

Part 2 Conservation Plan

The importance of environmental conservation at Lake Tahoe Region is emphasized by TRPA's guiding principles.

“The Tahoe Region exhibits unique and irreplaceable environmental and ecological values of national significance which are threatened with deterioration or degeneration.” TRPA shall *“maintain the significant scenic, recreational, education, scientific, natural, and public health values provided by the Region; and “ensure equilibrium between the Region’s natural endowment and its manmade environment.”* (TRPA Regional Plan, 2012)



The West Shore Multi Use Trail

This Conservation Plan outlines policies and programs to protect, preserve, and enhance the Area Plan's natural and cultural resources. It implements the Regional Plan at the local level to achieve and maintain the environmental Threshold standards.

Topics addressed include water quality, soil conservation and land coverage, stream environment zone (SEZ), air quality, scenic resources, vegetation, fisheries and aquatic resources, wildlife resources, noise, cultural resources and natural hazards.

2.1 2011 Threshold Evaluation

The 2011 Threshold Evaluation Report provides a snapshot of the overall environmental health at Lake Tahoe and is the fifth report since the adoption of the 1987 Regional Plan. Its findings indicate that significant environmental progress has been made and trends are increasingly positive. The Evaluation also shows that challenges remain.

Summary findings of the Threshold Evaluation Report are listed in Table 2.1. Consistent with the Regional Plan, this Area Plan is focused on addressing the Threshold areas of concern.

Table 2.1: 2011 Threshold Evaluation Report Findings

<i>Threshold</i>	<i>2011 Threshold Evaluation Executive Summary Findings</i>
Water Quality	The rate of Lake Tahoe annual clarity decline has slowed over the last decade. The winter clarity threshold indicator met the interim target of 78.7 feet (2011 measured 84.9 feet) and is trending toward attainment of 109.5 feet. Trends in stream water quality indicated that conditions have not declined over time. However, summer lake clarity and nearshore conditions are highlighted as major areas of concern.
Air Quality	The Tahoe Basin made air quality gains over the last five years. The majority of air quality indicators in the Lake Tahoe Basin were at or better than attainment with adopted standards. The Report shows that indicators for carbon monoxide and vehicle-miles-traveled moved from non-attainment into attainment. Federal and state tailpipe and industrial emission standards have likely contributed to this achievement along with local projects which delivered walkable, transit-friendly improvements such as the Heavenly Gondola in South Lake Tahoe.
Soil Conservation	An analysis of impervious cover (land coverage) showed that seven of nine indicators were in attainment with threshold targets, however, sensitive wetlands and very steep lands are “over-covered” which can negatively affect water quality and other resources. Stream zone restoration efforts implemented by TRPA partner agencies are making progress in achieving restoration goals with more needing to be done.
Scenic Resources	The Tahoe Basin made gains in scenic quality over the last five years. Overall, compliance with scenic quality standards is at 93 percent with an improving trend in scenic quality for the built environment. Developed areas along roadways and Lake Tahoe’s shoreline continue to be the locations where scenic improvements are needed.
Vegetation	The Regional Plan and partner agencies have successfully protected sensitive plant species, keeping those standards in attainment. However, a couple of uncommon plant communities fell short of attainment because of non-native species; beaver, aquatic invasive species and noxious weeds were identified as potential threats to the integrity of uncommon plant communities. Progress is being made on fuels reduction and forest ecosystem restoration.
Recreation	Both Recreation Threshold Standards have been implemented and are in attainment. TRPA partners have made substantial progress in upgrading recreational facilities through the Environmental Improvement Program.
Fisheries	TRPA and partner agencies have implemented a robust aquatic invasive species control and prevention program; however, aquatic invasive species continue to be a major area of concern because their threat to fisheries

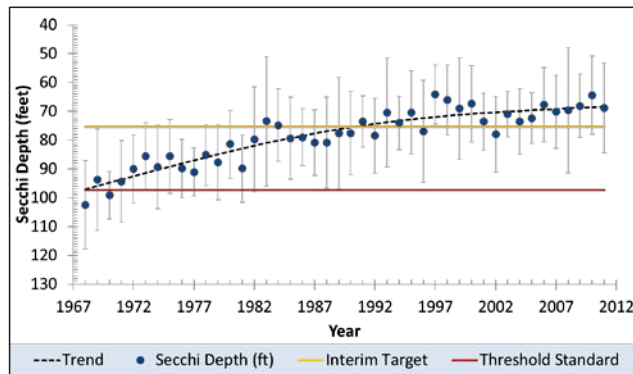
Table 2.1: 2011 Threshold Evaluation Report Findings

Threshold	2011 Threshold Evaluation Executive Summary Findings
	and other aquatic biota.
Wildlife	Indicators for special interest wildlife species show stable or improving conditions. TRPA’s development regulations have protected riparian wildlife habitats and partner agencies are making progress restoring these valuable habitats.
Noise	TRPA and the peer review panel recommended that noise standards and evaluation approaches be re-evaluated. The majority of standards were determined to be out of attainment as a result of a ‘no exceedance’ interpretation of the standard and that TRPA has little enforcement authority to address many noise issues – in particular, single event noise.

Source: 2011 Threshold Evaluation.

2.2 Water Quality

Restoring Lake Tahoe’s water quality has been a top priority for decades. Data indicates that after years of steady decline, Lake Tahoe’s average annual clarity has nearly stabilized, albeit well below the 97.4 foot threshold standard (1967-71 levels). Nearshore water quality and algae are topics of significant concern and active research.



Lake Tahoe Water Clarity (Average Annual Secchi Depth). Source: TRPA 2011 Threshold Evaluation, December 12, 2012.

To address water quality challenges, Placer County and partner organizations have made substantial investments in water quality initiatives. Completed and current water quality improvement projects are described below and depicted in the maps that follow (Figures 2-1 through 2-5).

ENVIRONMENTAL IMPROVEMENT PROGRAM (EIP)

The multi-agency Environmental Improvement Program (EIP) was launched in 1997 to improve the environment at Lake Tahoe. The EIP focuses on accelerating Threshold attainment with public and private investments in physical projects including erosion control measures, riparian area restoration, transportation, forest health, and others. TRPA administers the program.

Within the Plan area, water quality and erosion control EIP projects have been completed by various agencies, including Placer County, the State of California, California Tahoe Conservancy, local utility and fire protection districts and the U.S. Forest Service. Region-wide, over \$1 billion in federal, state, local and private funds have been invested in EIP Projects. Completed EIP water quality projects are mapped in Figures 2-1, 2-2 and 2-3 and described in the Implementation Plan.

This Area Plan supports continued implementation of the EIP in coordination with regional partners and the TMDL Program. As a capital program, project completion is directly related to availability of funding.

BEST MANAGEMENT PRACTICES (BMPs)

Best Management Practices (BMPs) are stormwater management measures that reduce runoff volume, peak flows, and pollution levels through detention, infiltration, evapotranspiration, and filtration. TRPA requires that BMPs be installed with all development permits and be designed to stabilize soil and infiltrate the volume of a 20-year, one-hour storm onsite. TRPA also requires that property owners in the Tahoe Region install BMPs on existing developed parcels – even if improvements are not being made.

As shown in Table 2.2-A, BMP compliance for developed parcels in the Plan area was 29 percent in 2013, slightly lower than the regional compliance rate. The significant cost of BMP retrofits has limited compliance. Properties with BMP certificates are mapped on Figures 2-1, 2-4 and 2-5.

For projects delegated to the County for approval under the Area Plan MOU, the County will enforce BMP compliance in consultation with TRPA. TRPA will continue to enforce the BMP retrofit program for properties not seeking development approvals. The MOU outlines the administrative details.

Table 2.2-A: BMP Compliance in the Area Plan

<i>Land Use</i>	<i>Parcels</i>	<i>BMP</i>	
		<i>Certificates</i>	<i>Compliance</i>
Single Family	9,983	3,078	31%
Multifamily	635	247	39%
Commercial	266	52	20%
Tourist	73	14	19%
Industrial	217	10	5%
Public Services	129	29	22%
Recreation	439	20	5%
Total Parcels¹	11,742	3,450	29%

1. Does not include conservation/backcountry or vacant parcels.

Source: TRPA, 2013.

LAKE TAHOE TMDL (TOTAL MAXIMUM DAILY LOAD)

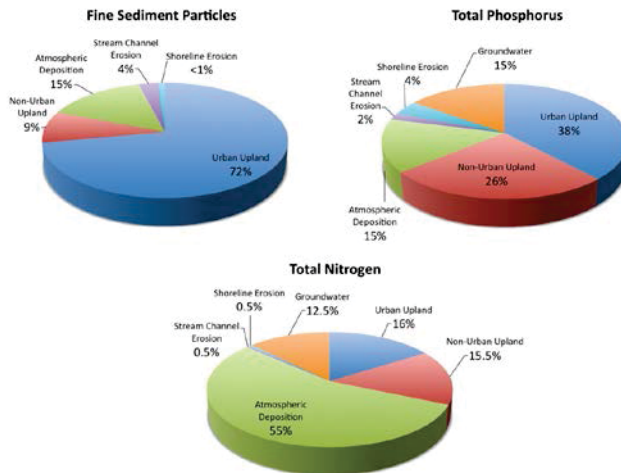
The Lake Tahoe TMDL program was developed in accordance with U.S. Clean Water Act and was approved in 2011. The TMDL is intended to complement the Regional Plan and was prepared in coordination with TRPA.

In the 2000s, extensive studies for the Lake Tahoe TMDL provided detailed information related to water quality. TMDL reports adopted by California and Nevada identified fine sediment particles, nitrogen and phosphorus as Lake Tahoe’s primary pollutants. Fine sediment particles are the most dominant pollutant contributing to the impairment of the lake’s deep water transparency and clarity, accounting for roughly two thirds of the lake’s impairment.



Lake Tahoe's West Shore

A pollutant source analysis identified urban uplands runoff, atmospheric deposition, forested upland runoff, and stream channel erosion as the primary sources of fine sediment particle, nitrogen, and phosphorus loads discharging to Lake Tahoe. The largest source of fine sediment particles to Lake Tahoe is urban stormwater runoff, comprising 72 percent of the total fine sediment particle load. The urban uplands also provide the largest opportunity to reduce fine sediment particle and phosphorus contributions to the lake.



Lake Tahoe Estimated Pollutant Loading. Source: Final Lake Tahoe Total Maximum Daily Load Report, November, 2010.

While the TMDL focuses on impairment of Lake Tahoe’s deep water transparency and clarity, the primary pollutants that it addresses (fine sediment, nitrogen and phosphorous) have also been shown to affect nearshore water quality.

Load reduction targets for fine sediments, phosphorus, and nitrogen have been established in the TMDL to attain the Lake Tahoe transparency standard over a 65-year implementation period. To meet the requirements of the TMDL program, each jurisdiction holding a NPDES permit – including Placer County – is required to reduce their baseline pollutant load by the set amounts.

Placer County’s initial Pollutant Load Reduction Plan (PLRP) was approved in 2013. Load reduction targets are being achieved with Water Quality Improvement Projects in high priority catchments, pollutant control management measures in road maintenance operations, and the completion of private parcel Best Management Practices (BMPs) for larger projects and redevelopment activities.

Table 2.2-B identifies the pollutant load reduction requirements for Placer County.

Table 2.2-B: 2016 Pollutant Load Reduction Requirements

<i>Parameter</i>	<i>Base Load (kg/year)</i>	<i>Annual Load Reduction (%)</i>	<i>Annual Load Reduction (kg)</i>	<i>Allowable Load (kg/year)</i>
Fine Sediment				
Particles (mass)	234,053	10%	23,405	210,648
Phosphorus	1,111	7%	78	1,033
Nitrogen	4,635	8%	371	4,264

Source: County of Placer Lake Tahoe Pollutant Reduction Plan, May 2013.

Since the 2004 baseline period, Placer County has completed sixteen qualifying projects, as listed in Table 2.2-C and mapped in Figures 2-1, 2-2 and 2-3. Registered TMDL catchments, the pollutant loading for each catchment, and the status of BMP certification are mapped in Figures 2-1, 2-4 and 2-5.

Table 2.2-C: Completed TMDL Water Quality Improvement Projects

<i>Water Quality Improvement Project</i>	<i>Year Completed</i>	<i>Load Reduction Estimate (FSP)</i>	<i>Lake Clarity Credit</i>
Dollar Point	2008	3,241	16.2
Lake Forest Meadow	2009–2010	2,184	11.0
Timberland	2004	551	3.0
Upper Cutthroat	2005	398	2.0
Lake Tahoe Park	2004	804	4.0
Tahoe Pines – Area A	2007	1,195	6.0
Tahoe Pines – Area B	2009	43	0.3
Tahoe Pines – Area C	2011	1,704	9.0
Tahoe Estates	2009	3,112	16.0
West Sunnyside Phase I	2008	1,305	7.0
Fox Clean Water Pipe	2010	400	2.0
Tahoe City Residential	2011	969	5.0
Brockway	2012	2,022	10.0
Homewood Phase 1 & 1A	2012	3,800	19.0
Beaver Street Retrofit	2007	928	5.0
Lake Forest Highlands	2012	1,000	5.0
Total		23,656	120.5

Note: One lake clarity credit = 200.42 pounds of FSP.

Source: County of Placer Lake Tahoe Pollutant Reduction Plan, May 2013.

Placer County anticipates completion of six additional TMDL water quality improvement projects by September 2016. The current projects are listed in Table 2.2-D.

Table 2.2–D: Current TMDL Water Quality Improvement Projects

<i>Water Quality Improvement Project</i>	<i>Year Completed</i>	<i>Load Reduction Estimate (FSP)</i>	<i>Lake Clarity Credit</i>
Lake Forest Panorama	2014–2015	6,040	30.1
West Sunnyside Phase II	2016	1,414	7.1
Snow Creek Restoration	2014	1,800	9.0
Kings Beach CCIP	Underway	10,508	52.4
Griff Creek	Underway	900	4.5
Kings Beach WIP ¹	2016	3,000	15.0
Total		23,662	118.1

1. Kings Beach WIP includes two subwatershed projects within the Kings Beach Planning Area.

Source: County of Placer Lake Tahoe Pollutant Reduction Plan, May 2013. Project status updated January 2015.

In addition to the water quality improvement projects, Placer County is implementing additional Pollutant Control Management Measures for road maintenance activities. These are listed in Table 2.2-E.

Table 2.2–E: Pollutant Control Management Measures Summary

<i>Action</i>	<i>Load Reduction Estimates (lbs/year) FSP</i>	<i>Lake Clarity Credits</i>
Change Abrasive Type	3,234	16
Increase Frequency of Sweeping	2,405	11
Utilize New High-Efficiency Sweeper	3,006	15
Management Measures Total ¹	5,411	25
Percentage of Required Credits	26,260	10%

1. Does not include changing abrasives – as a credit methodology is in development.

Source: County of Placer Lake Tahoe Pollutant Load Reduction Plan, May 2013.

The completed and current projects, along with identified pollution control management measures, are expected to reduce pollution loading by the required amounts. Additional efforts are being evaluated for future Load Reduction Plans in accordance with TMDL criteria.

WATER QUALITY POLICIES

- WQ-P-1 Continue to participate in the Lake Tahoe Total Maximum Daily Load (TMDL) program, maintain Pollutant Load Reduction Plans (PLRPs), and implement the identified pollutant load reduction measures.
- WQ-P-2 Continue to participate in the Lake Tahoe Environmental Improvement Program (EIP) and coordinate with other agencies to identify and secure funding for water quality improvement projects.
- WQ-P-3 Continue to prioritize and seek funding assistance for the installation and long-term maintenance of Water Quality Best Management Practices (BMPs).
- WQ-P-4 Reduce pollutant loading to Lake Tahoe by implementing incentives for redevelopment within Town Centers and the transfer of development to Town Centers in accordance with the Regional Plan.
- WQ-P-5 Pursue Area-Wide water quality treatment districts in coordination with involved property owners and in accordance with the Regional Plan and TMDL. Within an approved district, water quality facilities may be jointly managed in lieu of certain parcel-specific BMP requirements.
- Priority will be given to sites with interested property owners, in high pollution loading catchments, on SEZ lands and within Town Centers.
- WQ-P-6 Evaluate the feasibility of establishing one or more public stormwater districts to construct and maintain water quality improvements.
- WQ-P-7 Implement the recommendations outlined in the Pollutant Load Reduction Plan (PLRP) to achieve the Lake Tahoe TMDL five-year load reduction target for year 2016.
- WQ-P-8 Collaborate with the Lahontan Regional Water Quality Control Board to update and refine the Pollutant Load Reduction Strategy for load reduction targets beyond the year 2016 and update the Pollutant Load Reduction Plan as necessary to achieve the Lake Tahoe TMDL load reduction targets. The Placer County Tahoe Basin Area Plan hereby incorporates by reference all, monitoring ,operations and maintenance, and reporting required by the County's NPDES permit, the adopted Pollutant Load Reduction Plan and the Stormwater Management Plan, which will also be utilized by TRPA in the 4-year Area Plan recertification process pursuant to TRPA Code Sections 13.8.2 and 13.8.5
- WQ-P-9 All TRPA policies, ordinances and programs related to Water Quality will remain in effect.

The Implementation Plan describes the water quality improvement projects. Regulations are outlined in the Area Plan Implementation Regulations.

Figure 2-1 Water Quality Improvement Projects and BMP Certified Properties

Figure 2-2 Kings Beach Water Quality Improvements

Figure 2-3 Tahoe City Water Quality Improvements

Figure 2-4 Kings Beach Fine Sediment Loading



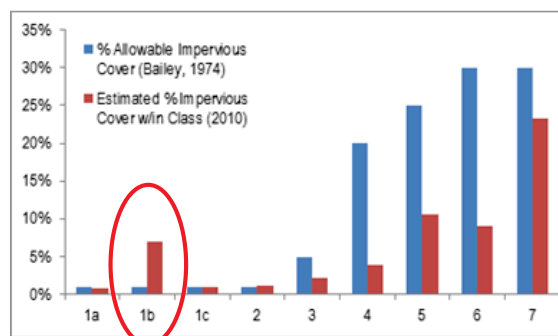
PLACER COUNTY
COMMUNITY DEVELOPMENT RESOURCE AGENCY
GEOGRAPHIC INFORMATION SYSTEM DIVISION

Tahoe Basin Area Plan

Figure 2-5
Tahoe City
Fine Sediment L

2.3 Soil Conservation and Land Coverage

TRPA maintains strict Threshold Standards for soils and land coverage, especially on sensitive lands. The primary Threshold attainment challenge involves Class 1b Lands (Stream Environment Zones - SEZs), which have land coverage well in excess of the adopted Threshold Standard. Coverage on other sensitive lands is near Threshold Standards. Lake Tahoe's SEZs have been substantially "over covered" since TRPA was established.



Existing land coverage in the Lake Tahoe Region. Source: TRPA 2011 Threshold Evaluation.

LAND CAPABILITY

TRPA uses a soils-based Land Capability ranking system as a regulatory tool and the starting point to determine allowable land coverage for property in the Region. Land capability is a composite measure related to slope, erosion potential, runoff potential and vegetative sensitivity. Land Capability Districts are mapped in Figure 2-6.

TRPA classifies districts 1 - 3 as "sensitive" and generally prohibits new development in those areas. The strictest regulations apply within District 1b (SEZ). Base allowable land coverage is 1 percent in Districts 1 and 2, and 5 percent in District 3. Districts 4 - 7 are considered "non-sensitive" and have less restrictive standards. Base allowable coverage is 20 percent in District 4, 25 percent in District 5, and 30 percent in Districts 6 and 7.

For sensitive lands, TRPA has programs for the transfer of development rights and existing coverage to other, less sensitive parcels. TRPA also administers an Individual Parcel Evaluation System (IPES), which ranks single family lots for development. These programs are described in the Land Use Plan below.

SOIL TYPES

Soils in the Lake Tahoe Region were formed mainly in alluvium derived from igneous intrusive rock, like granodiorite, and igneous extrusive rock, mostly andesitic lahar. Granodiorite is easy to spot, because it is a lightly colored rock covered in small black speckles. Andesitic lahars are created from volcanic eruptions and their resulting flows, and are much darker in color. These two rock types provide parent material for most soil in the Basin, and contribute to soil characteristics. Much of the soil in the Plan area is deep, well-drained, nutrient-rich and able to support forests and other vegetation.

Figure 2-6: Land Capability

LAND COVERAGE

The base allowable coverage for each land capability district also serves as the Threshold Standard. Removing coverage from Stream Environment Zones (SEZs) is a Threshold attainment challenge for the region and for this Area Plan. Coverage within the Plan area is shown in Table 2.3. SEZ areas are over-covered by 112.5 acres. Class 2 lands are also over-covered. Figures 2-7, 2-8 and 2-9 show the location of existing land coverage in relation to SEZs and other sensitive lands.

Table 2.3: Existing and Allowable Coverage by Land Capability District

<i>Land Capability District</i>	<i>Total Area (acres)</i>	<i>Base Coverage</i>	<i>Allowed Coverage (acres)</i>	<i>Existing Coverage (acres)</i>	<i>Acres Over or (Under) Threshold</i>
1a	10,908	1%	109	172	(85)
1b (SEZ)	1,248	1%	12.5	125	112.5
1c	11,823	1%	118	160	(42)
2	1,375	1%	13.75	33	19.25
3	3,571	5%	178.5	158	(20.5)
4	3,204	20%	640.8	107	(533.8)
5	8,774	25%	2,193.5	973	(1,220.5)
6	5,091	30%	1,527	289	(1,238)
7	0	30%	0	0	0
Other	219	n/a	0	4	4
Total	46,213		4,793.7	2017	(2,776.7)

Source: TRPA Bailey Land Capability Classification, Aerial LiDAR data collected in summer 2010.

SOIL CONSERVATION AND LAND COVERAGE POLICIES

- S-P-1 Pursue coverage removal projects in coordination with the EIP and TMDL programs, the California Tahoe Conservancy, and other partner agencies. Priority will be given to sites in high pollution loading catchments and SEZ lands.
- S-P-2 Accelerate sensitive land coverage removal and mitigation by implementing incentives for redevelopment within Town Centers and the transfer of development from SEZs and other sensitive lands to Town Centers in accordance with the Regional Plan.
- S-P-3 Pursue Area-Wide land coverage management districts in coordination with involved property owners and in accordance with the Regional Plan. Within

a district, area-wide coverage standards may be substituted for certain parcel level standards.

Priority will be given to sites with interested property owners, in high pollution loading catchments and within Town Centers.

S-P-4 Update parking standards to more efficiently utilize parking lots and minimize land coverage.

S-P-5 All TRPA policies, ordinances and programs related to Land Coverage will remain in effect.

The Implementation Plan describes the projects for soil conservation and land coverage, along with performance targets for sensitive land coverage removal. Regulations are outlined in the Area Plan Implementing Regulations.

Figure 2-7: Land Coverage

Figure 2-8: Kings Beach Land Coverage

Figure 2-9: Tahoe City Land Coverage

2.4 Stream Environment Zones (SEZ)

Stream Environment Zones (SEZs) are the highest priority for coverage removal and restoration activities. Existing SEZ development has had a significant impact on water quality, native riparian vegetation and related environmental values.

The Regional Plan reserves the strongest environmental protections for SEZ areas to promote the long-term preservation and restoration of these areas. SEZ areas are also afforded the most significant incentives for development transfers and restoration. Achieving the Threshold standard for SEZ coverage will be a long term challenge and is not expected to be achieved for many decades. This Area Plan seeks to significantly accelerate the rate of SEZ restoration. SEZ restoration priority sites include: Griff Creek, Lake Forest (Pomin Park), and Burton Creek.



A Water Quality Improvement Project

STREAM ENVIRONMENT ZONE POLICIES

- SEZ-P-1 Pursue SEZ restoration projects in coordination with the EIP and TMDL programs, the California Tahoe Conservancy, and other partner agencies. Priority will be given to sites in high pollution loading catchments.
- SEZ-P-2 Accelerate SEZ restoration by implementing incentives for redevelopment within Town Centers and the transfer of development from SEZs to Town Centers in accordance with the Regional Plan.
- SEZ-P-3 All TRPA policies, ordinances and programs related to Stream Environment Zones (SEZ) will remain in effect.

The Implementation Plan describes SEZ Restoration projects and performance targets. Regulations are outlined in the Area Plan Implementing Regulations.

2.5 Air Quality

The 2011 Threshold Evaluation documented air quality improvement. Most indicators were meeting or exceeding standards. Between 2007 and 2011, the number of “good” air quality days increased from 319 to 361. Only four “moderate” days were documented in 2011.

Federal and state emission standards have likely contributed to this achievement, along with local and regional efforts.

The Lake Tahoe TMDL showed that atmospheric deposition is also a major water pollutant and improved air quality could help achieve Lake Tahoe's transparency standard.

Motor vehicles are responsible for most of the region's direct (in-basin) greenhouse gas emissions. Wildfires are an additional challenge.

The Placer County Air Pollution Control District (APCD) is a special district created by state law to enforce local, state and federal air pollution regulations. TRPA also maintains strict air quality protection and mitigation programs (Code Chapter 65 - Air Quality). Air quality improvement projects are funded through the Lake Tahoe EIP, partly with air quality mitigation fees from private development. All of these programs are maintained and supported by this Area Plan

The Regional Plan seeks to improve air quality with an integrated land use, housing and transportation strategy that reduces reliance on automobiles and light trucks. Incentivizing the transfer of outlying development to Town Centers and prioritizing multi-modal transportation investments are key air quality improvement strategies being implemented with this Area Plan.

GREENHOUSE GAS EMISSIONS

The Regional Transportation Plan - Mobility 2035 also serves as Lake Tahoe's Sustainable Communities Strategy (SCS) for required greenhouse gas reductions for passenger vehicles in accordance with California Senate Bill 375 (Sustainable Communities and Climate Protection Act). Mobility 2035 is described in the Transportation Plan.

In Placer County, greenhouse gas emissions from buildings are addressed with California Green Building Standards, which were drafted to help the State achieve the AB 32 goal of reducing greenhouse gas emissions to 1990 levels by 2020. Area Plan Policies and Implementing Regulations also require energy efficient building designs for private projects and public infrastructure.

In addition, Placer County administers an energy efficiency and water conservation building retrofit program called the Placer County mPOWER (Money for Property Owner Water and Energy efficiency Retrofitting) program. The mPOWER program provides residential and non-residential property owners with financing opportunities to retrofit existing buildings with energy efficiency and water conservation improvements and renewable energy systems. The intent of the program is to promote more efficient use of water and energy within the built environment, reduce reliance on fossil fuels, and reduce greenhouse gas emissions.

Emissions Inventory

In 2012, the Tahoe Metropolitan Planning Organization (TMPO) and TRPA prepared a baseline emissions inventory as part of the Tahoe Region Sustainability Plan. Two baseline years were used (2005 and 2010) to quantify the effects of the 2008 economic downturn.

Source categories were determined based on unique characteristics of the Region including forestry, wildfires, and recreational boating, which are not typically significant in urban areas. Emissions estimates were also classified as direct and indirect. Direct emissions are those that result from activity contained entirely within the Basin. Indirect sources take into account emissions from activities outside of the Region that are attributable to activity within the Region (e.g., electricity generated outside of the Region that is consumed within the Region).

As shown in Table 2.5, the largest sources of emissions are electricity generation, transportation, and fuel combustion (heating & appliances).

Between 2005 and 2010 the greatest increase in emissions were from wildfire (including prescribed fires) and energy consumption. Sectors with the greatest reductions in emissions were transportation and solid waste.

Table 2.5: Tahoe Region Greenhouse Gas Emission Inventory

<i>Type</i>	<i>Source Sector</i>	<i>Source Category</i>	<i>2005</i>	<i>2010</i>
Direct	Transportation	On-road mobile sources	331,476	319,106
		Recreational boats	22,403	15,994
		Other off-road equipment	53,860	58,751
	Fuel combustion	Wood combustion	97,700	104,297
		Natural gas combustion	179,885	187,755
		Other fuel combustion	5,858	6,161
	Fires	Wildfires and prescribed burns	4,284	91,652
	Land use	Livestock	12,734	12,734
Indirect	Energy	Electricity consumption	487,553	562,543
		Wastewater treatment	2,115	2,300
	Transportation	Aircraft	5,131	4,739
	Waste	Municipal solid waste	110,512	26,704
Total Emissions			1,313,511	1,392,736

Source: TRPA/TMPO Regional Greenhouse Gas Emissions Inventory for the Lake Tahoe Basin, 2012.

AIR QUALITY POLICIES

- AQ-P-1 Continue to participate in the Lake Tahoe Environmental Improvement Program (EIP) and coordinate with other agencies to identify and secure funding for air quality improvement projects.
- AQ-P-2 Continue to implement federal, state and local air quality protection programs through the Placer County Air Pollution Control District.

- AQ-P-3 Include qualifying air quality improvement projects in TMDL Pollutant Load Reduction Plans (PLRPs).
- AQ-P-4 Prioritize projects and services that reduce vehicle miles travelled (VMT) and support alternative modes of transportation.
- AQ-P-5 Accelerate air quality improvement by implementing Regional Plan incentives for redevelopment within Town Centers and the transfer of development from outlying areas to Town Centers.
- AQ-P-6 Continue to implement the mPOWER incentive program to reduce greenhouse gas emissions from buildings and other site improvements.
- AQ-P-7 Implement building design standards and design capital improvements to reduce energy consumption and where feasible to incorporate alternative energy production.
- AQ-P-8 All TRPA policies, ordinances and programs related to Air Quality will remain in effect.

The Implementation Plan describes air quality improvement projects. Regulations are outlined in the Area Plan Implementing Regulations.

2.6 Scenic Resources

Overall, compliance with scenic quality Thresholds is at 93 percent with an improving trend in scenic quality for the built environment. Developed areas along roadways and Lake Tahoe's shoreline continue to be the locations where scenic improvements are needed.

Scenic Threshold standards include travel route ratings (for roadway and shoreline units), scenic quality ratings (for roadway and shoreline units), and ratings for public recreation areas and bike trails. The public recreation and bike trail ratings are all in attainment. The travel route and scenic quality ratings are mapped in Figure 2-10.



A Multi Use Trail in the Tahoe City Town Center

Improving scenic conditions are largely attributable to redevelopment projects that have occurred in accordance with TRPA's detailed Scenic Quality ordinances (Chapter 66). Non-

attainment areas generally include buildings constructed before adoption of TRPA Scenic Quality ordinances.

SCENIC RESOURCE POLICIES

- SR-P-1 Continue to participate in the Lake Tahoe Environmental Improvement Program (EIP) and coordinate with other agencies to identify and secure funding for projects that improve scenic quality.
- SR-P-2 Accelerate scenic resource improvement by implementing incentives for redevelopment within Town Centers and the transfer of development from outlying areas to Town Centers in accordance with the Regional Plan.
- SR-P-3 Support undergrounding of overhead utility lines on a project-by-project basis, as well as through established Underground Districts.
- SR-P-4 Protect and enhance existing scenic views and vistas.
- SR-P-5 Implement site and building design standards to protect and enhance scenic views from Town Centers and nearby areas.
- SR-P-6 Manage development located between designated scenic corridors and Lake Tahoe to maintain and improve views of Lake Tahoe from the corridors.
- SR-P-7 Prioritize scenic improvement efforts at the gateways to Lake Tahoe in Tahoe City and Kings Beach.
- SR-P-8 All TRPA policies, ordinances and programs related to Scenic Quality will remain in effect.
- SR-P-9 To ensure viewshed protection and compatibility with adjacent uses, new construction of buildings must not project above the forest canopy, ridgelines, or otherwise detract from the viewshed.

Scenic Quality improvement projects and policies are identified in the Implementation Plan.

Figure 2-10: Scenic Resources

2.7 Vegetation

The Plan area is dominated by conifer forests, with grasses and riparian vegetation in the stream environments. Threshold standards are in place for a variety of vegetation types. Threshold attainment trends are generally good, although invasive species and noxious weeds were identified as potential threats. Progress is being made on fuels reduction and forest ecosystem restoration.

Vegetation communities within the Plan area are listed in Table 2.7 and mapped within Figure 2-11. The majority (58 percent) of the Plan area consists of mixed white fir forests. White fir forests are primarily located along the west shore of the Plan area, extending from just north of Dollar Point to Tahoma. The north shore of the Plan area is dominated by jeffrey pine in the lower elevations and red fir in the higher elevations.

Existing vegetation patterns are strongly influenced by past and current human activities. Between 1859 and 1900, nearly 60 percent of the Lake Tahoe watershed was clear-cut. As a result, most forestlands are less than 150 years old. Restoring Lake Tahoe's old growth and late seral forests is a long-term Threshold attainment goal.

Housing and commercial development have also influenced the vegetation pattern present today in the Plan area. Impacts have been most significant in stream environment zones.

After most of the logging was complete, public agencies began acquiring land in the Tahoe Basin, intensifying in the 1930s and again after TRPA was established. Today more than 85 percent of the land in the Lake Tahoe Region is managed by the US Forest Service, Nevada Division of State Lands, California Department of Parks and Recreation, and the California Tahoe Conservancy. The agencies manage land for vegetation improvement, restoration of sensitive land, and other public benefits. Prescribed fires have become an important strategy to reduce the threat of catastrophic wildfire, allow larger trees to thrive, and support a healthy forest ecosystem. TRPA also administers strict Vegetation and Forest Health ordinances.

Table 2.7: Vegetation Communities

<i>Vegetation</i>	<i>Acres</i>	<i>Land Area %</i>
White Fir	26,755	58.0%
Montane Chaparral	4,656	10.1%
Jeffrey Pine	3,513	7.6%
Red Fir	3,106	6.7%
Sagebrush	2,100	4.5%
Subalpine Conifer	1,767	3.8%
Montane Riparian	917	2.0%
Sierra Mixed Conifer	686	1.5%
Perennial Grass	440	1.0%
Aspen	337	0.7%
Barren	229	0.5%
Lodgepole Pine	206	0.4%
Lacustrine	60	0.1%
Wet Meadow	29	0.1%
Unclassified	1,360	2.9%
Total	46,162	100.0%

Source: USFS, TRPA, 2007.

Figure 2-11: Vegetation Communities

VEGETATION POLICIES

- VEG-P-1 Pursue vegetation enhancement projects in coordination with the EIP and TMDL programs, the California Tahoe Conservancy, and other partner agencies. Priority will be given to disturbed sites with rare or threatened vegetation, in high pollution loading catchments, and in SEZs.
- VEG-P-2 Support forest enhancement projects being completed by land management agencies and fire districts, including selective cutting and controlled burning projects that improve forest health and reduce the risk of catastrophic wildfire.
- VEG-P-3 Accelerate the restoration of native vegetation by implementing incentives for redevelopment within Town Centers and the transfer of development from SEZs and other sensitive lands to Town Centers in accordance with the Regional Plan.
- VEG-P-4 Support protection of the Tahoe yellow cress (*Rorippa subumbellata*) species consistent the Tahoe Yellow Cress Conservation Strategy.
- VEG-P-5 Coordinate interagency efforts to detect and eradicate non-native terrestrial plants.
- VEG-P-6 All TRPA policies, ordinances and programs related to Vegetation will remain in effect.

Vegetation improvement projects are described in the Implementation Plan. Regulations are outlined in the Area Plan Implementing Regulations.

2.8 Fisheries and Aquatic Resources

There are two key aquatic environments in the Lake Tahoe Region—lakes and streams. Both environments play a key role in sustaining fish populations as some fish species use both lake and stream environments to fulfill their life cycles.

The diversity and abundance of Lake Tahoe’s fish community has changed considerably since arrival of Euro-American settlers. Several factors have contributed to the decline or extirpation of native fish and degradation of native aquatic habitats. These include increased sedimentation as a byproduct of logging, livestock grazing, commercial fish harvests, interruption of natural hydrologic regimes due to past logging practices, urban development, and introduction of non-native fish and other aquatic organisms.

Current aquatic resource priorities include management and eradication of aquatic invasive species and reintroduction of the native Lahontan Cutthroat Trout.

AQUATIC INVASIVE SPECIES

Aquatic invasive species (AIS) threaten Lake Tahoe and other lakes and streams. Damaging species include zebra and quagga mussels, Eurasian watermilfoil, Asian clams and curlyleaf pondweed (aquatic weeds).

Consequences of establishment include degradation of water quality, loss of important native species habitat, impacts to water conveyance structures, and negative economic impacts to the Lake Tahoe Region. TRPA has implemented substantial and coordinated AIS prevention, monitoring, control, education, and research efforts.

Aquatic invasive species are known to be transported from infested lakes and rivers on recreational watercraft, fishing gear, waders, construction machinery, and rafts. Watercraft inspections seek to prevent the inadvertent transport of alien species into the pristine waters of Lake Tahoe.

FISH HABITAT

TRPA has designated different types and qualities of fish habitat. “Prime” fish habitat includes spawning habitat and feed and cover habitat. Spawning habitats are composed of relatively small diameter gravel substrates used by native minnows for spawning and rearing fry. Feed and cover habitats are composed of larger diameter cobbles, rocks and boulders used by fish as foraging habitat, and to provide refuge from predators. “Marginal” habitats are dominated by sand and silt substrates interspersed with occasional willow thickets that establish during low lake levels. Figure 2-12 maps the location of spawning, feed and cover, and marginal fish habitats.

Figure 2-12: Fish Habitat

NATIVE FISH SPECIES

Lahontan cutthroat trout and mountain whitefish are the native large fish. Overfishing, habitat degradation, and the introduction of non-native aquatic species have contributed to the extirpation of the Lahontan cutthroat trout in the Tahoe Region. In 1970 the species was federally listed as ‘endangered,’ but was later reclassified as ‘threatened’ in 1975. Today, stream restoration projects and efforts to reintroduce Lahontan cutthroat trout are underway.

The Lake Tahoe Basin Management Unit Fisheries Department conducted non-game native fish surveys in streams of the California side of Lake Tahoe in 2007 and 2008. Creeks surveyed within the Plan area included Griff Creek, Watson Creek, Burton Creek, Homewood Canyon Creek, Madden Creek, Quail Creek, McKinney Creek, Ward Creek, and Blackwood Creek. Seven species of fish were sampled, five of which were native to the Tahoe Basin.¹ These include the Lahontan reidsider, paiute sculpin, speckled dace, Tahoe sucker, and tui chub. Three non-native species were also sampled including brook trout, brown trout and rainbow trout.

Table 2.8 shows the distribution of fish in the 2008 survey.

Table 2.8: Fish Species Sampled in Area Plan Area

<i>Fish Species</i>	<i>Native/Non-Native</i>	<i>Location</i>
Lahontan Redsider	Native	Quail Creek, Ward Creek
Paiute Sculpin	Native	Ward Creek
Speckled Dace	Native	Ward Creek, Griff Creek
Tahoe Sucker	Native	Griff Creek
Tui Chub	Native	Griff Creek
Brook Trout	Non-native	Mckinney Creek, Quail Creek, Madden Creek, Blackwood Creek, Ward Creek, Burton Creek, Watson Creek, Griff Creek
Brown Trout	Non-native	Quail Creek, Blackwood Creek, Ward Creek, Griff Creek
Rainbow Trout	Non-native	Mckinney Creek, Quail Creek, Homewood Creek, Madden Creek, Blackwood Creek, Ward Creek, Griff Creek

Source: Lake Tahoe Basin Management Unit Fisheries Department, 2008.

¹ The Lahontan cutthroat trout and mountain whitefish were not sampled as part of this study.

SPECIAL-STATUS FISH AND AMPHIBIAN SPECIES

The Lahontan cutthroat trout is currently listed as a ‘threatened species’ under the Federal Endangered Species Act. TRPA has adopted a policy statement to aid in state and federal efforts to reintroduce the Lahontan cutthroat trout to Lake Tahoe. Since 2002, the U.S. Fish and Wildlife Service (USFWS) has introduced Lahontan cutthroat trout to Fallen Leaf Lake to learn what conditions are necessary for successful restoration of the species in a lake environment. Findings suggest that restoration of a viable Lahontan cutthroat trout population may be possible if it can establish a niche apart from other trout species.

The Sierra Nevada Yellow-Legged frog, found in upper elevation lakes, ponds, bogs, and slow-moving alpine streams between 6,000 and 12,000 feet, is listed under the Federal Endangered Species Act. A second amphibious specie, the Yosemite toad is listed as federal candidate for listing under the Federal Endangered Species Act. The Yosemite toad is found in wet meadows between 4,000 and 12,000 feet in the Sierra Nevada. Fisheries and Aquatic Resource Policies

- FI-P-1 Support active management of Aquatic Invasive Species (AIS), including implementation of TRPA’s Lake Tahoe AIS Management Plan, to prevent new introductions of AIS, limit the spread and control existing AIS populations and abate AIS impacts.
- FI-P-2 Pursue aquatic resource enhancement projects in coordination with the EIP and TMDL programs, the California Tahoe Conservancy, and other partner agencies. Priority will be given to AIS management, removal of stream diversions and blockages, and projects that also reduce pollutant loading.
- FI-P-3 Support efforts to reintroduce Lahontan Cutthroat trout to waterways in the Truckee River/Lake Tahoe watershed.
- FI-P-4 All TRPA policies, ordinances and programs related to Fish and Aquatic Resources will remain in effect.

Fisheries and Aquatic Resource projects are described in the Implementation Plan. Regulations are outlined in the Area Plan Implementing Regulations.

2.9 Wildlife Resources

Threshold indicators for special interest wildlife species show stable or improving conditions. TRPA's development regulations have protected riparian wildlife habitats and partner agencies are making progress restoring these areas. Conflicts between people and black bears is also a challenge.

SPECIAL STATUS BIRDS AND MAMMALS

Three wildlife species are listed as 'endangered'. These include the willow flycatcher, bald eagle and the great grey owl. An additional two species are listed as 'threatened' including the bank swallow and California wolverine.



A Bald Eagle

TRPA identifies numerical and management standards related to six special-interest species—bald eagle, osprey, golden eagle, peregrine falcon, northern goshawk, and deer, and one group of species—waterfowl. The standards establish a minimum number of population sites that must be maintained, while the management standard establishes disturbance free buffer zones for each species or species group. According to the 2011 Threshold Evaluation Report, the status of all special-interest species is “at or somewhat better than target.”

WILDLIFE POLICIES

- SE-P-1 Pursue wildlife habitat enhancement projects in coordination with the EIP program, the California Tahoe Conservancy, and other partner agencies.
- SE-P-2 Coordinate with partner agencies to manage bear populations and minimize conflicts with people. Programs should emphasize public education and expand the use of bear-proof solid waste enclosures.
- SE-P-3 All TRPA policies, ordinances and programs related to Wildlife will remain in effect.

Wildlife projects are described in the Implementation Plan. Regulations are outlined in the Area Plan Implementing Regulations.

2.10 Noise

The Threshold Evaluation identified transportation corridors as the main source of noise in the Plan area. Other noise sources include motorized aircraft and watercraft, construction vehicles and equipment, machinery associated with refuse collection and snow removal, and off-road vehicles.

TRPA and the peer review panel recommended that noise standards and evaluation approaches be re-evaluated. The majority of standards were determined to be out of attainment as a result of a 'no exceedance' interpretation of the standard and that TRPA has little enforcement authority to address many noise issues – in particular, single event noise.

NOISE POLICIES

- N-P-1 Work with TRPA, Caltrans, Tahoe Area Regional Transit (TART), USFS, and other partner agencies to minimize transportation-related noise impacts on residential and sensitive uses. Additionally, continue to limit hours for construction and demolition work to reduce construction-related noises.
- N-P-2 Minimize passenger vehicle travel and roadway noise by implementing incentives for redevelopment within Town Centers and the transfer of development to Town Centers in accordance with the Regional Plan.
- N-P-3 Support the reevaluation of TRPA's Community Equivalent Noise Level (CNEL) standards and evaluation approaches, as called for in the 2011 Threshold Evaluation Report.
- N-P-4 All TRPA policies, ordinances and programs related to Noise will remain in effect.

Noise reduction projects are described in the Implementation Plan. Regulations are outlined in the Area Plan Implementing Regulations.

2.11 Cultural Resources

There are four properties listed on the National and California Registers of Historic Places, all of which are located in Tahoe City. These include Lake Tahoe Dam, Outlet Gates and Gatekeepers Cabin, Watson Log Cabin, and the Chapel of the Transfiguration.

LAKE TAHOE DAM

Located on SR 89 at the Truckee River in Tahoe City, construction of the dam took four years to complete, beginning in 1909 and ending in 1913. It is still in operation, and drains an area of 505 square miles. The dam is 18 feet high, and can increase Lake Tahoe's capacity by 744,600 acre feet. The dam was listed on the National Register of Historic Places on March 25, 1981.

**WILLIAM B. LAYTON PARK AND MARION STEINBACH INDIAN MUSEUM
(OUTLET GATES AND GATEKEEPERS CABIN)**

William B. Layton Park is the site of the Gateskeeper’s Cabin and Steinbach Indian Basket Museum. It is a California Registered Historical Landmark, number 797. The 3-acre site is owned by California State Parks and managed by the North Lake Tahoe Historical Society. The Gatekeeper’s Museum is a reconstruction of the original Gatekeeper’s Cabin, on the same site where the original stood until it was destroyed by arson fire in the early 1980s. The original Gatekeeper’s cabin was built by Robert Montgomery Watson—also the builder of the Watson Cabin—to be the home of the Watermaster who controlled the flow of water out of Lake Tahoe. The cabin now showcases Tahoe history, from the Washoe people through the logging and mining eras and the establishment of the tourism industry at Lake Tahoe. The Marion Steinbach Indian Basket Museum was added in 1992.



Gatekeepers Cabin and Steinbach Indian Basket Museum

WATSON LOG CABIN

The Watson Log Cabin was built in 1909 and is listed on the National Register of Historic Places as the oldest Tahoe City house that still sits where it was originally built, in the middle of Tahoe City overlooking Commons Beach.

CHAPEL OF THE TRANSFIGURATION

The Chapel of the Transfiguration, also known as the Outdoor Chapel, was built in 1909 and was the first church constructed in Tahoe City. It is located about one mile south of Tahoe City along SR 89 and was added to the National Register of Historic Places in 2011.

TRPA HISTORIC RESOURCES DATABASE

TRPA recognizes 21 sites of historical or archaeological significance in the Plan area, including a number of Native American sites and facilities. Figure 2-13 maps the location of historic resources located in the Plan area.

Figure 2-13: Historic Resources

CULTURAL RESOURCE POLICIES

- C-P-1 Encourage reuse and incorporate buildings or structures that are determined to be of historic significance into site plans.
- C-P-2 Evaluate cultural and/or historic resources when evaluating project activities with the goal of avoiding impacts to such resources.
- C-P-3 All TRPA policies, ordinances and programs related to cultural resources will remain in effect.

Cultural resource projects are described in the Implementation Plan. Regulations are outlined in the Area Plan Implementing Regulations.

2.12 Natural Hazards

Placer County has in place several existing emergency response plans for the Plan area, including the Placer Operational Area East Side Emergency Evacuation Plan, Placer County Local Hazard Mitigation Plan, and the Lake Tahoe Geographic Response Plan. The Placer Operational Area East Side Emergency Evacuation Plan was developed to help increase preparedness and facilitate the efficient and rapid evacuation of threatened communities in the far eastern end of the county in the



The Urban / Wildland Interface

event of an emergency, probably a forest fire or flood. The Placer County Local Hazard Mitigation Plan was developed to reduce or eliminate long-term risk to people and property from natural hazards and their effects, and includes implementing actions and programs that would help reduce wildfire hazards including, but not limited to, Firewise Communities/USA Education Outreach, Hazardous Vegetation Abatement Program, Biomass Removal Projects, and Annual Defensible Space Inspections Program in the Unincorporated County. The Lake Tahoe Geographic Response Plan is the principal guide for agencies within the Lake Tahoe watershed, its incorporated cities, and other local government entities in mitigating hazardous materials emergencies.

The threat of catastrophic fires has been identified as the number one natural hazard in the Tahoe Region. The forests in the Tahoe Region are significantly different than found prior to logging during the Comstock era. Prior to Comstock logging during the late 1800s, forest stands were much less dense consisting of larger trees and open understories. The current forest stand characteristics have created excess fuel hazards capable of supporting stand-

destroying fires that threaten communities and ecosystem health along the north and west shores of Lake Tahoe.

The Tahoe Region has one of the highest fire ignition rates in the Sierra Nevada. According to data from the US Forest Service's Lake Tahoe Basin Management Unit (LTBMU), between 1973 and 1996 the highest occurrence of ignitions in the Plan area occurred at Brockway, from Kings Beach to Tahoe Vista, and Dollar Point. The lowest occurrence of ignitions occurred at Homewood.

Flood risk is a consequence of rainfall characteristics, topography, water features, vegetation and soil coverage, impermeable surfaces, and the Plan area's stormwater management infrastructure.

The Federal Emergency Management Agency (FEMA) has published floodplain maps showing areas that would be inundated by the 100-year flood. As shown in Figure 2-14, various waterways located in the Plan area are subject to the 100-year flood. Rivers and creeks prone to flooding in the Plan area include Blackwood Creek, Ward Creek, Burton Creek, Lake Forest Creek, Tahoe Vista Creek, Griff Creek, and the Truckee River. Communities lying within the 100-year floodplain include portions of Kings Beach, Tahoe Vista, Dollar Point, Tahoe City, Tahoe Pines, and Homewood. TRPA prohibits additional development within the 100-year floodplain.

Additionally, potential exists for seiche-related waves up to 30 feet to occur along the shore of Lake Tahoe.

Other natural hazards include earthquakes, avalanche and landslide/mudslide events.

Earthquake, wildfire and flood hazards are addressed in building codes. Avalanche and mass instability hazards are addressed in TRPA codes.

NATURAL HAZARD POLICIES

- NH-P-1 Coordinate with partner agencies to implement the Lake Tahoe Basin Multijurisdictional Fuel Reduction and Wildfire Prevention Strategy.
- NH-P-2 Evaluate natural hazards when evaluating project activities with the goal of maintaining and enhancing public safety.
- NH-P-3 Pursue programs and incentives that encourage property owners to retrofit existing buildings to reduce ignitability.
- NH-P-4 Continue to implement and update building codes to minimize risks from natural hazards.
- NH-P-5 All TRPA policies, ordinances and programs related to natural hazards will remain in effect.

Part 2: Conservation Plan
Placer County Tahoe Basin Area Plan

NH-P-6 All new development projects within the Plan area shall prepare and implement an emergency preparedness and evacuation plan consistent with Government Code Section 65302 (g) (protection from unreasonable risks associated with the effects of seismic, geologic or flooding events or wildland fires, etc.) and in the furtherance of the Placer Operation Area East Side Emergency Evacuation Plan (Update 2015).

NH-P-7 The Placer Operational Area East Side Emergency Evacuation Plan, as updated by the Board of Supervisors in 2015 is hereby incorporated by reference.

Natural hazards projects are described in the Implementation Plan. Regulations are outlined in the Area Plan Implementing Regulations.

Figure 2-14: Flood Zones