


Environmental Assessment  
for  
Threshold Updates  
for  
Regional Plan Update for the Lake Tahoe Region

Tahoe Regional Planning Agency  
Stateline, Nevada

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# Acronyms and Abbreviations

AMS	Adaptive Management System
APC	Advisory Planning Commission
B-IBI	Bird Index of Biological Integrity
BMPs	best management practices
CARB's	California Air Resources Board's
CESA	California Endangered Species Act
CNEL	community noise equivalent levels
CO <sub>2</sub>	Carbon dioxide
Compact	Tahoe Regional Planning Compact
CTRPA	California Tahoe Regional Planning Agency
DIN	dissolved inorganic nitrogen
DP	dissolved phosphorous
EA	environmental assessment
EIP	Environmental Improvement Program
EIS	environmental impact statement
EMS	Environmental Management System
EPPM	emissions per person-mile
ESA	Endangered Species Act
g/m <sup>3</sup>	micrograms per cubic meter
GB	Governing Board
IBI	Index of Biological Integrity
Lahontan RWQCB	Lahontan Regional Water Quality Control Board
NEPA	National Environmental Policy Act
Nox	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRS	Nevada Revised Statutes
NTUs	nephelometric turbidity units
PAOTs	persons-at-one-time
PCU	Platinum-Cobalt Units
PIRS	Pathway Indicator Reporting System
PNV	potential natural vegetation
ppm	parts per million

RMHQs	required to maintain higher water quality
SAG	scientific advisory group
SQWIC	Storm Water Quality Improvement Committee
SSC	suspended sediment concentrations
TAUs	tourist accommodation units
TDS	total dissolved solids
TMDL	Lake Clarity Total Maximum Daily Load
TMDL	total maximum daily load
TP	total phosphorous
TROA	Truckee River Operating Agreement
TRPA's	Tahoe Regional Planning Agency's
TRRs	travel route ratings
TSS	total suspended solids
VMT	vehicle miles traveled
WUI	wildland urban interface



# Executive Summary

## Introduction

This environmental assessment (EA) evaluates a proposal to update existing environmental threshold carrying capacities (ETCCs or *thresholds*) that provide the foundation for the Tahoe Regional Planning Agency's (TRPA's) Regional Plan. Updating the thresholds is an element of the comprehensive update of TRPA's 20-year-old Regional Plan.

This EA is prepared according to TRPA's environmental review requirements for the purpose of disclosing potential environmental impacts associated with changes to existing thresholds. Assessment of impacts associated with management strategies to implement proposed thresholds is not within the scope of this EA and is deferred to the planned environmental impact statement (EIS) for the Regional Plan Update.

Where proposed thresholds potentially could result in significant impacts to the physical environment, relative to continued use of existing thresholds, this document also identifies mitigation measures that would allow avoidance of such potentially significant impacts. This EA is also intended to evaluate whether significant environmental impacts in changing thresholds are unavoidable so that an environmental impact statement would be required.

## Background and Existing Thresholds

The *Tahoe Regional Planning Compact* (Compact) required TRPA to develop *environmental threshold carrying capacities* (thresholds) for the Lake Tahoe Region. Under Compact Article II(i), *thresholds* are environmental standards necessary to maintain significant scenic, recreational, educational, scientific, or natural values of the Region or to maintain public health within the Region. Such standards are to include, but not be limited to, standards for air quality, water quality, soil conservation, vegetation preservation, and noise. The existing 36 indicators and standards used to track attainment of thresholds, adopted in 1982 and amended three times since, provide measurement standards for the Compact's significant regional values adopted by TRPA, which now also include threshold standards for stream environment zones, fisheries and wildlife, scenic quality, and recreation. Each existing (and proposed) threshold consists of an indicator and a standard for that indicator. *Indicators* are measurable parameters or indices used to track progress in achieving desired environmental conditions or values. *Standards* are numerical targets related to indicators that define successful achievement of the thresholds.

## Development of New Thresholds—Scoping and Collaboration

In recent years TRPA has been developing potential threshold updates as a precursor for a planned regional plan update. The threshold update process has benefited from collaborative input of public agencies, public interest groups, and the general public. The collaborative—*Pathway 2007*—represents a joint effort of TRPA, USDA Forest Service (Lake Tahoe Basin Management Unit), Lahontan Regional Water Quality Control Board (Lahontan RWQCB), Nevada Division of Environmental Protection, public interest groups, and the general public. The collaborative process has resulted in recommended statements of resource visions and desired conditions, as well as recommended threshold updates that

reflect these goals. Based on the collaborative process, TRPA has developed a proposed set of threshold updates to help improve conservation of the Region's resources and provide direction for management of the Region's built and natural environments.

## Need for Project

Information and understanding related to environmental science and resource management needs have changed since TRPA's original adoption of thresholds in 1982. Considerable advances have been made in scientific understanding of all environmental sciences. Also, information concerning the feasibility and suitability of existing thresholds has been revealed during the 20 years of their application. The proposed changes are needed to capture the full range of scientific advances and new information since 1982. Also, aging built environment and infrastructure in the Region suggests a need for development in the Region to shift toward redevelopment. Vacant land suitable for first-time development is nearly built out so that thresholds over the next 20-year planning period must address and maintain the Compact's environmental values in the context of commercial and mixed-use redevelopment. Furthermore, public desires and concerns for the quality and nature of communities in the Region have also evolved. The thresholds need to be updated to reflect all these factors, including current scientific understanding of the Region's natural processes, a protective basis for regulation of redevelopment, a foundation to facilitate environmental improvements, and a high level of biological functioning of undeveloped areas.

## No-Project Alternative

The *No-Project Alternative* would retain existing TRPA thresholds over the next 20-year planning period, with incremental improvements to management strategies using a new adaptive management approach. Under this alternative, some of the existing water quality thresholds are expected to be superseded by a new regulatory program to be established by Lahontan RWQCB and NDEP in the form of a total maximum daily load (TMDL) requirement for Lake Tahoe.

## Proposed Project and Action Alternatives

Table 3 of this report compares the existing and proposed thresholds, and thereby provides a good basis for understanding the proposed threshold changes. The 36 existing indicators that have been used to track thresholds progress would be redefined as 27 due to consolidation, elimination, and modification. These proposed threshold updates are intended to meet the need for the project described above, provide needed recalibration or amendment, and support improvements to management systems and coordination with other agencies.

During the scoping process for this environmental impact assessment, several variations on the proposed threshold updates were identified. All of these variations are addressed in this report, and where necessary potential impacts are examined as are the potential impacts of the proposed threshold updates.

## Potentially Significant Environmental Impacts of the Proposed Project and Mitigation Measures

Table ES-1 lists potentially significant impacts of the proposed thresholds updates and, as needed, mitigation measures proposed to prevent the impacts from occurring. All potentially significant impacts

can be mitigated to less-than-significance by these measures; none of the potentially significant impacts are unavoidable. The mitigation measures describe supplemental threshold indicators and/or standards, or in some cases management (implementation) strategies, that would be needed to ensure that the change from existing to proposed thresholds would not result in significant impacts to resources of the Tahoe Region.

**Table ES-1.** Summary of Potential Environmental Impacts of Changing TRPA Thresholds and Proposed Mitigation Measures

Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
<b>Air Quality Thresholds—Effects on Air Quality</b>		
<p><i>Criteria Pollutant Emissions and Re-entrained Road Dust.</i> Replacement of traffic-limiting thresholds (AQ-5 and -7) by air quality and water quality thresholds affecting traffic indirectly could allow traffic increases. As a result, increases in emissions of criteria pollutants and road dust re-entrainment could potentially result in diminished air quality and increased nutrient loading of water bodies.</p>	<p>Increased criteria pollutant emissions from vehicle exhaust would be unlikely to occur even with increases in VMT because (a) reduced emission rates per mile will likely offset the VMT increase, and (b) three criteria pollutants would be controlled by other air quality thresholds. However, increases in road dust are directly related to changes in VMT, so the potential increase in nutrient loading is potentially significant.</p>	<p>Provide that the proposed water quality threshold for the <i>Pollutant Load Sources/Reductions</i> specifically includes the contribution of re-entrained road dust to Lake Tahoe clarity. Retain the VMT threshold until the proposed TMDL-based threshold is fully developed.</p>
<b>Air Quality Thresholds—Effects on Other Resources</b>		
<p><i>Water Quality.</i> Atmospheric loading of nutrients in the waters of Lake Tahoe could increase because the existing, specific threshold for nitrogen loading would be replaced by the threshold for lake clarity and a TMDL-driven threshold for atmospheric loading.</p>	<p>See direct impact above.</p>	<p>See direct impact above.</p>
<p><i>2—Vegetation, Wildlife &amp; Fisheries, and Other Resources.</i> Carbon dioxide emissions from any increases in VMT and traffic volumes would contribute to local CO<sub>2</sub> concentrations and cumulatively to global CO<sub>2</sub> concentration, which has been implicated in global warming and resulting climate change and associated ecosystem impacts</p>	<p>If standards for criteria pollutants in the <i>Human and Environmental Health</i> threshold effectively preclude increases in VMT and traffic volumes, this potential impact would not occur. If it does occur, direct health or local ecosystem effects from increased carbon dioxide emissions would be less than significant. The contribution to cumulative global effect would likely not be considerable in comparison to other increasing sources of CO<sub>2</sub>. However, the cumulative impact is considered likely to be significant by most investigators.</p>	<p>Once the California Air Resources Board develops a California standard for emissions of CO<sub>2</sub> or carbon load reduction targets, modify the Regional Plan as required by the Compact to ensure compliance of sources in the Region.</p>

Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
<b>Water Quality Thresholds—Effects on Water Quality</b>		
<p><i>Pollutant Loading Sources.</i> Locally higher concentrations of pollutants could be allowed in tributaries, stormwater runoff, and stormwater infiltrating to groundwater. A currently-undefined pollutant loading threshold would replace existing specific concentration-based thresholds (WQ-4, WQ-5, and WQ-6) for tributaries, stormwater, and infiltration to groundwater. The undefined new threshold standards for pollutant load reduction would be linked to a new total maximum daily load (TMDL) for Lake Tahoe, and achieving it would not necessarily result in meeting the intent of all of the existing Lake Tahoe clarity-related standards for tributaries, stormwater runoff, and groundwater. As a result, water quality in tributaries, local drainages and water bodies receiving storm water, and groundwater could possibly be diminished.</p>	<p>Implementation and management measures to be adopted under the TMDL, and supplemented by local storm water management plans, are very likely to compensate for the changes in threshold standards, and in the long-term water quality protection will probably increase as a result of the changes. Potential impacts are thus considered unlikely, but TMDL implementation is not yet defined. Therefore, this impact is considered unlikely, and potentially significant, but only if there are impacts to human and environmental health at Lake Tahoe clarity-related concentrations. Lake clarity-related concentration standards are as much as an order of magnitude below those concentrations of sediment, nitrogen, or phosphorus that would have a direct impact on water quality of these sources.</p>	<p>As part of the development of TMDL implementation, evaluate potential effects of eliminating the existing specific-concentration thresholds WQ-4, WQ-5, and WQ-6 and replacing them with TMDL-related standards, programs, and management measures. Include needed changes in state standards to address any gaps attributable to the change and make them more consistent.</p> <p>During required periodic reviews and proposed coordinated adaptive management of TMDL implementation evaluate whether TMDL-based standards provide adequate protection of tributaries and other waters. If not, adapt TMDL implementation and management of the proposed threshold standards.</p> <p>Develop separate TMDLs for any impacted stream water quality based on 303(d) listing for impacting constituents.</p>
<p><i>Pollutant Loading Effects, Littoral Lake Tahoe.</i> Nearshore turbidity and other water quality parameters of Lake Tahoe could be allowed to worsen by adoption of the proposed nearshore aesthetic-based threshold that would replace the existing turbidity threshold WQ-1.</p>	<p>The new threshold is expected to be developed after 2008 based on research to be completed and to address both turbidity and other variables. It is possible but unlikely that existing standards for nearshore turbidity would be relaxed, because the desired condition is improved transparency, and public interest in increasing protection is high.</p>	<p>Provide that the new aesthetic-based threshold includes equivalent or more restrictive standards or policies for nearshore clarity, aesthetics, attached algae growth, or suspended sediment concentrations relative to the existing standards and policies.</p>
<b>Water Quality Thresholds—Effects on Other Resources</b>		
<p><i>Housing.</i> Compliance with new <i>Pollutant Loading Sources and Effects</i> thresholds might require changes in construction practices, land use, and private property BMP implementation, and result in increased development costs and therefore decreased availability</p>	<p>Potentially significant, but likelihood of impact can not be defined at this time. The costs of meeting TMDL targets would likely be partially funded by government programs and grants. However, implications to costs of housing is presently</p>	<p>If costs of meeting the new TMDL targets raise the costs of low- to moderate- income housing significantly, maintain the current ratios of market-rate, moderate, and low income housing through mechanisms that could include public subsidy,</p>

Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
of low- and moderate-income housing relative to higher-income housing.	unknown.	restriction of market-rate housing allocations, and incentives for mixed-use development.
<i>Transportation, Public Services, and Recreation.</i> Compliance with new water quality thresholds could require investment in water quality improvement and constrain development and use of transportation systems and public services, and constrain recreation access.	Potentially significant, but the nature and likelihood of the potential impacts can not be defined at this time.	Provide that implementation of the TMDL strategies and use of the new water-quality IBI threshold attributes do not diminish the current extents and levels of public transportation and other public services in ways that would significantly diminish public safety or welfare, or eliminate public access to important recreational sites.
<i>SEZs.</i> Standards for pollutant loading sources (TMDL load reductions) could require substantial reduction in fine sediment contribution from streams; extreme reductions could adversely affect geomorphic function of streams and associated ecological processes.	Unlikely but potentially significant. TMDL requirements are unlikely to but could result in reductions in stream channel erosion and associated fluvial and ecosystem function beyond background or natural levels.	Provide for TMDL-based water quality threshold standards to be protective of natural channel conveyance and geomorphic processes, allowing for natural bedload contributions of fine sediment from streams consistent with maintaining geomorphic function and associated ecological processes.
<b>Soil Conservation Thresholds—Effects on Soil and Runoff</b>		
None		
<b>Soil Conservation Thresholds—Effects on Other Resources</b>		
<i>Housing; Transportation, Public Services, and facilities for developed Recreation.</i> Application of impervious coverage allowances on a watershed basis could constrain construction of new housing or infrastructure. Especially in watersheds with significant excess coverage, application of the threshold by watershed could constrain additional coverage associated with development, re-development, or infrastructure improvements.	The significance of potential coverage constraints on housing availability or transportation systems is difficult to assess until additional information is developed, but it could be significant.	Provide a list and ranking of overcovered watersheds based on application of the proposed threshold using the new soil survey, and identify and adopt the components of soil conservation/stormwater plans.  Define the procedures for application of IPES and for review of commercial and tourist re-development projects in watersheds with excess coverage, including reduction of excess cover and use of functional open space concepts to mitigate excess coverage, both during and after stormwater plan development and adoption. Incorporate mechanisms to avoid short- or long-term adverse effects on housing or transportation

Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
systems.		
<b>Stream Environment Zones (SEZs) Thresholds—Effects on SEZs</b>		
None		
<b>SEZ Thresholds—Effects on Other Resources</b>		
None		
<b>Vegetation Thresholds—Effects on Vegetation</b>		
None		
<b>Vegetation Thresholds—Effects on Other Resources</b>		
<p><i>Scenic Resources</i>—The new threshold for <i>Hazardous Fuels</i> would result in removal of forest trees and shrubs in and around communities to meet specific fire behavior standards, which could impede attainment of the existing or proposed scenic quality thresholds.</p>	<p>At the project level, attainment of the <i>Urban Vegetation and Fuels Threshold</i> could conflict with attainment of existing or proposed thresholds for scenic resources, which constitutes a potentially significant impact of the proposed threshold.</p>	<p>Include in the threshold additional indicators to assess, and management standards to provide, that that fuels treatments are being conducted in a manner that is not diminishing scenic resources values protected by the proposed <i>Natural Environment Threshold</i>.</p> <p>Indicators could include (a) percentage of areas proposed for treatment under the <i>Hazardous Fuels Threshold</i> (WUIs) which have been analyzed for likelihood of treatments to impact attainment of the <i>Natural Resource Threshold</i>, and/or (b) the percentage of the number of analysis/modifications of proposed management prescriptions conducted prior to WUIs treatments to ensure that standards of the <i>Natural Resource Threshold</i> will be met.</p>
<p><i>Air Quality</i>—Air quality could be diminished and human health standards could be violated by prescribed burning actions seeking to attain the proposed <i>Hazardous Fuels</i> threshold in WUIs.</p>	<p>Potentially significant because prescribed burning has caused significant air quality degradation in the Region even when conducted on permissible burn days when atmospheric conditions were anticipated to be conducive to dispersal of smoke.</p>	<p>Supplement the hazardous fuel treatment threshold to include corollary management indicators and standards, or cross reference with the Air Quality visibility threshold that ensure that the number of days that complaints from smoke from prescribed burning</p>

Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
		<p>for hazardous fuels treatments are less than a maximum number deemed acceptable to the public for visibility or human health impacts (the latter are CARB health-based standards). Provide that where ever possible the Region utilizes non-burning methods for the disposal of hazardous fuels. In addition, fire should only be used on days when there is no atmospheric inversion layer that would prevent smoke from leaving the Region and extinguish the fire if smoke builds to unacceptable levels.</p>
<p><b>Wildlife and Fisheries Thresholds—Effects on Wildlife and Fisheries</b></p>		
<p><i>Habitat Protection for Special-status Species and Ecosystems.</i> Many of the IBI metrics proposed as diagnostic and attribute indicators for the aquatic and terrestrial ecosystem thresholds are incompletely developed (Type II and III) and will require full definition, testing, and validation before they can be effectively and reliably implemented. Until these steps have been successfully completed, it cannot now be analyzed whether implementation of the proposed thresholds will provide that existing protections for species and their habitats that are now provided under the current thresholds.</p>	<p>Due to the inherent scientific and logistic challenges of defining, testing, and validating complex multimetric variables, full implementation of the proposed thresholds will take considerable time. If existing thresholds are discontinued before this entire process is complete, existing protections for species and their habitats would be lost or significantly diminished.</p>	<p>Retain all existing thresholds and continue to implement them until the proposed thresholds have been fully defined, tested, and validated.</p>
<p><i>Natural Resource Values.</i> The proposed IBI valuation process for determining and monitoring wildlife resource values and ecosystem integrity does not include weighted coefficients for the diagnostic or indicator metrics that would provide balanced representation of all variables in the final index value. Accordingly, the IBIs can potentially show progressive attainment of threshold standards as a result of incremental over-representation of dominant metrics. Reverse trends in under-represented metrics can</p>	<p>Monitoring IBI metrics through trends in key attribute data should allow the monitoring agency to detect and respond to any apparent bias between metrics. However, the possible impact is potentially significant if this potential bias is not adequately evaluated together with management needs interpretations and conclusions drawn from final IBI values.</p>	<p>Provide that all variables are individually tracked to detect any adverse effects not apparent from diagnostic indicators alone.</p> <p>Retain all existing thresholds and continue to implement them until the proposed thresholds have been fully defined, tested, and validated.</p>



Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
<p>potentially go undetected if only the composite indices are monitored.</p>		
<p><i>Special-Interest Wildlife.</i> Populations of some of the existing seven <i>special-interest wildlife species/groups</i> could decline, because current maintenance of disturbance-free zones around their population sites may not be part of the new special-status species threshold.</p>	<p>The proposed threshold provides special-status species monitoring methods that will accurately track their population status, but not necessarily prevent population decline. Disturbance free zones are currently in place to protect known occurrences, but it is not clear how the new threshold would prevent population declines. This potential impact could be significant.</p>	<p>Supplement the threshold by establishing that the management strategies for the new threshold provides that the existing threshold-defined disturbance free zones shall be at least as numerous and extensive as the existing zones, until it can be verified that populations intended to be protected will be viable without maintenance of all of existing disturbance-free zones</p>
<p><i>Waterfowl.</i> Populations of waterfowl in the Region could potentially be adversely affected because they are currently considered to be <i>Special-Interest Wildlife Species</i> under Threshold W-1 but would not be considered as special-status species under the new threshold for <i>Sustainability of Special-Status Species</i>.</p>	<p>Removal of this species group from the W-1 Special Interest Species list should have little effect on the population status of the waterfowl in the Region. However, until the marsh bird thresholds have been fully defined, tested, and validated, this impact is potentially significant.</p>	<p>Retain the existing threshold for waterfowl until the proposed marsh bird threshold has been fully defined, tested and validated.</p>

**Wildlife and Fisheries Thresholds—Effects on Other Resources**

None

**Scenic Quality Thresholds—Effects on Scenic Quality**

<p><i>Scenic Integrity in Urban Areas.</i> The new “<i>Urban</i>” <i>Scenic Character Theme</i> could allow urban development in new areas and allow urban development to dominate the scenic identity. Under existing thresholds, urban-type development that would block views of mountain backdrops or require removal of trees that frame existing views may not meet the <i>Travel Route Rating</i> threshold (SR-1).</p>	<p>The change from the existing travel route rating system to the Scenic Integrity Level system may result in new urban development that is visually dominant and not consistent with the landscape. Although future urban development projects would still have to be consistent with TRPA design and development measures and would not be able to degrade scenic resources protected under the existing Scenic Quality ratings, this potential impact could be significant.</p>	<p>Limit areas mapped as <i>urban</i> under the new <i>Scenic Character Theme</i> standard to existing urban areas as defined in TRPA <i>Community Plans and Plan Area Statements</i>.</p>
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Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
<b>Scenic Quality Thresholds—Effects on Other Resources</b>		
<p><i>Vegetation.</i> Attainment of new Community Design Standards developed as part of the place-based planning process could affect the treatment prescription for an individual community’s ability to meet the vegetation standard of the Hazardous Fuels Threshold.</p>	<p>The implementation of the Hazardous Fuels Threshold involves only selective vegetation thinning that likely can be coordinated with scenic goals and community design standards, but this impact is potentially significant.</p>	<p>Include in the threshold additional indicators to assess scenic impacts from fuels reduction, and standards to provide that attainment of the proposed <i>Natural Environment Threshold</i> is not contributing to non-attainment of the <i>Hazardous Fuels Threshold</i>.</p> <p>Indicators could include number of development approvals where consideration of attainment of the <i>Natural Environment Threshold</i> and the treatment prescriptions for <i>Hazardous Fuels Threshold</i> (WUIs) are analyzed simultaneously.</p>
<b>Noise Thresholds—Effects on Noise</b>		
<p>None; all proposed changes would result in reduced noise levels.</p>		
<b>Noise Thresholds—Effects on Other Resources</b>		
<p><i>Recreation.</i> The new single-event noise source standard for over-snow vehicles (the equivalent of 73 dBA at 50 ft, 15 mph) may require the replacement of older models with new, quieter models or decrease snowmobile recreation in the Region.</p>	<p>The potential effect on current snowmobile use is unknown, thus this impact is potentially significant.</p>	<p>Transition enforcement after the implementation of new thresholds.</p>
<p><i>Recreation.</i> Motorized recreation activities could be reduced by more restrictive single-event standards for snowmobiles and OHVs, and new, currently-undefined) 1 hr noise standards varying by land-use type, and new, currently-undefined noise standards to protect wildlife.</p>	<p>Theses standards are undefined at this time, but the potential exists for them to reduce motorized recreation activities. Thus the impact is potentially significant.</p>	<p>Transition enforcement after the implementation of new thresholds to allow for public education about the new standards and allow for development of improved motorized recreation technology that meets the standards.</p> <p>Non-sensitive wildlife areas and areas not set aside for the quiet enjoyment of recreation should remain open to motorized recreation, subject to meeting the new standards.</p>

Potential Impact	Likelihood of Occurrence/Potential Significance	Mitigation Measures
<b>Recreation Thresholds—Effects on Recreation</b>		
None		
<b>Recreation Thresholds—Effects on Other Resources</b>		
None.		

## Section 1

# Introduction

### Purpose of This EA and Threshold Update

This document constitutes an environmental assessment (EA) for a proposal to update existing environmental threshold carrying capacities (ETCCs or thresholds) that provide the foundation for the Tahoe Regional Planning Agency's (TRPA's) Regional Plan. *Thresholds* are explained in Section 2, *Background and Existing Thresholds*, of this report. The purpose of this document is to satisfy TRPA's environmental review requirements of the Tahoe Regional Planning Compact (Compact) (Public Law 96-551; U.S. Congress 1980), TRPA's Code of Ordinances for environmental documentation (Chapter 5), and TRPA's Rules of Procedure (Article VI) (<http://www.trpa.org/default.aspx?tabindex=2&tabid=172>) by disclosing potential environmental impacts associated with changes to existing thresholds as identified through initial environmental impact assessment. Where proposed thresholds potentially could result in significant impacts to the physical environment, relative to continued use of existing thresholds, this document is also intended to identify mitigation measures that would allow avoidance of such potentially significant impacts. Finally, this EA is intended to allow the TRPA Governing Board to determine if significant environmental impacts in changing thresholds are unavoidable and whether an environmental impact statement is required under TRPA's environmental codes and regulations cited above.

Updating thresholds is the first step in updating the 20-year-old Regional Plan for the Lake Tahoe Region (1982a, 1983a, 1986, 1987), which is the umbrella document guiding all aspects of TRPA's exercise of its authorities established by the Compact. The Regional Plan is described in Section 2, *Background and Existing Thresholds*, of this report.

### TRPA Environmental Documentation Requirements

The Compact established TRPA's responsibility for assessing and documenting environmental impacts when acting upon matters that may have a significant impact on the environment (Article VII). That article sets forth an environmental-impact review process and establishes the content of an EIS. The Compact does not require that TRPA's environmental-impact review process be subject to the National Environmental Policy Act, the California Environmental Quality Act, or environmental-impact documentation laws of the State of Nevada. Rather, it establishes a process unique to TRPA.

TRPA subsequently enacted an ordinance prescribing its requirements for environmental documentation pursuant to the Compact (Chapter 5 of TRPA Code of Ordinances). This ordinance established a process to determine the need to prepare an EIS. It allows for use of an environmental checklist or an EA in determine if a project may have a significant effect on the environment, in which case an EIS must subsequently be prepared. The code requires that in addition to a description of the proposed project, EAs contain a discussion of the project need, identification of alternatives to the proposed project, discussion of environmental impacts of the proposed project and alternatives, and a list of agencies and persons consulted.

TRPA has also adopted a procedural rule for the environmental-impact review process (Article VI of TRPA Rules of Procedure), which elaborates the code's procedural requirements. It adds mitigation measures to the content requirements of EAs and allows for a *mitigated finding of no significant impact* if specified revisions to, or conditions on, a project would mitigate potentially significant impacts.

## Content and Organization of This Document

The major sections of this document are as follows:

- **Section 2, “Background and Existing Thresholds”**—explains the authorization for TRPA’s thresholds, and describes the existing thresholds for each resource.
- **Section 3, “Development of New Thresholds—Scoping and Collaboration”**—describes the processes conducted to determine the need for changing thresholds, develop proposed changes, and scope the alternatives and analysis needed for environmental assessment of potential impacts of the proposed threshold update.
- **Section 4, “Need for Project”**—sets forth the project need as required by TRPA’s environmental documentation ordinance; describes the reasons that many existing thresholds need to be changed.
- **Section 5, “No-Project Alternative”**—to provide a baseline for assessing impacts of the proposed thresholds, defines the no-project alternative, which is continuation of existing thresholds over the a 20-year planning horizon.
- **Section 6, “Proposed Project and Action Alternatives”**—sets forth visions and desired conditions for each resource and describes the proposed new thresholds that are designed to advance environmental conditions in the Region toward desired conditions; also describes several threshold alternatives identified during the scoping process and their disposition.
- **Section 7, “Environmental Impacts of the Proposed Project and Alternatives”**—for each resource, describes potential impacts on the resource from changing thresholds for that resource (direct effects) and potential impacts on other resources (indirect effects). Impacts of the proposed and alternative thresholds evaluated in detail are examined. *An impact summary table is provided.* This assessment is following by an analysis of cumulative impacts and growth-inducing impacts of the proposed thresholds update.
- **Section 8, “References Cited”**—gives full bibliographic data for documents and personal communications cited in this report.
- **Appendix A, “Persons and Agencies Consulted”**—describes TRPA and Pathway 2007 participants consulted in preparation of this report.

## Section 2

## Background and Existing Thresholds

### Compact, Thresholds, and Regional Plan

Enacted in December 1980, the *Tahoe Regional Planning Compact* required TRPA to develop *environmental threshold carrying capacities* (thresholds) for the Lake Tahoe Region U.S. Congress 1980. *Thresholds* are environmental standards necessary to maintain significant scenic, recreational, educational, scientific, or natural values of the Region or to maintain public health within the Region. Such standards are to include, but not be limited to, standards for air quality, water quality, soil conservation, vegetation preservation, and noise.

The Compact also required TRPA to adopt and enforce a regional plan and implementing ordinances to achieve and maintain the thresholds, while providing opportunities for orderly growth and development in the Tahoe region that is consistent with the thresholds.

TRPA, in consultation with other public agencies and the interested public, developed a proposed set of thresholds, evaluated their potential environmental impacts in an EIS, and adopted them by resolution in 1982 (*Resolution 82-11; TRPA 2007b*). They were amended in part by resolutions in 1997, 2001, and 2003. **At present, 36 compliance indicators and associated standards are evaluated to track attainment of thresholds based on Code of Ordinances, Chapter 32.** The Compact directly requires that thresholds include but not be limited to several resources (air quality, water quality, soil conservation, vegetation preservation, and noise), and establishes other requirements that are best met by establishing thresholds for stream environment zones, fisheries and wildlife, scenic quality, and recreation. These existing thresholds are described below in this section.

More than years have transpired since TRPA's adoption of the first set of thresholds (1982) and the current comprehensive *Regional Plan for the Lake Tahoe Basin* (1986). In recent months TRPA has been developing potential threshold updates as a precursor for a planned regional plan update. The threshold update process has benefited from collaborative input of public agencies, public interest groups, and the general public. The collaborative—*Pathway 2007*—is directed by the *Pathway Agency Steering Team and Executive Committee* comprising TRPA, USDA Forest Service (Lake Tahoe Basin Management Unit), Lahontan Regional Water Quality Control Board (Lahontan RWQCB), and Nevada Division of Environmental Protection. **The first task of the collaborative was to articulate updated *vision statements* and more specific *desired conditions* as guidelines for managing each environmental resource (TRPA et al 2005).** The second and ongoing task has been to consider updating thresholds to be consistent with these visions and desired conditions, modern scientific knowledge of the Region's resources, and the **mandate of the Compact.** At this time TRPA is putting forth a proposed set of threshold updates to refine most of the existing thresholds. This proposal is described in TRPA's *2006 Threshold Evaluation Report* and in Section 6 of this document (TRPA 2007a). The proposal is based on findings of the *2001 and 2006 Threshold Evaluation Reports* and input from the entire collaborative and the Executive Committee in particular. **Threshold evaluation reports are compiled every five years, consistent with *Resolution 82-11* and *Code of Ordinances, Chapter 32*,** to assess the degree of attainment of threshold standards, determine whether eventual attainment appears possible, and identify needed changes to thresholds indicators or standards to better track environmental conditions (TRPA 1991, 1996, 2002).

## Existing Thresholds

This section describes the existing thresholds as described in the *2001 and 2006 Threshold Evaluation Reports* and consistent with *Resolution 82-11* as amended (TRPA 2007b). This section also includes the *1982 Values Statements* for each resource as adopted by the TRPA Governing Board by separate resolution (TRPA 1982b). These values statements are somewhat analogous to the new vision and desired condition statements for each proposed threshold as stated in Section 6.

Each existing (and proposed) threshold consists of an indicator and a standard for that indicator. *Indicators* are measurable parameters or indices of multiple measurable parameters used to track progress in achieving desired environmental conditions or values. Standards are numerical targets related to indicators that define successful achievement of desired conditions or values.

Following a description of the existing thresholds below, a discussion of current levels of attainment of these thresholds is presented. That *Discussion of Existing Threshold Attainment* subsection is followed by a subsection, *Management Controls*, which summarizes TRPA's current land and resource management programs for implementation of the existing thresholds and the existing Regional Plan.

## Air Quality

1982 Value Statements:

- Attain state and federal air quality standards in the areas of the Region where they are not met, and maintain air quality in areas that meet the standards.
- Attain suitable levels of air quality in the Region to maintain the identified beneficial users of the Region (e.g., recreation, vegetation preservation, scenic resources, and public health and safety).
- Maintain or improve the clarity of the air and resultant visibility in the Lake Tahoe Region.

### AQ-1. Carbon Monoxide (CO)

*Indicator:* 2<sup>nd</sup> highest concentration at Stateline, California station

*Standards:* Concentrations less than federal, California, Nevada, and TRPA standards. The most restrictive are 8-hr average of 6 parts per million [ppm] *and* 1-hr average of 20 ppm)

*2006 Status:* Not in attainment, and positive resource trend.

### AQ-2. Ozone (O<sub>3</sub>)

*Indicator:* Number of 1-hour periods during which the TRPA ozone concentration standard of 0.08 ppm (hourly average) or applicable federal or state standard is equaled or exceeded at any permanent monitoring site.

*Standards:* No exceedances of the TRPA standard or applicable state and federal standards:

TRPA—0.08 ppm, hourly average

federal—0.12 ppm, hourly average

California—0.09 ppm, hourly average, not to be exceeded

Nevada—0.10 ppm, hourly average.

2006 Status: Not in attainment, and no apparent resource trend.

### AQ-3. Particulate Matter (PM)

*Indicator:* Number of 24-hr periods during which federal or state particulate matter standards are exceeded at any permanent monitoring station, and annual average PM10 concentrations at any permanent monitoring station.

*Standards:* No exceedances of federal or state annual average PM-10 concentrations:

- federal: 50 microgram per cubic meter ( $\mu\text{g}/\text{m}^3$ ) (3-yr annual average geometric mean) and
- California: 30  $\mu\text{g}/\text{m}^3$  (annual average geometric mean)

*or* 24-hour PM-10 concentration standards:

- federal: 150  $\mu\text{g}/\text{m}^3$  mean (3-yr running) and
- California: 50  $\mu\text{g}/\text{m}^3$  avg.

2006 Status: Non-attainment, and no apparent resource trend.

### AQ-4. Visibility

*Indicator:*

*Regional visibility*—visual range calculated from speciated aerosol and nephelometer data from the TRPA visibility-monitoring program, and

*Sub-regional visibility*—visual range calculated from speciated aerosol and nephelometer data collected at the Lake Tahoe Boulevard station.

For state visibility standards, visual range calculated from nephelometer data collected at Bliss State Park and Lake Tahoe Boulevard for periods in which relative humidity is less than 70 percent (miles).

*Standards:*

*Regional visibility*—extinction coefficient of 25 megameters ( $\text{Mm}^{-1}$ ) (~97 mi) for 50% of year and 34  $\text{Mm}^{-1}$  (~71 mi) for 90% of years calculated from aerosol species concentrations measured at the Bliss State Park monitoring site, and

*Subregional visibility*—50  $\text{Mm}^{-1}$  (~48 mi) 50% of year and 125  $\text{Mm}^{-1}$  (~19 mi) 90% of year as calculated from aerosol species concentrations measured at the South Lake Tahoe monitoring site. The standard is based on visibility from 1991–1993 and the understanding that certain gaseous pollutants and fine particulate (PM 2.5) reduce visibility, and water vapor interferes with other visibility measurements. Calculations will be made on three year running periods using the existing 1991–1993 monitoring data as the performance standards to be met or exceeded.

2006 Status: In attainment, and positive resource trend.



### **AQ-5. U.S. Highway 50 Traffic Volume (adopted as a management standard for CO)**

*Indicator:* Winter traffic volume on U.S. Highway 50 in South Lake Tahoe. Although the threshold does not specify a location on U.S. Highway 50, or the specific winter period, TRPA has used two measurements to assess winter traffic volume: (a) U.S. Highway 50 traffic volumes recorded at Park Avenue from 4:00 p.m. to 12:00 midnight for all days during the winter months of November through February, and (b) the same measurement taken on the Saturday of President's Day Weekend, which historically is the day of the most frequent exceedances of the CO standards. The latter measurement has been used as the indicator to determine compliance with the threshold.

*Standard:* 7% reduction in traffic volume on U.S. Highway 50 from 1981 values for winter nights between 4 pm and midnight.

*2006 Status:* In attainment, and positive resource trend.

### **AQ-6. Wood Smoke**

*Indicator:* Aerosol samples analyzed for organic and light-absorbing carbon collected in South Lake Tahoe and at Bliss State Park, serving as indirect indicators of wood smoke concentrations.

*Standard:* 15% reduction in annual emissions from 1981 base values.

*2006 Status:* Level of attainment and resource trend for both annual wood-smoke emissions and the indirect indicators are unknown.

### **AQ-7. Vehicle Miles Traveled (VMT) (adopted as a management standard for nitrate deposition in Lake Tahoe)**

*Indicator:* Vehicle miles traveled during the peak summer day, as estimated using the TRANPLAN transportation model or an equivalent model, and, since 1988, from the Quick Response System transportation model or equivalent model.

*Standard:* 10% reduction in VMT from 1981 value.

*2006 Status:* Not in attainment, and positive resource trend.

### **AQ-8. Atmospheric Nutrient Loading**

*Indicator:* Average annual concentration of particulate NO<sub>3</sub> at Lake Tahoe Boulevard air quality monitoring station (in µg/m<sup>3</sup>).

*Standard:* 20% reduction from 1973–1981 average level of dissolved inorganic nitrogen (DIN) loading of Lake Tahoe from atmospheric sources.

*2006 Status:* Level of attainment of both the loading and the indirect indicator is unknown, and no apparent resource trend.

## **Water Quality**

1982 Value Statements:

- Attain levels of water quality in the lakes and streams within the Basin suitable to maintain the identified beneficial uses of Lake Tahoe.

- Restrict algal productivity (rate of growth) to levels that do no impair beneficial uses or deteriorate existing water quality conditions in the Lake Tahoe Basin.
- Prevent degradation of the water quality of Lake Tahoe and its tributaries to preserve the lake for future generations.
- Restore all watersheds in the Basin so that they respond to runoff in a natural hydrologic function.

### **WQ-1. Littoral Lake Tahoe / Shallow Lake Turbidity**

*Indicator:* Turbidity offshore (typically measured at contour depth of 25-meters at 8 specific locations and more recently at 9 locations), both near and away from mouths of tributaries.

*Standard:* Decrease in sediment load to attain littoral turbidity not to exceed 3 nephelometric turbidity units (NTUs) in littoral Lake Tahoe, and not to exceed 1 NTU in shallow waters of the lake not directly influenced by stream discharges.

*2006 Status:* In attainment, but trend in resource condition is not statistically established.

### **WQ-2. Pelagic Lake Tahoe / Lake Clarity**

*Indicator:* Average visible depth of a Secchi disk in winter at the Lake Tahoe Index Station of the University of California, Davis, Tahoe Research Group since 1967. (Additional interim targets or management indicators involving rate of implementation of capital improvement programs and best management practices were also tracked in prior threshold evaluations [e.g., WQ-2A and WQ-2B].)

*Standard:* Visible depth of not less than 33.4 meters average in December-March, which is based on depths not less than 1967–1971 recorded depths. (The winter-average standard is based on comparison of annual and seasonal mean values between 1967–1971 and 1977–1981.)

*2006 Status:* Not in attainment, negative trend in resource condition, but rate of negative trend has recently diminished.

### **WQ-3. Pelagic Lake Tahoe / Lake Phytoplankton Productivity**

*Indicator:* Phytoplankton productivity in deep waters.

*Standard:* Annual mean phytoplankton primary productivity not exceeding 52 gC/m<sup>2</sup>/yr as measured at the Tahoe Research Group's Index Station.

*2006 Status:* Not in attainment, and negative trend in resource condition.

### **WQ-4. Tributary Water Quality (with focus on clarity of Lake Tahoe)**

*Indicator:* Average annual concentrations of constituents in streams for which State standards exist, and suspended sediment concentration.

*Standard:* Achieve applicable state standards for average annual concentrations of dissolved inorganic nitrogen, dissolved phosphorus, and dissolved iron and attain suspended sediment less than 60 mg/L (for 90% of the time).

*2006 Status:* Not in attainment, but positive trend in resource condition.

**WQ-5. Surface Runoff / Stormwater Quality (with focus on clarity of Lake Tahoe)**

*Indicator:* Suspended sediment and dissolved nutrient concentrations of constituents defining water quality where *runoff* (localized surface flow from rainfall and snowmelt draining small watersheds) enters surface waters. (An additional management indicator involving rate of implementation of best management practices related to pelagic clarity was established at one time; however it was not associated with a standard and constituted a benchmarks or target.)

*Standard:* Specified maximum concentrations of nitrogen, phosphorus, iron, suspended sediment, and grease & oil given in TRPA Code of Ordinances Chapter 81 (90<sup>th</sup> percentile dissolved inorganic nitrogen 0.5 mg/L, 90<sup>th</sup> percentile dissolved phosphorus 0.1 mg/L, 90<sup>th</sup> percentile dissolved iron 0.5 mg/L, 90<sup>th</sup> percentile suspended sediment 250 mg/L, grease and oil 2.0 mg/L).

*2006 Status:* Not in attainment, although the majority of sites monitored in 2001 met the standards. The trend in resource condition is unknown.

**WQ-6. Groundwater / Stormwater Infiltration to Protect Groundwater (with focus on clarity of Lake Tahoe)**

*Indicator:* Turbidity and concentrations of constituents defining water quality where *runoff* (localized surface flow from rainfall and snowmelt draining small watersheds) enters infiltration sites to groundwater.

*Standard:* Specified maximum turbidity and concentrations of nitrogen, phosphorus, iron, and grease & oil (turbidity 200 NTU, total nitrogen [as N] 5 mg/l, total phosphorus [as P] 1 mg/L, total iron 4 mg/L, and grease and oil 40 mg/L). However, where there is a direct and immediate hydraulic connection between ground and surface waters, discharge standards for surface waters given in WQ-5 are used.

*2006 Status:* Not in attainment, although the majority of sites monitored in 2001 met the standards. The trend in resource condition is unknown.

**WQ-7. Other Lakes Water Quality**

This threshold is applicable to the 174 lakes and ponds in the Lake Tahoe Region comprising 2.6% of the Region area. Ecological characteristics vary considerably.

*Indicator:* Physical parameters and concentrations of constituents defining water-quality in lakes for which State standards exist.

*Standard:* Existing water quality standards. State standards pertaining to Fallen Leaf Lake are given in *Table 3-13—Objectives for Fallen Leaf Lake* in the *Water Quality Control Plan for the Lahontan Region*, p. 3-38. Standards for other lakes are the state's general surface water quality objectives (California: *ibid.* p. 3-3. Nevada: Nevada Administrative Code 445A.120 and 445A.121, but portions of 445A.118—445A.225 may apply).

*2006 Status:* Degree of attainment unknown except for other lakes sampled in 2002 and 2003 seasons and Fallen Leaf Lake which does not appear to be in attainment for clarity. Resource trend is unknown, because sampling frequency does not permit statistical analysis, but comparison of monitoring data from the early 1990's and 2002–2003 does not appear to show a decline in water quality in the other lakes sampled.

## Soil Conservation & Stream Environment Zones (SEZs)

1982 Value Statements:

- Land coverage and disturbance shall not exceed the level of use an area can tolerate without sustaining permanent damage to the soil resource.
- Onsite erosion and resultant sediment transport to basin surface waters shall be restricted to levels that would not result in water quality deterioration.

### SC-1. Impervious Coverage

*Indicator:* Land coverage by Bailey land capability class.

*Standard:* Compliance of impervious coverage with specified maximum percents according to the *Land Capability Classification of Lake Tahoe basin, a Guide to Planning* (Bailey 1974).

*2006 Status:* Not in attainment, but positive resource trend (all new projects since 1972 are in attainment, and pre-1972 excess land coverage is progressively diminishing).

### SC-2. SEZs

*Indicator:* Acreage of naturally-functioning SEZs.

*Standard:* Preservation of all existing naturally-functioning SEZs in their natural hydrologic condition, and restoration of all disturbed SEZs in undeveloped, unsubdivided lands, and restoration of 25% of SEZs in disturbed, developed, or subdivided lands to attain 5% increase in 1982 acreage of naturally-functioning SEZs.

*2006 Status:* Not in attainment, but positive resource trend.

## Vegetation

1982 Value Statements:

- Provide for a wide mix and increased diversity of plant communities in the Tahoe Basin, including such unique ecosystems as wetlands, meadows, and other riparian vegetation.
- Conserve threatened, endangered, and sensitive plant species and uncommon plant communities of the Lake Tahoe Basin.

### V-1. Common Plant Communities

*Indicator:* Plant- and structural-diversity as measured by diversity indices of species richness, relative abundance, and spatial pattern.

*Standard:* Specific richness—perpetuation of specific plant associations (yellow [Jeffrey] pine forest, red fir forest, subalpine forest, shrub, sagebrush shrub, deciduous riparian, wet and dry meadow, wetland [marsh], and cushion plant [alpine scrub]), and

relative abundance—of the total amount of undisturbed vegetation in the Tahoe Region, maintenance of at least:

- meadow and wetland: >4%
- deciduous riparian: >4%
- shrub association: <25%

- yellow pine forest and red fir forest, other than mature seral stage: 15–25% each,

*and*

provision of the proper juxtaposition of vegetation communities and age classes (openings <8 ac and adjacent stands having different ages classes or successional stages), *and*

nondegradation of native deciduous tree, wetland, and meadow communities and provision of opportunities to increase the acreage of these riparian associations, consistent with the SEZ threshold, *and*

maintenance of native vegetation at a maximum level consistent with the limits defined in the *Land Capability Classification of the Lake Tahoe Basin, California—Nevada, A Guide For Planning*, Bailey, 1974, for allowable impervious cover and permanent site disturbance.

*2006 Status:* Not in attainment, but positive trend in resource condition.

## V-2. Uncommon Plant Communities

*Indicator:* Presence of characteristic species, and natural quality of uncommon communities.

*Standard:* Non-degradation of any uncommon plant community of exceptional scientific, ecological, or scenic value, including but not limited to eight specified community types: deep water plants of Lake Tahoe, Grass Lake sphagnum bog, Osgood Swamp, Freel Peak cushion-plant community, Hell Hole bog, Upper Truckee Marsh, Taylor Creek Marsh, and Pope Marsh.

*2006 Status:* In attainment, and positive trend in resource condition.

## V-3. Sensitive Plants

*Indicator:* Number of populations of specified species.

*Standard:* Maintenance of a specified minimum number of sites for 5 specified species:

- *Arabis rigidissima*—7 population sites
- *Lewisia pygmaea logipetala*—2 population sites
- *Draba asteriphora v. macrocarpa*—2 population sites
- *Draba asteriphora v. asterophora*—5 population sites
- *Rorippa subumbellata*—26 population sites.

*2006 Status:* In attainment, and no apparent trend in resource condition.

## V-4. Old Growth / Late Seral Stage Ecosystems

*Indicator:* Acreage of late-seral-stage or old-growth forest vegetation.

*Standard:* Attainment and maintenance of 55% of forested lands in the Tahoe Region in late-seral or old-growth condition, with specified minimum contributions from each elevational zone (computed by excluding TRPA-designated *urban areas* and limiting valuation of forest lands within approximately ¼ mi of urban areas):

- subalpine (>8,500 ft elevation)—5% of the forest (7,600 acres) ( 61% of the subalpine zone)
- upper montane (7,000–8,500 ft elevation)—30% of the forest (45,900 acres) ( 60% of the upper montane zone)
- montane (<7,000 ft elevation)—20% of the forest (30,600) ( 48% of the montane zone)

Areas of up to 40% the montane zone within 1,250 ft of urban areas may be included in judging attainment.

*2006 Status:* Not in attainment, but positive trend in resource condition.

## Wildlife & Fisheries

1982 Value Statements:

- Maintain suitable habitat for all indigenous species of wildlife without preference to game or non-game species through maintenance of habitat diversity.
- Preserve, protect, and enhance habitats of special interest species.
- Preserve, enhance, and, where feasible, expand habitat essential for threatened, endangered, rare, or sensitive species found in the basin.
- Maintain or improve aquatic habitat essential for the growth, reproduction, and perpetuation of existing and threatened fish resources in the Lake Tahoe Basin.
- Diversions of surface and groundwater shall not exceed the limitations set by the California-Nevada Interstate Compact.
- Instream flow necessary for the identified beneficial uses such as recreation, fisheries needs, and aesthetics shall be achieved.

### F-1. Lake Habitat

*Indicator:* Acreage of undisturbed rocky substrate in Lake Tahoe to 30 foot depth, which is suitable for fish spawning, feed, and cover.

*Standard:* No degradation; maintenance of the equivalent of 1982 amount (5,948 ac of “excellent” habitat as indicated by the Prime Fish Habitat Overlay Map dated 5/19/97 as may be amended from time to time).

*2006 Status:* Not in attainment, but positive resource trend.

### F-2. Stream Habitat

*Indicator:* Miles of streams in specified habitat condition classes.

*Standard:* Maintain specified number of miles of stream habitat in each habitat condition class, as indicated by the *Stream Habitat Quality Overlay* map, amended May 1997, based upon the re-rated stream scores set forth in Appendix C-1 of the 1996 Evaluation Report:

- excellent—75 mi,
- good—105 mi, and
- marginal—38 mi.

*2006 Status:* Not in attainment, but positive resource trend.

### F-3. Instream Flow

*Indicator:* Value according to a beneficial use assessment, such as the type established by Title 23, Section 670.6 of the California Administrative Code.

*Standard:* No reduction in instream flows until new standards are adopted.

2006 Status: In attainment, and no evidence of reduction of instream flow based on new diversions.

#### F-4. Lahontan Cutthroat Trout Reintroduction

*Indicator:* Number of Lahontan cutthroat trout populations in the Take Tahoe basin.

*Standard:* Existence of support by TRPA Governing Board for restoration of a Basin population.

2006 Status: In attainment, and positive resource condition trend, because of state-federal reintroduction program.

#### W-1. Special Interest Wildlife

*Indicator:* Number of population sites and disturbance-free zones for TRPA-listed species (5 species and 2 species-groups).

*Standard:* Maintain specified number of population sites and disturbance-free zones for each species:

- goshawk, 0.5 mi radius around nest—12 population sites
- osprey, 0.25 mi radius around nest—4 population sites
- bald eagle, nesting, 0.5 mi radius around nest—1 population site
- bald eagle, wintering, mapped areas—2 population sites
- golden eagle, 0.25 mi radius around nest—4 population sites
- peregrine falcon 0.25 mi radius around nest—2 population sites
- waterfowl—18 population sites, and
- deer—mapped areas, meadows.

2006 Status: Not in attainment, and no apparent trend in resource condition.

#### W-2. Habitats of Special Significance

*Indicator:* Same as for SC-2. SEZs—acreage of naturally-functioning streamside environment zones.

*Standard:* No degradation of *significant wildlife habitat* consisting of deciduous trees, wetlands, and meadows, and

provision of opportunities for some increase.

2006 Status: Not in attainment, but positive trend in resource condition.

### Scenic Quality/Resources

1982 Value Statements:

- Maintain and enhance the dominant natural-appearing landscape for the vast majority of views and lands in the Basin.
- Maintain and/or improve the aesthetic characteristics of the man-made environment to be compatible with the natural environment.
- Restore, whenever possible, damaged natural landscapes.
- Maintain levels of lighting necessary for public health and safety, and in keeping with the unique environment of the Tahoe Basin.

### **SR-1. Travel Route Rating**

*Indicator:* Rating of relative scenic quality (relative scenic quality of viewsheds) seen from state and federal highways, Pioneer Trail, and the lake, using specified rating system.

*Standard:* Maintenance or improvement of 1982 travel route ratings (TRRs), *and* restoration of scenic quality in roadway units having TRRs of 15 or below and in shoreline units having TRRs of 7 and below, as given in TRPA 1982.

*2006 Status:* Not in attainment, but positive trend in resource condition.

### **SR-2. Scenic Quality—Roadway and Shoreline Scenic Resources**

*Indicator:* Rating of relative scenic quality of 202 specified scenic resources (e.g., natural features) visible from state and federal highways, Pioneer Trail, and of 184 specified scenic resources visible from the lake, using specified rating system.

*Standard:* Maintenance or improvement of 1982 ratings (TRPA 1982) for each specified scenic resource.

*2006 Status:* Not in attainment, but positive trend in resource condition.

### **SR-3. Scenic Quality—Bike Paths and Outdoor Recreation Areas**

*Indicator:* Rating of relative scenic quality of specified resources visible from 37 specified outdoor recreation areas and 11 Class I and II bike paths, using specified rating system.

*Standard:* Maintenance of 1993 ratings of individual scenic resources.

*2006 Status:* Not in attainment, but positive trend in resource condition.

### **SR-4. Community Design**

*Indicator:* Qualitative design quality of the built environment, *and* SR-1 Travel Route Ratings.

*Standard:* Height, bulk, texture, form, materials, colors, lighting, and other design elements of new, remodeled, and redeveloped buildings are compatible with the natural, scenic, and recreational values of the Region.

*2006 Status:* Not in attainment, but positive trend in resource condition.

## **Noise**

1982 Value Statements:

- Reduce or eliminate those activities in the Basin that produce damaging or distressing noise levels.
- Provide for community and neighborhood tranquility.

### **N-1. Single Event, Aircraft Noise**

*Indicator:* Aircraft maximum noise levels measured in decibels monitored pursuant to the monitoring elements of the adopted *Lake Tahoe Airport Master Plan*.

*Standard:*



- Departures (all aircraft): 80 dBA at 6,500 meters from start to takeoff roll, *except* 77.1 dBA between 8 p.m. and 8 a.m.
- Arrivals: At 2,000 meters from the runway threshold approach, 84 dBA for general aviation and commuter aircraft and 86 dBA for transport category aircraft, *except* 77.1 dBA for all aircraft between 8 p.m. and 8 a.m.
- Within ten years after adoption of the airport master plan, the single-event noise standard for all arrivals shall be 80 dBA.

2006 Status: Attainment status unknown, and no apparent resource trend.

## N-2. Other Single Event Noise

*Indicator:* Maximum noise levels of motorized equipment (any single-event noise measurement made with a Type I sound level meter using the A-weighting and *slow* response pursuant to application manufacturers instructions, except that for sounds of a duration of two seconds or less, the *fast* response is used; see Chapter 23 of TRPA Code of Ordinances).

*Standard:* The following maximum noise levels from specified motorized equipment as follows:

- Boats—all of the following:
  - pass-by test 82 dBA at 50 ft with engine at 3,000 rpm;
  - shoreline test 75 dBA;
  - stationary test (per SAEJ-2005) 90/88 dBA for boats manufactured before/after January 1, 1993.
- Motor Vehicles <6,000 GVW—76/82 dBA (<35 mph/>35 mph) at 50 ft
- Motor vehicles >6,000 GVW—82/86 dBA (<35 mph/>35 mph) at 50 ft
- Motorcycles—77/86 dBA (<35 mph/>35 mph) at 50 ft
- Off-Road Vehicles—72/86 dBA (<35 mph/>35 mph) at 50 ft
- Snowmobiles—82 dBA (<35 mph) at 50 ft

2006 Status: Not in attainment, and no apparent resource trend

## N-3. Community Noise Equivalent Level (CNEL)

*Indicator:* Community noise equivalent levels (CNEL) (24-hr integrated, day/night weighted noise level), calculated pursuant to Code Section 23.4.

*Standard:* No exceedances of specified maximum CNEL for various land-use types, along specified roads, and at the South Lake Tahoe Airport:

### Land-Use Types

- High Density Residential Areas—55 dBA
- Low Density Residential Areas—50 dBA
- Hotel/Motel Areas—60dBA
- Commercial Areas—60 dBA
- Industrial Areas—65 dBA
- Urban Outdoor Recreation Areas—55 dBA
- Rural Outdoor Recreation Areas—50 dBA

- Wilderness, Roadless Areas and Critical Wildlife Habitat—45 dBA

Roadways @ 300 ft from road edge

- U.S. Highway 50–65 dBA
- SR 89, 207, 267, and 431–55 dBA

South Lake Tahoe Airport

- 60 dBA

2006 Status: Not in attainment, and no apparent resource trend.

## Recreation

1982 Value Statement:

- Maintain opportunities and facilities for the full spectrum of outdoor recreational uses to a socially acceptable level of concentration.

### R-1. High Quality Recreational Experience

*Indicator:* Experience of recreational users regarding quality of recreational experience by comparing the importance of identified recreation attributes (facilities and conditions) with the perceived recreation experience, i.e., recreational user satisfaction levels and perceptions of recreation quality; *and* amount of additional public access to the lake and other natural features, via land acquisition, additional trailheads and supporting amenities, additional trails, and additional bicycle trail segments.

*Standard:* Preserved and enhanced the high quality of the recreational experience, including preservation of high quality undeveloped shorezone and other natural areas, and provisions for additional access, where lawful and feasible, to the shorezone and high quality undeveloped areas for low density recreational use.

2006 Status: In attainment, and positive trend in resource condition.

### R-2. Capacity Available to Public

*Indicator:* Cumulative accounts of PAOT disposition, *and* extent (acreage) of land acquisition for public recreation use purposes, *and* facility development of non-PAOT projects.

*Standard:* A fair share of total Basin capacity for outdoor recreation is available to the general public.

2006 Status: In attainment, and positive trend in resource condition.

## Discussion of Existing Threshold Attainment

The degree of attainment of the various thresholds was assessed most recently by TRPA in the 2006 *Threshold Evaluation Report* (TRPA 2007). Results were summarized in the previous section for each existing threshold and are described below for each resource as a whole. Threshold attainment status and current resource trends for 1991, 1996, 2001, and 2006 (TRPA 1991, 1996, 2002, 2007a) are summarized in Table 1.

**Table 1. Summary of Threshold Indicator Status**

Threshold		Evaluations				Trend
		1991	1996	2001	2006	
<b>I. AIR QUALITY</b>						
AQ-1	CO	Nonattainment	<b>Attainment</b>	<b>Attainment</b>	Nonattainment	↑
AQ-2	O3	Nonattainment	Nonattainment	Nonattainment	Nonattainment	≡
AQ-3	Particulate	Nonattainment	Nonattainment	<b>Attainment</b>	Nonattainment	≡
AQ-4	Visibility	<b>Attainment</b>	Nonattainment	Nonattainment	<b>Attainment</b>	↑
AQ-5	U.S. 50 Traffic Volume	Nonattainment	<b>Attainment</b>	Unknown	<b>Attainment</b>	↑
AQ-6	Wood Smoke	Nonattainment	Nonattainment	Unknown	Unknown	≡
AQ-7	VMT	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
AQ-8	Atmospheric Nutrient Loading	<b>Attainment</b>	<b>Attainment</b>	Unknown	Unknown	≡
<b>II. WATER QUALITY</b>						
WQ-1	Turbidity (Shallow)	<b>Attainment</b>	<b>Attainment</b>	<b>Attainment</b>	<b>Attainment</b>	≡
WQ-2	Clarity, Winter	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
WQ-3	Phytoplankton PPr	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↓
WQ-4	Tributary Water Quality	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
WQ-5	Runoff Water Quality	Nonattainment	Nonattainment	Nonattainment	Nonattainment	≡
WQ-6	Groundwater	Nonattainment	Nonattainment	Nonattainment	Nonattainment	≡
WQ-7	Other Lakes	Unknown	Unknown	Unknown	Nonattainment	≡
<b>III. SOIL CONSERVATION</b>						
SC-1	Impervious Coverage	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
SC-2	Naturally-Functioning SEZ	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
<b>IV. VEGETATION</b>						
V-1	Relative Abundance and Pattern	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
V-2	Uncommon Plant Communities	<b>Attainment</b>	<b>Attainment</b>	<b>Attainment</b>	<b>Attainment</b>	↑
V-3	Sensitive Vegetation	Nonattainment	Nonattainment	Nonattainment	<b>Attainment</b>	≡
V-4	Late Seral/Old Growth (New in 2001)			Nonattainment	Nonattainment	↑
<b>V. FISHERIES</b>						
F-1	Lake Habitat	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
F-2	Stream Habitat	Nonattainment	Nonattainment	Nonattainment	Unknown	↑
F-3	In-Stream Flows	Unknown	Unknown	<b>Attainment</b>	<b>Attainment</b>	≡
F-4	Lahontan Cutthroat Trout (New in 2001)			<b>Attainment</b>	<b>Attainment</b>	↑
<b>VI. WILDLIFE</b>						
W-1	Special Interest Species	Nonattainment	Nonattainment	Nonattainment	Nonattainment	≡
W-2	Habitats of Special Significance	<b>Attainment</b>	Nonattainment	Nonattainment	Nonattainment	↑
<b>VII. SCENIC</b>						
SR-1	Travel Route Ratings	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
SR-2	Scenic Quality Ratings	Nonattainment	Nonattainment	Nonattainment	Nonattainment	↑
SR-3	Public Recreation Area Scenic Quality Ratings	Unknown	Unknown	Nonattainment	Nonattainment	↑
SR-4	Community Design	Unknown	Nonattainment	Nonattainment	Nonattainment	↑
<b>VIII. NOISE</b>						
N-1	Single Event (Aircraft)	Unknown	Nonattainment	Nonattainment	Unknown	≡
N-2	Single Event (Other)	<b>Attainment</b>	<b>Attainment</b>	Nonattainment	Nonattainment	≡
N-3	Community Noise	Nonattainment	Nonattainment	Nonattainment	Nonattainment	≡
<b>IX. RECREATION</b>						
R-1	High Quality Recreational Experience	Unknown	Unknown	Nonattainment	<b>Attainment</b>	↑
R-2	Capacity Available to the General Public	<b>Attainment</b>	<b>Attainment</b>	<b>Attainment</b>	<b>Attainment</b>	↑

Positive Trend ↑ Negative Trend ↓ No Trend ≡

## Air Quality

- Indicators for carbon monoxide, ozone, particulate matter, and vehicle miles traveled (VMT) are in non-attainment. Although carbon monoxide is out of attainment for the five year period, the region (South Stateline) was both in and out of attainment over the last five years and is currently meeting the annual standard.
- Based on data provided by Air Resource Specialists from 2002 through 2004, the Basin was shown to be in attainment for the regional and sub-regional visibility standards.
- The indicators for wood smoke and atmospheric nutrient loadings are based on a 15 and 20 percent reduction respectively from their 1981 levels. However, because the 1981 or subsequent levels of these pollutants were never established and the methods necessary to measure these pollutants were not developed, the attainment status of these two indicators cannot be determined.
- For the transportation thresholds, traffic flow near Stateline, CA, has improved and the threshold is now in attainment. Although the indicator for the vehicle miles traveled threshold is showing a positive trend—almost a 5 percent decrease in VMT from the 1981 levels, the threshold remains out of attainment.

## Water Quality

- Littoral turbidity is in attainment as in past evaluations; however, no trend can be established due to the frequency of sampling. There are concerns that the standard is set too high to be a useful indicator of Lake Tahoe's nearshore water quality.
- The winter average Secchi depth (Lake clarity measurement) is in non-attainment based on the 2001–2005 data. Recent *Lake Tahoe Clarity Model* runs indicate the rate of clarity loss has slowed, and the model predicts a leveling over time with the current pollutant loading estimates.
- Phytoplankton Primary Productivity is out of attainment and continues to increase. The standard based on different algal population dominance since the late 1960's may not be attainable.
- Tributary water quality is not in attainment of standards for all monitored streams.
- Storm water runoff to both surface waters and groundwater met discharge standards for nitrogen, phosphorus, and suspended sediment concentration (surface) in the majority of sample data available. However, these two thresholds are still considered in non-attainment since some samples did not meet discharge standards.
- The five *other lakes* sampled in the early 1990's were sampled during the ice free seasons of 2002 and 2003. The threshold for them is in non-attainment based on some of the specific standards for Fallen Leaf Lake (e.g., Secchi depth) not meeting standards. There did not appear to be a significant decline in the water quality between the two monitoring periods for the other four lakes sampled.

## Soil Conservation and SEZs

- Impervious coverage is in non-attainment, although it may be better described as having achieved partial attainment. Land capability classes 1A, 1C, 3, 4, 5 and 6 are in non-compliance on a Region-wide basis. Classes 1b, 2 and 7 currently exceed allowable coverage on a Region-wide basis. In addition, all new projects since 1987 are in attainment with the Bailey coefficients for impervious coverage. The reason for the non-attainment status of this threshold is due to the pre-1972 excess coverage that has not yet been mitigated through excess coverage mitigation programs.
- The threshold standard for naturally functioning SEZs is in non-attainment, however, the restoration of disturbed SEZs shows an increasing trend. Progress is being made in restoration

efforts through water quality fees collected for new impervious coverage, SEZ 1:1.5 mitigation requirements, and implementation of the Environmental Improvement Program (EIP).

## Vegetation

- The common-vegetation threshold is not in attainment. The standards for species richness and pattern indicators continue to be maintained. However, the standard for the relative abundance indicator has not been met for any of the target vegetation types with the possible exception of yellow pine. The desired wetland types (meadows and deciduous riparian vegetation) are less abundant than the threshold standard, and the abundance of shrub communities and mature red fir are greater than the desired condition.
- The uncommon-plant-communities threshold continues to be in attainment. The sensitive-plants threshold was in attainment through 2005 but was not in attainment in 2006 as a result of the high lake level submerging Tahoe yellow cress populations. The late seral/old growth ecosystems threshold is in non-attainment because of the small amount of forest in late seral or old growth condition.

## Fisheries

- Of the four threshold standards for fisheries, the region is in compliance with two threshold standards, in-stream flow and Lahontan cutthroat trout. The status of one standard is unknown, and one standard is out of attainment: lake fish habitat.
- The quantity of Lake Tahoe's fish habitat has not significantly changed since the 1996 threshold evaluation and falls short of attainment with the threshold standard. However, research suggests that the extent of physical disturbance is considerably less than that reported in the *1996 Threshold Evaluation Report*. Therefore, the region is close to achieving the threshold standard for lake habitat although additional research is needed to verify this conclusion.
- Although data are insufficient to evaluate the stream habitat threshold, preliminary data from a small number of streams indicate that a majority of the habitats surveyed are in good to excellent ecological condition.

## Wildlife

- Overall threshold indicators for special status wildlife species are not in compliance with the threshold standards. Although one additional indicator is near attainment and showing a positive trend, the region is in compliance with only one of the eight threshold standards: osprey.
- Recreational activities are suspected to contribute to the degradation of habitats for northern goshawk, waterfowl, deer, and nesting and wintering bald eagles. Threshold indicators for migratory species may also be affected by impacts outside of the Lake Tahoe Region.
- The threshold standards adopted for golden eagle and peregrine falcon will not likely be realized due to sub-optimal habitat conditions found in the Lake Tahoe Region (i.e., they are unlikely to nest higher than 4,000 ft above sea level).
- Although considerable momentum has been made towards the restoration of habitats of special significance (riparian habitats), restoration has not kept pace with identified interim targets and the adopted threshold standard.

## Scenic Quality/Resources

- Overall, one threshold standard for scenic resources is in non-attainment and three are near attainment. *SR-1 Scenic Threshold Travel Route Ratings* is still in non-attainment status; however, the trend within the travel routes continues to be positive in all areas of the Region, with the most improvement occurring within the scenic roadway corridors within the urban core. Major redevelopment projects and improvements to the built environment through private and public investment have improved scenic quality in those areas. The trend in the shoreline units are starting to show positive trends at the parcel level, as a result of the adoption of the *Shoreland Ordinances* following the 2001 threshold evaluation. However, a critical massing of projects has not been realized in individual shoreline units to directly result in scenic quality rating increases at the unit level. At the parcel level, proposed structures approved under the shoreland ordinances exhibit design qualities such as scale, massing, articulation, color and materials that are compatible with the natural appearing landscape.
- Scenic quality ratings for individual resources visible from the travel routes (SR-2) and resources visible from public recreation areas and bicycle trails (SR-3) are near attainment. The trend of developing regionally-appropriate designs visible from the travel routes is having a direct positive effect on the resources visible from the travel routes. Important improvements to recreation areas and bike trails have been funded since 2001, resulting in upgraded and new facilities available to the general public. Substantial investment leading up to the 2006 threshold evaluation greatly improved the maintenance of many facilities and added needed new facilities.
- Field observations, site visits, and permit reviews were used to assess the 2001 and 2006 condition about buildings compatible with the natural, scenic and recreational values of the region. Although a numerical standard to assess threshold attainment for community design does not exist, it is possible to draw conclusions from other numerical ratings. Overall, the contributions from the built environment toward attainment for travel route and scenic quality ratings have greatly increased since the last evaluation. Specifically, the quality of the built environment is being enhanced in most areas of the Region, with the majority occurring within the urban/commercial centers.

## Noise

- The status of the indicator for single-event aircraft noise as measured at the South Lake Tahoe Airport is unknown due to failure of monitoring equipment. However it is unlikely that noise levels have significantly changed since the last reporting period, during which the threshold was in non attainment.
- Indicators for single-event noises and community noise equivalent levels (CNEL) both exceed applicable standards; however, it should be noted that monitoring data for the reporting period are extremely limited, and this may affect the attainment status determination.

## Recreation

- Both components of the recreation threshold are in attainment. Based on user surveys completed during the evaluation period, recreational expectations of visitors and residents are being met, and therefore the recreation experience component of the threshold indicator is in attainment. The second component of the threshold indicator is the provision of additional access to the lake and other natural features by the general public, as supported by public land acquisition programs, as well as through the provision of additional trails and trailheads, including bicycle trail segments, and their supporting amenities. This second component of the threshold is also in attainment.

- The recreation capacity threshold indicator is in attainment. While few projects requiring PAOT allocations are being constructed, TRPA is reserving the capacity with the PAOT allocation system, and significant facility development for recreation projects that do not require PAOT assignments has occurred. Public land acquisition programs have resulted in key acquisitions of lands that support recreation purposes. Existing water and sewer capacity that has been reserved for recreation uses remains available.

## Management Controls

### Introduction

*Management controls* refer to the actions that TRPA and partner agencies take to implement the *Tahoe Regional Planning Compact*, attain the thresholds, and implement the *TRPA Regional Plan*. TRPA, the past *California Tahoe Regional Planning Agency* (CTRPA), and their forerunners in the 1960s prepared a series of comprehensive plans for the region, which were adopted under the current Regional Plan and remain in effect today.

TRPA management is focused upon coordination with the local jurisdictions, and State agencies, and in particular for the update of the Region's Plans with the other three Pathway 2007 agencies: USDA Forest Service (Lake Tahoe Basin Management Unit), the Lahontan RWQCB, and the Nevada Division of Environmental Protection (NDEP). The Forest Service and state parks departments manage the largest tracts of land in the Region consistent with the TRPA Regional Plan as well as their own plans. The Forest Service, California Tahoe Conservancy, and the Nevada Division of State Lands have purchased thousands of environmentally sensitive parcels in the Basin, in order to place them under the protection of public ownership and provide public access. These same agencies have contributed to the ongoing program of erosion and runoff control in the watershed with pilot projects to restore stream environment zones. These programs have evolved into the Environmental Improvement Program for the Lake Tahoe Region (EIP) that builds on the capital improvement approaches and other improvement plans that have been underway for the last twenty years for Threshold and other program attainment. Lahontan RWQCB in collaboration with NDEP are involved in the public process of developing and adopting load reduction targets for fine-sediment, nitrogen, and phosphorus input to Lake Tahoe, which is highly related to TRPA's water-quality standards, and is expected to strongly influence many aspects of TRPA's management of the Basin's resources. The TRPA water quality threshold currently has management standards to reduce loads of sediment, nitrogen, and phosphorus aimed at improving lake clarity. The two existing programs of applying best management practices (BMPs) to retrofit roadways and developed properties in the basin are still perceived to be the best approach to reaching the lake clarity goals shared with the other Tahoe Basin agencies.

Monitoring is the crux of determining attainment of environmental thresholds—quantifiable observations and standards for determining when desired conditions are achieved. Interagency monitoring efforts have grown to include water quality and air quality monitoring sites, using the most up-to-date equipment and analysis, with a cost of more than \$1 million annually since 1990. These and other monitoring programs provide information to direct and evaluate the effectiveness of control measures of the Regional Plan. A project is underway to develop an adaptive management system for the Lake Tahoe Region, to improve the responsiveness of programs attainment of thresholds and for all the Regional Plans implementation programs. The design of the *Adaptive Management System* is expected to be completed by the end of April 2007.

## Institutional Arrangements

The success of threshold attainment depends upon the coordination of all agencies and private-sector stakeholders in the Region. The Compact states “in formulating and implementing the regional plan, the agency shall seek the cooperation and consider the recommendations of counties, cities, and other agencies of local government, State and Federal agencies, of educational institutions and research organizations, whether private or public, and civic groups and private persons.” The following is a list of agencies/stakeholders cooperating with TRPA including but not limited to:

<b>Regional Agencies</b>	
Tahoe Transportation District	Tahoe Transportation Commission
Tahoe Metropolitan Planning Organization	
<b>Federal Agencies</b>	
U.S. Environmental Protection Agency	Army Corps of Engineers
U.S. Forest Service	Natural Resources Conservation Service
U.S. Bureau of Land Management (via SNPLMA EIP funding)	U.S. Postal Service
U.S. Bureau of Reclamation	U.S. Geological Survey
<b>State Agencies</b>	
Caltrans	California Air Resources Board
California Water Quality Control Board-Lahontan Region	Nevada Division of Environmental Protection
California State Lands Commission	Nevada Division of State Lands
California State Parks	Nevada Public Service Commission
California Tahoe Conservancy	Nevada Department of Transportation
<b>Local Governments</b>	
City of South Lake Tahoe (and Redevelopment Agency)	El Dorado County
Douglas County	Placer County (and Redevelopment Agency)
Carson City	Washoe County
<b>Other Local Agencies</b>	
Douglas County Sewer Improvement District	Tahoe City Public Utility District
Incline Village General Improvement District	Nevada Tahoe Conservation District
Kingsbury General Improvement District	Tahoe Resource Conservation District
North Tahoe Public Utility District	U.C. Davis/Tahoe Research Group
South Tahoe Public Utility District	South Shore Transportation Management Association
Desert Research Institute and the University of Nevada Reno	Truckee/North Tahoe Transportation Management Association
<b>Stakeholder Groups</b>	
Pathway Public Forum representing 43 stakeholder constituencies	Lake Tahoe Transportation and Water Quality Coalition



## Range of Existing Management Controls

This section describes the management controls that TRPA and cooperating agencies use to implement the existing Regional Plans, and Programs and strive to attain existing thresholds. They include:

- TRPA's Goals and Policies—the policy and general-plan document of the TRPA Regional Plan;
- TRPA's Code of Ordinances;
- TRPA's Regional Transportation Plan/Air Quality Management Plan;
- TRPA's Scenic Quality Improvement Program for the Lake Tahoe Basin, 1989;
- TRPA's Water Quality Management Plan for the Lake Tahoe Region, 1988 (208 Plan); and
- Future TMDL Implementation Plan for Pollutant Load Reduction
- Lahontan RWQCB's Water Quality Control Plan for the North Lahontan Basin, a part of the Lahontan Basin Plan;
- Storm water management programs for local government jurisdictions implemented under National Pollutant Discharge Elimination System (NPDES) permits and the EIP;
- Forest Service and States of California and Nevada programs for acquisition of sensitive lands, excess-coverage mitigation, and public recreational access;
- Environmental Improvement Program (EIP) for the Lake Tahoe Region; and
- Best management practices (BMPs) implementation programs of Partners in Conservation (Nevada and Tahoe Resource Conservation Districts, Natural Resources Conservation Service, University of Nevada, Reno Cooperative Extension, local jurisdictions and TRPA BMP team).

## Section 3

## Development of New Thresholds— Scoping and Collaboration

### Assessing Need for Change

As described in Section 2, *threshold evaluation reports* are compiled every five years, consistent with Resolution 82-11, to assess the degree of attainment of threshold standards, determine whether eventual attainment appears possible, and identify proposed changes to thresholds indicators or standards to better track environmental conditions and achieve desired conditions. In the *2001 Threshold Evaluation Report* (TRPA 2002), TRPA staff recommended a major revision of specific thresholds based on criteria for changing thresholds embodied in Resolution 82-11. The criteria are described in the introduction of Section 4, *Need for Project*, of this document. The Pathway 2007 collaborative (described in Section 2 above) was formed in 2002 when Pathway Agency staffs began meeting on a regular basis to assist in integrating and coordination in developing proposals for updating thresholds and the Regional Plan, Forest Plan, and TMDL for Lake Tahoe ([www.pathway2007.org](http://www.pathway2007.org)). The collaborative process was organized to include a public *Forum*, *core groups* for each resource area, supported by *technical working groups*, a *place-based planning process* and *planning working groups*, all overseen by a multi-agency *pathway management team* (TRPA et al 2005). Involvement of the public has been ensured by Forum membership—43 individuals representing business; labor; environmental interests; local, state, and federal governments; local districts; tribal interests; educational and social-service providers and others. It has also been ensured through the conduct of a series of public visioning, issues identification, and place-based planning workshops, focus groups, telephone surveys, and hearings. The technical working groups—formed from agencies technical staffs, and academic and other resource experts—have served to inject modern environmental science into the process of identifying need for threshold change.

The collaborative further examined the need for changing certain thresholds and identified a process to develop recommended changes. It determined that a vision statement, as well as a statement of desired conditions, should be articulated for each resource prior to developing recommended threshold changes. The first draft of these visions and desired conditions were published on September 30, 2005, in the *Pathway 2007 Draft Evaluation Report Version 1.1* (TRPA et al 2005). This report also described the need for changing thresholds in each resource area.

Concurrently, Lahontan RWQCB and NDEP are in the process of establishing a TMDL for three pollutants (nitrogen, phosphorous, and fine sediment) entering Lake Tahoe, with the primary purpose of restoring lake clarity. The TMDL, once it is adopted and allowable pollutant loads are allocated to the various sources around the lake, will establish a powerful need for changing TRPA's water quality threshold management standards to be consistent with it. Lahontan's process of establishing the TMDL is nearing completion in early 2009, at about the same pace of the Regional Plan update.

Finally, the *2006 Threshold Evaluation Report* (TRPA 2007a), released concurrently with this EA, documents TRPA staff's latest analysis of the status of and the need for changing existing thresholds. That analysis is summarized in Section 4, *Need for Project*, below.

## Developing Alternatives and Proposed Project

The Pathway 2007 collaborative process gradually formulated needed threshold changes, considered a wide range of alternative thresholds. In a series of workshops, the core groups and technical working groups for each resource considered a wide range of alternatives, ranging from fine-tuning to complete revision of existing thresholds to meet current scientific understanding and changed management priorities. Since thresholds were established in 1982, considerable advances have been made in scientific understanding of all environmental sciences. Moreover, many lessons have been learned in applying the existing thresholds. In 1987, the major concern in managing the Region's resources was with regulating new development. Today, management of redevelopment has become an important issue. Collaborative participants accordingly focused their consideration of threshold alternatives on means of regulating redevelopment, making environmental improvements, and maintaining high biological function of undeveloped areas. Thus, for many months prior to preparation of this EA, collaborative participants considered a wide range of feasible alternatives and gradually narrowed them to the proposed thresholds as agreements were reached about resource priorities, management needs, and implementation feasibility.

## Identifying Needed Impact Analyses; Issues

To initiate preparation of this EA, two public scoping hearings were advertised and conducted. First, TRPA's Advisory Planning Commission (APC) took public comments and identified environmental issues of interest to APC members on November 8, 2006 in South Lake Tahoe. Following, TRPA's Governing Board (GB) took additional public comments and identified issues of interest to Board members on November 15, 2006 in Kings Beach on the north shore of Lake Tahoe. Advertisements for these meetings also established a scoping period, during which interested persons and organizations could submit written comments about environmental issues.

The purpose of the scoping process was to identify both alternative thresholds that should be evaluated and types of potential environmental effects of proposed and alternative thresholds that should be assessed.

TRPA recorded public and APC/GB comments made at the public hearings and subsequently received extensive comment documents and letters. TRPA staff reviewed these letters, sorted them into response categories, and prepared a scoping report. Responsive actions include formulating specific alternative thresholds for further evaluation, identifying issues that should be addressed in the EA, and eliminating other alternatives and issues from further consideration for a variety of reasons. Section 6 of this EA identifies alternative thresholds to be evaluated for potential impacts along with the proposed thresholds described in Section 7.

## Section 4

# Need for Project

### Introduction

As noted in Section 3, resource management needs and goals, as well as environmental science, have changed since the original establishment of thresholds in 1982 (TRPA, Resolution 82-11). Considerable advances have been made in scientific understanding of all environmental sciences, feasibility and suitability of existing thresholds have been revealed during their application, development in the Region has shifted toward redevelopment, and public issues and concerns have evolved. Lands suitable for development in the Region are expected to be nearly built-out during the next twenty-year planning period, so that interest in commercial redevelopment and mixed-use has increased. The Pathway 2007 Collaborative participants accordingly identified needs for changing thresholds based on updated science, regulating redevelopment, making environmental improvements, and maintaining high biological functioning of undeveloped areas.

A systematic evaluation of the needs for changing existing thresholds benefits from establishment of criteria. Resolution 82-11 originally set out guideline for identifying needs for change thresholds (TRPA 1982a). It noted that change is warranted where scientific evidence and technical information indicate:

- (4a) two or more threshold standards are mutually exclusive, or
- (4b) substantial evidence to provide a basis for a threshold standard does not exist, or
- (4c) a threshold standard cannot be achieved, or
- (4d) a threshold standard is not sufficient to maintain a significant value of the region, or additional threshold standards are required to maintain a significant value.

Although these criteria provide a useful basis for assessing needs for change, other criteria are applicable for particular thresholds. Indeed, any sound, objective reason can support the need for change.

A major conclusion of the *2006 Threshold Evaluation Report* (TRPA 2007a) is that many of the existing thresholds standards, management standards, and implementation policies require re-evaluation and either recalibration or amendment, principally because an existing threshold standard was not considered sufficient to maintain a significant value or because additional standards are required to protect the resource and attain the desired condition, but to lesser degree because substantial evidence does not exist to support the threshold or because it likely cannot be attained. Conflict between threshold standards, on the other hand, has not materialized as a problem with existing thresholds. The 2006 evaluation report also concluded that changes to management systems and more coordination with other agencies are needed.

The need for changing some thresholds also results from a change in guiding principles for particular resources. Before identifying needs for change and proposed thresholds, the Pathway Collaborative determined that it should articulate a vision and set of desired conditions for each resource, which are presented in Section 6. These guiding principals, if adopted by the TRPA Governing Board either as part of the thresholds or as goal statements for the *Goals and Policies* of the Regional Plan, would replace the less-specific vision statements presented in Section 2 that were previously formulated as a basis for the existing thresholds.

The current degree of attainment of existing thresholds provides one context for understanding the need for changing many of them. Current attainment is discussed throughout the foregoing Section 2, and especially in the subsection *Discussion of Existing Threshold Attainment*. That section should be reviewed in connection with the summary of need for change presented below.

The following is a summary by resource area of the key needs for changing existing thresholds, based on the identification of need for change for each existing threshold presented in the 2006 Threshold Evaluation Report (TRPA 2007a).

## Air Quality

Needs for changing air-quality thresholds are:

- Visibility has improved significantly in the Region over the past 20 years and now consistently exceeds the threshold standard. A need exists to update visibility standards to reflect and ensure that this improvement will be maintained.
- The existing thresholds reflect ambient air quality standards for criteria pollutants as established by the U.S. EPA, California, Nevada, and TRPA, based on human health considerations. In some instances, standards vary between California and Nevada, necessitating the adoption of Region-wide standards. Moreover, a more holistic approach is needed to enable adaptive management of criteria pollutants, and to facilitate additional change as new information becomes available.
- Air quality can affect ecosystems, and existing thresholds do not provide for limiting adverse effects on ecosystems. An ecosystem health threshold is needed, based on documented pollutant types and levels than can damage ecosystems. Different standards, possibly for different pollutants, may need to apply in addition to the human-health-based criteria-pollutant standards.
- The *U.S. Highway 50 Traffic Volume Threshold* is intended to measure the progress of CO attainment (i.e., this threshold is shown as a management standard in the Air Quality section addressing carbon monoxide on page C-8 of Resolution 82-11). However, the data has not correlated well between CO levels and the traffic volumes along U.S. Highway 50. Thus, the traffic volume threshold approach for CO needs to be changed to a Region-wide concentration standard.
- The existing threshold for *Vehicle Miles Traveled (VMT)* was intended to reduce oxides of nitrogen (NO<sub>x</sub>) emitted by vehicles and consequent deposition of bio-stimulating nitrates into the lake (the threshold is shown as a management standard in the Air Quality section on Nitrate Deposition of Resolution 82-11). New information suggests that VMT as currently measured does not correlate well to NO<sub>x</sub> deposition to the Lake on an emission per passenger mile basis, so there is no basis for maintaining the VMT threshold for the purpose of reducing nitrate deposition.
- The threshold standard for wood smoke set a goal of reducing wood smoke from 1981 levels by 15 percent. A 1981 baseline was not established against which to assess the current levels. An implementable threshold is needed, or thresholds for visibility and particulate matter should be solely relied upon.
- It is not possible to adequately measure or model the DIN load on Lake Tahoe from atmospheric sources at this time although there are estimates. For this reason, no basis for the air quality *Atmospheric Nutrient Loading Threshold* exists. Atmospheric deposition is covered in the water quality threshold discussion, and will be covered in the TMDL load reduction target development for atmospheric deposition of nitrogen, phosphorus and fine particulate matter.

## Water Quality

Needs for changing water-quality thresholds are:

- Existing water quality thresholds are not sufficient to maintain human and environmental health on a regional basis. These existing standards are focused on Lake Tahoe clarity and do not address concentration standards appropriate for aquatic environmental health. Standards for human health vary between the two states and allow higher concentrations than existing clarity-related thresholds.
- The current turbidity and periphyton standards of Threshold WQ-1 are not adequately descriptive of the desired shallow-lake conditions or sufficiently protective of desired nearshore transparency and aesthetics. Moreover, turbidity monitoring at the 25 meter depth is too deep to reflect the human experience of elevated turbidity in the nearshore area.
- Continued focus on the winter average Secchi depth (WQ-2) might suggest improvement of lake clarity, while clarity in other seasons and/or annual average clarity may not be improving. Use of annual average values is needed to integrate seasonal hydrologic conditions, and would provide a better basis for tracking of inter-annual variability. Additionally, the Lake Tahoe Clarity Model being used for the TMDL is based on average annual values; this model will be an important tool for water quality management in the future.
- The existing primary productivity standard (WQ-3) was intended to improve and protect lake clarity, and the existing standard was established based on a very different phytoplankton assemblage than exists today. This has raised the question the appropriateness of the standard and whether it is even attainable. Comparisons of the primary productivity and Secchi depth data show no straightforward correlation between the two variables. In addition, current scientific understanding is that fine sediment has a more dominant influence on clarity than primary productivity. Secchi disk depth represents the integrated effects of clarity loss due to both fine sediment and algal growth, thereby reducing the need for a distinct productivity standard.
- The existing threshold for tributary water quality (WQ-4) was intended primarily to protect lake clarity by controlling tributary inputs of nutrients and sediment to Lake Tahoe, based on state standards. However, the state standards were set to improve water quality and not necessarily lake clarity. The existing state standards do not consistently address both dissolved and total nutrients and do not have an adequate scientific basis for protecting lake clarity. Also, the existing concentration-based standards do not relate directly to pollutant loads, which are the basis for current scientific analysis for the Lake Tahoe TMDL and are expected to be the primary focus of water quality management for lake clarity in the future.
- It is not known if the surface runoff concentration standards of WQ-5 directly contribute to reaching the Lake Tahoe clarity goals, although they were assumed to be protective. Moreover, a significant discrepancy exists between TRPA's and Lahontan RWQCB's standards for nutrients (use of dissolved vs. total concentrations) and the associated potential for stimulating algal growth. Similar to WQ-4, the existing concentration-based standards do not relate directly to pollutant loads to Lake Tahoe without flow and duration data.
- The primary intent of the existing groundwater threshold was to protect lake clarity by reducing the nutrient loading of groundwater. The threshold assumed that higher concentrations were allowable for storm water infiltrated to ground water (WQ-6) than for direct discharges of storm water (WQ-5) because the treatment path through the soil would remove some nutrients from infiltrated stormwater. Protection of lake clarity was indirect, assuming the threshold would reduce nutrient loading to groundwater and thereby reduce groundwater nutrient inputs to Lake Tahoe. The linkage between the existing standards, the reduction of nutrient loads to groundwater, and the indirect effects on reduction of nutrient loads to Lake Tahoe is not well

understood. Similar to WQ-4 and WQ-5, the existing concentration-based standards do not relate directly to sufficient reduction of pollutant loads to Lake Tahoe and the lake clarity response.

- As discussed in the 1982 Threshold Study Report (the basis for establishment of the existing thresholds), data was insufficient to establish an *other lakes* threshold standard. Evidence remains insufficient to provide the basis for an *other lakes* threshold. In addition these other lakes are ecologically distinct from one another and any adequate standards or threshold would have to take the individual ecology and considerable baseline data for these lakes into account.

## Soil Conservation and SEZs

Needs for changing soil conservation and SEZ thresholds are:

- The use of land capability and land coverage as guiding concepts to regulate development has proved sound, but changes to the threshold are needed to fix inconsistencies in applying the current Bailey and IPES systems, accommodate the new soils mapping and classifications of the new NRCS soil survey for the Basin, ensure that the effects of impervious cover and disturbance are fully mitigated on a watershed or runoff catchment basis, and better address *grandfathered* land coverage (pre-1972).
- The existing SEZ threshold standard calls for the “preservation of existing naturally functioning SEZ lands in their natural hydrologic condition”, but TRPA does not have a quantifiable criteria or attributes for “naturally functioning” to determine if SEZ preservation and restoration are adequate and will be sustained in the future. Criteria are needed for assessing the functioning of SEZs in relation to their natural physical, chemical, and biological condition.
- The existing SEZ threshold standard also calls for the restoration of “all disturbed SEZ lands in undeveloped, unsubdivided lands”. This standard needs clarification to define “disturbed” SEZs and to better define the areas to which the standard applies.
- The existing SEZ threshold standard also targets restoration of a percentage of the SEZ lands that were identified in 1982 as “disturbed, developed, or subdivided”. It needs revision to clarify the target, such as an establishment of a numeric target rather than a percentage.

## Vegetation

Needs for changing vegetation thresholds are:

- Thresholds for common vegetation (V-1) and late seral/old growth (V-4) related need to be combined to apply to all vegetation types and support recruitment of a diversity of age classes including early seral stages to support old growth development, and standards need to be based on pre-settlement extents of vegetation types and structural sub-types recently developed by the LTBMU rather than on the existing, unsupported targets based on the extent of the vegetation communities alone.
- The existing threshold for uncommon plant communities (V-2) needs to encompass the existence and sustainability of such communities as a whole, rather than restricting protection to eight specific community locations. Other uncommon plant community types need to be added to the threshold’s purview, such as aspen communities.
- The *non-degradation* standard of the uncommon plant community threshold (V-2) lacks definition other than extent of these communities and needs to be replaced by a measurable quantitative ecological status index that reflects a wide range of ecological conditions affecting plant community viability.

- Currently only five special status species are protected by the threshold for sensitive plants (V-3), and the threshold needs modification for consistency with federal, state, and other rare-plant programs to cover all special-status plant species known to occur in the Region (9 at present) or discovered in the future.
- The public has expressed concern over the high amounts of hazardous fuels in the wildland urban interface (WUI). An additional threshold needs to be established to protect the resource and the public based on fire behavior predicted from existing fuel loads, with a standard that fires in WUIs are predicted to be confined to ground fuels rather than reach forest canopies, which could have catastrophic effects on the forest and developed areas.

## Wildlife and Fisheries

Needs for changing wildlife and fisheries thresholds are:

- Thresholds involving somewhat ambiguous *suitable habitat* (e.g., F-1, F-2, W-2) need to be replaced by thresholds involving direct measures of ecosystem functioning, to allow more accurate determination of trends in biological condition.
- Instream flow (addressed by existing threshold F-3) needs to be recognized as a necessary but insufficient factor in maintaining riverine ecosystems, and additional threshold standards are needed to address biological integrity of these aquatic ecosystems.
- Reintroduction of Lahontan cutthroat trout in the Region has been achieved, so that the existing threshold F-4 is no longer applicable. This species now needs to be added to TRPA's list Special Interest/Status Species and be managed under a revised threshold that focuses on species sustainability.
- The current Special-Interest Species list incorporated in threshold W-1 does not include all of the special-status species currently recognized in the Tahoe Region by regulatory and management agencies. It also includes some species that do not have a recognized special-status or are inappropriate for a special-status species list for the Tahoe Region. The list needs updating for appropriateness and consistency with listings of other agencies.
- The rather limited and disparate thresholds for wildlife and fisheries such as habitat extent need to be replaced by broader thresholds for terrestrial and aquatic ecosystems that involve the full diversity of ecosystems in the Region and address ongoing biological integrity through objective measurements of both conditions of habitat factors and status of species' populations.

## Scenic Resources

Needs for changing scenic resource thresholds are:

- The scenic threshold system (thresholds SR-1, -2, and -3)—unique and innovative when developed in the 1970s—has evolved over thirty years to address new trends and is now in need of reorganization and streamlining.
- Travel Route Ratings (used for SR-2) were not specifically designed to reflect the needs of transitional (i.e., between natural and urban areas) and urban areas. The methodology assumes that all parts of the roadway and shoreline have the same inherent scenic quality and visual absorption capability. Thus, the methodology needs to change to reflect different qualities and capabilities of the urban, transition, and natural areas.
- The scenic resource thresholds anticipate that all roadway and shoreline units should achieve similar ratings, despite differences in the inherent landscape character of each unit and capability



to visually absorb development. Although it is ideal to have a high degree of natural scenic quality in all units, those which do not have views of the Lake or are dominated by development are in essence penalized under the current system.

- The community design threshold (SR-4) needs to be clarified with more specific criteria to ensure that development is appropriate in terms of its size, mass, architecture, and density for the area (i.e., landscape type) and reflects the valued visual attributes of the community in which it will be located.

## Noise

Needs for changing noise thresholds are:

- Visitors and residents have expressed concerns about the decline in serenity of their community and their enjoyment of the outdoors due to excessive noise from sources such as on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft, and aircraft, which indicates that improvements to the existing noise thresholds are needed.
- The current threshold indicators need to be more focused on monitored compliance with noise-level standards (number of exceedances) and corrective actions taken.
- A single set of standards need to apply Region-wide, because there is no defensible rationale for varying the standards across the state line within a basin having similar recreational values throughout.
- Noise standards for airport-based aircraft per the airport settlement agreement need to be incorporated into the noise thresholds, and noise from non-airport aircraft (e.g., helicopters, sea planes) needs to be addressed in the thresholds.
- New stationary exhaust standards for over-snow vehicles, off-highway vehicles, and on-highway motorcycles need to be incorporated into the thresholds.
- Noise standards for over-snow vehicles needs to be reduced to be more compatible with reduced noise levels for snowmobiles manufactured after 1976.
- The 24-hour CNEL noise standards need to be supplemented by 1-hour noise standards, to prevent loud noise from activities that may be of short duration.
- Adverse effects of noise on wildlife, which continues to be documented by the scientific community, need to be reduced by creation of a new threshold.

## Recreation

Needs for changing recreation thresholds are:

- The inherent qualitative nature of the existing recreation-experience threshold (R-1), and its non-numeric standards and indicators, make this threshold difficult to measure. Changes to standards are needed to ensure that the majority of opportunity attributes indicate high quality opportunities, recreation providers appropriately respond when recreation quality does not meet desired conditions for recreation, the number of Tahoe resource-dependent public recreation facilities and opportunities does not diminish and in fact grows, and specific recreation providers pursue implementing planned recreational improvements to enhance the experience and reduce the threat of impacts from inadequate facilities.
- The existing recreation-capacity threshold (R-2) is not useful for several reasons. The measurement used to determine attainment of this threshold (persons at one time or PAOTs) does

not reflect many of the recreational opportunities provided in the Region. Only a small percentage of the PAOT capacity provided for in the Regional Plan has been used in the 20 years since its adoption. The standard of retaining a fair share of resource capacity has never materialized as a limitation to recreation development. And the single standard does not address all three indicators. The existing threshold needs to be replaced with one that focuses on quality and quantity of recreational access to shorezones, natural areas, and public lands in general. Standards are needed to ensure continuing public land acquisition, especially to Lake Tahoe shoreline, construction of trails and trailheads, especially those served by public transit, and the quality and quantity of recreation access.

## Section 5

# No-Project Alternative

### Continued Use of Existing Thresholds

For purposes of this EA, the *No-Project Alternative* involves continued use of existing thresholds (see Section 2) over a 20-year planning horizon, with incremental improvements to management strategies using a new adaptive management approach. However, some of the existing water quality thresholds would be effectively superseded by new requirements and management strategies established by Lahontan RWQCB to implement an imminent total maximum daily load requirement for Lake Tahoe, described in Section 3.

### Twenty-Year Growth Estimates

TRPA's current permitting systems and land-use programs would continue to operate under the No-Project Alternative. Based on these assumptions, the U.S. Geological Survey (2004) estimated numbers of new housing and tourist accommodation units, road and trail extents, commercial developments and recreational facilities, and other growth that would be expected to occur under the No-Action Alternative over the 20-year planning period. Important trends and findings of USGS 2004, updated to the present by TRPA staff, are as follows. These estimates provide the basis for assessing likely environmental effects of the No-Action Alternative for both threshold update and ensuing Regional Plan update.

- Only minimal amounts of land conversions from one type of land use to another would occur.
- Essentially no land in sensitive areas or SEZs would be developed.
- Private development would outpace public recreation development.
- Roughly 95% of new housing units would be single-family homes, based on existing vacant parcels. However, mixed-use redevelopment could add more low and moderate income, multi-family units in association with commercial developments.
- Tourist accommodation capacity would increase by about 300 units.
- Commercial real estate development would involve only about 200,000 square feet of new floor space.
- Placer County, California, probably would not be able to retire enough parcels to satisfy the vacant lot equation, although allocation-demand through sensitive parcel retirement is increasing Region-wide, and parcel retirement demand in Placer County has begun to increase.
- Much of the single-family residential development that would occur would be clustered around existing developments and roads in the southern part of the Basin, although some development would occur around the entire Lake Tahoe shoreline.
- Multi-family developments would most likely be clustered in an area west of the airport at South Lake Tahoe, based on vacant multi-family designated parcels. However, the *place-based planning* process revealed an interest in implementing *Smart Growth* principles, which could result in wider distribution of multi-family units within mixed-use projects, principally commercial redevelopment.

- Most commercial development would be located in the Highway 50 corridor at the southern end of the Basin.
- Peak summer and winter and average summer population projections derived from various occupancy assumptions, existing data, trends, and the land use projections indicate that:
  - The Region's permanent residential population would increase from 62,843 in 2000 to 68,425 in 2027, representing an average annual increase of 0.33% in the permanent residential population. The population estimate is dictated by projected land-use for residential housing, assuming that 55% of the housing stock is occupied by permanent residents accommodating an average of 2.6 people per household.
  - Projected average winter/summer overnight visitation would reach 65,000/133,000, representing a 0.23% average annual increase in overnight visitors during 2003–2027. The increase is slightly lower than permanent residential growth due to relatively fewer *tourist accommodation units* (TAUs) and campsites projected for 2027.
  - Day visitors—the most challenging to estimate—could reflect an estimated annual growth rate of 1% in California's total population and thereby grow to 31,000/64,000 day visitors for an average winter/summer day in 2027. However, day visitation could be even greater, because the population growth rate of northern Nevada has recently been more rapid, and a large portion of Region visitation is by northern Nevadans.
- The demographic trend in Region residents would continue toward an older population, whereas demographic characteristics of visitors would reflect California and Nevada demographics as a whole. The residents' trend would result in increased rates of full-time occupancy of homes that are now occupied seasonally, which would increase demands for a range of public services.

## Emerging Management System

Pathway agencies are developing a Collaborative Adaptive Management System (AMS) (<http://www.pathway2007.org/>) that will be used to coordinate monitoring, research, information sharing, and implementation of management strategies for the Lake Tahoe Region under either the No-Action Alternative or the Proposed Project (including any threshold alternatives). The term *collaborative adaptive management* reflects two important characteristics of the system. First is its incorporation of adaptive management principles to support Pathway agencies' use of the best available knowledge for policy decisions. With adaptive management, policy-relevant knowledge improves through scientific research, monitoring, and experience. Second is the system's ability to support collaboration and coordination among Pathway agencies as they make management decisions. The Collaborative AMS will allow the Pathway agencies to pursue a clear and transparent process for making coordinated, information-based decisions to continually improve the effectiveness of management approaches to achieve desired conditions.

As a distinct component of the Collaborative AMS, Pathway agencies are developing a Pathway Indicator Reporting System (PIRS). This system will provide meaningful information on the state of the environment and social conditions with respect to the desired conditions established through the Pathway 2007 planning process. It is intended to provide clear and consistent information to the public at large, informed stakeholders and decision makers, and agency staff and the science community.

This section provides more detail on the Collaborative AMS and the PIRS and the path forward for developing and refining them.

## Collaborative Adaptive Management

The Collaborative AMS being developed through Pathway 2007 brings together three management concepts: a continual improvement management cycle, adaptive management, and a means for coordinating and collaborating among partners.

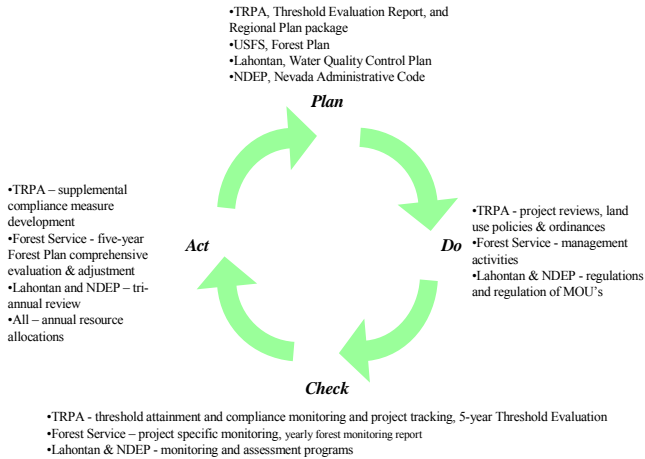
### Continual Improvement Management Cycle

At the core of the AMS is a continual improvement management cycle characterized by the following four steps:

- Plan—identify and analyze the problem to be addressed
- Do—develop and implement solutions
- Check—evaluate the results of the implemented solution
- Act—adopt and adjust the solution

As reflected in the diagram, the Pathway agencies’ current processes for planning and implementation reflect the various elements of the cycle, from:

- Developing comprehensive agency plans (e.g., TRPA’s Regional Plan) in the “Plan” step, to
- Undertaking management and regulatory activities in the “Do” step, to
- Monitoring, evaluation, and review activities in the “Check” and “Act” steps.



The role of the Collaborative AMS will be to appropriately coordinate these agency cycles to accomplish shared goals.

### Adaptive Management

Incorporating adaptive management into a traditional plan-do-check-act cycle acknowledges that uncertainty exists about the impact of management actions. Adaptive management introduces an explicit commitment to reducing uncertainty through experimentation and learning. It is resource management informed by research and monitoring.

An effective Collaborative AMS ensures that the best available knowledge systematically informs planning and management activities. This is a significant challenge. The *Lake Tahoe Watershed Assessment* concludes that “the lack of an institutionalized structure to gather, analyze, and disseminate information to support resource management decisions has impeded achievement of ecosystem integrity goals” in the Lake Tahoe Region. The *Sierra Nevada Forest Plan Amendment* is clear that “adaptive management is ultimately dependent upon the ability of institutions to integrate new information into management decisions and approaches.”

Reflecting the need to generate, document, and use new information, the key elements of adaptive management are:

- *Explicit documentation of conceptual models* that describe relationships between drivers, pressures, and management activities on the system of interest. Numeric models can numerically represent these system dynamics, and should be described in a manner that makes assumptions explicit.
- *Testing assumptions* by systematically implementing actions based on well-researched hypotheses and monitoring actual results.
- *Sustained and focused monitoring* that addresses targeted questions, as well as monitoring of implementation success and resource conditions.
- *Structured information flow resulting in recommendations* that are put in context and terms meaningful to management decision makers. A reporting and recommendation development schedule, can help provide timely input into decision making.
- *Adapting management and monitoring approaches* based on analysis of monitoring results and research findings, and changing assumptions and plans to reflect new information.
- *Learning* through methodical documentation of processes to avoid repeating mistakes and to encourage information sharing.

The degree of adaptive management to be employed will depend upon the level of concern and uncertainty related to specific management decisions. Those management decisions made relating to topics of high concern and low certainty will most benefit from active adaptive management

### **Collaborative Arrangements**

The Collaborative AMS will enhance coordination among agencies with overlapping management responsibilities and support collaboration in decision-making, information sharing, and other areas. It will allow researchers, agency staff and management to share information and collaboratively “close the loop” when new information suggests the need to adjust management direction. At the same time, a more explicit information flow and decision making process will increase the transparency of the information used to make management decisions. Explicitly incorporating review and input into the system will support factoring stakeholder information into resource management decisions.

When designing collaborative management arrangements, different degrees of formalization, centralization, authority, autonomy and a range of other factors are appropriate under different conditions. The Pathway agencies are exploring how existing and possible future collaborative arrangements may assist them in making coordinated decisions over the next twenty years, while respecting each agency’s legal mandates and governance structure.

### **Applications of Adaptive Management in the Lake Tahoe Region**

The current work to define a Collaborative AMS through Pathway 2007 builds on previous work in the Lake Tahoe Region, especially the *Lake Tahoe Watershed Assessment* and the *Sierra Nevada Forest Plan Amendment*. The watershed assessment outlined a set of collaborative arrangements to ensure research and monitoring information would effectively inform policy and project implementation decisions. To date, this system has only been partially implemented through specific applications. The following list summarizes project specific applications of adaptive management in use or development within the Lake Tahoe Region:

- **Conservation Strategy for Tahoe Yellow Cress**—This project established a clear process for directing targeted monitoring and research and developing recommendations for management activities and further targeting subsequent monitoring and research efforts. The calendar of activities and definition of clear reporting structures is key to this program’s success.

- **The Sediment Source Control Handbook**—This effort outlines a series of steps for testing expectations relating to sediment control project strategies applied at ski resorts and how research and monitoring information feeds back into future implementation decisions.
- **TRPA Regional Plan and Threshold Review**—Chapter 32 of the TRPA Code of Ordinances directs TRPA’s Threshold Review and review of compliance measures including reporting intervals and establishes the need for a monitoring program.
- **Forest Service Environmental Management System (EMS)**—The Forest Service is currently developing an EMS in compliance with national mandates to develop protocols for selected environmental aspects.

## Pathway 2007 Adaptive Management System Development

The Collaborative AMS is being developed with a solid grounding in current collaborative management approaches in the Lake Tahoe Region. Three important topics will be examined in-depth and suggestions will be made for improving protocols, lines of communication, and decision making structures for each. The experience gained investigating these three topics will then be used to develop a generalized approach for a Collaborative AMS. The Pathway agencies will be able to work with the Tahoe Science Consortium researchers to refine this template for additional topics that warrant the application of formal adaptive management. The three specific topics that will be examined in the process of developing a Collaborative AMS are:

- **Pathway Indicators and Standards**—The indicators and standards described in this Evaluation report vary in their level of development and degree of scientific understanding. The type II and III indicators require validation or additional development. New information from research may show the need for adjustments to some indicators or standards. A collaborative decision making process that incorporates stakeholder input will be defined to ensure scientific, legal and stakeholder input are considered, and that adjustments are consistent across agencies.
- **Environmental Improvement Program (EIP) Water Quality Sub-program**—The current EIP Update project is developing a more structured process for developing programmatic goals and employing project effectiveness research and monitoring information into the decision process for selecting future projects. The investigation of a Collaborative AMS will formalize how implementation tracking, effectiveness monitoring, and research are systematically reported to a collaborative decision making body.
- **Lake Clarity Total Maximum Daily Load (TMDL) Allocations**—Establishing the *Lake Tahoe Clarity TMDL* involves use of a sophisticated set of models to analyze loading of fine sediments, nitrogen and phosphorous to the lake, and to assess their impact on lake clarity. Research and monitoring over the coming years will refine the modeling assumptions and improve the accuracy of both the effect of these pollutants on lake clarity and the effectiveness of measures to reduce these pollutants. As a result of this improved understanding the load allocations assigned to specific entities and programs may be adjusted. A collaborative decision-making process will be established to ensure these adjustments occur in a systematic and coordinated manner incorporating input from all stakeholders.

Investigations around these three programs will focus on how implementation, cause and effect, and status and change research and monitoring information will be used in making management decisions. Improving the methods to monitor and report information related to desired conditions is a related area of investigation.

## Pathway Indicator Reporting System & Monitoring Strategy

One goal of the Adaptive Management System project is to develop a strategy to monitor and report Pathway indicators which satisfies the information needs of key audiences including the public at large, engaged stakeholders and decision makers, and agency staff and the science community. The scope of typical restoration programs leads to measurement of a large number of indicators, which can overwhelm the attention of many audiences. Organizing indicators into hierarchies based on spatial scale, programmatic type, resource area or other factors can better communicate results. The Pathway agencies are exploring techniques for reporting the status of environmental and social conditions at different levels of detail for different audiences.

Clear display mechanisms and graphical formats are being investigated to assist in communicating the status of Pathway indicators. Displays can take a variety of forms including long-term planning reviews, annual reports, conferences, and data-driven websites. Different graphical format, such as standardized charts and categorization of data into discrete reporting scales (i.e., good, fair & poor) can assist with communication.

### Pathway Indicator Monitoring Strategy

Sustained monitoring of environmental status related to the desired conditions is mandated for many of the Pathway agencies. Status and change monitoring provides meaningful retrospective information to staff and scientists regarding influences on the environment, including the overall impact of management actions. Further, the public is accustomed to reports of environmental status and expects an annual or periodic update of the status of resources of interest. The *Pathway Indicator Monitoring Strategy* will focus on defining how available and potential resources can be effectively used to provide the most meaningful information relating to the status of the Pathway Indicators.



## Section 6

# Proposed Project and Action Alternatives

## Introduction

The section describes the proposed thresholds updates, as well as alternative thresholds developed from the public scoping process (Section 3). These proposed thresholds were developed by the Pathway 2007 Collaborative, recommended to TRPA, modified by TRPA's staff to meet technical requirements, and presented to the TRPA's Governing Board as the recommended basis for further development of the Regional Plan Update. The Board accepted the recommendation and commissioned preparation of this assessment of potential environmental impacts of the proposed threshold changes, prior to issuing final direction to its staff to continue with planning for the Regional Plan Update. Any threshold updates that result from this process will not become effective until completion and adoption of the Regional Plan Update.

The proposed project is limited to changes in thresholds, defined in Sections 1 and 2. As noted in Section 2, each threshold includes an *assessment indicator* or indicators, and an associated *assessment standard* or standards that reflect the desired condition for indicator(s). TRPA has listed other standards of environmental condition, policies, and associated *management standards* that are considered *thresholds* (although not all of these have been used to track threshold attainment). Some of these may change as warranted to help implement the updated thresholds, but they do not govern approval of development projects (based on general threshold findings) or adoption of management programs (although these may seem to be focused in the area of management standards), so they are not considered to be part of the proposed project.

The proposed threshold updates vary in their current level of indicator and standard development. Type I thresholds are well-defined, Type III thresholds are mainly conceptual at this time, and Type II thresholds are intermediate in their level of development. Precise definitions are:

- *Type I.* The indicator directly represents the condition with respect to the desired condition, has well-established monitoring and analysis protocols and a historical dataset to show current condition. A measurable standard can be directly linked to the desired condition without further investigation.
- *Type II.* The indicator directly represents the condition with respect to the desired condition; monitoring and analysis protocols are established with minor adjustments potentially necessary; baseline or background information may be needed to establish a numeric level for current conditions. A measurable standard will directly link to the desired condition; however some additional investigation may be required to determine the appropriate measurable standard.
- *Type III.* The indicator is expected to represent the condition with respect to the desired condition; monitoring and analysis protocols and specific parameters may require further investigation to develop the indicator; baseline data may be needed to establish a numeric level for current conditions. Further analysis is required to develop a measurable standard that will directly link to the desired condition.

The current development type of each proposed threshold, or each component of each threshold, is identified in the threshold descriptions that follow.

## Proposed Project Components Same as No-Action Alternative

Certain components of the *No-Action Alternative* described in Section 5 are applicable to the proposed and alternative thresholds described in this section. In particular, management controls would be generally be similar to those existing management control previously described, except that management strategies (implementation strategies) for implementing the new thresholds would necessarily be different from the existing management strategies. New management strategies necessary for implementation of the proposed thresholds would be formulated in the Regional Plan Update, and their potential impacts assessed in an EIS that will accompany the plan draft.

Also applicable to both the No-Action Alternative and the proposed project are the growth projections and emerging AMS described in Section 5.

## Disposition of Existing Thresholds

The proposed thresholds are described by resource in the remainder of this section. Before the detailed description of them, two tables relating existing to proposed thresholds are presented. First, a list of existing thresholds and proposed changes to them is shown in Table 2.

**Table 2.** Existing Thresholds and Proposed Update

	Threshold	Proposed Disposition
<b>Air Quality</b>		
AQ-1	Carbon Monoxide (CO)	Update indicators and standards to the most up-to-date state and federal standards, and apply the most stringent standards Region-wide; incorporate into new <i>Human &amp; Environmental Health</i> threshold, and develop ecosystem-health component after 2008
AQ-2	Ozone (O <sub>3</sub> )	
AQ-3	Particulate Matter (PM)	
AQ-4	Visibility	Conform indicators and standards to recent improvements in visibility levels
AQ-5	U.S. Highway 50 Traffic Volume (for CO)	Replace with enhanced AQ-1 threshold above; target reduced traffic volume as a <i>management standard</i> <sup>1</sup> . Implement a new Region-wide traffic volume measurement and reporting program.
AQ-6	Wood Smoke	Replace with enhanced AQ-3 and AQ-4 thresholds above
AQ-7	Vehicle Miles Traveled (VMT) (for nitrate deposition to Lake)	Supplement with enhanced AQ-3 thresholds and Lake Tahoe TMDL <sup>2</sup> atmospheric load reduction management standard <sup>1</sup> ; implement a new VMT measurement and reporting program.
AQ-8	Atmospheric Nutrient Loading (of Lake Tahoe)	Replace with Lake Tahoe TMDL <sup>2</sup> atmospheric load reduction management standard <sup>1</sup> under water quality
<b>Water Quality</b>		
WQ-1	Littoral Lake Tahoe / Shallow Lake Turbidity	Modify threshold after 2008 to be aesthetic based; retain current threshold until new threshold is developed

Threshold		Proposed Disposition
WQ-2	Pelagic Lake Tahoe / Lake Clarity	Modify clarity standards to annual average and develop Lake Tahoe TMDL <sup>2</sup> load reduction targets for atmospheric deposition, tributaries, storm water, stream channel erosion, and groundwater
WQ-3	Pelagic Lake Tahoe / Lake Phytoplankton Productivity	Rely on WQ-2 threshold and clarity model projections and integrate into Secchi depth
WQ-4	Tributary Water Quality	Rely on Lake Tahoe TMDL <sup>2</sup> implementation load reductions and state 303(d) / 305(b) assessments
WQ-5	Surface Runoff / Storm water Quality	Rely on Lake Tahoe TMDL <sup>2</sup> implementation load reductions as management standards or targets
WQ-6	Groundwater / Storm water Infiltration to Protect Groundwater	Rely on Lake Tahoe TMDL <sup>2</sup> implementation load reductions
WQ-7	Other Lakes Water Quality	Address under new <i>Human &amp; Environmental Health</i> threshold and Fisheries indices of biological integrity
<b>Soil Conservation &amp; Stream Environment Zones (SEZs)</b>		
SC-1	Impervious Coverage	Modify indicator and standard, incorporate new data, and add breadth to indicator for watershed analysis
SC-2	SEZs	Modify indicator and standard, clarify <i>naturally functioning SEZ lands</i> with additional indicators, and quantify restoration acreage based on 1986 mapping.
<b>Vegetation</b>		<b>change to <i>Forests and Vegetation</i></b>
V-1	Common Plant Communities (aka Relative Abundance and Pattern)	Modify indicators and standards; combine with modified V-4 threshold in new <i>Healthy Vegetation</i> threshold
V-2	Uncommon Plant Communities	Modify indicators
V-3	Sensitive Plants	Modify indicators and standards
V-4	Old Growth / Late Seral Stage Ecosystems	Modify indicators and standards, combine with modified V-1 threshold in new <i>Healthy Vegetation</i> threshold, and incorporate into attribute indicators of <i>Biological Integrity of Terrestrial Ecosystems</i> threshold.
<b>Fisheries</b>		
F-1	Lake (Littoral) Habitat	Replace with a new <i>Biological Integrity of Aquatic Ecosystems</i> threshold when completed
F-2	Stream Habitat	Replace with a new <i>Biological Integrity of Aquatic Ecosystems</i> threshold when completed
F-3	Instream Flow	Include in stream segments for new <i>Biological Integrity of Aquatic Ecosystems</i> threshold when completed
F-4	Lahontan Cutthroat Trout Reintroduction	Add species to threshold WF-1 list
<b>Wildlife</b>		
W-1	Special Interest Wildlife	Modify species list, indicators, and standards
W-2	Habitats of Special Significance	Rely on new <i>Biological Integrity of Terrestrial and Aquatic Ecosystems</i> thresholds and modified SC-2 threshold for aquatic system protection

Threshold		Proposed Disposition
<b>Scenic Resources</b>		
SR-1	Travel Route Ratings	Modify indicators and standards to use scenic integrity levels (e.g., natural, transition, and urban) rather than existing travel route ratings
SR-2	Scenic Quality—Roadway and Shoreline Scenic Resources (aka Scenic Quality Ratings)	Continue without change under new natural environment desired condition
SR-3	Scenic Quality—Bike Paths and Outdoor Recreation Areas (aka Public Recreation Area Scenic Quality Ratings)	Continue without change under new natural environment desired condition
SR-4	Community Design	Maintain existing indicators and modify existing standard to require achievement of overall regional scenic quality vision and community character at the sub-regional level.
<b>Noise</b>		
N-1	Single Event, Aircraft Noise	Keep existing indicators and standards; develop non-airport aircraft standards and combine with N-2 in new <i>Single-Event Noise Sources</i> threshold
N-2	Other Single Event Noise	Modify indicators and standards to apply most restrictive standards Region-wide and make some standards more stringent; combine with N-1 in new <i>Single-Event Noise Sources</i> threshold
N-3	Community Noise Equivalent Level (CNEL)	Keep existing CNEL standards and add 1 hour standards
<b>Recreation</b>		
R-1	High Quality Recreational Experience	Modify indicators and standards
R-2	Capacity Available to Public	Retain access component, modify indicators and standards

<sup>1</sup> A *management standard* establishes a target but, unlike a *threshold*, does not require a finding of adherence before projects can be approved.

<sup>2</sup> Lake Tahoe TMDL = Lahontan Regional Water Quality Control Board and Nevada Division of Environmental Protection total maximum daily (fine sediment, nitrogen and phosphorus) load for Lake Tahoe. Targets will be set for reduction of loads from sources to Lake Tahoe.

## Comparison of Existing and Proposed Thresholds

Table 3 compares the existing and proposed thresholds in side-by-side format. The side-by-side comparison is not precise, since there is not a one-to-one correspondence between all existing and proposed thresholds. Notes in Table 3, however, indicate which existing thresholds are subsumed by certain new thresholds, reflecting information shown in the preceding table (Table 2).

**Table 3.** Comparison of TRPA's Existing and Proposed Environmental Threshold Carrying Capacities (ETCCs)

[See explanatory notes at end of table.]

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<b>Air Quality</b>						
1982 Value Statements: <ul style="list-style-type: none"> <li>◦ Attain state and federal air quality standards in the areas of the Basin where they are not met, and maintain air quality in areas that meet the standards</li> <li>◦ Attain suitable levels of air quality in the Basin to maintain the identified beneficial users of the Basin (e.g., recreation, vegetation preservation, scenic resources, and public health and safety)</li> <li>◦ Maintain or improve the clarity of the air and resultant visibility in the Lake Tahoe Basin</li> </ul>			Vision: Air quality in the Lake Tahoe Region is healthful for residents, visitors, and ecosystems and supports excellent visibility			
AQ-1. <i>Carbon Monoxide (CO)</i> —2 <sup>nd</sup> highest concentration at Stateline, annually	Concentrations less than Federal, CA, NV, and TRPA standards	N +	<i>Human &amp; Environmental Health</i> —Air quality in the Lake Tahoe Region is healthy for humans and ecosystems	<i>Human &amp; Environmental Health</i> —number of exceedances of any health standard for carbon monoxide, ozone, and particulate matter (both PM <sub>2.5</sub> and PM <sub>10</sub> )	<i>Human Health</i> —zero exceedances of the most restrictive federal, CA, NV, or TRPA human health standards for ozone, CO, and particulate matter, applied Region-wide	I

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
AQ-2. <i>Ozone (O<sub>3</sub>)</i> —number of exceedances of federal, state, or TRPA 1-hour ambient-air concentration standards	No exceedances.	N o				
AQ-3. <i>Particulate Matter</i> —average annual PM-10 concentration and number of exceedances of 24-hour federal or state concentration standards	No exceedances of average-annual or 24-hour standards	N o			<i>Environmental Health</i> —to be established as air pollutant impacts to ecosystems are identified	III
AQ-4. <i>Visibility</i> —light extinction distance regionally and subregionally (at Lake Tahoe Boulevard site)	Regional: 97 mi for 50% of year, and 71 mi for 90% of year, <i>and</i> Subregional: 48 mi 50% of year, and 19 mi 90% of year, <i>and</i> Visual range of 30 miles	Y +	<i>Visibility</i> —Visibility in the Lake Tahoe Region is at 2001–2003 levels or better	<i>Visibility</i> —Region-wide and local light extinction; light extinction allows calculation of visible range	<i>Region-wide Visibility</i> —Light extinction calculated at Bliss State Park equivalent to 116 mi. of visible range for 50% of year and 72 mi. of visual range for 90% of year  <i>Local Visibility</i> —Light extinction calculated at South Lake Tahoe equivalent to 58 mi. of visible range for 50% of year and 34 mi. of visible range for 90% of year; standards at other locations in the Region will be adopted once base- line monitoring data is available (after 2008)	I

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
AQ-5. <i>U.S. Highway 50 Traffic Volume</i> —winter traffic volume on U.S. Hwy 50 in South Lake Tahoe	7% reduction from 1981 total volume for winter days between 4 pm and midnight	Y +	[covered by <i>Human &amp; Ecosystem Health</i> , in particular the standard for CO]	--	--	--
AQ-6. <i>Wood Smoke</i> —carbon concentrations in aerosol samples from South Lake Tahoe and Bliss State Park	15% reduction in annual emissions from 1981 levels (1)	? o	[covered by <i>Visibility</i> and <i>Human &amp; Ecosystem Health</i> , as well as <i>Water Quality-Lake Tahoe Clarity</i> ]	--	--	--
AQ-7. <i>VMT</i> —vehicle miles traveled during peak summer day, as estimated from a traffic model	10% reduction from 1981 value	N +	Retain VMT Threshold until a modified indicator and standard can be proposed and supplemental standards are in place [covered by <i>Visibility</i> and <i>Human &amp; Ecosystem Health</i> , as well as <i>Water Quality-Lake Tahoe Clarity</i> ]	--	--	--
AQ-8. <i>Atmospheric Nutrient Loading</i> —average annual particulate NO <sub>3</sub> concentration at Lake Tahoe Blvd station	20% reduction from 1973–1981 average level of dissolved inorganic nitrogen loading of lake from atmospheric sources (1)	? o	<i>Lake Clarity</i> —deleted from Air Quality and addressed in <i>Water Quality-Lake Tahoe Clarity</i> below	--	--	--

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<b>Water Quality</b>						
1982 Value Statements: <ul style="list-style-type: none"> <li>◦ Attain levels of water quality in the lakes and streams within the Basin suitable to maintain the identified beneficial uses of Lake Tahoe</li> <li>◦ Restrict algal productivity (rate of growth) to levels that do not impair beneficial uses or deteriorate existing water quality conditions in the Lake Tahoe Basin</li> <li>◦ Prevent degradation of the water quality of Lake Tahoe and its tributaries to preserve the lake for future generations</li> <li>◦ Restore all watersheds in the Basin so that they respond to runoff in a natural hydrologic function</li> </ul>			Vision: Exceptional water quality provides restored clarity, environmental and human health, and human enjoyment of Lake Tahoe waters			
WQ-1. <i>Littoral Lake Tahoe or Shallow Lake Turbidity</i> —both near and away from tributaries	Decrease in sediment load to attain littoral turbidity not to exceed 3 NTUs and not to exceed 1 NTU in areas not directly influenced by stream discharges	Y ◦	<i>Lake Tahoe Clarity</i> —Restore and then maintain the waters of Lake Tahoe for purposes of human enjoyment and preservation of its ecological status as one of the few large, deepwater, ultraoligotrophic lakes in the	<i>Pollutant Loading Effects</i> —nearshore (shallow) aesthetic quality	<i>Clarity</i> —Appropriate nearshore aesthetic standard(s) to be developed after 2008; WQ-1 remains applicable in the interim	III



Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
WQ-2. <i>Pelagic Lake Tahoe or Lake Clarity</i> —visible depth of a Secchi disk (1)	Visibility depth not less than 33.4 meters average in December-March; <i>and</i> depths not less than 1967–1971 depths, based on annual and seasonal averages	N +	world with unique transparency, color, and clarity (1).  (ultraoligotrophic—very low nutrient content and productivity, and saturated with dissolved oxygen throughout its entire depth)	<i>Pollutant Loading Effects</i> —Secchi depths in deep water of lake	<i>Clarity</i> —annual average Secchi depth is at least 29.7 m	I
WQ-3. <i>Pelagic Lake Tahoe or Lake Phytoplankton Primary Productivity</i> —in deep waters	Mean productivity not exceeding 52 gC/m <sup>2</sup> /yr; <i>and</i> productivity not greater than 1967–1971 productivity, based on annual and seasonal averages	N -				III
WQ-4. <i>Tributary Water Quality</i> —concentrations of dissolved inorganic nitrogen, soluble phosphorus and iron constituents in streams for which suitable State standards exist; <i>and</i> suspended sediment concentration	Specified ranges of concentrations of dissolved inorganic nitrogen, soluble phosphorus, and iron; <i>and</i> suspended sediment less than 60mg/L for 90% of the time	N +		<i>Pollutant Loading Sources</i> —loads of fine sediment, nitrogen, and phosphorus from tributaries, stormwater, stream channel erosion, groundwater, and the atmosphere	<i>Pollutant Load Reductions</i> —determined by 2008 using the TMDL Process (including modeling) together with management strategies to determine pollutant reductions for achieving the clarity standards	

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
WQ-5. <i>Surface Runoff (Stormwater Quality)</i> —turbidity and concentrations of constituents defining water quality where runoff enters surface waters (2)	Specified maximum turbidity and concentrations of dissolved nitrogen, phosphorus, iron, suspended sediment, and grease & oil	N o				
WQ-6. <i>Groundwater (Stormwater Infiltration to Groundwater)</i> —turbidity and concentrations of constituents defining water quality where runoff enters infiltration sites to groundwater	Specified maximum turbidity and concentrations of total nitrogen, phosphorus, iron; and grease & oil (2)	N o				
WQ-7. <i>Other Lakes Water Quality</i> —physical parameters and concentrations of constituents defining water-quality in lakes for which State standards exist	State standards pertaining to Fallen Leaf Lake; <i>and</i> for other lakes, general surface water quality objectives	? o	<i>Human &amp; Environmental Health</i> —Water quality conditions in the Lake Tahoe Region protect human and environmental health (2)	<i>Water Quality Health Conditions Report</i> —summary of health-based water quality conditions for ground and surface waters	<i>Compliance</i> —compliance with established federal, state, and local standards	II
				<i>Index of Biological Integrity (IBI)</i> —to be determined by Fisheries Technical Working Group	<i>IBI Index</i> —see standards for IBI in <i>Wildlife &amp; Fisheries</i> section	II

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<b>Soil Conservation &amp; Stream Environment Zones (SEZs)</b>						
1982 Value Statements: ◦ Land coverage and disturbance shall not exceed the level of use an area can tolerate without sustaining permanent damage to the soil resource ◦ Onsite erosion and resultant sediment transport to basin surface waters shall be restricted to levels that will not result in water quality deterioration			Vision: <b>Soil resources</b> are conserved for the betterment of the environment and public. Soils function naturally, and land-use activities are assigned to suitable soils and landscape settings. Risks to life and property from natural hazards are reduced to acceptable levels. <b>SEZs</b> function at natural levels within the context of the watershed (i.e., SEZs function at natural capacities), and provide values commensurate with their functions. Societal and beneficial uses of SEZ such as water management, cultural and scientific purposes, limited agriculture, and recreation, are compatible with the naturally functioning conditions of SEZ lands.			
SC-1. <i>Impervious Coverage</i> —additional land coverage by parcel for projects	Impervious coverage complies with <i>Land Capability Classification of the Lake Tahoe Basin, California-Nevada, A Guide for Planning</i> (Bailey 1974).	N - (1)	<i>Land Coverage and Disturbance</i> - Land coverage, on a watershed basis, does not exceed the capability of the soil resources to offset the effects of impervious cover. The effects of impervious cover and disturbance (changes to infiltration, runoff detention capacity, and nutrient uptake capacities, and growing conditions) are fully mitigated	<i>Land Coverage</i> —acreage of land coverage by land capability class and watershed.	<i>Land Coverage</i> —land coverage, by land capability class on a watershed basis, shall not exceed the allowable percentage of impervious cover as specified in the appendix of <i>Land-Capability Classification of The Lake Tahoe Basin, California-Nevada</i> , as amended by the 2006 NRCS soil survey for the Lake Tahoe Basin.	I-III

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
SC-2. <i>SEZs</i> —area of naturally-functioning Stream Environment Zones	Preservation of naturally-functioning <i>SEZs</i> in their natural condition; <u>and</u> restoration of all disturbed <i>SEZs</i> in undeveloped, unsubdivided lands; <u>and</u> restoration of 25% of <i>SEZs</i> in disturbed, developed, or subdivided lands to obtain a 5% increase in 1982 area of naturally-functioning <i>SEZ</i> lands	N +	<p><i>SEZ Physical and Chemical Function</i>—<i>SEZ</i> physical and chemical processes function properly within the constraints and dynamics of the watershed, including, but not limited to, processes involving natural hydrology and water quality, and stormwater treatment capacity.</p> <p><i>SEZ Biological Function</i>—<i>SEZ</i> biological processes function properly within the constraints and dynamics of the watershed. Vegetation, terrestrial wildlife, and aquatic communities are healthy and sustainable.</p>	<p><i>SEZ Physical and Chemical Function</i>—natural functioning as indicated by acreages of <i>SEZ</i> restoration projects (Type I), <u>and</u> <i>SEZ</i> Hydrologic Function Index (Type III), <u>and</u> Stream/<i>SEZ</i> Condition Inventory (Type II), <u>and</u> Water Quality Index (Type III), <u>and</u> Stormwater Treatment Capacity Index (Type III).</p> <p><i>SEZ Biological Function</i>—natural functioning as indicated by <i>SEZ</i> Vegetation Condition Index (Type II), <u>and</u> Terrestrial Wildlife Habitat Index, <u>and</u> Aquatic Habitat Index. These indices are to be derived from the IBI results within the <i>Wildlife and Fisheries</i> section.</p>	<p><i>SEZ Physical, Chemical, and Biological Function</i>—Preserved, by enhanced or maintained existing naturally-functioning <i>SEZ</i> lands; <u>and</u> restoration of natural function to 1,100 acres of disturbed <i>SEZ</i> lands in zones designated as <i>disturbed, developed, or subdivided</i> lands in 1986, in accordance with local land and land-use conditions; <u>and</u> enhanced/restored natural function, consistent with land use plans and applicable regulations, on all disturbed <i>SEZ</i> lands outside of zones designated as <i>disturbed, developed, or subdivided</i> lands in 1986.</p>	I - III

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<b>Vegetation (proposed <i>Forest and Vegetation</i>)</b>						
1982 Value Statements: ◦ Provide for a wide mix and increased diversity of plant communities in the Tahoe Basin, including such unique ecosystems as wetlands, meadows, and other riparian vegetation ◦ Conserve threatened, endangered, and sensitive plant species and uncommon plant communities of the Lake Tahoe Basin			Vision: Vegetation in the Lake Tahoe Basin is healthy and dynamic with the full compliment of native plant communities, wildlife habitats, and ecological processes			
V-1. <i>Common Plant Communities</i> —diversity as measured by species richness, relative abundance, and spatial pattern	Increased diversity as measured by species richness, relative abundance and spatial pattern; <i>and</i> maintenance of existing number and abundance of habitat types, according to specified minimum extents; <i>and</i> limits on opening sizes and stand uniformity	N +	<i>Healthy Vegetation</i> —The full range of native species, development stages, habitats, and ecological processes occur.	<i>Healthy Vegetation</i> —Departure from historic vegetation structure	Achieve 3% reduction in departure from historical structure for each vegetation/forest type over 5-year evaluation period (historical structure is based on reconstructive vegetation structure studies adjusted for climatic and human-caused changes)	I

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
V-2. <i>Uncommon Plant Communities</i> —presence of characteristic species, and natural quality of uncommon communities	Non-degradation of any uncommon plant community, including but not limited to 4 specified community types	Y +	<i>Plant Communities of Concern</i> —The natural conditions and functions of plant communities of concern are sustained.	<i>Plant Communities of Concern</i> —Ecological Status Index	Ecological status maintained or improved at all monitored locations in an evaluation period	I
V-3. <i>Sensitive Plants</i> —Number of populations of 5 specified species	Maintenance of a specified minimum number of sites for each of the 5 specified species	N o	<i>Special Status Species</i> —Populations of native threatened, endangered, rare, special interest, or sensitive species found in the Region are maintained at sustainable levels.	<i>Special Status Plant Species</i> —conservation status (high, medium, or low priority)	Existing occurrences of high and medium priority species maintained	I
V-4. <i>Old Growth</i> —acreage of late-seral-stage forest vegetation	Attainment and maintenance of 55% of the forest in old-growth condition, with specified minimum contributions by elevational zone, computed by excluding urban areas and limiting valuation of forest lands within ~¼ mi of urban areas	N +	[covered by <i>Healthy Vegetation</i> and <i>Plant Communities of Concern</i> above]	--	--	--

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
--	--	--	<i>Hazardous Fuels</i> —Fuel conditions pose low wildfire risk to communities.	<i>Hazardous Fuels</i> —Predicted fire behavior	Predicted fire behavior in treated areas of urban and wildland-urban interface (WUI) zones does not exceed surface fire type (i.e., not predicted to become canopy fire).	I
<b>Wildlife &amp; Fisheries</b>						
1982 Value Statements: <ul style="list-style-type: none"> <li>◦ Maintain suitable habitat for all indigenous species of wildlife without preference to game or non-game species through maintenance of habitat diversity</li> <li>◦ Preserve, protect, and enhance habitats of special interest species</li> <li>◦ Preserve, enhance, and, where feasible, expand habitat essential for threatened, endangered, rare, or sensitive species found in the basin</li> <li>◦ Maintain or improve aquatic habitat essential for the growth, reproduction, and perpetuation of existing and threatened fish resources in the Lake Tahoe Basin</li> <li>◦ Diversions of surface and groundwater shall not exceed the limitations set by the California-Nevada Interstate Compact</li> <li>◦ Instream flow necessary for the identified beneficial uses such as recreation, fisheries needs, and aesthetics shall be achieved</li> </ul>			Vision: <p>Environmental conditions in the Lake Tahoe Basin support healthy and sustainable native terrestrial and aquatic animal populations and vegetation communities</p>			

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
F-1. <i>Lake Habitat</i> —acreage of undisturbed rocky substrate to 30’ depth, which is suitable for fish spawning, feed, and cover	Maintain not less than 1982 amount (5,948 ac of “excellent” habitat)	N +	<i>Biological Integrity of Aquatic Ecosystems</i> —Functional, physical, chemical, and biological integrity of the Region’s aquatic ecosystem is maintained at a sustainable level.	<i>Biological Integrity of Aquatic Ecosystems</i> —proportion of aquatic ecosystem component benchmarks met or exceeded within an evaluation period, as measured with various indices of biological integrity (IBI) and other relevant indicators	All benchmarks are met or exceeded within an evaluation period for each component, including streams, Lake Tahoe, wetlands, and small lakes  Note: Thresholds F-1 and F-2 remain in effect until this new threshold is developed and approved	II
F-2. <i>Stream Habitat</i> —miles of streams in specified habitat condition class	Maintain specified number of miles of stream habitat in each habitat condition class (excellent—75 miles; good—105 miles)	N +				
F-3. <i>Instream Flow</i> —valued according to a beneficial use assessment	No reduction in instream-flows until new standards are adopted	Y –				
F-4. <i>Lahontan Cutthroat Trout Reintroduction</i> —Number of Lahontan cutthroat trout populations in the Take Tahoe basin	One (a population restored)	Y +				



Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
W-1. <i>Special Interest Wildlife</i> —number of population sites and disturbance-free zones for TRPA-listed species (5 species and 2 species-groups)	Maintain specified number of population sites and disturbance-free zones for each species	N o	<i>Sustainability of Special Status Species</i> —Populations of, and environmental conditions and processes important to, native threatened, endangered, rare, special interest, or sensitive species are maintained at sustainable levels.	<i>Sustainability of Special Status Species</i> —proportion of special-status species that meet or exceed benchmarks within an evaluation period (as measured by presence/absence, abundance, productivity, and attribute indicators)	At least 20% of the benchmarks are met or exceeded within the 1 <sup>st</sup> 5-yr evaluation period, 40% by the 2 <sup>nd</sup> period, 60% by the 3 <sup>rd</sup> period, and 80% by the 4 <sup>th</sup> period.	II
W-2. <i>Habitats of Special Significance</i> —same as SC-2. <i>SEZs</i> —acreage of naturally-functioning stream environment zones	No reduction in naturally-functioning SEZs supporting deciduous trees, wetlands, and meadows; <u>and</u> provision of opportunities for some increase	N +	<i>Biological Integrity of Terrestrial Ecosystems</i> —Functional, physical, chemical, and biological integrity of the Region’s terrestrial ecosystem are maintained at or above a sustainable level.	<i>Biological Integrity of Terrestrial Ecosystems</i> —Proportion of terrestrial ecosystem component benchmarks met or exceeded within an evaluation period, as measured with a vertebrate IBI and other relevant indicators	All benchmarks are met or exceeded within an evaluation period for each component including montane, upper montane and sub-alpine vegetation zones.  Note: Threshold W-2 remains in effect until this new threshold is developed and approved.	II

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<b>Scenic Quality/Resources</b>						
1982 Values Statements: <ul style="list-style-type: none"> <li>◦ Maintain and enhance the dominant natural-appearing landscape for the vast majority of views and lands in the Basin</li> <li>◦ Maintain and/or improve the aesthetic characteristics of the man-made environment to be compatible with the natural environment</li> <li>◦ Restore, whenever possible, damaged natural landscapes</li> <li>◦ Maintain levels of lighting necessary for public health and safety, and in keeping with the unique environment of the Tahoe Basin</li> </ul>			Vision: The Lake Tahoe Basin is internationally recognized for its outstanding natural beauty and is a resource of national significance. Characteristic views within the Basin are of the natural appearing forest, meadows, mountains, and expansive blue lake. The built environment harmonizes with this natural appearing setting in a sustainable manner that supports a vibrant community and healthy economy			
SR-1. <i>Travel Route Rating</i> —rating of relative scenic quality seen from state and federal highways, Pioneer Trail, and the lake, using specified rating system	Maintain or improve 1982 travel route ratings (TRRs); <i>and</i> restoration of scenic quality in roadway units having TRRs below a specified value and in lake units having TRRs below another specified value	N +/- (2)	<i>Natural Environment</i> —Scenery viewed from Lake Tahoe and the Region’s major roadways, public recreation areas, trails, and urban centers predominantly displays natural-appearing forest, meadows, mountains, and the shoreline of Lake Tahoe. Development, where visible, complements the natural setting.	<i>Scenic Integrity</i> —Amount of visible development, its visual contrast, its level of dominance, and the number of viewpoints from which it is seen	<i>Scenic Integrity Levels</i> —Numerical scenic integrity levels assigned to each roadway and shoreline unit to achieve the desired conditions for scenic resources are maintained or achieved	I

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
SR-2. <i>Scenic Quality of Scenic Resources</i> —rating of relative scenic quality of specified scenic resources (e.g., natural features) visible from state and federal highways, Pioneer Trail, and the lake, using specified rating system	Maintain or improve 1982 ratings for each specified scenic resource	N +/- (2)		<i>Scenic Quality Ratings</i> —Measurements of scenic quality of natural landscape views of individual scenic resources that can be seen from travel routes, designated public recreation areas, and bike trails	<i>Scenic Quality Ratings</i> —Numerical ratings assigned each resource in the <i>Scenic Resources Inventory</i> and the 1993 <i>Lake Tahoe Basin Scenic Resource Evaluation</i> are maintained or improved	I
SR-3. <i>Scenic Quality from Recreation Areas and Bike Paths</i> —rating of relative scenic quality of specified resources visible from specified outdoor recreation areas and bike paths, using specified rating system	Maintain 1993 ratings of individual scenic resources	N -				
SR-4. <i>Community Design</i> —qualitative design quality of the built environment; <i>and</i> SR-1 Travel Route Ratings	Design elements of new, remodeled, and redeveloped buildings are compatible with the natural, scenic, and recreational values of the Region	N +	<i>Community Design</i> —Communities of the Lake Tahoe Region are planned and designed with aesthetic characteristics that respect local natural systems. Lake Tahoe’s built environment is diverse yet appropriate in scale and style. It helps foster the identity of individual communities and a sense of place.	<i>Community Design and Development Measures</i> —Implementation of applicable design and development measures: height, bulk, texture, form, materials, colors, lighting, signage, and siting	<i>Community Design Index Level</i> —Implementation of Development and Design Measures (listed under indicator, and other design elements) in new, remodeled, and redeveloped buildings, to be compatible with the natural, scenic, recreation, and community-desired visual values for the Region	II

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<b>Noise</b>						
1982 Values Statements: <ul style="list-style-type: none"> <li>◦ Reduce or eliminate those activities in the Basin that produce damaging or distressing noise levels</li> <li>◦ Provide for community and neighborhood tranquility</li> </ul>		Vision: Noise levels provide for community and neighborhood serenity, abundant quiet recreational areas, and are not harmful to wildlife				
N-1. <i>Aircraft Noise</i> —aircraft maximum noise levels measured as specified in the Lake Tahoe Airport Master Plan	Specified maximum noise levels in decibels at specified distances from aircraft for both arrivals and departures	N +	<i>Single-Event Noise Sources</i> —Single event noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.	<i>Noise Events</i> —Numbers of individual exceedances; <i>and</i> number of corrective actions taken, <i>and</i> percent of planned monitoring completed, with data compiled by category: on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft, airport aircraft, and non-airport aircraft (all type I except non-airport aircraft is type III)	<ul style="list-style-type: none"> <li>◦ On-Highway Vehicles—The current CA standard applied Region-wide, <i>and</i> a stationary exhaust standard for motorcycles</li> <li>◦ OHVs—The current CA standard applied Region-wide</li> <li>◦ Over-Snow Vehicles—73 db and/or equivalent standard</li> <li>◦ Watercraft—Same as current TRPA standards</li> <li>◦ Airport Aircraft—Same as existing</li> <li>◦ Non-Airport Aircraft—to be developed after 2008</li> </ul>	I, III

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
N-2. <i>Other Single Event Noise</i> —maximum noise levels of motorized equipment	Specified maximum noise levels in decibels at specified distances from boats, motor vehicles, motorcycles, ORVs, and snowmobiles traveling at specified speeds (or engine rpm)	N o				
N-3. Community Noise Equivalent Level (CNEL)—24-hr integrated, day/night weighted noise level	No increase in 1982 CNEL levels, <i>and</i> specified maximum CNEL for various land-use types, along specified roads, and at the South Lake Tahoe Airport	N o	<i>Cumulative Noise Levels</i> —Community noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.	<i>Cumulative Noise Levels</i> —Numbers of exceedances of 24-hour standards; <i>and</i> number of exceedances of 1-hour standards, for each land-use category and transportation corridor (type I and II, respectively)	24-hour standards same as existing, <i>and</i> hourly noise levels for each land use class and transportation corridor will be developed and proposed by 2008	I, II
			<i>Effects on Wildlife</i> —Noise levels are controlled to protect wildlife.	<i>Effect on Wildlife</i> —Further investigation of appropriate indicators will be done by wildlife experts after 2008.	Appropriate levels will be jointly developed by wildlife experts after 2008.	III

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<b>Recreation</b>						
1982 Values Statements: ◦ Maintain opportunities and facilities for the full spectrum of outdoor recreational uses to a socially acceptable level of concentration			Vision: The Lake Tahoe Basin’s unique natural, cultural, and human environments provide sustainable recreation opportunities consistent with public desires and natural resource capacities. Recreation is linked to irreplaceable natural assets, the regional economy, and social well-being			
R-1. <i>High Quality Recreational Experience</i> —Recreational user satisfaction levels and perceptions of recreation quality, <i>and</i> extent of preserved high quality undeveloped shoreline and other natural areas, <i>and</i> amount of additional lawful public access to Lake Tahoe and other natural features	Preserved or enhanced quality of the recreational experience; <i>and</i> preserved high quality undeveloped shoreline and other natural areas, <i>and</i> increased access to the shoreline and high quality undeveloped areas for low density recreation uses	N +	<i>Opportunity</i> —A spectrum of high quality recreation opportunities is provided, while sustaining Lake Tahoe’s natural setting as an outstanding recreation destination.	<i>Opportunity</i> —Quality of opportunities from recreation surveys (type I), <i>and</i> number of recreation opportunities (type I and II), <i>and</i> implementation of adopted recreation plans (type III)	<i>Opportunity</i> —Survey response demonstrates that majority of opportunity attributes indicate high-quality opportunities, <i>and</i> recreation providers appropriately respond when survey responses indicate that recreation quality does not meet desired conditions, <i>and</i> existing number of inventoried Tahoe resource-dependent public recreation facilities and opportunities is maintained, <i>and</i> 10% of the baseline number of facilities is improved or created every five years, <i>and</i> specific recreation providers identify their top priority projects that meet the desired condition from adopted recreation plans	I, II, III

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
					and pursue implementing 50% of their list during the plan period	
R-2. <i>Capacity Available to Public</i> —cumulative accounts of distribution of persons-at-one-time (PAOTs); <i>and</i> land acquisition for public recreation purposes; <i>and</i> facility development of non-PAOT projects	A fair share of total Basin capacity for outdoor recreation is available to the general public	Y +	<i>Access</i> —Additional high-quality access is provided to natural areas and the shorezone where lawful and feasible, consistent with desired resource conditions and user expectations.	<i>Access</i> —Availability of access to public land, shorezone, and trails (type I and II); <i>and</i> access quality from recreation surveys (type I)	<p><i>Access</i>—Quantity of land available for public recreation access is maintained or increased by:</p> <ul style="list-style-type: none"> <li>◦ continuing federal and State public land acquisition programs; target: 20,275 additional acres;</li> <li>◦ increasing public shoreline ownership to 50% for Lake Tahoe; target: 9,701 additional linear feet;</li> <li>◦ ensuring no net loss of shoreline that currently provides public or quasi-public access to Lake Tahoe; target 100% retained;</li> <li>◦ retaining all existing acreage associated with public rights-of-way and easements that provide access to public lands and waterways; target 100%</li> </ul>	I, II

**Comment [I1]:** The US Forest Service LTBMU does not agree with the survey method proposed or this standard, this is covered in the Technical Supplement for the Pathway Evaluation Report, but does not materially affect the analysis in this EA. See Forest Service letter of March 29, 2007 attached, and TRPA Recreation Response.

**Comment [I2]:** The LTBMU does not agree with this standard or having a standard, but it should not be interpreted to be focused any one acquisition agency and should not materially affect the analysis in the EA. See attached letter of March 29, 2007 and TRPA Recreation Response.

**Comment [I3]:** Same comment as above.

Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
					<p><del>retained;</del></p> <ul style="list-style-type: none"> <li>◦ building/designating/reconstructing new trails; targets 50 miles paved trails and 20 miles unpaved trails every 5 <del>years;</del></li> <li>◦ developing new trailheads or improving existing trailheads or newly serving them by public transit; target one every two years; <u>and</u> survey responses indicate that the majority of recreation access attributes indicate high quality access</li> </ul>	

**Notes:**

<sup>1</sup> **Specific notes for some indicators are shown in parentheses:**

(1) Additional interim targets or management indicators involving rate of implementation of capital improvement programs and best management practices were also tracked in prior threshold evaluations (e.g., WQ-2A and WQ-2B).

(2) An additional management indicator involving rate of implementation of best management practices was established at one time; however it was not associated with a standard and constituted a benchmarks or target.

<sup>2</sup> **Specific notes for some standards are shown in parentheses:**

(1) Standard indirectly addresses indicator.

(2) Where a direct and immediate hydraulic connection between ground and surface waters, defer to discharge standards for surface waters.

**Comment [14]:** Essentially same comment as above.

**Comment [15]:** Disclaimer for LTBMU in attached March 29, 2007 letter and TRPA Recreation Response.



Existing Values and ETCCs		Attainment & Trend <sup>3</sup>	Proposed Vision and ETCCs			Development Stage <sup>5</sup>
Indicator <sup>1</sup>	Standard <sup>2</sup>		Desired Condition <sup>4</sup>	Indicator	Standard	
<p><sup>3</sup> <b>2001 Attainment and Trend</b>  <u>Attainment Status:</u>                      Y = attainment                      N = non-attainment                      ? = unknown  <u>Trend of Resource Condition:</u>                      + = positive                      - = negative                      o = no apparent trend  <u>Specific Notes:</u>                      (1) All new projects since 1972 are in attainment, and pre-1972 excess land coverage is diminishing                      (2) TRRs of some rating units have increased while some have decreased.</p> <p><sup>4</sup> <b>Specific notes for some desired conditions are shown in parenthesis:</b>                      (1) The desired conditions for Human &amp; Environmental Health below also apply to tributary streams, and to the nearshore of Lake Tahoe for lake intakes, water contact recreation, and environmental health.                      (2) A variety of federal, state and local standards are in effect and apply to surface and groundwater for protection of human and environmental health.</p> <p><sup>5</sup> <b>Stage of Development</b>  <i>I</i> The indicator directly represents the condition with respect to the desired condition, has well established monitoring and analysis protocols and a historical dataset to show current condition. A measurable standard can be directly linked to the desired condition without further investigation.  <i>II</i> The indicator directly represents the condition with respect to the desired condition; monitoring and analysis protocols are established with minor adjustments potentially necessary; baseline or background information may be needed to establish a numeric level for current conditions. A measurable standard will directly link to the desired condition; however some additional investigation may be required to determine the appropriate measurable standard.  <i>III</i> The indicator is expected to represent the condition with respect to the desired condition; monitoring and analysis protocols and specific parameters may require further investigation to develop the indicator; baseline data may be needed to establish a numeric level for current conditions. Further analysis is required to develop a measurable standard that will directly link to the desired condition.</p>						

## Air Quality

### Vision

Air quality in the Lake Tahoe Region is healthful for residents, visitors, ecosystems, and supports excellent visibility.

### Desired Conditions

**Desired Condition 1—Visibility:** Visibility in the Lake Tahoe Region is at 2001–2003 levels or better.

**Desired Condition 2—Human and Environmental (Ecosystem) Health:** Air quality in the Lake Tahoe Region is healthy for humans and ecosystems.

### Proposed Threshold: Visibility (see Desired Condition 1)

#### Proposed Indicator

Number of days during which Region-wide and local light extinction measurements indicate that visible range standards are not met (Type I).

#### Proposed Standards

*Region-wide Visibility*—Light extinction calculated at Bliss State Park equivalent to 116 mi. of visible range for 50% of year and 72 mi. of visual range for 90% of year.

*Local Visibility*—Light extinction calculated at South Lake Tahoe equivalent to 58 mi. of visible range for 50% of year and 34 mi. of visible range for 90% of year; standards at other locations in the Region may be adopted once baseline monitoring data is available.

### Discussion

Visibility would continue be determined by light extinction, which allows calculation of visible range. Light extinction would be calculated by a formula based on particulate measurements and a relative humidity measuring device. The proposed indicator for visibility is the number of times the standards are exceeded at any monitoring station in the Region.

Different standards are proposed for Region-wide (regional) and local (sub-regional) visibility:

#### Regional Visibility

- Achieve a light extinction coefficient of  $21\text{Mm}^{-1}$  or less for 50% of the year (approximately equal to 116 miles).
- Achieve a light extinction coefficient of  $34\text{Mm}^{-1}$  or less for 90% of the year (approximately equal to 72 miles).

#### Sub-Regional Visibility

- Achieve a light extinction coefficient of  $42\text{Mm}^{-1}$  or less for 50% of the year (approximately equal to 58 miles).
- Achieve a light extinction coefficient of  $72\text{Mm}^{-1}$  or less for 90% of the year (approximately equal to 34 miles).

The above standards are to be measured using the protocol established by the TRPA. Attainment calculations will be made using three-year moving averages.

## **Proposed Threshold: Human & Environmental (Ecosystem) Health (see Desired Condition 2)**

### **Proposed Indicator 1**

*Human Health*—Number of exceedances of any health standard for carbon monoxide (8 hrs), ozone (1 hr), and particulate matter (both PM<sub>2.5</sub> and PM<sub>10</sub>) (Type I).

### **Proposed Standard 1**

*Human Health*—Zero exceedances of the most restrictive federal, California, or Nevada human health standards for ozone, CO, and particulate matter, which would be applied Region-wide.

### **Proposed Indicator 2**

*Environmental Health*—To be established as air pollutant impacts to ecosystems are identified (Type III).

### **Proposed Standard 2**

*Environmental Health*—To be established as air pollutant impacts to ecosystems are identified (after 2008).

## **Discussion**

### **General**

The indicator for human and environmental (ecosystem) health is the number of exceedances of any health standard for all pollutants of concern. For human health, pollutants of concern include ozone, carbon monoxide, and particulate matter. The pollutants of concern for ecosystem health have not been developed and will be proposed as soon as they become available. Although environmental health is recognized as an extremely important factor, due to limited information a new threshold to protect it cannot be proposed at this time. TRPA is awaiting the results of several studies of environmental health including acidification of lakes and vegetation damage from air pollutants. This new information will be considered in the adoption of any future standards.

The proposal is to modify measurements of the thresholds for both VMT and traffic volume (AQ-5 and AQ-7) and supplement them with standards based on reduction in emissions. The traffic-volume threshold was originally designed to measure the progress of CO attainment. However, because CO can be directly measured and TRPA has been unable to correlate CO levels with traffic volumes, deletion of this volume standard and indicator as currently written is proposed. In its place, TRPA recommends modifying the indicators and standards for CO as described in the *Carbon Monoxide* section below. Likewise, the VMT threshold was designed to measure nitrogen oxide and particulate matter emissions, but these also are not directly correlated to VMT. TRPA recommends modifying the indicators and standards for PM as described in the *Particulate Matter* section below, and for nitrogen oxides through an emissions standard and the *Pollutant Loading* indicator and standard in the Water Quality section.

TRPA is proposing to eliminate the atmospheric loading-of-the-lake air quality threshold at this time, because the reduction targets for nutrient loading levels from the 1973–1981 time period were never adequately quantified and no measurement protocols have been developed. Because no protocol for

measuring this indicator has been developed, the status of this indicator cannot be determined. For these reasons, TRPA is recommending that the standards and indicator be deleted until appropriate measurement techniques and loading values can be established.

### **Carbon Monoxide**

The proposed change is to modify indicators and standards for CO, and incorporate the threshold into a new *Human & Ecosystem Health* threshold (discussed below). The proposed indicator is the number of times the standards are exceeded at any monitoring station in the Region.

The indicator would be measured using the California Air Resources Board's (CARB's) methods and techniques for measuring carbon monoxide.

The proposed standards are:

- 8-hour average: 6 parts per million (ppm), not to be equaled or exceeded throughout the Region, and
- 1-hour average: 20 ppm, not to be exceeded throughout the Region.

### **Ozone**

The proposed indicators are the number of times the new standards are exceeded at any monitoring station in the Region. The indicators would be measured using CARB's methods and techniques for measuring ozone.

The proposed standards are:

- 8-hour average: 0.07 ppm, not to be equaled or exceed throughout the Region, and
- 1-hour average: 0.09 ppm, not to be equaled or exceed throughout the Region.

### **Particulate Matter**

The proposed indicators are the number of times the standards are exceeded at any monitoring station in the Region.

The proposed standards are:

#### PM<sub>10</sub>

- highest 24-hour average<sup>1</sup>: 50 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ )
- annual arithmetic mean<sup>1</sup>: 20  $\mu\text{g}/\text{m}^3$

#### PM<sub>2.5</sub>

- highest 24-hour average<sup>2,3</sup>: 25  $\mu\text{g}/\text{m}^3$
- annual arithmetic mean<sup>1</sup>: 12  $\mu\text{g}/\text{m}^3$

<sup>1</sup> Measured using the California Air Resources Board's (CARB's) methods and techniques for measuring PM.

<sup>2</sup> Measured using the U.S. EPA's methods and techniques for measuring PM.

<sup>3</sup> This standard is currently proposed by the CARB and if adopted would automatically apply Region-wide.

## Water Quality

### Vision

Exceptional water quality provides restored clarity, environmental and human health, and human enjoyment of Lake Tahoe waters.

### Desired Conditions

**Desired Condition 1—Lake Clarity:** Restore, and then maintain the waters of Lake Tahoe for the purposes of human enjoyment and preservation of its ecological status as one of the few large, deepwater, ultraoligotrophic<sup>1</sup> lakes in the world with unique transparency, color, and clarity.

**Desired Condition 2—Human & Environmental Health:** Water quality conditions in the Lake Tahoe Region protect human and environmental health.

### Proposed Threshold: Lake Tahoe Clarity (see Desired Condition 1)

#### Proposed Indicator 1

*Pollutant Loading Sources*—target for reducing loads of fine sediment, nitrogen, and phosphorus from tributaries, storm water, stream channel erosion, groundwater, and the atmosphere (Type III).

#### Proposed Standard 1

*Pollutant Load Reductions*—Determined by 2008 using the TMDL Process (including modeling) together with management strategies to determine pollutant reductions for achieving the clarity standards.

#### Proposed Indicator 2

*Pollutant Loading Effects*—Secchi depths in deep water of lake (Type I).

#### Proposed Standard 2

*Clarity*—As measured by annual average, Secchi depth is at least 29.7 m.

#### Proposed Indicator 3

*Pollutant Loading Effects*—Nearshore (shallow) clarity (Type II) and aesthetic quality (Type III).

#### Proposed Standard 3

*Clarity*—Appropriate nearshore clarity and aesthetic standard(s) to be developed after 2008; WQ-1 remains applicable in the interim.

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<sup>1</sup> Ultraoligotrophic - very low nutrient content and productivity, and saturated with dissolved oxygen throughout its entire depth.

## Discussion

### Pollutant Loading Sources

The proposed thresholds are based on the need for changes in indicators and standards to better reflect current scientific understanding of primary sources of pollutants causing reduced clarity and with current or developing management strategies. Proposed Indicator 1 and Standard 1 are more consistent with the approach for the Lake Tahoe TMDL than the existing concentration-based standards, focusing on pollutant loads from a combination of sources to achieve the clarity target, and are more directly linked with the scientific tools being used to assess management strategies (watershed and lake clarity models).

For the purpose of achieving lake clarity, Indicator 1 would replace the existing separate indicators and concentration standards for tributary streams (WQ-4), storm water runoff (WQ-5), and storm water infiltration to groundwater (WQ-6), which cannot be as directly linked to lake clarity effects by the current scientific tools. This change also ensures that threshold standards and indicators will be consistent with the developing TMDL, but standards cannot be established until the TMDL process results in specific load reduction targets or allocations (anticipated in 2008).

In addition to the need to better reflect current science and management strategies, the change will replace, for the purpose of protecting lake clarity, existing concentration-based standards that are currently inconsistent between jurisdictions.

### Deep-Water Clarity

The first proposed change is to use the annual average Secchi depth as the single indicator and basis for a standard, replacing the December–March seasonal average indicator and standard (WQ-2). This change would not eliminate winter seasonal data collection, but would integrate data from all seasons in a single standard. This change is consistent with current scientific tools such as the Lake Clarity Model.

The winter average metric was chosen in 1982 because the greatest decrease in clarity from historical data was illustrated by the winter seasonal average. However, general long-term trends in the winter seasonal and annual average data are similar, and use of the annual average allows a single standard to be adopted with reasonable confidence that it reflects desired conditions over a range of seasonal conditions. The historical reference period that will be used for annual average standard is the same as that currently used for the winter average indicator, and thus reflects the same historical conditions as the basis for the standard.

The second recommended change is to eliminate phytoplankton primary productivity as a threshold (WQ-3) and rely on the Secchi depth (Proposed Indicator 2 and Standard 2) for lake clarity. This change is consistent with the current TMDL approach of managing pollutant loads to achieve the clarity objective, and with current scientific tools that use pollutant load inputs to assess biological (e.g., chlorophyll-a) and physical (e.g., fine sediment) parameters as components of lake clarity predictions.

The TMDL load-reduction management standards will include the reduction of algal nutrient (nitrogen and phosphorus) loading to Lake Tahoe, which will be required for the reduction of algal productivity to reach the Secchi depth standard.

### Nearshore Clarity

The proposed change includes: 1) an interim period in which the existing turbidity standard is essentially retained but measurements are made at lower depth; and 2) development, after 2008, of a revised threshold for nearshore clarity that is intended to create a more protective indicator and standard(s) and better reflect the desired conditions for aesthetic quality.

The existing threshold (WQ-1) is in attainment, but aesthetic quality is not adequately protected by this standard. Based on previous studies and data (e.g., Taylor 2004), TRPA is aware that establishing numeric “not-to-exceed” values for turbidity and/or periphyton biomass will be difficult because of the

high variability of the nearshore conditions and the range of factors involved in aesthetic quality. Additional study is therefore required to support the development of appropriate indicators and standards, which may incorporate various forms of turbidity or transparency measurements, periphyton biomass or presence, and visible pollutant parameters. The Pathway target date for this evaluation and development of proposed changes is after adoption of the Regional Plan update, currently scheduled for 2008. In the interim, the proposed change is to continue using the existing turbidity standards but monitor turbidity in the shallower nearshore zone up near 2 meters depth, rather than at the current 25 meter contour.

During this period, TRPA will also support a research program leading to recommendations for new indicators/standards for nearshore clarity and aesthetics.

Future management standards and other standards would likely need to reflect these threshold changes to be developed, TMDL reductions to be developed for fine sediment and nutrients, and ongoing implementation of TRPA's EIP for load reduction.

## **Proposed Threshold: Human & Environmental Health (see Desired Condition 2)**

### **Proposed Indicator 1**

*Water Quality Health Conditions Report*—summary of health-based water quality conditions for ground and surface waters (Type II)

### **Proposed Standard 1**

*Water Quality Compliance*—Compliance with established federal, state, and local standards.

### **Proposed Indicator 2**

*Index of Biological Integrity (IBI)*—to be determined by Fisheries Technical Working Group (Type II). See *Wildlife and Fisheries, Proposed Threshold: Biological Integrity of Aquatic Ecosystems* below.

### **Proposed Standard 2**

*IBI Index*—See standards for aquatic ecosystems IBI in *Wildlife and Fisheries* section.

## **Discussion**

The proposed change reflects the need to separate lake clarity-related thresholds from those for human and environmental health, adding a threshold that addresses these subjects directly. Proposed Indicator 1 and Standard 1 are intended to attain the desired condition that water quality conditions in the Lake Tahoe Region (other than those for Lake Tahoe clarity) protect human health and environmental health. The human health aspect involves two beneficial uses in particular, drinking water supply and water contact recreation. The indicator for protection of human health is a periodic *Water Quality Health Conditions Report*—a summary of health-based water quality information and data from Tahoe Region ground and surface water. The Compact requires the attainment of Federal, State, and local water quality standards, and those that are not directly related to Lake Tahoe clarity would fall under the new *Human and Environmental Health Threshold*.

The standard for this indicator complies with established Federal, state, and local health-based and toxicity water quality standards and regulations. The change does not change existing regulatory standards, but is intended to improve comprehensive communication and awareness of these standards.

The indicator for environmental health is *Biological Integrity of Aquatic Ecosystems*, as measured by various IBIs for comparison against benchmarks for particular types of water bodies and ecological systems. IBIs are being developed for aquatic systems (lakes and streams) by the Fisheries Resource Group. The standards will be developed for specific stream segments and other water bodies, based on ecological types or classes. The IBI will be an integrated indicator rather than a water quality indicator *per se*, but may incorporate physical or chemical water quality parameters (e.g., dissolved oxygen, temperature, suspended sediment, etc.) for some classes of water bodies where these are key environmental health or habitat suitability indicators.

This indicator and standard are anticipated to be developed in 2007 and, if adopted then, would take effect with the adoption of the Regional Plan Update (currently anticipated in fall 2008). In the interim, existing thresholds F-1 and F-2 remain in effect, but these have little implication for water quality.

The proposed change also involves redirecting the goals of the *other lakes* threshold (WQ-7), by incorporating consideration of the human and environmental health of these water bodies in Indicator 1 and particularly in Indicator 2 described above. The Pathway proposal for these other lakes is that their water quality be evaluated in terms of environmental health for water quality with IBIs suitable to their individual ecology.

## Soil Conservation and Stream Environment Zones

### Vision

*Soil resources* are conserved for the betterment of the environment and public. Soils function naturally, and land-use activities are assigned to suitable soils and landscape settings. Risks to life and property from natural hazards are reduced to acceptable levels.

*SEZs* function at natural levels within the context of the watershed (consistent with natural watershed capacity), and provide values commensurate with their functions. Societal and beneficial uses of SEZ such as water management, cultural and scientific purposes, limited agriculture, and recreation, are compatible with the naturally functioning conditions of SEZ lands.

### Desired Conditions

**Desired Condition 1—Land Coverage and Disturbance.** Land coverage, on a watershed basis, does not exceed the capability of the soil resources to offset the effects of impervious cover. The effects of impervious cover and disturbance are fully mitigated

**Desired Condition 2—SEZ Physical, Chemical and Biological Functioning.** SEZ physical and chemical processes function properly within the constraints and dynamics of the watershed, including, but not limited to, processes governing natural hydrology, water quality, and stormwater treatment capacity. Vegetation, terrestrial wildlife, and aquatic communities are healthy and sustainable.



## Proposed Threshold: Land Coverage and Disturbance (see Desired Condition 1)

### Proposed Indicator

*Land Coverage and Disturbance*—Acreage of land coverage by land capability class and watershed (Type I)

### Proposed Standard

*Land Coverage and Disturbance*—Land coverage, by land capability class on a watershed basis, not exceeding the allowable percentage of impervious cover as specified in the appendix of *Land-Capability Classification of The Lake Tahoe Basin, California-Nevada*, as amended by the 2006 NRCS soil survey for the Lake Tahoe Basin.

### Discussion

The desired condition expresses a goal that soils subjected to partial covering by development, when examined on a watershed basis (rather than only at the Tahoe Region scale), maintain sufficient functioning to absorb the effects of impervious cover. Those effects include, but are not limited to, increased runoff and erosion, increased transport of small particle sizes, decreased ground water recharge, and increased pollutant-and organic-matter transport. The desired condition includes a goal that such effects are fully mitigated at the watershed scale.

Drainage patterns play a significant role in mitigating the effects of impervious cover—lands adjacent to or downslope of impervious cover may provide opportunities for attenuating or eliminating the effects of increased runoff and erosion, and transport of pollutants, while other pervious areas in the watershed may not. Thus, there is a need for soil conservation and storm water planning on a smaller scale to effectively mitigate the effects of impervious cover in a watershed as a whole. Factors that influence such planning include natural and artificial drainage patterns, jurisdictional boundaries (such as USFS land boundaries), connectivity to common outlets or watercourses for storm water, comparable land use(s), and/or implementation funding and phasing. It is intended anticipated that local jurisdictions (cities, counties) and state and federal land managers would be the primary entities performing this planning work, although private property owners might also participate individually or as groups for the purposes of redevelopment, BMP compliance, and environmental restoration.

The proposed land coverage threshold is a modification of the existing threshold which states impervious cover shall comply with the *Land Capability Classification of the Lake Tahoe Basin, California-Nevada, A Guide to Planning* (Bailey 1974). The Bailey document utilized the 1974 soil survey for many aspects of the land capability classification system, and assigned allowable coverage for specific soil types. The proposed changes reflect two primary needs: 1) use of updated soils information from the 2006 NRCS Soil Survey for the Lake Tahoe Basin (USDA Natural Resources Conservation Service 2006), and 2) application of coverage limits on a watershed scale to more effectively track and mitigate the effects of impervious cover.

Compared to the 1974 survey, the 2006 soil survey provides increased accuracy and greater detail based on utilization of modern soil science standards. These changes are expected to reduce differences between predicted soil characteristics based on the soil survey and field-verified conditions at specific sites, which currently cause difficulties in threshold application. Implementation of the proposed threshold would require incorporating the 2006 soil survey into the appendix and related tables of the Bailey document, and would result in changes, on a Tahoe Region scale, in the amount of land in various

capability classes (Scoles pers. comm.). This approach utilizes an obsolete definition of "hydrologic soil group" to avoid having a fundamental change in the way land capability classes are defined. In general, the application of the new soil survey is expected to adjust upward the acreage of higher capability classes (Land Capability Classes 4 through 6) and adjust downward the acreage of lower capability classes (Land Capability Classes 1 through 3). These adjustments or revisions vary by land use type, and much of the data shift in higher capability land is in the conservation and recreation land-use classes, which are primarily public lands. Preliminary estimates for higher capability lands indicate a revised estimate of approximately 900 acres more in coverage on residential lands in the Region, and relatively small revisions on commercial/public service (less than 30 acre increase) and tourist (less than 30 acre decrease) lands. These revisions only reflect the improved knowledge of the soil resource, not the actual amount of coverage that is determined on a site-specific basis.

Attainment of the new threshold would require meeting impervious coverage limitations on a watershed basis rather than solely at the Tahoe Region scale. At a Region scale, coverage in land classes 1A, 1C, 3, 4, 5, and 6 is currently less than the allowable Bailey coverage, and excess coverage in other classes (1B, 2, and 7) is generally because of coverage that existed prior to adoption of the Bailey system. However, analysis at the watershed scale shows that allowable coverage in each land capability class is exceeded in at least one watershed, and in many watersheds for some capability classes. For example, coverage on Class 4 lands Region-wide is currently 9 %, versus an allowable 20 % at the Region scale, but allowable coverage percentages on Class 4 lands are exceeded in 11 watersheds. Evaluation at the watershed scale is likely to focus more attention on pre-1972 excess coverage than the existing threshold.

An associated management standard (not part of the threshold) is proposed to require preparation of soil conservation/stormwater plans that would be implemented by cities and counties at a sub-watershed or catchment scale. At this scale, the relationship between impervious coverage, areas with natural or restored soil function, and the effectiveness of BMPs to reduce pollutant loads and transport can be better assessed. These plans would also be expected to provide an effective management tool for areas with pre-1972 excess coverage. Additional management standards are proposed for urban soil function and forest soil function. These standards are expected to complement soil conservation and storm water planning.

## Proposed Threshold: SEZ Physical, Chemical and Biological Function (see Desired Condition 2)

### Proposed Indicator

*SEZ Physical and Chemical Function*—Natural functioning as indicated by acreages of SEZ restoration projects (Type I), SEZ Hydrologic Function Index (Type III), Stream/SEZ Condition Inventory (Type II), Water Quality Index (Type III), and Stormwater Treatment Capacity Index (Type III).

*SEZ Biological Function*—Natural functioning as indicated by SEZ Vegetation Condition Index (Type II), Terrestrial Wildlife Habitat Index, and Aquatic Habitat Index. These indices are shown in the *Wildlife and Fisheries* section.

### Proposed Standard

*SEZ Physical, Chemical, and Biological Functioning*—Preserved, enhanced, and maintained existing naturally-functioning SEZ lands; and restoration of natural function to 1,100 acres of disturbed SEZ lands in zones designated as *disturbed, developed or subdivided* land in 1986; and enhanced and/or restored natural function, consistent with land use plans and applicable regulations, on all disturbed SEZ lands outside of zones designated as *disturbed, developed, or subdivided* lands in 1986.

**Comment [16]:** Response to LTBMU SEZ comment not required, this language is more flexible than what was proposed in March 29, 2007 letter. The use of "consistent" allows for a minor degree of flexibility; whereas "in accordance" infers literal compliance.

## Discussion

Two of the three desired conditions for SEZs add depth and specificity to the meaning of “natural function” with respect to preservation and restoration of SEZ lands. In particular, the desired conditions identify physical, chemical and biological attributes and processes as the basis for evaluating the success and value of SEZ preservation and restoration.

The proposed change maintains the use of SEZ acreage restored as a primary indicator, but adds indicators needed to establish the basis for considering what constitutes SEZ restoration and natural physical, chemical, and biological functions. In particular, the indicator for SEZ hydrologic function (an index) incorporates multiple SEZ functions that are considered valuable for defining “natural function.” The indicators for stream/SEZ condition inventory, water quality index, terrestrial wildlife habitat index, and fish and wildlife index are important to defining “natural function” and are to be used by two other resource areas (water quality, fish and wildlife). The multiple index and inventory indicators and standards are not yet developed.

The proposed SEZ threshold standard would modify the existing threshold standard which is “Preservation of naturally-functioning SEZs in their natural condition; and restoration of all disturbed SEZs in *undeveloped, unsubdivided lands*; and restoration of 25% of SEZs in *disturbed, developed, or subdivided lands* to obtain a 5% increase in 1982 area of naturally-functioning SEZ lands.”

The proposed change involves modifying the first part of the existing standard by adding “enhance and maintain” to infer necessary management of SEZs already having proper function. The second part of the existing standard would also be modified with “enhance” and the phrase “consistent with local land and land-use conditions.” This latter phrase recognizes that flexibility is necessary in setting appropriate focus for restoration of SEZs. For example, restoration of SEZ lands in roadless areas may have a different emphasis than restoration of an SEZ situated adjacent to a residential neighborhood that receives treated stormwater and more intensive recreational use. Local land conditions, including land use and regulatory conditions, are factors in establishing targets for restoration of SEZ physical, chemical, and biological functions that are not recognized in the current threshold. The second and third parts of the existing standard would be modified to refer consistently to SEZs inside and outside of 1986 mapping of *disturbed, developed, or subdivided lands*.

Lastly, the third part of the existing standard would be modified in two ways: 1) the 25% restoration target would be replaced with 1,100 acres; and 2) the phrase “to obtain a 5% increase in 1982 area of naturally-functioning SEZ lands” would be eliminated. The 1,100 acres is estimated to be equivalent to the 25% restoration target based on 1986 mapping of *disturbed, developed, and subdivided lands*, but provides a more definite metric. Approximately 400 acres of the 1,100 total has been restored since 1986 (TRPA 2006a). This change would avoid potential confusion from different interpretations of historical conditions.

## Forests and Vegetation

### Vision

Vegetation in the Lake Tahoe Region is healthy and dynamic with the full compliment of native plant communities, wildlife habitats, and ecological processes.

## Desired Conditions

**Desired Condition 1—Healthy Vegetation:** A full range of native species, development stages, habitats, and ecological processes occur.

**Desired Condition 2—Plant Communities of Concern:** The natural conditions and functions of plant communities of concern are sustained.

**Desired Condition 3—Special Status Species:** Populations of native, threatened, endangered, rare, special interest or sensitive species found in the Region are maintained at sustainable levels.

**Desired Condition 4—Hazardous Fuels:** Fuel conditions pose low wildfire risk to communities.

## Proposed Threshold: Healthy Vegetation

### Proposed Indicator

*Healthy Vegetation*—Departure from historic vegetation structure (Type I).

### Proposed Standard

Achieve 3% reduction in departure from historical structure for each vegetation/forest type over each 5-year evaluation period. Historical structure studies were not adjusted for climatic changes.

## Discussion

In the past five years the Forest Service has completed several research projects under the EIP to determine past and present vegetation patterns in the Region. These include developing a regional model for potential natural vegetation (PNV) of the Region; establishing baseline information on natural fire history and vegetation conditions in the Region; and evaluating the density, distribution, and dynamics of vegetation species in the Lake Tahoe Region. These efforts have resulted in refined maps of historic vegetation patterns by watershed. Use of this information would allow for a more geographically explicit approach to restoring historic vegetation patterns, including the extent of old growth, as restoration efforts will be focused at the watershed level.

The proposed *Healthy Forest Ecosystem* standard would use the results of the Forest Service research to revise the targets for the relative abundance of common plant communities. Because the same methods and data would also be used to set targets for late seral/old growth ecosystems, the standard proposes to combine the current *Common Vegetation* and *Late Seral/Old Growth Ecosystems* standards under a single standard. This proposed standard would use an indicator of departure from historical vegetation structure for all vegetation types. The proposed standard would cover all vegetation types, not just those specified under the current standards. The proposed standard would be to achieve 3% reduction in departure from historic structure for each vegetation/forest type over a 5-year evaluation period.

Implementing this standard may be impeded by the difficulty accessing steep terrain and areas without roads adequate for effective implementation of forest-structure restoration. Most of the needed forest treatments would be hand treatments where understory trees up to 14 inches dbh are cut.

These proposed changes will apply to lands outside of urban areas.

## Proposed Threshold: Plant Communities of Concern

### Proposed Indicator

*Plant Communities of Concern*—Ecological Status Index (Type I).

### Proposed Standard

Ecological status maintained or improved at all monitored locations in an evaluation period.

### Discussion

Renaming of the *Uncommon Plant Communities* threshold to *Plant Communities of Concern* reflects the proposed change in coverage from a few, site-specific examples of uncommon plant communities to all occurrences of those communities in the Tahoe Region and the addition of other uncommon plant communities that were previously not included under the current standard. The current standard for non-degradation of uncommon plant communities relies on a subjective visual determination by a resource specialist. The proposed standard would institute a quantitative assessment of the vegetation, soils, geomorphology, hydrology, and other relevant habitat features to monitor trends in these plant communities, which would provide a better method for tracking and assessing changes and the factors responsible for changes.

The monitoring protocols would be specific to each plant community, and changes would be assessed relative to baseline data. Existing data for six threshold locations (all but deepwater plants), as well as that which has been collected at 48 meadow locations around the Region, would provide the foundation for establishing a baseline for assessing the relative health and trend of these uncommon plant communities. Monitoring data would be collected every 5 years.

## Proposed Threshold: Special Status Species

### Proposed Indicator

*Special Status Plant Species*—conservation status (high, medium, or low priority) (Type I).

### Proposed Standard

Existing occurrences of high and medium priority species maintained.

### Discussion

Special status plant species include those that are listed as *threatened*, *endangered*, *proposed* or *candidate* species for listing under the Endangered Species Act (ESA) of 1973; species that are state listed under the Native Plant Protection Act (NPPA) of 1977, the California Endangered Species Act (CESA) of 1984 or Nevada Revised Statutes (NRS); species that are included on Forest Service lists of *species of concern* or *species of interest* pursuant to the 2004 National Forest planning rule; and species currently included on TRPA's *threshold species* list. Species in these categories have been identified as *special status species* because of their rarity, endangerment, and limited geographic distribution. They may also be considered *unique* according to both ecological and cultural criteria based on their inherent value and contribution to biological diversity. Some rare plant species occur in equally sensitive ecosystems, such as fens or cushion plant communities, but others may occur in habitats that are not considered uncommon or unique.

Because of the ecological and biodiversity values inherent in special status plant species, it is important that special management be instituted to ensure the long-term persistence and sustainability of these taxa. The concept of *sustainability* refers to the dynamic ability of a species to adapt to natural and human disturbances while continuing to survive under a variety of conditions. The special status plant species in the Lake Tahoe Region are found across the entire ecological and elevation gradients from the shores of the lake itself to the highest peaks. Conserving and enhancing these species and their habitats is critical to the overall environmental integrity of the Lake Tahoe Region. The special status species list may change as the taxa are evaluated over time. Survey protocols, data collection and evaluation procedures, and database management would be refined for the species deemed to be the highest conservation priorities.

The following changes to the Tahoe yellow cress threshold are based on the relationship between the mean number of occupied Tahoe yellow cress sites and lake elevation for the years 1979–2003 (Table 4). Although requiring the presence of a greater number of sites during low water years more closely fits the parameters outlined to prevent extinction in the *Tahoe Yellow Cress Conservation Strategy* (Pavlik et al. 2002), there are often only 13 sites that persist when the lake elevation is between 6,227 and 6,228 feet.

**Table 4.** Proposed Number of Tahoe Yellow Cress Threshold Sites Based on the Relationship Between the Number of Occupied Sites and Lake Level

Lake Elevation (feet)	Number of proposed threshold sites
≤ 6,222	26
6,223	24
6,224	21
6,225	19
6,226	17
6,227	14
≥ 6,228	12

## Proposed Threshold: Hazardous Fuels

### Proposed Indicator

*Hazardous Fuels*—Predicted fire behavior (Type I).

### Proposed Standard

Predicted fire behavior in treated and maintained areas of urban and WUI zones does not exceed *surface-fire type* (i.e., ground-initiated fire would not be predicted to become canopy fire). The predicted surface-type fire would be modeled based on moderate fire-weather conditions.

### Discussion

Fire is fundamentally essential for healthy, sustainable forest resources in the Sierra Nevada and the protection of human communities. Vegetation in the urban setting is, for all practical purposes, no different than the vegetation in the wildlands. The only exception is when high tree density and heavy fuel loads are present; in these situations the urban vegetation and fuels have the potential to threaten

communities with catastrophic consequences. The public has expressed a concern over the high amounts of hazardous fuels in WUIs. A new threshold is needed to address this concern, which would need to prioritize removal of hazardous fuels that present a threat to lives and property.

The desired condition is for fuel conditions to pose a low wildfire risk to communities. The proposed indicator is predicted fire behavior and the proposed standard is to achieve 90% probability that predicted fire behavior in treated areas of urban and WUI zones would be limited to surface fire rather than involve the forest canopy.

Tree and surface fuel treatments in the urban, WUI, and wildland zones will require three types of treatment:

- an initial mechanical or hand treatment aimed at removing and/or reducing understory growth and surface fuel accumulations;
- a follow-up prescribed fire to reintroduce fire into the ecosystem; and
- maintenance treatments as the stand grows and fuels continue to accumulate that will serve as surrogates for the role of wildfire.
- Removal of live and dead fuels alone will not substitute for the essential ecological function of fire.

## Wildlife and Fisheries

### Vision

Environmental conditions in the Lake Tahoe Region support healthy and sustainable native terrestrial and aquatic animal populations and vegetation communities.

### Desired Conditions

**Desired Condition 1—Biological Integrity of Terrestrial Ecosystems:** The functional, physical, chemical and biological integrity of the Region's terrestrial ecosystem are maintained at or above a sustainable level.

**Desired Condition 2—Sustainability of Special Status Species:** Populations of, and environmental conditions and processes important to, native threatened, endangered, rare, special interest, or sensitive species are maintained at sustainable levels.

**Desired Condition 3—Biological Integrity of Aquatic Ecosystems:** The functional, physical, chemical, and biological integrity of the Region's aquatic ecosystem is maintained at a sustainable level.

### Proposed Threshold: Biological Integrity of Terrestrial Ecosystems (see Desired Condition 1)

#### Proposed Indicator

*Biological Integrity of Terrestrial Ecosystems*—Proportion of terrestrial ecosystem component benchmarks met or exceeded within an evaluation period, as measured with a vertebrate IBI and other relevant indicators (Type II).

### Proposed Standard

All benchmarks are met or exceeded within an evaluation period for each component including montane, upper montane, and sub-alpine vegetation zones.

Note: Threshold W-2 remains in effect until this new threshold is developed and approved.

### Discussion

The existing threshold for terrestrial ecosystem uses habitat acreage metrics to monitor the condition and health of riparian habitats (W-2) in the Tahoe Region. The proposed threshold would use alternative wildlife IBIs to monitor the functional, physical, chemical and biological condition of terrestrial ecosystems in the Region (Table 5).

**Table 5.** Components of Proposed Thresholds for Wildlife and Fisheries

Threshold	Component	Diagnostic Indicator(s)
Biological Integrity of Terrestrial Ecosystem	Montane Vegetation Zone	Bird Index of Biological Integrity (B-IBI), based on bird community characteristics
	Upper Montane Vegetation Zone	
	Subalpine Vegetation Zone	
Sustainability of Special Status Species	List of Special Interest Species (each assigned to appropriate diagnostic indicator)	Productivity Abundance Presence/Absence
	Biological Integrity of Aquatic Ecosystems	Streams
Man-made Barriers Removed Stressor Monitoring Flow Regime Waterbird Index of Biological Integrity (W-IBI) Herpetological Index of Biological Integrity (H-IBI)		
Wetlands		Biological Pollution Index Stressor Monitoring Groundwater Level Zooplankton Assemblage Biological Pollution Index
		Lake Tahoe
Small Lakes		
		All Aquatic Components



Threshold	Component	Diagnostic Indicator(s)
	Wetland/Meadow/Riparian/Aspen	Area of wetland/meadow encroached by conifer and other undesirables.

As currently formulated, the proposed diagnostic indicator for the terrestrial ecosystem threshold is the *Bird Index of Biological Integrity* (B-IBI), with applicable habitat attribute indicators. This index is based on metrics of abundance and species richness (number of species) of indicator birds and functional bird species groups in the Region (Table 6).

**Table 6.** Terrestrial IBI Diagnostic and Attribute Indicators

Indicator Name	Data Description	Indicator Type*
<b>Diagnostic Indicators</b>		
Montane Vegetation Zone (Jeffrey Pine) B-IBI	A multi-metric indicator that uses bird species presence and abundance to determine biological condition of the Jeffrey pine zone.	II
Upper montane (Mixed conifer) B-IBI	A multi-metric indicator that uses bird species presence and abundance to determine biological condition of the mixed conifer zone.	II
Subalpine Zone (Lodgepole pine/subalpine) B-IBI	A multi-metric indicator that uses bird species presence and abundance to determine biological condition of the lodgepole pine/subalpine zone.	II
<b>Attribute Indicators</b>		
Snag/Woody Debris Index	Tons of large diameter coarse wood debris/acre, number of large diameter snags/acre	II
Terrestrial Habitat Stressor Indicators	Road density, recreation distribution and intensity, number of observations of uncontrolled pets.	II
Landscape Configuration/Patch Dynamics—level of habitat connectivity within Region and outside	Area-to-edge ratio, length and width of undeveloped wildlife corridors, the amount and configuration of structure, and stand development stages.	II
Habitat Diversity	Number and extent (acres) of different terrestrial habitat types meeting reference criteria, using the California Wildlife Habitat Relationships system	I
Special Habitat Types	Number and extent (acres) of special habitat types (e.g., old growth, caves, talus) meeting reference criteria	II

The species selected for use in the B-IBI determination include those whose occurrence and abundance show significant statistical correlation with development in the Region (Table 7). The species groups selected all showed consistent, measurable relationships (declines [intolerant] or increases [tolerant] in abundance or species richness) with development, and all had identifiable common ecological functions. Table 7 shows the final metrics included in the B-IBI and their association with development. These metrics, when referenced to optimal levels in natural environments, provide direct (not surrogate) empirical measures of the relative status of key biological components of the terrestrial ecosystem in the

Region. Collectively, they allow accurate monitoring of the integrity of the ecosystem as envisioned by both the 1982 and proposed thresholds.

**Table 7. B-IBI Metrics and Their Association With Development**

Development Intolerant Species	Development Intolerant Metrics
Black-backed woodpecker	Air forager abundance
Blue grouse	Foliage forager richness
Brown creeper	Intolerant species richness
Calliope hummingbird	Habitat specialist richness
Cassin's finch	Ground nester richness
Cassin's vireo	Invertivore richness
Chipping sparrow	Rare species richness
Dark-eyed junco	
Dusky flycatcher	
Golden-crowned kinglet	
Green-tailed towhee	
Hairy woodpecker	
Hermit thrush	
Hermit warbler	
Lincoln sparrow	
MacGillivray's warbler	
Mountain quail	
Nashville warbler	
Olive-sided flycatcher	
Pileated woodpecker	
Pine grosbeak	
Pine siskin	
Townsend's solitaire	
Warbling vireo	
Western tanager	
White-breasted nuthatch	
Wilson's warbler	
Yellow-rumped warbler	
Development Tolerant Species	Development Tolerant Metrics
Brewer's blackbird	Malentity abundance
Grown-headed cowbird	Tolerant species richness
Mourning dove	
Pygmy nuthatch	

Table 6 also shows the attribute indicators used in the proposed terrestrial ecosystem threshold, which provide important information on the structure, diversity, and condition of habitats within the Region.

For example, snags and logs are critical habitat elements for many plant and animal species and contribute to important ecological processes such as nutrient cycling and hydrological function. Similarly, indicators of habitat fragmentation (road density, landscape configuration), recreation disturbance level, and availability of habitat types and special habitat types all provide empirical measures of ecosystem condition that are responsive to development in the Region. They provide essential data that will enable the management agencies to maintain, preserve, and enhance the habitats and ecosystems needed for the maintenance of sustainable terrestrial wildlife populations and ecosystems in the Region.

The proposed threshold therefore will preserve the resource values of the existing threshold, in addition to providing a more effective, statistically accurate method for directly monitoring species and ecosystem status and health within the Region.

## **Proposed Threshold: Sustainability of Special Status Species (see Desired Condition 2)**

### **Proposed Indicator**

*Sustainability of Special Status Species*—Proportion of special-status species that meet or exceed benchmarks within an evaluation period (as measured by presence/absence, abundance, productivity, and attribute indicators) (Type II).

### **Proposed Standard**

At least 20% of the benchmarks are met or exceeded within the 1<sup>st</sup> 5-yr evaluation period, 40% by the 2<sup>nd</sup> period, 60% by the 3<sup>rd</sup> period, and 80% by the 4<sup>th</sup> period.

### **Discussion**

The existing Special-Interest Wildlife Threshold (W-1) requires preservation of population sites and disturbance free zones for special-status species. The proposed threshold would replace these metrics with more direct biological diagnostic indicators of species presence/absence, abundance, and productivity (Table 5). These new metrics provide statistically accurate, more informative measures of species condition and viability. Table 8 lists the species proposed as special-status species under the new threshold. The reasons for their inclusion and a brief description of the diagnostic indicators standards that will be used to monitor the species is also provided. Two special-status species currently listed under the existing threshold (golden eagle and peregrine falcon) and two species group (waterfowl and deer) would not be included in the new special-status species list, although waterfowl would continue to be monitored as part of the wetland IBI program. The mesocarnivores (pine marten, fisher, and wolverine) would be added as forest-health indicator species. The removal of the golden eagle and peregrine falcon is warranted because suitable habitat available to these species is limited in the Region and they occur only infrequently because of the region's high elevation relative to areas typically used. Attainment of sustainability goals for deer and waterfowl is unlikely due to ongoing impacts of recreation and development on threshold-established sites. The existing threshold standards for these species cannot be achieved.

**Table 8.** Proposed TRPA Special Interest Species, Diagnostic Indicators, Benchmarks, and Indicator Types

Species	Reason for Recommendation	Diagnostic Indicator	Benchmark (Minimum Maintenance Level)	Indicator Type
<b>Birds</b>				
Bald eagle (nesting)	ESA Threatened	5-year average # of occupied nests/year	Over a five year evaluation period, detect a 5-year mean of at least 0.6 occupied nests/year	I
		5-year average # of reproductive nests (with chicks)/year.	Over a five year evaluation period, detect a 5-year mean of at least 0.4 reproductive nests (i.e., nests with chicks)/year	
		5-year average # of fledglings/year	Over a five year evaluation period, detect a 5-year mean of at least 0.6 fledglings/year	
Bald eagle (wintering)	ESA Threatened	5-year average of number individuals detected/year during annual winter survey	Over a five year evaluation period, detect a 5-year mean of at least 8.4 individuals/year during the annual winter survey	I
		Acreage of key suitable wintering habitat effectively closed to recreational access during designated wintering season	Maintain minimum acreages closed at Pope Marsh, Upper Truckee Marsh, and Taylor and Tallac Marsh	
California spotted owl	USFS Sensitive, indicator of forest health	5-year average # of occupied territories/year	Over a five year evaluation period, detect a 5-year mean of at least 9.2 occupied territories/year	I
		5-year average # of owl pairs/year	Over a five year evaluation period, detect a 5-year mean of at least 5.3 owl pairs/year	
		5-year average # of fledged owls/year	Over a five year evaluation period, detect a 5-year mean of at least 2.6 fledged owls/year	
Northern goshawk	USFS Sensitive, indicator of forest health	5-year average proportion of territories occupied/year	Over a five year evaluation period, detect a 5-year mean of at least 42% territory occupancy/year.	I
		5-year average # reproductive territories/year	Over a five year evaluation period, detect a 5-year mean of at least 5.4 reproductive territories/year	
Osprey	State Species of Concern, indicator of shore zone health	5-year average # successful nests/year	Over a five year evaluation period, detect a 5-year mean of at least 4 successful nests/year	III
		5-year average # fledglings/year	Over a five-year evaluation period, detect a 5-year mean of at least 6 fledglings/year	

Species	Reason for Recommendation	Diagnostic Indicator	Benchmark (Minimum Maintenance Level)	Indicator Type
Willow flycatcher	USFS Sensitive, indicator of riparian habitat health	5-year average # active nests/year	Over a five year evaluation period, detect a 5-year mean of at least 4 active nest/year	II
		5-year average # successful nests/year	Over a five year evaluation period, detect a 5-year mean of at least 1.4 successful nests/year	
		5-year average # fledglings/successful nest/year	Over a five year evaluation period, detect a 5-year mean of at least 2.75 fledglings/year	
Yellow warbler	State Species of Concern, indicator of riparian habitat health	Diagnostic indicators determined with completion of monitoring and evaluation strategy	Develop and initiate monitoring program within the first five-year evaluation period	I
<b>Amphibians</b>				
Mountain yellow-legged frog	USFS Sensitive, indicator of riparian habitat health	Determine additional indicators with completion of monitoring and evaluation strategy	Develop and initiate monitoring program within the first five-year evaluation period	III
		Indicator(s) of stable population (e.g., life stage ratios)	Maintain at least one location that supports a stable MYLF population	
<b>Mammals</b>				
Listed furbearing mesocarnivores: American marten, fisher, and wolverine	USFS Sensitive, indicator of forest health	Presence (proportion of stations with affirmative detections) in suitable habitat and distribution (area of occupancy)	At least a certain percentage of sample sites (to be determined), detect presence of target species	II for marten, III for fisher and wolverine
		Determine additional indicators with completion of monitoring and evaluation strategy	Develop and initiate monitoring program within the first five-year evaluation period	
Trowbridge's shrew	State Species of Concern, indicator of riparian habitat health	Diagnostic indicators determined with completion of monitoring and evaluation strategy	Develop and initiate monitoring program within the first five-year evaluation period	III
Mountain beaver	State Species of Concern, indicator of riparian habitat health	Diagnostic indicators determined with completion of monitoring and evaluation strategy	Develop and initiate monitoring program within the first five-year evaluation period	III

Species	Reason for Recommendation	Diagnostic Indicator	Benchmark (Minimum Maintenance Level)	Indicator Type
<b>Fish</b>				
Lahontan cutthroat trout	ESA Threatened	<p>Accomplishment of recovery objectives (benchmarks) by specific completion dates identified by USFWS and Fisheries Technical Working Group</p> <p>Determine specific population status indicators as part of the monitoring and evaluation strategy</p>	<p>USFWS will establish Lake Tahoe Basin Lahontan Cutthroat Trout (LCT) Recovery Implementation Team (RIT) and write/revise recovery plan within the first five-year evaluation period</p> <p>Region partners will continue to implement ongoing actions for LCT reintroduction and recovery during plan development (e.g., Fallen Leaf Lake reintroduction)</p> <p>Implement Recovery Implementation Plan actions as opportunities arise during plan development and throughout first evaluation period</p> <p>Identify diagnostic indicators of population condition/stability and establish minimum benchmarks as populations are established by the end of the first evaluation period</p>	II
<b>Invertebrates</b>				
Tahoe benthic stonefly	Endemic species, potential indicator of water clarity and deep water plant community health	Diagnostic indicators and benchmarks determined with completion of monitoring and evaluation strategy	Develop and initiate monitoring and evaluation program within the first five-year evaluation period.	III

The diagnostic indicators and standards for most of the special-status species listed in Table 8 remain to be fully defined, but when defined, tested and validated, they will provide a reliable baseline for monitoring and maintaining special-status species health in the Tahoe Region.

## Proposed Threshold: Biological Integrity of Aquatic Ecosystems (see Desired Condition 3)

### Proposed Indicator

*Biological Integrity of Aquatic Ecosystems*—Proportion of aquatic ecosystem component benchmarks met or exceeded within an evaluation period, as measured with various IBIs and other relevant indicators (Type II).

### Proposed Standard

All benchmarks are met or exceeded within an evaluation period for each component, including streams, Lake Tahoe, wetlands, and small lakes.

Note: Thresholds F-1 and F-2 remain in effect until this new threshold is developed and approved.

### Discussion

The existing aquatic ecosystem threshold uses habitat indicators in addition to instream flow metrics to monitor the condition and health of Lake Tahoe and streams in the Region. The proposed threshold would use alternative multimetric diagnostic IBIs and associated attribute indicators (Table 9) to monitor Lake Tahoe, ponds, wetlands and streams ecosystem in the Region. When defined, tested, and validated, these metrics would include the components and diagnostic indicators shown in Table 5.

**Table 9.** Aquatic IBI Indicators

Indicator Name	Indicator Type	Data Description	Development Status
<b>Streams</b>			
Benthic Macroinvertebrate—Index of Biological Integrity	Diagnostic Indicator	Multi-metric index that uses benthic macroinvertebrate community to assess riparian habitat condition. Indicator is the proportion of sample sites exhibiting sustainable or optimal condition.	II
Man-made barriers removed	Attribute Indicator	Measure of the number of man-made barriers removed and the resulting distant of stream length gained/accessible to aquatic organisms.	II
Stressor Monitoring	Attribute Indicator	On watershed or sub watershed scale, % impervious cover, road density, development intensity, recreation intensity, acres of forest treatment, stream bank erosion.	II
Flow Regime	Attribute Indicator	On watershed scale using gauged streams, streamflow regime compared with natural seasonal regime (flow-frequency-exceedance); floodflow access to flood plain.	II

Indicator Name	Indicator Type	Data Description	Development Status
<b>Lake Tahoe</b>			
Biological Pollutants Index	Diagnostic Indicator	Distribution and extent of non-native and invasive plants and animals in Lake Tahoe.	II
Zooplankton Assemblage	Diagnostic Indicator	Multi-metric index that uses zooplankton community to assess Lake Tahoe's pelagic zone biological conditions. Indicator is the proportion of sample sites exhibiting sustainable or optimal condition	II
Littoral Fish Life History	Diagnostic Indicator	Measure of various life history stage parameters (e.g. # spawning redds) of importance to littoral fish species sustainability.	III
Lake Clarity—Secchi Disk	Diagnostic Indicator	A measure of oligotrophic conditions. Distant Secchi disks are visible from water's surface.	I
Catch/Unit Effort (CPUE)	Diagnostic Indicator	A measure of recreational fishing experience. Number of fish caught by a recreationist in a given amount of time.	II
Stressor Monitoring	Diagnostic Indicator	Direct measures of stress (e.g., PAH levels, gasoline constituents); shoreline erosion.	III
<b>Small Lakes</b>			
Herpetological—Index of Biological Integrity (or equivalent)	Diagnostic Indicator	Multi-metric index that enumerates the amphibian and aquatic reptile community, to assess the sustainability of biological integrity of small lakes	II
Waterbird—Index of Biological Integrity (or equivalent)	Diagnostic Indicator	Multi-metric index that enumerates the community of water-associated birds, to assess the sustainability of biological integrity of small lakes.	II
Biological Pollutants Index	Diagnostic Indicator	Distribution and extent of non-native and invasive plants and animals in small lakes.	II
Stressor Monitoring	Attribute Indicator	Direct measures of stress to biological community of small lakes (e.g. # boats, sound level, length of shoreline disturbed by recreational activity/access, shoreline erosion).	III
<b>Wetlands</b>			
Herpetological—IBI	Diagnostic Indicator	Multi-metric index that enumerates the amphibian and aquatic reptile community, to assess the sustainability of biological integrity of wetlands.	II
Waterbird—IBI	Diagnostic Indicator	Multi-metric index that enumerates the community of water-associated birds, to assess the sustainability of biological integrity of wetlands.	II
Biological Pollutants Index	Diagnostic Indicator	Distribution and extent of non-native & invasive plants and animals in wetlands.	III



Indicator Name	Indicator Type	Data Description	Development Status
Stressor Monitoring	Diagnostic Indicator	Direct measures of stress to biological community of wetlands (e.g., # human and pet intrusions into wetland edge and interior, noise levels, proportion of area disturbed/trampled by recreational activity/access).	III
Ground water level	Attribute Indicator	Depth from surface to ground water. Measure of functional characteristics.	II
<b>All Aquatic Components</b>			
Diversity of aquatic habitat types	Attribute Indicator	Measure of the number and extent of different aquatic habitat types.	II
Special aquatic-influenced (Riparian) habitat types	Attribute Indicator	Number, extent, and condition of special aquatic-influenced habitat types (aspen, riparian deciduous, wet meadow, marsh).	III
<b>Wetland/Meadow/Riparian/Aspen</b>			
Conifer encroachment	Attribute Indicator	Area of wetland/meadow encroached by conifer and other undesirable plant species.	II

Understanding the functional, physical, chemical, and biological integrity of the Region's aquatic ecosystem sufficiently to maintain it at sustainable levels requires attribute measures that individually and collectively provide accurate, reliable indices of ecosystem condition relative to measurable changes in habitat management and land uses. The suite of ecosystem attributes proposed for the IBI and other community health diagnostic indicators in Table 9 will provide multiple baseline measures for each ecosystem components.

When fully defined, these indicators collectively should provide a robust measure of ecological condition and ecosystem integrity. Multiple measures that change similarly in response to a habitat degradation gradient provide a more reliable and consistent measure of change than single measures alone. Similarly, multimetric indices based on attainment of standards defining optimal conditions provide accurate measures of overall ecosystem health and the success of management attainment programs.

## Scenic Quality/Resources

### Vision

The Lake Tahoe Basin is internationally recognized for its outstanding natural beauty and is a resource of national significance. Characteristic views within the Region are of the natural appearing forest, meadows, mountains, and expansive blue lake. The built environment harmonizes with this natural-appearing setting in a sustainable manner that supports a vibrant community and healthy economy.

### Desired Conditions

**Desired Condition 1—Natural Environment:** Scenery viewed from Lake Tahoe and the Region's major roadways, public recreation areas, trails, and urban centers predominantly displays natural appearing forest, meadows, mountains, and the shoreline of Lake Tahoe. Development, where visible, complements the natural setting.

**Desired Condition 2—Community Design:** Communities of the Lake Tahoe Region are planned and designed with aesthetic characteristics that respect the local natural systems. Lake Tahoe’s built environment is diverse yet appropriate in scale and style. It helps foster the identity of individual communities and a sense of place.

## Proposed Threshold: Natural Environment (see Desired Condition 1)

### Proposed Indicator

*Scenic Integrity*—Amount of visible development, its visual contrast, its level of dominance, and the number of viewpoints from which it is seen (Type I).

### Proposed Standard

*Scenic Integrity Levels*—Numerical scenic integrity levels assigned to each roadway and shoreline unit to achieve the desired conditions for scenic resources are maintained or achieved.

### Discussion

The recommended change is to amend the desired condition, indicator, and standard for SR-1 Travel Route Ratings to recognize that there are differences in the extent of visual evidence of development in different areas of the Region.

The desired condition for the natural environment is to preserve and enhance the scenery as viewed from Lake Tahoe and the Region’s major roadways, public recreation areas, trails, and urban centers as natural appearing forest, meadows, mountains, and the shoreline of Lake Tahoe. Development, where visible, complements the natural setting. The proposed threshold revision would include the replacement of the existing travel route ratings indicator with a *Scenic Integrity Level* indicator, which would be a measurement of visible development, its contrast, and its dominance of the landscape. The proposed standard is to maintain or achieve the assigned numerical Scenic Integrity Level rating assigned to each roadway and shoreline unit based on its inherent ability to absorb visual impact, to achieve the desired condition for scenic resources. These proposed changes would apply to lands within the Tahoe Region visible from TRPA’s identified scenic roadway and shoreline corridors.

As the first step in setting standards for Scenic Integrity Levels, the entire Tahoe Region would be inventoried according to *Landscape Scenic Character Themes*—as visually distinctive types of land use and development. This would be in addition to the current shoreline and roadway travel analysis units, which do not fully encompass the Region’s valued scenic features and viewsheds. The Scenic Character Themes proposed for the Tahoe Region include:

- “Natural-Appearing” theme, where visual influences from urban/community land uses are minimal or nonexistent;
- “Transition” theme, where visual influences from urban/community land uses exist yet are typically minor to moderate, expressing a blended scenic identity of natural appearance and typically subtle human influences; and
- “Urban/Community” theme, where human urban/community development is the dominant scenic identity.

Theme areas would be further subdivided into unique *Places*, wherever a unique socially valued scenic image and identity exists. Standards for acceptable levels of *Scenic Integrity* within each *Landscape*

*Scenic Character Theme* area and each *Place* would then be established and applied. Therefore, the standard established for each *Landscape Scenic Character Theme* area and each *Place* may be above, below, or equal to current conditions. Unlike the current standard for roadway travel units that is the same for all units, the new threshold standards may vary by Theme area and Place.

An ideal indicator of Scenic Integrity Levels is the level of visual dominance exhibited by development with respect to the surrounding setting. The standards for Scenic Integrity would be articulated three ways; verbally, pictorially, and numerically. The verbal descriptions would consist of written definitions of the conditions that meet the threshold standard. The pictorial descriptions would consist of sets of photographs taken within the Region that illustrate the conditions associated with each threshold. Several examples of each threshold level would be included. The numerical descriptions would consist of the numbers 1 through 5, since the proposed system would employ five possible levels of visual dominance and presence of development. The verbal and pictorial descriptions would provide the public with a quick and easy to understand development conditions considered acceptable in each area. The numerical descriptions of the standards would be used for future monitoring, making determinations of cumulative threshold attainment for either single or multiple projects, and the process of permitting specific proposed projects.

One of five Scenic Integrity Levels would be applied to each mapped Theme and Place units throughout the Region. The five possible levels of this threshold are:

- Scenic Integrity Level 1: undisturbed conditions such as in wilderness areas;
- Scenic Integrity Level 2: development must be visually non-evident;
- Scenic Integrity Level 3: development must appear subordinate or be non-evident;
- Scenic Integrity Level 4: development must appear visually co-dominant or less; and
- Scenic Integrity Level 5: development appears visually dominant.

In order to provide sensitivity and flexibility in response to local conditions and needs, the Scenic Integrity threshold standards would be applied to each individual mapped Theme unit and Place in the Region, but would also apply to specific views that occur within each area. To be considered in attainment, the unit as a whole must exhibit the conditions associated with the prescribed threshold level, and individual views within the unit would also need to meet the established threshold standard. This would ensure that individual projects meet the threshold and that the cumulative effect of numerous projects within the same unit would also collectively meet the threshold and not be detrimental to scenic quality.

### **Proposed Indicator**

*Scenic Quality Ratings*—Measurements of scenic quality of natural landscape views of individual scenic resources that can be seen from travel routes, designated public recreation areas, and bike trails (Type I).

### **Proposed Standard**

*Scenic Quality Ratings*—Numerical ratings assigned each resource in the *Scenic Resources Inventory* and the 1993 *Lake Tahoe Basin Scenic Resource Evaluation* are maintained or improved.

### **Discussion**

The proposed Scenic Quality indicator and standard is a combination of the existing SR-2 and SR-3 Scenic Quality thresholds. Combining the two indicators and standards would not result in any changes to the existing thresholds.

## Proposed Threshold: Community Design (see Desired Condition 2)

### Proposed Indicator

*Community Design and Development Measures*—Implementation of applicable design and development measures affecting height, bulk, texture, form, materials, colors, lighting, signage, and siting (Type II).

### Proposed Standard

*Community Design Index Level*—Implementation of *Development and Design Measures* (e.g., affecting height, bulk, texture, form, materials, colors, lighting, signage, siting, and other design elements) in new, remodeled, and redeveloped buildings, to be compatible with the natural, scenic, recreation, and community-desired visual values for the Region.

### Discussion

The recommended change is to amend the desired condition, indicator, and standard for SR-4 Community Design to provide standards that are appropriate for the Region and consistent with the desired visual attributes of a community. The existing community design standard is a policy standard that is difficult to measure and does not express the intent of achieving a desired community character.

The proposed desired condition for the Community Design Threshold states that development in the Lake Tahoe Region is planned and designed with aesthetic characteristics that respect the local natural systems and that the built environment is diverse yet appropriate in scale and style that fosters the identity of individual communities and creates a sense of place. The proposed indicator for this threshold is the degree of implementation of applicable design and development measures, such as height, bulk, texture, form, materials, colors, lighting, signage, and siting. The existing Community Design indicator did not list the specific design and development measures (e.g., height, bulk, texture, etc.) that should be used to determine compliance with the threshold. The proposed standard for this threshold is implementation of the appropriate design and development measures (height, bulk, texture, form, materials, colors, lighting, signage, siting and other design elements) in new, remodeled and redeveloped buildings that are compatible with the natural, scenic, recreation, and individual community desired visual values within the Region. The existing Community Design standard did not include *community desired visual values* as one of the compatibility tests for the assessment of appropriate community design. These proposed changes to the Community Design indicator and standard would apply to the built environment within the Tahoe Region and better reflect or reinforce individual community character.

## Noise

### Vision

Noise levels provide for community and neighborhood serenity, abundant quiet recreational areas, and are not harmful to wildlife.

### Desired Conditions

**Desired Condition 1—Single Event Noise Sources.** Single event noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

**Desired Condition 2—Cumulative Noise Levels.** Community noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.

**Desired Condition 2—Effects on Wildlife.** Noise levels are controlled to protect wildlife.

## Proposed Threshold: Single-Event Noise Sources (see Desired Condition 1)

### Proposed Indicator

*Noise Events*—Numbers of individual exceedances; *and* number of corrective actions taken, *and* percent of planned monitoring completed, with all data compiled with a monitoring protocol and reported no less than annually by category: on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft, settlement-agreement aircraft, and non-settlement-agreement aircraft. (Type I except for stationary exhaust standard for over-snow vehicles and motorcycles which are Type II, and standards for non-settlement-agreement aircraft standard are Type III.)

### Proposed Standard

- On-Highway Vehicles—Same as the current California standards.
- On-Highway Motorcycles—Same as the current California standards, and implement Region-wide a new stationary exhaust standard to be determined.
- OHVs—same as the current California standards applied Region-wide, and implement Region-wide a new stationary exhaust standard to be determined.
- Over-Snow Vehicles—A 73 dBA standard applied Region-wide and a new stationary exhaust standard that is equivalent to the 73 dBA standard referenced to SAE monitoring protocols.
- Watercraft—Same as current TRPA standards.
- Settlement-Agreement Aircraft—Same as existing standards.
- Non-Settlement-Agreement Aircraft—to be developed after 2008.

### Discussion

The proposed new threshold would combine the existing N-1 Single Event Noise (Aircraft) threshold with the N-2 Single Event Noise (other than aircraft) threshold into a single new threshold. For the most part, the proposed standards would remain the same as the current standards. The proposed changes fall into three primary categories: change in indicators, adoption of a single set of standards Region-wide, and improvement of the existing standards, described as follows.

**Changes in Certain Indicators.** The major problem in implementing the current threshold is a shortage of monitoring and enforcement. To address this, new indicators are proposed that focus upon evaluating the monitoring and enforcement practices in the Region. They include:

- *Number of exceedances of the noise standard by category.* This indicator would involve monitoring the number of times that the noise standard is violated for each category. This indicator would be used to direct resources toward improving or developing the necessary strategies to preserve the serenity of communities and neighborhoods and providing abundant quiet recreation areas.

- *Number of corrective action taken by category.* This indicator would involve monitoring the Region regulatory agencies' responses to noise violations and provide the necessary feedback on the effectiveness of the program and corrective solutions.
- *Percentage of planned monitoring completed by category.* This indicator was specifically developed in response to the public's concern that sufficient monitoring is needed to manage the program.

**Adoption a Single Set of Standards Region Wide.** TRPA proposes to adopt the current California noise standards for on- and off-highway vehicles Region-wide. In addition, TRPA is also proposing to adopt new or additional standards for off-highway vehicles, over-snow vehicles, and on-highway motorcycles. TRPA will work with the State of Nevada to adopt standards that are the same as the California Vehicle Code noise emission standards. These standards are necessary to preserve the serenity of the community and neighborhood. As stated previously, because the TRPA does not have police powers to enforce these standards, the proposed standards would only be effective if enforcement agencies adopt and enforce the proposed standards.

**Improvement of Existing Standards.** With some exceptions, the single event noise standards would be identical to those currently in place. Changes include clarification that the standards for aircraft noise would be the 2002 *Settlement Agreement* levels, establishment of standards for *Non-Settlement Agreement* aircraft, which are in progress, adoption of the current California on- and off-road vehicle noise standards Region-wide, and implementation of new stationary exhaust standards for off-highway vehicles, snowmobiles, and on-highway motorcycles.

Due to their complexity, standards for non-settlement aircraft category are not expected to be developed until after 2008.

Draft language for new stationary test procedures for OHVs, over-snow vehicles, and on-highway motorcycles is expected to be available in 2007. The proposed standards for motorized equipment under the new threshold are shown in Table 10.

**Table 10.** Proposed Single Event Maximum Noise Level Standards (dBA)

Source	Overall	Less Than 35 mph	Greater Than 35 mph	Monitoring Distance
<b>Watercraft</b>				
	82	--	--	50 ft, w/ engine at 3,000 rpm
	75	--	--	At shoreline
1993 & later	88	--	--	SAE J2005 stationary test
Prior to 1993	90	--	--	SAE J2005 stationary test
<b>Motor Vehicles</b>				
< 6,000 GVW	--	76	82	50 ft
>6,000 GVW	--	82	86	50 ft
<b>Motorcycles</b>				
	--	77	86	50 ft
	To be determined	--	--	stationary tailpipe test
<b>Off-Road Vehicles</b>				
	--	72	86	50 ft
	To be determined	--	--	stationary tailpipe test
<b>Over- Snow Vehicles</b>				
	Noise level of 73 dBA at 50 feet and/or equivalent noise level measured from tailpipe with a stationary test.			

## Proposed Threshold: Cumulative Noise Levels (see Desired Condition 2)

### Proposed Indicator

*Cumulative Noise Levels*—Numbers of exceedances of 24-hour standards (Type I); *and* number of exceedances of 1-hour standards (Type III), with all data compiled according to a monitoring protocol and reported no less than annually by area for each land-use class and transportation corridor.

### Proposed Standard

24-hour standards same as existing standards, *and* hourly noise levels for each land use class and transportation corridor would be developed and proposed by 2008.

### Discussion

Unlike single event noise levels, CNELs are 24-hour averaged noise levels found in a given area. CNELs are the noise level measurements of the average noise levels over a 24-hour day, with adjustments added for potential annoyance or intrusion that occurs during evening and night-time hours. Periodically the CNEL standards are reviewed and updated based on proposed activities in the Region, taking into account site-specific analyses, estimated impacts on affected land uses, consistency with other provisions of the Regional Plan, and reasonable tests of significance of change in noise levels. At this time, no changes to the 24-hour CNEL levels are proposed. However new 1-hour noise standards are currently being developed. The 1-hour noise standards are necessary to mitigate the noise associated with loud activities that may persist for only short periods.

Table 11 shows the standards for the 24-hour CNELs. No changes are proposed from the current levels. The standards are divided into land use classifications and transportation corridors, which are defined as 300' from the curbs of the highway. The specific values for the proposed 1-hr noise standards are currently being developed and therefore are not shown. TRPA staff expects to propose values by mid 2007.

**Table 11.** Cumulative Noise Level Standards

Location	24-hr CNEL (db)	1-hr <sup>1</sup>
<b>Land Use Class</b>		
High Density Residential	55	TBD
Low Density Residential	50	TBD
Hotel/Motel Facilities	60	TBD
Commercial Areas	60	TBD
Industrial Areas	65	TBD
Urban Outdoor Recreation Areas	55	TBD
Rural Outdoor Recreation Areas	50	TBD
Wilderness and Roadless Areas	45	TBD
Critical Wildlife Habitat Areas	45	TBD

Location	24-hr CNEL (db)	1-hr <sup>1</sup>
<b>Transportation Corridors</b>		
U.S. Highway 50	65	TBD
SR 28	55	TBD
SR 89	55	TBD
SR 207	55	TBD
SR 267	55	TBD
SR 431	55	TBD
<b>South Lake Tahoe Airport</b>	60	TBD

<sup>1</sup> 1-hr CNEL standards to be developed (TBD) and are anticipated to be available in mid 2007.

New indicators for this threshold are also proposed. The previous indicators were actually metrics to be used when taking noise measurements and do not specify a process for measuring progress. Although new indicators are being proposed, the present protocols for measuring noise are not proposed for change. The proposed indicators for CNELs include:

- *Number of exceedances of the 24-hour noise standard.* This indicator would be used to direct resources to improve or develop the necessary strategies to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas.
- *Number of exceedances of the 1-hour noise standard.* The actual numerical values for this standard are currently under development and would be used to direct resources to improve or develop the necessary strategies to preserve the serenity of communities and neighborhoods and provide abundant quiet recreation areas.

## Proposed Threshold: Noise Effects on Wildlife (see Desired Condition 3)

### Proposed Indicator

*Effect on Wildlife*—Further investigation of appropriate indicators would be done by wildlife experts after 2008 (Type III).

### Proposed Standard

Appropriate levels would be jointly developed by wildlife experts after 2008.

### Discussion

Although this threshold is not yet developed, it is proposed because of evidence that the addition of a new threshold indicator to limit the exposure of wildlife to noise is required to maintain a significant resource value in the Region. Single event noise standards limit the exposure of humans to noise, but they may not be sufficient to protect wildlife from disturbance. Reproduction of certain wildlife species can be disturbed by either continuous or sudden noise that is of lower intensity than noise adversely affecting humans.



Noise associated with human activities dominates the noise environment in the Lake Tahoe Region. Sources include noise from on-highway vehicles, off-highway vehicles, over-snow vehicles, watercraft, and aircraft. Indicators and standards have not been developed at this time, due to lack of appropriate studies. TRPA staff is currently working with wildlife experts from multiple agencies to develop them. However, due to resource limitations, necessary studies would not begin until 2008, and a proposed threshold is not expected until about 2010.

## Recreation

### Vision

The Lake Tahoe Region's unique natural, cultural, and human environments provide sustainable recreation opportunities consistent with public desires and natural resource capacities. Recreation is linked to irreplaceable natural assets, the regional economy, and social well-being.

### Desired Conditions

**Desired Condition 1—Opportunity:** A suitable spectrum of high-quality recreational opportunities is provided, while sustaining Lake Tahoe's natural setting as an outstanding recreation destination.

**Desired Condition 2—Access:** Additional high-quality access is provided to natural areas and shorezone where lawful and feasible, consistent with desired resource conditions and user expectations.

### Proposed Threshold: Opportunity (see Desired Condition 1)

#### Proposed Indicator

*Opportunity*—Quality of opportunities from recreation surveys (type I), *and* number of recreation opportunities (type I and II), *and* implementation of adopted recreation plans (type III).

#### Proposed Standard

*Opportunity*—Survey response demonstrates that majority of opportunity attributes indicate high-quality opportunities, *and* recreation providers appropriately respond when survey responses indicate that recreation quality does not meet desired conditions, *and* existing number of inventoried Tahoe resource-dependent public recreation facilities and opportunities is maintained, *and* 10% of the baseline number of facilities is improved or created every five years, *and* specific recreation providers identify their top priority projects that meet the desired condition from adopted recreation plans and pursue implementing 50% of their list during the plan period.

### Discussion

The proposed recreation thresholds would change the threshold focus from “high quality recreational experience”, which is a focus on the quality of the individual's experience, with a focus on “high quality opportunity”, which is a focus on the quality of the opportunity. The logic of this shift is that quality recreation opportunities lead to quality recreation experiences. The agency can then monitor recreation opportunity attributes rather than the more subjective user experience. These new indicators and standards would better measure recreation opportunity threshold achievement as follows:

- Quality of opportunities from recreation surveys
- Number of recreation opportunities

- Implementation of adopted recreation plans

The proposed thresholds would separate and thereby more clearly address means of achieving desired conditions for *access* and *opportunity*.

## Proposed Threshold: Access (see Desired Condition 2)

### Proposed Indicator

*Access*—Availability of access to public land, shorezone, and trails (type I and II); *and* access quality from recreation surveys (type I).

### Proposed Standard

Quantity of land available for public recreation access is maintained or increased by:

- continuing federal and State public land acquisition programs; target: 20,275 additional acres;
- increasing public shoreline ownership to 50% for Lake Tahoe; target: 9,701 additional linear feet;
- ensuring no net loss of shoreline that currently provides public or quasi-public access to Lake Tahoe; target 100% retained;
- retaining all existing acreage associated with public rights-of-way and easements that provide access to public lands and waterways; target 100% retained;
- building/designating/reconstructing new trails; targets 50 miles paved trails and 20 miles unpaved trails every 5 years;
- developing new trailheads or improving existing trailheads or newly serving them by public transit; target one every two years;
- *and* survey responses indicate that the majority of recreation access attributes indicate high quality access.

## Discussion

While the issue of resource use and fair-share consumption was once believed to be of critical importance, over the life of the 1987 Regional Plan fair share of infrastructure capacity has not been satisfactorily defined; it appears to be technically infeasible to quantify all of the resources necessary for existing and proposed facility development. The limiting resource for recreation facility development has been funding rather than availability of natural or municipal resources (e.g., land coverage and sewer/water capacity). The proposed *access* desired condition would remove the existing *fair share of capacity* concept while retaining measures for public land acquisition and modified facility development.

PAOT allocations have not proven to be an effective way to ensure outdoor recreation facility development, nor have they ensured that resource capacity is reserved for future recreation facility development. As modified, recreation site capacity would be addressed only indirectly by threshold standards, while being addressed directly through the implementation of the TRPA and land management agencies' land use plans, facility site development standards, building design standards, infrastructure capacities, and public input to project planning.

No single measure of access is key to determining the status of the associated standard. The indicators for this standard relate to the commodities that comprise access and the perception responses regarding the quality of recreation access, via consistent survey monitoring. The proposed standards emphasize the maintenance and improvement of existing access opportunities, and opportunities for gaining additional

public lands for recreation purposes. Compared to conditions of the past, if these commodities increase, the inference is that greater access will be achieved. If the commodities decrease, that would indicate a loss of access. Standards include specific goals for retention of existing public lands and new land acquisition, and construction and reconstruction of trails and trailheads. The new *access* proposal would retain the land acquisition measure that has resulted in important new recreation areas, while also emphasizing retention of existing access, including easements.

**Comment [17]:** Same comment as above for LTBMU and Recreation.

The use of new and quantified indicators and standards would better measure recreation opportunity threshold achievement as follows:

- Available access to public land, shorezone, and trails
- Access quality, via recreation surveys

## Alternatives to Specific Proposed Thresholds

As described in Section 3, alternatives to some of the proposed thresholds were identified during the public scoping process. One of them requires detailed consideration:

### Air Quality Alternative 1—Emissions Reduction Alternative

**Proposed Desired Condition 2—Human and Ecosystem Health:** Air quality in the Lake Tahoe Region is healthy for humans and ecosystems (same as for Proposed Project).

#### Proposed Indicator

*Pollutant emissions per person-mile* (grams) of the various forms of available transportation based on estimated per-mile rates and mix of transportation use.

This indicator is designed to allow comparison of the air emission levels of various modes of travel, and to encourage projects that make the lowest emission contributions to the Region. The proposed indicator is the amount of emissions of each criteria pollutant (carbon monoxide, ozone, and particulate matter) emitted for each mile of travel, on a per person basis. This indicator would be measured in grams and would use emission factors obtained from the CARB where available.

#### Proposed Standard

Transportation projects proposed for the Region utilize the lowest possible “emissions per person-mile” mode of travel. The mode of travel is defined as automobile, train, plane, watercraft, bus, gondola, and similar modes. (Modes such as walking and biking are not included in these comparisons.)

#### Discussion

The purpose of this threshold is to promote transportation projects that have the least impact on the Basin’s air quality. Because various modes of travel are capable of moving different amounts of people and have different emission factors for doing so, it would be necessary to compare each mode of travel on a per-person basis. For instance, although a bus has a much higher emission level than a passenger vehicle, it is capable of moving a greater amount of people at the same time and may be more beneficial in terms of air quality. Using the criteria of the amount of emissions on a per-person basis allows identification of transportation projects most benefiting air quality.

## Alternatives Considered But Eliminated from Detailed Consideration

### Introduction

Several other potential alternatives were identified during the public scoping process (TRPA 2006b), but after scrutiny were determined by TRPA staff not to constitute suitable alternatives. This section identifies each of these alternatives and disclose the reasons that they are not being considered in detail. The rationale for their rejection is also discussed in the project scoping report (TRPA 2007b).

### Air Quality

#### Separate ecosystem health and human health thresholds for air quality

**Suggested Alternative.** Establish distinct and separate air quality threshold standards for human health and ecosystem health as to both lake clarity and forest health.

**Reasons for Not Considering in Detail.** The ecosystem and human health components of the proposed air quality threshold are distinct and separate. For any given pollutant, the most restrictive standard between the two components would apply.

#### Establish diesel emissions alternative

**Suggested Alternative.** Establishment of air-quality indicators and standards for diesel emissions.

**Reasons for Not Considering in Detail.** CARB has proposed more stringent diesel vehicle emissions standards, so this alternative would be redundant with the new California standards.

#### Establish threshold for strength of air quality monitoring network

**Suggested Alternative.** Embodiment of a standard that requires a strengthening of the air monitoring network as a first step in improving management of air quality.

**Reasons for Not Considering in Detail.** Implementation strategy for existing threshold; defer to Regional Plan Update.

#### Develop more stringent visibility standard

**Suggested Alternative.** In addition to the proposed visibility standard, which is more stringent than the existing standard and which would be in attainment with current visibility conditions, an even more stringent standard that sets a target for additional improvement of visibility.

**Reasons for Not Considering in Detail.** The Pathway Forum, TWGs, or TRPA staff has not identified a technical basis for a more stringent alternative. Nonetheless, agencies can strive to attain a higher level of visibility that required by the new threshold.

## Water Quality

### Attain water quality thresholds rapidly

**Suggested Alternative.** Attainment of water quality thresholds based on Lahontan pending RWQCB and NDEP's TMDL within 10 years from adoption of the Regional Plan update.

**Reasons for Not Considering in Detail.** This concept does not apply to changing thresholds, but to implementation strategies. It therefore is deferred to development and consideration of the Regional Plan Update.

### Entertain more stringent water quality standards

**Suggested Alternative.** Establishment of water quality standards more stringent than those proposed or to be required under Lahontan RWQCB and NDEP's TMDL.

**Reasons for Not Considering in Detail.** Suggested alternative is not adequately defined for evaluation. The proposed new standards are considered to be stringent.

## Soil Conservation and SEZs

### Meet land coverage standard on sub-watershed basis

**Suggested Alternative.** Requires that performance standards be met on a sub-watershed basis before coverage limits can be increased.

**Reasons for Not Considering in Detail.** Implementation strategy for existing and/or proposed thresholds; defer to Regional Plan Update.

### Modify soil conservation threshold using IPES amendment

**Suggested Alternative.** Modification of existing land coverage threshold to incorporate a specific set of improvements to the current IPES).

**Reasons for Not Considering in Detail.** Implementation strategy for existing threshold; defer to Regional Plan Update.

## Scenic Resources

### Set simpler, objective standards for scenic quality

**Suggested Alternative.** Simpler measures of scenic integrity and quality, such as miles of development-free shoreline, number of developments in visually sensitive shorezones, number and size of new developments on currently undeveloped land, etc.

**Reasons for Not Considering in Detail.** Such a type of threshold would not attain desired conditions. Scenic integrity and quality cannot be adequately measured by numbers of items such as those listed. Scenic values are more subtle and need to be judged by how well development blends into the specific environment.

## Noise

### Set standards for boat noise at the shore

**Suggested Alternative.** A noise standard for boats that would involve measuring the level of noise on the Region's beaches and be unrelated to the distance from the motor.

**Reasons for Not Considering in Detail.** This is part of the proposed single-event noise threshold.

### Provide for separate quiet and noise-allowable area of dispersed recreation

**Suggested Alternative.** Standards for noise that would separate noise producing uses in dispersed recreation areas from quiet recreation uses.

**Reasons for Not Considering in Detail.** Mitigation measures for impacts of new OHV and over-snow vehicle noise standards have been proposed that would obviate this separation. There are also separation of uses in recreation management, utilizing Roadless and Wilderness designations for non-motorized recreation.

### Realize reduced speed limits and quieter pavement through threshold standards

**Suggested Alternative.** Standards requiring reduced speed limits and use of quieter pavement rather than the proposed thresholds to increase noise levels in transportation corridors

**Reasons for Not Considering in Detail.** The proposed thresholds do not allow increased noise levels in transportation corridors. The suggested means of achieving noise standards are threshold implementation strategies; defer to Regional Plan Update.

### Limit non-airport aircraft noise

**Suggested Alternative.** Numeric noise standards for non-airport aircraft (helicopter and seaplane noise), and address this standard to protection of wildlife from noise impacts.

**Reasons for Not Considering in Detail.** Part of the proposed noise thresholds.

### Formulate less-than-hourly cumulative noise standards

**Suggested Alternative.** A shorter-term cumulative-noise standard, hourly or even as short as 15-minutes.

**Reasons for Not Considering in Detail.** Such a short reporting period virtually constitutes a single-event, for which another comprehensive threshold is proposed. This suggestion may warrant consideration in the future, but not until the proposed 1-hour standard is formulated and tested. Evaluation of the performance of the 1-hour standard would consider the desirability and feasibility of an even shorter monitoring period.

### Use World Health Organization standards in cumulative noise level threshold

**Suggested Alternative.** Incorporate into the Cumulative Noise Level Threshold 24-hour standards recommended by the *World Health Organization*.

**Reasons for Not Considering in Detail.** Pathway Forum participants did not identify a need to modify the existing cumulative noise level standards. Instead they recommended that more focus be placed on monitoring existing noise and enforcing compliance with existing thresholds.

## **Include noise standards for protection of wildlife**

**Suggested Alternative.** Threshold with noise standards that are protective of impacts on wildlife.

**Reasons for Not Considering in Detail.** Part of proposed noise thresholds.

## **Recreation**

### **Ensure compatibility of recreation with Region resources**

**Suggested Alternative.** A recreation threshold alternative that gives preference to forms of recreation that are compatible and not in conflict with the other resource-related thresholds

**Reasons for not considering in detail.** The proposed recreation thresholds are not inherently inconsistent with any other thresholds or maintenance of environmental quality. The desired conditions for recreation require that recreation opportunity and access sustain the natural setting and are consistent with desired resource conditions for other resources.

### **Establish the recreation carrying capacity of the Region**

**Suggested Alternative.** A carrying-capacity threshold for recreation, which would require analyzing the recreation carrying capacity for the Region. This would involve developing a number for the ultimate PAOTs that can be accommodated in the Region, and then tracking total recreation use and setting the ultimate PAOT as the standard.

**Reasons for Not Considering in Detail.** The Pathway Forum and Working Groups were not able to develop such an approach, and a technical basis for doing so is not apparent. The PAOT tool, as currently defined, is not applicable to many recreation types and/or providers, making it a poor choice for a universal Region-capacity standard.

### **Consider a transit-based recreation threshold**

**Suggested Alternative.** An alternative embodying a transit-based access program for recreational access.

**Reasons for Not Considering in Detail.** An element of the *Access* threshold sets a standard for new transit connections to trailheads.

## **General**

### **Retain specific existing thresholds**

**Suggested Alternative:** Retention of specific thresholds that are proposed for elimination, including AQ-5 (Air Quality—Traffic Volume), AQ-6 (Wood Smoke) AQ-7 (Vehicle Miles Traveled), AQ-8 (Atmospheric Deposition), WQ-3 (Water Quality—Phytoplankton Productivity), SC-1 (Impervious Cover/Bailey), SC-2 (SEZ Preservation and Restoration), and V-4 (Late Seral/Old Growth Forests).

**Reasons for Not Considering in Detail.** The structure of this environmental assessment obviates an alternative retaining a particular set of existing thresholds. This document addresses impacts of retention of each existing threshold, as well as impacts of each proposed threshold. Decision-makers are therefore provided an opportunity to select any combination of new or existing thresholds for future use.

## Establish a threshold hierarchy

**Suggested Alternative.** An alternative to how TRPA would manage conflict between thresholds.

**Reasons for Not Considering in Detail.** Presently there is no indication that any proposed thresholds would be in conflict. Historically all potential conflicts between thresholds have been resolvable on a site specific basis.

## Adopt transportation thresholds

**Suggested Alternative.** Threshold to limit the traffic increases in the Region

**Reasons for Not Considering in Detail.** Both the Pathway Forum and the TRPA Governing Board have determined that a transportation threshold is not appropriate, because traffic and congestion management are threshold implementation (management strategy) issues appropriate for development in the Regional Plan Update and associated transportation planning required by the Compact. (The Compact specifies that mobility goals are carried out in the Transportation Plan, thus it is not necessary to also create a transportation threshold.) The environmental goals of a transportation program are covered by other resource areas.

## Adopt socioeconomic thresholds

**Suggested Alternative.** Threshold(s) to protect social and economic values in the Region.

**Reasons for Not Considering in Detail.** Socio-economic thresholds have consistently been rejected from the threshold proposal by both the Pathway forum and TRPA Governing Board. Reasons are several, but the primary reason is that thresholds are related to environmental protection and therefore should not include social and economic standards. Another reason is that social and economic conditions vary among Region communities and no consensus has been reached on how to set Region-wide standards for these local conditions.



## Section 7

# Environmental Impacts of the Proposed Project and Alternatives

## Introduction

This section presents the findings of the environmental-impact assessment of the proposed project and alternatives (including the No-Action Alternative). *Impacts* are adverse changes to the physical environment (benefits of proposed threshold changes are not documented here). This section is organized by resource. For each resource, both direct impacts and indirect impacts are described. *Direct impacts* are impacts to a particular resource as a result of changing the thresholds for that resource. *Indirect impacts* are impacts to other resources due to changing thresholds for a particular resource. For both types of impacts, the following organization is used:

- *Potential Impact*—an adverse resource impact that logically could potentially occur due to changing thresholds for the resource. The list of potential impacts is purposefully comprehensive, to ensure that all possible issues regarding changes in threshold protections are considered.
- *Likelihood Of Occurrence/Potential Significance*—Assessment of both the likelihood that the potential impact would actually occur and the importance of the impact to the resource if it did occur. In general, more potentially-significant impacts are identified for Type II and III thresholds than for Type I thresholds, because the present lack of threshold definition implies a greater possible array of adverse outcomes.
- *Proposed Mitigation Measures*—For those potential impacts appearing to be potentially significant, elements to incorporate into the proposed thresholds to ensure that the potential impacts do not occur, or, if they do, that they are less than significant. The identification of mitigation measures is a primary purpose of conducting this assessment of environmental impacts of proposed thresholds.
- *Impact Significance with Mitigation*—Identification of the apparent significance of the impact assuming that the proposed mitigation measures are adopted. If any impacts appear to be significant even with identified mitigation measures, they would need to be reconsidered in the Regional Plan Update EIS, once implementation strategies are identified.

Following the discussion of impacts to each resource, the *cumulative and growth-inducing impacts* of the proposed set of threshold updates is discussed.

Several assumptions have been made with regard to this impact assessment:

- Impacts of the proposed project (proposed thresholds) are determined relative to impacts of continuing with the existing thresholds.
- Impacts of the No-Action Alternative are determined relative to conditions anticipated under the proposed thresholds.
- Impacts of alternative threshold updates are determined relative to impacts of the proposed updates.

- The assessment generally considers environmental conditions over the next 20 years, in that biophysical, scientific, and technological conditions that have contributed to non-attainment of existing threshold are assumed likely to persist over this planning horizon.
- Proposed new thresholds are attainable, likely within the 20 year planning horizon, but for some thresholds, additional time maybe required to achieve attainment.
- Implementation strategies and actions are not part of proposed project; these would be formulated in the Regional Plan Update and evaluated in an accompanying EIS. As noted, for this EA it is assumed that all proposed thresholds would eventually be attained.
- Socioeconomic impacts are not environmental impacts; only changes to the biophysical environment are considered in this document. (Where socioeconomic impacts result from changing thresholds and these impacts result in impacts to the biophysical environment, those impacts are considered.)
- Establishment of resource visions and desired conditions are not considered to be part of proposed project.
- Determining if proposed thresholds have sound scientific bases is not a purpose of this EA. The development of proposed thresholds with the assistance of technical working groups for each resource area have ensured a sound scientific basis for each proposed threshold.

## Summary of Direct and Indirect Impacts

A summary of the direct and indirect impacts is presented in Table 12. Following the table, a more detailed description of potential impacts for each resource is given.

**Table 12.** Potential Environmental Impacts of Changing TRPA Thresholds, and Proposed Mitigation Measures

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
<b>Air Quality Thresholds—Effects on Air Quality</b>			
1— <i>Criteria Pollutant Emissions and Re-entrained Road Dust.</i> Replacement of traffic-limiting thresholds (AQ-5 and -7) by air quality and water quality thresholds affecting traffic indirectly could allow traffic increases. As a result, increases in emissions of criteria pollutants and road dust re-entrainment could potentially result in diminished air quality and increased nutrient loading of water bodies.	Increased criteria pollutant emissions from vehicle exhaust would be unlikely to occur even with increases in VMT because (a) reduced emission rates per mile will likely offset the VMT increase, and (b) three criteria pollutants would be controlled by other air quality thresholds. However, increases in road dust are directly related to changes in VMT, so the potential increase in nutrient loading is potentially significant.	Provide that the proposed water quality threshold for the <i>Pollutant Load Sources/Reductions</i> specifically includes the contribution of re-entrained road dust (fine particulate less than 20 micrometers in diameter) to Lake Tahoe clarity. Retain the VMT threshold until the proposed TMDL-threshold is fully developed.  Localized BMPs and dust control strategies should continue to be applied and are included in TMDL strategies for pollutant load reduction. These and other mitigation measures such as appropriate sweeping measures should be effective.	Less than significant.
<b>Air Quality Thresholds—Effects on Other Resources</b>			
1— <i>Water Quality.</i> Atmospheric loading of nutrients in the waters of Lake Tahoe could increase because the existing, specific threshold for nitrogen loading would be replaced by a threshold for lake clarity and a TMDL-driven threshold for atmospheric loading.	See direct impact above.	See direct impact above.	Less than significant.
2— <i>Vegetation, Wildlife &amp; Fisheries, and Other Resources.</i> Carbon dioxide emissions from any increases in VMT and traffic volumes would contribute to local CO <sub>2</sub> concentrations and cumulatively to global CO <sub>2</sub> concentration, which has been implicated in global warming and resulting climate change and associated ecosystem impacts	If standards for criteria pollutants in the <i>Human and Environmental Health</i> threshold effectively preclude increases in VMT and traffic volumes, this potential impact would not occur. If it does occur, direct health or local ecosystem	Once the California Air Resources Board develops a California standard for emissions of CO <sub>2</sub> or carbon load reduction targets, modify the Regional Plan as required by the Compact to ensure compliance of sources in the Region.	Less than significant.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
	<p>effects from increased carbon dioxide emissions would be less than significant. The contribution to cumulative global effect would likely not be considerable in comparison to other increasing sources of CO<sub>2</sub>. However, the cumulative impact is considered likely to be significant by most investigators.</p>		
<b>Water Quality Thresholds—Effects on Water Quality</b>			
<p>1—<i>Pollutant Loading Sources</i>. Locally higher concentrations of pollutants could be allowed in tributaries, stormwater runoff, and stormwater infiltrating to groundwater. A currently-undefined pollutant loading threshold would replace existing specific concentration-based thresholds (WQ-4, WQ-5, and WQ-6) for tributaries, stormwater, and infiltration to groundwater. The undefined new threshold standards for pollutant load reduction would be linked to a new total maximum daily load (TMDL) for Lake Tahoe, and achieving it would not necessarily result in meeting the intent of all of the existing Lake Tahoe clarity-related standards for tributaries, stormwater runoff, and groundwater. As a result, water quality in tributaries, local drainages and water bodies receiving storm water, and groundwater would be unlikely to be diminished for those water bodies <i>per se</i>.</p>	<p>Implementation and management measures to be adopted under the TMDL, and supplemented by local storm water management plans, are very likely to compensate for the changes in threshold standards, and in the long-term water quality protection will probably increase as a result of the changes. Potential impacts are thus considered unlikely, but TMDL implementation is not yet defined. Therefore, this impact is considered unlikely, and potentially significant, but only if there are impacts to human and environmental health at Lake Tahoe clarity-related concentrations. Lake clarity related concentration standards are as much as an order of magnitude below those concentrations of sediment, nitrogen</p>	<p>As part of the development of TMDL implementation, evaluate potential effects of eliminating the existing specific-concentration thresholds WQ-4, WQ-5, and WQ-6 and replacing them with TMDL-related standards, programs, and management measures. Include needed changes in state standards to address any gaps attributable to the change and make them more consistent.</p> <p>During required periodic reviews and proposed coordinated adaptive management of TMDL implementation, evaluate whether TMDL-based standards provide adequate protection of tributaries and other waters. If not, adapt TMDL implementation and management of the proposed threshold standards.</p> <p>Develop separate TMDLs for any impacted stream water quality based on 303(d) listing for impacting constituents.</p>	<p>Less than significant.</p>

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
	or phosphorus that would have a direct impact on water quality of these sources.		
2— <i>Pollutant Loading Effects, Pelagic Lake Tahoe.</i> The new Secchi depth clarity standard (29.7 m annual average) could allow reduced lake clarity relative to the existing WQ-2 standard (33.4 m winter seasonal average).	Unlikely to be significant.. The annual average standard will incorporate seasonal measurements, and the proposed standard for average annual clarity is based on the same historical period as the existing standard for winter clarity. The use of annual average values should be at least as effective as winter seasonal average values for assessing long-term trends.	None needed.	n.a.
3— <i>Pollutant Loading Effects, Pelagic Lake Tahoe.</i> Eliminating of the phytoplankton productivity threshold could allow more algae in deep waters of Lake Tahoe, if the current assessment indicator of phytoplankton primary productivity is replaced by an assessment indicator based on visual clarity. Visual clarity, or absorption of light, is affected by the levels of both suspended fine sediment and phytoplankton, and will not directly represent algal productivity.	Unlikely to be significant. Although the change in threshold could theoretically allow more algae in Lake Tahoe, or higher seasonal variability due to peaks in primary productivity, the proposed clarity standard should ensure that there are no adverse effects on visual clarity.	None needed.	n.a.
4— <i>Pollutant Loading Effects, Littoral Lake Tahoe.</i> Nearshore turbidity and other water quality parameters of Lake Tahoe could be allowed to worsen by adoption of the proposed nearshore aesthetic-based threshold that would replace the existing turbidity threshold WQ-1.	The new threshold is expected to be developed after 2008 based on research to be completed and to address both turbidity and other variables. It is possible but unlikely that existing standards for nearshore turbidity would be relaxed, because the desired condition is improved transparency, and public interest in	Provide that the new aesthetic-based threshold includes equivalent or more restrictive standards or policies for nearshore clarity, aesthetics, attached algae growth, or suspended sediment concentrations relative to the existing standards and policies.	Less than significant.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
	increasing protection is high.		
5— <i>Other Lakes Water Quality</i> . This existing threshold is proposed to be eliminated and partially replaced by the Human and Environmental Health threshold. Water quality in other lakes in the Tahoe Region is not likely to have been protected by the existing threshold, but could potentially be diminished by changing to an ecologically based index of biological integrity that does not yet include specific numerical water quality standards.	Less than significant. The existing standards are based on state regulations, which will continue in place and will be used as the basis for the proposed <i>Water Quality Health Conditions Report</i> , and compliance standard for drinking water, water contact recreation, and aquatic toxicity standards.	None needed.	n.a.
<b>Water Quality Thresholds—Effects on Other Resources</b>			
1— <i>Wildlife and Fisheries</i> . Elimination of phytoplankton primary productivity (bioassay) indicator could allow more algae in deep waters of Lake Tahoe, if the current assessment indicator of phytoplankton presence is replaced by an assessment indicator based on visual clarity. Changes in phytoplankton productivity could affect food web dynamics in Lake Tahoe.	Unlikely to be significant. Although the primary productivity standard will be eliminated, standards for lake clarity and for pollutant loading to the lake will still limit algal productivity to oligotrophic levels in order to achieve the clarity objective. Therefore, any increase in phytoplankton productivity would be too small to significantly impact food web dynamics. Also, state standards for algal growth potential and plankton counts would remain in effect.	None needed.	n.a.
2— <i>Housing</i> . Compliance with new <i>Pollutant Loading Sources and Effects</i> thresholds might require changes in construction practices, land use, and private property BMP implementation, and result in increased development costs and therefore	Potentially significant, but likelihood of impact can not be defined at this time. The costs of meeting TMDL targets would	If costs of meeting the new TMDL targets raise the costs of low- to moderate-income housing significantly, maintain the current ratios of market rate, moderate-, and low-income housing through	Less than significant.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
decreased availability of low- and moderate-income housing relative to higher-income housing.	likely be partially funded by government programs and grants. However, implications to costs of housing is presently unknown.	mechanisms that could include public subsidy, restriction of market rate housing allocations, and incentives for mixed-use development.	
3— <i>Transportation, Public Services, and Recreation.</i> Compliance with new water quality thresholds could require investment in water quality improvement and constrain development and use of transportation systems and public services, and constrain recreation access.	Potentially significant, but the nature and likelihood of the potential impacts can not be defined at this time.	Provide that implementation of the TMDL strategies and use of the new water-quality IBI threshold attributes do not diminish the current extents and levels of public transportation and other public services in ways that would significantly diminish public safety or welfare, or eliminate public access to important recreational sites.	Less than significant.
4— <i>SEZs.</i> Standards for pollutant loading sources (TMDL load reductions) could require substantial reduction in fine sediment contribution from streams; extreme reductions could adversely affect geomorphic function of streams and associated ecological processes.	Unlikely but potentially significant. TMDL requirements are unlikely to but could result in reductions in stream channel erosion and associated fluvial and ecosystem function beyond background or natural levels.	Provide for TMDL-based water quality threshold standards to be protective of natural channel conveyance and geomorphic processes, allowing for natural bedload contributions of fine sediment from streams consistent with maintaining geomorphic function and associated ecological processes.	Less than significant.
<b>Soil Conservation Thresholds—Effects on Soil and Runoff</b>			
1— <i>Soil and Runoff.</i> Use of the 2006 new soil survey more accurately reflects conditions likely to be encountered in the field. Preliminary analysis indicates that new soil survey information identifies some land currently classified in lower capability now as higher capability classes. Using this map-based information, the 2006 soil survey with the Bailey coverage limits shows an increased amount of allowable coverage in certain instances, especially for residential land use and forest lands. This increased allowable coverage could be interpreted as allowing a possible increase runoff and soil erosion..	In reality, the field conditions have not changed nor the criteria used to determine allowable coverage on a site-specific basis. Thus, the predicted amount of allowable coverage would increase, but not the amount of allowable coverage realized by a site-specific investigation (land capability verification). The higher amount	None needed.	n a.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
	of allowable coverage identified by the 2006 soil survey is the difference in mapping accuracy, not field conditions. No increase in allowable impervious coverage is therefore expected		
<b>Soil Conservation Thresholds—Effects on Other Resources</b>			
1— <i>Housing; Transportation, Public Services, and Developed Recreation</i> . Application of impervious coverage allowances on a watershed basis could constrain construction of new housing or infrastructure. Especially in watersheds with significant excess coverage, application of the threshold by watershed could constrain additional coverage associated with development, re-development, or infrastructure improvements.	The significance of potential coverage constraints on housing availability or transportation systems is difficult to assess until additional information is developed, but it could be significant.	Develop a list and ranking of significantly overcovered watersheds based on application of the proposed threshold using the new soil survey, and identify the components of soil conservation/stormwater plans.  Define the procedures for application of IPES and for review of commercial and tourist re-development projects in watersheds with excess coverage, including reduction of excess cover and use of functional open space concepts to mitigate excess coverage, both during and after stormwater plan development and adoption. Incorporate mechanisms to avoid short- or long-term adverse effects on housing or transportation systems.	Less than significant
<b>Stream Environment Zones (SEZs) Thresholds—Effects on SEZs</b>			
None; the new threshold maintains the same standards as the existing threshold, but adds indicators to better define functional SEZ restoration.			
<b>SEZ Thresholds—Effects on Other Resources</b>			
None; proposed changes increase the focus on objectives that may benefit other resources.			



Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
<b>Vegetation Thresholds—Effects on Vegetation</b>			
<p>1—<i>Abundance of Common Plant Communities.</i> The relative abundance of certain common plant communities under the new <i>Healthy Vegetation</i> standard could be different than under the existing <i>Threshold V-1</i>. Target acreages for five plant communities would be replaced with target acreages based on extent of pre-settlement seral stages and vegetation structure. Extent of some communities could therefore become less than exists or is currently targeted.</p>	<p>Because the new targets better reflect environmental adaptation of the Region’s species and communities, the decrease in abundance of some stages of some plant communities would not be a significant impact.</p>	None needed	n.a.
<p>2—<i>Extent of Old-Growth.</i> Existing or target acreages of old-growth forest in the Region (late seral-stage forest vegetation) could change through the elimination of the specific acreage-target threshold (55% of forested land, with specified minimums for each elevation zone) of existing <i>Threshold V-4</i> and future reliance upon the proposed <i>Healthy Vegetation</i> threshold based on pre-settlement acreages.</p>	<p>Current extents of old-growth, late-seral stage forest in the Region are well below either the existing or the proposed target levels, because of past intensive logging. Because both targets call for considerable increases in old-growth forest, and the proposed targets are more representative of ecosystem potential, the relatively-small reduction in target levels for some communities is not a significant impact.</p>	None needed	n.a.
<p>3—<i>Vegetation in WUIs.</i> The new threshold for <i>Hazardous Fuels</i> would result in removal of forest trees and shrubs in and around communities to meet specific fire behavior standards, thereby potentially changing forest structure and possibly decreasing plant-species diversity.</p>	<p>Treatments do not constitute removal of species or change in the canopy structure. Regeneration capacity is still viable, forest structure is retained, or decrease plant species diversity is maintained. Fuel reduction treatments would change the forest structure by lowering vegetation density through</p>	None needed.	n.a.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
	<p>thinning, limbing, and understory plant removal. However, these treatments would restore fire-resistant vegetation and lower the risk of catastrophic loss of vegetation to intense fire. Therefore, the initial loss of vegetation is not significant.</p>		
<b>Vegetation Thresholds—Effects on Other Resources</b>			
<p>1—<i>Scenic Resources</i>—The new threshold for <i>Hazardous Fuels</i> would result in removal of forest trees and shrubs in and around communities to meet specific fire behavior standards, which could impede attainment of the existing or proposed scenic quality thresholds.</p>	<p>At the project level, attainment of the <i>Urban Vegetation and Fuels Threshold</i> could conflict with attainment of existing or proposed thresholds for scenic resources, which constitutes a potentially significant impact of the proposed threshold.</p>	<p>Include in the threshold additional indicators to assess, and management standards to provide, that fuels treatments are being conducted in a manner that is not diminishing scenic resource values protected by the proposed <i>Natural Environment Threshold</i>.</p> <p>Indicators could include (a) percentage of areas proposed for treatment under the <i>Hazardous Fuels Threshold</i> (WUIs) which have been analyzed for likelihood of treatments to impact attainment of the <i>Natural Resource Threshold</i>, and/or (b) the percentage of the number of analysis/modifications of proposed management prescriptions conducted prior to WUIs treatments to ensure that standards of the <i>Natural Resource Threshold</i> will be met.</p>	<p>Less than significant.</p>
<p>2—<i>Air Quality</i>—Air quality could be diminished and human health standards could be violated by prescribed burning actions seeking to attain the proposed <i>Hazardous Fuels</i> threshold in WUIs.</p>	<p>Potentially significant because prescribed burning has caused significant air quality degradation in the Region even when conducted on permissible burn days when</p>	<p>Supplement the hazardous fuel treatment threshold to include corollary management indicators and standards, or cross reference with the <i>Air Quality</i> visibility threshold to ensure that the number of days that complaints about smoke</p>	<p>Less than significant.</p>

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
	atmospheric conditions were anticipated to be conducive to dispersal of smoke.	from prescribed burning for hazardous fuels treatments are less than a maximum number deemed acceptable to the public for visibility or human health impacts (the latter are CARB health-based standards). Provide that where ever possible the Region utilizes non-burning methods for the disposal of hazardous fuels. In addition, fire should only be used on days when there is no atmospheric inversion layer that would prevent smoke from leaving the Region and extinguish the fire if smoke builds to unacceptable levels..	
3— <i>Recreation</i> —Broader protections for <i>Special-Status Plant Species</i> and uncommon plant communities ( <i>Plant Communities of Concern</i> ) could result in more limited recreation access in certain areas.	Most recreational uses are not limited to a specific location and can be constructed or relocated or operated differently without reducing recreational capacity substantially. Therefore, this impact is not significant.	None needed.	n.a.
<b>Wildlife and Fisheries Thresholds—Effects on Wildlife and Fisheries</b>			
1— <i>Habitat Protection for Special-status Species and Ecosystems</i> . Many of the IBI metrics proposed as diagnostic and attribute indicators for the aquatic and terrestrial ecosystem thresholds are incompletely developed (Type II and III) and will require full definition, testing, and validation before they can be effectively and reliably implemented. Until these steps have been successfully completed, it cannot be analyzed whether implementation of the proposed thresholds will provide existing protections for species and their habitats that are now provided under the current thresholds.	Due to the inherent scientific and logistic challenges of defining, testing, and validating complex multimetric variables, full implementation of the proposed thresholds will take considerable time. If existing thresholds are discontinued before this entire process is complete, existing protections for species and their habitats would be lost or significantly diminished.	Retain all existing thresholds and continue to implement them until the proposed thresholds have been fully defined, tested, and validated.	Less than significant

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
2— <i>Natural Resource Values</i> . The proposed IBI valuation process for determining and monitoring wildlife resource values and ecosystem integrity does not include weighted coefficients for the diagnostic or indicator metrics that would provide balanced representation of all variables in the final index value. Accordingly, the IBIs can potentially show progressive attainment of threshold standards as a result of incremental over-representation of dominant metrics. Reverse trends in under-represented metrics can potentially go undetected if only the composite indices are monitored.	Monitoring IBI metrics through trends in key attribute data should allow the monitoring agency to detect and respond to any apparent bias between metrics. However, the possible impact is potentially significant if this potential bias is not adequately evaluated together with management needs interpretations and conclusions drawn from final IBI values.	Provide that all variables are individually tracked to detect any adverse effects not apparent from diagnostic indicators alone.  Retain all existing thresholds and continue to implement them until the proposed thresholds have been fully defined, tested, and validated.	Less than significant.
3— <i>Shallow Lake Habitat</i> . The new <i>Aquatic Ecosystem</i> threshold may not preserve all undisturbed rocky substrate to 30' depth relative to the existing threshold (F-1), because the proposed aquatic-ecosystem indicators and standards for Lake Tahoe do not include habitat-type acreages.	Rocky substrate is not a limiting resource for Lake Tahoe fisheries. Proposed IBI fisheries attribute metrics would provide direct quantitative data on fisheries critical resources and habitat attributes that would allow management of Lake Tahoe fisheries more appropriately than using anon-limiting habitat measure.	None needed.	n.a.
4— <i>Stream Habitat</i> . The proposed threshold would not use the existing habitat condition classification, potentially resulting in habitat loss due to diminished capability to quantitatively measure stream habitat types.	The proposed threshold uses the benthic macro invertebrate IBI as the principle attribute indicator of stream habitat quality, not mileage of qualitatively classified habitat condition. This measure more precisely captures stream habitat condition, obviating the potential impact.	None needed.	n.a.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
5— <i>Instream Flow</i> . The proposed thresholds would potentially allow new streamflow diversions, which are not allowed under the existing threshold (F-3; no reduction in stream flows), which could impact stream fisheries.	The proposed threshold uses flow regime and a benthic macro-invertebrate IBI as fisheries attribute indicators, which would provide a stronger basis for a standard of stream flow conditions needed to sustain fisheries than a simple, no-flow-reduction standard. No fisheries impact would result from this threshold change.	None needed.	n.a.
6— <i>Special-Interest Wildlife</i> . Populations of some of the existing seven <i>special-interest wildlife species/groups</i> could decline, because current maintenance of disturbance-free zones around their population sites may not be part of the new special-status species threshold.	The proposed threshold provides special-status species monitoring methods that will accurately track their population status, but not necessarily prevent population decline. Disturbance free zones are currently in place to protect known occurrences, but it is not clear how the new threshold would prevent population declines. This potential impact could be significant.	Supplement the threshold by establishing that the management strategies for the new threshold provide that the existing threshold-defined disturbance free zones shall be at least as numerous and extensive as the existing zones, until it can be verified that populations intended to be protected will be viable without maintenance of all of existing disturbance-free zones.	n.a.
7— <i>Peregrine Falcon and Golden Eagle</i> . Occurrences of peregrine falcon and golden eagle, accidental or causal migrants in the Region, could diminish because they are currently <i>Special-Interest Wildlife Species</i> under Threshold W-1 but will not be special-status species under the new threshold for <i>Sustainability of Special-Status Species</i> .	Because the peregrine falcon and golden eagle are accidental or casual migrants in the Region, establishment specific population sites and disturbance free zones per the existing threshold has not been possible. Thus, the change in thresholds would not affect these species.	None needed.	n.a.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
8— <i>Waterfowl</i> . Populations of waterfowl in the Region could potentially be adversely affected because they are currently considered to be <i>Special-Interest Wildlife Species</i> under Threshold W-1 but would not be considered as special-status species under the new threshold for <i>Sustainability of Special-Status Species</i> .	Removal of this species group from the W-1 Special Interest Species list should have little effect on the population status of the waterfowl in the Region. However, until the marsh bird thresholds have been fully defined, tested, and validated, this impact is potentially significant.	Retain the existing threshold for waterfowl until the proposed marsh bird threshold has been fully defined, tested and validated.	Less than significant.
9— <i>Deer</i> . Populations of deer in the Region could potentially be adversely affected because they are currently considered to be <i>Special-Interest Wildlife Species</i> under Threshold W-1 but would not be considered as special-status species under the new threshold for <i>Sustainability of Special-Status Species</i> .	The principal impact on deer summering in the Tahoe Region is loss of wintering grounds outside of the Region to the east. Thus, removal of this species group from the special interest species list would likely have little effect on the populations in the Region	None needed.	n.a.
<b>Wildlife and Fisheries Thresholds—Effects on Other Resources</b>			
1— <i>Housing, Public Services, and Employment</i> . The proposed IBI and associated benchmarks for the <i>Biological Integrity of Terrestrial Ecosystem</i> threshold would tend to limit expansion of the influence of residential and commercial development into undeveloped areas, relative to existing thresholds.	No aspect of current formulation status of the new wildlife and fisheries thresholds indicates that they would inhibit development expansion more than the existing thresholds. Moreover, water quality and other thresholds would likely have much more effect. The potential impact is not significant.	None required.	n.a.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
<b>Scenic Quality Thresholds—Effects on Scenic Quality</b>			
1— <i>Scenic Integrity in Urban Areas</i> . The new “ <i>Urban</i> ” <i>Scenic Character Theme</i> could allow urban development in new areas and allow urban development to dominate the scenic identity. Under existing thresholds, urban-type development that would block views of mountain backdrops or require removal of trees that frame existing views may not meet the <i>Travel Route Rating</i> threshold (SR-1).	The change from the existing travel route rating system to the Scenic Integrity Level system may result in new urban development that is visually dominant and not consistent with the landscape. Although future urban development projects would still have to be consistent with TRPA design and development measures and would not be able to degrade scenic resources protected under the existing Scenic Quality ratings, this potential impact could be significant.	Limit areas mapped as <i>urban</i> under the new <i>Scenic Character Theme</i> standard to existing urban areas as defined in TRPA <i>Community Plans and Plan Area Statements</i> .	Less than significant.
2— <i>Community Design Standards</i> . The place-based planning process to establish community desired visual values may relax existing design standards in some planning areas, potentially allowing degradation of scenic resources compared to that required under existing thresholds..	While these existing design standards may be changed during the place-based planning process, the minimum Community Design Index Level must still be met in all Region project areas, so the changes would not significantly impact scenic quality.	None needed.	n.a.
<b>Scenic Quality Thresholds—Effects on Other Resources</b>			
1— <i>Vegetation</i> . Attainment of new Community Design Standards developed as part of the place-based planning process could affect the treatment prescription for an individual community’s ability to meet the vegetation standard of the Hazardous Fuels Threshold.	The implementation of the Hazardous Fuels Threshold involves only selective vegetation thinning that likely can be coordinated with scenic goals and community design standards, but this impact is	Include in the threshold additional management indicators to assess scenic impacts from fuels reduction, and standards to provide that attainment of the proposed <i>Natural Environment Threshold</i> is not contributing to non-attainment of	Less than significant.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
	potentially significant.	the <i>Hazardous Fuels Threshold</i> .  Indicators could include number of development approvals where consideration of attainment of the <i>Natural Environment Threshold</i> and the treatment prescriptions for <i>Hazardous Fuels Threshold</i> (WUIs) are analyzed simultaneously.	
<b>Noise Thresholds—Effects on Noise</b>			
None; all proposed changes would result in reduced noise levels.			
<b>Noise Thresholds—Effects on Other Resources</b>			
1— <i>Recreation and Transportation</i> . Application of California/TRPA noise standards to the Nevada portion of the Region for on-highway and off-highway vehicles, assuming increased enforcement relative to existing thresholds, could inhibit some existing motorized used for transportation and recreation in the Nevada portion.	Although standards for these uses currently are different for California and Nevada, in practice noise levels from these uses have not been perceptibly larger in Nevada. TRPA will work with the state of Nevada to adopt the same standards as the California Vehicle Code, in order to make the new standard more enforceable. Thus, little impact on existing motorized uses in Nevada is expected.	None needed.	n.a.
2— <i>Recreation</i> . The new single-event noise source standard for over-snow vehicles (the equivalent of 73 dBA at 50 ft, 15 mph) may require the replacement of older models with new, quieter models or decrease snowmobile recreation in the Region.	The potential effect on current snowmobile use is unknown, thus this impact is potentially significant.	Transition enforcement after the implementation of new thresholds.	Less than significant
3— <i>Recreation</i> . Motorized recreation activities could be reduced by more restrictive single-event standards for	Theses standards are undefined at this time, but the potential exists for	Transition enforcement the implementation of new thresholds to allow for public education	Less than significant



Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
snowmobiles and OHVs, and new, currently-undefined) 1-hr noise standards varying by land-use type, and new, currently-undefined noise standards to protect wildlife.	them to reduce motorized recreation activities. Thus the impact is potentially significant.	about the new standards and allow for development of improved motorized recreation technology that meets the standards.  Non-sensitive wildlife areas and areas not set aside for the quiet enjoyment of recreation should remain open to motorized recreation, subject to meeting the new standards.	
<b>Recreation Thresholds—Effects on Recreation</b>			
1— <i>Public Recreation Capacity</i> . The estimated amount of new recreational development that may be maintained and constructed under the new Access Threshold may be less than the amount of recreational PAOT capacity that could be developed under the existing R-2 threshold. Also, the Region’s capacity to accommodate additional recreation may be consumed by non-public-recreational uses. As a result, recreational opportunities that may be developed under the proposed thresholds may not be adequate to meet the public demand.	The likelihood that Region capacity would be used for non-recreational development is low, because the need to reserve capacity for recreational use never materialized under the existing PAOT system. The capacity being reserved with sewer/water providers would not change. Thus, this impact is potentially significant.	None needed.	n.a.
<b>Recreation Thresholds—Effects on Other Resources</b>			
1— <i>Vegetation, Fish and Wildlife, Water Quality, Soils, Air Quality, Noise, and Scenic Resources</i> . Removal of the <i>fair-share</i> policy that requires PAOTs to control recreational development may result in greater recreational development and increased impacts on natural resources.	The likelihood that recreational development under the proposed recreation thresholds would exceed the capacity reserved under the existing R-2 threshold is low, as indicated by the low numbers of PAOTs used over the last 20 years. No projects have been denied needed PAOTS, and non-PAOT	None needed.	n.a.

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures	Significance with Mitigation
<p>2—<i>Vegetation, Fish and Wildlife, Water Quality, Soils, Air Quality, Noise, and Scenic Resources.</i> The proposed <i>Opportunity and Access</i> thresholds remove existing R-1 language that specifies “low density recreational use” for new public access to the lake and other natural features, and “preservation of high quality undeveloped shoreline and other natural areas”, possibly allowing increased impacts to natural resources.</p>	<p>recreation development has always been widespread. Thus, this impact is less than significant.</p>	<p>None needed.</p>	<p>n.a.</p>
<p>Because the threshold establishes Region-wide policy guidance, the replacement of specific protective language of the existing threshold with proposed more-general protective language could result in projects not currently allowed. However, the vision and desired condition call for consistency with desired conditions for other resources. Management of recreation projects will consider location and existing conditions of sites (e.g., location in urban areas, or previously developed or disturbed sites) in determining new access, which may in some cases should be for higher density use and result in developed shoreline. The potential impacts is not significant.</p>	<p>recreation development has always been widespread. Thus, this impact is less than significant.</p>	<p>None needed.</p>	<p>n.a.</p>

## Air Quality

### Direct Impacts of Proposed Threshold Changes

#### Impact 1: Re-entrainment of road dust from traffic increases and consequent nutrient loading of water bodies could increase

##### Potential Impact

The traffic volume and VMT thresholds (AQ-5 and AQ-7) were originally designed to protect against CO violations and lake deposition. Without these standards, traffic volumes on U.S. Highway 50 and Region-wide VMT could increase, leading to increases in criteria-pollutant emissions. Motor vehicle exhaust consists of several criteria pollutants that are of concern in the Lake Tahoe Air Basin. Exhaust emissions include reactive organic gases and nitrogen oxides (which combine in the atmosphere to form ozone), CO, and particulate matter (PM10 and PM2.5). Increases in traffic volume could also increase re-entrainment of road dust to the atmosphere and consequent deposition into Lake Tahoe and other water bodies, loading them with aquatic-ecosystem nutrients including nitrogen and phosphorus.

##### Likelihood of Occurrence/Potential Significance

Increased criteria pollutant emissions from vehicle exhaust would be unlikely to occur even with increases in VMT. Due to improvements in vehicle exhaust controls and turnover in the vehicle fleet, even with substantial increases in VMT, exhaust emissions of criteria pollutants are projected to decrease through 2025. Deposition of nitrogen to Lake Tahoe from NO<sub>x</sub> in motor vehicle exhaust will therefore also decrease over the next several years, even with increases in VMT. Moreover, three criteria pollutants (CO, ozone, and PM) would be controlled by other air quality thresholds that reflect state law limiting ambient air concentrations.

Unlike exhaust emissions, however, increases in re-entrained road dust are related to increases in VMT, numbers of vehicles and vehicle speed. Consequently, increases in VMT could result in increased deposition to Lake Tahoe and other water bodies from re-entrained road dust. The re-entrainment of road dust by vehicles might be partially controlled by the other air quality threshold for Human Health reflecting state law limiting ambient air concentrations of PM10 and PM2.5, but the number and distribution of monitoring stations may preclude complete control. Accordingly, the potential for increased nutrient loading of water bodies due to elimination of the VMT and traffic volume thresholds is a potentially significant effect.

##### Mitigation Measures

Provide that the proposed water quality threshold for the *Pollutant Load Sources/Reductions* specifically includes the contribution of re-entrained road dust (fine particulate less than 20 micrometers in diameter) to Lake Tahoe clarity. Retain the VMT as a measure of project impact or congestion threshold until the proposed new TMDL-threshold is fully developed.

Localized BMPs and dust control strategies should continue to be applied and are included in TMDL strategies for pollutant load reduction. These and other mitigation measures such as appropriate sweeping measures should be effective.

##### Significance with Mitigation

Less than significant.

## Indirect Impacts to Other Resources of Proposed Threshold Changes

### **Impact 1: *Water Quality—Atmospheric loading of nutrients to Lake Tahoe could increase and lake clarity could decrease with threshold elimination***

#### **Potential Impact**

*Water Quality*—Atmospheric loading of nutrients in the waters of Lake Tahoe could increase, decreasing lake clarity, because the existing, specific threshold for nitrogen loading would be replaced by a threshold for lake clarity and a TMDL-driven threshold for reduction of atmospheric loading.

#### **Likelihood of Occurrence/Potential Significance**

See direct impact above.

#### **Mitigation Measures**

See direct impact above.

#### **Significance with Mitigation**

Less than significant.

### **Impact 2: *Vegetation, Wildlife & Fisheries, and Other Resources—carbon dioxide emissions from any traffic increases would contribute slightly to global warming effects***

#### **Potential Impact**

In addition to criteria pollutant emissions discussed in the direct air quality impact 1, motor vehicles also emit carbon dioxide. Carbon dioxide (CO<sub>2</sub>) is a greenhouse gas and is implicated as the primary contributor to global warming. The traffic volume and VMT thresholds were originally designed to protect against CO violations and lake deposition. As described in Direct Impact 1, without these standards, traffic volumes and VMT could increase. However, due to existing and proposed vehicle exhaust controls, the emissions of criteria pollutants are expected to decrease substantially through at least 2025. However, these emission controls will have no effect on CO<sub>2</sub> emissions, since CO<sub>2</sub> is the byproduct of gasoline combustion. Consequently, increases in VMT would result in a proportionate increase in CO<sub>2</sub>. Therefore, by eliminating the traffic volume and VMT thresholds, CO<sub>2</sub> emissions could increase with any increases in traffic volume and VMT.

#### **Likelihood of Occurrence/Potential Significance**

If standards for criteria pollutants in the threshold for human and ecosystem health effectively preclude increases in VMT and traffic volumes, this potential impact would not occur.

CO<sub>2</sub> emissions are not a direct health concern in concentrations typically found in the ambient environment. Even though increases in VMT or traffic volume would increase CO<sub>2</sub> emissions, those emissions would not result in direct health effects to humans or direct environmental effects to the ecosystem. The effects would be cumulative in that CO<sub>2</sub> emissions within the Lake Tahoe Basin would contribute to cumulative worldwide greenhouse gas emissions, atmospheric concentrations of CO<sub>2</sub>, global warming, and resulting ecosystem impacts. The climatic changes that are occurring as a result of global warming and those impacts that will continue to occur may lead to future detrimental ecosystem effects worldwide and in the Lake Tahoe Basin.

**Mitigation Measures**

Once the California Air Resources Board develops a California standard for emissions of CO<sub>2</sub> or carbon load reduction targets, modify the Regional Plan as required by the Compact to ensure compliance of sources in the Region.

**Significance with Mitigation**

Less than significant.

**Impacts of the No-Action Alternative Relative to the Proposed Project**

Three of the existing indicators—AQ-1 Carbon Monoxide, AQ-2 Ozone, and AQ-3 Particulate Matter—were based on previously set ambient air quality standards established by the U.S. EPA, California, Nevada, and TRPA. However, over time, standards have been added and some have been made more stringent. For example, new standards have been adopted for PM<sub>2.5</sub> while 8-hour averaging times have been set for ozone.

The new thresholds use as an indicator any health standards for CO, ozone, and particulate matter and consequently would be automatically updated if and when the ambient standards are strengthened by the U.S. EPA, California, Nevada, or TRPA. Under the No-Action Alternative, recent changes to the ambient standards would not be accounted for in TRPA's thresholds.

The No-Action Alternative could also have a significant effect on visibility. The existing standards are less than the current visibility conditions in the Region. Without new more stringent standards, the progress made during the past twenty years could be reversed, which would allow existing visibility to decline.

**Impacts of the Emissions-Reduction Alternative Relative to the Proposed Action**

This alternative could also result in increased emissions of criteria pollutants and re-entrained road dust, depending on how emissions per person-mile (EPPM) were defined and how well mass transit were utilized. For example, a full bus would likely have lower EPPM than a group of passenger cars transporting the same number of people. However, if the bus were only partially full, then the passenger cars might have lower EPPM. Thus, if the EPPM studies implementing this threshold indicate that more buses should be used in the Lake Tahoe Region, but ridership remains low, implementation of this threshold could actually increase VMT within the Region, which would result in an increase in the amount of re-entrained dust that could be deposited into Lake Tahoe. The likelihood of this adverse effect materializing would need additional study.

The mitigation measure for this potential effect would be include that stated for Direct Impact 1 of the proposed project. Moreover, the alternative threshold should be formulated so that it minimizes both EPPM on a vehicle selection basis and increases in VMT.

The EPPM standard could result in increased traffic volumes comparing use of hybrid vehicles and high emissions buses and VMT. It is unlikely that CO<sub>2</sub> emissions would correspondingly increase. However, to the extent that EPPM is measured accurately, emissions of CO<sub>2</sub> and other pollutants would be minimized. In addition, this alternative threshold could be formulated so that it minimizes both EPPM through the selection of low emissions vehicles and any increases in VMT overall.

## Water Quality

### Direct Impacts of Proposed Threshold Changes

#### **Impact 1: *Locally higher concentrations of pollutants could be allowed in tributaries, stormwater runoff, and stormwater-infiltrating to groundwater***

##### **Potential Impact**

The existing concentration-based Lake Tahoe clarity-related standards for tributaries, storm water, and storm water infiltrating to groundwater were thought to represent conditions in relatively undisturbed watersheds, and reducing pollutant loads from surface runoff and groundwater, respectively. These standards will be replaced with new TMDL loading allocations designed to improve Lake Tahoe clarity. These TMDL-based management standards are expected to require significant reductions in the present pollutant loads in storm water. Implementation measures needed to meet TMDL objectives for loading to the lake are not yet defined, and therefore the local effects of TMDL implementation on tributaries, storm water, and storm water infiltrating to ground water are also not known. Replacement of the existing concentration standards with a lake-clarity based loading standard could potentially allow tributary and storm water quality to locally decline by shifting from the more general applicability of concentration-based standards to a focus on total loads to the lake. Concentrations of nutrients and sediment above those allowed by the existing standard could potentially occur in Lake Tahoe tributaries, local drainages, SEZs, and other water bodies while meeting the loading objectives for the lake. In addition, elimination of the standard for storm water infiltration to groundwater could potentially affect local or regional groundwater quality.

##### **Likelihood of Occurrence/Potential Significance**

For all three types of waters considered under this impact (tributaries, storm water, storm water infiltrating to ground water), controls on water quality would generally revert to state standards after elimination of the existing threshold, unless implementation of the TMDL provided stricter controls. Because implementation measures for the Lake Tahoe TMDL are presently unknown, the discussion that follows considers state standards that would apply in each case.

##### ***Tributary Water Quality***

Nutrients. For streams tributary to Lake Tahoe, the existing threshold (WQ-4) standard refers to applicable state standards for dissolved nutrients. These standards have been interpreted to apply to existing California and Nevada state standards, some of which are based on total rather than dissolved constituent concentrations. In addition, the standards are different in the two states. The existing threshold is therefore somewhat difficult to interpret. Nevertheless, the state standards would remain in place after modification of the threshold, and in general this would prevent adverse effects with respect to dissolved nutrient concentrations.

A potential exception occurs in Nevada, where reference to dissolved concentrations in the existing threshold has been interpreted to apply the standard for soluble phosphorous in Lake Tahoe (0.007 mg/l annual average concentration) to the tributaries (TRPA 2006a). Elimination of the threshold standard might and should eliminate this erroneous interpretation, and control on dissolved phosphorous concentrations would revert to the state standard of 0.05 mg/l annual average concentration for total phosphorous (TP) or specific standards required to maintain higher water quality (RMHQs) for some streams, which are up to an order of magnitude higher. This could potentially allow increased dissolved phosphorous (DP) concentrations. Because the ratio between DP and TP varies, the effect of this change is difficult to evaluate. In this case, eliminating the threshold potentially allows higher concentrations, but the effects of higher concentrations have not been determined. Existing threshold nutrient concentrations

were intended to protect Lake Tahoe clarity, and are thus lower than typical standards for streams in other areas. An increase in allowable concentrations might not have detrimental effects on ecosystem and public health or other beneficial uses, but this has not been determined.

***Sediment.*** For sediment, the existing threshold refers to suspended sediment concentrations (SSC), and establishes a standard of 60mg/l for the 90<sup>th</sup> percentile sample value. The existing state standards for sediment are not based on the same parameters as the threshold standard.

In California, a general surface water objective limits the increase in turbidity to less than 10% of natural levels, and requires waters to be free of coloration that causes nuisance or adversely affects the water for beneficial uses (however, turbidity has not been consistently measured on Tahoe streams). This general objective is unlikely to provide the same level of protection as the existing SSC standard. California standards for total dissolved solids (TDS) on individual streams (annual average concentration standards vary from 30 to 90 mg/l; 90<sup>th</sup> percentile standards vary from 60 to 90 mg/l) have been referenced in relation to this threshold standard, but the TDS measurements and standards are not directly relevant to suspended sediment concentrations<sup>2</sup>. Elimination of the existing threshold and reliance on the California standard may therefore affect tributary water quality with respect to suspended sediment. The other state standards (TDS, turbidity, color, nutrients) would likely have some effect on controlling suspended sediment concentrations, including focus on fine particulate sizes relevant to Lake Tahoe clarity, but the level of protection afforded tributary streams is not directly comparable with the existing threshold.

In Nevada, a standard exists for total suspended solids (TSS): sample values of not more than 25 mg/l, turbidity less than 10 NTU, and color not more than 75 Platinum-Cobalt Units (PCU). TSS and SSC are determined using different analytical techniques, and they are not directly comparable (Gray et al 2000). TSS measurements are less likely to include sand size particles, but these particles are not as strongly associated with water quality problems as finer particles. Both TSS and SSC are measures of suspended material in a sample, and the Nevada standard affords protection at least similar to the existing threshold standard. The effect of eliminating the existing threshold standard in Nevada is therefore likely less than significant for sediment.

#### ***Storm Water Discharge***

The existing threshold standard for stormwater (WQ-5) limits concentrations of dissolved nutrients (DIN, 0.5 mg/l; DP, 0.1 mg/l; DFe < 0.5 mg/l at 90<sup>th</sup> percentile), suspended sediment (SSC < 250 mg/l at 90<sup>th</sup> percentile), and grease and oil (Sample Value < 2.0 mg/l) to be below specified numeric values. In California, state standards exist for nutrients that use the same numeric values as the threshold standard, but refer to total concentrations (TN, TP, TFe) rather than dissolved concentrations. Because only a fraction of the total nutrients typically occur in dissolved form, this standard is more restrictive than the existing threshold. In Nevada, no state standards exist and elimination of the threshold would allow higher concentrations of nutrients in storm water.

Neither California nor Nevada has state standards for suspended sediment in storm water, but California has a standard of 20 NTU for turbidity. There is no direct correlation between turbidity and SSC, but turbidity is more closely correlated with fine sediments that are a concern for Lake Tahoe water quality. California has the same grease and oil standards as the TRPA threshold. Nevada does not have a standard for grease and oil.

For stormwater discharge, elimination of the existing threshold would eliminate standards for some constituents and revert to state standards for others that are not directly comparable to the existing standard.

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<sup>2</sup> TDS measurements are intended to quantify dissolved (non-particulate) constituents in filtered samples (less than 2 microns), and SSC concentrations measure suspended (particulate) sediment.

Higher constituent concentrations in stormwater may not directly create a significant adverse impact—the effect of this change on receiving waters is more important. The original focus of the existing threshold was stormwater loading to Lake Tahoe, but potential impacts associated with elimination of the threshold are more associated with its application to stormwater discharges to local streams, drainage courses, and water bodies. Lake Tahoe's urban drainage system is partially conveyed in traditional infrastructure (storm drains and constructed channels) and partly through natural drainage courses and SEZs. Stormwater discharges to SEZs, streams, and drainage courses currently must meet the existing threshold standards. Elimination of the standards could potentially allow higher concentrations to be discharged to SEZs, streams, and natural drainage courses, and this effect is considered potentially significant. The change is more significant in Nevada than California, where existing state standards provide nearly equivalent protection.

#### ***Stormwater Infiltration to Groundwater***

The existing threshold standard for storm water infiltration to groundwater (WQ-6) limits concentrations of total nutrients (TN<5 mg/l; TP<1 mg/l; TFe<4 mg/l at 90<sup>th</sup> percentile), turbidity (<200 NTU), and grease and oil (Sample Value <40 mg/l). California has the same standards, but Nevada does not have comparable state standards. Therefore, elimination of the existing threshold could allow higher levels of pollutants in stormwater discharges for infiltration to groundwater in Nevada, unless TRPA's Code of Ordinances, Chapter 81 retains the current stormwater standards as a management fall-back. Stormwater infiltration to groundwater using typical BMPs has been demonstrated to have effects on groundwater nitrate concentrations (2NDNature 2006). Elimination of the threshold therefore has potential effects on groundwater quality, if pre-infiltration management approaches are not employed. Increases in groundwater concentrations associated with infiltration may not result in significant adverse impacts to groundwater quality relative to drinking water quality or general groundwater quality standards, but this has not been studied or determined. Source water protection zones have been established by TRPA and the water purveyors around drinking water wells, and continued sampling of these wells would detect any localized impacts to drinking water sources. Potential impacts on Lake Tahoe due to groundwater nutrient contributions would be addressed by the TMDL, and TMDL implementation might also reduce or eliminate more general potential impacts to groundwater quality. However, the potential effects and implementation controls are not determined at this time, and elimination of the threshold could allow higher concentrations to be discharged to groundwater. This effect is therefore considered potentially significant.

#### ***Implications of TMDL***

The likelihood of the potential effects described above is difficult to assess until TMDL load reduction strategies are better defined. Implementation of the TMDL load reductions will have effects on tributary and storm water quality, including storm water infiltrated to groundwater, as a means to achieve the lake clarity objective. However, the TMDL concept includes some possible flexibility to meet the required load reductions to the Lake, including potential tradeoffs between different sources and constituents. The existing thresholds were intended to achieve lake clarity indirectly by addressing sources with uniform standards for source types. The new TMDL-based threshold is more consistent with current science, and with future regulatory and management programs. It can therefore be expected to be more effective than the current thresholds in achieving the lake clarity objective. The current TMDL development program includes detailed analysis of the same sources addressed by the current thresholds (plus others), and over the long term can be expected to increase the focus on sources of pollutants to the lake. However, elimination of the existing WQ-4, WQ-5, and WQ-6 thresholds will eliminate some standards that now apply to local sources although these standards are not uniform between the two states and TRPA, and similar standards may not be adopted as part of the lake clarity TMDL (although the two states and TRPA have agreed to evaluate these once the TMDL is completed). Implementation and management measures to be adopted under the TMDL, supplemented by local storm water management plans, are very likely to



compensate for the changes in threshold standards, and in the long-term water quality protection will probably increase as a result of the changes. Potential impacts are thus considered unlikely, but water quality protection for tributary streams, SEZs, local drainages, and groundwater (in addition to lake clarity) has a high level of importance and sensitivity in the Tahoe Region. Therefore, this impact is considered unlikely, but potentially significant.

### **Mitigation Measures**

As part of the development of TMDL implementation strategies, evaluate potential effects on tributary streams, SEZs, local drainage courses, and groundwater of eliminating the existing thresholds and replacing them with TMDL-related load reduction targets, programs, and management measures. Include in this evaluation an assessment of the need for changes in state concentration-based standards to fill any gaps left by threshold standard elimination, and to recommend more consistent state standards for tributaries and other waters. Both states, EPA, and TRPA management and staff agreed in 2001 that such an evaluation is needed for the development of consistent standards..

During periodic reviews proposed for coordinated adaptive management of TMDL implementation and adoption of new thresholds under the Regional Plan Update, evaluate whether adequate protection of tributaries and other waters is provided. If not, adapt TMDL implementation and management of the proposed threshold standards.

### **Significance with Mitigation**

Less than significant.

## **Impact 2: The new annual average Secchi depth clarity standard could allow reduced lake clarity relative to the existing winter seasonal average standard.**

### **Potential Impact**

The existing threshold standard (WQ-2) refers to the winter average Secchi disk depth (33.4 m). Replacement of this standard with an annual average (29.7 m) could allow reduction of clarity in the winter season.

### **Likelihood of Occurrence/Potential Significance**

This potential effect has a high level of importance in the Lake Tahoe Region. However, the proposed change will incorporate winter seasonal values as part of the annual average, and both the existing and proposed standard are related to data for the same historical period (1967–1971) as a target for lake clarity. In addition, existing state standards for Lake Tahoe will remain in effect, and the new TMDL loading allocations and related load reduction management standards will be directly related to lake clarity.

Both California and Nevada have standards for Vertical Extinction Coefficient less than 0.08/m when measured below the first meter, and California has an annual average Secchi depth standard of 29.7 m (same as proposed threshold).

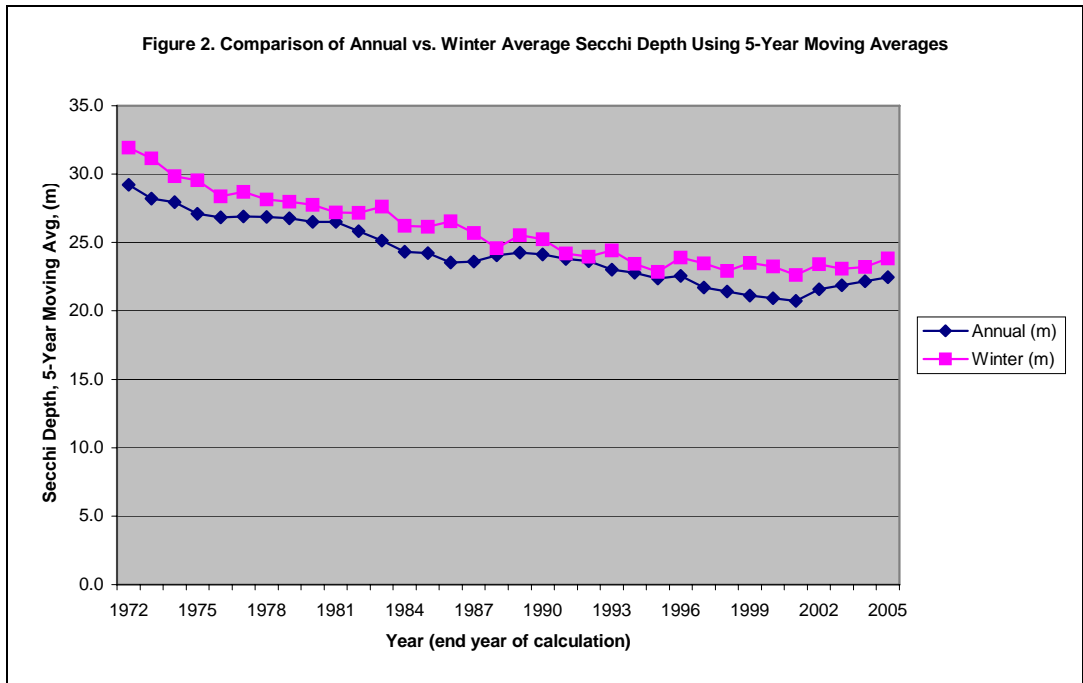
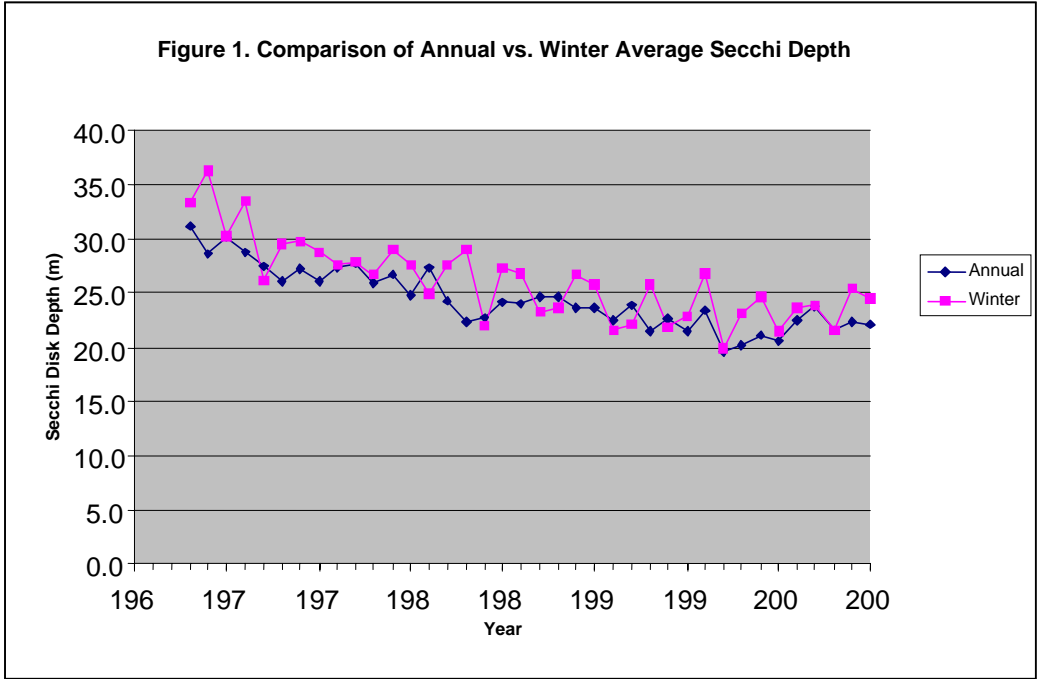
Figure 1 shows the historical trend in both annual average and winter seasonal average Secchi disk depth data collected by Tahoe Research Group/TERC and illustrates significant inter-annual variability in the measurements. Figure 2 shows a five-year moving average of the same data, which better illustrates the long-term relationship between annual average and winter seasonal average values.

The average difference between the two 5 year moving average data points over the period of record is approximately 1.6m, and the maximum difference is approximately 3.0 m. Therefore, change to an average annual value that is 3.7m lower than the annual average value could be argued to reduce the

clarity objective in relative terms. However, both standards reflect exceptional clarity and the same historical target period.

This effect is considered unlikely to be significant from an aesthetic perspective (both values reflect exceptional clarity during the same target period and high variability occurs naturally), or from an ecological perspective (both values represent extremely oligotrophic conditions).

Winter Secchi depth data are a component of seasonal average values, but a shift to annual average values for the standard could eventually result in a change in data collection that would reduce the winter data available for scientific or management purposes. This is unlikely, however, since the sampling frequency to determine the average annual Secchi depth is currently year round rather than being focused on any particular season. TRPA could ensure that a program is in place for continued long term collection and analysis of winter Secchi depth data at the current sample locations and frequency.



**Mitigation Measures**

None are required.

**Significance with Mitigation**

Not applicable.

**Impact 3: Elimination of phytoplankton productivity indicator could allow more algae in deep waters of Lake Tahoe.****Potential Impact**

The existing threshold standard for phytoplankton primary productivity (WQ-3) would be eliminated in favor of using annual average Secchi depth as the sole indicator for clarity. Visual clarity is affected by the levels of both suspended fine sediment which scatters light and phytoplankton absorption of light, and the proposed thresholds will not directly represent algal productivity. This could allow more algae in Lake Tahoe, reducing water quality.

**Likelihood of Occurrence/Potential Significance**

Although the change in threshold could theoretically allow more algae in Lake Tahoe, or perhaps higher seasonal variability in clarity due to peaks in primary productivity, the proposed clarity standard should ensure that there are no adverse effects on visual clarity. In addition, the TMDL loadings will address the reduction of algal nutrient (nitrogen and phosphorous) loading to Lake Tahoe to control algal productivity and meet the proposed clarity standard.

Available data indicate that there is not a direct correlation between primary productivity and clarity measured by Secchi depth. The intent of the existing threshold was to improve clarity by reducing algal productivity, but current scientific analysis indicates that fine sediment may be more important to clarity. Elimination of the primary productivity standard should not affect achieving the clarity target because other more direct metrics are included in the proposed thresholds for this purpose.

An increase in primary productivity has occurred over the past 35 years, and levels four times higher than the existing standard (52 gC/m<sup>2</sup>/yr) are occurring, and could theoretically continue to occur with the proposed change. However, primary productivity can be reasonably expected to be limited by the clarity standard and TMDL reduced loadings for nitrogen and phosphorus to levels that represent exceptional lake water quality from aesthetic, chemical, and biological perspectives. Therefore, this effect is considered unlikely to be significant.

Primary productivity bioassay data provide information for understanding the role of nitrogen and phosphorus limitation for algal growth. Chlorophyll-a data is used to evaluate the effect of algal population dynamics on clarity. Data collection of both types would not be eliminated by eliminating the PPr threshold, but continued collection of this data is important for scientific and management purposes. A change in the threshold standard could reduce focus on primary productivity data, but this is unlikely given the current research uses of the data, and TRPA could ensure that a program is in place for continued long term collection and analysis of primary productivity data at the current sample locations and frequency.

**Mitigation Measures**

None are required.

**Significance with Mitigation**

Not applicable.

**Impact 4: Nearshore turbidity of Lake Tahoe could increase by adoption of a new nearshore aesthetically-based threshold that will replace the existing turbidity threshold.**

**Potential Impact**

A new aesthetic-based standard for nearshore water quality is expected to be developed after 2008 based on research to be completed. The new indicators and standards are not yet developed, but they could focus on a variety of specific sources/causes that affect nearshore water quality and aesthetics and not necessarily on littoral turbidity. Because the proposed standard is currently undefined, nearshore turbidity could conceivably be allowed to increase under the new aesthetic standard.

**Likelihood of Occurrence/Potential Significance**

The intent of developing a new indicator and standard is to be more protective of nearshore water quality as well as aesthetics. The existing threshold standards for turbidity (WQ-1) have been attained, but are not considered adequate to protect the water quality of the nearshore area from an aesthetic perspective. The existing standard for periphyton has not been used to track progress, and lacks an adequate scientific baseline due to limited data and uncertainty that the historical data adequately represent the desired conditions.

The existing standard will remain in place until research is conducted to establish a new standard, but will be monitored at up to the 2 m depth rather than the 25 m depth. Water quality at the 2 m depth has been shown to be more sensitive to nearshore effects and inflows (Taylor et al 2004). Therefore, the change in indicator depth is expected to be more protective of nearshore water quality and result in no significant adverse effects.

It is anticipated that the new standard will incorporate clarity (i.e., turbidity, light transmission, or other measure), visual aspects (visible pollutants), and possibly periphyton metrics (Benoit pers. comm.), based on current research intended to develop practical standards that are more protective of nearshore water quality than the existing nearshore turbidity standard. However, because indicators and standards have not yet been defined, a potential exists for relaxation of current turbidity standard, which could be a significant impact. This is considered unlikely because the intent of developing a new indicator and standard is to improve transparency relative to the existing standard. The new standard will be subject to public review, and there has been previous public expression against any relaxation of nearshore standards, even on a local basis such as South Shore areas which have had elevated turbidity.

**Mitigation Measures**

Provide that the new aesthetic-based threshold includes equivalent or more restrictive standards or policies, relative to the existing standards and policies, for nearshore clarity, aesthetics, attached algae growth, or suspended sediment concentrations.

**Significance with Mitigation**

Less than significant.

**Impact 5: Water quality in other lakes in the Tahoe Region could potentially be degraded by elimination of the existing standard.**

**Potential Impact**

The existing threshold which only say to attain state standards is being eliminated and being partially replaced by the Human and Environmental Health threshold. Water quality in other lakes in the Tahoe

Region could potentially be diminished by changing to an ecologically based index of biological integrity that does not yet include specific numeric water quality standards.

#### **Likelihood of Occurrence/Potential Significance**

The existing standards (WQ-7) refer to standards for physical parameters and concentrations of constituents for which state standards exist. In California a specific standard exists for Fallen Leaf Lake. Other lakes in California and Nevada are protected by more general *water quality objectives for surface water* or standards protecting beneficial uses. However, most other lakes have never been monitored and have no baseline data or numeric standards. The 1982 *Study Report for the establishment of Environmental Threshold Carrying Capacities* stated that: "There are not sufficient data to determine causal relationships between land use activities and water quality of other lakes in the Tahoe Basin." For these reasons, the existing threshold does not provide substantial protection of water quality in other lakes in the Region, and a basis for standards or management measures does not exist.

The proposed threshold change is based on the need to identify problems in individual other lakes relative to their individual ecology, and implement strategies to reduce or eliminate identified impacts. The existing state standards will remain in place and be supplemented by the proposed threshold standards. This potential impact is considered less than significant.

#### **Mitigation Measures**

None required.

#### **Significance with Mitigation**

Not applicable.

### **Indirect Impacts to Other Resources of Proposed Threshold Changes**

#### **Impact 1: *Wildlife and Fisheries—Elimination of phytoplankton productivity indicator could allow more algae in deep waters of Lake Tahoe and affect food web dynamics***

##### **Potential Impact.**

The existing threshold standard for primary productivity would be eliminated in favor of a single standard using Secchi disk depth for lake clarity. This could allow higher levels of algal growth in Lake Tahoe that would affect food web dynamics or other ecological processes.

#### **Likelihood of Occurrence/Potential Significance**

Although the primary productivity standard will be eliminated, standards for lake clarity and new TMDL-based standards for pollutant loading to the lake will still limit algal productivity to oligotrophic levels in order to achieve the clarity objective. Therefore, it is unlikely that changes would result from the proposed threshold change at an order of magnitude to significantly effect the food web. In addition, existing state standards in California and Nevada for *algal growth potential* and for *plankton counts* would remain in effect.

Primary productivity data collection and analysis is important for scientific and management purposes even though primary productivity may be eliminated as a threshold standard. Accordingly, TRPA could ensure that a program is in place for continued long term collection of Lake Tahoe primary productivity data. TRPA also intends to include component benchmarks in the *Index of Biological Integrity* for aquatic ecosystems that represent the linkage of primary productivity to ecosystem health in Lake Tahoe.

This effect is considered unlikely to be significant.

**Mitigation Measures**

None are needed.

**Significance with Mitigation**

Not applicable.

**Impact 2: *Housing—Compliance with new Pollutant Loading Sources and Effects Thresholds might require changes in construction practices, land use, and private property BMP implementation that result in increased development costs and consequent reduced availability of lower-income housing.*****Potential Impact**

The TMDL-based pollutant loading sources threshold is expected to result in significant required reductions in pollutant loads from urban areas, including new and existing residential development. This could lead to additional controls on construction practices to reduce offsite sediment transport, changes in land use or building allocations, and increased requirements for private property BMP implementation. Increased costs associated with new construction and retrofit of existing development could make it more difficult for low- and moderate-income families to obtain housing in the Tahoe Region. However, the extent of required changes and their indirect effects on housing, if any, cannot be defined until TMDL implementation strategies are further developed.

**Likelihood of Occurrence/Potential Significance**

The likelihood and significance of this potential effect can not be defined at this time. The costs of meeting TMDL targets will likely be partially funded by government programs and grants, but the extent to which they will affect private property owners and housing costs is presently unknown.

**Mitigation Measures**

If costs of meeting the new TMDL targets significantly raise the costs of low- to moderate-income housing, maintain the current ratios of market rate, moderate-, and low-income housing through public subsidy, restriction of market rate housing allocations, and incentives for mixed-use development. Implementation of these policies will be evaluated in the Regional Plan Update EIS.

**Significance with Mitigation**

Not applicable.

**Impact 3: *Transportation, Public Services, and Recreation—Compliance with new water quality thresholds could result in constraints to existing transportation systems, public services, and recreation access.*****Potential Impact**

The TMDL-based pollutant loading sources threshold is expected to result in significant required reductions in pollutant loads from urban areas, including new and existing residential development. This is likely to require significant public investment and may also result in constraints on transportation system usage and development, changes in public services such as snow plowing and traction abrasive application, and reduced recreational access to sensitive lands or SEZs for the purpose of minimizing disturbances that affect water quality. The water-quality IBI for aquatic ecosystems could conceivably constrain recreation access to some areas to protect water quality and ecological health, if locations are identified where recreational activities are the source of problems or impacts.

**Likelihood of Occurrence/Potential Significance**

The extent of required changes and their indirect effects on transportation, public services, and recreation cannot be defined until TMDL implementation strategies and the IBI threshold are further developed, such that the likelihood and significance of this effect can not be defined at this time. Presumably, significant public investment would be made to improve water quality while maintaining at least the existing level of transportation and public services, but this is currently unknown. New water quality TMDL-based thresholds, combined with IBIs for aquatic ecosystems, could conceivably constrain recreation access to some areas to protect water quality and ecological health. This likelihood of this effect is also currently unknown.

**Mitigation Measures**

Ensure that implementation of the TMDL strategies and use of the new water-quality IBI threshold attributes do not diminish the current extents and levels of public transportation and other public services in ways that would significantly diminish public safety or welfare, or eliminate existing public access to important recreational sites.

**Significance with Mitigation**

Less than significant.

**Impact 4: *SEZs—Standards for pollutant loading sources (TMDL load reductions) could require substantial reduction in fine sediment contribution from streams and adversely affect geomorphic function of streams and associated ecological processes*****Potential Impact**

The new TMDL-based standards could require reductions of fine sediment delivery from stream channel erosion, which has been identified as a significant source of this pollutant to Lake Tahoe (Simon 2004). Erosion is a natural process and extreme reductions could interfere with geomorphic function of streams and SEZs and associated ecological processes that reflect natural levels of disturbance and physical evolution of channels.

**Likelihood of Occurrence/Potential Significance**

The extent of required reductions and their implications for streams cannot be defined until TMDL implementation strategies are further developed. TMDL requirements could result in reductions in stream channel erosion beyond background or natural levels. The TMDL presents the opportunity to manage sources of pollutants such that the combined total meets loading objectives to the lake. Natural processes such as low levels of stream channel erosion need to be protected, consistent with the proposed SEZ threshold to maintain fluvial and ecosystem function. Although TMDL implementation strategies are unlikely to require extreme reductions in stream sediment inflows to Lake Tahoe that would impede fluvial and ecosystem function, they could. Thus the potential effect must be considered potentially significant at this time.

**Mitigation Measures**

Provide for TMDL-based water quality threshold standards to be protective of natural geomorphic processes, allowing for contributions of natural bedloads, if not fine sediment, from streams consistent with maintaining geomorphic function and associated ecological processes.

**Significance with Mitigation**

Less than significant.



## Impacts of the No-Action Alternative Relative to the Proposed Action

Under the no-action alternative, existing thresholds for nearshore and pelagic lake clarity (WQ-1,2,3) would continue in place. Relative to the proposed project, the existing nearshore standard would probably provide a lower level of protection for water quality both in the interim period during development of the new standards and in the long term after adoption of the new nearshore standard. In the interim period, continued monitoring at the 25 m depth would be insensitive to nearshore water quality effects such as tributary inflows (Taylor 2004). In the longer term, the existing standard is not considered adequately protective of nearshore water quality. Existing turbidity standards are comparable to low Secchi depths (less than 5 feet) and not representative of the desired condition. The new indicators and standards are anticipated to incorporate higher standards for clarity, visible pollutants, and possibly periphyton (Benoit pers. comm.) relative to the existing standards.

For pelagic lake clarity, the existing standard for Secchi depth does not incorporate a full range of seasonal values and is more difficult to interpret than the proposed standard, in light of inter-annual variability in hydrologic conditions. Maintenance of the existing phytoplankton productivity standard is considered unattainable in light of current scientific understanding including changes in algal population dominance, and is less directly linked to lake clarity than the proposed combination of Secchi depth and pollutant loading thresholds.

Under the no-action alternative, existing concentration-based standards for tributaries, storm water, and storm water infiltration to groundwater (WQ-4,5,6) would be maintained. Maintenance of these existing standards for tributaries, storm water, and storm water infiltration to groundwater is considered less effective than the proposed standards for pollutant loading for the purpose of attaining lake clarity, because these indicators are less directly related to lake clarity and because current scientific tools (TMDL Watershed Model and Lake Clarity Model) are load-based rather than concentration-based. In addition, maintenance of concentration standards could eventually be inconsistent with TMDL load reductions.

Under the no-action alternative the existing standard for other lakes (WQ-7) would be maintained. Compared to the proposed threshold, this standard provides equivalent protection for lakes where existing state standards exist, but does not provide protection of ecological integrity for other waters like the proposed standard. In addition, compared to the existing thresholds, the proposed thresholds add a water quality conditions report to improve communication and visibility of compliance with existing state standards for protection of human and environmental health.

## Soil Resource

### Direct Impacts of Proposed Threshold Changes

**Impact 1: *Application of the new soil survey with Bailey coverage limits could increase allowable coverage and increase runoff and soil erosion.***

#### Potential Impact

The 2006 soil survey provides a higher level of detail and accuracy than the 1974 soil survey and is based on current soil science practice. The new survey is expected to reduce the differences between coverage allowances predicted by the Bailey system based on 1974 soils mapping and conditions verified in the field for specific sites. Preliminary application of the new soils units to the Bailey system has been made by using pertinent soils attributes (Scoles pers. comm.). As part of this analysis, corrections to the original compilation of Tahoe Basin acreage by land capability class have been made using GIS. The

preliminary application indicates a data shift in the relative proportions of low capability land (Land Capability Classes 1 through 3) and high capability land (Land Capability Classes 4 through 7). That is, approximately 32,000 acres of land mapped by the 1974 soil survey as low has been correctly identified as high capability classes with the 2006 soil survey. Much of this data shift (approximately 29,000 acres) is associated with conservation and recreation land uses that are in public ownership. Approximately 2,800 acres are associated with residential land uses. Data shifts in other land use classes are relatively small.

Based on the improved understanding of the correct acreage of land capability classes, a revised estimate of allowable impervious coverage has been made by land use. In the high capability classes, there is actually approximately 7,600 acres more of allowable coverage basin-wide across all land uses. Of this corrected estimate, approximately 6,700 acres are in conservation and recreation land uses, and approximately 900 acres are in residential land use. The revised estimate of allowable coverage in commercial/public service land use is less than 30 acres more, and the allowable coverage in tourist land use is estimated to be about 30 acres less.

The revised estimates of allowable coverage in low capability lands is relatively small. The largest of these is in residential land use, where there is about 50 acres less of allowable coverage.

The potential effect of the revised estimates of allowable coverage is perception that there is more allowed coverage in the basin. In fact, the soil conditions have not changed nor would any change occur for the coverage coefficients assigned to each soil series. The public lands, show the most significant additional coverage potential; however, such coverage is unlikely due to the undeveloped premise of these lands. The revised estimate of allowable coverage in residential land uses would likely be realized under the present land development system when field verifications of land capabilities are made for particular projects. That is, the revised estimate of allowable coverage would be apparent when assessing land capabilities using more detailed soil characteristics. This existing approach assures that the estimated capacity of the soils is not less than the amount needed to mitigate the effects of impervious cover, using the system developed by Bailey and used over the past 20 years. Assuming the existing Bailey system is adequately protective of increased soil erosion and runoff, the revised estimate of allowable land coverage will not increase the allowable impervious coverage determined by a land classification or capability verification.

### **Likelihood of Occurrence/Potential Significance**

Regulation of impervious coverage is a primary strategy in Lake Tahoe land use planning and regulation, and potential effects are thus highly sensitive in both environmental and socio-economic contexts. The data shift from low to high capability lands represents about 15% of the estimated amount of residential land coverage in the basin. Information on the distribution of the coverage increase by watershed is currently being developed. Any new allowable coverage would be based on site-specific characteristics; thus, it should not exceed the soil capacity as defined by the Bailey System coefficients. Nonetheless, new allowable coverage will occur in overcovered watersheds that should be offset with local and regional mitigations (stormwater facilities, etc.).

The 2006 soil survey has not yet been practically applied to coverage determinations and the analysis of potential coverage increases is preliminary. To ensure that application of new soil survey data to coverage determinations using the Bailey system will not have adverse effects on soil resources and runoff, additional development and testing of application criteria are planned.

Field conditions in the Region have not changed, nor the criteria used to determine allowable coverage on a site-specific basis. Thus, the predicted amount of allowable coverage would increase, but not the amount of allowable coverage realized by a site-specific investigation (land capability verification). The

higher amount of allowable coverage identified by the 2006 soil survey is the difference in mapping accuracy, not field conditions. No increase in allowable impervious coverage is therefore expected.

#### **Mitigation Measures**

None are needed.

#### **Significance with Mitigation**

Less than significant.

## **Indirect Impacts to Other Resources of Proposed Threshold Changes**

### ***Impact 1: Housing, Transportation, Public Services, and Recreation—Application of impervious coverage allowances on a watershed basis could constrain construction of new housing or infrastructure.***

#### **Potential Impact**

Analysis of existing coverage by watershed indicates that one or more watersheds has excess coverage for each land capability class, and for some classes many watersheds have excess coverage. The Basin-wide perspective differs in that total coverage for several capability classes (1A, 1C, 3, 4, 5, 6) is significantly less than the total allowable coverage. This indicates that the distribution of coverage by watershed is skewed, with some watersheds having significantly less allowable coverage by capability class, and some having significantly excess coverage. Application of the coverage allowances by watershed in the new threshold represents a more stringent standard than the existing Region-wide standard, because it will be applied to each part (watershed) of the basin rather than Region as a whole. Especially in watersheds with significant excess coverage, this could constrain additional coverage associated with development, re-development, or infrastructure improvements (especially transportation system improvements that require additional coverage).

Existing management practice includes use of the IPES system for evaluating and allocating development of residential parcels. This system is consistent with the Bailey coverage allowances and is applied on an individual parcel basis. In this respect, existing management practice already applies the Bailey system at a local scale. TRPA plans to continue use of the IPES system is for residential parcels, and will develop a parallel system based on functional open space concepts for commercial/public service and tourist land uses. For re-development projects, TRPA anticipates that excess coverage on a parcel basis will be managed by preventing increased coverage on the parcel, and mitigating for the excess coverage elsewhere in the watershed.

In spite of the fact that current application of IPES and development review procedures are on a parcel basis, application of allowable coverage on a watershed basis could constrain new development in watersheds with excess coverage, or result in bias towards development in particular land capability classes where existing coverage is below the allowable level. The proposed indicator includes the development of soil conservation and stormwater plans, which would serve two purposes. First, planning at this scale is anticipated to improve the effectiveness of impervious coverage management by coordinating it with BMP implementation and hydrologic analysis at a catchment scale. Second, the plans could provide for management of excess coverage at a watershed scale, allowing for mitigation of the excess coverage and providing flexibility for development to proceed on individual parcels consistent with current IPES evaluation and development review procedures.

**Likelihood of Occurrence/Potential Significance**

The application of allowable coverage on a watershed basis is likely to produce changes in geographic perspective on sensitivity to re-development and additional development involving new coverage. At a minimum, this will affect priorities for impervious coverage management and private property BMP implementation, but application could also constrain development and infrastructure improvements involving new coverage in some watersheds. The proposed management indicators (BMP implementation, soil conservation/stormwater plans) could provide flexibility in attenuating the effects of excess impervious coverage, but the relationship of these plans to the threshold standard (e.g., effectiveness of plans versus simple interpretation of the allowable coverage by watershed) needs to be better defined. Even if development or infrastructure improvements were constrained, the significance of this potential impact on housing availability or transportation systems is difficult to assess until additional information is developed on the distribution of excess coverage, and management standards are better defined. This potential adverse effect is considered unlikely to occur, but could be significant if it did.

**Mitigation Measures**

Develop a list and ranking of significantly overcovered watersheds based on application of the proposed threshold using the new soil survey (also see mitigation measures for direct impacts), and identify the components of soil conservation/stormwater plans.

Define the procedures for application of IPES in watersheds with excess coverage: 1) during an interim period for development of soil conservation/stormwater plans in these watersheds; and 2) after development of the plans. Incorporate mechanisms to avoid short- or long-term adverse effects on housing or transportation systems where new coverage is needed.

Define the procedures for review of re-development projects in watersheds with excess coverage, including use of functional open space concepts to mitigate excess coverage: 1) during an interim period for development of soil conservation/stormwater plans in these watersheds; and 2) after development and adoption of the plans. Incorporate mechanisms to avoid short- or long-term adverse effects on housing or transportation systems.

**Significance with Mitigation**

Less than significant.

**Impacts of the No-Action Alternative Relative to the Proposed Project**

Relative to the proposed project, the no-action alternative would continue the focus on coverage for the entire Region and would not incorporate the use of new and improved soils information. The no-action alternative would therefore be less effective at controlling the actual effects of impervious coverage and land disturbance. The lack of watershed focus would allow excess coverage to continue in some watersheds with less incentive for reduction or mitigation of coverage, and without sufficient analysis of the relationship between impervious coverage, runoff patterns, and soil conservation. The continued use of the 1974 soils survey would pose difficult management problems due to inconsistencies between actual land capabilities and those predicted from the soil survey, and would reduce the value that new information and current scientific practice could bring to management of impervious coverage relative to the new standard.

## Stream Environment Zones

### Direct Impacts of Proposed Threshold Changes

No direct impacts were identified for this threshold change. The new threshold essentially maintains the same fundamental standards as the existing threshold, but adds indicators to better define functional SEZ restoration.

### Indirect Impacts to Other Resources of Proposed Threshold Changes

No indirect impacts to other resources were identified for this threshold change. The indices for the new threshold are not yet developed, and this leaves some uncertainty as to the balance between various indices and functions and how they will be used in defining appropriate restoration. However, under the existing threshold there are no defined objectives for stream condition, biological resources, or stormwater treatment, and SEZ restoration is typically evaluated on the basis of general hydrologic function. Thus, compared to the existing threshold, the proposed change simply increases the focus on objectives that might benefit other resources, particularly vegetation, fish and wildlife, and water quality.

### Impacts of the No-Action Alternative Relative to the Proposed Project

Under the no-action alternative the wording of the standards would not include the objective to enhance naturally functioning SEZs and SEZs in *unsubdivided, undeveloped* lands. Targets for SEZs in *disturbed, subdivided, and developed* areas would remain as percentages associated with a 1982 characterization of SEZs, which probably cannot be reproduced or updated. In this respect the no-action alternative is considered less clear direction for management of SEZ restoration than the proposed change. Additionally, the no-action alternative would not include proposed indicators for hydrologic function, stream condition, biological resources, and stormwater treatment, and thus could potentially be less protective of a broad range of resources associated with SEZ restoration.

## Vegetation

### Direct Impacts of Proposed Threshold Changes

#### Impact 1: Relative abundance of common plant communities could change

##### Potential Impact

The relative abundance of certain common plant communities under the new *Healthy Vegetation* standard could be different than under the existing *Threshold V-1*. Target acreages for the five existing common plant communities would be replaced with target acreages based on extent of pre-settlement seral stages and vegetation structure. In this zero-sum situation, increases in targets for some communities involve decreases in targets for other. Thus the extent of some communities could therefore become less than exists or is currently targeted.

##### Likelihood of Occurrence/Potential Significance

The new standard would be based on the current USFS vegetation classification system and recent reconstructive vegetation structure studies about the pre-settlement abundance of the Region's vegetation types and seral stages. The proposed targets would be based on pre-settlement abundance adjusted for climatic and human caused changes.

The targeted abundance of some vegetation types would differ from those set under the existing common vegetation threshold, in some cases being higher, and other cases lower, than under the existing standard. For example, the pre-settlement average percentage of early seral stages in the Jeffrey pine-montane chaparral vegetation type was 30%, which is higher than the 15–25% target currently set for yellow pine forest in seral stages other than mature. In no cases would the proposed change in extent be severe or threaten the viability of the plant community or organisms dependent upon it. Because the new targets appear to more accurately represent pre-settlement conditions than the existing standards, they presumably better reflect environmental adaptation of the Region's plant species and communities. Accordingly, the decreased abundance of some stages of some plant communities would not be a significant impact.

**Mitigation Measures**

None needed.

**Significance with Mitigation**

Not applicable.

**Impact 2: *Old-growth targeted levels will change*****Potential Impact**

Existing target acreages of old-growth forest in the Region (late seral-stage forest vegetation) could change through the elimination of the specific acreage-target threshold (55% of forested land, with specified minimums for each elevation zone) of existing Threshold V-4 and future reliance upon the proposed *Healthy Vegetation* threshold based on pre-settlement acreages.

**Likelihood of Occurrence/Potential Significance**

The present target is 55% forest-wide, with values ranging from 48% to 61% depending upon elevation range/forest community type (based on targets of subalpine—5%, upper montane—30%, and montane—20%). The new standard would also set the relative abundance of late seral vegetation according to the vegetation type, but it would be based on pre-settlement extents estimated from reconstructive vegetation structure studies. Current extents of old-growth, late-seral stage forest in the Region are well below either the existing or the proposed target levels, because of past intensive logging. Because both targets call for considerable increases in old-growth forest and the proposed targets are more representative of ecosystem potential, the relatively-small reduction in target levels for some communities is not considered a significant impact. In no cases would the proposed change in extent be severe or threaten the viability of the plant community or organisms dependent upon it.

The existing threshold is partially implemented through the establishment of an upper diameter limit for tree removals in development projects, as specified in the Code of Ordinances, Section 71.2A (i.e., 30-inch diameter at breast height [dbh] for westside conifers and 24" dbh for eastside conifers). Although preserving individual large-trees is not necessarily equivalent to preserving or restoring old-growth ecosystems, if applied as part of a broader leave-tree prescription, it can help to ensure retention of old-growth forest. Regardless, this implementation strategy is not part of the existing or proposed threshold. As part of the Regional Plan Update, it will be re-examined to gauge its utility in attaining the proposed threshold (if it is adopted) or in retaining other important forest values in the Region.

**Mitigation Measures**

None needed.

**Significance with Mitigation**

Not applicable.

**Impact 3: *Vegetation diversity near communities could be reduced*****Potential Impact**

The new threshold for *Hazardous Fuels* would result in removal of forest trees and shrubs in and around communities (the WUI) to meet specific fire behavior standards. Such actions potentially could change forest structure and possibly decrease plant-species diversity.

**Likelihood of Occurrence/Potential Significance**

Treatments do not constitute removal of species or change in the canopy structure. Regeneration capacity is still viable, forest structure is retained, or decrease plant species diversity is maintained. Fuel reduction treatments would change the forest structure by lowering vegetation density through thinning and limbing. Understory brush species could also be removed, reducing plant diversity. However, by manipulating forest structure to prevent ground fire from transferring to the canopy, these actions would restore the fire-resistant vegetation characteristics of the pre-settlement forest. In turn, these actions would impede the recent historical trend toward catastrophic, stand-replacing, understory-replacing fires. Thus, by mimicking natural fuel conditions, these fuels treatments would act to preserve vegetation over the long term. Therefore, the initial loss of some forest structure and diversity is not significant.

**Mitigation Measures**

None needed.

**Significance with Mitigation**

Not applicable.

**Indirect Impacts to Other Resources of Proposed Threshold Changes****Impact 1: *Quality of views or scenic vistas could decline*****Potential Impact**

The new threshold for *Hazardous Fuels* would result in removal of forest trees and shrubs in and around communities to meet specific fire behavior standards, which could modify existing views of Lake Tahoe or other scenic vistas and impede attainment of the existing or proposed scenic quality thresholds.

**Likelihood of Occurrence/Potential Significance**

In particular circumstances, attainment of the *Hazardous Fuels Threshold* could conflict with attainment of the *Natural Environment Threshold* for scenic resources (or the existing scenic quality thresholds if they are retained). The potential conflict constitutes a potentially significant impact of adopting this threshold.

**Mitigation Measures**

In areas with high scenic quality or specific scenic resources, the standard *Hazardous Fuels* reduction prescriptions can likely be modified to both minimize degradation of existing scenic resources and meet fire behavior standards. The implementation of vegetation and fuels treatment programs do not require the removal of all trees and shrubs, but only selective thinning that could be coordinated with scenic goals. The retention of large trees with canopy separated from ground and understory vegetation is a typical strategy of fuels reduction prescriptions. Thus, the mitigation measure for this potential impact is:

Amend the *Hazardous Fuels Threshold* for vegetation to include in the threshold additional indicators to assess, and management standards to provide, that fuels treatments are being conducted in a manner that is not diminishing scenic resources values protected by the proposed *Natural Environment Threshold*.

Indicators could include (a) percentage of areas proposed for treatment under the *Hazardous Fuels Threshold* (WUIs) which have been analyzed for likelihood of treatments to impact attainment of the *Natural Environment Threshold*, and/or (b) the percentage of the number of analysis/modifications of proposed management prescriptions conducted prior to WUIs treatments to ensure that standards of the *Natural Resource Threshold* will be met.

Potential solutions for typical situations where fuels reduction and scenic integrity conflicts may arise could be described in a pictorially-based set of guidelines prepared by TRPA and the USDA Forest Service.

### **Significance with Mitigation**

Less than significant.

## **Impact 2: Air quality could be diminished by smoke from prescribed burning of hazardous fuels**

### **Potential Impact**

Attainment of the new threshold for *Hazardous Fuels* would include implementation of treatment prescriptions required to achieve fuel management goals. Prescribed burning is an important component of fuel treatment programs. The smoke resulting from prescribed fires could have an adverse impact on air quality.

### **Likelihood of Occurrence/Potential Significance**

WUI zones consist of outer and inner zones. The inner zone contains structures, such that broadcast burning is not an appropriate fuel treatment prescription. In these areas, mechanical thinning and limbing of trees, mastication of brush, lopping or chipping and scattering of thinnings, and piling and burning of piles comprise the treatment prescriptions. Broadcast burning may be used to reduce ground fuels in the outer WUI zone, although the primary treatment in the outer zone is thinning of canopy and removal of ladder fuels to cause approaching wildfire to change from canopy fire to ground fire. Overall, prescribed fire is generally expected to be limited to pile burning in WUIs.

Although pile burning (and broadcast burning) generate air pollutants, the amount of air pollution generated tends to be lower than for catastrophic uncontrolled fires. Unlike uncontrolled fires, prescribed fires are limited to periods of time when atmospheric conditions are more conducive to adequate dispersal of pollutants in the judgment of APCD authorities. Nonetheless, pile burning has caused significant air quality degradation in the Lake Tahoe Basin, even when conducted on approved burn days. Because of the current limited ability of local authorities to control impacts of smoke, this potential impact of the *Hazardous Fuels Threshold* is considered potentially significant.

### **Mitigation Measures**

Supplement the hazardous fuel treatment threshold to include corollary management indicators and standards, or cross reference with the *Air Quality* visibility threshold, to ensure that the number of days that complaints about smoke from prescribed burning for hazardous fuels treatments are less than a maximum number deemed acceptable to the public for visibility or human health impacts (the latter are CARB health-based standards). Provide that where ever possible the Region utilizes non-burning methods for the disposal of hazardous fuels. In addition, fire should only be used on days when there is



no atmospheric inversion layer that would prevent smoke from leaving the Region and extinguish the fire if smoke builds to unacceptable levels.

**Significance with Mitigation**

Less than significant.

**Impact 3: Recreation access could diminish****Potential Impact**

Revised standards for *Special-Status Plant Species* and *Plant Communities of Concern* could result in prohibitions on trail construction or limitations on recreational activities in certain areas.

**Likelihood of Occurrence/Potential Significance**

This impact is likely to occur, as limitations on public access may be necessary to protect some of these plant resources. Recreational activities on Lake Tahoe beaches have had an adverse effect on Tahoe yellow cress, and hikers have had an adverse effect on the Freel Peak cushion plant community. However, the area occupied by special-status plants and plant communities of concern is relatively small, and the area subject to limitations on public access would also be relatively minor. In addition, most recreational uses are not limited to a specific location and can be directed to avoid special-status species, or if an existing use, can be relocated or operated differently to eliminate existing effects. Therefore, this impact is not significant.

**Mitigation Measures**

None are needed.

**Significance with Mitigation**

Not applicable.

**Impacts of the No-Action Alternative Relative to the Proposed Project**

Under the existing *Common Vegetation* threshold, plant communities and stages are poorly defined and the standards for abundance are set arbitrarily, rather than based on historic levels. Attainment of current thresholds is more difficult to evaluate and is based on less meaningful standards than would be the case under the proposed threshold. This threshold is currently not in attainment, and achieving attainment may be more difficult to determine than under the proposed threshold.

Under the current *Uncommon Plant Communities* threshold, the existing standards apply only to specific sites. Because additional sites would be protected under the proposed threshold, some examples of these communities could become degraded in other areas if the proposed threshold is not adopted. In addition, monitoring requirements would become more rigorous under the proposed threshold. Under the monitoring specified in the current threshold, small changes or a gradual decline in habitat quality might not be apparent. Under the current *Sensitive Plants* threshold, only seven species are covered, whereas all sensitive plants would be covered under the proposed threshold. Under the existing threshold, special-status species not covered under the threshold could decline.

The existing *Late Seral/Old Growth Ecosystems* threshold sets acreage targets for forest composition of late seral/old growth stages that are not based actual pre-settlement conditions (as adjusted for climatic and human caused changes) and are therefore not ecologically appropriate. The current thresholds do not include an *Urban Vegetation and Fuels* threshold. Without this threshold, there would be a much higher

likelihood of a catastrophic wildfire within the WUIs, which could have adverse impacts on the forest vegetation.

## **Fisheries and Wildlife**

### **Direct Impacts of Proposed Threshold Changes**

#### **Impact 1: Existing habitat protection for special-status species and ecosystems could diminish if existing thresholds are prematurely discontinued**

##### **Potential Impact**

Many of the IBI metrics proposed as diagnostic and attribute indicators for the aquatic and terrestrial ecosystem thresholds are incompletely developed (Type II and III) and will require full definition, testing, and validation before they can be effectively and reliably implemented. Until these steps have been successfully completed, it cannot be analyzed whether implementation of the proposed thresholds would provide existing protections for species and their habitats that are now provided under the current thresholds could be reduced or lost.

##### **Likelihood of Occurrence/Potential Significance**

Due to the inherent scientific and logistic challenges of defining, testing and validating complex multimetric variables, full implementation of the proposed thresholds will undoubtedly take considerable time. If existing thresholds are discontinued before this entire process is complete, existing protections for species and their habitats are likely to be lost or significantly diminished.

##### **Mitigation Measures**

Retain all existing threshold until the proposed thresholds have been fully defined, tested, and validated, to ensure no loss of protection for the Tahoe Region ecosystems and special-status species.

TRPA could ensure that a scientific review committee oversees the development, final design, and implementation of the IBI monitoring program to ensure no protections are lost.

##### **Significance with Mitigation**

Less than significant

#### **Impact 2: Natural resource values could diminish due to masking in the composite IBIs**

##### **Potential Impact**

The proposed IBI valuation process for determining and monitoring wildlife resource values and ecosystem integrity does not include weighted coefficients for the diagnostic or indicator metrics that would provide balanced representation of all variables in the final index value. Accordingly, the IBIs can potentially show progressive attainment of threshold standards as a result of incremental over-representation of dominant metrics. Reverse trends in under-represented metrics (e.g., rarer species occurrences or productivity) can potentially go undetected if only the composite indices are monitored.

##### **Likelihood of Occurrence/Potential Significance**

Any multivariate indices is subject to bias if the composite metrics used in formulating the indices are not appropriately weighted consistent with their relative value in that indices. This potential for bias should be evaluated to ensure the indices are fully representative of the

ecosystem condition. Closely monitoring the actual values of each diagnostic and attribute indicator in concert with measurement of changes in IBI values will allow monitoring agencies to detect and respond to any emergent bias. If a formulation bias is present, but not detected, the impact on the monitored resource could potentially be significant.

**Mitigation Measures**

Provide that all variables are individually tracked to detect any adverse effects not apparent from diagnostic indicators alone.

Retain all existing thresholds and continue to implement them until the proposed thresholds have been fully defined, tested, and validated.

**Significance with Mitigation**

Less than significant.

**Impact 3: Shallow, rocky-substrate habitat for fish in Lake Tahoe could be disturbed as a result of replacing a habitat threshold with an IBI threshold****Potential Impact**

The new threshold for *Biological Integrity of Aquatic Ecosystems* may not preserve all undisturbed rocky substrate to 30 foot depth relative to the existing threshold (F-1), because the proposed aquatic-ecosystem indicators and standards for Lake Tahoe do not include habitat-type acreages as attribute measures used in the IBI index determination or standards to determine threshold attainment.

**Likelihood of Occurrence/Potential Significance**

The Pathway 2007 *Fisheries Core Group* has recently determined that rocky substrate is not a limiting resource for Lake Tahoe fisheries. The proposed threshold standards (e.g., zooplankton assemblage, biological pollution index, catch per unit effort, littoral fish life history index, lake clarity), when fully defined, tested and validated, would provide direct quantitative data on fisheries resources and key habitat attributes that can be used to determine and track the ecological status of Lake Tahoe fisheries more accurately than a single (and non-limiting) habitat measure. Standards based on these indicators would guide development approvals better than the preservation of all (and non-limiting) rock substrate. Thus, the potential impact is unlikely to materialize.

**Mitigation Measures**

None needed.

**Significance with Mitigation**

Not applicable.

**Impact 4: Stream habitat could be degraded as a result of replacing a habitat threshold with an IBI threshold****Potential Impact**

The existing threshold standard is to maintain specified number of miles of stream habitat in each habitat condition class (e.g., excellent—75 miles, good—105 miles). The proposed threshold would use the benthic macro invertebrate IBI as the principle diagnostic indicator of stream habitat quality, not mileage of qualitatively classified habitat condition. This difference in indicators potentially could result in habitat loss due to diminished capability to quantitatively measure and monitor stream habitat types.

**Likelihood of Occurrence/Potential Significance**

The proposed threshold metrics more accurately characterize stream condition relative to fish ecological requirements and are therefore better to classify stream habitats than the qualitative distance measures used in the existing threshold. The proposed threshold uses the benthic macro-invertebrate IBI as the principle attribute indicator of stream habitat quality, not mileage of qualitatively classified habitat condition. This measure more precisely captures stream habitat condition relative to fish needs in providing a change-sensitive biological measure of stream habitat condition. Using this new method of ecosystem monitoring, when fully defined, tested, and validated, will enhance the capacity to accurately classify stream habitat types. There should not be any impact resulting from this threshold change.

**Mitigation Measures**

None Required

**Significance with Mitigation**

Less than significant

**Impact 5: New stream diversions could occur, adversely affecting fisheries****Potential Impact**

The proposed thresholds would be potentially allow new streamflow diversions, which are not allowed under the existing threshold (F-3; no reduction in stream flows), which could impact stream fisheries.

**Likelihood of Occurrence/Potential Significance**

The proposed threshold uses flow regime as a fisheries attribute indicator in the aquatic ecosystem IBI. This indicator uses gauged streams to measure streamflow regime and compare it to the natural regime. When integrated with other IBI attribute measures such as the *Benthic Macro-invertebrate IBI*, this indicator would provide a stronger basis for a standard of stream flow conditions needed to sustain fisheries than a simple but indefensible no-flow-reduction standard. There will not be any adverse effects on fisheries resulting from this threshold change.

**Mitigation Measures**

None Required

**Significance with Mitigation**

Not applicable.

**Impact 6: Population sites for some special-status wildlife could be adversely affected by loss of disturbance-free zones****Potential Impact**

Populations of some of the existing seven special-status species/groups could decline because current maintenance of disturbance-free zones around their population sites may not be part of the new special-status species threshold, which is focused on population monitoring but not, as of yet, on protection.

**Likelihood of Occurrence/Potential Significance**

The proposed threshold provides special-status species monitoring methods that will accurately track their population status, but not necessarily prevent population decline. Established state and federal protocols for special-status species occurrence determination and maintenance of disturbance free zones are currently in place to protect known occurrences, but incremental site-specific and/or cumulative

encroachment on critical habitat sites is potentially possible through negotiated mitigation if the new threshold does not require no-disturbance zones. Such actions could potentially result in population declines, monitored but not prevented. This would constitute a significant impact.

**Mitigation Measures**

Supplement the threshold by establishing that the management strategies for the new threshold provide that existing threshold-defined disturbance free zones shall be at least as numerous and extensive as the existing zones, until it can be verified that populations intended to be protected will be viable without maintenance of all of existing disturbance-free zones. Such management approaches are currently part of standard project evaluation to prevent impact.

**Significance with Mitigation**

Less than significant

**Impact 7: *Peregrine falcon and golden eagle could be adversely affected*****Potential Impact**

Occurrences of peregrine falcon and golden eagle, accidental or causal migrants in the Region, could diminish because they are currently *Special-Interest Wildlife Species* under Threshold W-1 but will not be special-status species under the new threshold for *Sustainability of Special-Status Species*.

**Likelihood of Occurrence/Potential Significance**

Because suitable nesting habitat is not available to the peregrine falcon and golden eagle in the Tahoe Region because of the Region's high elevation relative to nesting habitat typically used by the two species, establishment specific nesting sites and associated disturbance-free zones per the existing thresholds has not been possible. Thus, the change in thresholds would not affect these species.

**Mitigation Measures**

None needed.

**Significance with Mitigation**

Not applicable.

**Impact 8: *Waterfowl populations could be adversely affected*****Potential Impact**

Populations of waterfowl in the Region could potentially be adversely affected because they are currently considered to be *Special-Interest Wildlife Species* under Threshold W-1 but would not be considered as special-status species under the new threshold for *Sustainability of Special-Status Species*.

**Likelihood of Occurrence/Potential Significance**

The existing threshold standard for waterfowl in the Tahoe Region is maintenance of 18 population sites with disturbance free zones. These sites are primarily marsh areas. The proposed new threshold for the marsh bird IBI includes indicators for waterfowl presence, abundance, and reproductive status. Monitoring and management of the marsh ecosystem and marsh birds under this new proposed threshold should provide equal, if not enhanced, protection for waterfowl and the marsh areas they use. Removal of this species group from the W-1 Special Interest Species list should have little effect on the population status of the waterfowl in the Region. However, until the marsh bird thresholds have been fully defined, tested, and validated, this impact is potentially significant.

**Mitigation Measures**

Retain the existing threshold for waterfowl until the proposed marsh bird threshold has been fully defined, tested, and validated, to ensure no degradation of the Region marshes used by waterfowl, reduction in number of waterfowl sites, or Region-wide population decline.

TRPA could ensure that a scientific review committee oversees the development, final design, and implementation of the IBI monitoring program to ensure no protections are lost.

**Significance with Mitigation**

Less than significant.

**Impact 9: Deer populations could be adversely affected****Potential Impact**

Populations of deer in the Region could potentially be adversely affected because they are currently considered to be *Special-Interest Wildlife Species* under Threshold W-1 but would not be considered as special-status species under the new threshold for *Sustainability of Special-Status Species*.

**Likelihood of Occurrence/Potential Significance**

The existing threshold standard for deer in the Tahoe Region is non-degradation of meadows and other deer use areas. However, current use of meadows near urban areas by deer is low due to existing levels of recreation and development disturbance.

Monitoring studies of the deer herds that use the Region show that deer migrate out of the Region to the drier eastside of the Sierra Nevada during winter. It is well-established that the principal impact on these herds is loss of wintering grounds in those areas. Summer range in the Region is not limited the herd populations. Accordingly, removal of this species group from the special interest species list for existing Threshold W-1 would likely have little effect on the populations of the deer herds in the Tahoe Region.

**Mitigation Measures**

None needed.

Meadow degradation avoidance and minimization mitigation programs could be continued as an integral part of meadow restoration as expected, new development and recreation projects in the Region to retain the existing conditions of extant meadows that are used by deer.

**Significance with Mitigation**

Not applicable.

**Indirect Impacts to Other Resources of Proposed Threshold Changes****Impact 1: Wildlife standards could limit expansion of residential and commercial development****Potential Impact**

The proposed threshold IBI standards and associated benchmarks for the *Biological Integrity of Terrestrial Ecosystem* threshold would tend to limit expansion of the influence of residential and commercial development into undeveloped areas, relative to existing thresholds.

**Likelihood of Occurrence/Potential Significance**

The degree to which the proposed thresholds for wildlife and fisheries would limit expansion of new development relative to the existing thresholds is unclear at this time, and depends upon the ultimate characteristics of the terrestrial and aquatic ecosystem IBIs and the special-status species benchmarks. No aspect of their current status indicates that these new thresholds would inhibit development expansion more than the existing thresholds. Recreation development is expected to be within the current urban boundary rather. As noted in Section 4, development pressures in the Region have gradually shifted from expansion of development into undeveloped areas to redevelopment of previously-developed areas. Accordingly, application of the new wildlife and fisheries would have relatively less likelihood of constraining new development projects.

Constraints on new development in the Region are much more likely to arise from water quality constraints, and, to a lesser degree, from Soils, SEZs, and air quality constraints. The TMDL-based water quality thresholds, as described above, clearly have the greatest potential for constraining development than any of the other thresholds.

Considering these factors, it is unlikely that the change in thresholds for wildlife and fisheries would impose significant constraints on development or significantly adversely affect Region housing, public services, or development-based employment.

**Mitigation Measures**

None needed.

**Significance with Mitigation**

Not applicable.

**Impacts of the No-Action Alternative Relative to the Proposed Project**

Existing thresholds for wildlife and fisheries are principally habitat-based. The proposed aquatic and terrestrial ecosystem thresholds are based more on multimetric indices of species and population condition. The No-Action Alternative would retain the habitat-based standards. Attainment of existing habitat-based standards does not necessarily mean that populations of special-interest species using those habitats will be sustainable. Many of the existing threshold metrics are insufficient to accurately track population and/or ecosystem trends required for achieving comprehensive ecosystem integrity within the Tahoe Region. For example, the acreage of undisturbed rocky substrate to 30 ft depth (Threshold F-1) is now considered non-limiting to fish in Lake Tahoe. Other species-specific factors such as the functional, chemical, and biological characteristics of the lake are likely to play a more prominent role in determining fish population trends than substrate habitat. Similarly, the well being of fish in streams is likely to be more accurately detected by monitoring changes in biologically-relevant water quality and biological variables than by simple qualitative measures of habitat condition. Relative to the proposed project, the No-Action Alternative would provide a monitoring and implementation program of limited capacity to accurately track and fully manage Lake Tahoe's special-status species or ecosystems.

## Scenic Quality/Resources

### Direct Impacts of Proposed Threshold Changes

#### Impact 1: The Urban Scenic Character Theme may allow urban development to be visually dominant

##### Potential Impact

The new *Urban* Scenic Character Theme (a proposed standard of the *Natural Environment, Scenic Integrity Threshold*) may increase the amount of urban development in the Region and would allow urban development to be visually dominant, but only in Community Plans and other designated mix-use areas within the current urban boundary. The existing travel route ratings do not allow development to be visually dominant, even in Region areas designated as urban in *Community Plans and Plan Areas*. The existing travel route system requires that all units attain the same level of scenic quality.

The new *Scenic Integrity Level* standard would replace the existing *SR-1 Travel Route Rating Threshold* (roadway and shoreline travel route rating standards) with scenic integrity level ratings for each existing Region roadway and shoreline unit. Each existing roadway and shoreline unit will be assigned a scenic character theme (e.g., *Natural, Transition, or Urban*) and scenic integrity level (from 1, which allows no development, through 5, which allows development to be visually dominant) to provide scenic protection based upon the roadway or shoreline unit's location and existing scenic character theme. Areas within the Region that will be designated as an *Urban* theme under the new standard would be assigned a scenic integrity level of 5, which would allow development to be visually dominant according to the character of that area. Visually-dominant development means that development is readily visible from public viewpoints and is the primary feature of the scene when viewed at close range or from within the development. The current roadway and shoreline travel route rating system requires that all units, regardless of whether they are in an urban setting or natural setting, attain the same level of scenic quality, which is essentially impossible. As such, the current system does not allow development to be visually dominant or to reduce existing numerical travel route ratings, regardless of whether the proposed development is located in a natural, transition, or urban area. Therefore, the proposed Scenic Integrity Level standard would remove an obstacle to development in urban areas that exists under the existing travel route rating standards—the ability for new urban development projects to be visually dominant within their context.

##### Likelihood of Occurrence/Potential Significance

When considered alone, the change from the existing travel route rating system to the Scenic Integrity Level system may result in new urban development or redevelopment that is visually dominant and not consistent with the Lake Tahoe Region landscape. In addition, depending on how the Scenic Character Theme's are mapped, the change conceivably may also result in a greater amount of Basin lands that are considered "Urban." However, at present and in the future under the proposed thresholds, development in urban areas must also be consistent with the Community Design threshold and may not reduce Scenic Quality ratings for individual scenic resources that can be seen from travel routes, designated public recreation areas, and bike trails. In addition, while development in urban areas may be allowed to have greater massing, consistent with greater densities, it still must be compatible with the natural landscape in terms of design and color. When all of the proposed scenic thresholds are considered, a future urban development project may be allowed to be visually dominant as viewed from a public viewpoint, but would still have to be consistent with TRPA design and development measures and would not be able to degrade scenic resources protected under the existing Scenic Quality ratings. Nonetheless, this potential impact could be potentially significant.



**Mitigation Measures**

Limit areas mapped as *urban* under the new Scenic Character Theme standard to existing urban areas as defined in TRPA Community Plans and Plan Area Statements.

**Significance with Mitigation**

Less than significant.

**Impact 2: *The place-based planning process to establish community desired visual values may relax existing design standards in certain planning areas*****Potential Impact**

The place-based planning process being used to help establish community-desired visual values may change the applicable design and development measures for some of the Region's planning areas. Existing Community Plans have specific design standards that were adopted by the local community to address the unique characteristics of each applicable Community Plan area. Standards that require certain building set backs or conformance with a list of building materials may be eliminated or modified during the place-based planning process. However, this has not been the desire expressed in the place-based planning to date as expressed in the three urban community vision summaries.

**Likelihood of Occurrence/Potential Significance**

While these existing design standards may be changed during the place-based planning process, there is a minimum *Community Design Index Level* that still must be met in all Region project areas (e.g., maximum building height, controls on building materials). The *Community Design Index Level* exists to ensure that, at a minimum, regionally-based criteria are used to achieve scenic quality standards. As a result, the place-based planning process may change applicable design standards, but the changes would only consist of limited changes to the overall Region community design standards to more clearly designate desired community character. Therefore, the potential changes to community design standards would not result in development that is inconsistent with the overall natural and scenic resource values of the Region, and would not therefore result in a significant impact to scenic quality.

**Mitigation Measures**

None are required.

**Significance with Mitigation**

Not applicable.

**Indirect Impacts to Other Resources of Proposed Threshold Changes****Impact 1: *Community design standards established by the place-based planning process could restrict urban vegetation and fuels treatment*****Potential Impact**

Attainment of new Community Design Standards developed as part of the place-based planning process could affect the treatment prescription for an individual community's ability to meet the vegetation standard of the Hazardous Fuels Threshold. For example, the new standards may discourage thinning in WUIs that may result in decreased scenic quality ratings).

**Likelihood of Occurrence/Potential Significance**

In areas with high scenic quality or views of specific scenic resources, the standard Vegetation and Fuels reduction prescriptions can be modified to both maintain scenic resource goals and meet fire behavior standards. The implementation of Vegetation and Fuels Treatment programs do not require the removal of all trees and shrubs, but only selective vegetation thinning that can be coordinated with scenic goals and community design standards. Most identified community centers are not areas of focus for fuels reduction needs. The WUIs will be applied more to open space and at the margins of low density residential areas. However, this impact is potentially significant.

**Mitigation Measures**

Include in the threshold additional management indicators to assess, and standards to ensure, that that attainment of the proposed *Natural Environment Threshold* is not contributing to non-attainment of the *Hazardous Fuels Threshold*.

Indicators could include number of development approvals where consideration of attainment of the *Natural Environment Threshold* and the *Hazardous Fuels Threshold* (WUIs) are analyzed simultaneously. These could also include evaluation of community centers which already meet the fuel reduction goals.

To integrate these two thresholds, TRPA could map areas proposed for treatment under the fuel-reduction threshold (i.e., in WUIs) that may impact views from scenic areas of concern. For these areas visible from scenic areas of concern, management prescriptions could be required for development permitting that integrate site-specific fuels reduction and scenic resource protection.

Potential solutions for typical situations where fuels reduction and scenic integrity conflicts may arise could be described in a pictorially-based set of guidelines prepared by TRPA and the USDA Forest Service.

**Significance with Mitigation**

Less than significant.

**Impacts of the No-Action Alternative Relative to the Proposed Action**

Under the No Action Alternative, the existing travel route rating system contained within the SR-1 threshold would remain. The SR-1 threshold is not in attainment, and the travel route ratings in some units continue to worsen from new development and public land management actions. The Travel Route Rating Methodology forms the backbone of the larger scenic threshold system. The Travel Route Ratings are based on a mix of factors that were not specifically designed to reflect the needs of the scenic thresholds. The following list contains some key areas of difficulty identified in the existing Travel Route Rating Methodology:

- It is not sensitive enough to adequately reflect changes over a five- year monitoring period.
- It is too complex to understand.
- It assumes all parts of the roadway have the same inherent scenic quality and visual absorption capability.
- It assumes all parts of the shoreline have the same inherent scenic quality and visual absorption capability.
- It is likely to be more impacted by fuels reductions, which can make the built environment more evident as has occurred along Pioneer Trail.

The scenic thresholds are set up in a manner that anticipates that all roadway and shoreline units would achieve or exceed a similar acceptable rating, despite differences in the inherent landscape character of each unit and their capability to visually absorb development. Although it is ideal to have a high degree of scenic quality in all units, those that do not have views of the Lake or are dominated by development are in essence penalized under the current system. The existing scenic thresholds call for the maintenance or improvement of the numeric rating of each unit. It is virtually impossible to develop a buildable parcel that consists of undeveloped natural forest land and maintain the assigned rating under the existing system. While the goal is to maintain or improve the scenic quality of the Lake Tahoe Region, there needs to be some allowance for the scenic impact of legal developments on yet-undeveloped urban-type land. Under the No-Action Alternative, the existing SR-1 threshold standards and indicators would not be amended pursuant to technical information that illustrates that the current system is insensitive to change, does not account for differing landscape themes present in the Region, and is not consistent with the vision of a community regarding the desirable built environment.

## Noise

### Direct Impacts of Proposed Threshold Changes

None; all proposed changes would result in reduced noise levels.

### Indirect Impacts to Other Resources of Proposed Threshold Changes

The proposed changes to the noise thresholds are more restrictive than the current noise thresholds. These new noise standards may reduce recreational and transportation opportunities that involve the use of noise-generating equipment (e.g., on-highway motorcycles, off-highway vehicles, over-snow vehicles, sight-seeing aircraft, sea-planes).

New indicators would also focus on monitoring and enforcement that currently is not occurring under the existing thresholds. A higher level of monitoring and enforcement, if achieved, could result in the identification of threshold exceedances by noise-generating recreational/transportation sources that have not been identified under the current thresholds.

New single-event noise standards employing a stationary exhaust test for on-highway motorcycles, off-highway vehicles, and over-snow vehicles could reduce use of non-compliant vehicles in the Region. A new threshold, to be developed, may constrain use of non-settlement-agreement aircraft. This category includes aircraft used for sightseeing which is not included in the Recreation threshold and has impacts of its own, advertising, and other aircraft that do not arrive or depart from the airport but fly over the planning area (e.g., sightseeing helicopters, sea planes that land on the lake which TRPA has no control of, aircraft that display advertisements another non-sanctioned activity, and private airplanes). A one-hour noise threshold would be added along with the current cumulative 24-hour CNEL noise standard. This additional restriction could result in lower noise requirements than currently exists in areas subject to the current 24-hour standards which would have shorter term impacts. A new threshold to provide additional protection to wildlife from noise is currently under development and could also constrain motorized recreation use.

**Impact 1: Use of some vehicles in Nevada could be reduced****Potential Impact**

Application of California/TRPA noise standards to the Nevada portion of the Region for on-highway and off-highway vehicles, assuming increased enforcement relative to existing thresholds, could inhibit some existing motorized uses for transportation and recreation in the Nevada portion.

**Likelihood of Occurrence/Potential Significance**

Although standards for these uses currently are different for California and Nevada, in practice noise levels from these uses have not been perceptibly larger in Nevada. TRPA will work with the state of Nevada to adopt the same standards as the California Vehicle Code, in order to make the new standard more enforceable. Thus, little impact on existing motorized uses in Nevada is expected, and the potential impact is less than significant.

**Mitigation Measures**

None are needed.

**Significance with Mitigation**

Not applicable.

**Impact 2: Snowmobile use could diminish****Potential Impact**

The new single-event noise source standard for over-snow vehicles may require the replacement of older models with new, quieter models or may cause a decrease snowmobile recreation in the Region. This change could affect both dispersed use of snowmobiles by private owners and concentrated use at commercial snowmobile concessions tracks. However, concession operators tend to cycle machines at a higher frequency and replacement issues have not posed that much of a problem for other recreational machines such as jet skis.

**Likelihood of Occurrence/Potential Significance**

Snowmobiles manufactured prior to 1969 emitted relatively high levels of noise. At full throttle, these machines emitted sound levels as high as 102 dB(A) from a distance of 50 feet. Those produced after June 30, 1976, and certified by the Snowmobile Safety and Certification Committee's independent testing company, emit no more than 73 dB(A) at 50 feet while traveling at 15 mph when tested under SAE J1161 procedures. TRPA will implement SAE or similar monitoring protocols. Problems with excessive noise levels do occur when mufflers are worn or users modify exhaust systems or substitute original muffler systems with after-market racing exhausts. Thus, most 2-stroke snowmobiles having factory installed mufflers in good condition would be expected to meet the proposed standard. Although most existing snowmobiles may be expected to meet the new standard, a currently unknown number would not meet it. Thus, the potential effect on current snowmobile use is unknown, and accordingly this impact is potentially significant for individual owners.

**Mitigation Measures**

Provide a transition period during which the new standard would not be applied but the effective date of future application would be publicized, allowing time for public education and conversions to quieter vehicles that meet the standards.

Non-sensitive wildlife areas and areas not set aside for the quiet enjoyment of recreation should remain open to motorized recreation, subject to meeting the new standards.

**Significance with Mitigation**

Less than significant.

**Impact 3: Some other motorized recreation uses could diminish****Potential Impact**

Motorized recreation activities could be reduced by currently-undefined but more restrictive single-event standards for on-highway motorcycles not considered under the Recreation threshold and OHVs, new 1-hour noise standards varying by land-use type, and noise standards to protect wildlife. The latter two new thresholds could also reduce over-snow vehicle use (see Impact 3).

**Likelihood of Occurrence/Potential Significance**

These standards are undefined at this time, but the potential exists for them to reduce motorized recreation activities. Thus the impact is potentially significant.

**Mitigation Measures**

Provide a transition period during which new standards would not be applied but the effective date of future application would be publicized, allowing time for users to modify or replace vehicles.

Specify areas where new standards for protection of wildlife would apply, to allow for non-sensitive areas to be unencumbered by the new standards.

**Significance with Mitigation**

Less than significant

**Impacts of the No-Action Alternative Relative to the Proposed Project**

Under the No-Action Alternative no changes to current thresholds would occur. Some forms of motorized recreation used and non-airport aircraft would continue to emit noise at levels that annoy Region residents. Noise of moderately high intensity lasting for moderately short time periods would continue to be uncontrolled and annoy Region residents. Noise from recreational vehicles and other sources would continue to adversely affect the Region's wildlife.

Exceedance of current standards would continue to occur. The current indicators are of limited usefulness in that there is no tracking of the number of exceedances, corrective actions, or the amount of monitoring undertaken. Because there are limited resources for monitoring noise, noise conditions could potentially worsen as Region population and visitation increases.

## Recreation

### Direct Impacts of Proposed Threshold Changes

#### **Impact 1: *Region resource/infrastructure capacity may be exhausted by non-recreation development***

##### **Potential Impact**

The proposed *Recreation Threshold* remove mention of the total Basin capacity reservation for recreational uses that is included in the existing *R-2 Capacity Available to the Public Threshold*. The existing PAOT allocation system as a threshold target/ceiling would be eliminated and replaced with specific targets for new recreational access (e.g., targets for public land acquisition, shoreline access, public easement retention, and trail/trailhead construction/reconstruction).

The existing capacity reservation as measured in PAOTs was intended to ensure that resource capacity (e.g., sewer/water and land coverage) is reserved for recreation uses, and it is also intended to both target and cap recreational development levels in the Basin. Thus, the existing capacity system for recreational development attempts to both promote certain types of recreation and control recreation facility development. Without the existing PAOT allocation system, there is a potential effect that sufficient resource capacity for recreational development may not be reserved for recreational development, or conversely that recreational development levels may exceed the carrying capacity for natural resources (e.g., land coverage, air emissions, etc.) within the Basin.

The targets included in the proposed *Recreation Access Threshold* are not measured in PAOTs and do not include targets for each recreational opportunity type in the Basin. Therefore, the estimated amount of new recreational development that may be maintained and constructed under the new Recreation Access Threshold may be greater or less than the amount of recreational PAOT capacity that was reserved for and could be developed under the existing R-2 threshold. As a result, recreational opportunities that may be developed under the proposed thresholds may not be adequate to meet the public's desires and expectations or could provide extra capacity that is not needed.

##### **Likelihood of Occurrence/Potential Significance**

The likelihood that Region capacity would be used for non-recreational development, thereby limiting recreational opportunities is low, because the need to reserve capacity for recreational use never materialized under the PAOT system during the 20-year planning period of the 1987 Regional Plan. A large majority of PAOTs reserved for recreational development in the 1987 Regional Plan were not used (approximately 19,800 of the 25,275 PAOTs reserved) because of a limited definition of recreation providers and uses that are eligible to receive and use PAOT allocations and the fact that such providers have focused predominately on existing facility retrofit. For example, many developed recreational facilities constructed by State and local governments (e.g., the South Lake Tahoe Community Playfields and the City's ice rink) do not require a PAOT allocation and therefore do not appear in the PAOT tracking. Further, it appears that the limiting resource for recreational facility development has been funding and not necessarily natural or municipal resources such as land coverage and sewer/water capacity. Further, there is still capacity being reserved with some sewer/water providers that would not change even if the threshold does, and the primary land management agencies that would create recreation opportunities have adequate availability of needed development rights (e.g., land coverage, restoration credits) due to their large land bases. Therefore, this impact is less than significant.

##### **Mitigation Measures**

None are needed.

**Significance with Mitigation**

Not applicable.

**Indirect Impacts to Other Resources of Proposed Threshold Changes****Impact 1: *Removal of the fair-share policy that requires PAOTS to control recreational development may result in greater recreational development and increased impacts on natural resources*****Potential Impact**

As described for the preceding impact (Recreation Direct Impact 1), the estimated amount of new recreational development that may be maintained and constructed under the new *Opportunity and Access Thresholds* may be greater or less than the amount of recreational PAOT capacity that was reserved 20 years ago and could be developed under the existing R-2 threshold. As a result, recreational development included in the new Access Threshold could have greater environmental impacts on natural resources (e.g., vegetation, fisheries and wildlife, water quality, soils, air quality, noise, and scenic resources) than the recreation development that is allowed under the existing PAOT allocation system.

The concern is that environmental impacts to natural resources that may be increased as a result of adoption of the proposed *Opportunity and Access Thresholds* may include:

- Degradation of water quality from public use at new shoreline acquisitions, new trails and trailheads, or retention/expansion of recreational facilities;
- Loss of soil functioning from public use of new shoreline acquisition, new trails and trailheads, or retention/expansion of recreational facilities;
- Damage to SEZs from public use at new shoreline acquisitions, new trails and trailheads, and/or retention/expansion of recreational facilities;
- Degradation of sensitive species, especially Tahoe yellow cress, from public use at new shoreline acquisitions and/or retention/expansion of recreational facilities;
- Intrusion into undisturbed sensitive species habitat from public use at new shoreline acquisitions, new trails and trailheads, and/or expansion of recreational facilities;
- Degradation of unique vegetation communities from new trails and trailheads and/or retention/expansion of recreational facilities;
- Degradation of air quality from expansion of recreational facilities;
- Degradation of scenic resources from new shoreline acquisition, new trails and trailheads, and/or retention/expansion of recreational facilities; and
- Increased noise levels from new trails and trailheads and/or expansion of recreational facilities.

**Likelihood of Occurrence/Potential Significance**

The likelihood that recreational development included under the proposed *Opportunity and Access Thresholds* would exceed the capacity reserved under the existing R-2 threshold is low because the need to reserve capacity for recreational use never materialized under the PAOT system during the 1987 Regional Plan time frame, as described for the preceding potential impact (Recreation Direct Impact 1). In reality, trail construction and reconstruction have been sensitively designed to protect the environment, resulted in the relocation of trails away from sensitive areas, provided new recreation interpretive facilities to educate visitors on proper environmental ethics, and included new shoreline acquisitions that have restored degraded shorelines in high-use areas and added public access projects that have effectively directed public use to reduce potential effects. The elimination of PAOT assignment as a measure of

threshold accomplishment does not remove the need to appropriately assess facility capacity as part of the permitting process, as is currently done for the non-PAOT projects that have been approved over the last 20 years. Therefore, this impact is less than significant.

**Mitigation Measures**

None are required.

**Significance with Mitigation**

Not applicable.

**Impact 2: Undeveloped Lake Tahoe shoreline and other natural features could be degraded by changes in public access under the new Access Threshold****Potential Impact**

The elimination of the R-1 threshold language that specifies that public access be obtained for “low density recreational use” and calls for “preserved high quality undeveloped shoreline and other natural areas” may result in greater effects to natural resources under the proposed *Opportunity and Access Thresholds*.

The proposed thresholds replace language that call for low density recreational use and preservation of undeveloped shoreline with targets for maintaining and expanding recreational uses and improving the quality of recreational opportunities and access, while sustaining the natural setting and consistent with desired resource conditions. This change would potentially require higher densities of recreational development and new recreational development in currently undeveloped shoreline and other natural areas to meet the recreational development targets. These changes could result in greater effects to natural resources (e.g., SEZs and sensitive species habitat) than under the existing R-1 threshold. For example, the proposed Access Threshold standard calls for the acquisition of 20,275 additional acres of public lands, 9,701 linear feet of additional Lake Tahoe shoreline, and the maintenance of all existing shoreline access that currently provides public or quasi-public access to Lake Tahoe. Without the existing R-1 indicator requirement to use new public access to Lake Tahoe for “low density recreational use”, new recreational access could serve higher density uses, thereby bringing more people to the shoreline and increasing impacts to sensitive plant species, scenic quality along the shoreline, and noise levels at adjacent lands.

Environmental impacts to natural resources that could be increased as a result of adoption of the proposed Opportunity and Access Thresholds were described above under *Recreation, Indirect Impact 1, Potential Impact*.

**Likelihood of Occurrence/Potential Significance**

The likelihood that recreational development targets included under the proposed Opportunity and Access thresholds would increase environmental effects to natural resources is low, because of the necessity for attaining thresholds in other resource areas. Recreational development projects must be consistent with not only recreation thresholds, but also thresholds for the seven other resources (e.g., water quality, air quality, soil conservation). In addition, the proposed desired condition statements for the Opportunity and Access Thresholds include language that requires recreational development to sustain Lake Tahoe’s natural setting as an outstanding recreation destination and be consistent with desired resource conditions, which includes those desired conditions established for the other resources. Further, the standards for these thresholds place a new emphasis on reconstruction and upgrade of existing facilities rather than purely new construction. In addition, as written it would enable new shoreline acquisition of existing “quasi-public” (membership only) beaches to convert to public ownership and credit threshold attainment. Management of recreation projects will consider location and existing conditions of sites (e.g., location in



urban areas, or previously developed or disturbed sites) in determining new access, which may in some cases should be for higher density use and result in developed shoreline. The potential impacts is not significant.

### **Mitigation Measures**

**None are needed.**

### **Significance with Mitigation**

Not applicable.

## **Impacts of the No-Action Alternative Relative to the Proposed Action**

Under the No-Action Alternative, recreational development would more likely not be provided or maintained consistent with user expectations.

The inherent qualitative nature of the existing R-1 threshold and its non-numeric standards and indicators make this recreation threshold difficult to apply. The existing standard is not quantitative and therefore encompasses a multitude of factors that can influence its attainment status. For example, the standard calls for preserved or enhanced quality of the recreational experience, but does not provide a measurable value to achieve. Therefore, under the No Action Alternative, measuring and maintaining user's expectations for quality of recreational opportunities and access would continue to be difficult.

The measurement used to determine attainment of the R-2 threshold (persons at one time or PAOTs) does not reflect many of the recreational opportunities provided in the Region (e.g., developed recreation included in recreation plans such as trails, ball fields, ice rinks, and parks). Only a small percentage of the PAOT capacity (less than 9% of summer day use, 7% of overnight, and 37% of winter day use PAOTs) provided for in the Regional Plan has been used in the 20 years since its adoption. But most importantly, the concept of retaining a fair share of resource capacity has never materialized as a limitation to recreation development, and has not directed development of the recreational opportunities most desired by the public (e.g., additional beach access and trails). Therefore, under the No-Action Alternative, an absence of clear direction would continue about which recreational development opportunities should be provided to meet user expectations, as defined from recreation surveys.

## **Cumulative and Growth-Inducing Impacts**

TRPA's rules and regulations for environmental documentation (see Section 1) do not explicitly require that cumulative or growth-inducing impacts be discussed in an EA. They do require that growth-inducing impacts be discussed in an EIS. These rules and regulations require that environmental impacts in general be disclosed in any environmental document, but none of them specifically mentions or discusses how cumulative impacts should be treated. TRPA's Initial Environmental Checklist, however, does contain a definition of cumulative impact within one of the four questions posed in the section *Findings of Significance*:

Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.)

Unlike the definition of cumulative impacts used in CEQA and NEPA, this definition focuses on the cumulative effect of a single project affecting more than one resource. CEQA and NEPA, on the other

hand, focus on cumulative effects of two or more projects (past, present, reasonably foreseeable) on a particular resource. Thus, the definition of *cumulative effect* set forth by the TRPA regulatory documents is different from that definition used in CEQA and NEPA. Nonetheless, both types of cumulative effects, together with potential growth-inducing effects, are discussed in this section.

## Growth-Inducing Impacts

The proposed project (threshold update) would not have the potential to *induce* growth, such as, for example, would extending roads and utilities into an undeveloped area, inducing landowners to develop their properties. However, changing some thresholds might allow or facilitate some growth that is currently constrained by the existing thresholds. Accordingly, this section focuses on potential *growth-facilitating* effects.

Relative to the existing thresholds, only a few of the proposed threshold updates could have growth-facilitating impacts, assuming proposed mitigation measures for direct and indirect impacts previously identified are adopted. See Table 13 for an accounting of growth-facilitating effects. First, the replacement of several water-quality thresholds with a TMDL-based threshold that specifies pollutant load reduction targets is potentially inducing of *redevelopment* and would use concurrent improvement of conditions that now cause water quality problems to facilitate appropriate redevelopment in community centers. In redevelopment, it is possible that occupancy densities could increase. However, this threshold change is unlikely to be inducing of new growth. Second, the proposed elimination of *Threshold F-1, Lake Habitat* is potentially growth-facilitating because construction in the Lake's nearshore zone could become easier to approve. However, the existing *F-1 Threshold* has been shown to not be significantly affected by piers and buoys in fish habitat by several U.C. Davis studies. Changes in six other existing thresholds would potentially result in growth-facilitating impacts if the proposed mitigation measures for the impacts were not adopted, as indicated in the table.

Growth-inducement or growth-facilitation *per se* is not considered to be a significant environmental impact. Growth inducement or facilitation would be considered to be significantly adverse only if it resulted in a significant physical impact to the environment, which in this document would be identified in the *indirect impact* sections above. The potential growth-facilitating impacts noted above (redevelopment as a result of TMDL-base thresholds and more nearshore in-water construction) would not be expected to result in a significant impact to any of the Region's resources, because the thresholds, together with the mitigation measures identified earlier in this section, are expected to provide levels of resource protection similar to that provided by the existing thresholds.

**Table 13.** Potential for Growth-Facilitating Impacts

	Threshold	Proposed Disposition	Potential Growth-Facilitating Impact
<b>Air Quality</b>			
AQ-1	Carbon Monoxide (CO)	Conform indicators and standards; to the most up-to-date state and federal standards and apply the most stringent standards Region-wide; incorporate into new Human & Ecosystem Health threshold, and develop ecosystem-health component after 2008	None for either component. Future <i>Ecosystem Health</i> component potentially could inhibit growth, depending upon formulation.
AQ-2	Ozone (O3)		
AQ-3	Particulate Matter (PM)		

	Threshold	Proposed Disposition	Potential Growth-Facilitating Impact
AQ-4	Visibility	Conform indicators and standards to recent improvements in visibility levels	None. Because existing visibility exceeds the existing threshold, new threshold would eliminate potential growth-allowance of the existing threshold.
AQ-5	U.S. Highway 50 Traffic Volume (for CO)	Replace with enhanced AQ-1 threshold above; target reduced traffic volume as a management standard	None with traffic volume management. Otherwise, criteria-pollutant emissions could be held constant or reduced while traffic could be allowed to increase, removing an impediment to growth.
AQ-6	Wood Smoke	Replace with enhanced AQ-3 and AQ-4 thresholds above	None. Existing threshold has not been enforced and is not enforceable.
AQ-7	Vehicle Miles Traveled (VMT) (for nitrate deposition to Lake)	Supplement with enhanced AQ-2 emission threshold and Lake Tahoe TMDL atmospheric load reduction management standard; Retain VMT in project impact or non-threshold transportation study.	None appropriate management. Otherwise, criteria-pollutant emissions could be held constant or reduced while traffic could be allowed to increase, removing an impediment to growth.
AQ-8	Atmospheric Nutrient Loading (of Lake Tahoe)	Replace with Lake Tahoe TMDL atmospheric load reduction management standard	None. TMDL would be at least as growth constraining as existing threshold.
<b>Water Quality</b>			
WQ-1	Littoral Lake Tahoe / Shallow Lake Turbidity	Modify threshold after 2008 to be aesthetic based; retain current turbidity threshold until new threshold is developed	None with recommended mitigation for change to aesthetic-based threshold. Otherwise, currently unspecified new threshold could allow more nearshore aesthetic impact, potentially removing an impediment to growth.
WQ-2	Pelagic Lake Tahoe / Lake Clarity	Modify clarity standards to annual average and develop Lake Tahoe TMDL load reduction targets for atmospheric deposition, tributaries, storm water, stream channel erosion, and groundwater	None from modifying clarity standard. Pollutant load reduction targets are potentially inducing of redevelopment and concurrent improvement of conditions that now cause water quality problems. Occupancy densities could increase. Unlikely to be inducing of new growth.
WQ-3	Pelagic Lake Tahoe / Lake Phytoplankton Productivity	Rely on WQ-2 threshold and clarity model projections	None. New threshold would be at least as growth-constraining as existing threshold.
WQ-4	Tributary Water Quality	Rely on Lake Tahoe TMDL implementation load reductions	See WQ-2.
WQ-5	Surface Runoff / Storm water Quality	Rely on Lake Tahoe TMDL implementation load reductions	See WQ-2

	Threshold	Proposed Disposition	Potential Growth-Facilitating Impact
WQ-6	Groundwater / Storm water Infiltration to Protect Groundwater	Rely on Lake Tahoe TMDL implementation load reductions	See WQ-2
WQ-7	Other Lakes Water Quality	Address under new Human & Environmental Health threshold indices of biological integrity	None. New threshold would be at least as growth-constraining as existing threshold.
<b>Soil Conservation &amp; Stream Environment Zones (SEZs)</b>			
SC-1	Impervious Coverage	Modify indicator and standard, incorporate new data, and add breadth to indicator for watershed analysis.	No effect since new threshold does not change Bailey coefficients. The new soil survey only improves the accuracy of the estimated amount of allowable coverage in the Region.
SC-2	SEZs	Modify indicator and standard, clarify <i>naturally functioning SEZ lands</i> with additional indicators, and quantify restoration acreage based on 1986 mapping.	No effect.
<b>Vegetation</b>			
V-1	Common Plant Communities (aka Relative Abundance and Pattern)	Modify indicators and standards; combine with modified V-4 threshold in new Healthy Vegetation threshold	Not significant. New threshold would have similar effect on growth potential as existing threshold. New <i>Hazardous Fuels Threshold</i> would likely be growth-neutral.
V-2	Uncommon Plant Communities	Modify indicators	Not significant. New threshold would have similar effect on growth potential as existing threshold.
V-3	Sensitive Plants	Modify indicators and standards	Not significant. New threshold would have similar effect on growth potential as existing threshold.
V-4	Old Growth / Late Seral Stage Ecosystems	Modify indicators and standards; combine with modified V-1 threshold in new Healthy Vegetation threshold	Not significant. New threshold would have similar effect on growth potential as existing threshold.
<b>Fisheries</b>			
F-1	Lake (Littoral) Habitat	Replace with a new Biological Integrity of Aquatic Ecosystems threshold when completed	Potentially growth-facilitating, since construction in the Lake's nearshore zone could become easier to approve.
F-2	Stream Habitat	Replace with a new Biological Integrity of Aquatic Ecosystems threshold when completed	Not significant. New threshold would have similar effect on growth potential as existing threshold.

	Threshold	Proposed Disposition	Potential Growth-Facilitating Impact
F-3	Instream Flow	Continue as a standard under Biological Integrity of Aquatic Ecosystems threshold	Not significant. New threshold would have similar effect on growth potential as existing threshold.
F-4	Lahontan Cutthroat Trout Reintroduction	Add species to threshold W-1 list	No effect; actions needed to attain this threshold have been completed.
<b>Wildlife</b>			
W-1	Special Interest Wildlife	Modify species list, indicators, and standards	None with recommended mitigation for waterfowl and project impact evaluation. Otherwise, removing them from the special interest species list could allow more disturbance of wetland habitats, lessening an impediment to adjacent growth.
W-2	Habitats of Special Significance	Rely on new Biological Integrity of Aquatic Ecosystems threshold and modified SC-2 threshold for aquatic system protection	See SEZs above.
<b>Scenic Resources</b>			
SR-1	Travel Route Ratings	Modify indicators and standards to use scenic integrity levels (e.g., natural, transition, and urban) rather than existing travel route ratings	None with recommended mitigation for scenic integrity in urban areas. Otherwise, new urban development that is visually dominant and not consistent with the landscape could be allowed, potentially allowing more new urban development than under the existing thresholds within the urban boundary.
SR-2	Scenic Quality—Roadway and Shoreline Scenic Resources (aka Scenic Quality Ratings)	Continue without change under new natural environment desired condition	Not significant. New threshold would have similar effect on growth potential as existing threshold.
SR-3	Scenic Quality—Bike Paths and Outdoor Recreation Areas (aka Public Recreation Area Scenic Quality Ratings)	Continue without change under new natural environment desired condition	Not significant. New threshold would have similar effect on growth potential as existing threshold.
SR-4	Community Design	Modify indicators and standards	Not significant. New threshold would have similar effect on growth potential as existing threshold.

	Threshold	Proposed Disposition	Potential Growth-Facilitating Impact
<b>Noise</b>			
N-1	Single Event, Aircraft Noise	Keep existing indicators and standards; develop non-airport aircraft standards and combine with N-2 in new Single-Event Noise Sources threshold	None. New threshold would be at least as growth-constraining as existing threshold.
N-2	Other Single Event Noise	Modify indicators and standards to apply most restrictive standards Region-wide and make some standards more stringent; combine with N-1 in new Single-Event Noise Sources threshold	None. New threshold would be at least as growth-constraining as existing threshold.
N-3	Community Noise Equivalent Level (CNEL)	Keep existing CNEL standards and add 1 hour standards	None. New threshold would be at least as growth-constraining as existing threshold.
<b>Recreation</b>			
R-1	High Quality Recreational Experience	Modify indicators and standards	None. New threshold would have similar effect on growth potential as existing threshold.
R-2	Capacity Available to Public	Modify indicators and standards	None with recommended mitigation measure of basing recreational opportunity upon estimated carrying capacity. Otherwise, removal of reservation of fair share of recreation opportunity for public use could allow more sewer and water capacity to go to private land development.

## Cumulative Impacts

### Cumulative Impacts of Past, Present, and Reasonably Foreseeable Projects

The primary purpose of establishing and seeking attainment of thresholds is to control cumulative impacts of development and use of the Lake Tahoe Region. The thresholds are intended to ensure that cumulative impacts of past, present, and reasonably foreseeable project are not significant. A finding must be made for each new project that the project will not impede attainment of any threshold.

The purpose of the threshold update project is improving the ability of TRPA to use thresholds to prevent significant cumulative impacts of Region development and use. Thus, relative to the existing thresholds, the proposed project is designed and expected to *diminish* the potential for cumulatively significant impacts to occur in the project area.

### Cumulative Impacts of Effects on Two or More Resources

TRPA's definition of cumulative impacts noted above—small impacts on two or more resources together having a significant effect on the environment—is addressed by the indirect impact analyses above. In

the context of the proposed project—threshold update—this definition of cumulative impacts requires assessment of whether attainment of one threshold could impede attainment of another threshold. The indirect impact assessment revealed four cases where threshold attainment under the new thresholds could conflict. These conflicts, and the mitigation measures previously identified to prevent them from occurring, are as follows:

**Table 14.** Potential Threshold-Attainment Conflicts

Potential Impact	Likelihood of Occurrence/ Potential Significance	Mitigation Measures
<b>Water Quality vs. SEZ Thresholds</b>		
Standards for pollutant loading sources (TMDL load reductions) could require substantial reduction in fine sediment contribution from streams; extreme reductions of sediment and natural bedload could adversely affect geomorphic function of streams and associated ecological processes.	Potentially significant. TMDL requirements are unlikely to, but could result in, reductions in stream channel erosion and associated fluvial and ecosystem function beyond background or natural levels.	Provide for TMDL-based water quality threshold standards to be protective of natural geomorphic processes, allowing for natural bedload contributions of fine sediment from streams consistent with maintaining geomorphic function and associated ecological processes.
<b>Vegetation vs. Scenic Resource Thresholds</b>		
The new threshold for <i>Hazardous Fuels</i> would result in removal of forest trees and shrubs in and around communities to meet specific fire behavior standards, which could impede attainment of the scenic quality thresholds.	At the project level, likely to occur and likely to present potentially significant impacts.	Include in the threshold additional indicators to assess, and management standards to provide, that that fuels treatments are being conducted in a manner that is not diminishing scenic resource values protected by the proposed <i>Natural Environment Threshold</i> .
<b>Vegetation vs. Recreation Thresholds</b>		
Broader protections for <i>Special-Status Plant Species</i> and uncommon plant communities ( <i>Plant Communities of Concern</i> ) could result in more limited recreation access in certain areas, impeding ability to meet recreational development standards.	Most recreational uses are not limited to a specific location and can be constructed or relocated or operated differently without reducing recreational capacity substantially. Therefore, this impact is not significant.	None needed.
<b>Recreation vs. Other Thresholds</b>		
Removal of the <i>fair-share</i> policy that requires PAOTs to control recreational development may result in greater recreational development and increased impacts on natural resources.	The likelihood that recreational development under the proposed <i>Opportunity and Access Thresholds</i> would exceed the capacity reserved under the existing R-2 threshold is low, because the need to reserve capacity for recreational use never materialized under the PAOT system. Thus, this impact is less than significant.	None needed.

## Cumulative Impacts with Non-Jurisdictional Activities

### Activities on National Forest System Lands

The discussion above has focused on potential cumulative impacts for projects and activities that are within TRPA's purview and subject to TRPA's thresholds. This section considers cumulative effects of such jurisdictional impacts with impacts of projects beyond TRPA's direct control.

The applicability of TRPA's thresholds to activities on National Forest System lands in the Lake Tahoe Region is subject to differences in interpretation. The Compact appears to make all city, county, state, and Forest Service activities subject to TRPA's thresholds, because any project developed in the Region must be found consistent with threshold attainment and the Regional Plan, and *project* is defined to include activities undertaken by "any public agency". The Forest Service occasionally asserts sovereignty of the federal government, however, and does not comprehensively want to subject its projects/activities to TRPA's threshold-attainment findings process. The issue is rendered moot, however, by the fact that memoranda of understanding between the agencies establish a mutual goal of seeking attainment of TRPA's thresholds and, recently, commit the Forest Service to working collaboratively with TRPA to update the thresholds. Accordingly, because of the comprehensive and continuous coordination between these two agencies to manage and mitigate environmental impacts in the Lake Tahoe Region, it is concluded that activities and projects conducted on National Forest System lands are less likely to result in significant cumulative impacts in relation to effects of private projects approved under TRPA's finding process for threshold-attainment compatibility.

### Activities on Out-of-Region Lands

Projects conducted on lands outside of the Tahoe Region—either just outside of the Region or more distant—may have cumulative effects when considered together with in-Region activities affected by the threshold-update project. The potential for such cumulative effects is limited by the fact that the TRPA's jurisdictional lands largely comprise a basin, tending to isolate its water quality issues from water quality issues on surrounding lands. The same effect applies in lesser degree to air quality—the Tahoe Basin constitutes a distinct air basin as well as a distinct water basin, although day use and other visitation to the Tahoe Basin can impact air quality in an un-controlled way through vehicle emissions, traffic and congestion in high visitation periods. As previously discussed, air pollutant emissions from areas far from the Region can affect in-Region visibility. Accordingly, TRPA's threshold for visibility—both existing and new—although intended to control the cumulative effects of air-pollutant emissions—is difficult to attain/maintain based on in-Basin management strategies alone; attainment is dependent upon activities approved by many jurisdictions throughout the northern California region. Nonetheless, the proposed raise in the standard for the visibility threshold is an action intended to preclude an increase of in-Basin pollutant emissions that would be permitted under the existing threshold because of out-of-basin regional reductions in emissions. Thus, the proposed visibility-threshold update would act to preclude a cumulatively significant impact.

Another air pollutant of emerging concern is CO<sub>2</sub>, which is the subject of intensive work by CARB staff. It is noted there that elimination of traffic-level thresholds could allow increased traffic levels if per-vehicle emission rates of criteria pollutants (CO, NO<sub>x</sub>, particulates) continue to decline. Any traffic increase potentially results in increased emission of CO<sub>2</sub>, since it is the byproduct of gasoline or any carbon-based fuel combustion. Although potential increases in CO<sub>2</sub> emissions in the Region would be unlikely to cause any direct/indirect impacts to the Region's ecosystems, any contribution to global CO<sub>2</sub> levels is now considered to represent a contribution a significant cumulative impact to global housing, infrastructure, food production, and ecosystems. Once CARB establishes carbon loading and other greenhouse gas targets that contribute to global warming, TRPA will be required to plan for the attainment of such targets.



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## Section 9 **Persons and Agencies Consulted**

This document was prepared by consultants working with Technical Managers of TRPA's staff. These managers coordinated their input with Pathway 2007 Core Groups and Technical Working Group members. Document input and review has been provided by TRPA management staff and the Pathway 2007 Coordination Team members and their technical support staff, representing TRPA; Lahontan RWQCB; USDA Forest Service, Lake Tahoe Basin Management Unit; and the Nevada Division of Environmental Protection.