Flooding

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.

In January 1997 Northern California and western Nevada, including the Tahoe Basin were affected by major flooding. In December 1996 several storms produced a large snowpack that was followed by a subtropical storm that brought heavy rain. The national weather service measured 11.6 inches of precipitation at Tahoe City during a five-day period. As a result, the level of Lake Tahoe rose more than a foot to its highest elevation since 1917.[15]

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 2-5, 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 located in a portion of the 100-year floodplain include Kings Beach, Tahoe Vista, Dollar Point, Tahoe City, Tahoe Pines, and Homewood.

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

[15] Flood of January 1997 in the Lake Tahoe Basin, California and Nevada. USGS (1998).

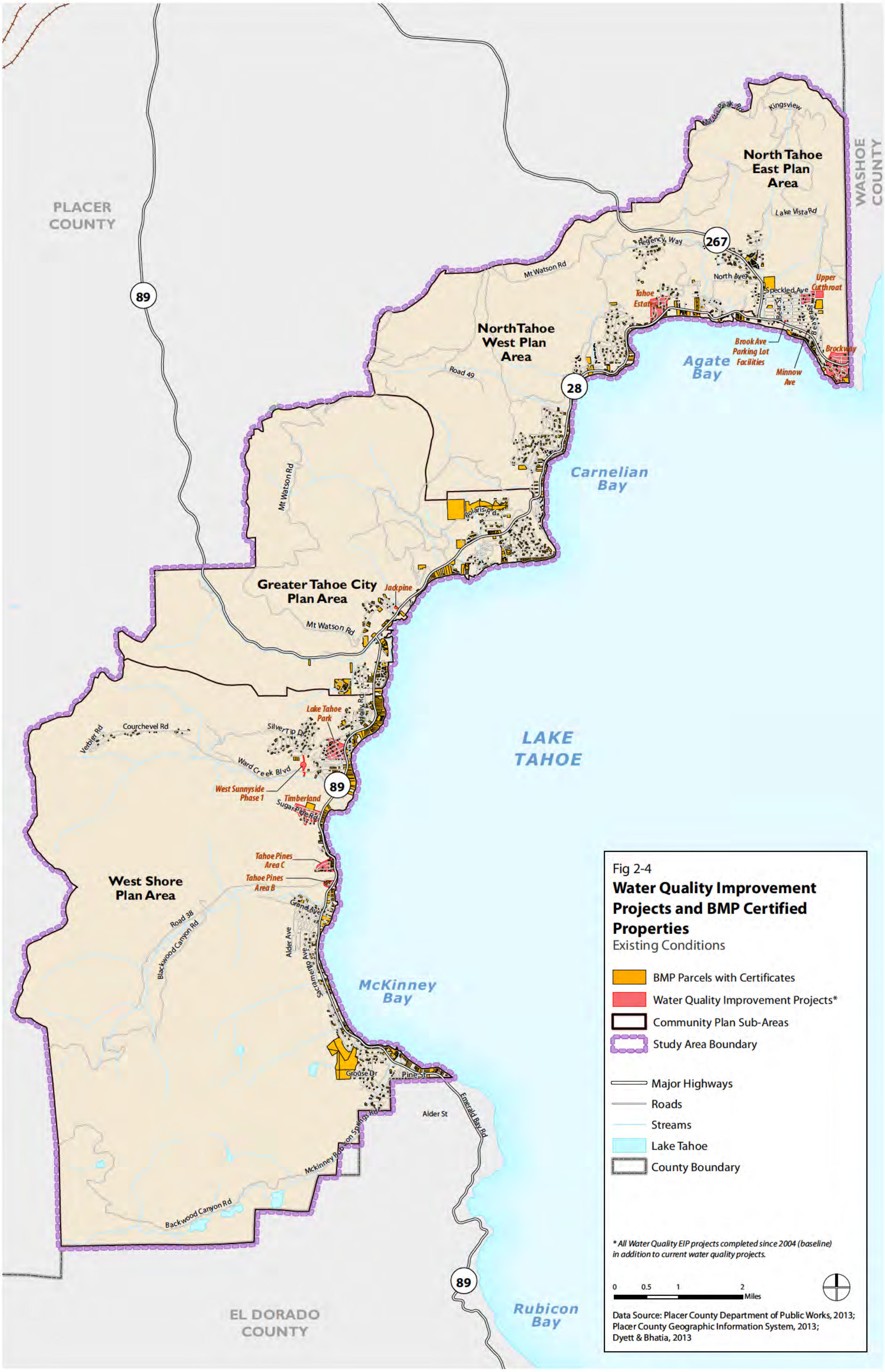


Fig 2-4

Water Quality Improvement Projects and BMP Certified Properties

Existing Conditions

- BMP Parcels with Certificates
- Water Quality Improvement Projects*
- Community Plan Sub-Areas
- Study Area Boundary
- Major Highways
- Roads
- Streams
- Lake Tahoe
- County Boundary

** All Water Quality EIP projects completed since 2004 (baseline) in addition to current water quality projects.*

0 0.5 1 2 Miles

Data Source: Placer County Department of Public Works, 2013; Placer County Geographic Information System, 2013; Dyett & Bhatia, 2013

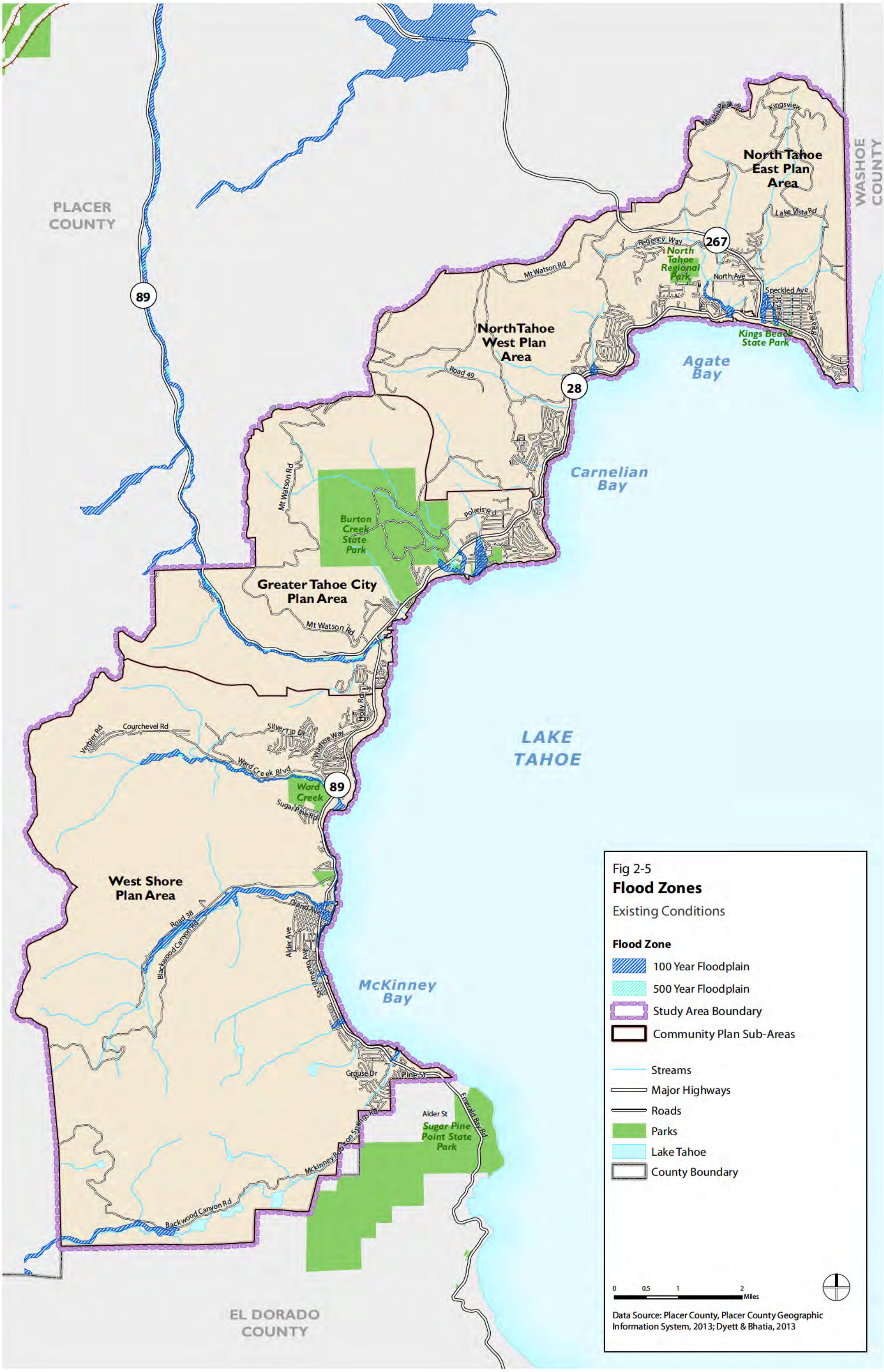


Fig 2-5

Flood Zones

Existing Conditions

Flood Zone

- 100 Year Floodplain
- 500 Year Floodplain
- Study Area Boundary
- Community Plan Sub-Areas
- Streams
- Major Highways
- Roads
- Parks
- Lake Tahoe
- County Boundary

Data Source: Placer County, Placer County Geographic Information System, 2013; Dyett & Bhatia, 2013

2.4 Soils, Land Capability and Coverage

This section discusses soils found in the Plan Area in addition to land capability and existing land coverage.

ENVIRONMENTAL SETTING

Land Coverage

Land coverage prevents rainfall and snowmelt from infiltrating directly into the soil contributing to pollutant-laden stormwater runoff that reaches streams and ultimately Lake Tahoe. As discussed in Section 2.3, Hydrology, Water Quality and Flooding above, three pollutants—fine sediment particles (FSP), phosphorus and nitrogen—are responsible for Lake Tahoe's deep water transparency loss. Stormwater runoff from urbanized uses is the largest source of FSP and phosphorous. TRPA defines two types of coverage that are described below: (1) hard land coverage and (2) soft land coverage. Figure 2-2 and Figure 2-8 map the location of land coverage in the Plan Area.

Hard Land Coverage

Hard land coverage (impervious cover), as defined by Chapter 90 of the TRPA Code, is any human-made structure, improvement, or covering that prevents normal precipitation from directly reaching the surface of the land underlying the structure, improvement, or covering. These typically include, but are not limited to, roofs, decks, asphalt, concrete, tennis courts, and patios. A structure, improvement, or covering is not considered land coverage by TRPA if it allows at least 75 percent of normal precipitation to reach the ground directly and permits growth of vegetation on the approved species list. Impervious cover can result in water quality degradation, flooding and soil erosion. It affects natural hydrology and water quality by preventing rainfall and snowmelt from infiltrating into the soil (to subsurface flows) and causing it to become surface runoff.[16]

Soft Land Coverage

Soft land coverage (soil compaction), as defined by Chapter 90 of the TRPA Code, includes artificially compacted areas without human-made structures, where the soil has become sufficiently altered and/or compacted so as to prevent substantial infiltration. Causes may include, but are not limited to, the parking of cars and heavy and repeated pedestrian traffic. Soil compaction inhibits natural water and soil-air storage by reducing pore space in the soil. Reduced soil water-storage capacity affects plant growth and increases runoff and sediment export.[17]

[16] Section 3.7: Geology, Soils, Land Capability and Coverage, TRPA Regional Plan Update Draft EIS. Ascent Environmental (2011).

[17] ibid

Land Capability

TRPA uses the Bailey Land Capability System as the starting point to determine the land capability and allowable coverage for a site on which a project is proposed. The Bailey Land Capability System was development in 1970 by a multi-agency, interdisciplinary team of natural resource experts led by Robert G. Bailey, a hydrologist with the US Forest Service. Land tolerance is the principal measure of capability, which is an estimate of use an area can tolerate without sustaining permanent damage to water quality through erosion and other causes. The lower erosion hazard a soil has, the higher its capability rating for development. The range of classes identified by Bailey extend from land capable of tolerating a high degree of interference without permanent damage to water quality or land productivity (class 7) to land that should remain in its natural condition, but may be suitable for wildlife, dispersed recreation, or protection of watersheds (class 1).[18] Table 2.4-1 below summarizes the Bailey land scoring system and allowable base coverage within the Plan Area. Figure 2-6 maps the land capability of land located in the Plan Area.

Table 2.4-1: Land Capability Districts

Land Capability District	***Base Coverage***	*Slope Percent*	*Erosion Potential*	*Runoff Potential*
1a	**1%**	30+	High	Moderately high to high
1b (SEZ)	**1%**		Poor Natural Drainage	
1c	**1%**		Fragile Flora and Fauna	
2	**1%**	30-50	High	Low to moderately low
3	**5%**	9-30	Moderate	Moderately high to high
4	**20%**	9-30	Moderate	Low to moderately low
5	**25%**	0-16	Slight	Moderately high to high
6	**30%**	0-16	Slight	Low to moderately low
7	**30%**	0-5	Slight	Low to moderately low

Source: Robert G. Bailey, 1974.

The Bailey system prohibits new development on all capability 1 through 3 parcels, and restricts the amount of hard coverage that can be located on capability 4 through 7 parcels. For parcels with Bailey scores 1 through 3, TRPA has built into its Code of Ordinances a program for the transfer of development rights to other, less sensitive parcels. In this way, development can be moved away from the most sensitive areas and property owners can still realize value from their land.

Existing Land Coverage

Table 2.4-2 below shows the total acreage in the Plan Area by land capability district. Based on the Bailey Land Capability System, total allowable land coverage is 4,657 acres, equal to about 10 percent of the total land area within the Plan Area. The existing area of land coverage was estimated using high-resolution Light Detection and Ranging (LiDAR) data. Approximately 1,444 acres of hard coverage currently exist in the Plan Area (3 percent of the total

[18] Land-Capability Classification of the Lake Tahoe Basin, California-Nevada. Robert G. Bailey (1974).

land area) and about 604 acres of soft coverage (1 percent of total land area).[19] While the Plan Area as a whole has less than the allowable amount of coverage, district "1b" (SEZ) has more development than would otherwise be allowed. As shown in Table 2.4-2, "1b" (SEZ) is over covered by 193 acres. Figure 2-2 and Figure 2-8 map existing land coverage within the Plan Area.

Table 2.4-2: Existing and Allowable Hard Coverage by Land Capability District

Land Capability District	*Total Area (acres)*	*Base Coverage*	*Impervious Surface Allowed Within District (acres)*	*Estimated Existing Area of Impervious Cover (acres)*	*Area Over or Under Covered (acres)*
1a	8,676	1%	87	53	(34)
1b (SEZ)	2,962	1%	30	223	193
1c	11,509	1%	115	68	(48)
2	1,973	1%	20	12	(8)
3	4,756	5%	238	112	(126)
4	3,162	20%	632	58	(575)
5	7,660	25%	1,915	659	(1,256)
6	5,404	30%	1,621	256	(1,365)
7	0	30%	0	0	0
Other	416	n/a	0	4	4
Total	**46,518**		**4,657**	**1,444**	**(3,214)**

Source: TRPA, Aerial LiDAR data collected in summer 2010.

Stream Environment Zones

As shown above in Table 2.4-2, Stream Environment Zone (SEZ) land makes up about 6 percent (2,962 acres) of the total area in the Plan Area. SEZ is a term used by TRPA to describe perennial, intermittent, and ephemeral streams and drainages, wet meadows, marshes, and other wetlands; riparian areas; and other areas expressing the presence of surface water or near-surface groundwater. SEZ areas generally possess the following characteristics: riparian or hydric (wet site) vegetation; alluvial, hydric soils; and the presence of surface water or near-surface groundwater at least part of the year. While SEZs may only make up 5 percent of the land area in the Tahoe Region, they provide key habitat for 84 percent of the 250 wildlife species in the Region and can help to reduce sediment and nutrient runoff concentrations by 70 to 90 percent. SEZs can also provide dispersed recreation opportunities, scenic open space, flood flow capacity, and buffers within urban areas. Protecting and restoring SEZs is essential for improving and maintaining the environmental amenities of the Lake Tahoe Region and for achieving environmental threshold standards for water quality, vegetation preservation, and soil conservation.[20] Figure 2-7 maps the location of SEZ land within the Plan Area.

[19] According to the Regional Plan Update EIS, the data reported by LiDAR likely underestimates the total amount of existing coverage because the remote-sensing data does not include all soft coverage.

[20] Section 3.7: Geology, Soils, Land Capability and Coverage, TRPA Regional Plan Update Draft EIS. Ascent Environmental (2011).

Geology and Soils

The Tahoe Basin was formed by the rise and fall of the landscape due to geologic block faulting. A geologic block fault is a fracture in the Earth's crust causing blocks of land to move up or down. Uplifted rocks created the Carson Range on the east and the Sierra Nevada on the west. Down-dropped blocks created the Lake Tahoe Basin in between.

Snow, rain, and streams filled the southern and lowest part of the Basin, forming the ancestral Lake Tahoe. Modern Lake Tahoe was shaped and landscaped by the scouring glaciers during the Ice Age. Many streams flow into Lake Tahoe, but the lake is drained only by the Truckee River, which flows northeast through Reno and into the terminal Pyramid Lake in western Nevada.

Topography

The Plan Area is characterized by an alpine topography, with mountainous terrain, alpine meadows, and sandy beaches. The lake itself lies at an elevation of 6,225 feet. Elevations can range up to 10,881 feet at Freel Peak, the highest peak in the Plan Area. The runoff of the area drains to Lake Tahoe, the Truckee River and the Rubicon River.

Soils

As shown in Figure 2-8, soils within the Plan Area vary greatly. Soils at lower elevations in the Basin were formed mainly in alluvium derived from igneous rocks, and are all on alluvial or flood plains. Most of the alluvial soil is 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, making them easier to distinguish than granodiorite rock. These two rock types provide parent material for the different types of soil in the Basin, and contribute to soil characteristics. Soil composition is important to examine because soil type determines the types of vegetation able to grow in an area; for example, shallow, nutrient-poor soil is ill-suited for growing large trees. Much of the soil in the Plan Area is deep, well-drained and nutrient-rich and is able to support a variety of large species of flora. Several different soil types are found in each of the distinctive community plan sub-areas. These soil types are named by their location, and many of these soils are endemic to the area. The soil types range from the Ellispeak, Waca, and Kneeridge series in the west shore, to Kingsbeach and Watsonlake series soils in the North Tahoe-East Plan Area and the Greater Tahoe City Plan Area.

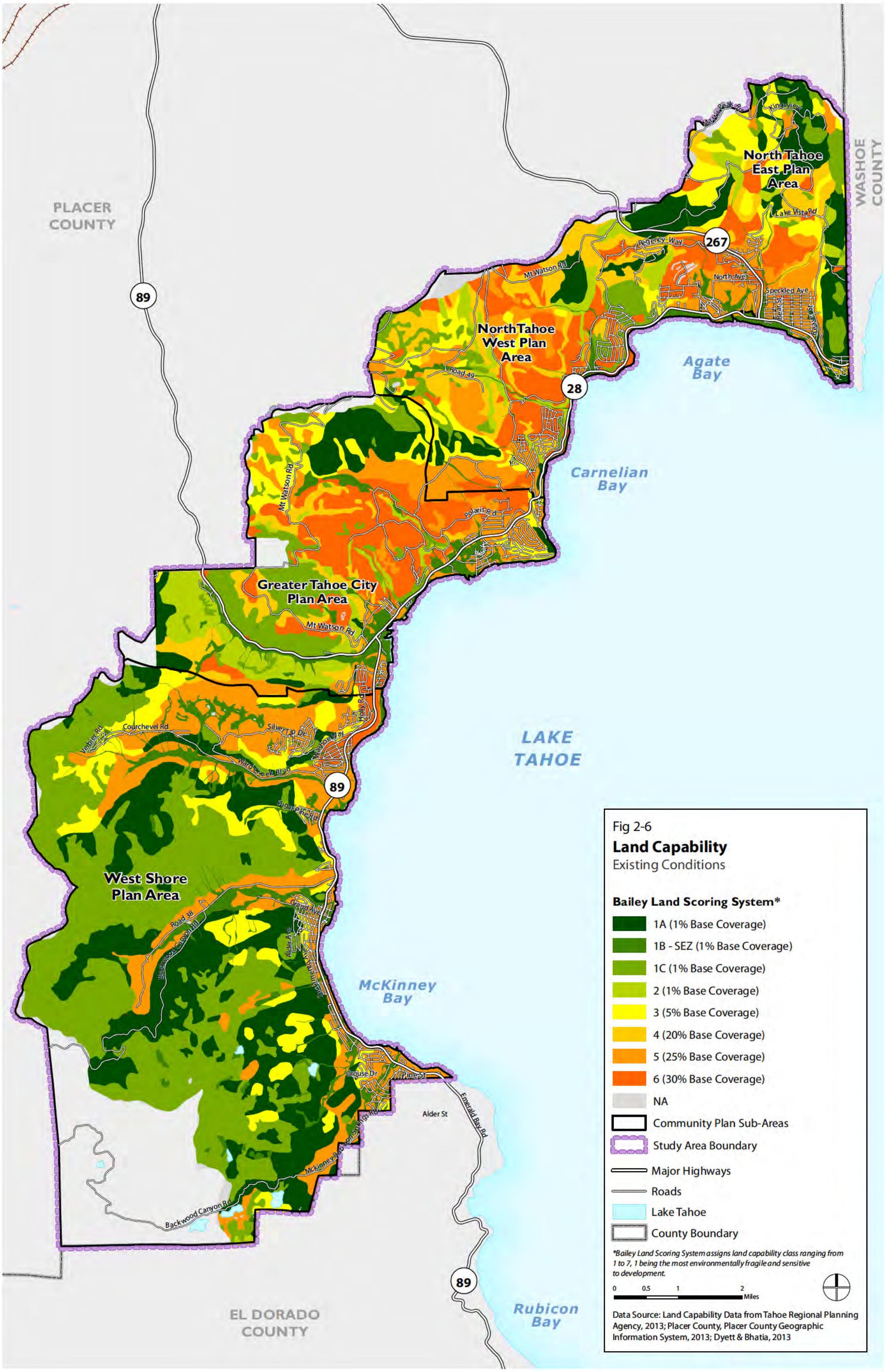


Fig 2-6

Land Capability

Existing Conditions

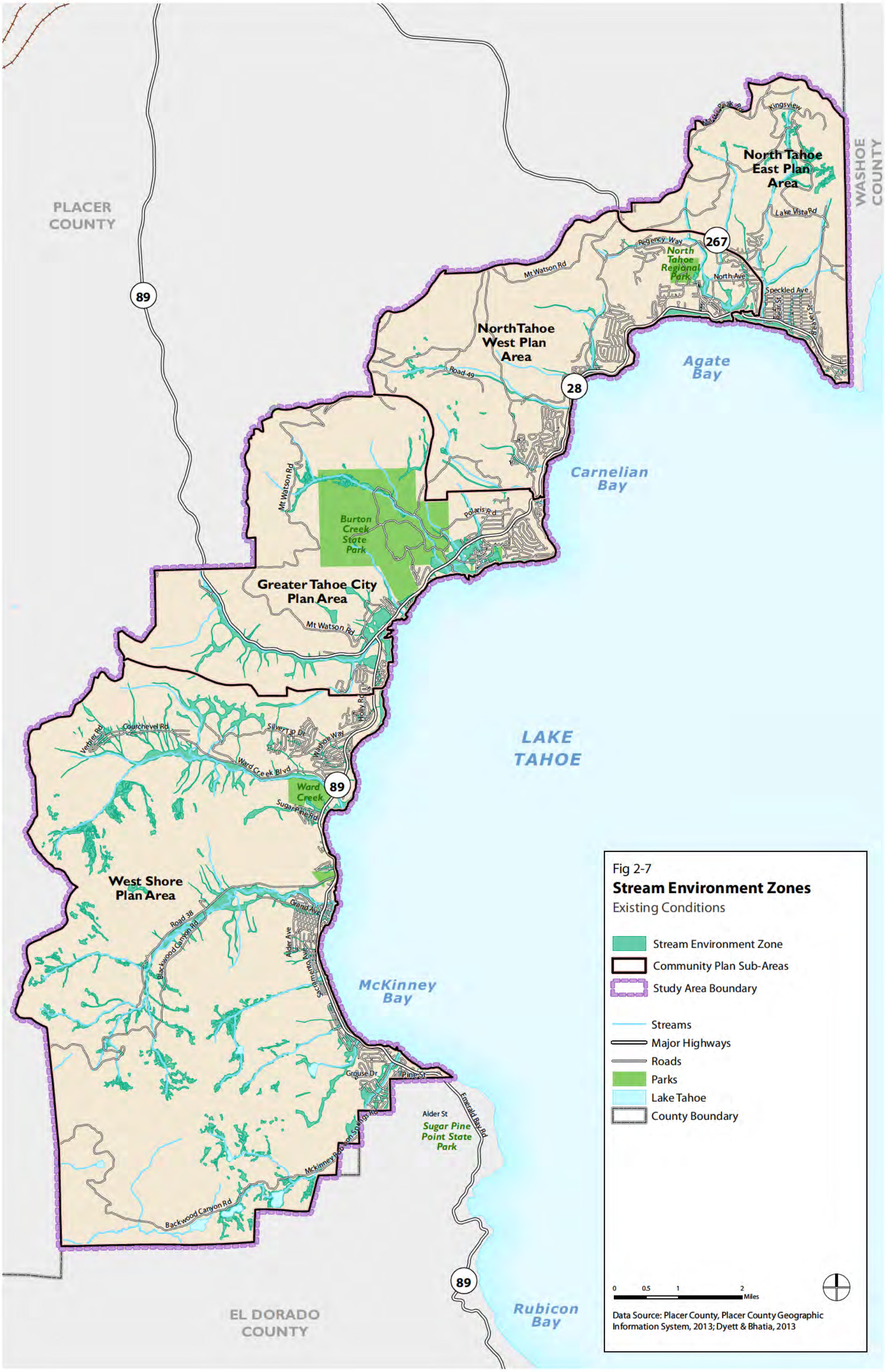
Bailey Land Scoring System*

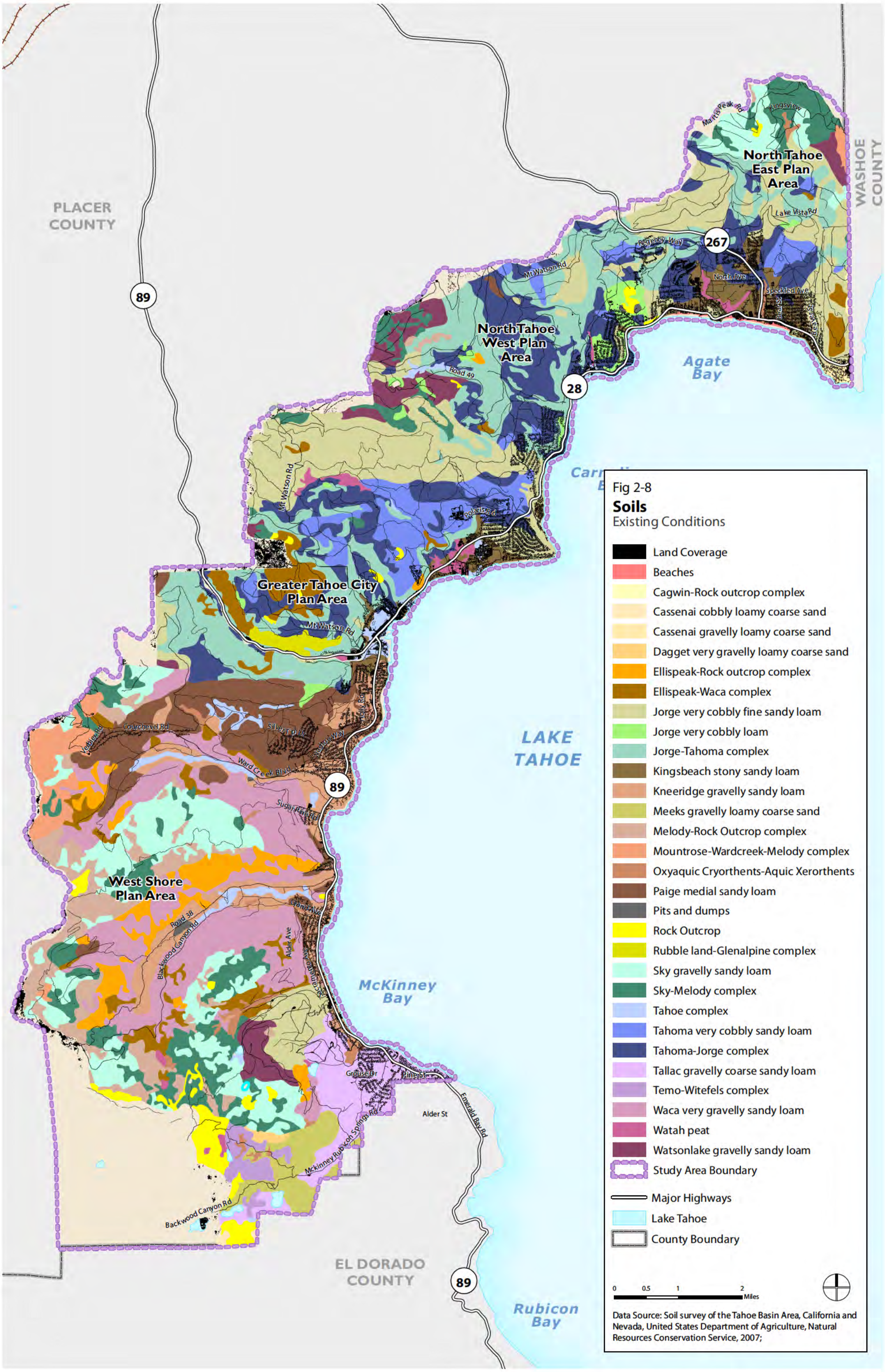
- 1A (1% Base Coverage)
- 1B - SEZ (1% Base Coverage)
- 1C (1% Base Coverage)
- 2 (1% Base Coverage)
- 3 (5% Base Coverage)
- 4 (20% Base Coverage)
- 5 (25% Base Coverage)
- 6 (30% Base Coverage)
- NA
- Community Plan Sub-Areas
- Study Area Boundary
- Major Highways
- Roads
- Lake Tahoe
- County Boundary

Bailey Land Scoring System assigns land capability class ranging from 1 to 7, 1 being the most environmentally fragile and sensitive to development.

0 0.5 1 2 Miles

Data Source: Land Capability Data from Tahoe Regional Planning Agency, 2013; Placer County, Placer County Geographic Information System, 2013; Dyett & Bhatia, 2013


PLACER COUNTY
WASHOE COUNTY
EL DORADO COUNTY
North Tahoe East Plan Area
North Tahoe West Plan Area
Greater Tahoe City Plan Area
West Shore Plan Area
Agate Bay
Carnelian Bay
LAKE TAHOE
McKinney Bay
Rubicon Bay
Burton Creek State Park
North Tahoe Regional Park
Ward Creek
Sugar Pine Point State Park
Kingsview
Lake Vista Rd
Regency Way
North Ave
Speckled Ave
Mt Watson Rd
Road 49
Polaris Rd
Silver Tip Dr
Madroña Way
Ward Creek Blvd
Sugar Pine Rd
Courchevel Rd
Verbier Rd
Grand Ave
Alder Ave
Scenic Dr
Road 38
Blackwood Canyon Rd
Grouse Dr
Pine St
Alder St
Emerald Bay Rd
McKinney Rubicon Springs Rd
Backwood Canyon Rd
89
267
28
Fig 2-7
Stream Environment Zones
Existing Conditions
Stream Environment Zone
Community Plan Sub-Areas
Study Area Boundary
Streams
Major Highways
Roads
Parks
Lake Tahoe
County Boundary
0 0.5 1 2 Miles
Data Source: Placer County, Placer County Geographic Information System, 2013; Dyett & Bhatia, 2013


PLACER COUNTY
WASHOE COUNTY
EL DORADO COUNTY
North Tahoe East Plan Area
North Tahoe West Plan Area
Greater Tahoe City Plan Area
West Shore Plan Area
Agate Bay
McKinney Bay
Rubicon Bay
LAKE TAHOE
89
267
28
Mt Watson Rd
Regency Way
North Ave
Speckled Ave
Lake Vista Rd
Martis Peak Rd
Kingsview
Road 49
Polaris Rd
Courchevel Rd
Vedbler Rd
Silver Tip Dr
Ward Creek Blvd
Sugar Pine Rd
Holly Rd
Grand Ave
Alder Ave
Road 38
Blackwood Canyon Rd
Grouse Dr
Pine St
Alder St
Emerald Bay Rd
McKinney Rubicon Springs Rd
Backwood Canyon Rd
Fig 2-8
Soils
Existing Conditions
Land Coverage
Beaches
Cagwin-Rock outcrop complex
Cassenai cobbly loamy coarse sand
Cassenai gravelly loamy coarse sand
Dagget very gravelly loamy coarse sand
Ellispeak-Rock outcrop complex
Ellispeak-Waca complex
Jorge very cobbly fine sandy loam
Jorge very cobbly loam
Jorge-Tahoma complex
Kingsbeach stony sandy loam
Kneeridge gravelly sandy loam
Meeks gravelly loamy coarse sand
Melody-Rock Outcrop complex
Mountrose-Wardcreek-Melody complex
Oxyaquic Cryorthents-Aquic Xerorthents
Paige medial sandy loam
Pits and dumps
Rock Outcrop
Rubble land-Glenalpine complex
Sky gravelly sandy loam
Sky-Melody complex
Tahoe complex
Tahoma very cobbly sandy loam
Tahoma-Jorge complex
Tallac gravelly coarse sandy loam
Temo-Witefels complex
Waca very gravelly sandy loam
Watah peat
Watsonlake gravelly sandy loam
Study Area Boundary
Major Highways
Lake Tahoe
County Boundary
0 0.5 1 2 Miles
Data Source: Soil survey of the Tahoe Basin Area, California and Nevada, United States Department of Agriculture, Natural Resources Conservation Service, 2007;

2.5 Scenic Resources

The scenic quality of the Tahoe Basin is appreciated by visitors and residents alike and is viewed from roads, trails, scenic resources such as parks and public beaches, and the surface of Lake Tahoe. This section discusses scenic resources in the Plan Area.

ENVIRONMENTAL SETTING

The Lake Tahoe Region affords views of a magnificent lake setting within a forested mountainous environment. The unique combination of visual elements provides for exceptionally high aesthetic values. The following is a brief summary of the dominant natural features of the Lake Tahoe Region.

- **Lake Tahoe.** Lake Tahoe is a water feature of remarkable color, clarity, size, and depth. Lake Tahoe is the second deepest lake in the United States and tenth deepest in the world, with a maximum measured depth of 1,645 feet. Water color ranges from clear, light green along the shoreline to dark blue in the deeper areas. The lake is approximately 22 miles long, 12 miles wide providing for long-distance views throughout the Basin.
- **Mountains.** The Lake Tahoe Basin is ringed by several high mountains rising to elevations up to 10,891 feet. The mountains are thickly forested, predominately by evergreen species, and many have rocky summits that maintain patches of snow year-round.
- **Natural Views.** Natural views contain a high degree of natural contrast and variety within the Tahoe Basin consisting of clear blue water, rocky shoreline and sandy beaches, man-made features (marinas, piers and other structures), sloping vegetation and rocky outcrops intermingled with streams and waterfalls, and forested mountains that climb to high peaks.
- **Dark Skies.** Rural and rural transition areas in the Lake Tahoe Basin have dark skies with little light pollution from urban areas. Views from lakeside beaches and from watercraft on the Lake are especially expansive and free of nighttime light interference.
- **Scenic Roadways.** In Placer County, SR 28 and portions of SR 89 are Eligible State Scenic Highways (not officially designated).

Existing Scenic Quality / Scenic Threshold Status

TRPA has conducted systematic monitoring of scenic conditions in the Lake Tahoe Region since 1982. As mandated by the Bi-State Compact, TRPA has adopted environmental threshold carrying capacities for scenic resources. They are represented by travel route ratings (roadway and shoreline travel units), scenic quality ratings (roadway and shoreline travel units), public recreation area and bike trails, and community design. The following is a brief discussion of the scenic threshold status of scenic resources within the Plan Area.

Travel Route Ratings for Roadway Travel Units

Travel route ratings assess the visual experience of traveling major roads in the Tahoe Basin. Roadways are separated into 54 travel segments or "travel units" that represent a continuous, two-directional viewshed. Travel route ratings consist of a numeric composite score that represents the relative scenic quality within each travel unit, which must achieve a minimum composite score (threshold standard) to be determined "in attainment." The officially adopted numerical threshold standard for roadway travel units in the Tahoe Basin is 15.5, which is 0.5 higher than it was originally in 1982. In order to be considered "in attainment" the current rating must be (a) above the standard of 15.5 and be (b) equal to or above its original 1982 rating. The following aspects are considered and rated according to their effect on scenic quality:

- Man-made features along the roadway and shoreline
- Physical distractions to driving along the roadways
- Roadway characteristics
- View of the Lake from the roadways
- General landscape views from the roadways and shoreline
- Variety of scenery from the roadways and shoreline

Table 2.5-1 below lists the composite travel route ratings for roadway travel units in the Plan Area and Figure 2-9 maps their location as well as identifies which roadway travel units are in attainment. As shown in Table 2.5-1, 10 out of 18 roadway travel units in the Plan Area are in attainment. Roadway units not in attainment and with the worst threshold composite scores include Unit 10 (Homewood), Unit 20A (Tahoe Vista), Unit 20B (Kings Beach), and Unit 42 (Outlet). Additionally, three roadway units had threshold composites scores that were worse than their 1982 score including Unit 11 (Homewood), Unit 17 (Cedar Flat) and Unit 43 (Lower Truckee River).

Table 2.5-1: Attainment Status of Roadway Travel Units

Roadway Travel Unit		*Threshold Composite Score* 1982	2011	*Attainment*
Unit 9	Tahoma	14	14	No
Unit 10	Quail Creek	14	15.5	Yes
Unit 11	Homewood	13	12	No
Unit 12	Tahoe Pines	17	17.5	Yes
Unit 13	Sunnyside	14	14	No
Unit 14	Tahoe Tavern	13	15.5	Yes
Unit 15	Tahoe City	12	16.5	Yes
Unit 16	Lake Forest	13	16.5	Yes
Unit 17	Cedar Flat	17	16	No
Unit 18	Carnelian Bay	14	16	Yes
Unit 19	Flick Point	14	16	Yes
Unit 20A	Tahoe Vista	NA	13.5	No
Unit 20B	Kings Beach	NA	13.5	No
Unit 20C	Brockway	NA	16	Yes
Unit 40	Brockway Cutoff	15	15.5	Yes
Unit 41	Brockway Summit	21	21	Yes
Unit 42	Outlet	10	13	No
Unit 43	Lower Truckee River	20	19	No

Source: TRPA, 2013.

Scenic Quality Ratings for Roadway Travel Units

In contrast to travel route ratings which reflect the positive or negative effects of certain physical characteristics of the landscape on scenic quality throughout an entire travel unit, the scenic quality rating for roadway travel units is a composite score for specific individual views, or features of the landscape referred to as scenic resources, seen from a specific location within a given roadway travel unit. Scenic quality ratings are based on four visual characteristics that are rated from zero (absent) to three (high). In order to be "in attainment" composite scenic quality scores must be maintained from their original 1982 composite score. If the composite score or any sub-component score drops below what it was in 1982, the resource is considered to be "out of attainment." The following visual characteristics comprise the subcomponents of the composite score:

- Unity
- Vividness
- Variety
- Intactness

As shown if Figure 2-9, two scenic resources in the Plan Area are not in attainment. These include a visual feature in Unit 13 (Sunnyside) and entry point feature in Unit 43 (outlet). The remaining scenic resources within the Plan Area have maintained their scenic quality.

Travel Route Rating for Shoreline Travel Units

Shoreline travel unit ratings reflect conditions looking toward the shore from the surface of Lake Tahoe. The Lake's 72-mile shoreline is broken up into 33 individual units representing a portion of shoreline that exhibits similar visual character. Travel route ratings consist of a numeric composite score that represents the relative scenic quality within each travel unit, which must achieve a minimum composite score (threshold standard) to be determined "in attainment." The officially adopted numerical threshold standard for shoreline travel units is 7.5, which is 0.5 higher than it was originally in 1982. In order to be considered "in attainment" the current rating must be (a) above the standard of 7.5 and be (b) equal to or above its original 1982 rating. The following aspects are considered and rated according to their effect on scenic quality:

- Man-made features along the shoreline
- General landscape views within the shoreline unit
- Variety of scenery within the shoreline unit

Table 2.5-2 below lists the composite travel route ratings for shoreline travel units in the Plan Area and Figure 2-9 maps their location as well as identifies which shoreline travel units are in attainment. As shown in Table 2.5-2, 5 out of 11 shoreline travel units in the Plan Area are in attainment. Shoreline units not in attainment and with the worst threshold composite scores include Unit 15 (Tahoe City), Unit 16 (Lake Forest), and Unit 19 (Carnelian Bay). Additionally, four shoreline travel units had threshold composites scores that were worse than their 1982 score including Unit 14 (Ward Creek), Unit 16 (Lake Forest), and Unit 18 (Cedar Flat), and Unit 22 (Brockway).

Table 2.5-2: Attainment Status of Shoreline Travel Units

		Threshold Composite Score		
Shoreline Travel Unit		*1982*	*2011*	*Attainment*
Unit 12	McKinney Bay	9	9	Yes
Unit 13	Eagle Rock	11	11	Yes
Unit 14	Ward Creek	10	9.5	No
Unit 15	Tahoe City	5	5.5	No
Unit 16	Lake Forest	5	4	No
Unit 17	Dollar Point	10	10	Yes
Unit 18	Cedar Flat	8	7.5	No
Unit 19	Carnelian Bay	5	6.5	No
Unit 20	Flick Point	8	8	Yes
Unit 21	Agate Bay	8	8	Yes
Unit 22	Brockway	10	9	No

Source: TRPA, 2013.

Scenic Quality Ratings for Shoreline Travel Units

The scenic quality rating for shoreline travel units assesses specific views or features of the landscape, referred to as scenic resources, when looking from a specific location on Lake Tahoe. Scenic quality ratings are based on four visual characteristics that are rated from zero (absent) to three (high). In order to be "in attainment" composite scenic quality scores must be maintained from the original 1982 composite score. If the composite score or any subcomponent score drops below what it was in 1982, the resource is considered to be out of attainment. The following visual characteristics comprise the subcomponents of the composite score:

- Unity
- Vividness
- Variety
- Intactness

As shown if Figure 2-9, four shoreline resources in the Plan Area are not in attainment. These include a shoreline view in Unit 12 (McKinney Bay), a shoreline view in Unit 14 (Ward Creek), a visual feature in Unit 18 (Cedar Flat), and a shoreline view in Unit 20 (Flick Point). The remaining shoreline resources within the Plan Area have maintained their scenic quality.

Public Recreation and Bike Areas

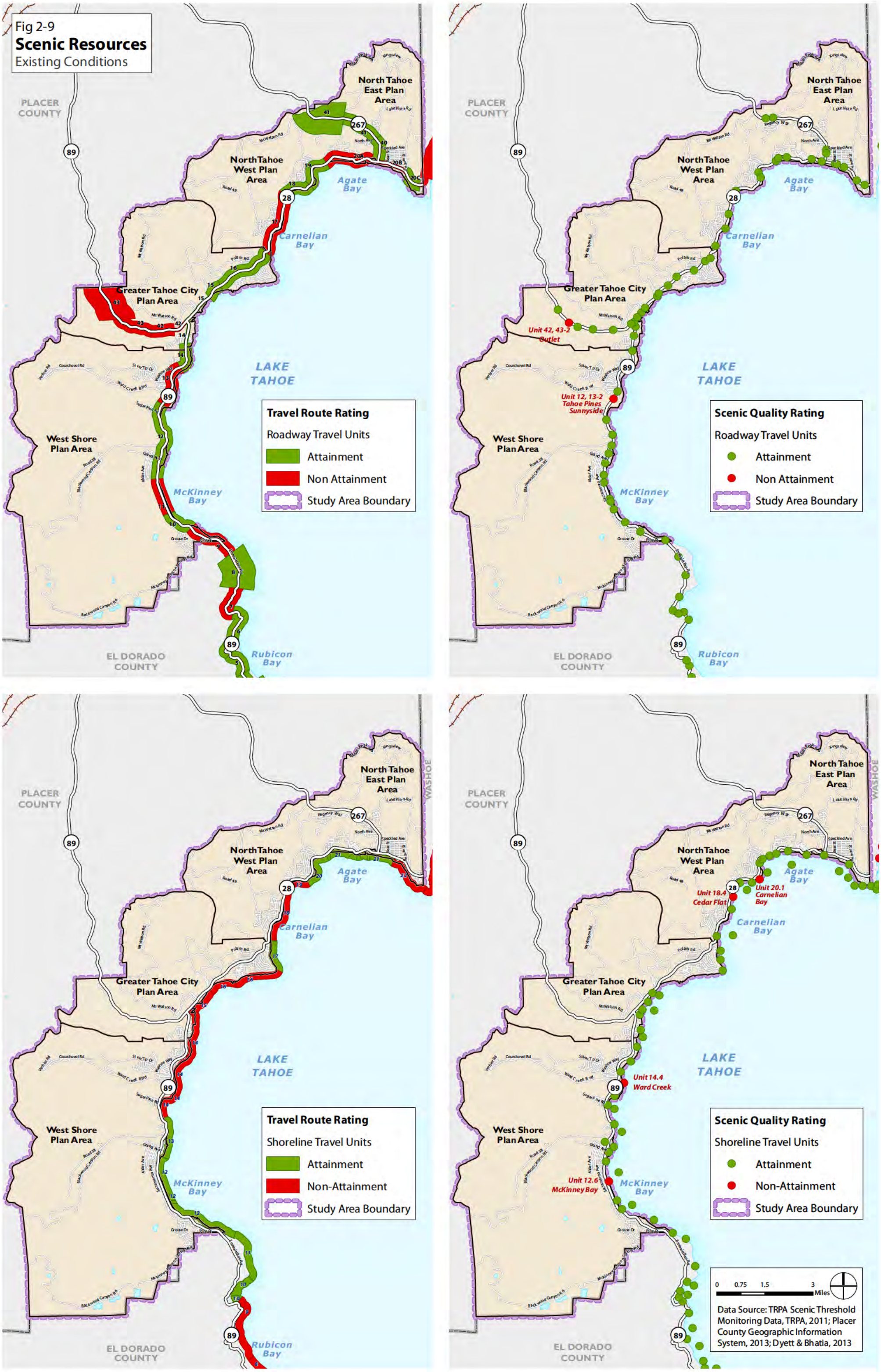
TRPA also evaluates scenic conditions at public recreation areas (beaches, campgrounds and ski areas) and bike trails. The adopted threshold standards address three general types of scenic resources: (1) views from recreation area or bicycle trail, (2) views of natural features within the recreation area or along the trail, and (3) visual quality of man-made features within the recreation area or adjacent to the trail.

Currently all 54 scenic resources associated with public recreation and bike trails that are located within the Plan Area are "in attainment," meaning that the visual characteristics for these resources have not degraded since they were first evaluated in 1993.

Community Design

The threshold standard for Community Design is a policy statement that calls for implementation of design standards and guidelines found in the Code of Ordinances, the Scenic Quality Improvement Program, and in the adopted Community Plans. Since adoption of the 1987 Regional Plan, Placer County has adopted nine community/general plans within the Plan Area establishing design standards and guidelines for development throughout the Placer County Tahoe Basin. According to TRPA, travel ratings are overall at or better than their target values, which is evidence that actions taken by TRPA and Placer County have been effective at ensuring the "height, built, texture, form, materials, colors, lighting, signing and other design elements of new, remodeled and redeveloped buildings are compatible with the natural, scenic and recreational values of the region."

Fig 2-9
Scenic Resources
Existing Conditions



2.6 Historic and Cultural Resources

This section discusses historic and cultural resources found in the Plan Area. Cultural resources include sites, buildings, structures, or objects that may have archaeological, historical, cultural, or scientific significance.

ENVIRONMENTAL SETTING

Prehistoric Context

The prehistoric occupation of the Lake Tahoe Region can be interpreted using the Paleo-Archaic-Emergent chronological sequence. (Fredrickson, 1974) The sequence consists of three broad periods: The Paleo-Indian period (10,000 – 6,000 BC); the Archaic period (6,000 BC to AD 500); and the Emergent period (AD 500 – 1800). The entry and spread of people into California dates to the Paleo-Indian period. No prehistoric resources have been formally recorded in the Plan Area.

Ethnographic Context

The Lake Tahoe Region has been inhabited by people for thousands of years, beginning with the Washoe people. Washoe life at the lake centered on fishing camps and milling sites located in lush meadows within view of the lake and along permanent streams. The word Tahoe is a mispronunciation of the Washoe word Da ow aga, which means "lake." Washoe territory covered hundreds of miles, from Honey Lake in the north, to Mono Lake in the south, and Lake Tahoe in between. The Washoe people viewed Lake Tahoe as a spiritual center, and all the Washoe communities gathered there for the annual fish runs in early summer. The Washoe were true stewards of the land, and took great care to ensure resources were never depleted. After contact from white settlers, Washoe life changed drastically, and within a few short years, the lake was beginning to be settled and the Washoe were displaced.

Historic Context

The first written record of non-Indians in Washoe land were fur trappers in 1826. In 1844, four years before gold was discovered in Coloma, General John C. Fremont came upon the lake during his exploration of the far west. The area was frequently traversed by settlers heading west in the hopes of striking it rich in the Gold Rush. Harsh winters limited the number of people who settled around the lake until silver was discovered in nearby Virginia City in the 1860s. Settlers often chose to live on some of the most fertile gathering areas that the Washoe depended on, further displacing them. The "Comstock Bonanza" led to a logging boom in the Tahoe Basin after silver was discovered in Nevada, and early settlers cut timber, processed it in the lake, and then shipped the timber via flume to the Virginia City silver mines. Within a decade, white settlers had completely displaced the Washoe people from their traditional lands and moved to tracts of land outside of the basin that were rocky and had poor soil. The Washoe found it difficult to adapt to reservation life.

Today, the Washoe people inhabit several regions in Western Nevada, outside of Carson City and Reno, and in California in Alpine County. There are about 1,550 official tribal members, which is nearly half of the pre-contact Washoe population. In recent years the Washoe have

acquired lands within their ancestral territory, but will never have reign over their region as they once did. Colonization by white settlers forever changed native life in the region.

Between 1900 and 1960, Lake Tahoe became a recreation destination. Following World War II and improvements in automobile transportation infrastructure, Nevada casinos and small recreation retreats were developed to better accommodate a more mobile and affluent society.

In 1960, the Winter Olympic Games in nearby Squaw Valley catapulted Lake Tahoe into the national spotlight, and the region has been a mecca for winter sports ever since. Several ski resorts are located in the Placer Basin, including the Homewood Mountain Resort, and Granlibakken Ski and Snowboard Hill. Most of the development and urbanization of the Tahoe Region occurred during and following the 1960 Winter Olympic Games. Since then, the population of the entire region has increased over five times, with the most rapid expansion (by more than 70 percent) occurring in the 1970s, as development proceeded virtually unchecked. Today, there are about twenty developed towns and small communities in the Basin.

Historic Resources

There are four properties listed on the National Register of Historic Places and the California Register of Historic Places in the Plan Area, 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. It is a 3-acre site 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. The museums at William B. Layton Park are visited by over 10,000 people annually. The North Lake Tahoe Historical Society school tour programs serve more than 1,000 school children annually.

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.

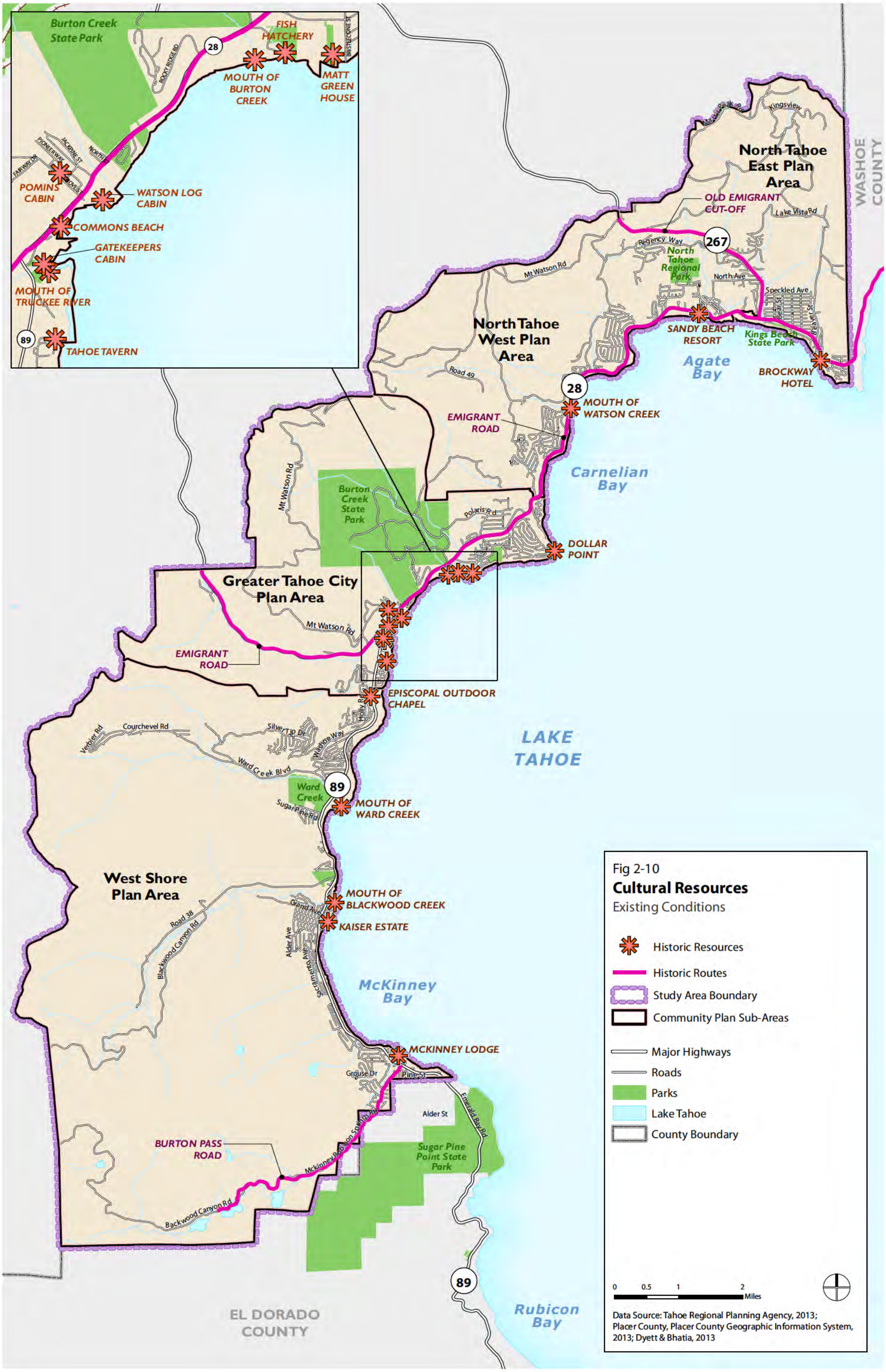
Chapel of the Transfiguration

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 determines historic buildings and areas through a Historic Resource Administration Determination Application process, which generally involves buildings greater than 50 years of age. TRPA uses the best available science and planning practices to review each project individually so that Lake Tahoe can continue to be an Outstanding National Water Resource.

Currently TRPA recognizes 21 sites of historical or archaeological significance in the Plan Area. These sites are categorized by physical types as linear and non-linear features. Linear features account for three of the recognized sites and non-linear sites account for the 18 remaining sites. Linear features include roads, passes, railroads, trestles, flumes, and trails. Non-linear features include housing, lodges, chapels, ranger stations, ranches, toll houses, sawmills, bridges, dairies, historic districts, logging/lumber camps, railroad tunnels, cabins, taverns, mansions/estates, piers, hotels, resorts, beaches, points, creek/river mouths, marshes, Native American function sites, springs, bays, and harbors. Figure 2-10 maps the location of historic resources located in the Plan Area.


Burton Creek State Park
FISH HATCHERY
MOUTH OF BURTON CREEK
MATT GREEN HOUSE
POMINS CABIN
WATSON LOG CABIN
COMMONS BEACH
GATEKEEPERS CABIN
MOUTH OF TRUCKEE RIVER
TAHOE TAVERN
North Tahoe East Plan Area
OLD EMIGRANT CUT-OFF
North Tahoe Regional Park
SANDY BEACH RESORT
Kings Beach State Park
BROCKWAY HOTEL
Agate Bay
North Tahoe West Plan Area
MOUTH OF WATSON CREEK
EMIGRANT ROAD
Carnelian Bay
Burton Creek State Park
DOLLAR POINT
Greater Tahoe City Plan Area
EMIGRANT ROAD
EPISCOPAL OUTDOOR CHAPEL
LAKE TAHOE
MOUTH OF WARD CREEK
West Shore Plan Area
MOUTH OF BLACKWOOD CREEK
KAISER ESTATE
McKinney Bay
MCKINNEY LODGE
BURTON PASS ROAD
Sugar Pine Point State Park
EL DORADO COUNTY
Rubicon Bay
WASHOE COUNTY
Fig 2-10
Cultural Resources
Existing Conditions
Historic Resources
Historic Routes
Study Area Boundary
Community Plan Sub-Areas
Major Highways
Roads
Parks
Lake Tahoe
County Boundary
0 0.5 1 2 Miles
Data Source: Tahoe Regional Planning Agency, 2013; Placer County, Placer County Geographic Information System, 2013; Dyett & Bhatia, 2013

2.7 Air Quality

This section provides a discussion of the scientific and emissions background of air quality in the region, including natural factors that influence air quality along with air quality pollutants of concern.

Criteria Pollutants/Air Pollutants of Concern

The federal and state governments have established ambient air quality standards for the following six criteria pollutants: O3, CO, NO2, SO2, particulate matter (particulate matter smaller than 10 microns or less in diameter [PM10] and particulate matter smaller than 2.5 microns or less in diameter [PM2.5]), and lead. O3, NO2, and particulate matter are generally considered to be "regional" pollutants, as these pollutants or their precursors affect air quality on a regional scale. Pollutants such as CO, SO2, lead, and particulate matter are considered to be local pollutants that tend to accumulate in the air locally. Particulate matter is considered to be a localized pollutant as well as a regional pollutant. Toxic air contaminants (TACs) are also discussed below, although no state or federal ambient air quality standards exist for these pollutants. Brief descriptions of these pollutants are provided below.

Ozone

O3 is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials.

O3 is not emitted directly into the air but is formed by a photochemical reaction in the atmosphere. O3 precursors (ROG/VOC and NOX) react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem.

State and federal standards for ozone have been set for 1- and 8-hour averaging times. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The EPA recently replaced the 1-hour ozone standard with an 8-hour standard of 0.075 ppm. However, the California 1-hour standard will remain in effect. The state 8-hour standard is 0.070 ppm, not to be exceeded.

Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.