

Appendix E. A table showing chapter contributor’s responses to constructive peer-review input of a draft version of 2011 Threshold Evaluation, submitted to the peer review panel in February, 2012. Responses indicate how comments were addressed and/or incorporated into a draft version of the 2011 Threshold Evaluation that was presented at the April, 2012 Governing Board Meeting. Peer review comments that affirmed reported content are not included in this table. Those comments can be found in the peer review report.

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Air Quality	Rich Axler	Atmospheric deposition	TERC provides loading and concentration data in its State of the Lake Report. This data was not included in the WQ chapter, I suspect, because it is not a formal or ambiguous Threshold for WQ. This information was included in the AQ chapter under 'nitrate deposition'. This dovetails into the peer review comments by both reviewers that the data selected for the Thresholds Evaluation Report is just a slice of what is available. Also note that the Threshold Evaluation provides references to UC Davis reports (e.g., state of the lake) as well as other relevant publications for the more engaged reader.
Appendix IE-4	Rich Axler	Remote sensing: Remote sensing offers a method for trying to get at littoral zone water quality.	TERC has a long-term partnership with NASA-JPL on remote sensing at Lake Tahoe for water quality. Application to the nearshore is currently underway in a federally funded research project. Also TERC-NASA (State of the Lake) also includes an analysis of lake-wide spatial variability in clarity at 0.5 and 1 mile from the shoreline. These documents are now referenced in the public draft of the Threshold Evaluation.

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Appendix WQ-2	Rich Axler	Annual yield: It would be helpful to see these data normalized to watershed area and to annual water yield (flow-weighted in order to highlight the differences between the streams.	Agree that this is something that can be easily done. It has been done in the past by the USGS and it would be beneficial to do an update in the future. Summaries of FWC pollutants were added as WQ appendices
Conclusion and Recommendations	Dan Canfield	Fertilizer ban	I haven't heard about this in a very long time in all my discussions with TRPA, Lahontan and NDEP. Was this stressed in the Thresholds Evaluation Report? Subsequent to JER response, JER and TRPA discussed and agreed that it would be wise to include a recommendation to phase out use of phosphorus fertilizers in the basin despite peer-review comment that suggest it would not result in any improvement to water quality.
General Comments	Dan Canfield	Are the multiple working hypotheses that are advanced in the scientific literature adequately addressed	Not at all consistent with the TRPA requests when asked for this information. They requested a status and trends evaluation with no more detailed scientific understanding. Most topics would require an in-depth technical analysis that has never been funded. Agency focus has been on relationship to standards/thresholds. NLA: The focus of the tributary section was on status and trends related to TPRA thresholds and state standards for tributaries, and the format of presenting the information was provided by TRPA in the form of an "indicator summaries."
General Comments	Dan Canfield	"Keep it Simple Stupid"	Really - it seems pretty simple right now for WQ. Keep the worst runoff out of the lake by restoring dysfunctional portions of the watershed. Having science-based targets for load reduction is not all that complicated and in fact required by the CWA.

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Implementation and Effectiveness	Dan Canfield	Saying the declining trend in sediment and nutrient load from streams and the slowing rate of lake transparency decline coincides with the implementation dates of the 1987 Regional Plan and 1997 EIP (see Water Quality Chapter of this evaluation) may be true as a coincident, but a cause/effect relationship is difficult to establish.	Two comments: (1) it is said in the report that the monitoring program provides direct evidence for a declining trend in loading - it should not. (2) This peer review comments confirms long-standing position on the difficulty of establishing a cause/effect relationship unless the changes are large. NLA: The analysis of trends in stream loading is based on linear regressions that probably do not meet the assumptions and therefore should not be used. If the regression lines are left on the figures it should be clear that the regressions meet/do not meet the assumptions, are not significant and therefore there is no statistically significant trend. All definitive statements made about cause and effect relationships removed from report narrative; and Regression lines removed from tributary loading indicator summaries in draft public report. Added write-ups on flow-weighted pollutants concentrations as appendix to the public report to show alternative way of showing trends in conditions. Remove simple linear trend analysis from public draft.
Implementation and Effectiveness	Dan Canfield	Urban fine suspended sediments	It appears that the reviewer was not provided with sufficient background material (see TMDL Technical Report) on the distinction between total sediments and the ultra-fine particles that affect transparency. Most researchers are not accustomed to thinking about particles this small. The sediment budget in the TMDL Technical Report clearly shows that stream input of total suspended sediment (from non-urban and stream channel erosion) is high at ~60%. It is equally as high for the sediment <63 µm (typically considered fine by most researchers); however, this value drops to 10-15% when the <16 µm fraction is

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			considered. It is this <16 µm fraction that has been identified as critical for transparency. This document is referenced multiple times in the draft public report.
Introduction	Carol Wessman	The introduction needs a compelling narrative at the start....	The introduction chapter was completely reorganized and rewritten in response to peer-review comments
Introduction	Dan Canfield	Tone of comments	Reviewers also display "parental affection" for their view of the world. The purpose of the Thresholds Evaluation needs to be clearly stated but at the same time integrated with all the other activities. Revisions made to introduction to address issues raised.
Introduction	Rich Axler	Confidence: a statistical framework for determining confidence in status and trends indicators need to be based on measures of uncertainty which need to be clearly shown in all figures and tables, and clearly discussed. This is a recurring flaw in most chapters, especially that involving water quality.	GAM statistical analysis for Secchi depth provides a measure of statistical significance. GAM trend included in the revised Threshold Evaluation Report. Again, this being said, I agree that a "statistical framework" for trend analysis for stream data is needed. NLA: Agree. To be completed as part of a SNPLMA Round 12 research project. Will not be solved with this report
Methodology	Edwin Krumpe	The reader should be reminded that this is the overall approach to methodology and that in individual chapters on indicators there will be some further explanation where slight modifications to this methodology are	Comment addressed in report, pg. 2-6. Text was added to remind the reader.

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		required.	
Methodology	Robert Lilieholm	Page 2-2, last paragraph: Add a final sentence, e.g., "These four steps are described in detail below."	Text added, pg. 2-2
Methodology	Robert Lilieholm	Page 2-4, paragraph directly below bullets: Change "... and is understandable by most." to "... and is readily understandable."	Text changed, pg. 2-4
Methodology	Robert Lilieholm	Page 2-4, first equation near the bottom of the page: Change "% to target" to "Percent to Target" for consistency.	% changed to percent, pg. 2-4
Methodology	Robert Lilieholm	Page 2-6, first paragraph under the section entitled "Evaluation of Indicator Trend:" Give the reader some idea of what the term "evaluation period" means. I assume that this could be a year in the case of annual measures, or 5 to 10 years (or more) for some periodic forest measurements.	Text added, pg.2-6
Methodology	Robert Lilieholm	Page 2-7, Figure 2-2: Rather than combine all possible trend symbols into a single graphic, use five different trend indicators to avoid possible confusion (e.g., use an approach similar to that expressed in Figure 2-3).	Comment noted, but figure was not changed
Methodology	Robert Lilieholm	Page 2-8, Table 2-2: For the last row of the Table, change "... insufficient data or due to..." to "... insufficient data, highly variable data, or due to..."	Text added, Table 2-2.
Methodology	Robert Lilieholm	Page 2-12: Correct the reference to "Figure X4."	Correction made to Figure reference, pg. 2-12

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Methodology	Robert Lilieholm	Page 2-13, paragraph above the middle set of bullets: Change "...but are principles..." to "...but are instead principles..."	Text changed, Pg. 2-13
Methodology	Robert Lilieholm	Page 2-13: Correct grammar in sentence before section entitled "Estimating Interim Targets."	Grammar corrected, Pg. 2-13
Methodology	Robert Lilieholm	Page 2-14, second bullet: Correct typo (i.e., "estamate").	Typo corrected, Pg. 2-14
Methodology	Robert Lilieholm	Page 2-14: Correct typo under "Air Quality" description (i.e., "intenties").	Typo corrected, Pg. 2-14
Methodology	Robert Lilieholm	Page 2-14: Correct typo under "Wildlife" description (i.e., change "provide" to "provided," change "Department" to "Department").	Typo corrected, Pg. 2-14
Methodology	Robert Lilieholm	Page 2-14: Correct typo under "Recreation" description (i.e., correct "Conservancy").	Typo corrected, Pg. 2-14
Methodology	Carol Wessman	The intentions and methods were described completely, but language was slightly to very "dense". Editing, with a focus on simplifying and shortening sentences, would significantly increase clarity. I found a number of typographical errors and tried to point out a few below under "Editorial Comments". This chapter needs significant editorial attention.	Chapter was revised and edited to address this comment.

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Methodology	Carol Wessman	Under Section 2, the discussion of “Determine Indicator Status” is not clear and, in fact, confusing. Figure 2-1 appears to define percent divergence differently than the example given for winter lake transparency and differently than the detailed descriptions of the categories of discrimination. The best I can tell, the figure should be labeled such that the $\leq 25\%$ and $\geq 25\%$ of the target are going to be relative to the type of standard. For example, for “achieve the minimum” standard, the “somewhat worse than target” is $\leq 75\%$ and “considerably better than target” is $\geq 125\%$. (I understand the figure is implying the target plus/minus 25% or greater/less than, but that’s confusing.) The example of winter lake transparency is confusing because it is categorized as “considerably worse than target” because it is greater than the target. In sum, this section needs to be made consistent in its message.	The figure was relabeled to address this confusion, and winter Secchi example was corrected.
Methodology	Carol Wessman	Pg 2-1, Interim Target: “is an intermediate numeric objective identified in Threshold Evaluations and related to a standard that is expected”	Edit made
Methodology	Carol Wessman	Pg 2-2, central question to evaluation: “What is the status of the indicator And how has it changed over time (trend)?” à space between “over” & “time”	Edit made
Methodology	Carol Wessman	Pg 2-4: “Maintain with Range” Standards à “e.g. percent forest vegetation type cover” is	Edit made

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		awkward. Use "e.g. percent cover of forest vegetation type".	
Methodology	Carol Wessman	Pg 2-4, 2nd to last paragraph: "This method is commonly used because it is based on straightforward calculations"	Edit made
Methodology	Carol Wessman	Pg 2-5: "For the "maintain within range" "However, if the value was above or below the prescribed range, one needed to"	Edit made
Methodology	Carol Wessman	Pg 2-6, 1st paragraph under 3): "In other cases, (comma) a trend determination was not made due to insufficient data"	Edit made
Methodology	Carol Wessman	Pg 2-6, 2nd paragraph under 3): "...method that fits a straight line through the set of points plotted on x (time) and y (indicator value) axes ..."	Edit made
Methodology	Carol Wessman	Pg 2-7, third line: "The coefficient of determination or R2 values was also evaluated ..." The coefficient of determination is defined in the next sentence.	Edit made
Methodology	Carol Wessman	Pg 2-7: "...functions or changing cyclical patterns common in, (comma) for example, (comma) wildlife populations."	Edit made
Methodology	Carol Wessman	Pg 2-8, Under 4): The term "Aging" in "Data Continuity, Aging, and Quality Assurance" is not quite right. "Age" of sampling isn't commonly used. More applicable would be "Sampling" or "Record" or "Duration" or ...?	The term aging was changed to 'recency of data'

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Methodology	Carol Wessman	Pg 2-8, "Spatial and Temporal Representation": "... analysis or a scientifically supportable qualitative rationale. and Either approach infers that the spatial and temporal representativeness of the monitoring effort adequately characterizes regional conditions for the resource or condition considered."	Edits made
Methodology	Carol Wessman	An example of a very complex and unclear sentence on page 2-10 under "Aggregation of Status, Trend, and Confidence": "In general it appeared that previous evaluations took a very restrictive approach for characterizing the attainment status at the Indicator Reporting Category level where the Indicator Reporting Category was deemed to be in "non-attainment" if any of the standards within the Indicator Reporting Category were out of attainment in any of the years covered by the evaluation." Wow.	Comment noted. Chapter text was revised extensively to address this comment.
Methodology	Carol Wessman	Pg 2-13: "In these instances, the numerical elements of the management standards were evaluated in a manner similar to a numerical standard if ..."	Edit made
Methodology	Gary Hunt	The confidence status and trend determinations would benefit greatly if an actual example calculation was provided preferably for one of the actual threshold categories presented later in the report.	Agree with comment. An actual example from the vegetation chapter was included in the methodology chapter
Methodology	Gary Hunt	The methodology applied in the current Threshold Evaluation represents a significant improvement over these prior approaches, as	Agree with comment

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		a result.	
Methodology	Gary Hunt	This reviewer disagrees with the practice of not using a status score in calculation of overall indicator status when the following conditions exist: 1] due to insufficient data or 2] because a standard had not been established. The overall score should reflect the unavailability of these data regardless of these circumstances. I have the same criticism for this practice used in calculation of indicator trend scores. The ultimate outcome is that confidence scores are affected in those instances where status and trends scores were artificially biased high due to insufficient data or lack of standards (page 2-12).	Comment noted, but no change in methodology made. We could not devise an objective method to account for status or trend outcomes with insufficient data or where a standard is lacking in the aggregation process. Further, in some cases several indicators within an indicator category have status and trends with insufficient data. We are concerned that these 'unknowns' could overwhelm the 'known' results.
Methodology	Gary Hunt	The approach for estimating interim targets and attainment dates appears reasonable for indicators trending towards the standard and for those standards found to be in attainment. For those indicators trending away from the standard it is not clear why literature reviews were the preferred approach. It was not clear why actual TRPA data (if available) could not be used? Further, if nothing was yielded from the literature review no interim target or attainment date was identified.	Comment noted. A more conservative approach was taken in the development of interim targets to reduce the chance of subjective or unsubstantiated selections of interim targets.

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Methodology	Gary Hunt	The attainment status of many indicators is evaluated using a numerical value. In some instances (eg. odors) management standards and/or policy statements and practices are employed solely in determining attainment status. All three (3) of these practices in practice should work in unison on a parallel path towards evaluating indicator performance and ultimately Threshold Standard attainment. To this end policy statements and management standards (if without numerical endpoints) should not be viewed as having the same stature in the overall process as those with actual numerical standards. Forward progress towards attainment, as well as, decline is difficult to evaluate for threshold categories where numerical standards are not in place (Page 2-13).	Agree with comment. Text is included in chapters 1 and 2 to describe the differences among the three types of standards (policy, management, and numerical). It is well implied that the standards are not treated equally (i.e., do not have the same stature).
Methodology	Gary Hunt	For example, in the case of odors the TRPA should consider installation of a process to monitor and record odor complaints including use of an Odor Hotline. Odor events could be monitored and used to evaluate attainment with an actual numerical standard (eg goal = reduction of complaints year to year). This could be accomplished through development of a complaint data base. Goals for attainment could be set moving forward consisting of net reductions in complaints (actual number or %) from the prior reporting period. Complaint	Agree with this comment. Would need to be addressed in future monitoring program

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		trends could be monitored and used to evaluate the effectiveness of existing regulations and policy statements.	
Methodology	Daniel Canfield	In this document, simple linear regression was used to estimate indicator trends from available data unless otherwise specified in the Data Evaluation and Interpretation narrative. When evaluating trends with data collected over multiple years, it is possible because of the N to obtain a statistically significant relationship, but it is not meaningful. Dr. Yves Prairie of Canada and Bryhn and Dimberg of Sweden (Prairie, Y.T. 1996. Evaluating the predictive power of regression models. Canadian Journal of Fish and Aquatic Sciences 53:490-492.; Bryhn, A.C. and P.H. Dimberg. 2011. An operational definition of a statistically meaningful trend. PLoS ONE 6(4):1-9.) have shown that when the R2 value is less than 0.64 the relationship is not statistically meaningful. This is important as weak trends are reported in the document when there is no time relationship.	Comment noted, but no change in methodology made. TRPA used a $r^2 < 0.5$ as the cutoff for point for weak correlations.

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Methodology	Daniel Canfield	<p>Estimating the time it will take an indicator to reach attainment using regression analysis is a standard scientific approach. However, the predicted value from a regression equation is only an estimate and is subject to error. It is clearly necessary to provide confidence intervals around the estimated value because as the x values gets farther from the mean value the confidence intervals become so large the prediction is essentially meaningless. For this reason, extrapolating outside the range of data used to establish a regression has proven over time to often lead to erroneous predictions. Many scientists do this, but the confidence in the prediction should be classified as very, very, very low or to put it bluntly useless.</p>	<p>It is generally agreed that TRPA can do a better job of reporting the variability associated with data, when available. However, it is difficult for many non-scientists to understand the importance of variability, and its inclusion can lead to greater confusion. Addition caveats added to relevant sections.</p>
Methodology	Daniel Canfield	<p>Another major concern is the apparent limitations placed by the preparers of this Threshold Evaluation, on themselves, as to what data would be considered for analysis. There is a wealth of important information in the scientific literature and agency reports that could prove most useful in trying to solve the Lake Tahoe puzzle. For example, Dr. Goldman's publications of 1965 and 1988 (and the references cited) are particularly helpful as is the UC-Davis Tahoe: State of the Lake Report 2011 (see Chapter 4, Water Quality).</p>	<p>Comment noted, but no change in methodology was made. The primary purpose of this report is to evaluate the status and trends of indicators relative to established standards or targets. Solving the puzzle of why these conditions occur is generally left to focused research and beyond reporting requirements followed to produce this report. Additional narrative and references were added to relevant section of the report to further call out factors known to impact various indicators.</p>

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Methodology	Daniel Canfield	Throughout the historical published literature, there are numerous single point estimates, such as historical Secchi readings, that when aggregated they can be compared using standard statistical techniques like frequency analysis to provide evidence for or against change. Such an analysis permits the time window to be expanded prior to 1968 and to look at the multiple working hypotheses examined by early scientists. Data continuity and quality assurance results typically do not contribute significantly to a variance component analysis as most of the variance is attributed to date and spatial variance in a single lake. The appropriate sampling protocol also changes with the researcher and the objectives of their study, but the information obtained during the study can be most useful. Therefore, it is highly recommended that the preparers of this evaluation consider all available information.	Comment noted, but additional analysis and data gathering not conducted; no change made to methodology chapter. Need to address comment as a component of future monitoring, evaluation and reporting efforts and program.
Methodology	Richard Axler	This chapter does a good job of presenting TRPA's approach to determining status and trends for their prescribed set of indicators. Their new metrics for evaluating progress in relation to targets may be an improvement over previous 5-year evaluations. However, there are still some important methodology questions that need to be addressed. The major one relates to the lack of adequate statistical analysis and the potential use of	Comment noted. TRPA did the best it could with the time and funding available for this effort, but there always be room for improvement. Scientists and technical staff from partner agencies were involved in the analysis and development of chapters 3-11. Analytical approaches were adjusted in several cases in response to this (and other) peer review comments related to analysis. Addition description of the quality of the data is provided

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		<p>incorrect techniques based on the characteristics of the data set (i.e. how much data, missing data, levels of detection, confidence limits, normality or non-normality assumptions, etc.). These analyses are not trivial to carry out and are usually the result of extensive discussions between the scientists who designed the monitoring and research programs and statisticians who have had prior experience evaluating these kinds of long-term environmental data sets. A linear regression analysis has assumptions built into it, such as normally distributed data – which is not the case for many environmental variables. There are other non-parametric models and tests for trends that are well vetted by the U.S. Geological Survey (USGS) for use in streams in particular, but also for lakes. It does not appear to me that the scientists from TRPA’s Partners had much to do with the statistical methodology used for the Report or the presentation of their own data; and I think they are the folks that should be doing the analysis, and then working with TRPA and Extension Educators to best communicate results in words and graphics.</p>	<p>in each indicators summary.</p>
Methodology	Richard Axler	Careful re-reading of this section’s wording is also needed.	Agreed. A careful re-read and editing was completed
Methodology	Richard Axler	2-4. Throughout the report, it’s time to use meters as the primary unit and put “feet” in parentheses throughout (except in some pre-	Comment noted, but no change in methodology made

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		packaged figures from ERC, DRI or USGS.).	
Methodology	Richard Axler	<p>I also think it's inappropriate to use a ratio of current annual Secchi (or any other indicator) and the target value as a measure of "attainment" for a couple of reasons. The first is that the parameter may not be linear – such as light attenuation as estimated by Secchi depth. One meter of loss of Secchi depth from 25-24 m is due to a tiny fraction of particles in the water needed to decrease it from 15 to 14 meters or 5 to 4 meters. Such data may be "linearized" by using a Ln transformation or by using 1/[Secchi depth]. Also, we have no reason to expect progress to be linear over time and I would argue that this creates false expectations. Most ecological processes that I know of are distinctly non-linear. And the installation of stormwater BMPs and the repair of SEZs, for example, can require several years for construction impacts to wash away and revegetation to occur. Sediment discharge may be worse after a project than before if heavy rainstorms occur before the project area is fully remediated.</p>	<p>Comment noted, and changes were made to the methodology write-up. Text was added to page 2-4 explicitly pointing out the drawback to the categorization approach is that it assumes changes in an indicator occur in a linear fashion over the entire range of the indicator. Yet we know this is not the case for many indicators. In most cases, however, the distance between an indicator and the standard or interim target is only a portion of the full potential range, and it is assumed that this distance can change in a linear fashion.</p>

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Methodology	Richard Axler	Definitions of what constitutes a change as in Table 2-2 are useful only to the extent that you can accurately assess the values of the indicators and their uncertainty. It may be better to simply report an Indicator Trend Category as Improving, Declining, Essentially No Change, and Insufficient Data to Evaluate. Where a rate of change can be calculated, it should be reported along with the confidence intervals. The detail in some of the indicator descriptions seems unwarranted given the uncertainties in the values of some of these indicators.	Comment noted, but no change in methodology made. TRPA staff and consultants discussed this issue at length during the development of the methodologies. In the end it was thought that more categories in trend would communicate more information. This is something that will be assessed after the report is completed, and may be changed in future reports.
Methodology	Richard Axler	There is also an important need to have some index of the weather in most of the water quality, and perhaps also some of the air quality, and even socioeconomic indicators. For more than 30 years it has been clear to the TRG (now TERC) that annual Secchi, and in particular winter Secchi, increased (more transparent) in low precipitation Water Years. Weather has direct control of the water budget in the basin such as stream flows, but also is important to lake productivity in terms of how early summer stratification breaks down, how long the lake remains isothermal, how strong and frequent wind storms are, how early or late does spring arrive, and how dry and how hot is summer? I think TRPA has also spent too much attention comparing one year to other. There's ample data presumably	Comment noted, but not change made to methodology chapter. This is a good point. Some information was added to the beginning of the water quality chapter to point out the important influence of weather and water year variation; however, additional data analysis was not completed.

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		to do a good job of addressing the influence of the weather – which would then need to be summarized for the 5 year evaluation period and used when discussing changes between evaluation periods and in discussing the individual “bumps and grinds” of the data – particularly the Secchi and 14C-PPr data.	
Methodology	Richard Axler	2-8 Confidence. I rather like the way TRPA tried to establish “rules” for consistency in their confidence in status estimation. However, the Trend Confidence procedure, in my opinion, has the flawed premise that trends are always described by a linear regression and associated t-test (determined by the combination of r2 and degrees of freedom n-1). It’s a step in the right direction, in that the confidence of the trend description should be stated clearly. However, the methodology will likely vary depending on the nature of the data set.	Agree with this comment. In fact the methodology for determining trend did vary, depending on the data set and the author’s understanding of those data. Text in the methodology section was included to more explicitly point out that linear regression was the general approach to analyzing trends, but several exceptions occur – for example, a general additive model was used to describe Secchi trend, Theil regression was used for most AQ data. More work is needed to develop objective methods for estimating confidence using different analytical approaches. TRPA generally took a conservative approach.

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Methodology	Dan Canfield	Inappropriate use of simple linear regressions: simple linear regression was used to estimate indicator trends from available data unless otherwise specified in the Data Evaluation and Interpretation narrative. When evaluating trends with data collected over multiple years, it is possible because of the N to obtain a statistically significant relationship, but it is not meaningful.	Comment Addressed In Report. Agree with the comment. Simple linear regressions typically miss the important process as complex in ecosystems. In the most analyses of ecosystem data simple linear regressions are not appropriate. There are numerous statistical approaches than can be applied but these require work to implement and as always depend on the questions being asked (see new GAM analysis used by TERC for long-term Secchi data and included in the public draft). Researchers and managers only ask different questions. The relationship between statistical significant and a meaningful interpretation of the data are not the same. Again, this requires a clear understanding of the questions. NLA: The simple linear regressions used with the tributary load data to test for trends have to meet several assumptions before they should be used: 1) the residuals are normally distributed, 2) the variance of the residuals is constant, 3) the residuals are independent and 4) the relationship between X and Y is linear (i.e. load is linear with time). If the assumptions were checked and met, this should be stated in the report. Issues acknowledged in the public draft of the report. Trend lines for tributary loads removed in public draft

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Methodology	Dan Canfield	Extrapolating outside the range of data used to establish a regression has proven over time to often lead to erroneous predictions.	Agree with this comment. This is why for the purpose of the TER (Thresholds Evaluation Report) data presentations and discussions were limited to the existing data with no predictions. Often, as with the Tahoe TMDL, models are used to simulate ecosystem response. These are not intended to be errorless predictions, but rather allow us to look at possible, big-picture responses. A statistically-based model using field data was developed by TERC (Jassby et al. 2005). The goal of this model was to determine if Secchi depth could be mimicked on the basis of precipitation, depth of mixing and other factors. This model was only designed to explain existing, rather than future data. Issues and limitations with using models to predict interim targets and threshold attainment dates acknowledged in the public draft of the report
Methodology	Dan Canfield	Another major concern is the apparent limitation placed by the preparers of this Threshold Evaluation, on themselves, as to what data would be considered for analysis.	This comment provides very good justification revising the Thresholds and Regional Plan reporting guidelines. Science and managers are currently conducting such a formalized process for nearshore indicators. Threshold updates acknowledge in the recommendations section of the public draft. Some limitations on data analysis stem from existing ordinance language where the agency is to "continuously monitor" threshold related indicators. Conducting a "meta-analysis" proposed by commenter is appropriate but outside the scope of the Threshold Evaluation and staff capacity.

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Methodology	Rich Axler	Ratios	As pointed out by Axler, indicators and levels of attainment can be complicated by the bio-physical processes at play. Things cannot be multiplied, divided, added or subtracted at will without an understanding of the underlying mechanisms. This is why the accumulation of a number of indicators into an "uber-indicator" with a single value may not be scientifically correct. While it may meet the temporary needs of decision makers, it can lead to disappointment in the long run. These caveats are recognized and noted in the public draft of the 2011 Threshold Evaluation. Additionally, data from all monitored streams is presented in the public draft to address this comment.
Methodology	Rich Axler	Definitions of uncertainty	As correctly identified, this should not be done on the basis of professional judgment. However, I do appreciate the need to show progress or anticipated progress. This is a very difficult issue as water quality restoration is not just about science. But, a set of quantitative-based criteria should be established. In the TMDL we added an uncertainty section that was based on the comprehensiveness of the data - uncertainty can be assessed in many ways. Addition description and narrative of "certainty" was added to the draft report.

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Methodology	Rich Axler	Weather data to support status and trends data	<p>Both statistical and mechanistic models have been developed by TERC to investigate this (Jassby et al. 2003 and Sahoo, G.B., S.G. Schladow and J.E. Reuter. 2010) and are referenced in the TEVAL). Effect of sediment and nutrient loading on Lake Tahoe optical conditions and restoration opportunities using a newly developed lake clarity model. Water Resources Research, Vol. 46, W10505, doi:10.1029/2009WR008447. The importance of hydrology and precipitation is very well appreciated. The most important question is 'can BMPs and other restoration actions change the watershed so that high flow years function as low flow years with regard to loading'? In other words, can load reduction be achieved even if flow is high? While I agree that the current stream data set could shed light on this general issue, not enough is known about the specific effect land use has on the actual measured load. To do this would require a very intensive set of monitoring sites in the watersheds. In the TMDL Pollutant Reduction Opportunity Report we took a first stab at this for urban stormwater loading. While the LTIMP stream data does provide a good data base to better understand the relationship between flow, load and concentration, it's ultimate connection to land-use policy has uncertainties. An evaluation of the BMP and restoration projects to date typically reveals that the projects were conceptually appropriate - pollutant source control, stormwater treatment and hydrologic source control. What is needed is a thorough evaluation of what type of response can be expected based on anticipated projects. Expectations need to be managed based on scientific uncertainty. The LTIMP data base, as it</p>

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			<p>exists, can only go so far in reducing this uncertainty. A 'back of the envelope' calculation may be helpful. In rough numbers, over the past decade, a total of \$1.5B has been spent on environmental protection and restoration. Of this, it might be reasonable to guesstimate that no more than 25 percent actually stopped sediment and nutrients from actually entering Lake Tahoe as money was spent on a wide variety of projects. The Tahoe TMDL estimated that a total of \$1.5B (additional) would need to be spent on targeted WQ projects that actually reduced load to the lake. At this level of funding (\$37.5M per year), is it reasonable to see changes on anything less than a decadal time scale? The point being that analysis of monitoring data needs to consider whether significant changes are likely over the period of record.</p>

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Overall Assessment of TRPA 2011 Threshold Evaluation Report	Rich Axler	My major concern with the Draft Thresholds Report was in regard to its lack of statistical rigor in the status and trends analyses, and not doing a better job of linking the large effects of annual weather differences to lake and stream water quality and the natural variability of the data in the context of available measurement methods.	<p>On the surface this is a very reasonable comment. For the stream data we took this into account by presenting the long-term data in terms of flow weighted concentration (FWC) - annual load÷annual flow (added WQ appendixes showing FWC). While the two are related FWC does give a picture of how flow (wet vs. dry years) affects the concentration. We also included a plot of running average in the original analysis to provide a more time integrated view of long-term changes. This is a very common technique use by the USGS. These analyses are now included in the draft Threshold Evaluation Report as an appendix to the Water Quality Chapter (see appendix WQ-3).</p> <p>The relationship between annual weather differences and stream loading has been recognized and appreciated for many years, actually starting with the work of Dr. Axler at Tahoe. This is why data on flow is provided on the same graph as the load estimates. The USGS and TERC did not produce the simple liner trend lines that appeared in the draft version of the report to describe the trend in loading - the TRPA did so because the agency is mandated to show program in attainment in threshold attainment. Since load is directly related to flow, we decided to use the FWC as discussed above and removed the SLR from stream graphics. The use of more traditional time-series analyses statistics (Mann-Kendall test) does not account for influence of wet vs. dry variability. That being said, the USGS and TERC are currently working on the application a more sophisticated approach.</p> <p>NLA: Typically when USGS calculates loads all the concentration data for several years is used to develop the regression equations, and therefore it is not deemed appropriate to analyze for trends in</p>

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			<p>annual (yearly) loads due to auto-correlation. However, the Tahoe stream data and loading techniques are unique in that UCD calculates annual load based on that water year's data. Because of this the annual loads probably are not auto-correlated (although this needs to be checked) and therefore appropriate trend analysis should be able to be performed. USGS and TERC are looking into the appropriate statistical techniques for this, but as J. Reuter stated, tests such as the Mann-Kendall test will not account for the variability due to streamflow that is due to variability in precipitation. This is why looking at the data in different ways is important, such as using flow-weighted concentrations (presented in appendix WQ-3) or other "indicators". Although flow-weighted concentrations do not fall within TRPA's thresholds, they do shed light for status and trends of concentrations over time. With regard to the affect of meteorological variability on water quality, TERC has published a model that takes this and the depth of mixing into account in sreaching for trends (Jassby, A.D., J.E. Reuter and C.R. Goldman. 2003. Determining long-term water quality change in the presence of climatic variability: Lake Tahoe (USA). Can. J. Fish. Aquat. Sci. 60: 1452-1461). This tool has not received much traction within the Basin, despite being discussed in the TMDL Technical Report. Recently, TERC also employed a much more sophisticated approach for evaluating the long-term trend in Secchi data - a Generalized Additive Model (GAM). This has been reported in the State of the Lake Report but not used in past Thresholds Evaluation Reports or the version that was submitted to the peer-review committee. The GAM will be</p>

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
			<p>applied to secchi data and presented in the draft public version of the 2011 Threshold Evaluation. As most watershed ecologists would state, these complex ecosystems rarely function in a linear manner or in ways adequately represented by the common Excel relational functions. Statistically-based analyses such as the GAM and that developed in Jassby et al. use the data to inform process. NLA: USGS (Rowe and others, 2002) published tributary loading estimates and trends of concentration data. This is the typical approach by USGS, to look at trends in concentrations (instead of loads) using a statistical test (Seasonal Kendall test) that allows for the removal of flow variability in concentration data to improve the performance of the statistical trend test. An update using this technique for trends of concentrations could be performed; however, TRPA thresholds are in terms of trends of loads, not concentrations.</p>
Overall Assessment of TRPA 2011 Threshold Evaluation Report	Rich Axler	<p>I was also disappointed that the Report did not do a good job of presenting information in a landscape perspective highlighting how certain key indicators cut across major areas (i.e. Chapters) – such as how the Air Quality NOx data is linked to lake N-loading; how N and P source loading is from fundamentally different processes (N from the atmosphere and P from watersheds), and how the land-water interface meets in the littoral zone with consequences to periphyton and phytoplankton, food webs, fisheries, recreation, and both scenic and property value.</p>	<p>These are all very important issues that have been discussed by both researchers and agency staff. While the Thresholds Evaluation Report does not delve into these questions there are other reports and scientific papers, reports, etc. that do. This report appeared to have a very specific purpose; however, the reviewer's comments noteworthy in the sense that the TRPA and other agencies may need an overall report, aimed at a quasi-technical audience that pulls all the pieces together. At the moment, as far as an outsider is concerned, the total is much less than the sum of the parts.</p>

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Overall Assessment of TRPA 2011 Threshold Evaluation Report	Rich Axler	Outreach: Reviewer can't overstate the importance and cost-effectiveness of a strong, well funded outreach, education, and training program for the general public, students and teachers, agencies, decisionmakers, and targeted business audiences.	Not within scope of this report, but it provides another good example of my comment above - TERC's outreach and education is world-class, yet the reader of this report would not know about this and all the other work being done by the many stakeholders.
Soil Conservation	Carol Wessman	"A slightly more enhanced discussion with supporting citations would strengthen this section."	Comment Addressed In Report. Additional discussion and citations added.
Soil Conservation	Carol Wessman	"Bailey's actual 1974 document for this classification scheme is difficult to access..."	Comment Addressed In Report. The Bailey Report is available on the TRPA website and the web address has been provided as a footnote in the report.
Soil Conservation	Carol Wessman	Provide more discussion and include supporting citations.	More supporting information has been provided.
Soil Conservation	Carol Wessman	Bailey's 1974 document is hard to find.	Comment Addressed In Report. The Bailey Report is available on the TRPA website and the web address was provided.
Soil Conservation	Carol Wessman	Provide a short description of each of the Bailey land capability classes and/or a table that characterizes each of the classes by the important physical criteria.	Comment Addressed In Report. Table 4 from the Bailey report (1974) has been provided in text for additional details.
Soil Conservation	Carol Wessman	For preliminary impervious surface analyses, provide data properties (resolution, time of acquisition, etc.) in introduction. Provide more detail on the intended use of object-based analysis. Need a better description of the application of this approach.	Address in Future Reporting Efforts. The approach is to provide a brief summary of the methods used. Additional details will be addressed in future reporting efforts as appropriate.
Soil Conservation	Carol Wessman	First paragraph of New Land Coverage is unclear. How is land coverage calculated on water quality mitigation fees? Clarify	Comment Addressed In Report. Clarification added.

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Soil Conservation	Carol Wessman	Not convinced that a comparison between the current assessment of impervious cover and the 2006 assessment are inappropriate. If no comparison is done, a better justification for why this cannot be done is needed.	Comment Addressed In Report. A table has been added to compare the 2002 hard impervious cover estimates for the Lake Tahoe Basin with the 2010 estimates. Both use the new 2007 soil survey data.
Soil Conservation	Carol Wessman	Agreed with report recommendation that threshold standard language needs to be updated to update or replace the language of the Bailey report.	Comment Noted
Soil Conservation	Carol Wessman	Text needs to be better supported by literature. More description is needed on importance of SEZ to soil conservation.	Comment Addressed In Report. Additional discussion is provided and additional references added as appropriate.
Soil Conservation	Carol Wessman	Acreage of SEZs is inadequate to describe impacts on soil conservation. It is an indirect indicator of erosion and sediment transport. Potential threshold standards such as identification of runoff and erosion sources and amounts would be more direct or explicit statements.	Mandated by Threshold Standard. We recognize that SEZ acreage alone is insufficient to assess overall condition and impacts on soil conservation. One recommendation in this report is to change the threshold standard to assess the functions and conditions of SEZs.
Soil Conservation	Carol Wessman	The SEZ indicator should not be confined to restoration projects if it is meant as an assessment of overall Basin condition.	Mandated by Threshold Standard. See previous comment.
Soil Conservation	Carol Wessman	Reviewer states that no indicator has been developed to verify preservation of SEZs. This should be pointed out in introductory paragraphs and it should be noted that only restoration projects are being monitored for status and trend, but not the area of naturally functioning SEZs in the Basin.	Comment Addressed In Report. Additional discussion is provided in public draft

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Soil Conservation	Carol Wessman	A list of editorial comments was provided.	Comment Addressed In Report. All editorial comments have been addressed in the public draft.
Soil Conservation	Richard Axler	Note that LiDAR analysis was done in August 2010. Provide statement about the ideal time for using it with contemporaneous aerial photography would be prior to leaf-out.	Comment Noted. Penetration to ground does decrease with dense vegetation, but this was mitigated by the high pulse densities used for this collect. Report by Watershed Sciences from 2011 can be made available. The average first-return density of delivered dataset is 11.82 points per square meter; Average Ground Point Density = 2.26 points/m ²
Soil Conservation	Richard Axler	Reviewer disagrees with the way acreages are portrayed in Table 5-2. The analysis has set a somewhat arbitrary allowance for impervious surfaces within classes and then allowed impervious surface cover to increase to this maximum. It seems imprudent and flawed to have a policy to allow further conversion to impervious surfaces as a "target" since the Lake is an impaired water body. A reasonable policy would be to not increase impervious surfaces with a class with exceptions. Duluth, MN has a development ordinance regarding no net increase in impervious surfaces.	This is the policy that TRPA has adopted and this report only addresses the extent to which Region is in compliance with the Policy. Comment Addressed In Report. Table 5-2 and new Table 5-3 have been modified to remove "target" language, replacing it with "maximum allowable" to be more accurate. The reviewer's other points regarding policy are noted. However, this report evaluates the threshold standard as currently adopted.
Soil Conservation	Richard Axler	Map illegible.	Comment Noted. The map is intended only to provide a quick visual of the extent of impervious cover within the Lake Tahoe Basin, not any specifics, due to the space available in the report. TRPA maintain a GIS that can be access upon request

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Soil Conservation	Richard Axler	Reviewer disagrees with Interim Target statement which specifies that interim targets are not needed for land capability classes where impervious cover is below target for reasons given above. Impervious surfaces lead to excess flow, high peak flows, lower base flows, increase channel and bank erosion, increase sediment and nutrient discharge. A no net increase in runoff guideline or ordinance at least for many areas of the Basin seems warranted. Reviewer agrees with the rest of the section including recommendations.	It is mandated by Regional Plan – code of ordinances to identify interim targets and target attainment dates for those indicators currently out of attainment. TRPA regulations are already in place for a "no net increase in runoff" through stormwater regulations which require that all runoff from impervious surfaces (new or existing) in the Region be addressed by infiltrating the 20 year-1 hour storm on site. Any change to the land capability class allowable coverage would require a revision to the threshold standard. A recommendation has been made to detach the Bailey land capability report from the threshold standard, and additional considerations such as those of the reviewer's made be pursued in the future.
Soil Conservation	Richard Axler	It would be helpful to add a final row to SEZ section Table 5-1 that lists the total 21,944 acres of SEZs in Basin, with 4400 of these disturbed, of which 25%, or 1100 acres, is to be restored.	Comment Addressed In Report. The SEZ restoration goals have been added to Table (renamed Table 5-4).
Soil Conservation	Richard Axler	Map of SEZ restoration projects from 2005-2011 is illegible.	Comment Noted. The map is only intended to provide a quick visual of the distribution of SEZ restoration projects within the Lake Tahoe Basin, not any specifics, due to the space available. Map information is accessible upon request
Soil Conservation	Richard Axler	Bar graphs should be plotted on true time scale with three bars centered at 1990, 1992, and 1995. A rate calculated for these numbers indicate that SEZ restoration is slowing down over time.	Comment Noted

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Soil Conservation	Daniel Canfield	Reviewer expected a major discussion on soil erosion control projects given the effect of fine sediment on Lake water clarity.	Mandated by Threshold Standard. The chapter focuses on the impervious cover and SEZ indicator reporting categories to address the primary purpose of the threshold evaluation report in evaluating status attainment. Discussion on soil conservation/erosion control included in the Implementation and Effectiveness chapter.
Soil Conservation	Daniel Canfield	The key to soil conservation in the Tahoe Basin is getting funds for erosion control. "Boots on the ground" is more effective than spending money to get better satellite models.	Comment Noted. Erosion control projects are ongoing through the Basin. Programs, policies, and activities are in place to minimize soil erosion and restore SEZs, including stream channels.
Soil Conservation	Daniel Canfield	Weather variations and long-term climate change (dry/wet periods) are among the most important environmental drivers of tributary runoff and thus sediments and nutrients. These factors are more important than impervious cover, wildfire, and stream channel instability which can contribute sediment and nutrients to the Lake or tributaries.	Comment Noted
Soil Conservation	Daniel Canfield	TRPA should consider soil conservation practices used in Maine and mountainous regions of Europe. For details, see Reviewer's full comments.	Comment Noted
Soil Conservation	Daniel Canfield	Could not find Bailey's report	Comment Addressed In Report. The Bailey Report is available on the TRPA website and the web address has been provided.

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Soil Conservation	Daniel Canfield	It is questionable why the authors suggest a 6-acre change in impervious cover will occur by 2016 and Class 1b will not obtain the standard in 563 years. Credibility could be diminished by numbers like these. For Class 1b, state that standard will not be obtained in the foreseeable future or it is never expected to reach attainment.	Comment Addressed In Report. These numbers have been removed and the suggested statement is used.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	Editorial comments were provided throughout Chapter.	Comment Addressed In Report. All editorial comments were considered and most were incorporated into the document.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	Minor comments and questions were provided throughout Chapter.	Comment Addressed In Report. All minor comments and questions were considered and many were incorporated into the document. Substantial comments or questions by the reviewer are individually addressed below.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	A graphic showing the estimated new land coverage for the various time periods is recommended.	Comment Addressed In Report. A chart has been added.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	Give some qualitative indication of the impact of not including transferred or relocated land coverage, decrease in land coverage due to banking or pursuant to excess land coverage mitigation programs in new land coverage acreage.	Comment Addressed In Report

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	Figure 5-1: Change trend status from "unknown" to "insufficient data to determine trend" for land capability classes 4-7 to match that of classes 1-3.	Comment Addressed In Report
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	Consider adding to Table 5-2 a comparison to impervious cover estimates from previous threshold evaluations.	Comment Addressed In Report. A table has been added to compare the 2002 hard impervious cover estimates for the Lake Tahoe Basin with the 2010 estimates. Both use the new 2007 soil survey data.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	Revise Target Attainment Date of 563 years to focus on attainment of interim target of 6.1 acres of reduced coverage.	Comment Addressed In Report. Statement has been removed.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	Include a recommendation that the soft coverage analysis will be updated once the results from the current work on quantifying soft coverage become available.	Comment Addressed In Report. Recommendation has been added.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	TRPA should consider evaluating what the word "restore" means, providing a working definition, and evaluating past projects to determine which projects meet that definition. Make a recommendation that TRPA will work with partner agencies to come up with clear definitions for restoration and enhancement.	Comment Noted. The need to clearly define restoration and enhancement is already in the recommendations.

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	One approach to understanding the extent of naturally functioning SEZs that are being preserved is to get an estimate of the number of SEZ acres that have been transferred from private to public land ownership. This is a form of preservation that is often used, and the assumption is that SEZs are at risk of loss in private ownership but not in public ownership.	Address in Future Reporting Efforts. Comment is noted. The approach will be considered in the next threshold evaluation.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	How many acres of disturbed SEZs are in undeveloped, unsubdivided lands? Does the 4,400 acre figure include the disturbed SEZs in undeveloped and unsubdivided lands?	Comment Addressed In Report. Text has been added to clarify that no estimate of disturbed SEZs in the "undeveloped, unsubdivided" category are available. The 4,400 acres pertain only to SEZs that are "disturbed, developed, or subdivided" and this is already clearly stated in the text.
Soil Conservation	Zach Hymanson (not on panel, reviewed Soils chapter)	What is the confidence in numbers of total SEZ acres and total acres disturbed?	Comment Noted. Current total SEZ acreage of 21,944 acres for the Basin are based on the 2001 Threshold Evaluation, which replaces a previous figure of 17,000+ acres in previous Evaluations. We recognize that total SEZ acres for the Basin and acres of disturbed SEZs need to be updated using best available science and technology and this is reflected in the interagency SEZ Roadmap.
Vegetation	Carol Wessman	I would add that a recommendation is warranted for a landscape analysis in future work.	Addressed in Future Reporting Efforts. The agency recognizes that composition and configuration are both important aspects of landscape vegetation, but are beyond the scope of this evaluation. Analysis approach will be addressed in future evaluations

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Vegetation	Carol Wessman	The standard indicator Species Richness... might be titled Landscape Richness or Land Cover Richness or Vegetation Richness because it is at the level of an association... rather than species.	Mandated by Threshold Standard. The Threshold Standard states "Maintain species richness by providing for perpetuation of plant associations." The title of the section was changed to "Vegetation Community (Association) Richness" for clarification.
Vegetation	Carol Wessman	In Table 6.1, why do the Common Veg and Uncommon Veg Categories have different types of standards (one with and one without numeric targets)?	Mandated by Threshold Standard. This is the way the Threshold Standards are written and adopted; not able to change in this evaluation, though the agency recognizes that some of the standards need to be updated/clarified as a separate effort.
Vegetation	Carol Wessman	Given the recent fires (Angora and Gondola), wouldn't the eventual regeneration satisfy targets for small diameter trees? This is mentioned but should be more developed.	Comment Addressed In Report. The Trend section in the Red Fir/Yellow Pine forest evaluation discusses the fact that burned areas will contribute small tree acreage eventually. Another note regarding stand-replacing wildfires was added to the Target Attainment Date section.
Vegetation	Carol Wessman	Is there discussion of removing "ongoing fire suppression?"	This type of mandate is beyond the scope of the agency. It is unlikely that fire suppression agencies would get the public support to let fires burn in the Basin and put so many homes at risk.
Vegetation	Carol Wessman	Editorial Comments: grammar mistakes and clarification of one sentence on pg. 6-6.	Comment Addressed In Report. These mistakes have been fixed and meaning of sentence clarified.
Vegetation	Robert Lilieholm	Pg 6-1: text refers to little active forest mgmt since 1970s, but doesn't specify what's happened since then.	Comment Addressed In Report. Clarified in report by stating that forest management treatments began at that time.

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Vegetation	Robert Lilieholm	Pg 6-2: (1) change "fire resistant species" to "fire susceptible species." (2) Specify type of treatments conducted in conifer forests.	Comment Addressed In Report. (1) This sentence was modified since review and reads differently/accurately now. (2) Added "fuel reduction" to clarify type of treatments.
Vegetation	Robert Lilieholm	Pg 6-8: Be consistent in the use of vegetation "communities" and "associations."	Comment Addressed In Report. The Threshold Standard states "Maintain species richness by providing for perpetuation of plant associations." Therefore, the word "association" must be included, but since most people understand these systems more as "communities," that was included as well. Updated in report to read more clearly by writing as "community (association)" in most locations.
Vegetation	Robert Lilieholm	Pg 6-8: "Incense cedar" is not a true cedar and should be written as "Incense-cedar."	Although incense cedar is not a true cedar, it's often written without capitalization or a dash between the words. I don't believe the dash is as mandatory/accepted as "Douglas-fir" for example; therefore did not update.
Vegetation	Robert Lilieholm	Pg 6-9: Under "Status," some statement of wildfire risk should be included.	Comment Addressed In Report. Added sentence stating that natural disturbances such as wildfire could cause a shift in vegetation community location over time.
Vegetation	Robert Lilieholm	Pg 6-11, bar graph: some explanation is needed for the very high yellow pine value reported in 2006.	Comment Addressed In Report. The text below the graph was updated to indicate that different diameter limits were used in the 2006 and 2011 evaluations.
Vegetation	Robert Lilieholm	Pg 6-12, under "Trend:" comment regarding timeframe of reforestation after Gondola and Angora fires.	Comment Addressed In Report. An addition to end of sentence that reads "however, these changes could take decades" addresses this comment.

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
Vegetation	Robert Lilieholm	Pg 6-12, "Interim Target:" In the last sentence, why does TRPA expect a stable or slight increase in the area of small diameter red fir and Jeffrey pine by 2016?	Comment Addressed In Report. Sentence was changed to read: "If land management agencies implement harvest and regeneration strategies that promote young age classes, such as group selections, it is possible that the percentage of small-diameter Red Fir and Yellow Pine cover will be maintained or will slightly increase in the Region by the next evaluation."
Vegetation	Robert Lilieholm	Pg 6-13, "Monitoring Approach:" How is dominance of trees <10.9" defined? Basal area, trees per acre, volume, crown coverage?	Dominance was determined by crown cover. Was not clarified in report but can be added at final revision stage.
Vegetation	Robert Lilieholm	Pg 6-15, last two sentences: (1) Is more work really needed to refine these trend data? (2) Are there estimates of how many acres could be restored through conifer removal?	Comment Addressed In Report. (1) The mapping approach should at least be documented so the same methodology is used in future evaluations (thereby making trend estimates more accurate). (2) The following text was added to this section: "... and an estimate of acres of meadow that could be gained through restoration projects should be determined."
Vegetation	Robert Lilieholm	Pg 6-17, "Recommendations for Addtl. Actions:" I agree the current standard of "not more than 25%" is problematic... the more likely risk is to exceed the 25% benchmark as wildfire threatens to convert forestlands to shrublands.	True - exceeding 25% is more likely than reaching 0% shrublands. However, it is not necessary to state this in the report, because if the 25% shrubland benchmark is exceeded, it will be addressed as being out of threshold conformance.
Vegetation	Robert Lilieholm	Pg 6-19, "Effectiveness of Programs and Actions:" This section notes limited potential for removal of conifers in riparian zones... rather than revise down the threshold, revise regulations so these areas can be restored.	Comment Addressed In Report. The following text was added: "...existing regulations should be evaluated and amended if necessary to facilitate projects that would benefit areas of deciduous riparian vegetation."

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Vegetation	Robert Lilieholm	Pg 6-20, "Relevance:" Change (i.e., Jeffrey pine) to (i.e., Jeffrey and Sugar pine).	Comment Addressed In Report. Updated.
Vegetation	Robert Lilieholm	Pg 6-21, middle of page: Change "50 years of fire suppression to 100 years.	Comment Addressed In Report. This sentence was modified since review to state 100 years of fire suppression.
Vegetation	Robert Lilieholm	Pg 6-26, third paragraph: How was average DBH calculated? Arithmetic or quadratic mean?	Comment Addressed In Report. The statement that an average diameter >24" was used was a mistake; instead the evaluation was based on stands dominated by trees >24". This error was fixed (see comment/response above regarding how dominance was defined).
Vegetation	Robert Lilieholm	Pg. 6-29, "Unit of Measure:" Need to better define "dominated by large diameter trees." (see comment above on Pg 6-13)	Dominance was determined by crown cover. Was not clarified in report but can be added at final revision stage.
Vegetation	Robert Lilieholm	Pg 6-19, "Effectiveness of Programs and Actions:" Reference to acres treated for fire risk reduction should be reported by type - i.e., WUI projects vs. those away from developed regions and intended to protect large forested landscapes.	Most fuel reduction projects in recent years have been in the WUI and also intended to protect large forested landscapes (most neighborhoods in the Basin back up to large acreages). The WUI surrounding neighborhoods often has large trees and valuable old-growth structure, despite the close proximity to homes.
Vegetation	Robert Lilieholm	Pg 6-30, end of section: Relaxing the subalpine late seral threshold is probably warranted, although careful thinning could be used to accelerate stand growth and increase stand diameter in some situations.	The purpose of relaxing the diameter cutoff when considering "old growth" subalpine species is because the agency recognizes that 24" dbh, and especially 30" dbh, is much greater than some subalpine species would naturally reach over the course of approx. 200 years. Thinning to increase stand growth is not necessary if the sole purpose would be to increase diameters beyond natural levels.

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			Additionally, planning for management treatments in the subalpine zone is beyond the scope of this agency.
Vegetation	Robert Lilieholm	Pgs 6-38, 40, 42, 45, 49, "Monitoring Approach:" In describing the USFS Region 5 Range Monitoring Program, "meadow" should be changed to "wetland" or more specific wording.	Comment Addressed In Report. The text "...classify a meadow..." was changed to "...classify meadows and wetlands..."
Vegetation	Robert Lilieholm	Pgs 6-43, 45, end of first section: Are two monitoring plots sufficient to form the basis of future threshold evaluations?	Statistically, two plots is not adequate to establish baseline conditions. However, in the absence of any other quantitative data, two plots will at least be a starting point to work from.
Vegetation	Robert Lilieholm	Pg 6-43, last section: Given the destructive nature of beaver activity, why isn't their removal proposed as an option?	Removal of beavers as a management strategy is outside the scope of this agency. The Threshold Evaluation reports on conditions, but should not make recommendations to other agencies that are beyond the scope of TRPA authority.
Vegetation	Robert Lilieholm	Pg 6-47: Main map needs an inset locator map.	Comment Addressed In Report. Vicinity map added to main map.
Vegetation	Robert Lilieholm	Pg 6-55: The font size in the map is too small to be legible.	Comment Addressed In Report. A new map was created to replace the illegible one.
Vegetation	Robert Lilieholm	Pg 6-59, 60: Reference is made to an MOU that expired in 2011; should its renewal be recommended, or was it unsuccessful?	Comment Addressed In Report. The "Recommendations for Additional Actions" section had been updated since review to include recommendation of reinstating the

Report Section	Reviewer	Comment Received	General Response to Peer Review Comment Provided by Chapter Contributors
			expired MOU.
Vegetation	Robert Lilieholm	Pg 6-64, top sentence: Change "litter" to "trash" to avoid confusion with downed naturally occurring biomass.	I believe the word litter does refer to forest floor biomass in this instance. The sentence refers to marginal habitat where no plants were found (draba prefers sites without much biomass on the sand/rocky substrate).
Vegetation	Robert Lilieholm	Misc: comments on grammatical errors.	Comment Addressed In Report. Grammatical errors have been fixed in report.
Water Quality	Dan Canfield	Secchi disk discussion is buried	Comment Noted. Given the hyper-focus the Basin has on transparency, this statement is just not well informed. In fact a common thought is that there is too much emphasis on Secchi and not enough on other important issues.
Water Quality	Dan Canfield	Annual, winter and summer data should be presented: The discussion should begin with the annual average changes in Secchi depth followed by winter changes and summer changes..	Comment Addressed In Report. Agree, which is why Thresholds need modification based on many years of new science. Winter, Annual and summer status addressed in public draft
Water Quality	Dan Canfield	Goldman concluded these observations indicate that the transparency varies considerably during the year and that the pelagic zone of Tahoe probably had not suffered any marked decline in transparency during the last 90 years. This is an important conclusion to check out because the frequency of present-day values occurring outside of the range reported in the early 1960s may not be that great, suggesting great changes in Lake Tahoe's water clarity.	I haven't a clue where the reviewer came up with this!? It is the complete opposite to what has been said by science since the mid-1970s.

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Water Quality	Dan Canfield	Examination of Figure 10, however, shows that there are numerous measurements for the month of July. The distribution of measured July values can be statistically compared to the 1968 to present-day July values to determine how many years from 1968 to now differ from years when Goldman thought transparency had not declined.	<p>I was unable to locate Fig. 10 in the materials sent to me. Regardless, the reviewer has the impression that the level of analysis is much less than it is. Suggest providing the following citations by TERC</p> <ul style="list-style-type: none"> • Jassby, A.D., J.E. Reuter, R.C. Richards and C.R. Goldman. 1999. Origins and scale dependence of temporal variability in the transparency of Lake Tahoe, California-Nevada, <i>Limnol. Oceanogr.</i> 44(2): 282-294; • Reuter, J.E. and W.W. Miller. 2000. Aquatic resources, water quality and limnology of Lake Tahoe and its upland watershed, pp. 215-399. In: <i>The Lake Tahoe Watershed Assessment</i> (ed.) D. Murphy and C. Knopp. Vol. 1. United States Department of Agriculture – Forest Service. • Jassby, A.D., C.R. Goldman, J.E. Reuter and R.C. Richards. 2000. Biostatistical evaluation of long-term lake clarity record. <i>Verh. Internat. Verein. Limnol.</i> 27:2634-2635. • Jassby, A.D., J.E. Reuter and C.R. Goldman. 2003. Determining long-term water quality change in the presence of climatic variability: Lake Tahoe (USA). <i>Can. J. Fish. Aquat. Sci.</i> 60: 1452-1461. <p>• Chapters 1-3 (especially 1 and 3) of the TMDL Technical Report. The Reviewer's comment highlights the need to include the summer Secchi trend. Referenced the State of the Lake Report in TEVAL – currently no standard for summer transparency</p>

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Water Quality	Dan Canfield	Eutrophication hypothesis	This is discussed in detail in the TMDL Technical Report. Report is referenced in the public draft.
Water Quality	Dan Canfield	Phosphorus loading	Not sure of the specific meaning (in a peer review sense) behind this "back of the envelope" comment. Dr. Canfield would be the first to admit that this an over-simplified view. I suspect his point is that presentation of transparency and productivity data, and stream loading does not give the impression that adequate links are being made. This is all covered in detail in the TMDL Technical Report.
Water Quality	Dan Canfield	Internal sources	Again, this over-simplified comments suggests that the reviewer was not aware of the detail loading analysis done as part of the TMDL. The stream data presented is <u>not</u> the only source. It is very difficult to ask a peer reviewer to not look beyond the material presented. A background on water quality would have been helpful; however, I completely acknowledge that the TRPA's purpose in this report was not to provide a complete scientific treatise. This is where the TMDL Technical Report needs to come into play. TMDL documents are referenced several time in the draft report.

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Water Quality	Dan Canfield	External inputs of nutrients are not a driving factor.	<p>The turnover of nutrients and sedimentation are indeed very important factors in controlling accumulation in the lake (refer to: Jassby, A.D., C.R. Goldman and J.E. Reuter. 1995. Long-term changes in Lake Tahoe (California-Nevada, U.S.A.) and its relation to atmospheric deposition of algal nutrients. Arch. Hydrobiol. 135(1):1-21 and Reuter, J.E. and W.W. Miller. 2000. Aquatic resources, water quality and limnology of Lake Tahoe and its upland watershed, pp. 215-399. In: The Lake Tahoe Watershed Assessment (ed.) D. Murphy and C. Knopp. Vol. 1. United States Department of Agriculture – Forest Service, pages 347-352 contributed by Alan C. Heyvaert). The TMDL documents the importance of external sources. Internal sources are most commonly driven by release of N & P from anoxic sediments. Since this does not occur in Lake Tahoe, this is not a likely sources. Given that the contribution of atmospheric deposition to the N-loading budget is 55% for total-N and 77% for dissolved inorganic-N, the reviewer does correctly identify that there must be sources above stream loading. Without the inclusion of the nutrient and sediment budget from the TMDL (Table 4-67 and the accompanying text (section 4.6) the reviewer would know this important background information.</p>

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Water Quality	Dan Canfield	Nutrient trends	Only TSI but phosphorus and nitrogen concentrations in the lake since 1980 are also provided in the State of the Lake Report each year. TERC and TRPA are currently creating long-term plots for the other forms of N & P in the lake. Since nutrients are not formally included in the thresholds program, they are not part of the Thresholds Evaluation Report. Canfield correctly points out throughout this review that this practice is too constrained and leads to 'lost' information when evaluating water quality trends. I believe this is understood by the TRPA and is the reason why they and TERC are now working on this and why there is a desire to incorporate the TERC State of the Lake analyses into the TRPA program.
Water Quality	Dan Canfield	Focus on soil erosion control: Perhaps TRPA needs to focus on soil erosion control.	Based on my experience, the Basin does significantly focus on soil erosion and erosion control, as well as treatment of surface runoff when materials from erosion and human sources get into stormwater flow.
Water Quality	Dan Canfield	Importance of sediment	The Tahoe TMDL investigates this alternative hypothesis in considerable detail. Jassby et al. (1999) forwarded this hypothesis in the late 1990s and research over the last decade has investigated this in significant detail (see: Swift, T.J., J. Perez-Losada, S.G. Schladow, J.E. Reuter, A.D. Jassby and C.R. Goldman. 2006. Water clarity modeling in Lake Tahoe: Linking suspended matter characteristics to Secchi depth. <i>Aquatic Sciences</i> . 68:1-15 and Sahoo, G.B., S.G. Schladow and J.E. Reuter. 2010. Effect of sediment and nutrient loading on Lake Tahoe optical conditions and restoration opportunities using a newly developed lake clarity model. <i>Water Resources Research</i> , Vol. 46, W10505, doi:10.1029/2009WR008447). The importance of fine

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			sediment particles has dominated the scientific and management discussion since the mid-2000s.
Water Quality	Dan Canfield	Primary productivity and fine sediments	Again, this has been published (Jassby et al. 1999, Swift et al. 2006; Sahoo et al. 2010) and covered in great detail in the TMDL Technical Report. Did the reviewers has access to these documents?
Water Quality	Dan Canfield	Increase in primary productivity	Our stream loading data does not suggest a decrease in nutrient loading. UC Davis scientists have observed the 'apparent' difference between water column chlorophyll and primary productivity (PPr). The working hypothesis is that this relationship is based on phytoplankton size changes in association with the dynamics of the microbial-food loop seen in oligotrophic systems. TERC recently conducted a detailed analysis of phytoplankton community structure and physical forcing factors, TERC (Winder, M. and D.A. Hunter. 2008. Temporal organization of phytoplankton communities linked to physical forcing. <i>Oecologia</i> 156(1): 179-192) concluded that (1) between 1982 and 2006 phytoplankton biomass did not exhibit a significant change; however, a gradient in community structure was observed. An ordination analysis captured two significant axes -

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			<p>N:P ratio, phosphorus and light, and thermal stratification, (2) water column N:P ratios confirmed the findings from bottle bioassays that Tahoe phytoplankton shifted from both N and P limitation to predominately P limitation between the 1980s and 1990s, and (3) that a change in temperature associated with climate change affects stratification and favors small diatoms.</p>
Water Quality	Dan Canfield	Feasibility of obtaining threshold values	<p>I agree that this is an important issue. Canfield makes a suggestion that optical profiles in the lake have changed so much that a full reduction in PPr may not be possible. This may or may not be true, but an interesting hypothesis. Meeting the threshold/standard of a 29.7 m annual average Secchi depth may also not be feasible based on socio-economic conditions. The science community is very willing to discuss these types of issues with the TRPA and this should be done. The TRPA best understands the possible impediments to changing the existing thresholds.</p>
Water Quality	Dan Canfield	Nutrient-rich wastewater	<p>Comment noted. Seems outside charge to Threshold Evaluation Report reviewers.</p>

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Water Quality	Dan Canfield	Sediment erosion: Control of soil erosion in Lake Tahoe's watershed would reduce the nutrients entering the lake and suspended sediments.	Management in the Tahoe basin over the past 10 years is based on the working hypothesis that certain fine sediment particles (<16 µm in diameter) as well as nutrients affect transparency and algal growth (both phytoplankton and the nuisance attached algae). As discussed in detail in the TMDL Final Report, treatment is based on hydrologic source controls, stormwater treatment and pollutant source controls (i.e. erosion control). The Pollutant Reduction Opportunities Report - done in support of the TMDL - evaluates each of these three approaches, providing various management scenarios.
Water Quality	Rich Axler	The presentation and analysis of the long-term water quality data from the lake and its tributaries do not appear to mirror the data and analyses presented by TERC-UC-Davis via its 2011 (WY 2010) State of the lake report or its many other publications found on its website	Not sure what is meant. Data is the same that is presented in the State of the Lake Reports. Perhaps mixing up winter average vs annual average? Error bars and GAM trend added to public draft.
Water Quality	Rich Axler	Inadequate statistical analysis of the long-term data sets	See comments above and our recognition of need to develop a statistical framework for stream loading data (currently being researched under a round 12 SNPLMA research project). We believe that the new GAM analysis for Secchi depth is appropriate; however, reviewer did not see this. GAM included in public draft of report.
Water Quality	Rich Axler	There are also many omitted, but important data sets	These and others, including periphyton (as suggested) are included in the State of the Lake Report for exactly this purpose. These and other data sources are referenced in the intro to the WQ chapter. NLA: It would be beneficial to include the loading graphs of fine sediment, SRP, and TN since they are discussed in the tributary section. These graphic and

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			write-ups are included in appendix WQ-3 of the public draft.
Water Quality	Rich Axler	Statistical uncertainties for Secchi and PPr: Table 4-1	These are addressed in the document prepared for TRPA by TERC that provide details of methodology and background for these parameters. The use of GAM was intended to address statistical confidence in long-term trend. A standard deviation for data collected within a single year is not wholly meaningful as it describes seasonal variation more than anything. This is why a GAM approach to annual, winter and summer Secchi is taken. Error bars on PPr are also a indicator of seasonality and do not provide a measure of confidence in the data. GAM will be applied to PPr and included in to public draft.
Water Quality	Rich Axler	Standards: Table 4-1. Applicable State and Federal WQ standards listed in this table are sometimes not specific enough	The regulatory agencies need to make this clear. After decades of having these values, a scientific guided review is in order.
Water Quality	Rich Axler	Secchi standard deviation	This data has been provided to TRPA - and is included in public draft. Added mean and standard deviation to sheet 3 in this file. Stdev for Ppr is also attached in the file.
Water Quality	Rich Axler	Declining PPr trend (comment based on page 4-10 Top): Reviewer does not see any basis presented here for the statement that the trend is declining... I think it's a mistake for TRPA to be evaluating one year in relation to another or to the long-term average except for the purpose of illustrating correlations with	This justifies the statement on page 4-10 that PPr trend is worsening. "Confidence in the long term trend also is "high". The linear regression model explains 96% of the variability in annual average phytoplankton PPr values collected over the period of record. The slope of the line is significantly different than zero ($t = 32.73$; $n =$

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		meteorological or some other tangible factor. Perhaps a running 3 year average would be helpful.	43; $P < 0.001$). I fully agree that it is not productive to compare one year to the next. This tends to overlook the complexities and does not benefit lake restoration discussions. Additional narrative added to text
Water Quality	Rich Axler	Polynomial fit: page 4-12. The polynomial fit provides a reasonable description of the data but there is no supporting "model" for why this equation should be used.	See response above on the difficulties of using Excel dropdown menus to model ecosystem processes.
Water Quality	Rich Axler	Target date: page 4-13 Target Attainment Date = 2076.	The extensive TMDL analysis suggested that the lake can respond with a timescale of 1-2 decades to a significant change in loading. The extended target date reflects the implementation schedule rather than some underlying limit on lake response, i.e. if magically all excessive load were reduced today the lake would show a response within 10 years according to TERC models. Target dates are required reporting element of TRPA progress reports - such as the Threshold Evaluaitons. Perhaps this requirement needs to be removed considering the number of critiques recieved and the cost associated with accurately estimating.
Water Quality	Rich Axler	Summer window: It would also be interesting to see data from the "summer" window, in addition to the winter window and the full annual averages.	TERC published this in the State of the Lake Report for the 2010 data (TERC, 2011). This report is referenced in the public draft.

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Water Quality	Rich Axler	Flow-weighted concentrations: I think it's important to show flow-weighted (i.e. normalized) concentrations in addition to mean annual concentration (e.g. for TP ion page 4-24).	Flow weight concentrations were provided by TERC and USGS in the WQ appendix. Text needs to be clear that page 4-24 is for exceedance of WQS that is not based on flow-normalized concentrations. However, this comment reinforces the need for FWC to be included (which are included in WQ appendices). NLA: The water quality standards are in terms of annual averages for TP and TN, and for SSC 90% of samples must be below 60 mg/L. Current standards to not take into consideration variation in stream flow.
Water Quality	Rich Axler	Sufficient samples: page 4-21. How is the number of sufficient samples defined? How are years with few samples handled in the plots? It seems to me that there should be a minimum number of samples, perhaps with a caveat regarding how they are distributed across hydrologic regimes. For example, if 4 samples are collected during baseflow for the year, one would expect low TSS and relatively high DIN and TN. TRG/TERC/USGS have traditionally conducted event based sampling with a balance between high and low flow sample collections.	Report states the following "Currently, a total of 20-35 individual samples are collected each water year from each of the ten regularly monitored streams. This sampling frequency is considered sufficient to characterize different inflow conditions observed during the water year. The sampling frequency has varied over the period of record. The stream monitoring program focuses on both event-based conditions (large runoff events associated with rainfall and snowmelt) and baseline conditions (low inflow during summer when precipitation is negligible)". The term sufficient is used in the sense that there is monthly sampling during based-flow and event-based samples during the precipitation and runoff season. NLA: The question of how many samples are sufficient is a good question and USGS asked this question to NDEP when calculating annual averages for each water year. There are some years where only 2 samples are available. We thought that the calculations should only be made when there are samples across all hydrologic regimes in a given water year. However, we were told by NDEP that they are required by EPA to use any available data when

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			calculating annual average and the minimum number of samples needed/required was 2. Hence if there were at least 2 samples in a given water year we calculated an annual mean. We could update the table in WQ-1 to list the number of samples used for each water year's annual average (n).
Water Quality	Rich Axler	General Creek: page 4-22 . Is General Creek still considered to be a reasonable reference stream based on very low development? Additional columns with % development and % Impervious Surface would be informative. If general Creek has virtually no development in the watershed and still violates a WQ standard, isn't this a problem? Or is this due to a climate change signal?	Based on the long-term data, General Creek show much lower load. It is not a true control stream in that it had some historical disturbance, but it has been largely undeveloped since LTIMP began. Lahontan needs to go back to the data originally used determine WQS for General Creek and determine where it was in terms of the selected standard value. Given the great degree of interannual variability in the flow volume, it is difficult to ascertain a clear climate signal, however, it is a very good suggestion that needs to be considered over time.
Water Quality	Rich Axler	Rosewood Creek: 4-22. The Rosewood Creek diversion from the Third Creek watershed needs to be highlighted in all its graphs and tables. This needs to be dealt with.	Agree. Need to get documentation on the discussions that accompanied the change in sampling location at that time.
Water Quality	Rich Axler	Trend analysis: page 4-22. Confidence. I don't agree that qualitative graphical inspection is the only way to assess potential trends here. As for the lake data, I would have TERC, USGS, and DRI stream ecologists and hydrologists analyze these data. Mann- Kendall non parametric trend analysis is a method long used by USGS and many state agencies for	Mann-Kendall is good. We have been cautious since because of the impacts of the very high and low load years that result from weather and flow rather than real changes in watershed delivery. Should be applied to FWC. Again, we acknowledge the need to develop a 'statistical framework' for the LTIMP stream program.

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		assessing temporal, and more recently, spatial trends in stream data.	
Water Quality	Rich Axler	Monitoring approach: needs to specify details of the Event Based Sampling approach and protocols used.	I defer to the USGS for this updating. NLA: The sampling approach includes routine monthly sampling and event based sampling. Event based sampling occurs during storm events, rain-on-snow events and spring snow-melt runoff events. Samples are collected across all hydrologic regimes, including low flows. Depth-integrated, equal width increment sampling techniques are used. Nutrient and fine sediment samples are split using a churn and analyzed by UCD TERC. Suspended sediment samples are analyzed by USGS.
Water Quality	Rich Axler	General Creek high 1981 TP: Map illegibility. General Creek 1981 data for TP seems very strange – the highest average TP. I recall that this was a low water year but cannot recall if because of this there were problems getting a wide enough distribution of samples.	Nancy could you check this out? NLA: I will have to recalculate. It looks like 11 samples were used to make the calculation whereas other years 19 to 127 samples were used.
Water Quality	Rich Axler	Flow weight means: pages 4-25 to 4-26. I got lost in the reasoning for not using flow-weighted means. If concentrations are simply averaged, there is a lot of weight given to outliers and this can be really important for smaller data sets for particular streams and years. A median value is perhaps more appropriate for such low data (low “n”) years but a set of rules for how to deal with this are	See previous comments on FWC. This is why they were include in the original analysis and included in appendix WQ-3 in the public draft report. NLA: State standards require use of annual averages not FWC.

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		needed.	
Water Quality	Rich Axler	Near the standard of 0.05 mg/L:page 4-26, 27 A better way to state this is that 13 out 18 years had TP <0.070 mgP/L. It is wrong to define “near” the standard of 0.05 mg/L as a difference of 0.02 mg/L in such an arbitrary manner. It depends on the method limit of detection and the field variance.	Agree that agencies should define what near means, but do it in terms of what they are willing to accept, e.g. would a difference of 10% 0.055 mg/L affect WQ, do they not want it 100% higher at 0.10 mg/L. This is an agency decision.
Water Quality	Rich Axler	Flow weighted (Bottom of 4-26)	See previous comments on FWC.
Water Quality	Rich Axler	TN: TN section suffers from the same problems as TP.	See previous response to TP
Water Quality	Rich Axler	Data presentation by individual stream : Figures 1-4 scales: Although nice to see all streams on the same Y-axis, this makes the graphs difficult to read in some cases.	This is in the Appendix for load. FWC is included in appendix as well.
Water Quality	Rich Axler	Truncating data set	Combining the LTIMP stream data into a single value results in the loss of much useful information. Data for each monitored stream are included in the WQ appendixes in the public draft.

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Water Quality	Rich Axler	Suspended Sediment loads in 2003, 2009 and 2010: Page 4-33. The 2010 loads were not only similar to 2003, but also 2009. And 199 and 2000 had similar loads but much higher flows illustrating the fact that there are other factors affecting nutrient and sediment loads and concentrations. Besides precip patterns across the basin, there might be soils differences that were not discussed (are there good soils maps and erodibility indices throughout the Basin?). The rain on snow comment was a good one and these years might be flagged in their plots.	The point was to compare water years with similar loads and streamflows. Water Year 2003 had very similar loads and flows to 2010. 2009 had slightly higher loads but lower flows than 2010. Water year 2000 had the same annual flow as 2010 but higher loads. Water year 1999 had higher loads and much higher streamflow than 2010. This does/may illustrate that there other factors affecting the loads than just the total amount of streamflow in a given water year.
Water Quality	Rich Axler	Page 4-33 Decline in annual loading of SS	Risky conclusion to make. Since loads are so impacted by flow trends cannot be determined with much confidence. In my opinion the trend is driven by the fact that they were higher flow years early on the period of record. I would delete this conclusion; it does not stand on solid ground. NLA: If the assumptions for linear regression are checked and met, simple linear regression can be used. However, in this case I don't think the assumptions have been met, the most basic assumption is Y has a linear relationship with X, which just by looking at the graph that does not appear to be met. Agree to remove wording on SS loads decreasing over time. This conclusion was abandoned in the public draft.
Water Quality	Rich Axler	trend of N+N load	The linear regression for N+N should be checked to make sure the assumptions have been met. Also, TRPA may want to run this again to confirm the p-value presented in the figure. Done - removed linear regression from public draft - presented annual data only.

