

CHAPTER 1

Introduction

Located between the Carson Range on the east and the Sierra Nevada on the west, the Tahoe Region is divided by the California-Nevada state line. Approximately one-third of the Region is in Nevada, and two-thirds in California. The total land area of the Region is about 202,000 acres, with about 85 percent as open space and in public ownership (Figure 1-1).

Lake Tahoe and its surrounding natural landscapes are treasured because they provide for an extraordinary Sierra Nevada mountain recreation and visual experience. The lake is one of the largest and deepest in the world, and the unique water transparency and stunning natural landscape has drawn people to its shores for centuries.

Lake Tahoe is the Region's dominant feature and is approximately 12 miles wide and 22 miles long, with a surface area of 192 square miles and 72 miles of shoreline. With a maximum depth of 1,645 feet, Lake Tahoe is the 10th-deepest lake in the world. Maximum elevation of the lake's surface is 6,229 feet above sea level. The topography of the Region consists chiefly of steeply sloping mountains with a few flat or moderately sloping areas where most development has occurred. Elevations of the peaks surrounding Lake Tahoe range from about 8,000 feet to nearly 11,000 feet above sea level. Long, relatively mild winters and short, dry summers generally characterize the climate of the Region.

History

The Washoe people are the first known human inhabitants of the Region dating back more than 8,000 years (Murphy and Knopp 2000). The basin is a spiritual retreat for the Washoe and was used as a place to gather food and materials to survive winter months at lower elevations.

Euro-American settlement in the Lake Tahoe Region started in earnest in the 1860s as a result of the Comstock silver rush. From 1860 until after the turn of the century, the land was intensely grazed with livestock and logged to support Comstock-era mining operations outside of the basin. It is estimated that during the Comstock-era about two-thirds of the Region was clear-cut (USDA 2000). Substantial alterations to wetlands and streams attributed to logging operations and livestock grazing were also noted during the Comstock-era. It is during this time that major human-induced alterations to Lake Tahoe's watersheds began to have a measurable effect on Lake Tahoe, as demonstrated from lake bed sedimentation studies (Heyvaert 1998). In response to the devastation left behind by Comstock-era logging, a forest management policy of fire prevention and vegetation preservation was endorsed to restore Lake Tahoe's forested landscape. As a consequence of this policy, today's forest in the basin no longer represents the forest conditions

that preceded Euro-American settlement; today's forest is over-stocked with trees of a similar age class because the natural fire regime known to shape the species composition and structure of Tahoe's forest has been substantially altered.

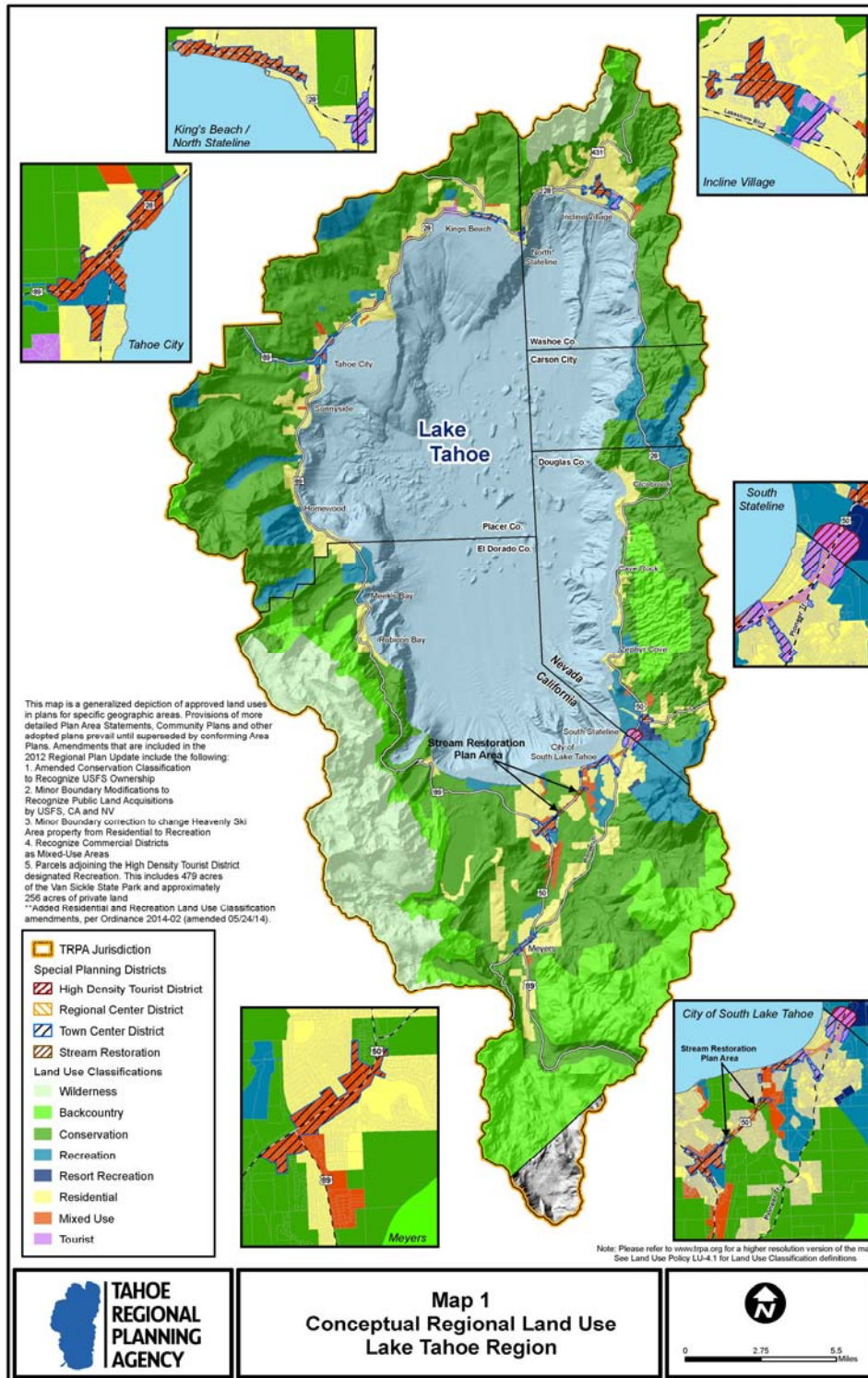


Figure 1-1. Tahoe Regional Planning Agency Regional Plan Map. Plan areas are shown, with each color representing an individual land use classification.

Tahoe Regional Planning Agency and the Bi-State Compact

Between 1900 and 1960, Lake Tahoe became a recreation destination. Following World War II and improvements in roads, Nevada casinos and small recreation retreats were developed to better accommodate a more mobile and affluent society. The economic momentum of casino gaming and the 1960 Winter Olympics at Squaw Valley spawned a significant uncontrolled expansion of development at Tahoe. The completion of the Tahoe Keys subdivision was responsible for the fragmentation of a significant freshwater marsh system critical for filtering sediment and nutrients from entering Lake Tahoe. Late in the 1960s, rapid development spurred the governors of California and Nevada to enter into the first bi-state, federally ratified agreement, the Tahoe Regional Planning Compact, resulting in the creation of the Tahoe Regional Planning Agency (TRPA) in 1969.

Dr. Charles Goldman's research group at the University of California, Davis began studying the lake in late 1950s and documented declining environmental conditions. Dr. Goldman suggested reversing the environmental decline would require addressing sewage effluent, and unregulated development, and other point sources of pollutants in the Region. Even though Dr. Goldman's findings generated substantial controversy at the time, policies and actions were initiated to address the causes of lake degradation. The 1969 Porter-Cologne Act in California, and an executive order by the Governor of Nevada (dated January 27, 1971), prohibited discharges of domestic, municipal, or industrial wastewaters to Lake Tahoe, its tributaries, groundwater, or the portion of the Truckee River within the Tahoe Region.

The population of the Region rapidly increased in the latter half of the 20th century. In 1956 there were an estimated 2,850 residents in the Region. By 1970 the number had grown to 26,105 and by 1980 the total had reach 48,071. Development proceeded virtually unchecked during the period and between 1950 and 1970 the number of lots in the region increased from 17,754 to 49,334 (Ingram and Sabatier 1987). Today, there are about 20 developed towns and small communities in the basin. The City of South Lake Tahoe is the only incorporated city wholly within the regional jurisdiction of TRPA. As of 2013, an estimated 54,380 people reside year-round in the Lake Tahoe Region (see also Appendix A of this report for additional details of socioeconomic conditions in the Region).

The two states' resolved to control development pressures in the late 1960s. But the 1969 Compact and subsequent planning approach were found insufficient to protect Lake Tahoe's environment. In 1980, the Bi-State Compact was amended to strengthen the agency mission in cooperatively leading the preservation, restoration, and enhancement of the unique natural and human environment of the Lake Tahoe Region. The revised Bi-State Compact directed the agency to adopt environmental quality objectives known as "environmental threshold carrying capacities" (hereafter, "threshold standards"), and develop a regional land use plan to address the impacts resulting from urban development. Threshold standards set targets for environment quality intended to protect the unique natural values of the Tahoe Region while still providing for appropriate and orderly development. The Region's economy and communities are highly dependent on outdoor recreation and the environmental health of the region. To attain the restoration and environmental health goals established in threshold standards the TRPA Regional Plan implemented a broad suite of policies, ordinances, and land use zoning requirements designed to guide the Region toward achievement and maintenance of adopted threshold standards, while at the same time sustaining community and economic values. The periodic threshold evaluations reported on progress in achieving threshold standards and put forward Regional Plan course corrections in response to best available science and monitoring.

The environmental impact of legacy land uses and urban development that was built in the 1960s and 1970s, prior to the Regional Plan, continued to adversely impact the Region. Between 1987 and 2010, TRPA amended the Regional Plan to incorporate best available science and allow environmentally beneficial programs and projects. Starting in the 1990s, threshold evaluations and other studies made it clear that regulation alone would not achieve and maintain adopted threshold standards. To address legacy impacts, TRPA adopted the Environmental Improvement Program (EIP) in 1997. The EIP secured public and private funding for capital investment into on-the-ground implementation of stormwater treatment infrastructure, stream area restoration, transportation improvements, forest health, and other environmentally beneficial programs and projects.

TRPA is uniquely positioned to evaluate environmental and economic conditions. The agency governs at an ideal scale – a Region defined by watershed boundaries – to evaluate land use practices and their implications on environmental quality and socioeconomic outcomes. TRPA takes advantage of research and monitoring across a range of spatial scales to keep plans and programs up to date. TRPA is governed by a 15-member bi-state Governing Board which meets monthly, allowing for adjustments in policy and management action in a relatively short time frame. The agency uses best available research and monitoring findings to continually improve the Regional Plan and fulfill mandates outlined in the Bi-State Compact to achieve environmental and socioeconomic goals for the Region.

2015 Threshold Evaluation Report

This report is the sixth comprehensive review of environmental health relative to the threshold standards known as the “threshold evaluation report.” The report presents monitoring data from multiple reliable sources and includes contributions from members of academic universities, government research institutions, land management and regulatory agencies, and private consultants. The purpose of the threshold evaluation report is to:

- Report the degree and rate of progress toward attainment of adopted environmental threshold carrying capacities and applicable local, state, and federal air and water quality standards
- Summarize progress on Regional Plan implementation
- Assess the effectiveness of Regional Plan elements in achieving threshold standards
- Provide recommendations on additional actions to facilitate threshold standard attainment or otherwise improve the effectiveness of the plan or applicable standards

In accordance with the Regional Plan ((TRPA 1986); (TRPA 2012)), this evaluation summarizes current and available monitoring data and information that addresses required reporting elements, and includes recommendations for adjustments to threshold standards and the Regional Plan. Reporting requirements are outlined in the Regional Plan, and as a consequence, this report should not be viewed as an exhaustive and integrated synthesis of all available research and monitoring in the Lake Tahoe Basin. It addresses progress in the attainment of threshold standards. However, where appropriate, references to current and related applied research are provided to guide the reader toward more in-depth information.

The threshold evaluation report documents the status and trends of relevant indicators relative to the threshold standards. The report analyzes the mechanisms or processes driving the observed status and trends where possible. However, a comprehensive analysis of causes and effects of observed status and trends is beyond the charge given to the four-year threshold evaluation.

Threshold Standards

The Bi-State Compact defines a threshold standard as “...an environmental standard necessary to maintain a significant scenic, recreational, educational, scientific or natural value of the region or to maintain public health and safety within the region.” The Compact directed TRPA to adopt threshold standards as a means to encourage wise land use and conservation of the waters of Lake Tahoe and resources of the surrounding area. The TRPA Governing Board adopted Resolution 82-11 in 1982 which established the threshold standards.

The 2011 Threshold Evaluation Report began the process of standardizing the reporting process for evaluation of status and trend of threshold standards and the 2015 report follows the methodologies established in the 2011 report. The following provides a brief narrative description of the organizational structure of the threshold standards. Threshold standards are hierarchically organized (Figure 1-2). At the top of the hierarchy, are the nine threshold categories:

- Water quality
- Soil conservation
- Air quality
- Vegetation preservation
- Wildlife
- Fisheries
- Noise
- Recreation
- Scenic resources

Each threshold category is then divided into reporting categories, within which there are one or more standards. For each standard there is an associated indicator. The resolution established three different types of Threshold standards: numerical standards, management standards, or policy statements. The type of standard has different implications for how standard attainment is assessed.

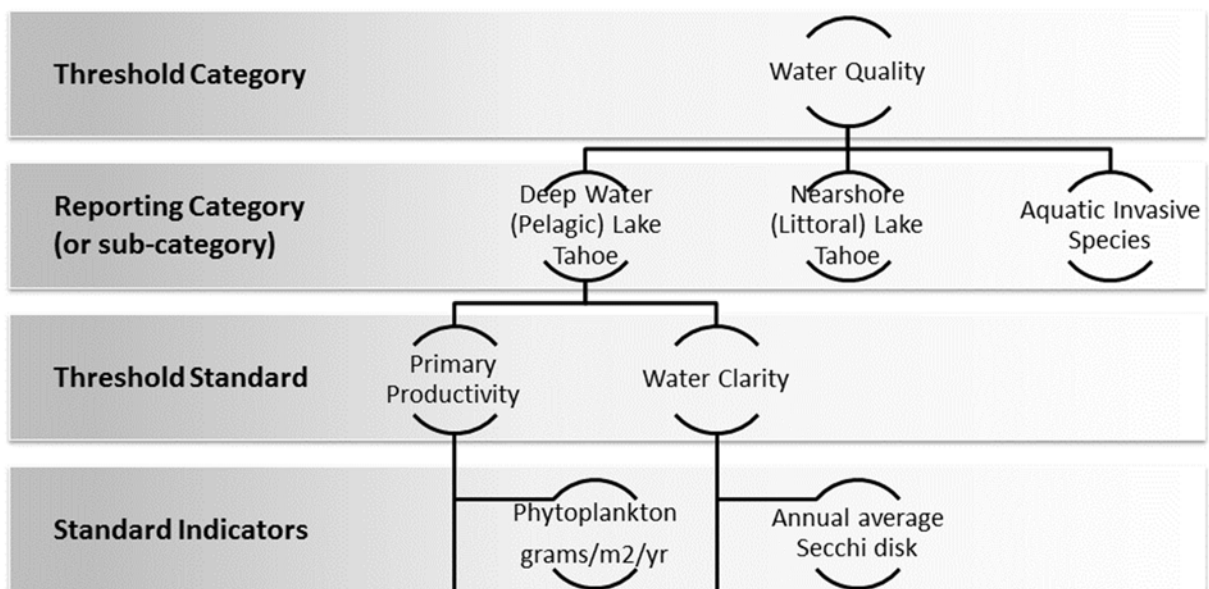


Figure 1-2. Example of how threshold standards are hierarchically organized under indicator reporting categories and threshold categories.

Neither Resolution 82-11 nor other preceding documents defined threshold standard types. The following definitions are provided based on historical interpretations of Resolution 82-11, precursor documents, and definitions provided by the U.S. Environmental Protection Agency, U.S. Forest Service, U.S. National Park Service, and other agencies:

- Numerical Standard – is an adopted standard that represents in numeric terms the value or conditions intended to maintain a beneficial level of environmental quality, ecosystem function, socioeconomic sustainability and public health and safety or experience. A classic example of a numerical standard is the “annual average deep water transparency as measured by Secchi disk shall not be decreased below 29.7 meters.”
- Management Standard – is an adopted best practice, regulation, norm or requirement intended to protect or conserve a valued natural resource or socioeconomic value or experience. Examples of management standards include requiring development setbacks from sensitive lands such as stream environment zones, restricting the amount of land that can be developed on a parcel, or restricting detrimental land uses in buffered areas around sensitive wildlife areas.
- Policy Statements – provide direction to the agency in developing the Regional Plan. Policy outline principles or rules intended to guide decisions needed to achieve desired outcomes or values. For example, the following is a policy statement under the recreation threshold category: *“It shall be the policy of the TRPA Governing Body in development of the Regional Plan to preserve and enhance the high quality recreational experience including preservation of high-quality undeveloped shorezone and other natural areas. In developing the Regional Plan, the staff and Governing Body shall consider provisions for additional access, where lawful and feasible, to the shorezone and high quality undeveloped areas for low density recreational uses.”*

Chapters 3 through 11 of this report examine the status and trends of threshold standards and associated indicators for each threshold category. Information in these chapters is presented in a standardized format. For each threshold category, an introduction includes a description of the indicator reporting categories and an overview of the numerical standards, management standards, and policy statements adopted for the Region for that threshold category.

Each chapter provides an introduction to each indicator reporting category (in previous threshold evaluations these were loosely termed “threshold indicators”) along with background information on the factors and activities that affect indicators within the indicator reporting category.

Following the introduction to each indicator reporting category are “indicator summaries” for each numerical standard and management standard with numeric targets within the indicator reporting category. For narrative management standards and policy statements, an assessment summary characterizes the extent to which a management standard or policy statement has been implemented within the context of the Regional Plan. If information on the effectiveness of the management standard or policy statement exists, it is included or otherwise referenced in the management standard summary or policy statement summary. A description of the content included in indicator summaries and management standard and policy statement summaries is included in the methods chapter.

Chapter 1 Introduction References

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