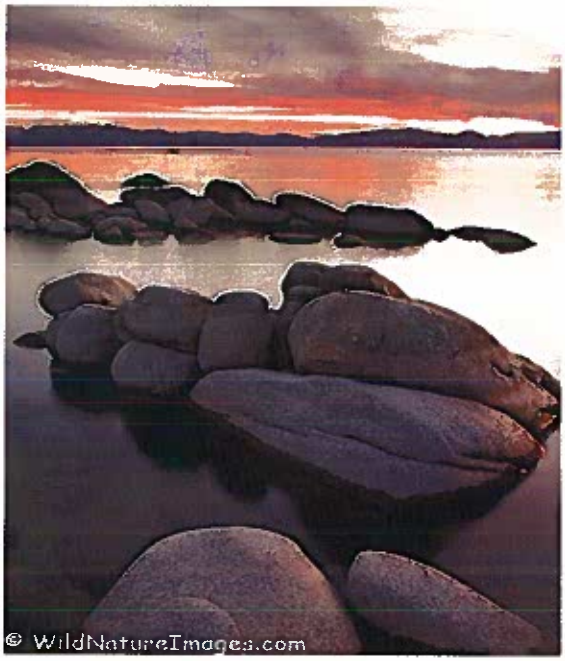
Lake Tahoe Nv

Lake Tahoe Nevada State Park General Management Plan File



NEVADA DIVISION OF STATE PARKS

LAKE TAHOE-NEVADA
STATE PARK
MASTER DEVELOPMENT PLAN
WITH RESOURCE ANALYSIS

1990

CONTENTS

	PAGE
CHAPTER ONE	
INTRODUCTION	
PURPOSE OF PLAN	1 - 1
DESCRIPTION, LOCATION AND PARK SETTING	1 - 6
PARK HISTORY	1 - 11
PLANNING PROCESS	1 - 18
CHAPTER TWO	
REGIONAL INFLUENCES	
DEMOGRAPHICS	2 - 1
RECREATIONAL DEMAND	2 - 2
RECREATION SUPPLY	2 - 7
SUPPLY/DEMAND ANALYSIS	2 - 8
LAND USE TRENDS	2 - 10
CHAPTER THREE	
THE EXISTING PARK	
NATURAL RESOURCES	3 - 1
CULTURAL RESOURCES	3 - 21
SITE ANALYSIS	3 - 22
EXISTING FACILITIES AND USE	3 - 22
CHAPTER FOUR	
DEVELOPMENT PLAN	
PROCESS	4 - 1
PLAN	4 - 5
IMPLEMENTATION	4 - 26
SIGN PLAN	4 - 28

CHAPTER FIVE
PARK MANAGEMENT PLAN

ADMINISTRATION AND STAFFING PLAN SERVICES PLAN
LAW ENFORCEMENT PLAN
MAINTENANCE PLAN
RESOURCE MANAGEMENT PLAN
RECREATIONAL MANAGEMENT PLAN
CONCESSIONS PLAN

CHAPTER SIX
GENERAL OPERATIONAL PROCEDURES

ADMINISTRATION AND STAFFING
SERVICES
LAW ENFORCEMENT
MAINTENANCE
RESOURCE MANAGEMENT
RECREATION
CONCESSIONS

BIBLIOGRAPHY B - 1

APPENDIX
APPENDIX 1: ALTERNATIVES SUMMARY A1 - 1
APPENDIX 2: SUMMARY OF COMMENTS A2 - 1
APPENDIX 3: VEGETATION SPECIES LIST (TAHOE BASIN) A3 - 1
APPENDIX 4: WILDLIFE SPECIES LIST (TAHOE BASIN) A4 - 1

TABLES

2-1 POPULATION STATISTICS: 1980-1987 2 - 2
2-2 PROJECTED STATISTICS: 1990-2010 2 - 2
2-3 LTNSP VISITATION CHARACTERISTICS 2 - 4
2-4 LTNSP VISITOR PATTERNS 2 - 4
2-5 RECREATIONAL ACTIVITIES COMPARISON 2 - 6
2-6 RECREATION SUPPLY, DEMAND & NEED 2 - 9
3-1 THREATENED AND ENDANGERED SPECIES 3 - 10
3-2 SENSITIVE SPECIES OF THE TAHOE BASIN 3 - 10
3-3 VISITATION STATISTICS: 1985-1988 3 - 24
3-4 BOATS LAUNCHED AT LTNSP: 1985-1989 3 - 25
4-1 FACILITIES LOCATION MATRIX 4 - 22
4-2 RECOMMENDED SPECIES LIST AT LAKE TAHOE 4 - 23

FIGURES

1-1	VICINITY MAP	1 - 8
1-2	PROJECT AREA	1 - 9
1-3	ORIENTATION MAP	1 - 10
1-4	HISTORIC RESOURCES	1 - 17
1-5	PLANNING PROCESS	1 - 19
2-1	LAND OWNERSHIP	2 - 11
2-2	STATE MANAGED LANDS	2 - 12
2-3	ZONING AND LAND USE	2 - 16
2-4	ACCESS & CIRCULATION	2 - 17
2-5	EXISTING UTILITIES	2 - 18
3-1	SLOPE ANALYSIS	3 - 16
3-2	GEOLOGIC FEATURES	3 - 17
3-3	SURFACE WATERS	3 - 18
3-4	HABITAT ANALYSIS	3 - 19
3-5	SOILS ANALYSIS	3 - 20
3-6	COMPOSITE SITE ANALYSIS: AREA-WIDE	3 - 26
3-7	COMPOSITE SITE ANALYSIS: SAND HARBOR	3 - 27
3-8	COMPOSITE SITE ANALYSIS: CAVE ROCK	3 - 28
3-9	COMPOSITE SITE ANALYSIS: SPOONER LAKE	3 - 29
3-10	COMPOSITE SITE ANALYSIS: BACKCOUNTRY	3 - 30
3-11	COMPOSITE SITE ANALYSIS: HIGHWAY 28	3 - 31
3-12	EXISTING FACILITIES: AREA-WIDE	3 - 32
3-13	EXISTING FACILITIES: SAND HARBOR	3 - 33
3-14	EXISTING FACILITIES: CAVE ROCK	3 - 34
3-15	EXISTING FACILITIES: SPOONER LAKE	3 - 35
3-16	EXISTING FACILITIES: BACKCOUNTRY	3 - 36
3-17	EXISTING FACILITIES: HIGHWAY 28	3 - 37
4-1	RECREATIONAL PROGRAM/PROGRAM RELATIONSHIPS	4 - 3
4-2	RECOMMENDED PLAN: AREA-WIDE	4 - 16
4-3	RECOMMENDED PLAN: SAND HARBOR	4 - 17
4-4	RECOMMENDED PLAN: CAVE ROCK	4 - 18
4-5	RECOMMENDED PLAN: SPOONER LAKE	4 - 19
4-6	RECOMMENDED PLAN: BACKCOUNTRY	4 - 20
4-7	RECOMMENDED PLAN: HIGHWAY 28	4 - 21
4-8	LANDS FOR EXCHANGE, PURCHASE, OR MANAGEMENT AGREEMENT	4 - 29
4-9	OFF-SITE DIRECTIONAL SIGNS	4 - 30

Rev. 2/90

CHAPTER I: INTRODUCTION

A. PURPOSE OF PLAN

1. WHY THE PLAN IS BEING WRITTEN

The purpose of this plan is to update the basic principles for the use, preservation, and operation of Lake Tahoe-Nevada State Park. Increasing visitation and the popularity of Nevada's State Parks has provided the impetus for a statewide effort by the Division to update all individual park development plans. The goal of this plan is to provide a long range management and development strategy based on current visitation, needs and conditions, as well as projections for future use and needs. In addition, this development plan will become an element of the comprehensive Nevada State Park System Plan currently under development.

This plan begins with an introductory chapter covering the description, location, setting and history of Lake Tahoe. Chapter Two addresses the regional influences that directly and indirectly affect the area. The park's natural and cultural resources, existing facilities and uses are described in Chapter Three. Chapter Four details the recreational program and development phasing, as well as the proposed facilities and their locations. The remaining two chapters deal exclusively with the management, operation and maintenance of the area's facilities and resources.

2. ISSUES

The main issues examined in the preparation of this development plan include: 1) issues outlined in Recreation in Nevada, Statewide Comprehensive Outdoor Recreation Plan, 1987; 2) current user conflicts and visitor impacts at Lake Tahoe-Nevada State Park; 3) public opinions collected during public comment periods, 4) issues raised in the 1987-88 user survey, and 5) environmental and cultural considerations.

a. SCORP Identified Issues

The 1987 Statewide Comprehensive Outdoor Recreation Plan (SCORP) identifies major concerns shared by most Nevadans relating to outdoor recreation. Three apply directly to Lake Tahoe.

1) As Nevada's population grows, the demand for recreation opportunities increases.

2) Recreation providers in the state have been unable to keep up with increasing demand.

3) In addition, many Nevadans consider water-related recreation and outdoor recreation opportunities, such as those found at Lake Tahoe, a vital component of the state park system.

b. User Conflicts/Visitor Impacts

Lake Tahoe-Nevada State Park generates heavy recreation use, particularly during the warm summer months. At such times, a variety of user conflicts and visitor impacts occur.

1. Sand Harbor Management Area

Heavy foot traffic along the perimeter of Sandy Point and large numbers of pedestrians during the Shakespearian and Music festivals have led to heavy erosion. On the downhill side of this erosion, sand buries young vegetation and weakens mature shrubs. On the uphill side, shrub roots are exposed, weakening and eventually killing the plant. Similar heavy pedestrian traffic across the parking lot islands has lead to erosion and trampling of vegetation. Stabilization measures of these areas to date have included fencing and some revegetation of the islands, and fencing and decking of Sandy Point.

On busy days during the summer months, when the parking lots at Sand Harbor are full, people often climb over the existing chain link fence along Highway 28. This chain link fence impacts the scenic beauty of the area.

Existing boat parking is often filled before 10:00 am during the summer season on weekends. Overflow parking is done along the highway north of the Park, or at Incline Village, creating a great inconvenience to park visitors and a safety problem on the highway.

2. Cave Rock Management Area

During weekends, the boat parking lot at Cave Rock is frequently used to capacity. At times of rough water or at the end of the day, too many boats compete for the very small facility, creating safety problems.

3. Spooner Lake Management Area

The distance between parking and trailhead facilities at Spooner Lake has resulted in several casual trails and random trampling of vegetation, followed by slope erosion.

Presently, equestrians share the main Spooner parking lot with other park users. The waste left by the horses is a frequent source of complaints from other visitors.

4. Marlette/Hobart Backcountry Management Area

At present, only 2 primitive camping areas exist in the backcountry area, with a total of 7 campsites. With increased use of the Tahoe Rim Trail (under construction), stress will likely be placed upon these limited sites. Mountain bikes are also beginning to impact the area by leaving the designated roadways.

5. Highway 28 Management Area

Serious slope erosion has become a problem at Hidden Beach as well as at Sand Harbor. This erosion is caused by a combination of undirected runoff from the highway and a lack of well-planned trails for visitors. Stairs were built several years ago, but have since fallen into a state of disrepair.

The Memorial Point/Hidden Beach area receives a substantial amount of use, yet there are no restroom facilities. This has created a local sanitation problem.

Motorists, bicyclists, and pedestrians compete with one another for space on Highway 28 during the summer months. With little to no shoulder on this road, space is limited and congestion is high. Heavy use of this area has also led to erosion.

c. Public Identified Issues

Public input used during this planning process originated through a year-long park user survey, comments at two public workshops, and written comments. The public showed concern for several issues, including the following:

- maintaining launch facilities
- expanding boater parking
- removing garbage along remote areas of the shoreline
- installing a bike path along the east shore
- protecting the resources in the backcountry

A more detailed list of public concerns and suggestions may be found in Appendix 2.

d. Governor's Tourism Program Identified Issues

The Governor's Tourism Program (Nev. Commission on Tourism, 1987) provides additional issues which the Division considers when updating or creating development plans. The first two directly relate to general tourism goals as stated by the Nevada Commission on Tourism and are: increasing awareness of the state's wide variety of activities, and increasing the length of stay of each visit. State parks protect historical, scenic and scientific areas and promote a wide variety of outdoor recreational experiences. This helps to reinforce the concept of the "other" Nevada and can provide interesting activities to lengthen each visitor's stay.

A final issue taken from the Governor's Tourism Program involves an inventory of places or activities that draw tourists to the state. Five of the eight inventoried items directly relate to Lake Tahoe during this development plan process. These are:

1. Natural Heritage Sites
2. Recreation Sites
3. Special Events
4. Wildlife
5. Trails

e. Environmental Considerations

Environmental characteristics considered important to the management and potential development of Lake Tahoe-Nevada State Park include:

1. Erosion (as previously described)
2. Sensitive habitat areas (flora and fauna)
3. Water quality and sedimentation
4. Air quality and noise impacts
5. Overpopulation of rodents and insects carrying disease
6. Dead and stressed trees; poor quality in timber stands
7. Reforestation

3. GOALS AND OBJECTIVES

Management and development of Lake Tahoe-Nevada State Park follow certain goals and objectives for the area. The Division follows several guidelines established for the management of a State Park, as outlined in the Division's policy manual. Some of these guidelines appropriate to updating this plan are as follows (Division of State Parks Policy Manual, 1987: Policy 23, Attachment A.):

1) State Parks are established to preserve and protect exceptional or unique natural features of ecological, geological, scientific or similar nature, or exceptional scenic qualities.

2) Cultural features of historical, archaeological or other significance may exist on the site, complimenting the natural features or scenic qualities.
3) Development shall be complimentary, but not dominant. Development shall be limited to that which is necessary to protect and preserve the scenic and natural values, provide public access, protect public health, provide adequate interpretive programs, and other recreational public use facilities. Carrying capacity will generally be low-moderate.

4) Recreational activities shall compliment the natural and scenic park values, and shall be appropriate for natural surroundings. Emphasis shall be placed on passive recreational activities.

5) Parks shall be adequate in size and have appropriate boundaries to: a) protect the significant features and the dominant scenic values; b) provide a buffer sufficient to insure the park's integrity; c) accommodate development so that various types of public use will not conflict, impair, damage or detract from the natural environment.

6) Location must be based on inherent qualities, and not geographic, demographic or other factors.

7) A full range of appropriate visitor services may be provided.

8) Parks shall be of statewide significance, that is, sufficiently distinctive to attract and interest people from other parts of the state.

9) Ownership should be fee simple with no special conditions that do not meet with the approval of the Division of State Parks. A long-term lease with another governmental entity is an acceptable alternative to fee simple ownership. Scenic easements may be considered where a large area is necessary for protection of scenic values, and where fee simple ownership is not feasible.

10) Generally, non-recreational uses will not be permitted. However, other uses which enhance the visitor's experience and park objectives can be permitted.

4. PART OF THE STATE PARK SYSTEM PLAN

As previously stated, the Lake Tahoe-Nevada State Park Development Plan will contribute to the Nevada State Park System Plan. The State Park System Plan is a composite of individual park development plans with unifying goals and objectives, providing a broad overview of long-range development plans for the various Nevada Division of State Parks administered areas. It will serve as an information source for political subdivisions, state and federal agencies, legislators, etc. The System Plan is intended to assure that the development themes, activi-

ties and facilities of the various parks complement one another, providing optimum variety with minimal duplication.

5. DESCRIPTION OF THE DIVISION OF STATE PARKS

The Division of State Parks is one of six agencies within the Department of Conservation and Natural Resources. The Division has the legislated intent to "acquire, protect, develop and interpret a well balanced system of areas of outstanding scenic, recreational, scientific and historical importance for the inspiration, use and enjoyment of the people of the State of Nevada and that such areas shall be held in trust as irreplaceable portions of Nevada's natural and historic heritage" (NRS 407.013).

The Division is charged with preparation and maintenance of the Statewide Comprehensive Outdoor Recreation Plan (SCORP) that encompasses public recreation opportunities at all levels of government, as well as providers of privately owned public recreation. Accordingly, the Division is obligated to "coordinate its activities with, and represent the interest of all other agencies and political subdivisions of the state having interests in the planning, development and maintenance of outdoor recreation resources and facilities" (NRS 407.207). The Division also administers the awarding and disbursement of federal financial assistance programs to the state's various political subdivisions for recreation facility acquisition and development (NRS 407.205).

B. DESCRIPTION, LOCATION AND PARK SETTING

1. DESCRIPTION OF PARK AND LOCATION

Lake Tahoe straddles the border between Nevada and California (see Vicinity Map, figure 1-1). It is one of the world's clearest, largest and deepest high altitude fresh water lakes. It is 22 miles long by 12 miles wide, is approximately 6,225 feet above sea level at the shore line, and is 1,645 feet in depth.

Lake Tahoe-Nevada State Park is on the east side of the Tahoe Basin (see Project Area map, figure 1-2). Except for one noncontiguous parcel, it is 9 miles long by 5 miles at its widest point and contains approximately 13,700 acres. The park extends from the lake shore, east and up over the Carson Range, changing altitude from 6,225 feet to 9,214 feet in a distance of 1.5 miles. Much of the park is precipitous with slopes over 30%. Still, there are many areas suited for diverse recreation activities. The primary focus of the park is Lake Tahoe, which draws visitors and provides the setting.

Surrounding the park are primarily U.S. Forest Service lands with a few private land holdings. The park and these surrounding lands have been considered together throughout this planning process. Lake Tahoe-Nevada State Park is found within Planning Region One, as identified by SCORP (1987). This planning region includes Carson City, and Washoe, Douglas, Storey, Lyon, and Churchill counties.

The park has been organized into five management areas, (see Orientation map, figure 1-3) to assist in the overall management of the park. Each area has unique resources that require different operation, maintenance and development strategies. The management areas are:

Sand Harbor Management Area
Cave Rock Management Area
Spooner Lake Management Area
Marlette-Hobart Backcountry Management Area
Hidden Beach, Memorial Point and the Highway 28 Corridor

Sand Harbor, a popular recreational area for swimming, boating and picnicking, is approximately two miles south of Incline Village. The Hidden Beach area includes the Memorial Point Scenic Turnout and that portion of Highway 28 from Hidden Beach to Sand Harbor. This management area is largely an unsupported day use area, with secluded beaches and uninterrupted views of Lake Tahoe. Spooner Lake, at the junction of highways 50 and 28, provides opportunities for picnicking, hiking, horseback riding, fishing, and a variety of other summer activities. The Marlette-Hobart backcountry area, covering much of the higher elevations east of Lake Tahoe, contains valuable resources in its watersheds, timber, cultural resources and wildlife. Cave Rock, located about five miles south of the junction of U.S. Highway 50 and Nevada State Highway 28, is primarily a boat launching facility.

Access to the majority of the park is provided via State Route 28, which passes along the east shore of Lake Tahoe. Access to the backcountry area is available through a series of trails. The Cave Rock management unit is accessed via Highway 50.

2. PHYSICAL SETTING OF THE AREA

Lake Tahoe is flanked on the west by the Sierra Nevada Mountains, and on the east by the Carson Range. Woodland vegetation and picturesque mountain peaks characterize both ranges.

Visually and climatically, the lake is the primary influence on the Lake Tahoe Basin as a whole. The basin is a large, 501 square mile, high altitude valley with the lake covering 191 square miles. It occupies a large fault-block valley between the Carson Range on the east and the spectacular mountain peaks of the Sierra Nevadas on the west. The Basin contains several communities and is a destination for tourists worldwide. It is 34 miles from Reno, and 15 miles from Carson City. Much of the heavy weekend traffic comes from the San Francisco Bay area, less than 200 miles away.

Figure 1-1
VICINITY MAP

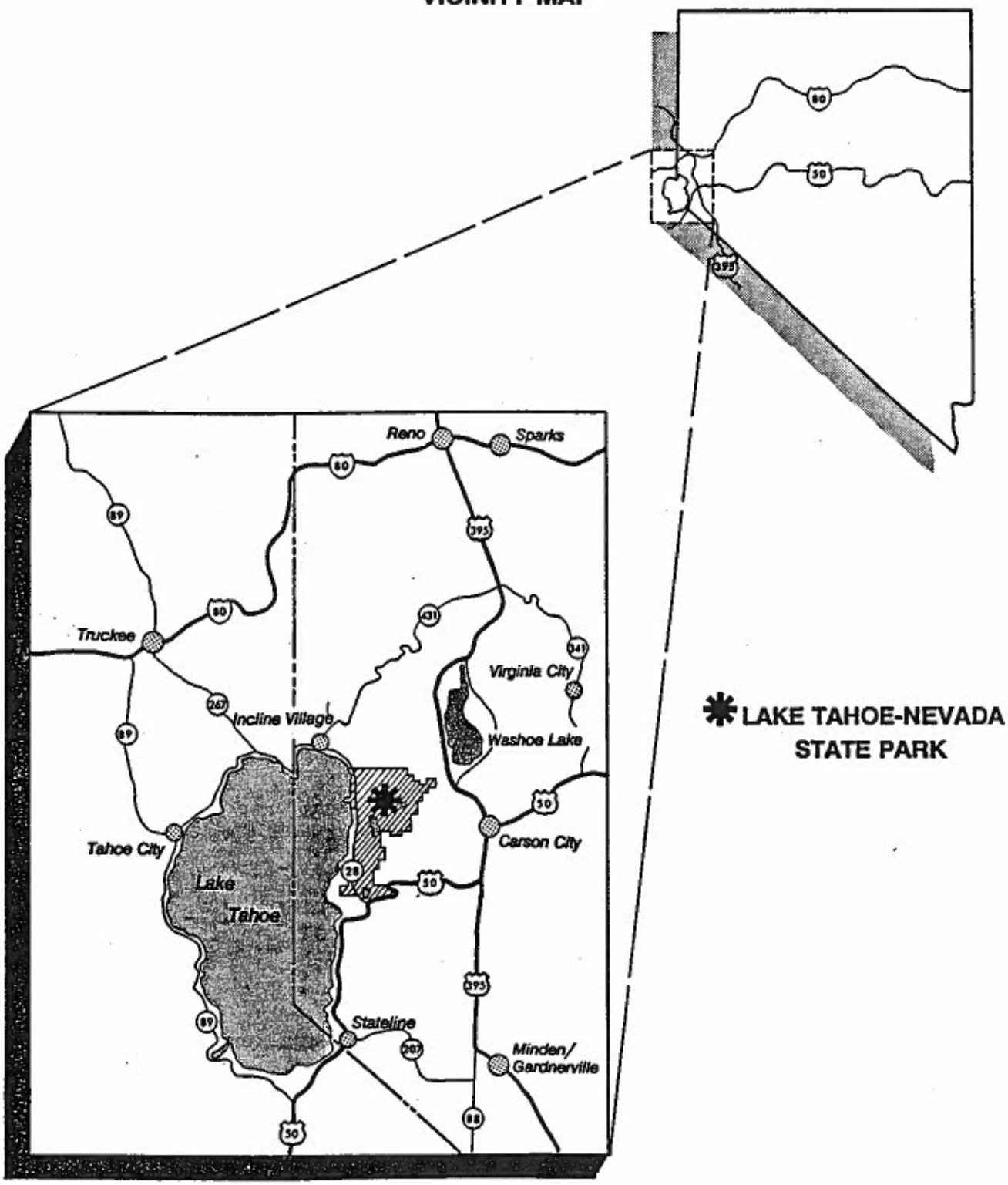
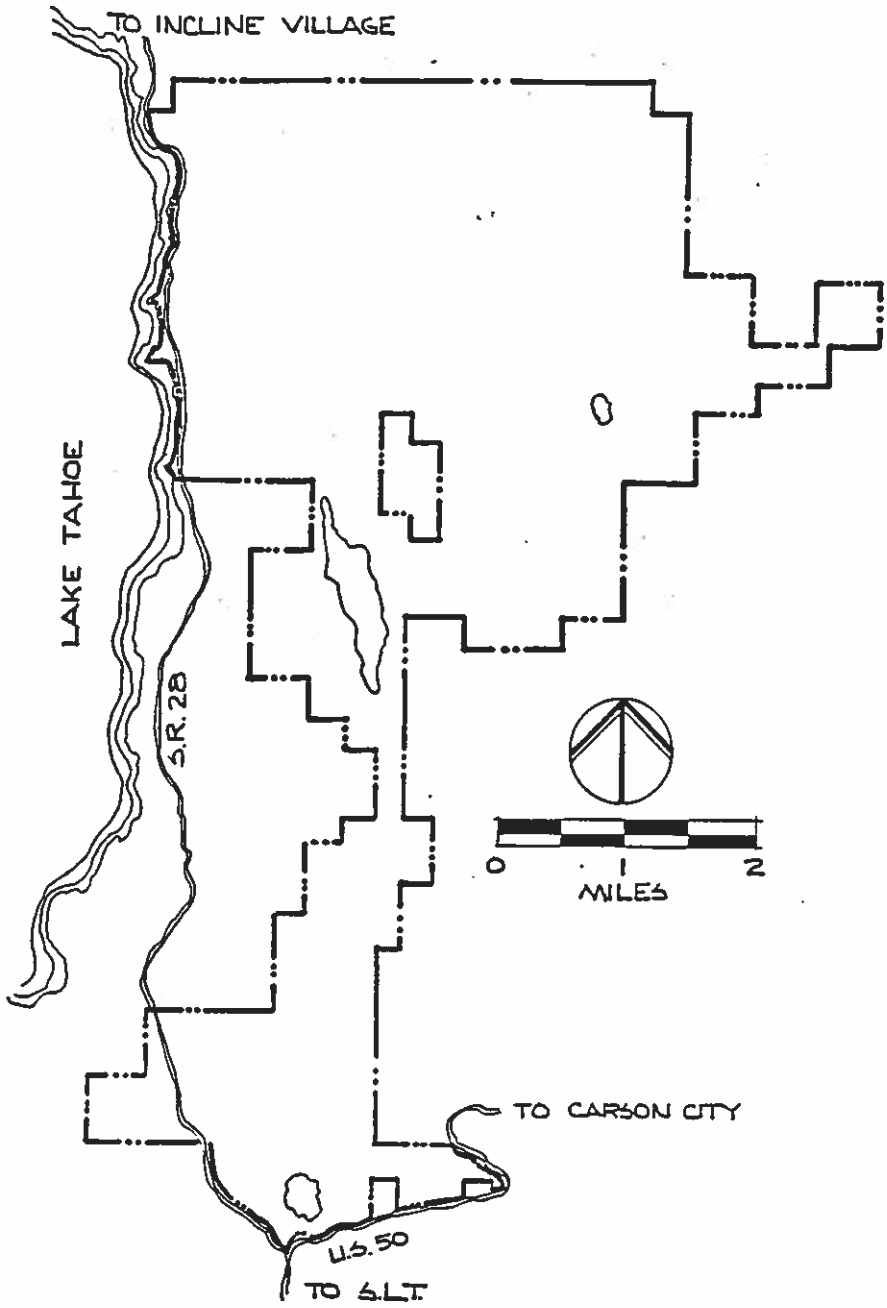


Figure 1-2
PROJECT AREA



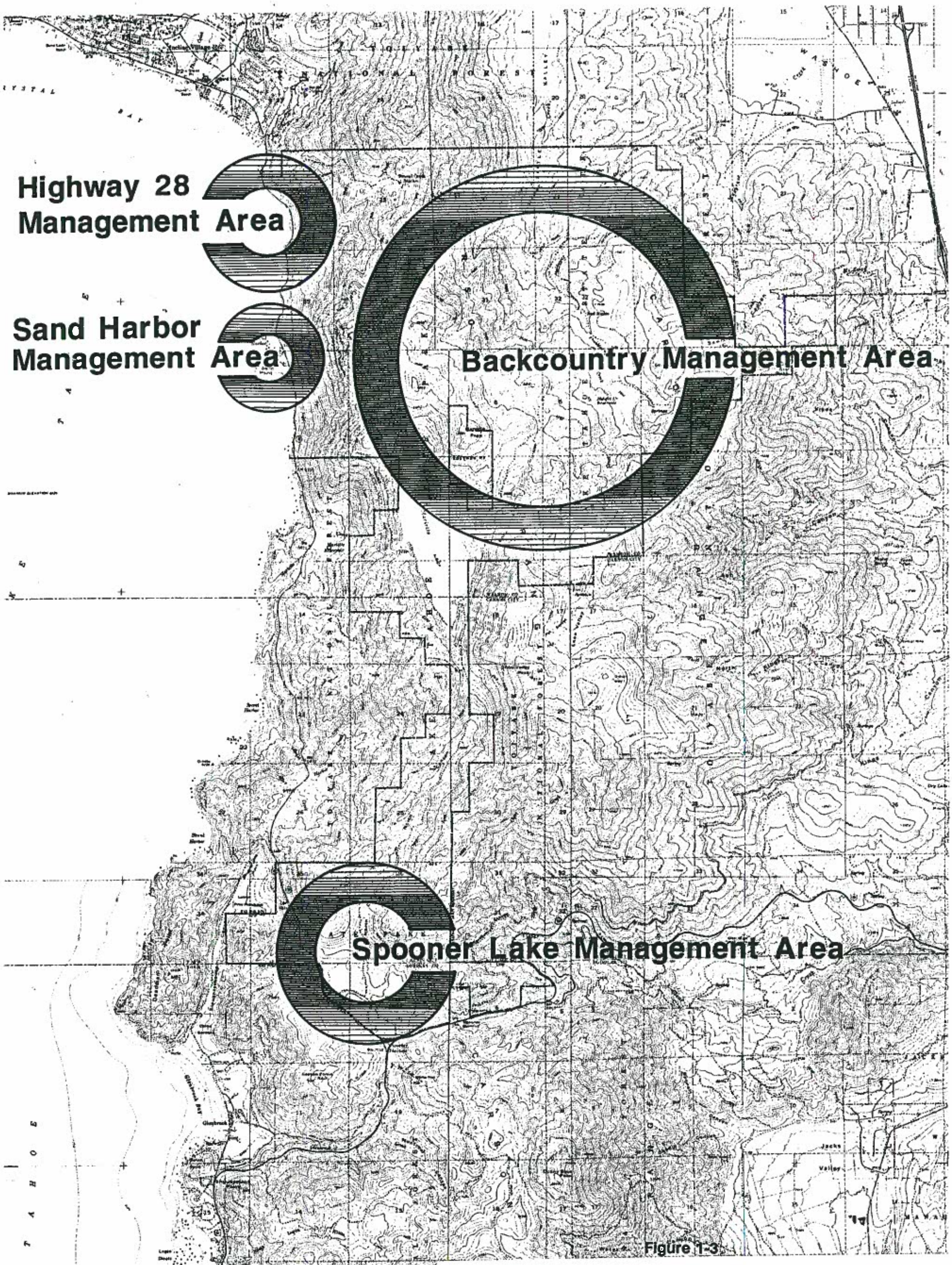


Figure 1-3

ORIENTATION MAP

Lake Tahoe–Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989

3. ADJACENT PROPERTY OWNERSHIP

Directly north of the park, along the shore of Lake Tahoe, is the Incline Village General Improvement District. This property is privately owned. Privately owned lands are also found at Lakeview, northeast of the park, at Glenbrook, southwest of the park, and as small parcels throughout the Carson Range. Little Valley, to the north, is managed by the University of Nevada-Reno. A large parcel east of the park is owned by the Carson City Water Co. The U.S. Forest Service maintains the remaining lands surrounding the park. Ownership around the Cave Rock Unit is private.

C. PARK HISTORY

1. HISTORY OF THE AREA

Archaeological research indicates that human utilization of the Lake Tahoe basin may have begun with a hunting culture, which appears to have occupied the area several thousands of years before the beginning of the Christian era. These people were replaced by a new group associated with the Washo Indians, who lived in the area in the late-prehistoric and historic times.

The Washo lived a highly mobile life, their cycle built around utilization of seasonal food resources over a broad area. In the spring, they fished in the Tahoe Basin, and moved into the mountain meadows during the summer. As fall approached, the tribes migrated again to the valleys east of the Carson Range, where they remained throughout the winter (Wirth and Associates, 1972).

The first white men known to have seen Lake Tahoe were Lieut. John C. Fremont and his expedition's topographer, Charles Preuss, on Feb. 14, 1844. They did not then set foot on Tahoe's shore, but viewed it from Red Lake Peak to the south. Fremont called it Lake Bonpland, after a French botanist. Preuss, however, showed the lake as Mountain Lake on his maps of the expedition, and this was the name it was generally known as until 1852. W.M. Eddy, surveyor general of California, identified Tahoe as Lake Bigler, on March 15, 1853, after California's 3rd Governor, John Bigler.

While the California State Legislature made this name official in 1879, it was never popular. The name "Tahoe" in varied spellings began to appear in newspapers in 1862. By the 1880's, this name was in general use, but was not made official until 1945. This Washo Indian word has been translated variously as "big water," "deep water," and "high water" (Scott, 1957 and TRPA: Historical and Cultural Committee, 1971).

Although Fremont is associated with discovery of the area, his party never entered the Tahoe Basin. Dan Murphy and a group of three other young men and two young women, a subgroup of the Stephens-Murphy- Townsend emigrant party, visited the lake late in November 1844, only 9 months after Fremont and Preuss

first saw it. Murphy's group apparently crossed the Truckee River, rode south along Tahoe's west shore, and reached what was probably McKinney Creek. They then passed through a low divide (Barton Pass) and entered the headwaters of the Rubicon River, which flows west.

For the next 15 years, Lake Tahoe was comparatively undisturbed by the great westward migration. This was because the two best routes through the basin were more difficult to travel than the more heavily travelled routes to the north and south of the lake.

By the mid-1850's, the numerous Mother Lode placer camps and towns in California foresaw an end to the gold rush, and began competition to become major east-west wagon road terminals. This set off a flurry of road surveying activity throughout the Sierra.

The road which most influenced the history of the Lake Tahoe Basin and its present settlement pattern was the Placerville Toll Road, often called the Bonanza Road. This system of toll roads (1858-1863) between Placerville, Genoa, Carson City, and the Comstock area climbed steadily from Placerville to Johnson (Echo) Pass and crossed the Carson Range south and east of Lake Tahoe.

Entering the basin from Tahoe City to the north, Scott's Route, later named the Placer County Emigrant Road, wound its way along the lake's north shore to Mill Creek (Incline Village). The road then turned eastward toward Tunnel Creek, crossed the Carson Range near Twin Lakes, angled northeast through Little Valley, and dropped into the Washoe Valley (TRPA: Historical and Cultural Committee, 1971).

With the opening of the mining boom in the Washoe Valley and on the Comstock Lode, miners poured over the passes from California to the new diggings. The old Placerville Toll Road, which followed the general alignment of U.S. 50 over Spooner Summit and around the south shore of the lake, served mail and stage routes that linked the Comstock with California.

Following the opening of intensive mining activity in the Virginia City/Gold Hill region, the need for a broad range of supportive resources arose. The required timber for fuel and mine supports soon stripped the hills around Virginia City, and loggers moved into the Tahoe Basin (Wirth and Associates, 1972).

The first major logging industry in the area began in 1872. What began as a mixed sawmill-farming operation for local use in the early 1860's at Glenbrook by Capt. Augustus Pray, became a highly competitive industrial struggle after purchase by the Carson and Tahoe Lumber and Fluming Company. This company also acquired property throughout the basin and emerged as the largest operator among several large lumber firms competing for control of the basin's timber stands (Ballweber: interview, 1989, and TRPA: Historical and Cultural Committee, 1971).

After this company had stripped the timbered slopes of the east-central portion of the region, it shifted cutting operations to the south end of the lake, and extended a narrow-gauge railroad throughout the Lake Valley/Meyers area. Logs were hauled to Bijou, rafted to the sawmills at Glenbrook, sawed up and hauled to Spooner's Summit by another narrow-gauge railroad, where they were flumed down Clear Creek to Carson City. From there, the lumber was shipped on the Virginia and Truckee Railroad to the Comstock mines.

As the supply of prime timber was depleted at the south end of the lake, the Carson and Tahoe Lumber and Fluming Company directed its operations to the west shore. In the meantime, the Sierra Nevada Wood and Lumber Company was cutting in the northern area. Its logs were brought to Incline, where an impressive combination of railroads, sawmills, inclined tramways and V-flumes cut and moved the lumber over the crest of the Carson Range to the Comstock mines.

The Donner Lumber and Boom Company logged the northwestern section of the Lake Tahoe region. The Pacific Wood, Lumber, and Flume Company, the fourth and last of the large Comstock logging and lumbering companies, operated in the extreme northeastern area and on the eastern front of the Carson Range. Timber was cut by these companies as fast as possible when demand was high, and during a peak period of mining activity, as much as 72 million feet were cut in one year.

Increased activity throughout the region, and the growth of scenic logging railroads, flumes and sawmills, constituted a growing tourist attraction. Railroads brought tourists to Truckee, where stagecoaches (and later a railroad) brought them to Tahoe City. From there, they could travel by steamer to other lakeside sites.

The basic pattern of land use around the lake after the Comstock era was a mixture of commercial resort businesses, agricultural production, the seasonal use of pasture lands, the growth of many large private holdings or estates, and the residual holdings of the lumber companies. Three major resort hotel areas developed, including Tahoe Tavern at Tahoe City, Lakeshore House and Glenbrook Hotel at Glenbrook, and the Tallac Resort Hotel at Tallac.

The Tahoe Forest Reserve was established by the Federal Government in 1907, and was later renamed the Tahoe National Forest. In 1910, the Eldorado National Forest was carved out of the southern portion of the basin in California, and in 1945 the Toiyabe National Forest was established on the Nevada side.

Access to the Tahoe Basin was improved in the 1930's with the improvement of U.S. Highway 50, and soon many rustic summer cabins clustered near the lakefront to the south. The restrictive exclusiveness of the old luxury hotels declined with the advent of the automobile and the trend emerged toward middle class accommodations (TRPA: Historical and Cultural Committee, 1971).

Following World War II, the tourist trade in the basin experienced not only a new upsurge, but also the beginning of a major development trend which has lasted decades. Year-round highway access extended the summer home season through weekend and holiday use in the spring and fall. The Winter Olympics in Squaw Valley in 1960 drew world-wide and nation-wide attention to the winter sports potential of the region. Incline Village and the Zephyr Cove/Stateline areas grew during the 1960's. With the coming of modern resort hotels to these areas and to Crystal Bay, the drawing power and carrying capacity for tourist trade had increase appreciably, and is expected to continue well into the 21st century (Wirth and Associates, 1972).

2. HISTORY OF THE SITE

Many historic sites exist within and immediately adjacent to Lake Tahoe-Nevada State Park, as shown on the Historic Resources map, figure 1-4. As summarized above, the eastern shore of the lake played an important role in supplying lumber to the mines of the Comstock Lode.

Soon after the 1859 discovery of the enormous wealth of the Comstock Lode, vast mining and milling enterprises began. With timber resources quickly exhausted in the immediate vicinity of Virginia City and the Comstock Lode, heavy logging operations began on the east side of Lake Tahoe.

Spooner Station, founded by Michel(e) Spooner and Company in the early 1860's at the summit above Glenbrook, originally operated as a shingle mill. It soon grew into a little settlement consisting of a hotel, saloon, several workmen's shacks and a combination stable and barn. Corrals bordered Spooner Meadow to the north, and here the partners kept their yoke oxen, pasturing milk cows and draft horses. East of the ox enclosure, G.W. Kenison ran a blacksmith shop, and the Pioneer Stage Lines also had their own large two-story barn (Scott, 1957).

The Carson & Tahoe Lumber & Fluming Company acquired the oldest mill on the lake, previously known as Caption Augustus Pray's pioneer mill built at Glenbrook in 1861. Among the major properties acquired in 1873 was the Summit Flume Company which owned an 11-mile long V-shaped flume from Spooner's Summit eastward along Clear Creek to the wood yard south of Carson City. The most difficult transportation link in this process was the time consuming, cumbersome and expensive hauling between Glenbrook and Spooner Summit.

Plans were soon underway for construction of a nearly 10 mile long narrow gauge railroad to connect these two sites. In 1875, there was considerable activity around Glenbrook with railroad construction, logging, saw mill operation and several small parties of tourists. Upon completion of the railroad in August 1875, the Carson & Tahoe Lumber & Fluming Company became the largest supplier of lumber and wood for the Comstock. From logging at Lake Tahoe, sawing at Glenbrook, transporting by train to Spooner Summit and then by flume to Carson City, the Carson & Tahoe Lumber & Fluming Company effectively utilized hundreds of men

and a number of separate operations to meet the increasing lumber and cord wood demands of the Comstock (Short Line Enterprises, 1982).

In order to augment the water supply for their lumbering enterprises, the owners of the Carson & Tahoe Lumber & Fluming Company placed a dirt fill and stone dam across the head of Marlette Basin, high in the mountains above Sand Harbor, in the summer of 1873. The collected water, which came to be known as Marlette Lake, was conveyed by six miles of V-flume running southward from the reservoir to Summit Camp at Spooner Station. Here three small retaining ponds fed the twelve miles of trestled V-flume winding down Clear Creek Canyon to Carson City.

Named after Seneca Hunt Marlette, Surveyor General of California and early developer of the Tahoe area, Marlette Lake later became a water supply for the growing needs of the Comstock mines and settlements. Each day, the intricate processes of extracting gold and silver from the deep-mined rock required water by the millions of gallons. The domestic water supply around Virginia City was also increasing.

The Virginia and Gold Hill Water Company found a suitable water supply at Franktown Creek (Hobart) on the east side of the Carson Range. A diversion dam was constructed high above the valley, and water was carried to the mines by a combination box flume and pressure pipe installation. Despite crossing difficult terrain, the aqueduct from Hobart Creek Reservoir was completed on July 25, 1873, and was the world's longest and highest inverted siphon, with a pressure of 865 pounds per square inch at its lowest point, Lakeview Station. So well did these engineers construct this aqueduct, that today the citizens of Virginia City still utilize water flumed and piped directly from the Tahoe Region.

The two million gallons of water supplied daily to Virginia City by the Hobart Creek Dam, however, was not enough to meet the increasing demands of the Comstock, and in 1873, the Virginia and Gold Hill Water Company arranged with the Carson & Tahoe Lumber & Fluming Co. to draw from Marlette Lake. To increase the lake's available water supply, an improved dam was built and nearly doubled the lake's capacity.

A covered box flume was constructed from Marlette's western outlet north along the Carson Range, 1800 feet above Lake Tahoe. The flume ran around the mountain rim to the west portal of a 4,000-foot tunnel blasted through the solid granite above Sand Harbor. A northern flume also collected water of the mountain streams and brought it to the western portal of the tunnel. On the east side of the divide, another box flume carried the water to the junction with the Hobart Creek System. With this complex flume system, the daily water delivered to the Virginia City area was raised to 6,600,000 gallons.

In the meantime, the Sierra Nevada Wood and Lumber Company, organized by Walter Scott Hobart, began operations on the northeast shore of Lake Tahoe. The tunnel and water flumes of the Marlette system provided the basis for the lumber

plant. About 1.5 miles from the western portal of the water tunnel, the company built a double-track tramway from the steam-powered sawmill near Mill Creek (Incline Village), up the steep slopes to the vicinity near the tunnel. This tramway became known as the Great Incline of the Sierra Nevada.

Lumber and cordwood were carried by a V-flume to and through the tunnel and along the eastern side of the mountains. From there, they descended to the divide between Eagle and Washoe Valleys at Lakeview.

Logs were supplied to the sawmill at Mill Creek by a narrow gauge railroad from Sand Harbor. In the spring of 1881, the company installed a rail bed that led south from the mill to Sand Harbor. Logs were rafted by the steamer Niagara to Sand Harbor from land sections on south Tahoe, and hauled on the railroad to Incline (Galloway, 1947 and Scott, 1957). Also at Sand Harbor was the summer estate of Walter Scott Hobart, Jr. Mr. Hobart enjoyed several years in the area, and spent much of his time collecting and racing boats around the northern shore of the lake (Scott, 1957).

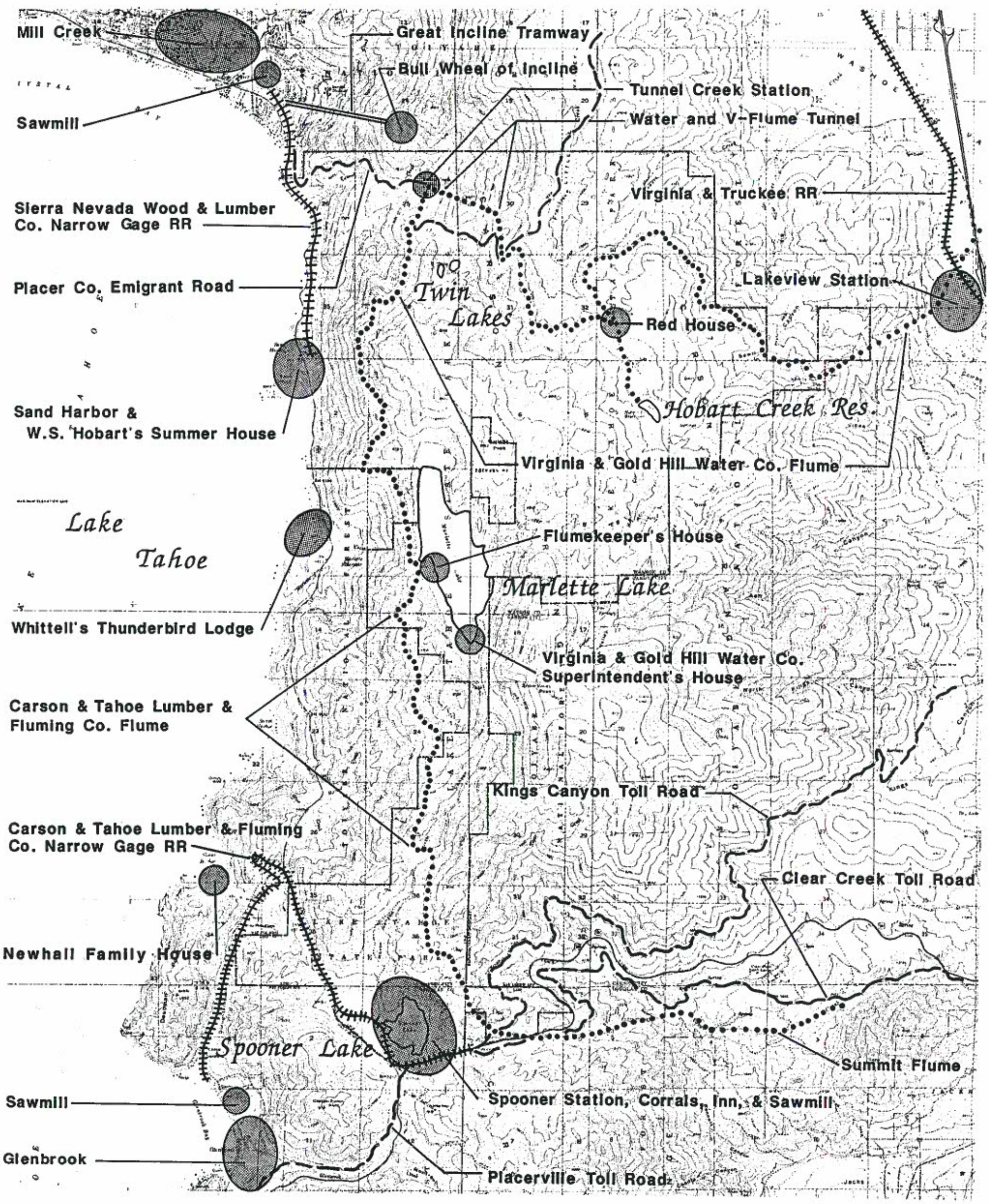
At Cave Rock to the south, the Johnson Pass lakeshore turnpike constituted the greatest single expenditure of the toll road built between Placerville and Washoe. Including extension of right away around Cave Rock, the 100-foot trestle bridge and the hand-chiseled stone buttresses formed one mile of road improvement and cost $40,000. The original Indian trail ran above the rock, and this steeper but more direct route was widened to accommodate wagon traffic after 1863. This cut-off was maintained into the 1890's for use whenever the bridge was under repair.

The earliest settler to take up land near Cave Rock was William Hamilton of Carson Valley, who built a way station on "Rocky Point," known as the Rocky Point House, in May of 1864. From here, Hamilton ranched and serviced traffic on the turnpike (Scott, 1957).

3. WHEN PARK AUTHORIZED/HISTORY OF AUTHORIZATION

The history of Lake Tahoe-Nevada State Park dates back to August 14, 1958, when Sand Harbor was officially declared a state park by gubernatorial proclamation (Draft System Plan, 1987). It immediately became the most popular and most heavily used in the Nevada State Park System. In 1963, the Nevada Legislature authorized land acquisitions for a Lake Tahoe State Park within a specified boundary, and authorized the acquisition of the Marlette Lake Water System, which brought 5,378 acres into state ownership in 1964. This system would be used for water management purposes, and recreation use of the lands (Wirth and Associates, 1972).

Some 5,300 acres in Washoe County, including 3.5 miles of shoreline, were acquired in November of 1967 through condemnation proceedings. In addition, the 1967 Legislature had transferred title of the Cave Rock Park and Boat Landing site in Douglas County to the State Park System and in 1969, acquisition of



Legend:*

- Historic Sites
- Flumes
- Emigrant Roads
- Railroad Alignments
- Tramway

* Locations are approximate.

Figure 1-4

HISTORIC RESOURCES

Lake Tahoe-Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989

Spooner Lake was authorized. Official dedication of the Lake Tahoe-Nevada State Park took place on October 1, 1971 (Draft System Plan, 1987).

Since its inception, several improvements have been made within Lake Tahoe-Nevada State Park. The following is a list of expenditures to date:

Sand Harbor:	$1,234,857.77
Spooner Lake:	1,053,592.78
Cave Rock:	372,878.25
Miscellaneous:	106,050.00

D. PLANNING PROCESS

1. PAST PLANS

In 1964, an informational report, A Park for Lake Tahoe, was prepared by the Division of State Parks which discussed land values, proposed facility development and projected visitor use. This report was followed by A Land Use Plan for Lake Tahoe State Park, Nevada in 1972, prepared for the Division by Wirth and Associates Environmental Planning Consultants. In 1983, the Lake Tahoe State Park Resource Management Plan was completed by the Division of State Parks. The goal of this plan was to guide the programs to protect, restore and perpetuate the natural and cultural resources of Lake Tahoe-Nevada State Park. An update of this resource plan was begun in 1988.

In addition to these park-specific studies, several area-wide plans have been prepared for the Lake Tahoe Basin. A complete list of these plans can be found in the bibliography.

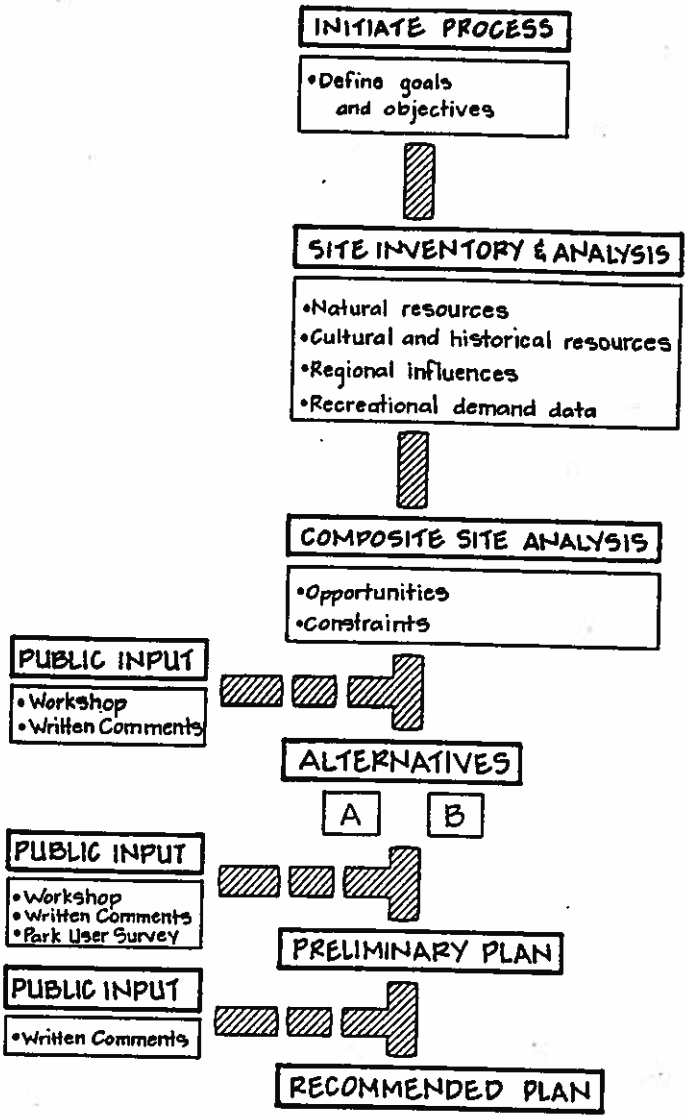
2. PROCESS FOR THIS PLAN

This development plan reviews the development that has taken place and outlines future plans. It takes into consideration present recreational demands, regional influences, land use trends, and environmental resources.

The three plan development phases included data inventory and analysis, alternative generation, and recommended plan development. (See Planning Process, Figure 1-5).

The development plan update began in 1983, when a team of planners, park rangers, a landscape architect, and an engineer was formed within the Division of State Parks. The team members reviewed and analyzed existing data, talked to numerous state, regional, and federal agencies and compiled recreational opportunity possibilities. Public hearings were held in Carson City and Reno in June of 1983. A draft plan was completed shortly thereafter and made available for public review and comment, but due to budgetary restraints, the planning process was not completed.

Figure 1-5
PLANNING PROCESS



In the Spring of 1986, the planning process resumed. Staff updated site and area information for Lake Tahoe in many categories. Such areas included: land use trends (ownership, land use, zoning, transportation, and utilities), natural resources (topography, soils, slope, climate, vegetation, wildlife and perceptual attributes), and cultural resources (archaeological and historic). Chapter Two, Regional Influences, and Chapter Three, The Existing Park, detail the findings in these categories. This information was then analyzed and development limitations and opportunities identified. The Composite Site Analysis (chapter 3) presents this information.

The new planning team consisted of planners and field representatives from State Parks, as well as representatives from the Tahoe Regional Planning Agency and the U.S. Forest Service, Lake Tahoe Basin Management Unit. Based upon the public comments and the draft plan generated in 1983, alternatives were prepared and presented at a public workshop on July 9, 1986 at Incline Village. Information gathered at this meeting, along with other public and staff comments resulted in preliminary recommendations, which were distributed to the public in December of 1986. Further progress on the plan was delayed, awaiting the results of a year-long park user survey, which was completed in the spring of 1988. The planning process resumed in March of 1989.

With results of the state-wide recreation telephone survey in 1986, the 1987-88 park user survey and additional staff suggestions, the preliminary plan was revised as necessary, and made available for final public review. Upon receipt of comments from this review period, the recommended plan was finalized in November, 1989.

3. PARTICIPANTS IN THIS PLAN

In addition to State Parks personnel, staff from the Tahoe Regional Planning Agency, U.S. Forest Service, Carson City Parks and Recreation Department, Washoe County Parks & Recreation Department, Nevada Division of Forestry, Nevada Division of Historic Preservation, and the Nevada Department of Wildlife provided valuable insight and resource information during the planning process.

4. PUBLIC INVOLVEMENT

This planning effort facilitated public involvement in several ways. The public meetings held in 1983 served as a starting point from which to formulate development alternatives and identify visitor concerns. At the public workshop in 1986, staff and park users met to discuss the existing park and development proposals. A detailed list of comments generated by this meeting is found in Appendix 2. In addition to these meetings, several presentations were made to a variety of groups, including the Carson City Park and Recreation Commission, Incline Village Chamber of Commerce, and the Incline Village-Crystal Bay Advisory Board. Following these meetings and the public review periods, many written comments were received and provided additional insight.

CHAPTER II: REGIONAL INFLUENCES

A. DEMOGRAPHICS

1. Historic

Early inhabitants of Lake Tahoe were the migratory Washo Indians, who spent summers at the lake, and left the higher elevations at the end of the summer to spend the winters in the valleys to the east.

One of the important emigrant trails to California travelled around the south shore of the lake, but did not bring many residents to Lake Tahoe.

With the discovery of the Comstock Lode to the east, miners poured into western Nevada. Logging camps and small settlements soon sprang up around the lake to supply the mining industry.

With the steady decline of the Comstock and of commercial lumbering, came a rise in tourist traffic around the turn of the century. Summer home developments grew with improved roadways, and after World War II, year-round highway access and air transportation brought an upsurge in the resident population of the Tahoe Basin. During the 1960's, Incline Village north of the park, and the resorts between Stateline and Zephyr Cove to the south, brought increasing numbers of residents and tourists to Lake Tahoe (Wirth and Associates, 1972).

The three counties in which Lake Tahoe-Nevada State Park is situated are Carson City, Douglas and Washoe counties. Since 1940, all three of these counties have experienced a steady rise in population. From 1940 to 1980, Carson City's population has grown from 3,209 to 32,022 people. Similarly, Douglas county has grown from 2,056 people in 1940 to 19,421 in 1980. Washoe County has experienced the most growth, from 32,476 in 1940 to 193,623 in 1980 (Nev. Office of Community Services, 1988). While the majority of people in each of these counties resides in the urban areas of Carson City, Minden/Gardnerville and Reno, respectively, the numbers of county residents within the Tahoe Basin have similarly increased.

2. Existing

Since 1980, the populations of all three counties described above have risen steadily. These figures are shown in table 2-1, and indicate that Lake Tahoe-Nevada State Park has continued to serve a rapidly growing population (Nev. Office of Community Services, 1988). They also show that a large number of potential users are in an active age group.

Table 2-1
POPULATION STATISTICS: 1980 - 1987

	Carson City	Douglas County	Washoe County
1980	32,022	19,421	193,623
1987	36,650	25,200	236,480
% population in 15-64 age group (1980)	70%	71%	72%

3. Projected

Projected population statistics for these counties are shown in table 2-2, and indicate that the park will continue to serve a rising population (Nev. Office of Community Services, 1988).

Table 2-2
PROJECTED POPULATION STATISTICS: 1990 - 2010

	Carson City	Douglas County	Washoe County
1990	39,962	30,071	264,398
2000	51,123	45,277	364,171
2010	63,031	66,140	488,567

B. RECREATIONAL DEMAND

1. Effect of Population Increases in Creating Demand

This steady rise in population for the counties surrounding Lake Tahoe-Nevada State Park has placed an increasing demand on all recreation facilities. Increasing populations raise demand for these facilities at all levels. However, resident populations require certain park features not necessarily appropriate for a State Park to provide. If local recreation providers cannot keep pace with population growth, residents will apply increasing pressure on the State system to meet their needs.

2. Affect of Socioeconomic Data on Demand

A number of data sources provide insight into the socioeconomic condition of regional residents and park visitors. This information can be used to help determine the ability of regional residents to participate in the full range of recreational activities available. First, the 1986 SCORP telephone survey indicates that, of those respondents in planning region one (Carson City, Douglas, Washoe, Churchill, Lyon, and Storey Counties), 54% had household incomes below $30,000, 23.4% from $31,000 to $50,000, and 13.1% above $51,000. Statewide, the same survey found that 51.9% had household incomes below $30,000, 25.9% from $31,000 to $50,000, and 9.4% above $51,000. This would indicate that the incomes of residents in the planning region generally follow the statewide average. Planning region one, however, has a slightly higher percentage in the below $30,000 and above $50,000 categories, and slightly fewer in the mid-range of $31,000 to $50,000.

The 1987-88 park user survey indicates that visitors to Lake Tahoe do not tend to represent the regional population's economic characteristics: 32.7% of respondents had family incomes below $30,000, 33.1% had family incomes from $31,000 - $50,000, and 31.9% reported family incomes above $50,000. These figures indicate that Lake Tahoe-Nevada State Park tends to attract, on the average, more visitors from the middle and upper income brackets than are typical of the region or statewide. They also indicate, however, that the park attracts a broad economic spectrum of visitors.

Part of the phenomenon regarding the preponderance of middle-upper income brackets may be attributed to the large influx of out-of-state visitors, primarily from California. Incomes there are generally higher than in Nevada. Furthermore, almost 3/4 of the park's visitors are repeat users in the active adult age categories.

These characteristics all point towards demand for adult activities that often require an above average investment in necessary equipment and at least moderate physical requirements. Such activities include mountain biking, skiing, boating, backpacking, camping, and horseback riding.

Information regarding such visitor characteristics was partially obtained from the 1987-88 park user survey. These results are indicated in table 2-3 below.

Table 2-3
LAKE TAHOE-NEVADA STATE PARK VISITATION CHARACTERISTICS
(1987-88 State Park User Survey)

VISITOR CHARACTERISTICS

Age:

< 16	18.7%
16-25	12.8
26-35	25.7
36-45	21.7
46-59	13.6
> 60	7.2

Resident Area:

Planning Region I	46.0%
N. California	36.0
S. California	8.0
Midwest States	2.0
Southern States	2.0
All Other	6.0

Visit Park Before:

Yes	73.0%
No	27.0

Length of Stay:

< 4 Hours	50.0%
1/2 to 1 Day	48.0
> 1 Day	2.0

3. Activity Preferences

Activity preference information comes from two sources. They include the 1987-88 State Park User Survey, and the 1986 State Park Telephone Survey. This information is provided below. (See tables 2-4 and 2-5). In summary, recreational activities preferred by visitors of Lake Tahoe and residents of planning region one coincide with those currently provided at Lake Tahoe-Nevada State Park. These activities include relaxing outdoors, picnicking, swimming, hiking/walking, lake fishing, and motorboating.

Table 2-4
LAKE TAHOE-NEVADA STATE PARK VISITOR PATTERNS
(1987-88 State Park User Survey)

VISITOR PATTERNS

What the visitor did this visit:

a. Sand Harbor/Highway 28:

Relaxing Outdoors	90.1%	Hiking/Walking	34.3%
Swimming	51.2	Motorboating	21.1
Family Picnicking	44.1	Photography	15.5

b. Spooner Lake/Backcountry:

Relaxing Outdoors	83.5%	Nature Study	43.7%
Hiking/Walking	74.0	Photography	25.1
Family Picnicking	45.5	Lake Fishing	23.5

c. Cave Rock:

Relaxing Outdoors	80.0%	Fam. Picnicking	19.5%
Lake Fishing	71.5	Photography	16.5
Motorboating	29.0	Swimming	15.0

Visitor's Favorite Activity:

a. Sand Harbor/Highway 28:

Relaxing Outdoors	46.9%	Fam. Picnicking	6.1%
Motorboating	9.9	Swimming	5.6
Lake Fishing	7.0	Hiking/Walking	5.6

b. Spooner Lake/Backcountry:

Hiking/Walking	36.2%	Fam. Picnicking	9.0%
Relaxing Outdoors	16.1	Bicycling	6.5
Lake Fishing	12.6	Nature Study	4.5

c. Cave Rock:

Lake Fishing	44.5%	Water Skiing	4.5%
Relaxing Outdoors	20.5	Swimming	3.0
Motorboating	13.5	Pleasure Driving	3.0

If provided, the visitor would utilize the following facilities:

a. Expanded cross-country ski trails at Spooner Meadows:

very likely	22.9%	somewhat unlikely	8.2
somewhat likely	18.1	very unlikely	50.8

b. A food, beverage, and sundries concession at Sand Harbor:

very likely	36.0%	somewhat unlikely	6.7
somewhat likely	25.1	very unlikely	32.2

c. A tent/trailer/RV campground w/o hookups at Spooner Lake:

very likely	19.8%	somewhat unlikely	20.9
somewhat likely	23.6	very unlikely	35.7

d. A visitor center/nature center at Spooner Lake:

very likely	42.6%	somewhat unlikely	8.1
somewhat likely	32.2	very unlikely	17.1

e. Rental horses for backcountry trails:

very likely	26.5%	somewhat unlikely	10.3
somewhat likely	20.7	very unlikely	42.5

f. An equestrian trailhead below Spooner Lake:

very likely	5.7%	somewhat unlikely	19.3
somewhat likely	5.1	very unlikely	69.9

g. A bike trail from Incline Village to U.S. 50:

very likely	47.3%	somewhat unlikely	7.7
somewhat likely	18.3	very unlikely	26.7

The 1987-88 park user survey asked visitors to list their favorite activities. As already indicated, relaxing outdoors, motorboating and family picnicking were most favored by the respondents from the Sand Harbor/ Highway 28 areas. Hiking/walking, relaxing outdoors and lake fishing were most preferred by respondents from the Spooner Lake/Backcountry areas. Respondents at Cave Rock favored lake fishing, relaxing outdoors and motorboating.

In addition to this information, the Division uses participation rates published in the 1987 SCORP as indicators of recreation demand. This data only reflects current participation, however, and not demand for recreational opportunities that may not currently exist in any one area.

Despite certain limitations in the data, examining participation rates and recreation desires can show important relationships. Table 2-4, Recreational Activities Comparison, shows the six outdoor recreational activities in Planning Region I that received the highest rates of participation. For comparison, this table also shows the six favored outdoor recreation activities. This information was gathered during the 1986 State Parks telephone survey.

Table 2-5

RECREATIONAL ACTIVITIES COMPARISON: PLANNING REGION I

(1986 State Park Telephone Survey)

ACTUAL PARTICIPATION RATES*	DESIRED ACTIVITY*
Relaxing Outdoors	Lake Fishing
Swimming	Swimming
Bicycling	Hiking/Walking
Pleasure Driving	Downhill Skiing
Hiking	Tent Camping
Gardening	Water Skiing

*Ranked from highest to lowest

This comparison suggests that activities in which Region I residents wish to participate are not necessarily the ones in which they actually participate. The main reason given to explain this situation was lack of time. Other common reasons noted were: too expensive, seasonal activity, lack of facilities, and other.

5. Latent Demand for Various Activities

Latent demand for park associated activities is derived by determining those activities which, if provided, would generate use. The 1987-88 park user survey asked what facilities, services or activities not currently offered in the park would be taken advantage of if available. Of respondents at Sand Harbor/Highway 28, showers, overnight camping, boat rental, ranger talks, and a boat wash area were listed as possible facilities. Respondents in the Spooner Lake area listed such facilities as overnight camping, showers, and guided backcountry tours. Of those responding at Cave Rock, picnic sites and a bait stand/snack bar were listed.

A drawback in using this data to determine recreational demand and/or latent demand in a specific park involves the kind of experience appropriately provided by the State Park system. Some activities are better provided by the private sector, or other levels of government. The state system cannot, and should not, meet all recreational needs in any one region.

C. RECREATION SUPPLY

1. This Park

Lake Tahoe-Nevada State Park provides the visitor with the opportunity to enjoy the scenic beauty of Nevada's highest and cleanest lake and to enjoy the natural resources of the Carson Range. Developed recreation facilities include:

a. Sand Harbor Unit
   1. Boat Launch Area, including boat trailer parking, ramp and dock, and restroom.
   2. Group Use Area, including ramada, restroom, and vehicle parking.
   3. Main Beach Area, including guarded swimming beach, vehicle parking, restrooms, and picnicking.

b. Highway 28 Corridor Area
   1. Off-highway parking for Memorial Point scenic overlook
   2. Trails connecting highway to selected beaches
   3. Hidden Beach swimming area

c. Cave Rock Unit
   1. Boat Trailer Parking
   2. Ramp and Dock
   3. Restroom
   4. Vehicle Parking

d. Spooner Lake Unit
   1. Day Use Area, including picnicking, vehicle parking, and restrooms
   2. Trailheads and trails
   3. Group Use Area, including ramada (seasonal ski lodge) and vehicle parking
   4. Reservoir for fishing and non-motorized watercraft.

e. Marlette-Hobart Backcountry Area
   1. Designated backcountry trails
   2. 2 primitive campgrounds

2. Other Facilities in Region

Other public recreation providers on the Nevada side of Lake Tahoe include Douglas and Washoe Counties, the U.S. Forest Service, and the Incline Village General Improvement District (IVGID). On the California side, the state, counties, and U.S. Forest Service provide additional recreation opportunities. The county agencies provide day use facilities around the Basin such as picnic areas, beaches, ball fields, tennis courts, swimming pools, and turf areas. The U.S. Forest Service provides additional boating facilities and beaches, as well as interpretive areas and campgrounds. IVGID supplies a variety of day use facilities, some of which are available only to residents of Incline Village.

Private recreation suppliers in the area provide a wide variety of winter and summer activities, both indoor and outdoor, for visitors of all ages.

D. SUPPLY/DEMAND ANALYSIS

1. SCORP

Data available for evaluating supply and demand has many flaws. First, different activities are often appropriately provided by different recreation suppliers. Where these overlap, determining the state's share is difficult. In addition, since SCORP data is collected within planning regions, determining the recreation needs in a particular park is difficult. The only reliable indicators for recreation needs on a park specific basis is the park user survey. Also, because the natural and cultural resources of each State Park differ, activities that may be possible and appropriate at one park may not be in another. And thirdly, determining recreation need for

activities not included in the SCORP analysis becomes little more than a guessing game with no numerical data to review.

2. Projected Numbers and Trends

Despite these flaws, the 1987 SCORP identifies supply, demand and need for many recreation activities in Planning Region I. The following table shows this analysis for picnicking, camping, fishing, swimming, and hiking/backpacking within the region.

Table 2-6
RECREATION SUPPLY, DEMAND, AND NEED
REGION I

	1986	1990	1995	2000
Picnicking, No. of Tables				
Demand	1498	1732	1973	2229
Supply	1457	1457	1457	1457
Need	41	275	516	772
Camping, Tent - Number of Sites				
Demand	1781	2083	2394	2724
Supply	297	297	297	297
Need	1484	1786	2097	2427
Fishing, Miles of Stream				
Demand	1616	1843	2099	2360
Supply	64	64	64	64
Need	1552	1779	2035	2296
Swimming, Number of Pools				
Demand	106	122	139	158
Supply	28	28	28	28
Need	78	94	111	130
Hiking/Backpacking, combined - Miles of Trails				
Demand	517	602	691	784
Supply	131	131	131	131
Need	386	471	560	653

3. Impact on Park Carrying Capacity

Recreational carrying capacity may be defined as the level of recreational use which an area can withstand while providing a sustained quality of recreation. At present, the Sand Harbor and Cave Rock Management Areas often fill to their existing

capacities during the summer months. This limit appears to be the threshold at which the quality of the experience can be maintained. Facility development in these areas should proceed with care.

4. Role of Park in Meeting Demand

Of the activities identified in the 1987 SCORP analysis, Lake Tahoe-Nevada State Park currently provides facilities for swimming, fishing, hiking and picnicking, as well as limited facilities for primitive camping. Opportunities exist for expanding some of these facilities in several areas, while maintaining the quality of the visitor's experience.

Activities not included in this analysis, though appropriate or provided at this park, include: historic and/or natural science interpretive areas, group picnicking, boating, mountain biking, horseback riding, cross-country skiing, and special events. Lack of specific data requires recreation need for these activities be evaluated through discussions with visitors and staff members. This effort will be explained in better detail in Chapter 4.

Using information provided by the 1987-88 Park User Survey, Lake Tahoe-Nevada State Park helps meet the demand for nearly all activities including: relaxing outdoors, hiking/walking, fishing, boating, picnicking, water skiing, nature study, pleasure driving, mountain biking, horseback riding, cross-country skiing, camping and swimming.

E. LAND USE TRENDS

1. Ownership

The majority of lands surrounding Lake Tahoe-Nevada State Park are owned by the federal government and managed by the U.S. Forest Service (Figure 2-1). Within these lands are small, privately owned parcels both within the Carson Range and along the lake shore. Privately owned lands are also found at Incline Village to the north of the park, at Lakeview Estates to the northeast and at Glenbrook to the south. Also to the north is Little Valley, managed by the University of Nevada, Reno.

As shown on the Ownership map, figure 2-1, property ownership is mixed to the east, with large areas owned by the Carson City Water Company and the town of Carson City. Within the park, state lands are managed both by the Division of State Parks and the Division of Buildings and Grounds, as shown on figure 2-2.

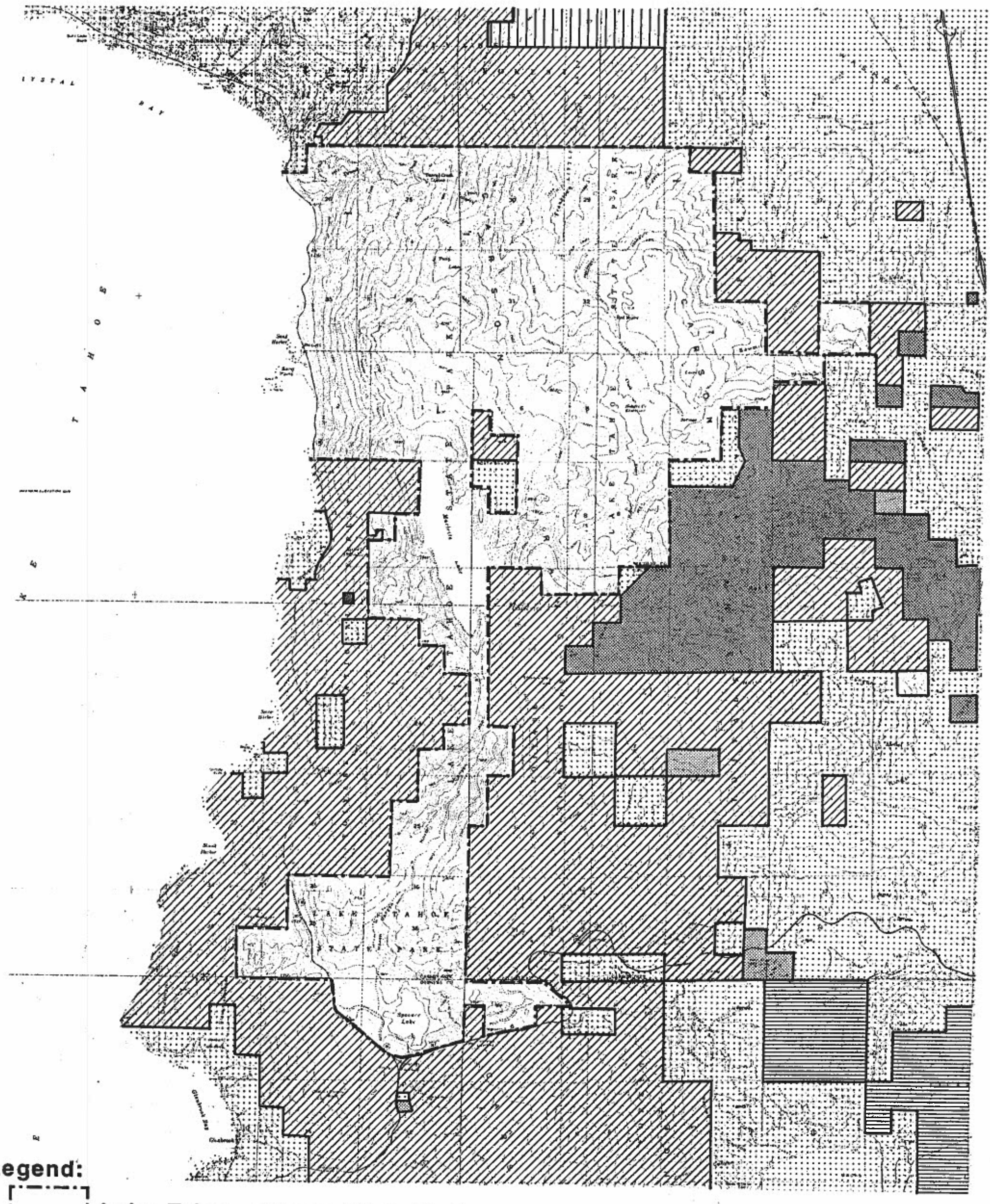


Figure 2-1

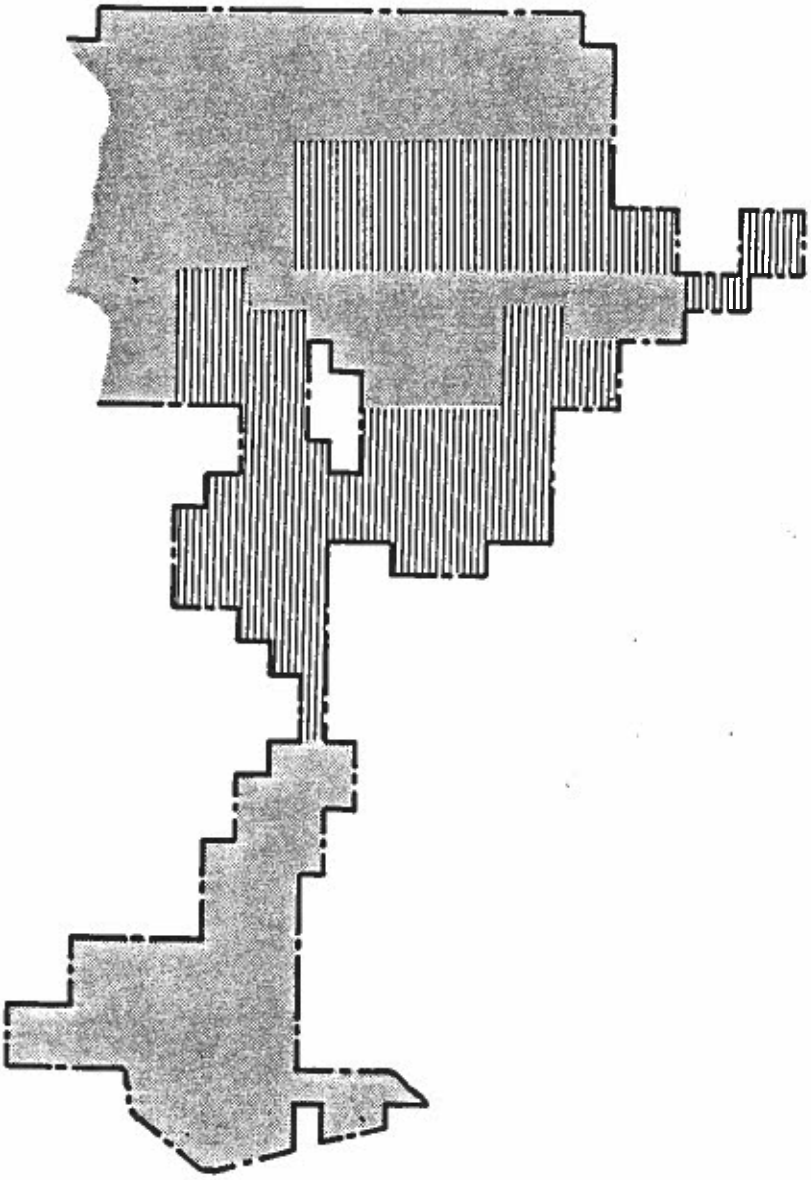
LAND OWNERSHIP

Lake Tahoe-Nevada State Park

Development Plan

1989

Figure 2-2



State Managed Lands within Lake Tahoe-Nevada State Park

State Parks Land

Curtis Wright/Buildings & Grounds Lands

2. Land Use

Land use in the region surrounding Lake Tahoe-Nevada State Park is predominantly undeveloped forest lands, most of which are managed by the U.S. Forest Service. In addition to the developed recreation sites at Sand Harbor, Spooner Lake, and Cave Rock, the privately owned Ponderosa Ranch at Incline Village draws a great number of tourists to the area. The Glenbrook Golf Course, south of the park, is also privately owned, providing facilities for both the residents of Glenbrook and members of the public.

Swimming and hiking are important recreation activities throughout the area. During the warm summer months, when these activities are at their peak, the limited shoulder space along State Route 28 is over-crowded with vehicles. Bicyclists also compete for limited highway space, frequently causing dangerous driving conditions.

Residential development near the park is concentrated at Glenbrook and Incline Village. Scattered homes can also be found along the lakeshore (see Zoning and Land Use, figure 2-3).

Commercial businesses, casinos, and ski areas can be found at Incline Village to the north, and in the Zephyr Cove/Stateline area to the south.

3. Zoning

Zoning information for each of the three relevant counties was gathered during the planning process. Residential zoning densities differed with each county, and are summarized on figure 2-3. Low density residential development is found in Glenbrook, along the lake shore, and on the eastern side of the Carson Range in Carson City.

Medium and high density residential development, as well as commercial zoning near the park, is concentrated in Incline Village, Zephyr Cove, and Carson City.

4. Access/Transportation

State Route 28 provides primary access to the park, intersecting U.S. Highway 50 at Spooner Summit, and State Route 431 at Incline Village. Access within the developed recreation areas, including the Sand Harbor and Spooner Lake units, is provided via paved, 2-lane park roads. The backcountry area is accessible by a series of hiking trails and service roads (see figure 2-4, Access and Circulation).

U.S. Highway 50 and a paved entry road provide access to the Cave Rock unit.

5. Trails

Numerous trails can be found throughout the backcountry area (see Access and Circulation, figure 2-2). From the east, Ash Canyon, Lakeview, and Kings Canyon serve as primary trailheads. Within the park, trails from Lakeview and Ash Canyon are legally accessible only by foot.

From the south, two major trailheads are located in the Spooner Lake area. The North Canyon Trail connects Marlette and Spooner Lakes, and provides backcountry access for service vehicles. The Tahoe Rim Trail, planned as a 150-mile hiking trail encircling the Tahoe Basin, will pass through Lake Tahoe-Nevada State Park, and is currently under construction. The State Park segment will connect Spooner Summit and Tahoe Meadows.

Tahoe Meadows, along the Mt. Rose Highway, serves as a northern trailhead for the proposed Tahoe Rim Trail, as well as for the trails to Price Lakes, Washoe Valley, and Little Valley. A trail at Tunnel Creek provide access to the backcountry area from State Route 28 to the west.

6. Utilities

The locations of utilities corridors are shown on the Existing Utilities map, figure 2-5.

a. Water

Water at the Sand Harbor and Spooner Lake Management Areas is supplied by wells owned and operated by the Division of State Parks. The Cave Rock Management Area receives water from the Cave Rock Water Company.

b. Electrical Power

The Sierra Pacific Power Company supplies electrical power to the Sand Harbor and Spooner Lake Management Areas via an underground power line entering the park from the north. Power to Cave Rock is also supplied by Sierra Pacific Power.

A major 120 kv power transmission line also enters the park on the eastern boundary near Lakeview and leaves the park near Incline Village.

c. Telephone Service

Nevada Bell provides telephone service to the Sand Harbor Management Area, and Contel services the Spooner Lake and Cave Rock Management Areas.

d. Sanitation

Sewage generated within the Tahoe Basin must be treated and then exported. No septic tanks, or similar treatment facilities which allow sewage to enter the ground, are allowed in the Tahoe Basin. At Sand Harbor, the Division of State Parks maintains a small tertiary treatment plant, from which treated sewage is emptied into the Incline Village General Improvement District export line. This line parallels Highway 28, passes Spooner Summit, drops into the Carson Valley, and eventually empties into the Carson River.

At Spooner Lake, sewage is kept in holding tanks that are pumped and exported outside the basin. The Division of State Parks maintains a lift station at the Cave Rock Management Area, from which untreated effluent is pumped into the Douglas/Tahoe sewer district.

e. Other

Southwest Gas Corporation operates a major gas line which traverses the park. It enters the park near Lakeview to the east, and leaves the park along Tunnel Creek Road at Incline Village.

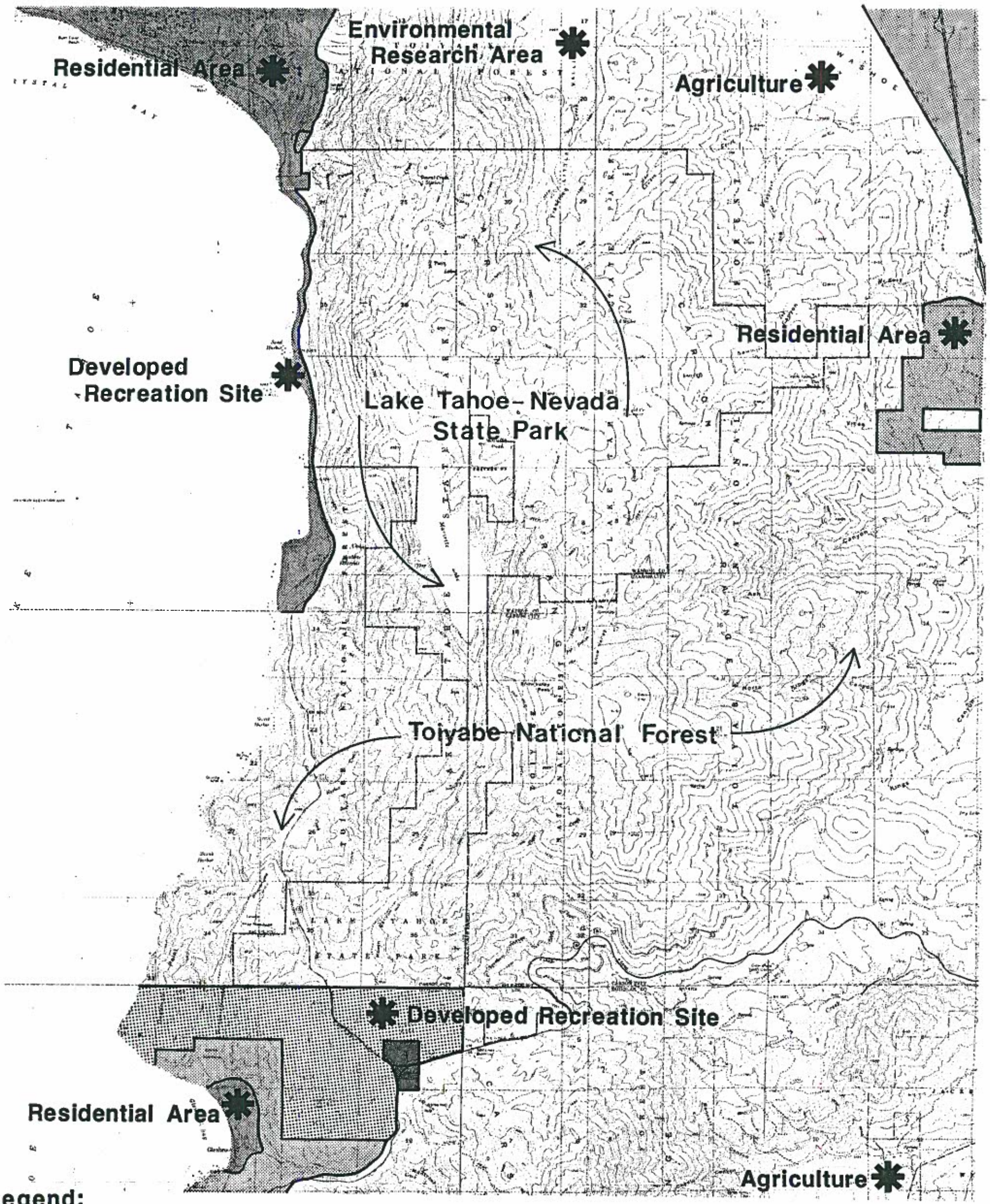


Figure 2-3

ZONING & LAND USE

Lake Tahoe-Nevada State Park

Development Plan

0 1/4 1/2 1mi 2mi 3mi

N

1989

Legend:

- Notes on Land Use
- Limited Commercial
- Open Reserve: Farm & Forestry
- Single Family : 5 acres
- Single Family : 1 - 2.5 acres
- Single Family : < 1/2 acre

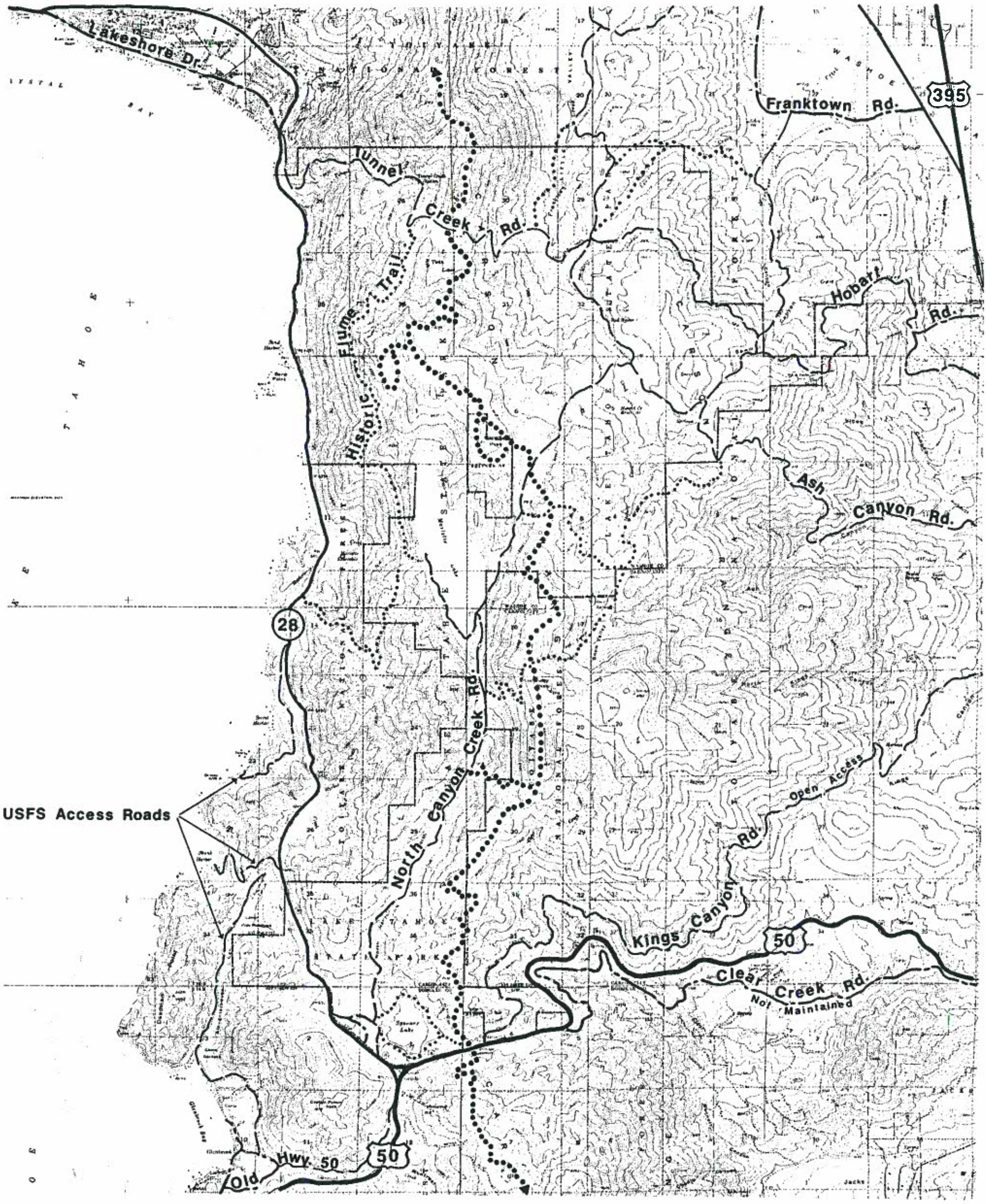


Figure 2-4

ACCESS & CIRCULATION

Lake Tahoe–Nevada State Park

Development Plan

Legend:

- Highway
- Light Duty Paved
- Unimproved Dirt: Restricted Access
- Tahoe Rim Trail
- Other Hiking Trails

N

0 1/4 1/2 1mi 2mi 3mi

1989

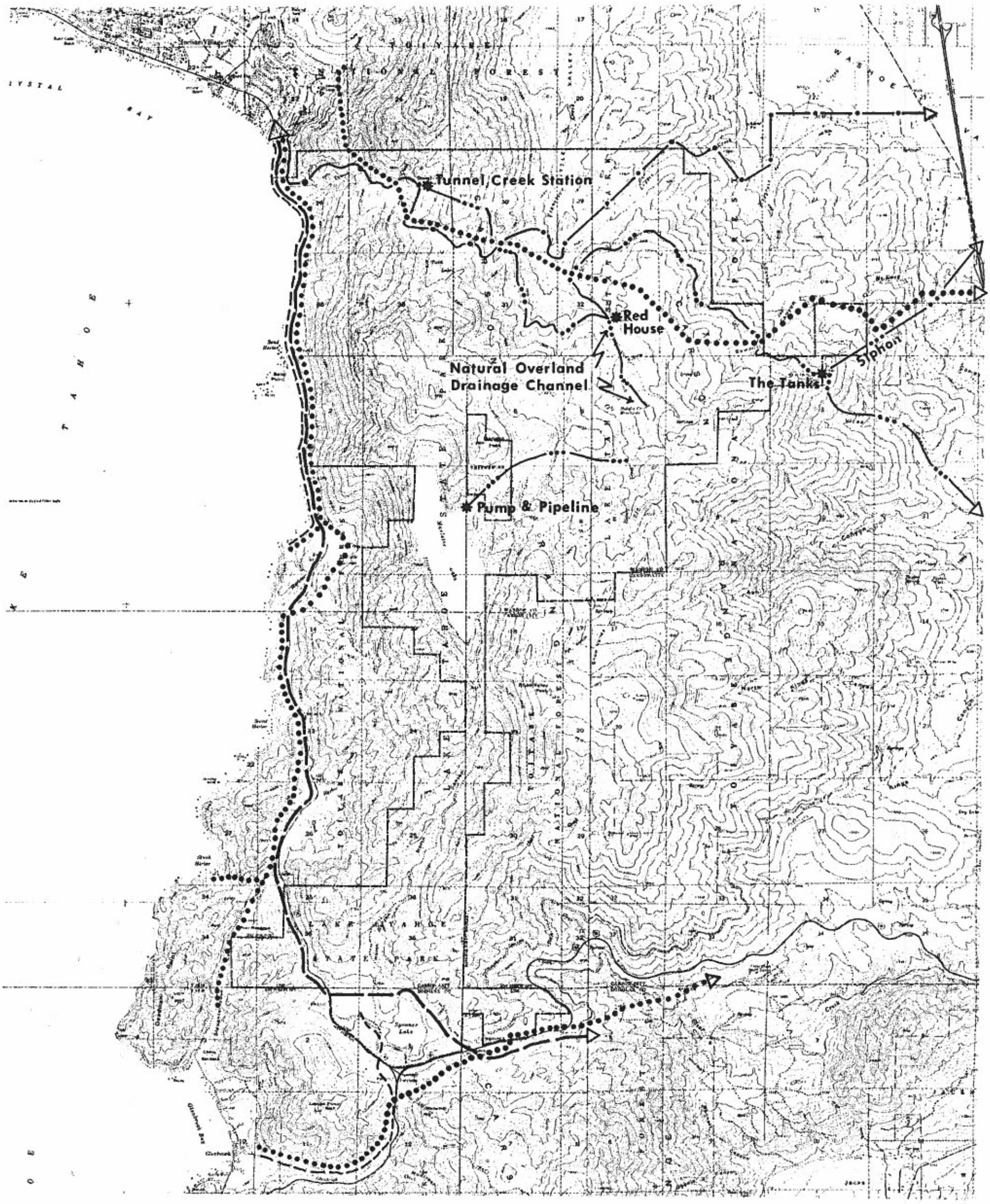


Figure 2-5

Legend:

- Gas Line
- Power Line
- Sewer Line
- Telephone Line
- Water Line

EXISTING UTILITIES

Lake Tahoe–Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989

CHAPTER III: EXISTING PARK

A. NATURAL RESOURCES

1. PHYSIOGRAPHY/SLOPES

The area covered by the Lake Tahoe Basin is slightly more than 500 square miles, of which 315 square miles is land, and 191 square miles is water surface. This alpine basin is in an eastward bulge of the Sierra Nevada, with the Carson Range forming the highlands to the east, and the Sierran crest to the west.

Elevations range from about 6,225 feet (mean level of the lake) to 10,887 feet at Freel Peak in the southeastern part of the basin. Within the park, Snow Valley Peak is the highest point, reaching an elevation of 9,214 ft, while Marlette Peak attains 8,780 ft. Several peaks more than 9,000 feet high rise along the crest of the ranges that rim the basin. Maximum legal elevation of the Lake's surface is 6,229 feet; minimum legal elevation is 6,223 feet. A concrete dam built in 1865 controls release of Lake Tahoe water to the Truckee River, its only outlet, which drains into Pyramid Lake northeast of Reno.

With a maximum depth of about 1,645 feet, Tahoe is the third deepest lake in North America. It's volume is about 122 million acre feet (40 trillion gallons), and it is fed by 63 tributary streams (TRPA: Geology Committee, 1971).

In general, the topography of Lake Tahoe-Nevada State Park consists of many steep (30%-70%) slopes with minor valley flats, as shown on the Slope Analysis map, figure 3-1. Stream erosion has dissected the area into intricate arrangements of V-shaped canyons with numerous intermittent drainage channels. Some areas have been denuded of soil by accelerated erosion on over-steepened slopes.

2. GEOLOGY

In the southern part of the Tahoe Basin is a flat plain of lake bed deposits, glacial outwash and glacial moraines bounded by high peaks of granite and metamorphic rocks. The northern part of the basin consists of extensive volcanic rocks. The basin was formed by faulting and the lake occupies a down-dropped block or graben that is bordered by steep faults. The box-like shape is characteristic of other basins in the Basin and Range physiographic province to the east.

Major landforms within the Lake Tahoe Basin and nearby areas were formed by faulting, warping, and combinations of both. Faults along the margins have not been delineated in detail. However, the physiographic expression of the steep, near vertical drop-off areas along the shoreline clearly suggest that steep faults bound the basin.

The oldest rocks here are sedimentary and volcanic rocks that have been metamorphosed and are now preserved as remnants in granitic rocks. These older rocks are sporadically exposed in the eastern and western parts of the basin, mainly along the crest of the basin divide.

Granitic rocks underlie the entire basin; however, in the northern and northwestern parts, the basement rocks are covered by younger Tertiary and Quaternary volcanic rocks. These are mainly mudflow breccias, basaltic flows, and minor masses of intrusive volcanic rocks and sedimentary rocks that were derived through the erosions of the volcanic and granitic rocks. Younger glacial moraines, tills, glacial outwash, and lake bed sediments form extensive deposits in the southern part of the basin. Similar but less extensive deposits lie to the northwest and are much less common in the eastern part of the basin in Nevada (TRPA: Geology Committee, 1971).

Within the park (as shown on figure 3-2, Geologic features), a biotite-hornblende monzogranite is the predominant formation, and is found in association with other ingeous units such as the hornblende-biotite quartz monzodiorites and granodiorites typical of the Carson Range. Near Spooner Lake is a large area of metaconglomerate and metasandstone. As described above, volcanic rocks are exposed in the higher elevations, such as Marlette and Snow Valley Peaks. These volcanic rocks include andesite and basalt flows, tuffs, breccias, and conglomerates. Intermixed with these units, particularly in low-lying areas, are accumulations of sandy boulder colluvium and older sandy alluvium. The beaches of Sand Harbor are composed of older beach sands, which have accumulated through wave action (Nev. Bureau of Mines and Geology: Carson City, 1977, Genoa, 1980, Glenbrook, 1985, and Marlette, 1986).

Throughout the park, fault traces are evident. These faults generally trend north-south and northeast-southwest (Nev. Bureau of Mines and Geology, Carson City, 1977, Genoa, 1980, Glenbrook, 1985, and Marlette, 1986).

3. WATER RESOURCES

Water clarity is one of Lake Tahoe's most unusual characteristics. Plant and animal life now present at great depths depend upon water clarity for transmittance of sunlight's energy. Today, both the quality and quantity of water in the basin are of great concern.

Hydrologic conditions in the basin are a function of the climatic and physical characteristics of its 63 sub-basin drainages. With the exceptions of the upper Truckee River and Trout Creek drainages, which have formed valleys and comprise about 30% of the basin watershed area, the drainages are characterized by small but steep gradient channels emptying directly into Lake Tahoe.

Drainage channels comprise only a small part of any drainage basin, but they are critically important since they provide a well integrated system for transporting water and sediment from the drainage basin. These stream environment zones (SEZ), as identified by the Tahoe Regional Planning Agency, consist of the natural marsh and meadowlands, drainageways, and floodplains which provide surface water conveyance from upland areas into Lake Tahoe and its tributaries. The preserva-

tion of SEZ's is an integral ingredient for improving and maintaining the various environmental amenities of the Lake Tahoe Basin (TRPA, 1984).

After the basin was sewered in the late 1960's and early 1970's, with all effluent exported, the primary threat to water quality became erosion resulting from land disturbing activities. Runoff, erosion, and sedimentation resulting from land disturbance and development appear to be accelerating the natural aging (eutrophication) of Lake Tahoe. Studies indicate that the water quality of the near-shore areas of Lake Tahoe and some of its tributaries has significantly deteriorated over the last 25 years. Massive algal growths are occurring near the mouths of several tributaries and in the shallow waters near the outlet at Tahoe City. These algal growths are attributed to an increased supply of nutrients (nitrogen, phosphorous, etc.) delivered to the lake by accelerated surface runoff and erosion from urban areas. This increased runoff has adversely affected sensitive stream and lake biotic life (USFS, 1973).

The top 6 feet of the lake are regulated as a reservoir. About 720,000 acre feet are available for local and downstream use, and over 400,000 acre feet evaporate from the lake's surface each year. The California-Nevada Interstate Compact sets the amount of water that can be diverted from the lake at 34,000 acre feet annually to assure adequate flows for downstream Truckee River and Pyramid Lake water uses. There are extensive demands on this supply, and in many places, both in the basin and downstream, extensive disputes over water rights have taken place (USFS, 1985).

In addition to Lake Tahoe, there are three other significant water bodies found within the Lake Tahoe-Nevada State Park: Marlette Lake, Hobart Creek Reservoir and Spooner Lake (see figure 3-3, Surface Waters).

In the backcountry, the Marlette Lake watershed covers approximately 1860 acres. The lake surface area is approximately 352 acres and contains some 11,000 acre feet of water. At present, the water is used to replenish Hobart Creek Reservoir via pumps and a discharge pipeline, as the need arises. The lake is also used by the State Dept. of Wildlife for a cutthroat trout spawning operation.

The Hobart Creek Reservoir watershed area covers approximately 2110 acres, of which 1630 acres drain into the reservoir. The remaining 480 acres of this drainage area lie below the dam and above the Red House diversion dam. The reservoir is approximately 22 feet deep and can store about 100 acre feet of water. Currently, this water is stored for use by Virginia City, Lakeview and the State office complex in Carson City. The reservoir is also a popular fishing area.

Quantities of inadequately treated water have entered the distribution systems. Excessive chlorine demands result from receipt of water which contains sediment and/or colloidal suspended solids of vegetable origin. The open reservoir allows the chlorine to dissipate, such that the residual necessary to maintain bacterial

purity is lost. Unprotected storage can also allow recontamination by animal waste and wind blown solids.

Water from Hobart Creek Reservoir runs over the surface of the ground to the diversion dam at Red House before entering the piped water system. This water picks up additional contaminants from livestock, wildlife, and vehicles crossing the drainage. Pumping water from Marlette Lake to Hobart Creek Reservoir requires a diesel engine-driven pump, oil tank and associated plumbing, an oil service truck and periodic maintenance of the facility. This operation contributes to the pollution of the watershed, generates noise during pumping and creates a potential fire hazard. The Marlette-Hobart Management Plan (Nev. Division of Forestry, 1978) outlines management policies for the preservation and improvement of the watersheds.

Spooner Lake, at an elevation of 6,983 ft., covers 100 surface acres and stores approximately 1,580 acre-feet of water. The lake is being kept below maximum storage to protect an archaeological site nearby. Spooner Lake is fed by snowmelt from its 608 acre watershed, and from seeps and springs. Nevada State Parks releases water in the spring to maintain a lake level below the elevation of the archaeological sites, after which the water is shut off.

Between 1973 and 1988, nearly 18,000 fish were stocked into Spooner Lake by the Nevada Department of Wildlife (NDOW). Of these, 5,190 were brook trout, and were all subject to winterkill. Members of the remaining three species (rainbow trout, cutthroat trout and brown trout) are still present in the system, although unable to reproduce. Their numbers must be supplemented through stocking. Lahontan tui chub appear to be native to Spooner Lake, and have greatly increased in number since the lake's area was enlarged following reconstruction of the dam in 1981/82.

Oxygen levels have been closely monitored by (NDOW), as these levels appear to be the main limiting factor for winter trout survival. During the summer months, oxygen levels are directly related to aquatic plant activity, and are suitable for fish survival. These levels are typically between 4 and 5 ppm, and occasionally may reach 13 ppm. Oxygen levels during the winter, however, drop dramatically with depth. This is due to ice which often forms on the surface. During the winter of 1982/83, for example, oxygen levels under 2 feet of snow and 3 feet of ice registered less than 1 ppm oxygen over the entire water column. It was during this winter that the brook trout winterkilled and several thousand tui chubs perished.

The apparent factor leading to winter trout mortality is prolonged snow cover over ice, which limits light penetration. In order to alleviate this problem, a small floating windmill was installed by NDOW in 1986 to provide open water during the winter months, but has often been found broken, tipped over or frozen in the ice. During the winter of 1988/89, however, the windmill worked without incident, and maintained a hole some 30 feet in diameter in the center of the lake.

Spooner Lake will continue to be managed as a catch and release lake. To qualify as a trophy fishery, the water should provide a 100% increase in growth from stocking for a catchable trout. Although this has yet to be accomplished at Spooner Lake, it will remain a goal for the future by the Nevada Department of Wildlife (NDOW: Draft Report, 1989).

A number of streams are found throughout the park (figure 3-3), particularly in the backcountry area. One characteristic of streams in the area is the tremendous variation between maximum and minimum flows. Maximum flows may reach up to 10,000 times the minimum flows. The volume can vary greatly during periods of heavy runoff. The Surface Waters map, figure 3-2, shows annual and intermittent streams within the planning area, as well as TRPA quality ratings for streams within the basin. To summarize, only North Canyon Creek has been found to have excellent water quality. Those streams with good water quality include Marlette Creek and Secret Harbor Creek. All remaining annual streams have marginal water quality (TRPA: Stream Habitat Quality, 1987).

4. VEGETATION

More than 500 species of native plants and at least 160 introduced species may be found within the Tahoe Basin. Plant communities can be divided into horizontal segments according to the type and height of the plants growing in them.

Plants generally distribute themselves according to their ability to grow under various ranges of moisture. They are limited principally by their ability to establish themselves and survive under the maximum or minimum extremes of available water. Variation in topography is another parameter affecting plant communities, by influencing transpiration rates, growing periods, available sunlight, soil types, soil parent material, and soil depth.

Vegetation throughout the Carson Range has considerable diversity. Surveys conducted by the U.S. Forest Service, Carson Ranger District, and the Nevada Department of Wildlife have identified several old growth timber stands within Lake Tahoe-Nevada State Park. These stands represent distinct ecosystems in comparison to other vegetation communities, and are typically dominated by red fir, with western white pine, lodgepole and some mountain hemlock as co-dominants. They provide an area that is diverse biologically as well as adding biological diversity to the landscape. In addition to wildlife habitat, old growth forests also serve as a model of forest renewal and nutrient cycling, and do not exhibit the epidemic insect and disease outbreaks which plague many western second growth stands.

The lumbering industry which boomed in the 19th century nearly stripped old growth timber from the Carson Range. Those remaining stands are commonly found on over-steepened slopes, and other areas too difficult to have been cut. In the Carson Range, existing old growth forests can be found in Little Valley, north of Marlette Lake, and within the Clear Creek drainage near Snow Valley Peak (see

Habitat Analysis map, figure 3-4). The USFS and NDOW survey also identified tracts of timber which do not presently qualify as old growth, but which could serve as habitat corridors linking the fragmented old growth tracts into a functional management unit.

Even though the area was intensely logged in the last half of the nineteenth century, today it has an extensive second growth of mixed conifer. Typical plant associations include: mixed conifer, riparian-deciduous, chaparral, meadow, aquatic-emergent, and alpine scrub associations. Some of the plant communities are stratified according to elevation, but conifers and mountain meadow associations are found at all levels.

The following lists include those species identified as growing within Lake Tahoe-Nevada State Park, and were obtained from TRPA Vegetation Overlays (1987). A complete list of species inhabiting the Tahoe Basin may be found in Appendix 3.

Mixed conifer association: is comprised of three principal plant communities. A yellow pine forest encircles Lake Tahoe from its shoreline to an elevation of 6,400 feet. Extending upward from the pine forest to an elevation of 9,000 feet is the red fir forest. Whitebark pine and mountain hemlock comprise the subalpine forest above 9,000 feet.

Mixed Conifer Forest: Dominant Species

Red fir	Abies magnifica
Jeffrey pine	Pinus jeffreyi
Ponderosa pine	Pinus ponderosa
Whitebark pine	Pinus albicaulis
Lodgepole pine	Pinus contorta latifolia

Riparian deciduous association: occurs in moist soils adjacent to streams and lakes. Rich soils and available water provide favorable conditions for a wide variety of plant species along riparian corridors, making this one of the most important plant communities in the Basin.

Riparian-Deciduous Association: Dominant Species

Alder	Alnus sp.
Willow	Salix sp.
Quaking aspen	Populus tremuloides
Black cottonwood	Populus trichocarpa

Chaparral association: is found throughout the park primarily on the east side of the basin on dry and south-facing slopes.

Chaparral Association: Dominant Species

Tobacco bush	Ceanothus veluntinus
Greenleaf manzanita	Arctostaphylos patula
Pinemat manzanita	Arctostaphylos nevadensis
Huckleberry oak	Quercus vacciniifolia
Basin sagebrush	Artemisia tridentata
Bitterbrush	Purshia tridentata
Rabbitbrush	Chrysothamnus

Meadow associations: are an important component of the Tahoe Basin flora and can be found at all elevations. Dry meadows of mostly grasses and forbs are found in forest openings in shallow soils. Wet meadows are often found at higher elevations where decomposed granitic soils have filled depressions in the bedrock substrate and in low areas adjacent to streams and lakes. The soils of wet meadows are waterlogged year-round and support such water-tolerant species as sedges and rushes. Some meadows have both a wet and dry phase and support plant populations characteristic of both meadow types. As meadows begin to dry out and the water table lowers, the plant composition changes and the meadow becomes colonized by forest trees such as lodgepole pine.

Meadow Associations: Dominant Species

Mule ears	Wyethia mollis
Sedge	Carex ssp.
Rush	Juncus mertensianus

Aquatic-emergent association: includes emergent marsh and open-water plants. Emergent vegetation is locally abundant in shallow waters of small lakes and along certain segments of the Lake Tahoe shoreline. TRPA has identified these areas only as tall emergent marsh and short emergent marsh, without indicating specific species. Likely inhabitants are listed in Appendix 3.

Alpine scrub association: is found in the alpine environment on the northwest side of Snow Valley Peak. The dominant species of this area is the cushion plant.

Several sensitive plant species have also been identified within the Tahoe Basin (Soderberg: interview, 1989, and Clemmer: interview, 1989):

Sensitive Plant Species within the Tahoe Basin

Galena Creek Rock-cress	Arabis rigidissima var. demota
Sierra Sedge	Carex paucifructus
Tahoe Draba	Draba asterophora var. sterophora
Cup Lake Draba	Draba asterophora var. macrocarpa
Torrey's Buckwheat	Eriogonum umbellatum var. torryanum
Long-petaled Lewisia	Lewisia pygmaea ssp. longipetala
Hidden-petaled Campion	Silene invisia

One notable species, the Tahoe Yellow Cress (Rorippa subumbellata), is listed by the federal government as an endangered species. This plant is found within the Lake Tahoe-Nevada State Park, and is shown on the Habitat Analysis map, figure 3-4. Particular care should be taken to ensure that this plant and its habitat are preserved.

5. SOILS

The soils of the Tahoe Basin are predominantly derived from granitic basement rocks related to rock found throughout the Sierra Nevada. Soils formed from granitic rocks are coarse textured and rocky, low in water holding capacity and plant nutrients, high in erosion potential, and generally difficult to revegetate when disturbed.

Soils formed from volcanic rocks, found in the northern portion of the basin, are moderately deep over fractured bedrock and are stony to moderately coarse textured with finer textured subsoils. Their water holding capacity, fertility, and erosion potential are moderate.

Soils formed in alluvium, found along margins of the lake and adjacent to stream channels, occur as terraces, glacial outwashes, fans, and flood plains. They are generally very deep, high in nutrient content, have coarse to moderately coarse textures, and may be easily eroded.

Characteristically, the soils that prevail throughout the basin are very unstable even where undisturbed. When various land uses are superimposed, greatly accelerated erosion and channel sedimentation can occur. (U.S. Forest Service, 1973)
Within the park itself, a variety of soil associations exist. In general, soils are classified by the U.S. Department of Agriculture's Soil Conservation Service according to the development limitations inherent in each soil type. Included in each analysis is a brief description of the properties of the soil which cause the limitation. Although a particular soil may have several limitations to development, it does not necessarily preclude the use of a site containing that soil. Rather, it is a guide to the special design and engineering considerations which may be necessary for safe and successful utilization of such a site.

Most soils within the park have at least some limitations to facility development, and are shown on the Soils Analysis map, figure 3-5 (Soil Conservation Service: Tahoe Basin Area, 1974; Douglas County, 1984; Carson City, 1979; and Southern Washoe County, 1983). Only a few areas have slight limitations to development. Gefo gravelly loamy coarse sand, on slopes of 2 - 9%, are found at Sand Harbor. Typically, these soils are somewhat excessively drained with rapid permeability. Runoff is slow, and the erosion hazard is slight to moderate. Tahoma stony sandy loam, on slopes of 2 - 15%, occupy a large area west of Spooner Lake. This series consists of well-drained soils with moderate permeability. The runoff is generally slow to medium and the erosion hazard is slight to moderate. In the area of Franktown Creek and Little Valley, soils of the Ampat series are found. These soils consist of very deep, well drained soils with moderately rapid permeability. Runoff is slow and the hazard of erosion is slight.

Several soils within the park have moderate limitations to development. The Cagwin rock outcrop complex, on slopes from 5 - 30%, are found throughout the park, especially in stream areas. These soils are usually excessively drained with rapid permeability. Runoff within the soils is slow to moderate, and rapid in the rock outcrops. The hazard of erosion is slight. Umpa very stony sandy loam, on slopes from 5 - 15%, is found north and adjacent to Spooner Meadow. These soils are well-drained with moderately rapid permeability. Their runoff is medium, and the hazard of erosion is slight. Near Franktown Creek, adjacent to the Ampat series previously defined, and on the south side of Hobart Creek Reservoir, are Inville Variant gravelly sandy loams on slopes of 2 - 8%. Moderately slow permeability is typical of these very deep, somewhat poorly drained soils. Runoff is typically slow, with a slight hazard of erosion. Soils of the Kayo stony sandy loam, found on the eastern side of the park, are very deep and excessively drained, with moderately rapid permeability, slow runoff and slight erosion hazard.

The remainder of Lake Tahoe-Nevada State Park hosts soils with severe limitations to development. Included among them are soils of the Elmira (wet variant), Graylock, Blackwell, Toiyabe, Marla, and Gabica series. Typically, limiting factors may include high soil moisture, extremely stony texture and content, shallow depth to bedrock, and poor drainage. Other areas with severe limitation include rock outcrops and over-steepened slopes.

6. WILDLIFE

In the Tahoe Basin, some 255 wildlife species have been identified as inhabitants (see Appendix 4 for a complete species list). Most of this wildlife covers the entire park, and care should be taken to preserve habitats. Several species of birds and animals, including the bald eagle, peregrin falcon, and wolverine, are considered to be rare or endangered within the basin. Table 3-1 indicates those inhabitants which are considered threatened or endangered by the federal government and/or the State of California (Soderberg: interview, 1989).

Table 3-1
THREATENED AND ENDANGERED SPECIES
Lake Tahoe Basin

Common Name	Scientific Name	Status Fed.	Status Calif.
Am. Bald Eagle	Haliaeetus leucocephalus	E	E
Am. Peregrine Falcon	Falco peregrinus anatum	E	E
Sierra NV Red Fox	Vulpes vulpes necator		T
Wolverine	Gulo gulo luteus		T
Lah. Cutthroat Trout	Salmo clarkii henshawi	T	

E - Endangered T - Threatened

Several species are also considered sensitive within the Tahoe Basin (Soderberg: interview, 1989, and Clemmer: interview, 1989). Table 3-2 identifies these species. Special attention should be given to particular species habitat needs as shown on the Habitat Analysis map, figure 3-4.

Table 3-2
SENSITIVE SPECIES OF THE TAHOE BASIN

Common Name	Scientific Name	Source
Fisher	Martes pennanti	USFS
Spotted Owl	Strix occidentalis	USFS
Goshawk	Accipter gentalis	USFS
Willow Flycatcher	Empidonas trailii	USFS
Mono Basin Mtn. Beaver	Aplodontia rufa californica	NNHP
Lake Tahoe Benthic Stonefly	Capnia lacustra	NNHP
Northern Flying Squirrel	Glaucomys sabrinus lascivus	NNHP
Sierra NV Snowshoe Rabbit	Lepus Americanus Tahoensis	NNHP
Osprey	Pandion haliaetus	NNHP
Long-eared Chipmunk	Tamias quadrimaculatus	NNHP
Lodgepole Chipmunk	Tamias speciosus frater	NNHP
Townsend's Chipmunk	Tamias townsendii senex	NNHP
Douglas' Squirrel	Tamiasciurus douglasii albolimbatus	NNHP
Black Bear	Ursus americanus californiensis	NNHP
Marten	Martes americana	Both

USFS = United States Forest Service
NNHP = Nevada Natural Heritage Program

Wildlife is an important element in the natural ecosystem and adds much to the visual and recreational opportunities of the basin. Habitat is the sum total of environmental conditions in an area occupied by a wildlife species or population. Ability to adapt to environmental changes and constraints on their territorial requirements are the two most important factors in population levels or survival of a species. Combinations of different terrestrial vegetation types and aquatic communities are needed to provide all the essential elements necessary for the survival of any one species. Thus the availability of a variety of terrestrial and aquatic communities determines the number of species present or species diversity. The amounts of these habitats generally determines the abundance of any one species or animal population. A great majority of species in the area depend at least in part on herbaceous vegetative types which comprise less than 5% of the basin area.

Survey work directed at identifying specific animals which use old growth habitat is lacking for the east slope of the Sierra Nevada. Work describing species associations across a range of habitats is more readily available, and it is, therefore, reasonable to expect the following species may occur in old growth wildlife habitat in this area (McGraw: USFS and Neel:NDOW, 1989):

Birds:

Great Gray Owl	Strix nebulosa
Spotted Owl	Strix occidentalis
Flammulated Owl	Otus flammeolus
Peileated Woodpecker	Drycopus pileatus
Goshawk	Accipiter gentilis
White-headed Woodpecker	Picoides albolarvatus
Black-backed Woodpecker	Picoides articus
Pygmy Nuthatch	Sitta pygmaea
Brown Creeper	Certhia americana

Mammals:

Trowbridge's Shrew	Sorex trobridgii
Spotted Bat	Euderma maculatum
Northern Flying Squirrel	Glaucomys sabrinus
Western Red-backed Vole	Clethrionomys occidentalis
Sierra Nevada Red Fox	Vulpes fulva sp.
Black Bear	Ursus americanus
Pine Marten	Martes americana
Fisher	Martes pennanti
Wolverine	Gulo gulo

Amphibians:

Sierra Nevada Salamander	Ensatina eschsholtzi eschsholtzi
Southern Long-toed Salamander	Ambystorma macrodactylum sugillatum

The aquatic system of Lake Tahoe and its tributaries is complex and interrelated. It includes Lake Tahoe, the minor lakes, and all the streams in the region. Floating and attached forms of minute plant and animal life (plankton and periphyton) are the most important organisms in the fishery food web and are also the most sensitive to changes taking place. These minute biota are the food source for the larger forms of aquatic life which, in turn, comprise the segments of the food chain directly vital to game fish.

Fishing is a major summer recreational use in the Tahoe Basin. Approximately 80% of that use in Lake Tahoe is associated with lakes and the California Dept. of Fish and Game stocking programs. The remaining 20% is associated with stream habitat and self-sustaining populations. As previously noted, the Nevada Dept. of Wildlife maintains fish stocking programs in Marlette and Spooner Lakes, as well as Hobart Creek Reservoir.

The species of fish found in Lake Tahoe may be classified as game and nongame fish.

Game Fish of Lake Tahoe:

Brown Trout	Salmo trutta
Eastern Brook Trout	Salvelinus fontinalis
Golden Trout	Salmo aquabonita
Kamloops Rainbow Trout	Salmo gairdneri kamloops
Kokanee Salmon	Onchorynchus nerka kennerlyi
Lake Trout	Salvelinus namaycush
Mountain Whitefish	Prosopium williamsoni
Rainbow Trout	Salmo gairdneri

Nongame Fish of Lake Tahoe:

Brown Bullhead	Leictalurus nebulosus
Golden Shiner	Notemigenus crysoleuscicas
Lahontan Mtn. Sucker	Pantosteus lahontan
Lahontan redside	Richardsonius ergregius
Mosquito Fish	Gambusia affinis
Piute Sculpin	Cottus beldingii
Tahoe Sucker	Catostomus tahoensis
Tui Chub	Gila bicolor

Early commercial fishing and other detrimental activities affecting fish habitat have greatly depleted native gamefish populations. The native cutthroat trout (listed in table 3-1) and whitefish are but a fraction of their former populations. As previously noted, the Lahontan Cutthroat Trout is listed as threatened by the federal government.

The Tahoe Regional Planning Agency has identified resident and migratory fish populations within the Tahoe Basin. All perennial streams within the State Park have resident fish populations. Several spawning areas are found along the shoreline of the park, as are feeding and/or escape cover habitats (TRPA: Prime Fish Habitat Overlay, 1987). These sensitive fish habitat areas are shown on the Habitat Analysis map, figure 3-3. Of these areas, nearly all are considered to have excellent habitat quality.

Those perennial streams of the Carson Range outside the Tahoe Basin were studied by the Nevada Department of Wildlife in 1978 and 1979 (Warren: interview, 1989). Similar variables were tested in these streams as were tested by TRPA within the Tahoe Basin, and include stream flow, aquatic cover, substrate, fish abundance, etc. Nevada State Parks staff members compared the information obtained from both surveys, and individually ranked the habitat quality of the streams outside the Tahoe Basin. These results are also illustrated on the Habitat Analysis map, figure 3-3.

7. CLIMATE

The typical climate of Nevada consists of dry air, light precipitation and large temperature changes. The Sierra Nevada Mountains impact almost all of western Nevada's climate, by acting as a barrier to maritime air moving inland from the Pacific.

A large portion of the moisture carried by this maritime air falls as precipitation on the western slopes of the Sierra Nevadas. As the air descends the eastern slope, it is warmed by compression, so that little precipitation occurs. This "rain-shadow" effect strongly influences the climate of Nevada. The western slopes of the Sierras have reported more than 70 inches of rainfall annually. In comparison, Washoe Valley averages only 8.5 inches of precipitation annually.

Weather patterns of the Lake Tahoe Basin are variable. The lake itself has an important effect on precipitation and temperature. Because the water temperature of the lake is relatively constant, air temperatures are moderated. Shoreline areas tend to be warmer in winter and cooler in summer than areas farther removed from the lake. Precipitation is in turn affected by this temperature pattern.

Due to the large volume of water, the offshore portion of the lake undergoes only a moderate temperature change during the year. In the shallow water along the beaches, the temperatures range up to marginally comfortable swimming levels in the peak of the summer season.

Because of the altitude of Lake Tahoe, winters are cold, but they are seldom severe. During this season, the average daytime temperature at Glenbrook is approximately 44F, with an average nighttime temperature of 26F. Summers in the basin are cool and dry. Daytime temperatures average 75F, and nighttime temperatures average 44F. These warmer temperatures are generally due to the stable atmospheric conditions which predominate for several months.

Because of the varying amounts of moisture from year to year, snow cover varies greatly, with bare ground common during many winter months in the Carson Range. The average annual snowfall, however, is 200-280 inches at the 7,000 ft. elevation, and the length of the snow season changes with altitude. Precipitation during the spring and summer months generally occurs during thunderstorms in the late afternoon. At Sand Harbor, the mean annual precipitation is 20-25 inches. This amount increases steadily with elevation, and reaches a maximum of 35 inches along the basin divide. East of the basin, the amount of rainfall decreases rapidly, to below 10 inches in Eagle Valley.

The primary climatic characteristic of the basin is the short growing season caused by the high altitude. This ranges from about 70 days near the lakeshore to only 30 days in the higher elevations (Wirth and Associates, 1972).

The solar angle measures the altitude of the sun off the earth's surface. At Lake Tahoe, the sun angle at noon on June 21 (summer solstice) is 75 degrees. For park development, this angle is used to design shade structures that provide relief from the hot summer sun. Because tall conifers predominate the landscape of the park, shade structures have not been found necessary at this park.

Wind velocities are moderate, but can create wave action severe enough to interfere with small boating and with swimming on much of the shoreline at both Sand Harbor and Cave Rock.

Another aspect of the Tahoe Basin weather is the temperature inversion which frequently forms. The thickness of the inversion varies from about 20 feet to a few hundred feet.

8. AIR QUALITY

The four air quality components of greatest significance are carbon monoxide, ozone, oxides of nitrogen, and particulates. Carbon monoxide is largely produced by automobile emissions. The Highway 50 corridor through South Lake Tahoe is currently the only area with a CO problem in the basin. Like CO, ozone is largely a result of auto emissions. Visibility is affected by particulates from wood smoke, dust, sulfate and auto emissions. Oxides of nitrogen are also the products of automobile emissions and other combustion. These oxides can be deposited directly on the lake and support algal growth (U.S.F.S., 1985)

Within Lake Tahoe-Nevada State Park, air quality is very good. Clear, dry, alpine conditions prevail throughout the Carson Range.

9. PERCEPTUAL

Scenic quality is perhaps the most often identified natural resource of the Lake Tahoe Basin. The basin affords views of a magnificent lake setting within a forested mountainous environment. This combination of visual elements provides for exceptionally high aesthetic values. Throughout the park, the spectacular scenery of Lake Tahoe and its surrounding mountains is apparent. From the shoreline, the views are often long and uninterrupted. In the backcountry area, views of the Carson Range, alpine lakes, and rocky outcrops dominate.

As one approaches the park, the vastness of the lake and rugged terrain provide the visitor with an increasing awareness of the natural integrity preserved within the park. The developed areas of Incline Village to the north and the Zephyr Cove/Stateline area to the south stand in distinct contrast with the natural beauty of the park. Beyond the visual appeal of the region, the sounds and smells of the park are important components of its beauty. The songs of birds, the sound of the rippling waves and the scent of the pine trees stand as reminders of a pristine Lake Tahoe.

Perhaps the most spectacular of all views in the park is obtained from the ridge of the western escarpment of the Carson Range. The Flume Trail from Marlette Lake to the tunnel has spectacular views of the lake.

The Tahoe Rim Trail offers vistas for the eastern and western slopes of the Carson Range. The trail offers high angle look-outs which present the lake and surrounding natural features in clear outline. One can clearly discern Emerald Bay, Fallen Leaf Lake and other features which cannot be seen from lake level. One can also see Carson Valley, Carson City, Washoe Lake and distant mountains to the east.

Aside from these grand vistas, Spooner Lake represents a variety of habitat communities, from waterfowl habitat along the lake, to a wide open mountain meadow which changes color with each passing season.

The visual characteristics of the area were an important aspect in park development. Where possible, facilities were sited to blend with the surrounding environment, and materials were used to compliment the natural colors of the area. New buildings were built low to be visually unobtrusive. Revegetation of native species in disturbed areas has also been an important planning objective.

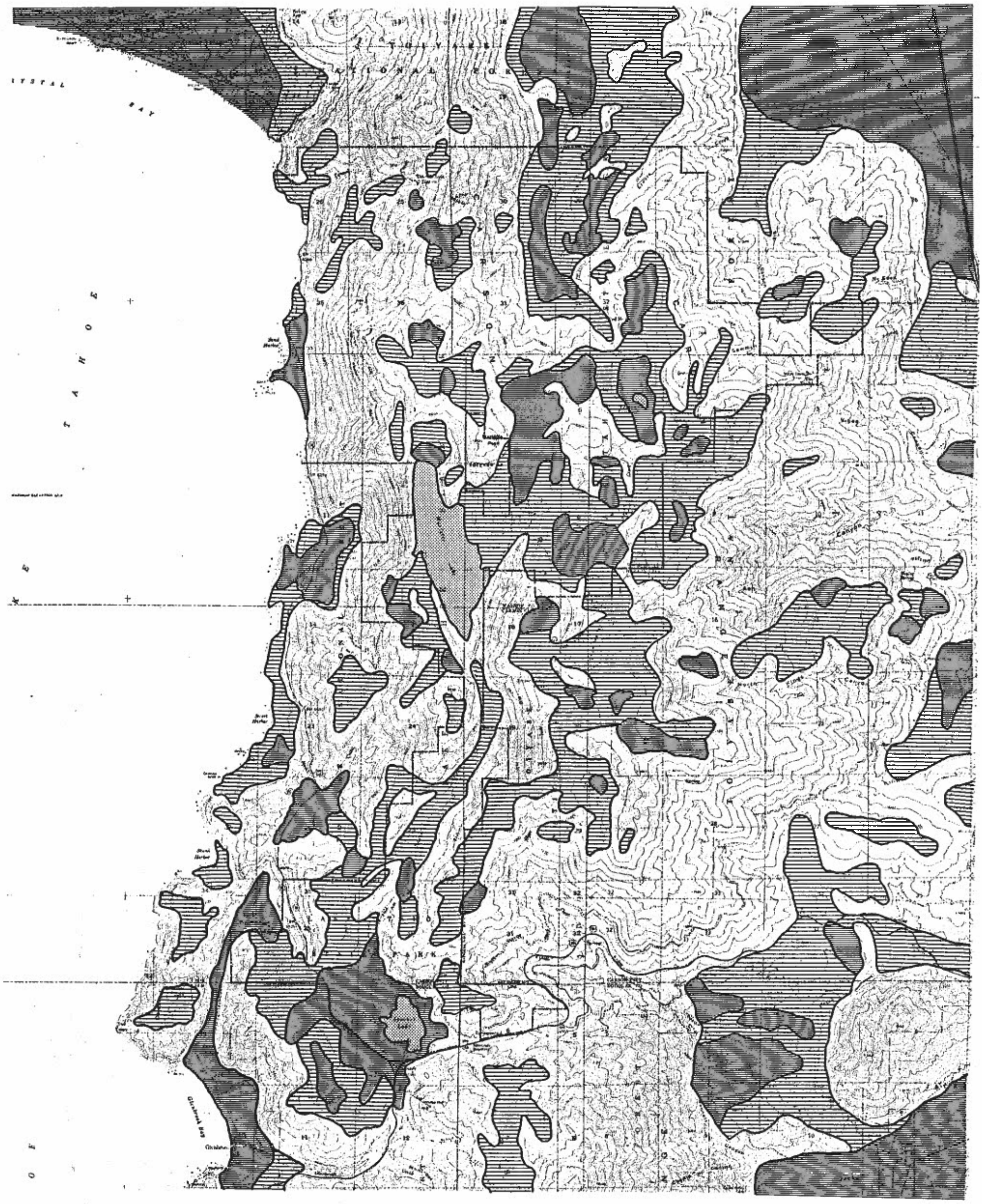


Figure 3-1

Legend:

- 0 - 15 % Slopes
- 16 - 30 % Slopes
- Over 30 % Slopes
- Water Body

SLOPE ANALYSIS

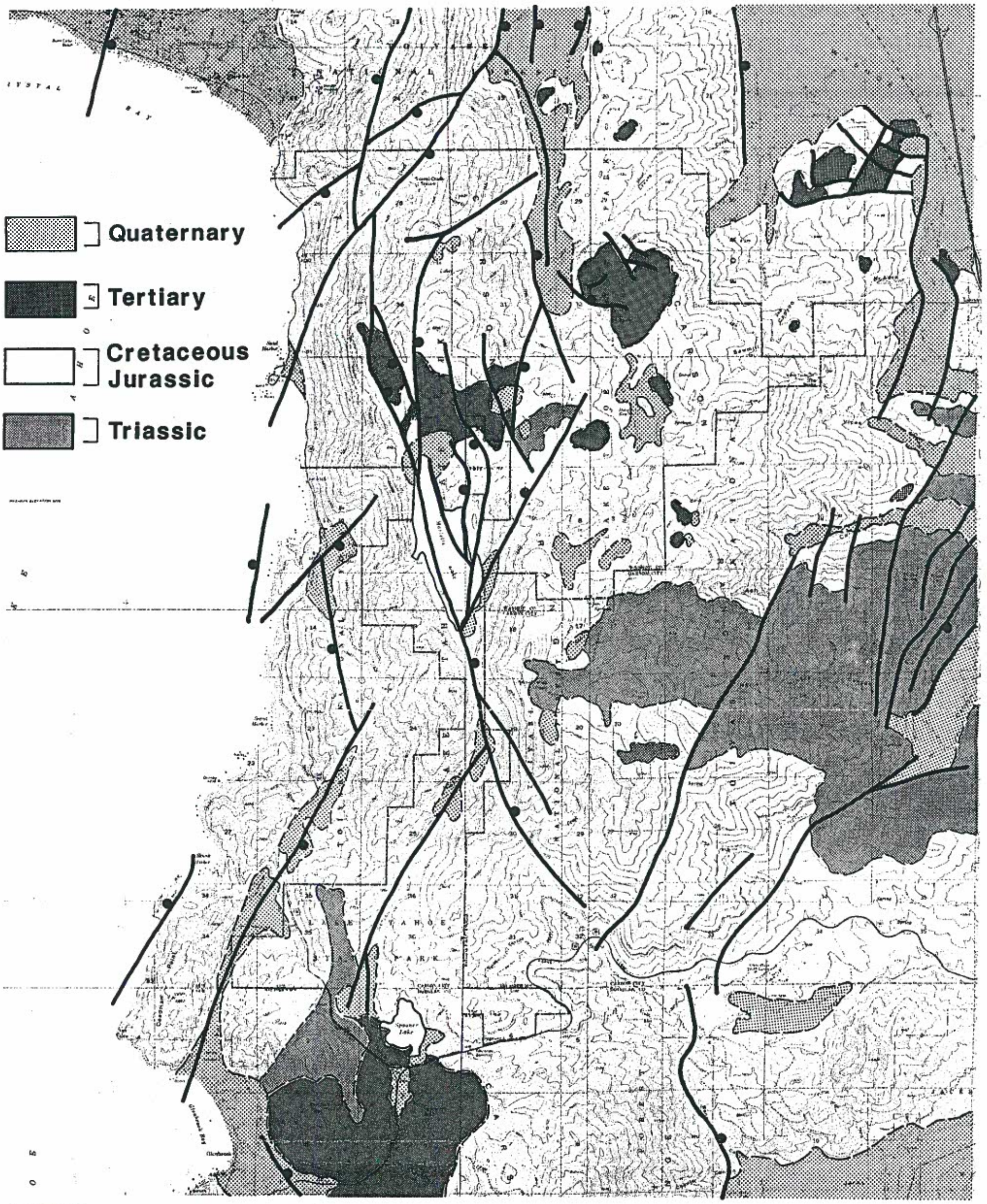
Lake Tahoe-Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989



Legend:

Rock Types:

- Igneous - Plutonic
- Igneous - Volcanic
- Metamorphic
- Alluvium, Colluvium, & Other Deposits
- Fault: Ball on downthrown side.

Figure 3-2

GEOLOGIC FEATURES

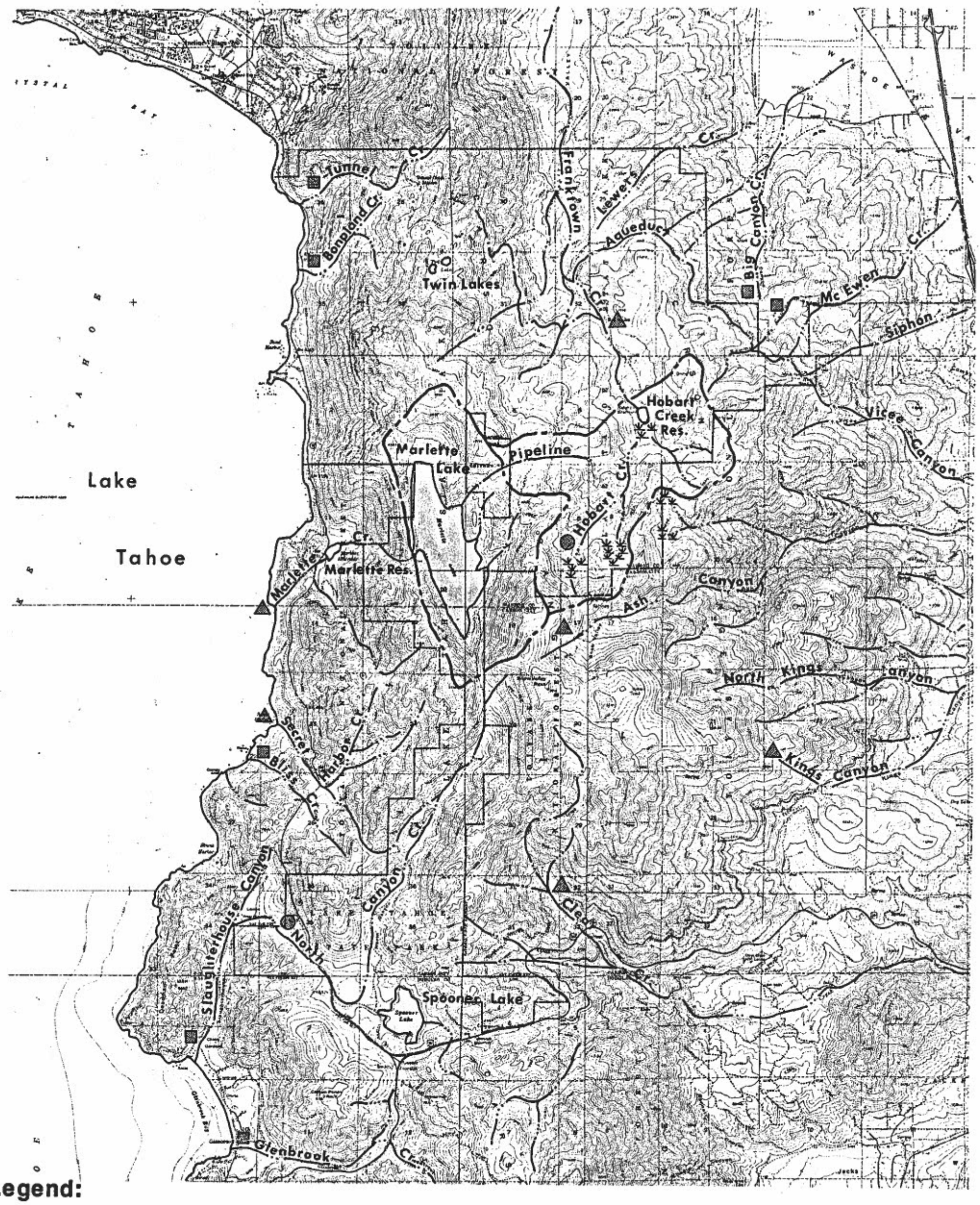
Lake Tahoe-Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989



Legend:

- Watershed Boundary
- Aqueduct
- Annual Stream
- Intermittent Stream

Water Quality*:

- Excellent
- Good
- Marginal

* Within Tahoe Basin: Rated by TRPA
Outside Tahoe Basin: Rated independently

- Water Body
- Marsh Area

Figure 3-3

SURFACE WATERS

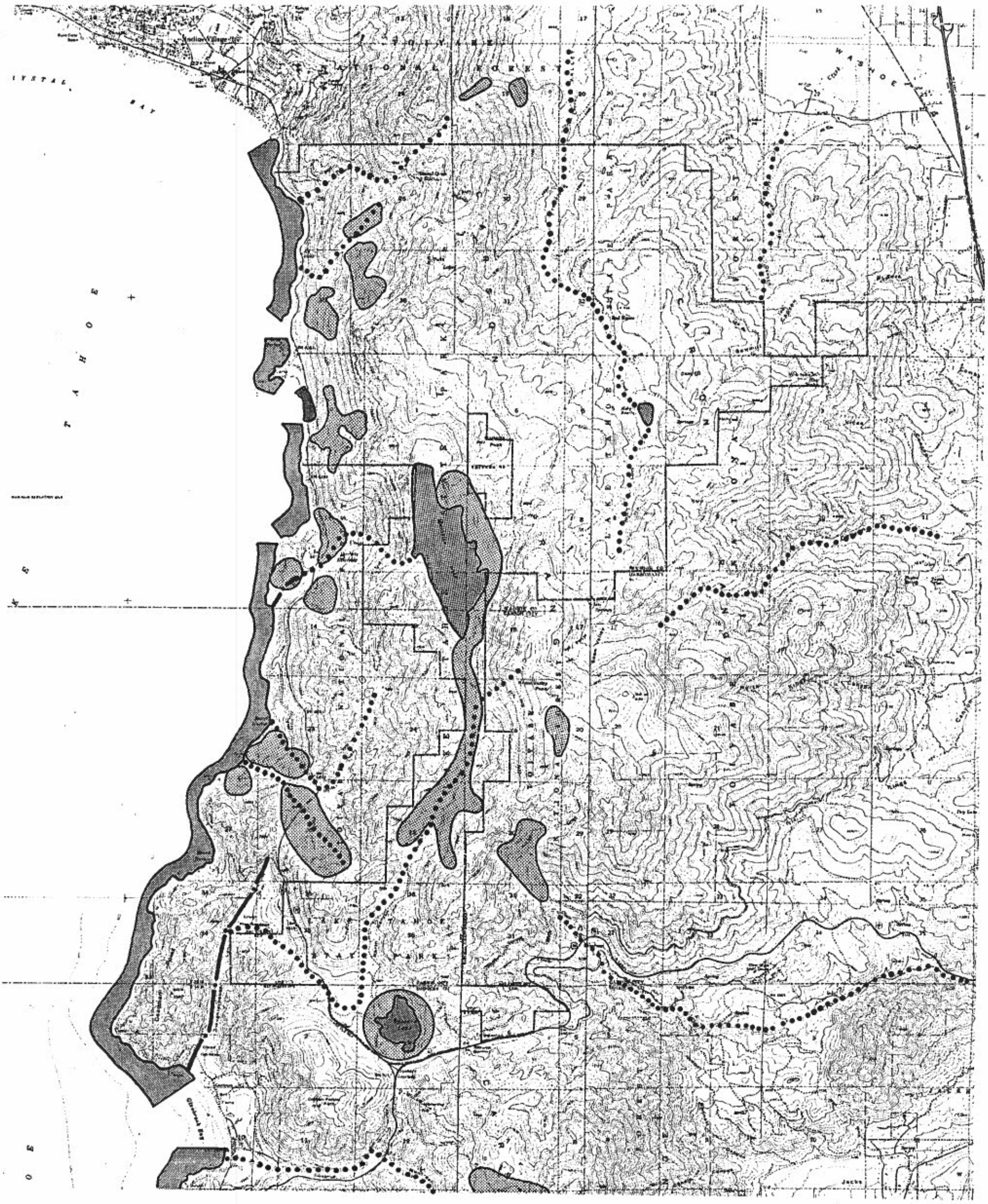
Lake Tahoe–Nevada State Park

Development Plan

0 1/4 1/2 1mi 2mi 3mi

N

1989



Legend:

- Sensitive Plant Communities*
- Sensitive Wildlife Habitat*
- Sensitive Fish Habitat
- Resident Fish Habitat
- Migratory Fish Habitat

*Locations are approximate

Figure 3-4

HABITAT ANALYSIS

Lake Tahoe–Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989

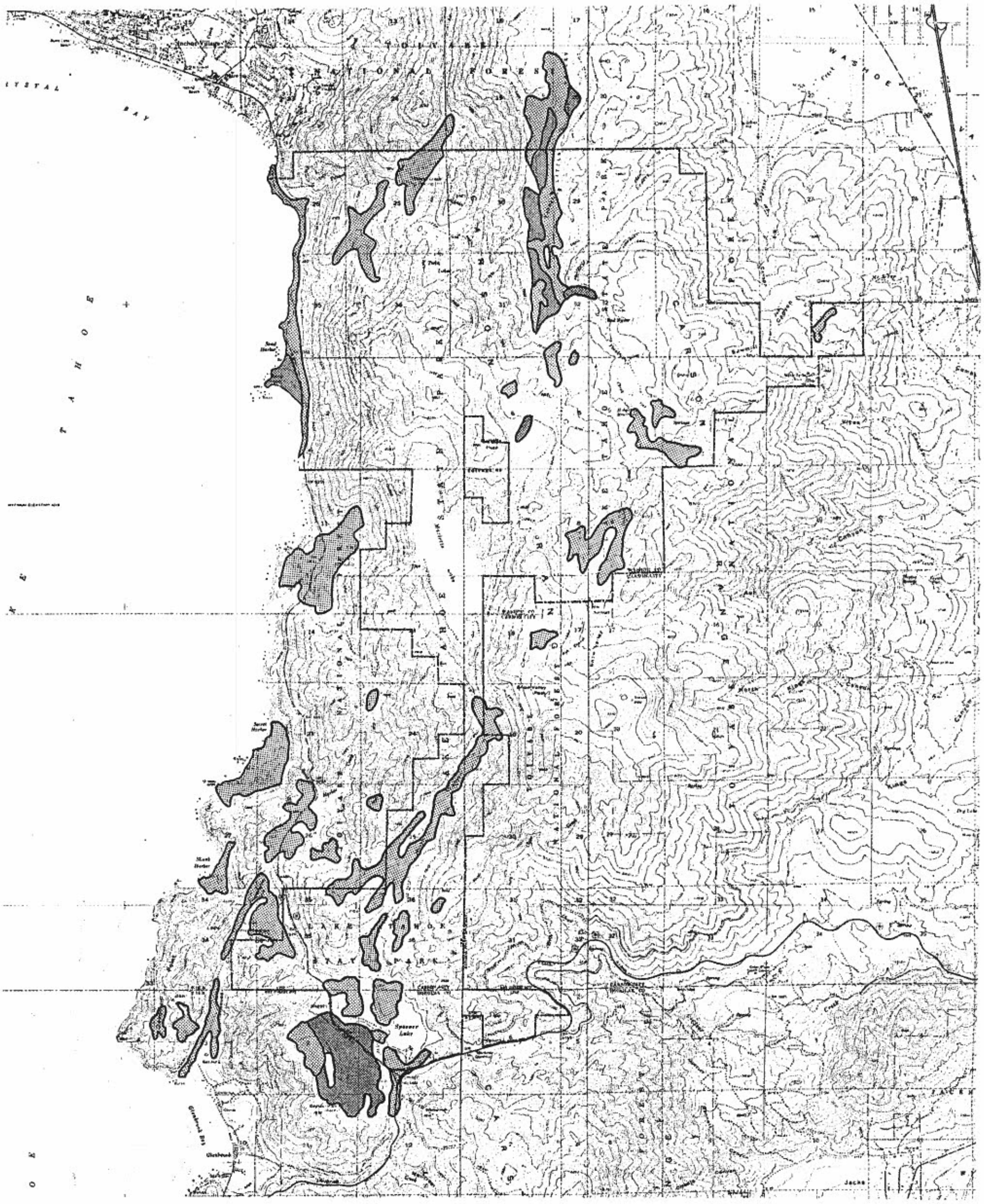


Figure 3-5

Legend:

Limitations to Development...

- Slight
- Moderate
- Severe

SOILS ANALYSIS

Lake Tahoe-Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989

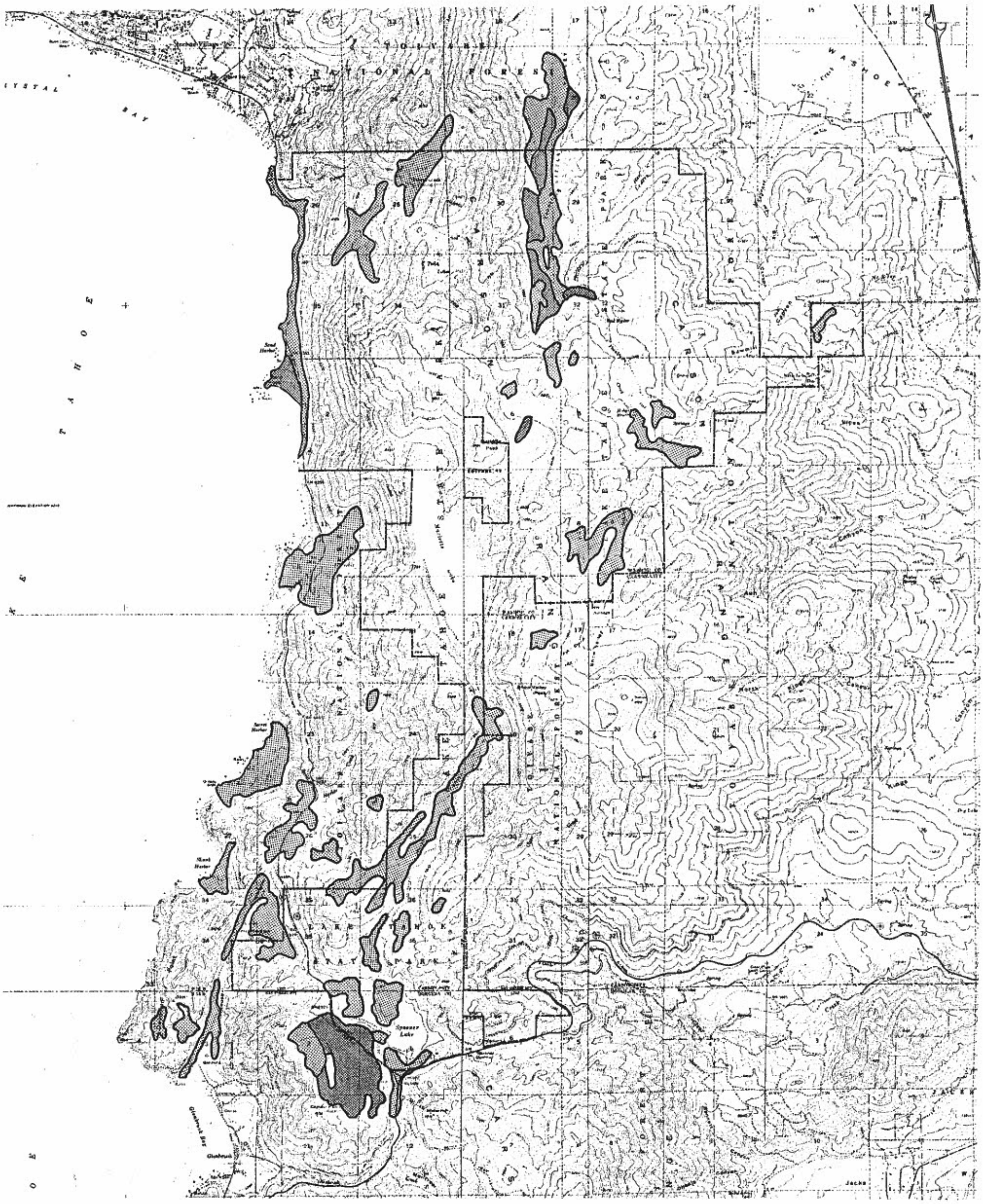


Figure 3-5

Legend:

Limitations to Development...

- Slight
- Moderate
- Severe

SOILS ANALYSIS

Lake Tahoe–Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989

B. CULTURAL RESOURCES

1. ARCHAEOLOGICAL

Archaeological research has produced evidence that indicates the Washo tribe inhabited the Lake Tahoe Basin for about 10,000 years. Several ethnographic sites have been identified, and have provided insight into the migration patterns of these early inhabitants.

Permanent camp sites and fishing areas were found throughout the basin, particularly at the mouths of streams, and food gathering sites were concentrated in the meadows.

Within the park, an important archaeological area has been identified at Spooner Lake, and is one of the oldest known sites in the northern Sierras, dated to 7100 years before present. (Nevada State Museum, 1980). This area was studied by the Nevada State Museum, Dept. of Anthroplogy in the fall of 1979. A total of nine aboriginal sites were identified, and included two base camps and seven prehistoric task camps. One of these base camps, occupied intermittently between 7100 and 140 B.P., was judged to be eligible for the National Register of Historic Places. In addition to these known sites, other task sites or small associated temporary camps are probably present as well. Of the more notable artifacts discovered were several metate fragments, grinding stones, flaked stone tools, projectile points, and charcoal fragments. Other notable tools included a small hammerstone/core and biface fragments.

Other archaeological sites within the park appear to include a fishing site, located at the mouth of Marlette Creek, and a resting spot at Sand Harbor (TRPA and USFS: Historical and Cultural Committee, 1971).

2. HISTORICAL

As described in Chapter 1, the history of the Tahoe Basin dates back to the mid 1800's. Few historic sites remain intact, and the historic flavor of the region has often been masked by the explosive development which has taken place since the 1940's.

Near or within the park area itself, several indications of historic features remain. The old mill site and resort buildings of Glenbrook have been preserved, and the railroad grade to Spooner Lake is still visible. Remnants of the railroad grade from Sand Harbor to Incline Village are also visible.

Although collapsed several decades ago, portions of the wooden flume from Marlette Lake north to Tunnel Creek are still in existence along the cliffs above Sand Harbor. Of the two residences once found at Marlette Lake, a portion of the foundation of the flume keeper's house can still be seen on the western shore. The second residence was that of Curtis Wright, and today only the stone chimney

remains on the southern shore of the lake. Red House, located at the junction of Hobart and Franktown Creeks, was the residence of the Hobart Creek Reservoir watermaster. The structure still stands, but is in desperate need of stabilization to prevent continued deterioration.

At Cave Rock, remnants of the historic toll road around the rock are still visible.

C. SITE ANALYSIS MAP/SUMMARY

1. DEVELOPMENT LIMITATIONS

The Site Analysis map delineates areas most developable and identifies important development opportunities and constraints. Areas considered unsuitable for development include those with severe soils, steep slopes and sensitive habitats. An area-wide composite site analysis map is found as figure 3-6. Site analyses for each individual management area are found as figures 3-7 through 3-11.

2. DEVELOPMENT OPPORTUNITIES

Areas considered potentially developable are those without severe soil, slope or habitat limitations. Development in these areas must be done with caution, however, to maintain the visual and natural integrity of the park and basin.

D. EXISTING FACILITIES AND USES

The existing facilities at Lake Tahoe-Nevada State Park consist of family and group picnic sites, two boat launching areas with parking, comfort stations, hiking trails, beaches, scenic overlooks, and equestrian trailheads. There is also a maintenance/visitor information building, and a ranger residence. The locations of these facilities throughout the park are shown on the area-wide Existing Facilities map, figure 3-12. The existing facilities for each management area comprise figures 3-13 through 3-18.

1. CAMPING

Currently, there are two primitive camping areas in the backcountry management area, with a total of 7 campsites. No other developed camping facilities are available within the park.

2. PICNICKING

Family and group picnic sites are located at both the Sand Harbor and Spooner Lake Management Areas. There are 54 picnic sites at Sand Harbor, and 25 sites at Spooner Lake. Each family picnic site includes a picnic table, grill, and trash can. The group ramada at Sand Harbor will accommodate up to 100 people, and the ramada at Spooner Lake will accommodate groups up to 75. Each of these facilities includes picnic tables, grills, trash cans, and reserved parking areas, with nearby restrooms.

3. MAINTENANCE SHOP/PARK OFFICE

The main park office and maintenance shop is located near the entrance of the Sand Harbor Management Area. There is also a small maintenance building at Spooner Lake, north of the developed facilities.

4. RANGER RESIDENCE

Two ranger residences are located east of the Sand Harbor maintenance shop and park office, across Highway 28.

5. ROADS - CIRCULATION

Entrance to the Sand Harbor Management Area is made via two paved, two-lane entrance roads. One of these roads brings visitors to the beach and picnic areas. The second road is used for vehicles with trailers, and accesses the boat launch area.

The Memorial Point/Hidden Beach Management Area is directly accessible via Highway 28. A paved, two-lane entrance road brings visitors to the boat launching facilities at Cave Rock.

Access to the Spooner Lake Management Area is by way of a paved, two-lane entrance road, which branches near the entrance and encircles both parking areas. The Backcountry Management Area is reached by a series of hiking and equestrian trails.

6. UTILITIES

Lake Tahoe-Nevada State Park is serviced by all major utilities, as described in Chapter 2.

7. OTHER FACILITIES

Two boat ramps with docks are located within the park. At Sand Harbor, the launching area includes a 4-lane boat ramp, with 52 boat trailer parking spaces and 4 overnight boat trailer parking spaces. At Cave Rock, the launch area consists of a 2-lane ramp with 41 boat trailer parking spaces. A restroom is included at each of these launching sites.

Swimming is a major attraction to this state park, and there are 2,295 linear feet of guarded swimming beach at Sand Harbor. Additional beaches are found at Hidden Beach and areas along the shore, and are accessed via primitive and developed trails from Highway 28.

At present, there are 33.5 miles of trails in the backcountry area, and an additional 18 miles of proposed Rim Trail.

Parking and restroom facilities are located at the Sand Harbor, Spooner Lake, and Cave Rock Management Areas.

8. USE STATISTICS

Visitation figures for Lake Tahoe-Nevada State Park show, in general, steady yearly increases. The following table shows visitation figures since 1985.

Table 3-3
VISITATION STATISTICS FOR LAKE TAHOE, 1985-1989

	1985	1986	1987	1988	1/89-11/89*
Sand Harbor					
Beach	270,596	316,489	325,623	356,190	347,685*
Boating	110,906	70,347	53,974	66,526	67,841*
Memorial Point	140,696	229,424	276,126	219,385	182,487*
Hidden Beach	52,939	24,278	25,882	40,958	43,518*
Cave Rock	146,103	160,425	165,815	180,373	107,876*
Spooner Lake	34,681	69,238	79,071	81,065	76,274*
Total	755,921	870,201	926,491	944,497	825,681*

*These figures indicate the total number of visitors to Lake Tahoe Nevada State Park through November 1989 only, and do not indicate the total for the year.

The large number of visitors at Hidden Beach in 1985 was likely due to the removal of parking barriers prior to highway construction, thereby allowing more visitors access to the area. Similarly, in 1985, the fee booth at the Sand Harbor Boat Launch was not open as often to turn cars away. In 1986, a formula was

developed to better determine the number of vehicles at Memorial Point, which may attribute to the increase in visitation figures.

Visitation at the park is influenced by many factors, including weather, launching conditions, and road conditions. The park, however, often fills to capacity during the summer months.

The number of boats launched at the park has also increased, as indicated below:

Table 3-4
BOATS LAUNCHED AT LAKE TAHOE-NEVADA STATE PARK, 1985-1989

	1985	1986	1987	1988	1/89-11/89
Sand Harbor	5,330	6,379	7,578	7,407	5,489*
Cave Rock	2,483	3,738	4,287	5,883	5,558*
Total	7,813	10,117	11,865	13,290	11,047*

*These figures indicate the total number of boats launched during 1989 prior to completion of this plan, and do not indicate the total for the year.

Recreational uses occurring at the park include boating, waterskiing, swimming, relaxing outdoors, fishing, mountain biking, picnicking, hiking, primitive camping, equestrian uses, and enjoying cultural events. While the park spans 13,700 acres, many of these activities are concentrated in the developed facilities at the Sand Harbor, Memorial Point/Hidden Beach, Spooner Lake and Cave Rock Management Areas.

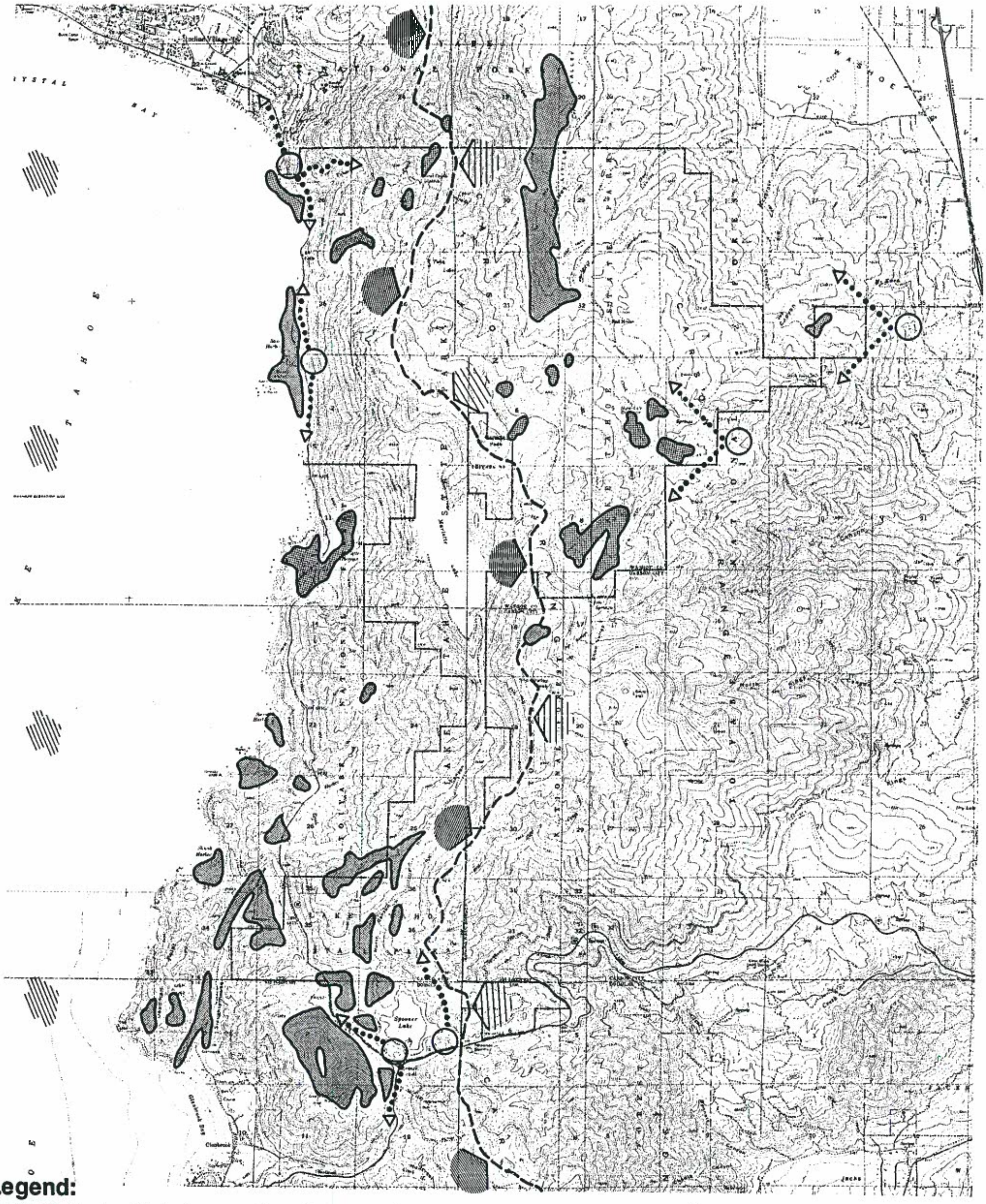


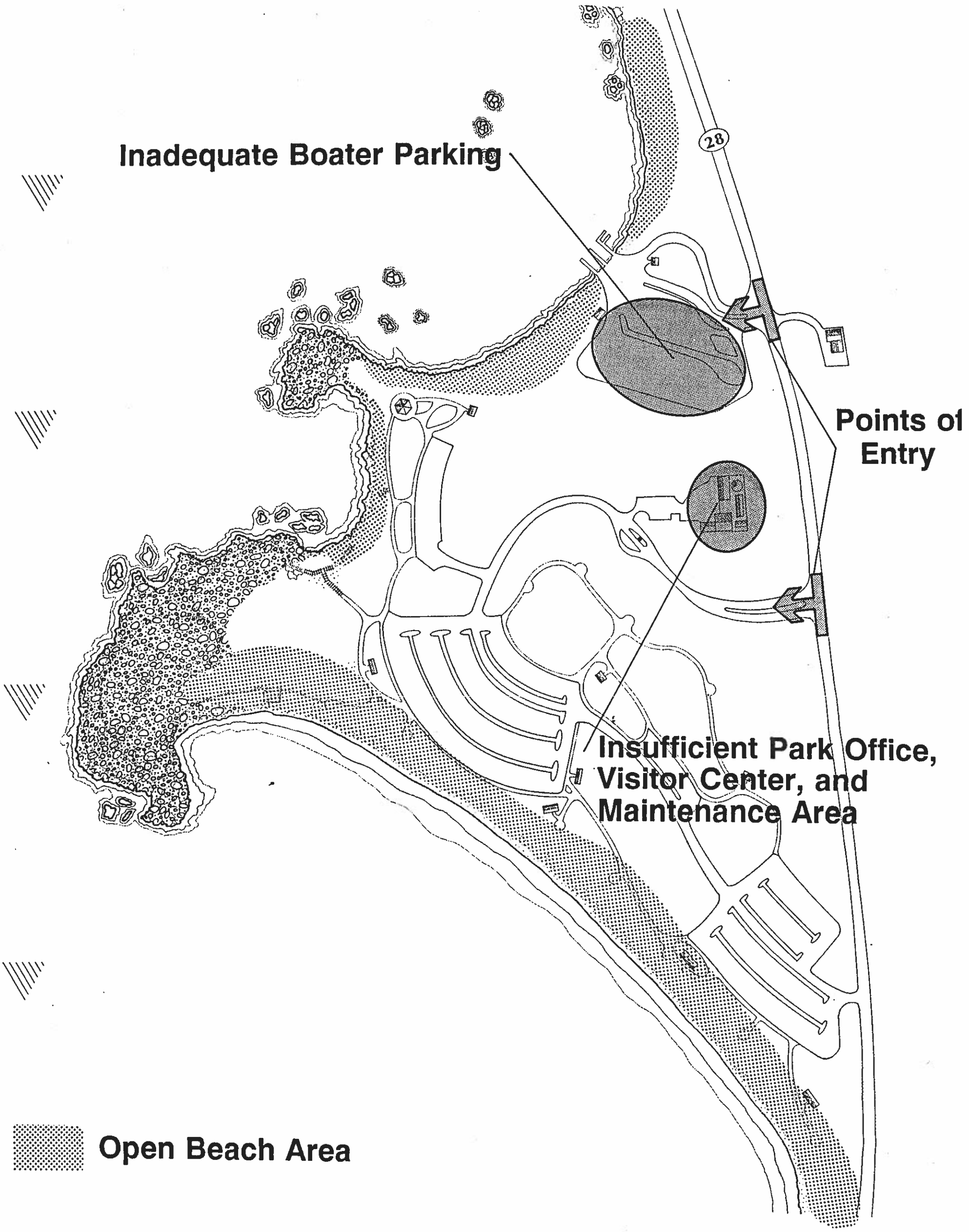
Figure 3-6

COMPOSITE SITE ANALYSIS

Lake Tahoe–Nevada State Park

Development Plan

1989



Open Beach Area

Rocky Shoreline & Scenic Vistas

Direction of Wave Approach

Figure 3-7

COMPOSITE SITE ANALYSIS

Sand Harbor Management Area

Lake Tahoe–Nevada State Park Development Plan

0 100' 200' 400' 800'

N

1989

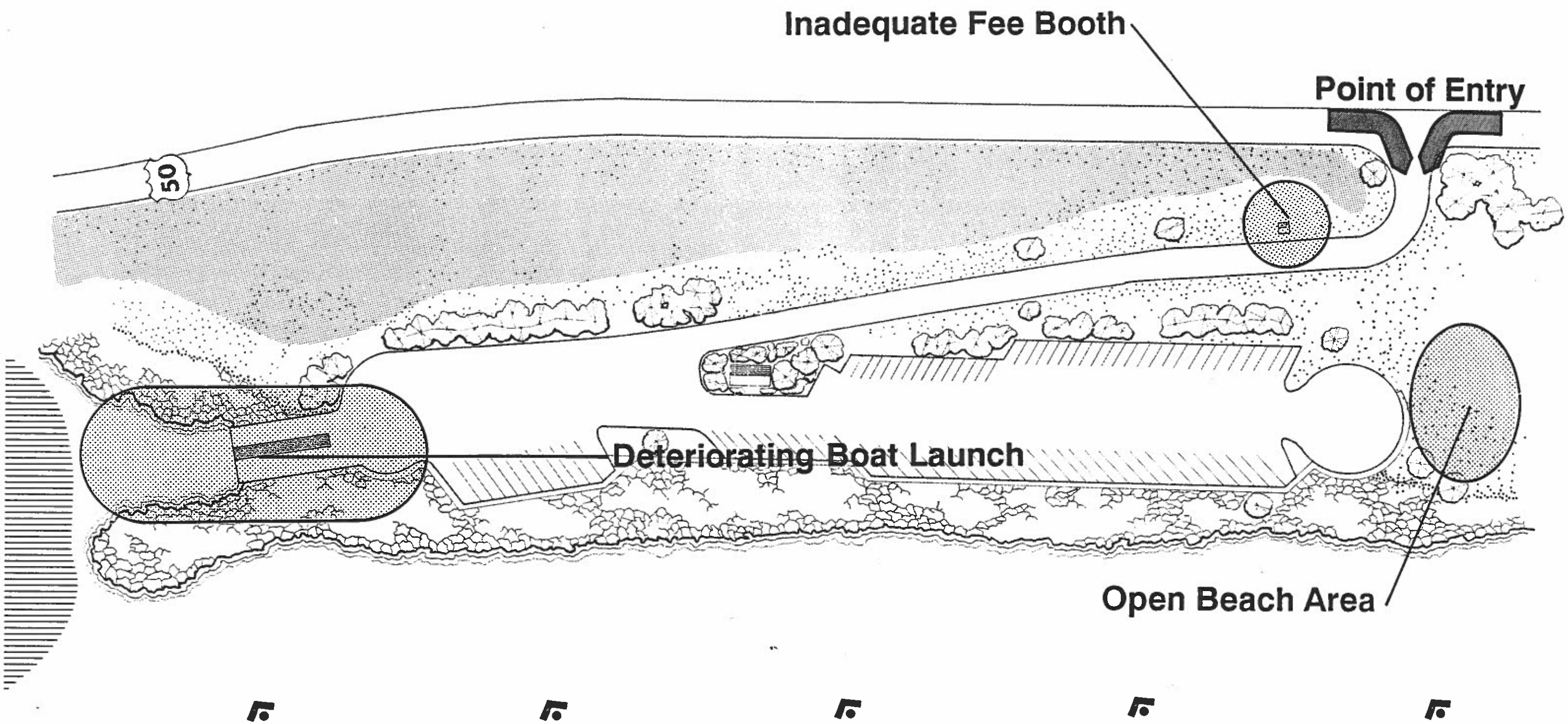


Figure 3-8

COMPOSITE SITE ANALYSIS

Cave Rock Management Area

Lake Tahoe-Nevada State Park Development Plan

Direction of Wave Approach

Unprotected Water

Steep Embankment

0 75' 150' 300'

N 1989

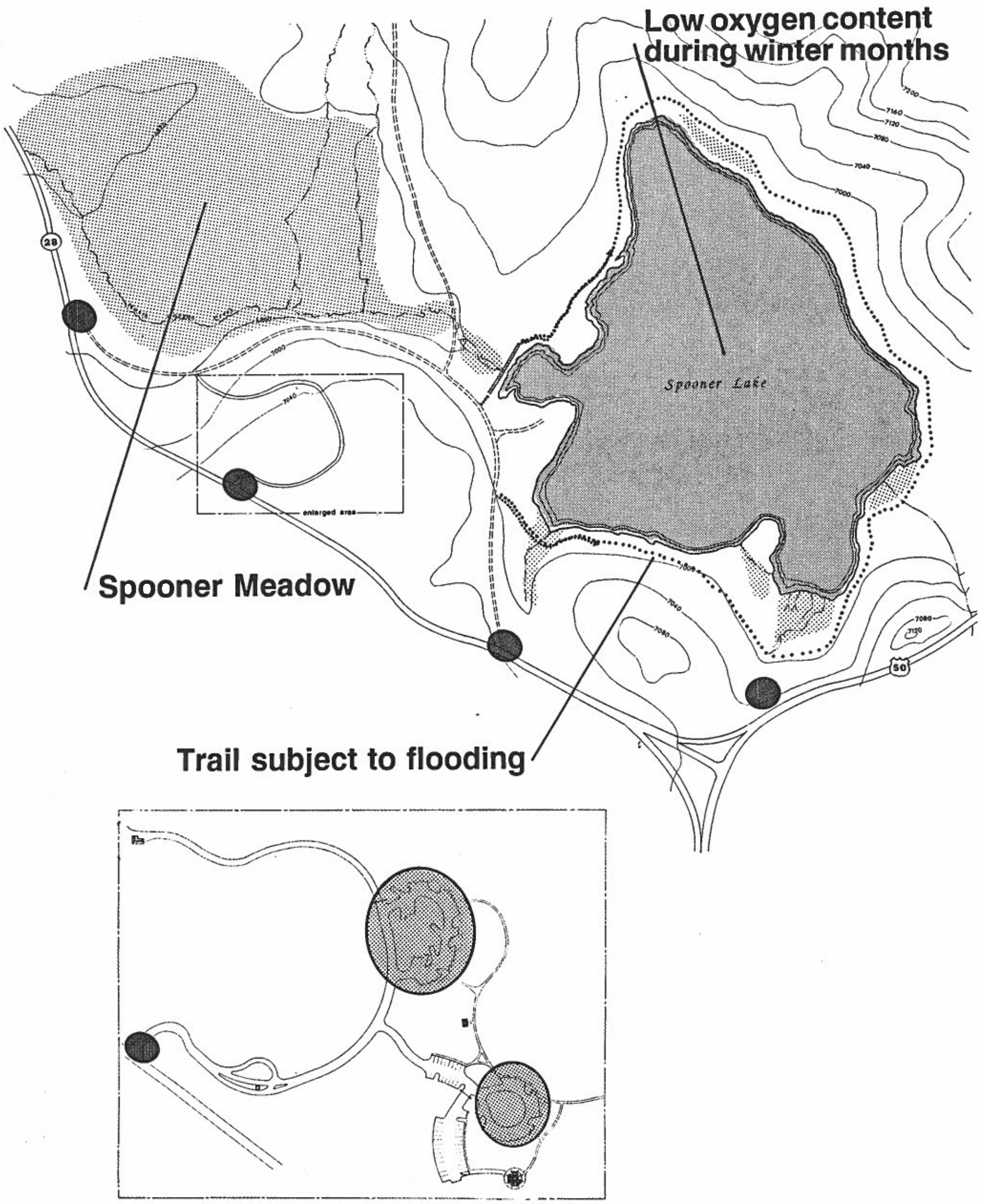


Figure 3-9

COMPOSITE SITE ANALYSIS

Spooner Lake Management Area

Lake Tahoe-Nevada State Park Development Plan

0 500' 2000'
250' 1000'

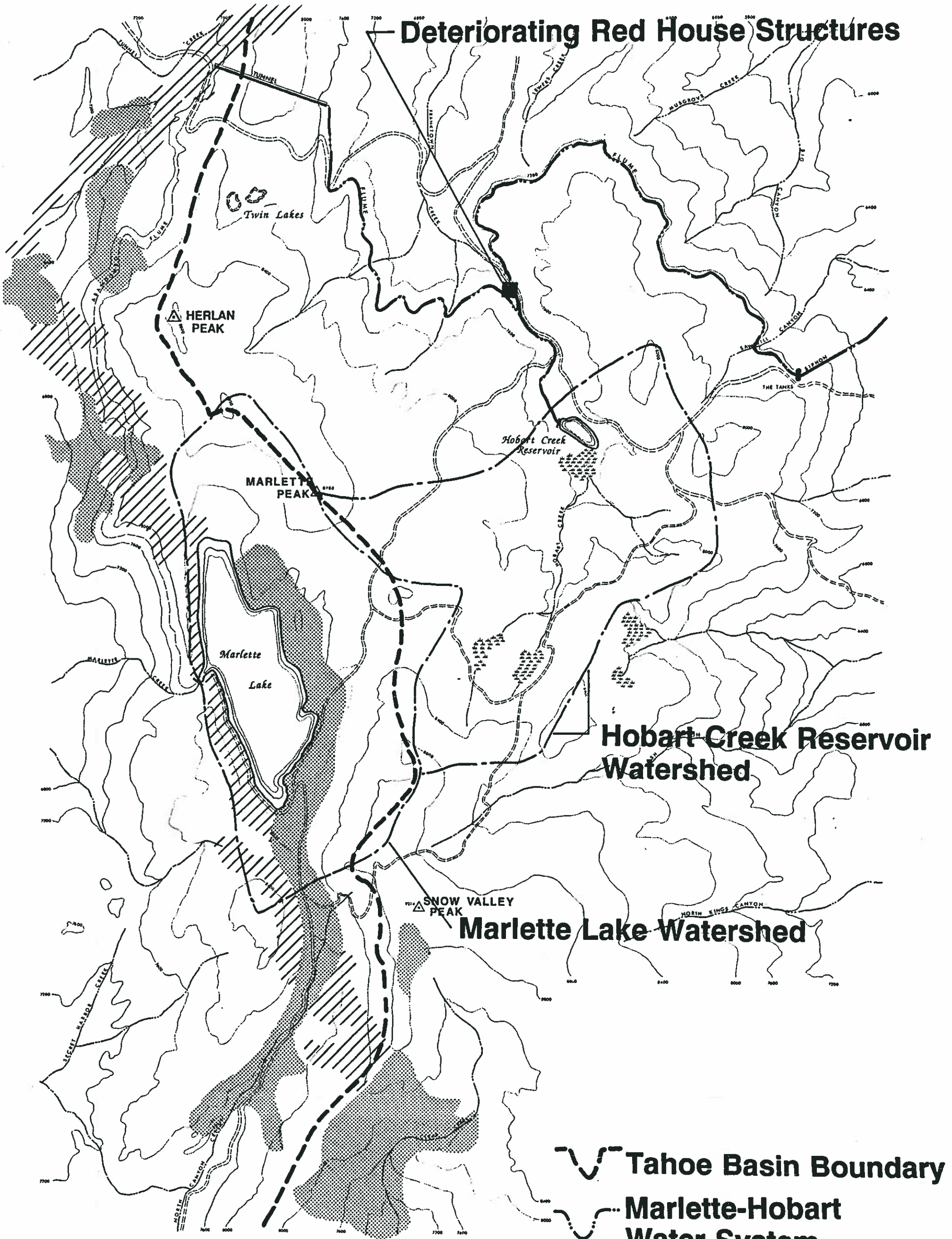
N

1989

Difficult snow removal areas

Marsh Areas

Entry Points



*Locations are approximate. Sources: USFS, NDOW, TRPA.

Figure 3-10

COMPOSITE SITE ANALYSIS

Backcountry Management Area

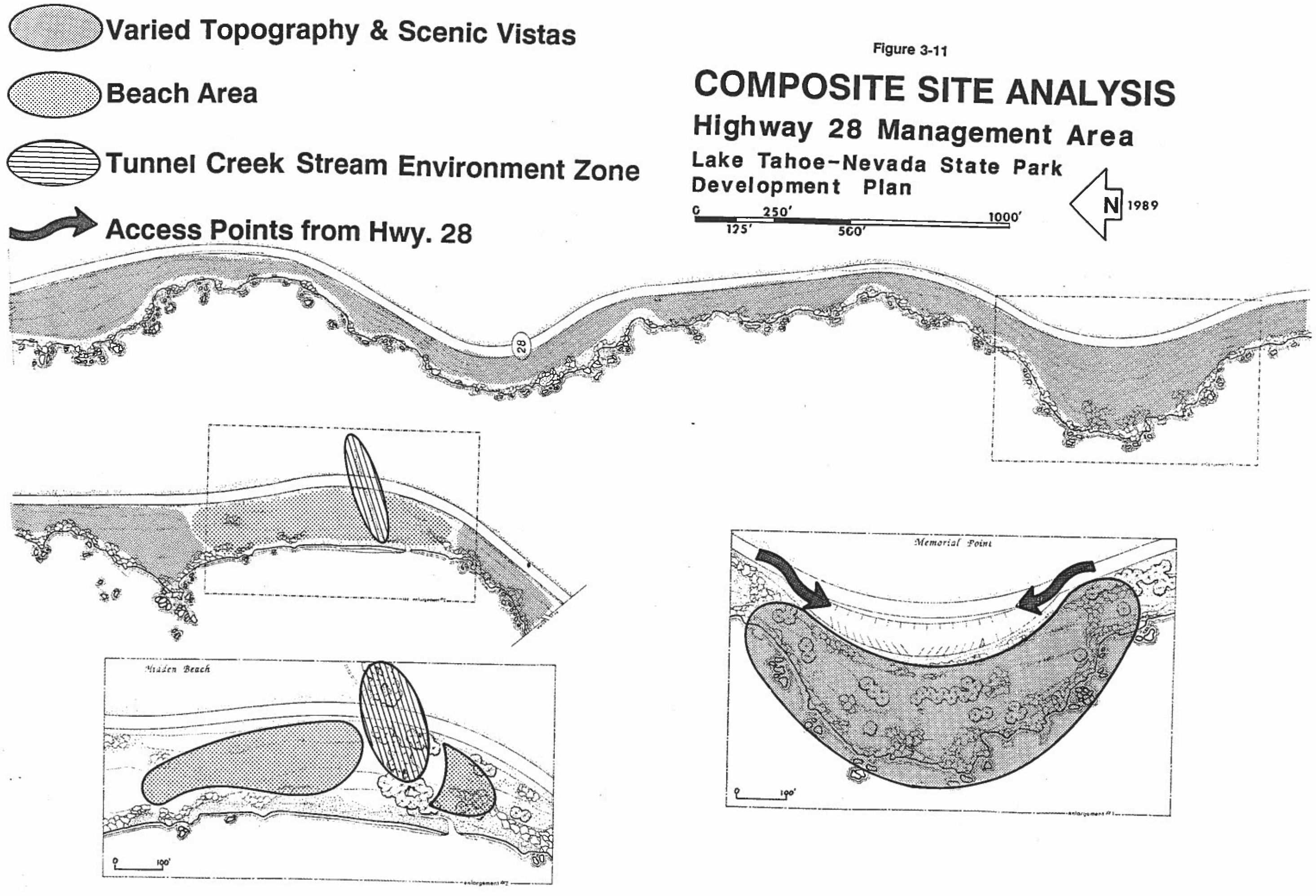
Lake Tahoe-Nevada State Park Development Plan

Figure 3-11

COMPOSITE SITE ANALYSIS

Highway 28 Management Area

Lake Tahoe-Nevada State Park Development Plan



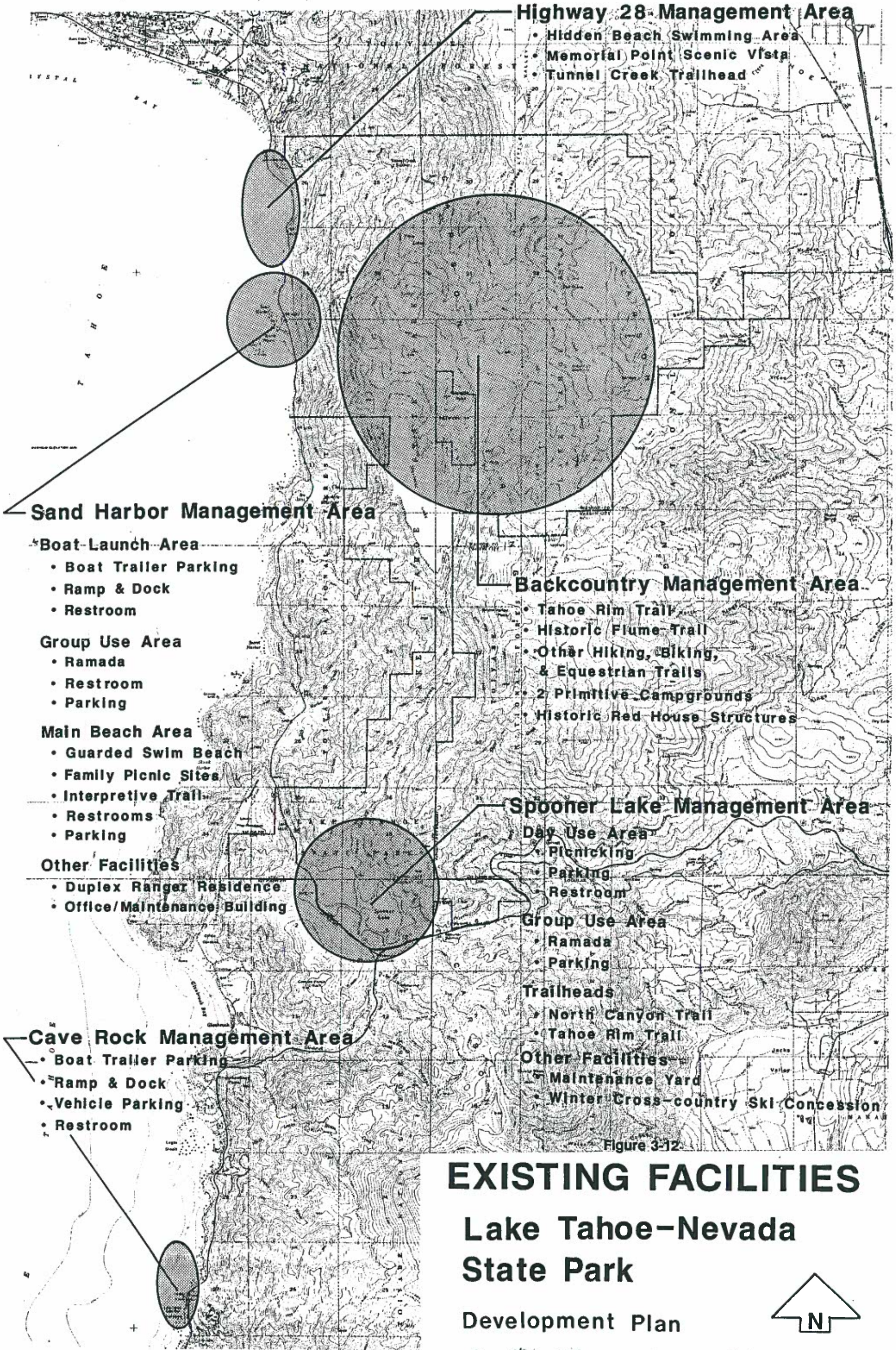


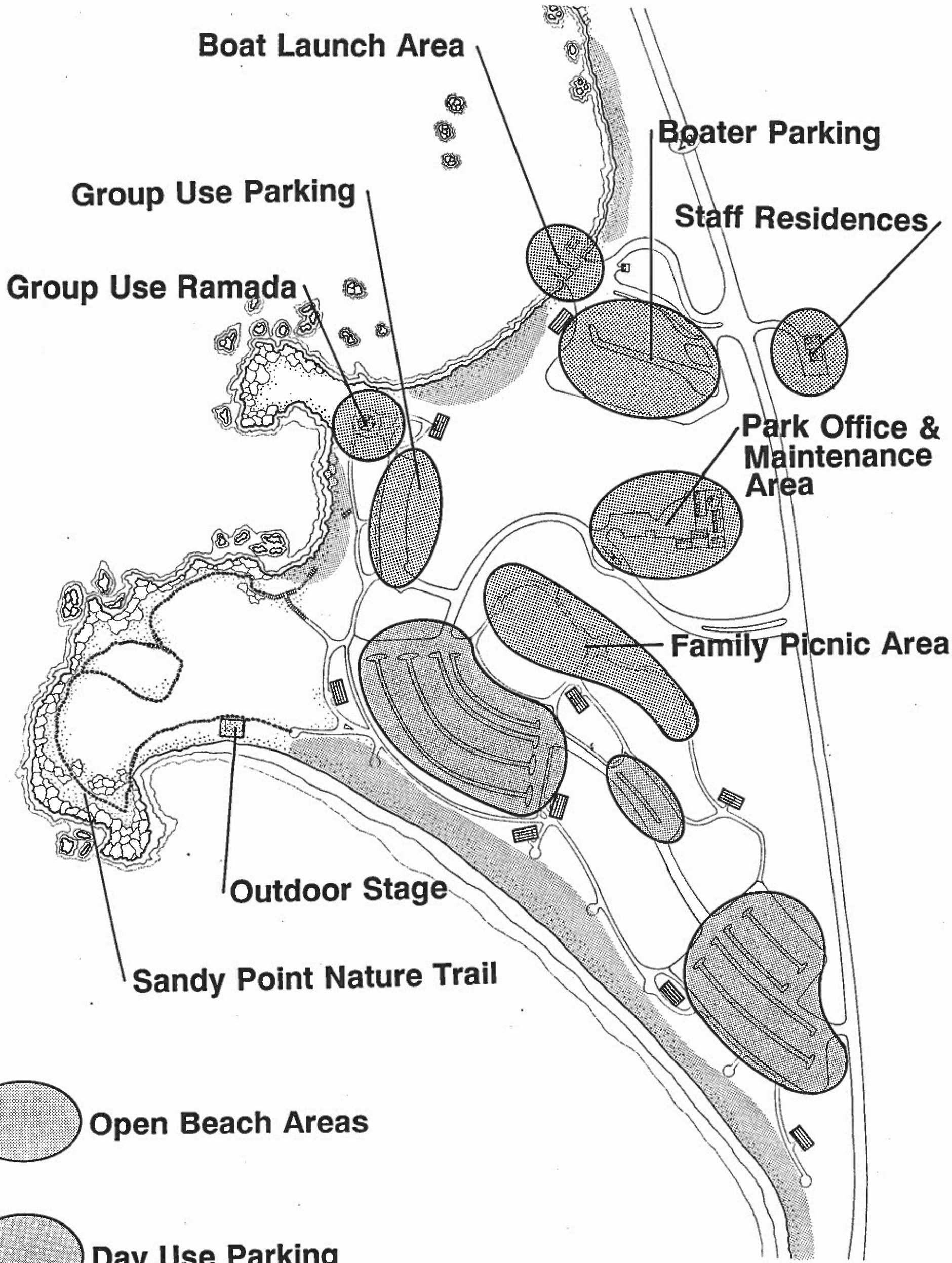
Figure 3-12

EXISTING FACILITIES

Lake Tahoe–Nevada State Park

Development Plan

1989



Open Beach Areas

Day Use Parking

Restrooms

Figure 3-13

EXISTING FACILITIES

Sand Harbor Management Area

Lake Tahoe–Nevada State Park Development Plan

0 200' 800'
100' 400'

N

1989

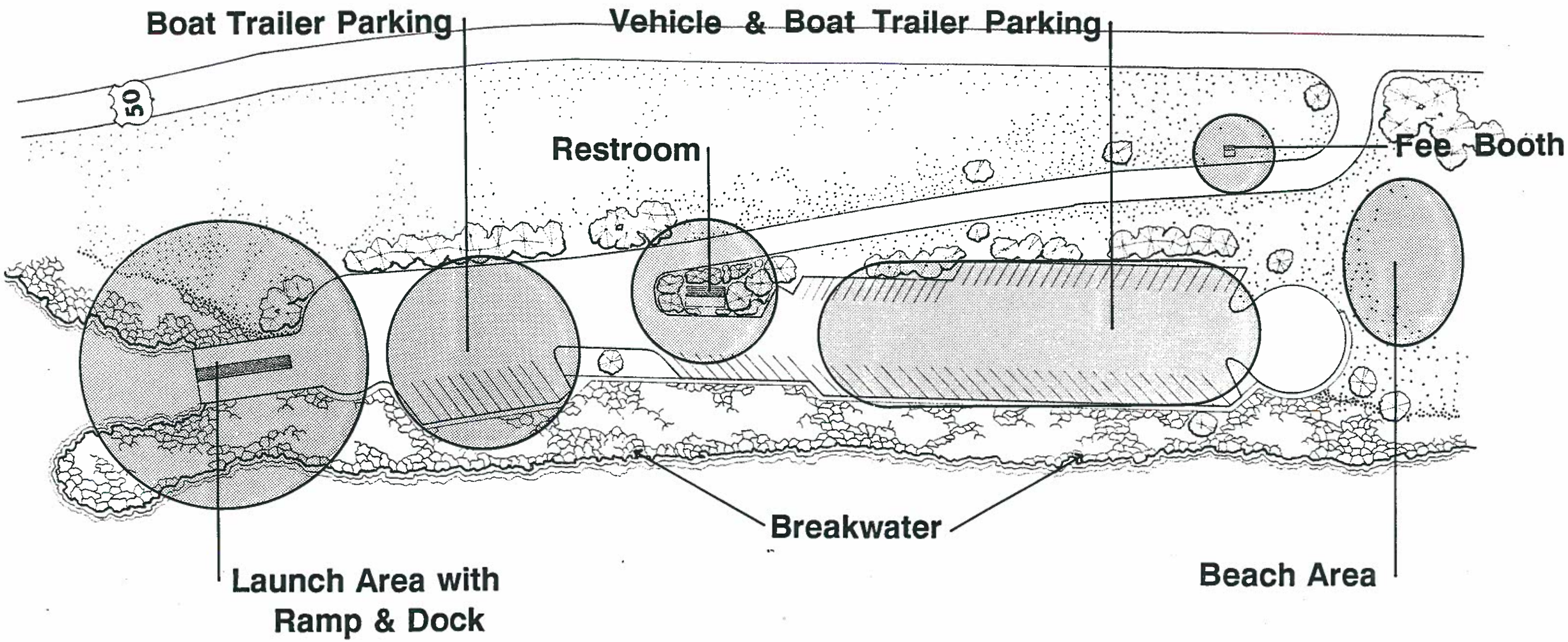


Figure 3-14

EXISTING FACILITIES

Cave Rock Management Area

Lake Tahoe-Nevada State Park Development Plan

0 75' 150' 300'

N 1989

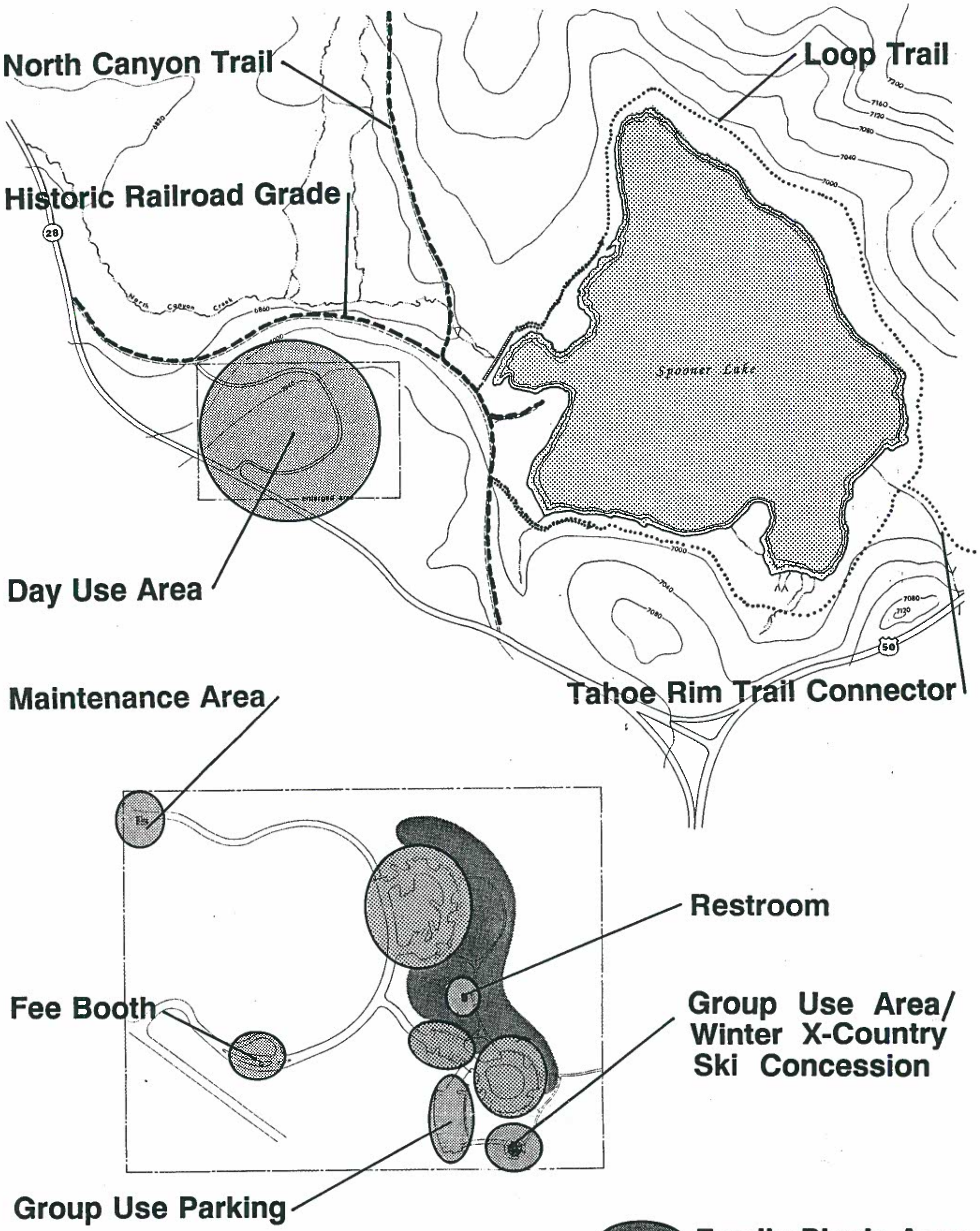


Figure 3-15

EXISTING FACILITIES

Spooner Lake Management Area

Lake Tahoe-Nevada State Park

Development Plan

0 250' 500' 1000' 2000'

N

1989

Family Picnic Area

Day Use Parking

Catch & Release Fishing Area

Service Vehicle Access Roads

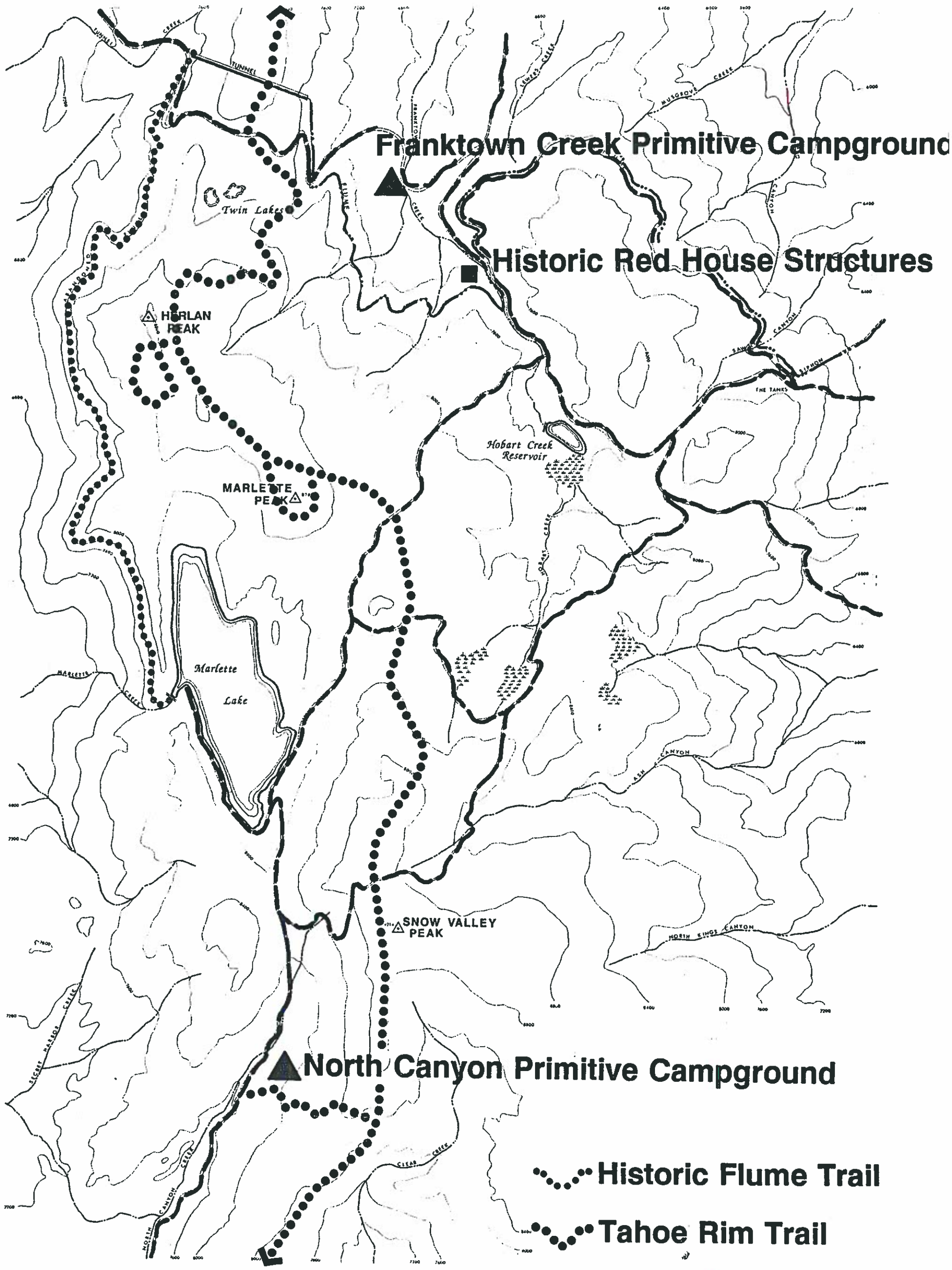


Figure 3-16

EXISTING FACILITIES

Backcountry Management Area

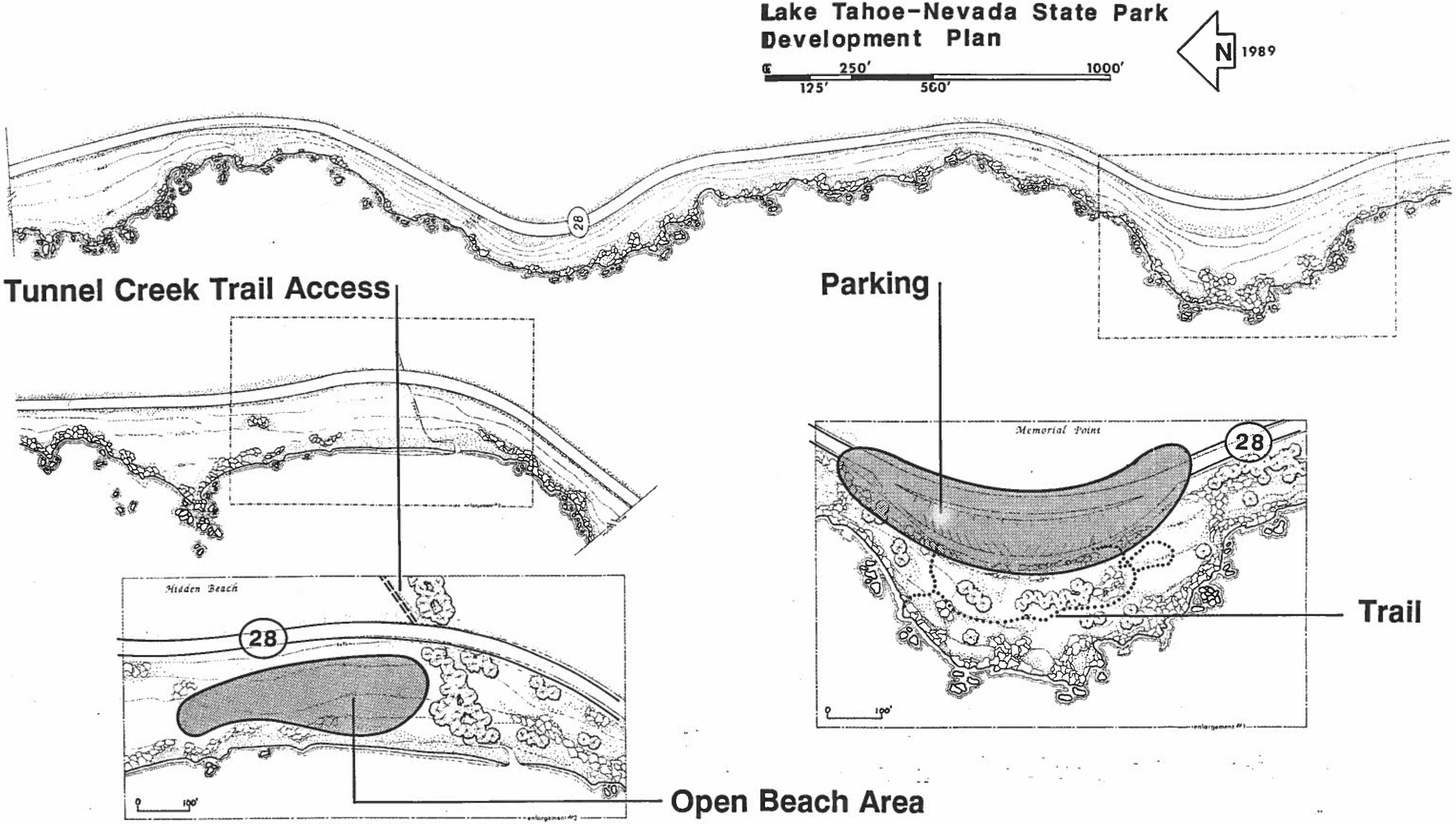
Lake Tahoe-Nevada State Park
Development Plan

Figure 3-17

EXISTING FACILITIES

Highway 28 Management Area

Lake Tahoe-Nevada State Park Development Plan



CHAPTER IV: DEVELOPMENT PLAN

A. PROCESS

The general planning process followed throughout this update was outlined in Chapter One. At each step in the process, new information and input helped direct the plan to the next phase. Predetermined criteria formed the basis of evaluating this information. Thorough staff review at each step insured an orderly process.

Part of the evaluation process involved addressing the following questions:

1. Can we reasonably provide this experience, given the projected use, available management personnel and estimates of available funds?
2. Is this the type of experience the state should provide, or is it more appropriate for another level of government or the private sector?
3. Can we reasonably manage this experience in a quality fashion?
4. What are the environmental and visual impacts of such an activity?

These questions helped to eliminate certain suggestions from further consideration. Other considerations addressed the nature and expectations of the typical visitor and known recreational demands (see Chapter 2). The two resulting alternatives grew from this process and represented several ways to accommodate the visitor while retaining the environmental integrity of the area. Appendix 1 contains a complete description of the alternatives.

1. ALTERNATIVES

Both alternatives for Lake Tahoe-Nevada State Park enhance existing recreation opportunities and propose several additional facilities. The following is a brief summary of these alternatives:

Alternative A - Improvements to Sand Harbor would include a food, beverage and sundries concession near the main beach, additional staff residences and expanded boater parking. At Cave Rock, replacement of the boat dock is recommended. Proposals at Spooner Lake include a new RV and tent campground across Highway 28 on U.S. Forest Service Lands, a visitor center, a seasonal ranger residence, and elimination of the cross-country ski concession.

In the Backcountry, proposals include a series of loop trails and primitive campsites. Along Highway 28, this alternative proposes a series of parking nodes, with trailheads and trails to waterfront areas.

In addition to the proposals at each management area, Alternative A suggests improving access to the Backcountry by establishing a series of trailheads on public lands at Lakeview, Ash Canyon, Kings Canyon and Incline Village, with a major trailhead at Tahoe Meadows.

Several property parcels would be exchanged, acquired or brought under management agreement with the USFS. Private inholdings would eventually be eliminated on a willing seller or life tenancy basis.

Alternative B - In this alternative, hand cart vending stands would be operated near the main beach, no expanded boater parking would take place, and the launch facilities would be utilized by tour boats in the evening hours. At Cave Rock, the boat dock would be replaced, and the existing breakwater would be extended. Proposals at Spooner Lake include a larger campground and visitor center than were described in Alternative A, a horse concession and an expanded cross-country ski operation.

In the Backcountry, trails and primitive campsites are also proposed, with better trail and campsite access for equestrian users. Along the Highway 28 corridor, parking nodes are again proposed, as is a bike trail. This alternative also suggests that Skunk Harbor be designated a boat-in camp.

Trailheads and property acquisitions in this alternative are the same as in Alternative A.

These alternatives were presented at a second public workshop held in Incline Village on July 9, 1986. Attendees of this meeting were encouraged to express their concerns and suggestions about the park and the proposed alternatives. Comments received pertaining to the alternatives were evaluated, and helped to formulate the preliminary plan.

Completion of the plan was again delayed, until the results of the 1987-88 Park User Survey were available. At this time, proposals were re-evaluated, and modified as necessary.

Final evaluation of the plan was based on:

1. meeting recreational needs
2. protecting sensitive areas
3. adherence to the plan concept
4. maintenance requirements

The plan was made available for final public review in the fall of 1989, after which time the final recommended plan was compiled.

2. PLAN CONCEPT

Lake Tahoe-Nevada State Park offers a wide variety of recreational opportunities, natural amenities and historic features. Scenic diversity is another important aspect of the park setting. The recommended development plan suggests strengthening the recreational features and opportunities of the park, while preserving the precious natural resources of the region. Major aspects of the plan are

enhancement of the visitor experience, user safety, and sensitive development within a unique resource.

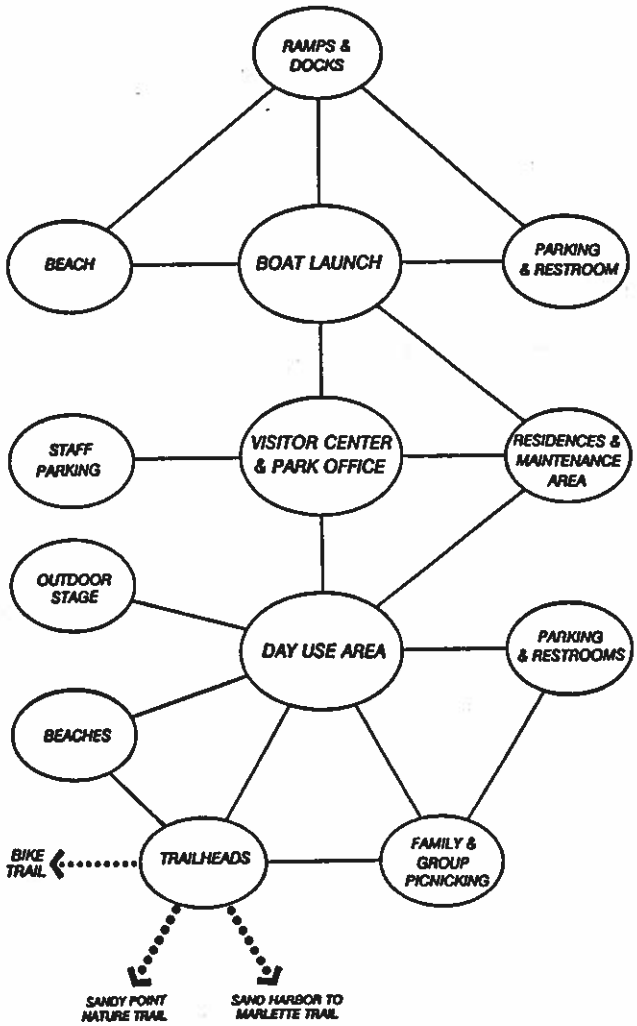
3. RECREATIONAL PROGRAM/PROGRAM RELATIONSHIPS

The recreational program proposed by this plan for Lake Tahoe-Nevada State Park is based on both the amenities of this precious water resource and the scenic beauty of the Sierra Nevadas. Existing and proposed activities and facilities include: family picnicking, boat launching, swimming, relaxing outdoors, hiking, primitive camping, horseback riding, mountain biking, cross-country skiing, interpretation and information, and the addition of on-site staff. (See Recreational Program/Program Relationships, Figure 4-1).

Figure 4-1
RECREATIONAL PROGRAM/PROGRAM RELATIONSHIPS

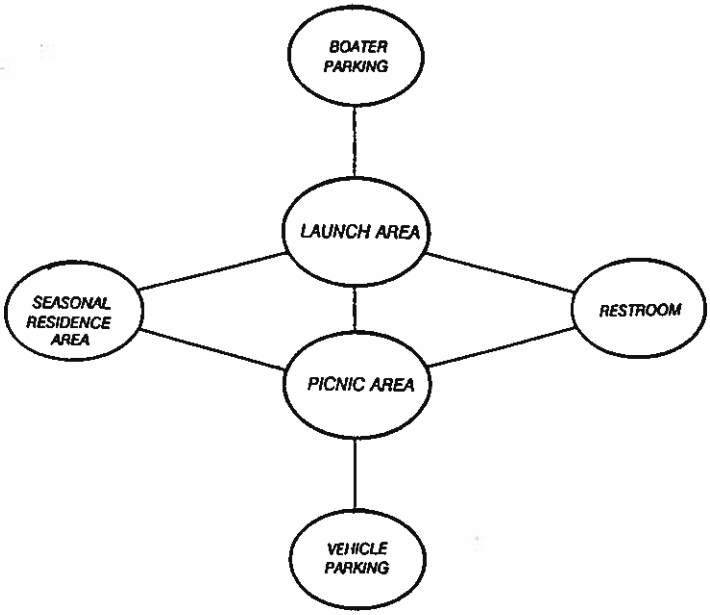
SAND HARBOR

Program:
- Boat Launch Area
  - a. Ramps & Docks
  - b. Parking & Restrooms
  - c. Beach Area
- Visitor Center/ Park Office Complex
  - a. Staff Parking
  - b. Residences & Maintenance Area
- Day Use Area
  - a. Beaches
  - b. Parking & Restrooms
  - c. Fam. & Group Picnicking
  - d. Outdoor Stage
  - e. Trailheads & Trails



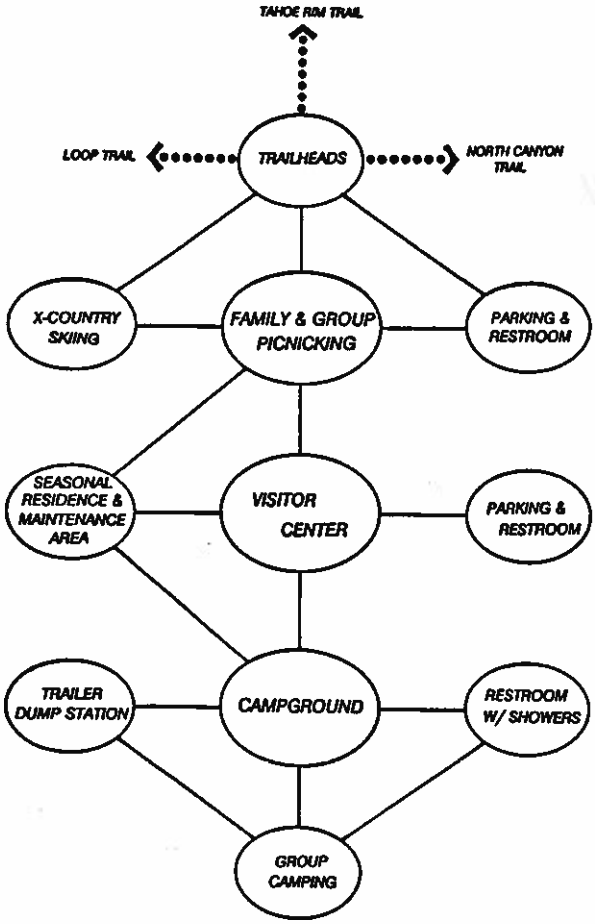
CAVE ROCK

Program:
- Boat Launch Area
  - a. Ramp & Dock
  - b. Parking
- Picnic Area
  - a. Tables & Grills
  - b. Restroom
  - c. Parking
  - d. Landscaping
- Seasonal Residence



SPOONER LAKE

Program:
- Fam. & Group Picnicking
  - a. Tables & Grills
  - b. Trails
  - c. Trailheads
  - d. X-Country Skiing
  - e. Parking
  - f. Restrooms
- Visitor Center
  - a. Parking
  - b. Restroom
  - c. Interpretive Displays
  - d. Trails
- Campground
  - a. Tent & Trailer Camping
  - b. Group Camping
  - c. Restroom w/ Showers
  - d. Trailer Dump Station

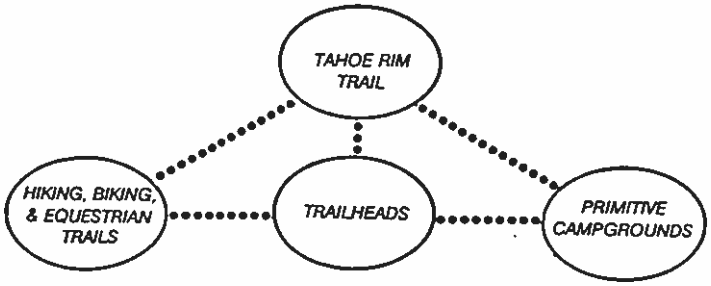


BACKCOUNTRY

Program:
Trails

Trailheads

Primitive Camping



HIGHWAY 28 CORRIDOR

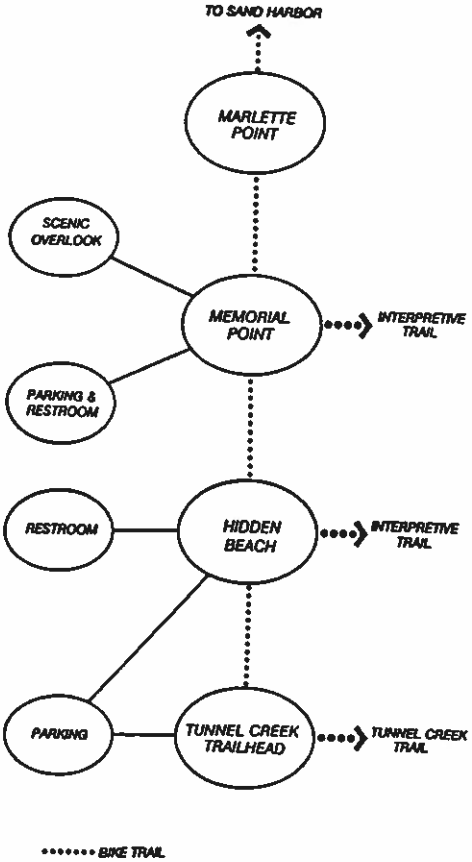
Program:
Memorial Point
a. Restroom
b. Trails
c. Scenic Overlook
d. Parking

Hidden Beach
a. Restroom
b. Trails

Tunnel Creek Trailhead
a. Trail
b. Parking

Marlette Point

Bike Trail



B. PLAN

1. PLAN SUMMARY

The recommended Lake Tahoe-Nevada State Park Development Plan suggests strengthening the recreational opportunities at the park, and enhancing the interpretive aspects of the Tahoe Basin (figure 4-2). New facilities will include visitor centers at Sand Harbor and Spooner Lake, additional boater parking at Sand Harbor, a tent and trailer campground, sanitary facilities at Hidden Beach and Memorial Point, and additional staff facilities.

Improvements to existing facilities will include completion and improvement of trails, replacement of aging boat launch facilities at Cave Rock, enlargement of maintenance areas, and enhancement of interpretive information.

2. MANAGEMENT AREAS

Five management areas (MA's) are considered in this development plan, and include Sand Harbor, Cave Rock, Spooner Lake, the Backcountry, and the Highway 28 Corridor.

a. Sand Harbor

The existing facilities and site character would essentially remain unchanged under the recommended plan. Only a few significant changes would take place (figure 4-3).

1. Comfort station #4 (adjacent to the outdoor stage area) on the main beach would be remodeled, and the number of toilets would be doubled. The architectural character of the building would be maintained, and no building expansion would occur.

   The remaining comfort stations will be brought up to current codes, including handicapped access.

2. The existing boater parking at the launch area will be expanded, with approximately 20 additional spaces provided. This expansion will be located south of the existing boat trailer parking.

3. Two additional staff residences are proposed for construction adjacent to the existing residences on Highway 28. These residences would serve the housing needs of an additional park ranger and the park maintenance specialist.

4. A new park office/visitor center would be built between the existing group use area and the main beach, and would include approximately 4 staff parking spaces. The location of this facility would serve a three-fold purpose: 1) park staff would be more centrally located within the park, 2) the visitor center would be more readily accessible, and 3) the existing office and visitor center would be converted into shop space, thereby enlarging the park's maintenance facility.

5. A hiking trail is proposed from Sand Harbor to Marlette Lake. This trail would rise 1500' from Sand Harbor and follow the old flume line to Marlette Lake.

6. A need for an outdoor ice-skating rink has been identified in the north-shore area of Lake Tahoe. Placement of this facility at Sand Harbor would allow better use of the park during winter months. This plan recommends flooding the group use parking area, and installing special mats to retain the ice.

b. Cave Rock

Several modifications are proposed for Cave Rock (figure 4-4). The existing boat dock is in need of replacement. In order to protect the new dock from undue damage and to provide additional protection from wind and wave action during boat launching and retrieval operations, a floating breakwater with buoy light on the end would extend the existing stationary breakwater. In addition, a seasonal residence trailer would be situated on the site and the fee booth replaced. Six picnic sites are also proposed at Cave Rock, each with a table and grill. Landscaping improvements and trash enclosures are also included in this plan.

The entrance to Cave Rock, for visitors travelling south, requires a tight right turn, with no deceleration lane available. As traffic often moves very quickly in this location, this condition causes problems. Re-alignment of the entrance road, and/or the addition of a south-bound deceleration lane may be necessary at some point, and should receive further evaluation.

c. Spooner Lake

A significant percentage of proposed park facilities would be developed in the vicinity of Spooner Lake (figure 4-5). The proposed facilities will necessitate provision of a small package sewer treatment plant that would be connected to the existing Tahoe Basin sewer export line from Incline Village, which passes through the Spooner area on its way to Carson Valley. Proposals at this management area include:

1. A new tent and trailer campground (no utility hook-ups) would be developed across Highway 28 from Spooner Lake on national forest land. The campground would include two or three separate loops to accommodate approximately 60 campsites, situated on a 25 acre site. The campground would be constructed and managed by the Nevada Division of State Parks under a management agreement or possible future land exchange with the U.S. Forest Service.

   Each tent and trailer site would have a vehicle pull-off, picnic table and barbecue grill. In addition, at least one-third of the sites would have a tent pad; some of these sites could be developed as walk-in tent sites separated from one or more

small vehicular parking areas. An average of one water spigot per four campsites would be provided. Comfort stations with flush toilets and hot showers would serve the area. A trailer dump station would also be included. Access to the campground would be provided via an entrance road off Highway 28.

Interpretive trails would also be provided in and near the campground. Captain Pomin Rock affords scenic views of Lake Tahoe, and is in close proximity to the campground. Appropriate signage will encourage campers to use these trails, and to avoid nearby private property.

2. A group campground would be developed adjacent to the tent and trailer campground, encompassing perhaps two acres. This facility would be comprised of approximately 10 units for organized groups. Designed to accommodate both tents and RV's, it would serve a diversity of groups, ranging from Boy Scouts to small Good Sam Club caravans. A centralized comfort station with flush toilets, hot showers and a water source would service the area.

3. A small Visitor Interpretive Center with up to 50 PAOT (people at one time) capacity is proposed at the junction of Highways 50 and 28, overlooking Spooner Lake. Parking for this facility will be located on an existing cleared area, just north of the intersection.

   Additional parking will be located within the Spooner management area. These parking area(s) will accommodate a total of 160 PAOT (people at one time), including the visitor center parking.

   At present, the U.S. Forest Service is considering joining the Bureau of Land Management in developing a regional visitor/tourist information facility to serve the eastern Sierras. Depending upon its final location and size, Nevada State Parks may modify its planned Visitor Interpretive Center at Spooner Lake.

   Should the Forest Service choose not to pursue the option with the BLM, the Spooner Lake facility may be made a joint venture with the Forest Service. Another alternative is Nevada State Park participation in a multi-agency regional visitor center in the vicinity of Carson City. This could relegate the scope of the Spooner facility to an environmental education/interpretive center only.

The concept of interpretive facilities throughout the Basin is further discussed under Regional Considerations, page 4-14.

4. In the vicinity of the existing group use ramada/winter ski concession, a new comfort station will be built. A series of warming huts may also be provided, for cross-country trail users during the winter months.

5. The need for horse trailer parking has been identified in the Spooner Lake area, as the numbers of equestrian users have been increasing. In order to adequately meet this need, a separate horse trailer parking area is desirable. The location of this trailhead would be determined upon consideration of several factors such as size, proximity to the North Canyon Trail, and impact on nearby facilities.

   Included in this equestrian trailhead would be overnight parking, to accommodate individuals hiking and/or camping in the Backcountry, who may wish to leave their vehicles either overnight or beyond the designated closing time. This will enable park staff to close the remainder of the Spooner facilities and increase security.

6. Modifications may be made to the existing day use parking areas, to facilitate snow removal.

7. A seasonal ranger residence and small maintenance shop/yard would be built in the vicinity of the existing maintenance shed.

8. A wind driven aerator has been placed on Spooner Lake by the Nevada Department of Wildlife to improve the survival rate of the trophy fish in the lake during periods of low dissolved oxygen content. However, a diversion pipeline from North Canyon Creek to Spooner Lake is desirable to increase the reservoir's volume and to provide a constant flow of oxygenated water, particularly during the winter months when a low oxygen level is most prevalent. However, major archaeological mitigation would be necessary in order to raise the water level of the reservoir to the designed capacity.

9. A Tahoe Rim Trail trailhead will be developed on the north side of Highway 50 at Spooner Summit with interpretive signs, parking for up to 25 vehicles, and limited horse trailer parking. The existing U.S. Forest Service day use/picnic area across the highway will provide a comfort station, picnicking and additional parking facilities.

10. The existing loop trail around Spooner Lake will be re-routed to avoid sensitive areas, and the connector from this loop trail to the Tahoe Rim Trail will be better designated.

11. Several historic logging roads are located on the hills north of Spooner Meadow. With increased traffic on both the Tahoe Rim Trail and the North Canyon Trail to Marlette, consideration may be given to improving and designating these roads as trails, in order to disperse traffic in this area.

12. Entry to Spooner Lake for north-bound visitors has similar traffic problems as those for south-bound visitors at Cave Rock. A sharp right-hand turn is required, with no deceleration lane. Traffic at this location often moves very quickly, causing safety hazards at this location. The addition of a deceleration lane, and/or the re-alignment of the entrance road may be necessary, and should be further examined.

d. Backcountry Area

Provisions will be made for more readily available access to the high country by hikers, horseback riders and mountain bikers. A series of loop trails will be developed utilizing existing trails to the extent possible (figure 4-6). Restroom facilities in the general vicinity of Marlette Lake are also recommended.

1. A primary objective will be completion of the Tahoe Rim Trail through the length of the existing 13,700 acres of the park. Several existing and proposed trails will connect the Rim Trail with other park trails. These connector trails include the previously discussed Spooner Lake connector trail, Rim Trail/North Canyon connector trail, Snow Valley Peak Trail, Franktown Creek Trail and Tunnel Creek Trail.

2. Other trails would be developed or designated between Lakeview and Washoe Lake State Park, as well as between Price Lake and Tunnel Creek Trail.

3. A focal point of the Backcountry will be a series of four primitive campgrounds spaced periodically along the network of existing and proposed trails. Two partially completed primitive campgrounds with two campsites in each area are currently available at Franktown Creek and North Canyon. These will remain and be improved. Two new primitive campgrounds are proposed for Twin Lakes and Marlette Peak. None are proposed within the Marlette Lake or Hobart Reservoir watersheds.

The campsites will be generally clustered into small groups of four or five individual sites. Each campsite cluster (campground) would feature a fire ring, sani-hut, tent pad, and a developed water source (spring or hand pump well). No open fires would be permitted during the fire season; only portable backpacker stoves could be used. As least one primitive campground (Franktown Creek Camp) would be available for horses and would include a series of hitching posts or tie racks.

4. The Backcountry would be serviced by a series of new trailheads, in addition to the existing trailheads at Spooner Lake, Spooner Summit and Davis Creek County Park. Additional trailheads would be established on public lands at Ash Canyon, Tunnel Creek, and Lakeview. A major Tahoe Rim Trail trailhead would be established at Tahoe Meadows. The trailheads will generally feature 12-25 parking spaces and an informational kiosk, except at Tahoe Meadows, which will have approximately 50 parking spaces, including a half dozen horse trailer spaces.

a. Trailhead parking for vehicles and horse trailers, as well as an informational kiosk are proposed at Ash Canyon. Should the need arise to enlarge the trailhead, a second phase of development may add sanitary facilities and a water source.

ORV access beyond the trailhead to the existing park boundary would be permitted to continue per existing policy. Development and management would be a cooperative effort between Carson City and Nevada State Parks. The exact location of this trailhead has not yet been determined.

b. Trailhead parking and an informational kiosk only are proposed in the general vicinity of Lakeview. Development and management would be under the jurisdiction of the Carson City Park and Recreation Department in cooperation with the Nevada Division of State Parks. No ORV or other public vehicular access would be permitted beyond Lakeview on Hobart Road, per existing policy. Non-motorized access to the Backcountry would be provided via the existing jeep trail to Hobart Reservoir and Franktown Creek.

The exact location of this trailhead would be determined at the time of further public hearings, if and when construction and management details are better defined. Daily supervision of the trailhead would be carried out, either by city or state personnel. A proven strategy for controlling vandalism would

be developed, in order to properly address the concerns of nearby residents.

c. Parking is badly needed at Tunnel Creek, not only to serve the trailhead, but to serve Hidden Beach as well. Approximately 20 spaces are proposed for this site with an informational kiosk. Because the area is partially within a SEZ (Stream Environment Zone), a replacement riparian stream zone will have to be acquired or rehabilitated prior to development of this trailhead.

5. The possibility of an equestrian concession is addressed in this plan, and is suggested for further investigation and consideration. The facility may provide trail rides into the backcountry area, utilizing the park trail system and horse camp facility. The location of this concession would be dependent upon such factors as existing and future Tahoe Basin horse concession programs, access, water availability, etc. A potential partnership between the U.S. Forest Service and Nevada State Parks may be considered, to best serve visitors to the area, and to provide a quality equestrian facility. This plan recommends investigating these options, and making a final determination upon further examination of all possibilities.

6. The historic Red House Structures are rapidly deteriorating. It is recommended that these structures be given immediate attention. They could be preserved in a state of arrested decay, or restored to their original condition.

7. This plan recommends that the Backcountry Management Area be designated as a State Primitive Area, as described by the Nevada Division of State Parks Policy Manual (Policy Number 23):

"A primitive area is a protected natural environment. The area is primarily managed to prevent degradation of the natural conditions, provide opportunities for solitude or primitive recreation and special features. Motorized use within the area is very limited or non-existent."

The exact area to be included in this primitive area has not yet been determined, but would roughly include those lands within the park east of Highway 28, excluding the Spooner Lake Management Area.

e. Highway 28 Corridor

Public lands along Highway 28, from Incline Village to Glenbrook, are managed by both the Nevada Division of State Parks and by the U.S. Forest Service (figure 4-7).

1. A series of parking nodes just off Highway 28 are planned by the Forest Service and Nevada State Parks, with trailheads to designated beaches and waterfront areas.

   As parking nodes are constructed, parking along the highway would be reduced or eliminated as proposed by the U.S. Forest Service - Lake Tahoe Basin Management Unit, Land and Resource Management Plan (1988). Parking will be provided by the U.S. Forest Service with associated improvements for 850 PAOT (people at one time). One of these parking nodes, to accommodate 20 vehicles near Marlette Creek, has been completed. This area will be opened to the public upon completion of appropriate signage.

   Proposed for 1990 is a second parking node, where the U.S. Forest Service Secret Harbor access road intersects Highway 28. This parking area would accommodate 50 vehicles and would be located on the west side of the highway, north of the intersection. At some time in the future, the opportunity may exist for a third parking node, further down this access road. This location, however, may not prove suitable, and further on-site investigations may be necessary to determine its location, size, and impact.

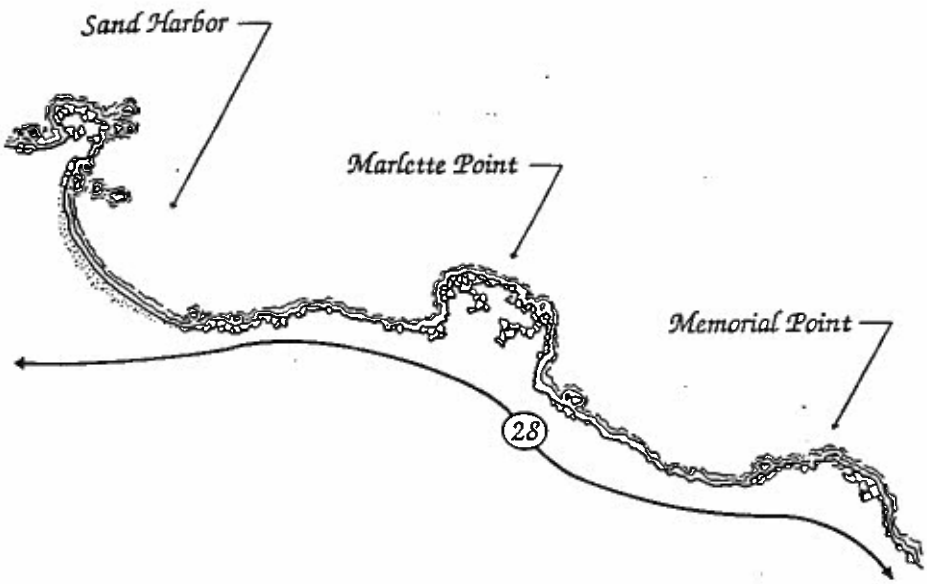
   A fourth parking area will be developed by Nevada State Parks, to serve the Tunnel Creek Trailhead area. Site suitability will depend upon such factors as land availability, access, and user safety.

2. Hidden Beach will be served by a self-contained comfort station, developed access trails and information/interpretive signs or kiosk. Parking will be very limited, confined to the nearby Tunnel Creek Trailhead parking node.

3. Memorial Point provides an existing vista point with off-highway parking. Two trails to the lakeshore with information/interpretive signs and/or kiosk are proposed. Sanitary facilities are also planned, with small observation platforms included.

4. A treated surface bike trail is proposed between Incline Village and U.S. Highway 50 at Spooner Lake. The bike trail would parallel Highway 28, utilizing existing roads and trails where possible, and would be wide enough to accommodate bicyclists and pedestrians.

5. Marlette Point, located between Sand Harbor and Memorial Point, is a popular sunbathing destination for pedestrians and bicyclists. The recommended bike trail would serve this area, and would increase user safety along this stretch of Highway 28.



6. Skunk Harbor, on national forest land, is currently an undeveloped lakeshore recreation site. Access is by boat or by hiking. Increased visitation may bring the need for sanitary facilities. Service of such facilities may better be suited to State Parks, under an operations agreement. The Forest Service proposes to develop the site for boat-in camping and day use on a small scale. The historic Newhall family house is an interpretive feature at the site.

f. Regional Considerations

As previously mentioned, a regional visitor center is being considered to serve visitors entering the Tahoe Basin from the east. A series of visitor centers have already been developed by a number of agencies, including the U.S. Forest Service, California State Parks, and local authorities within the Tahoe Basin. Additional, cooperatively run information stations are also planned, at each major entry point to the Basin, to assist visitors and orient them to special features, requirements and services of the area.

The locations of these visitor centers on the Nevada side of the Tahoe Basin have not yet been determined, and the role of Nevada State Parks in their development and operation has not yet been evaluated. Their existence, however, is addressed in this plan, and may influence the location and size of proposed visitor centers within the park, such as the one at Spooner Lake.

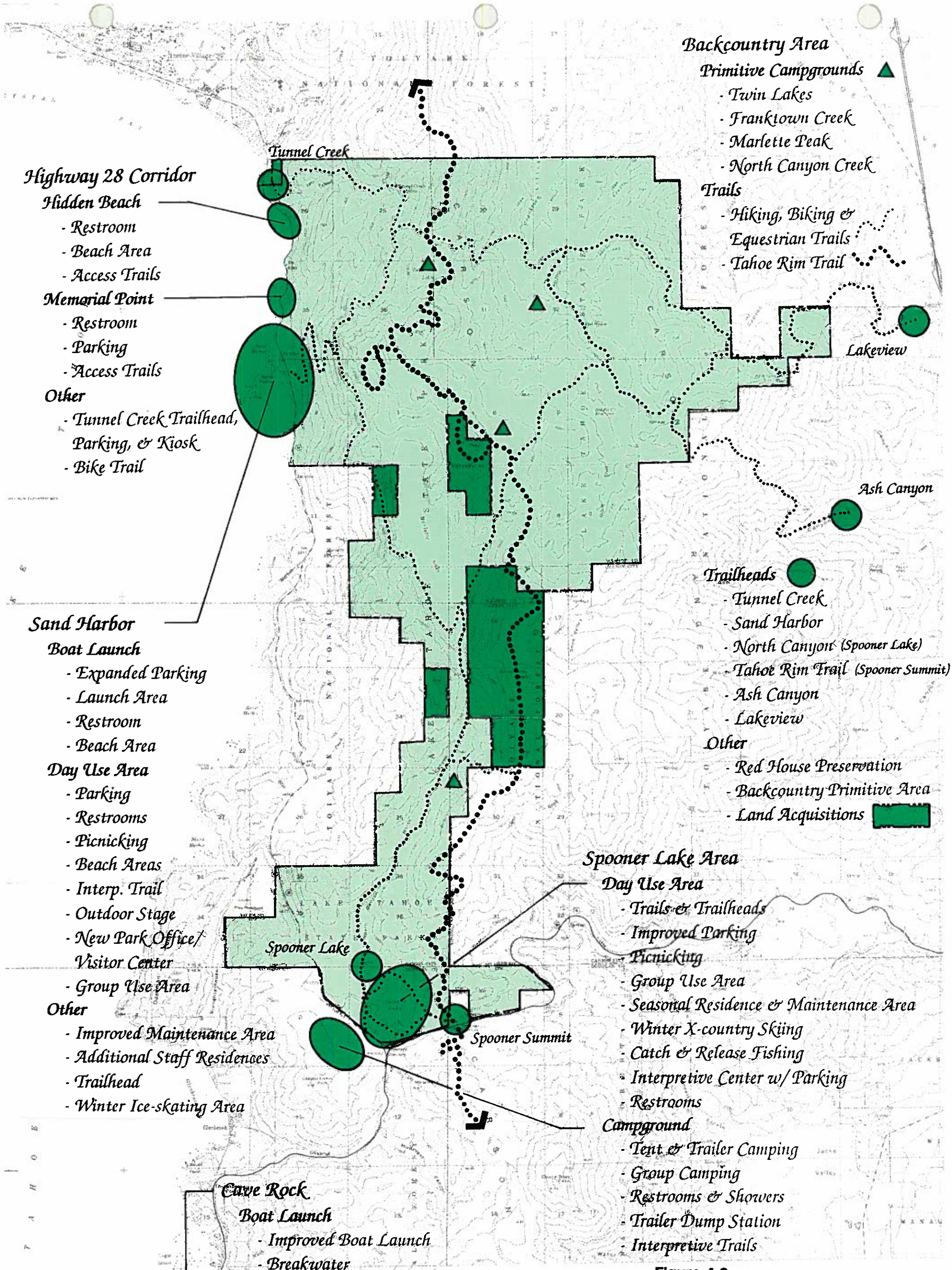


Figure 4-2

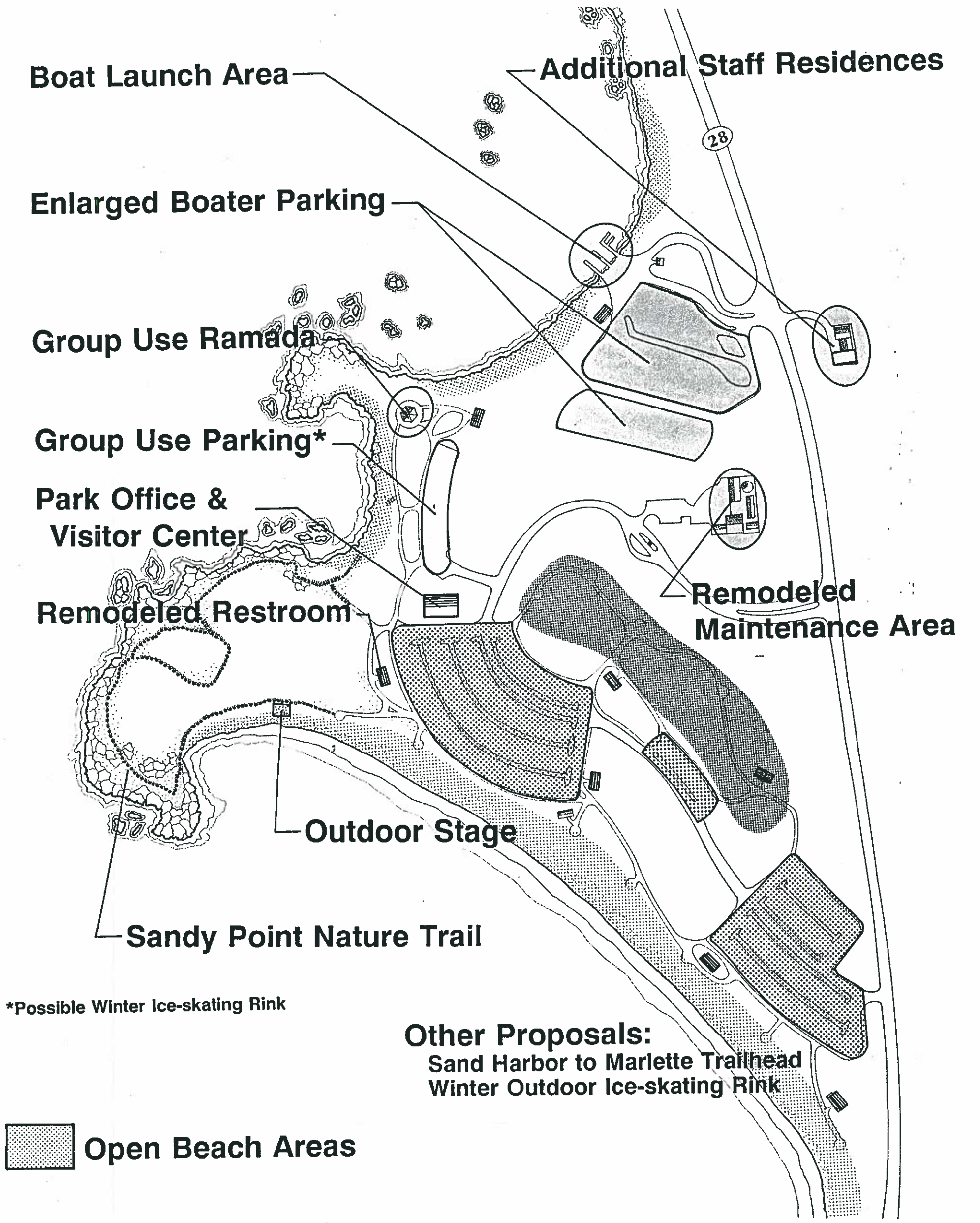
RECOMMENDED PLAN
Lake Tahoe–Nevada State Park

Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989



Open Beach Areas

Day Use Parking

Family Picnic Area

Restrooms

Figure 4-3

RECOMMENDED PLAN

Sand Harbor Management Area

Lake Tahoe-Nevada State Park
Development Plan

0 200' 800'
100' 400'

N

1989

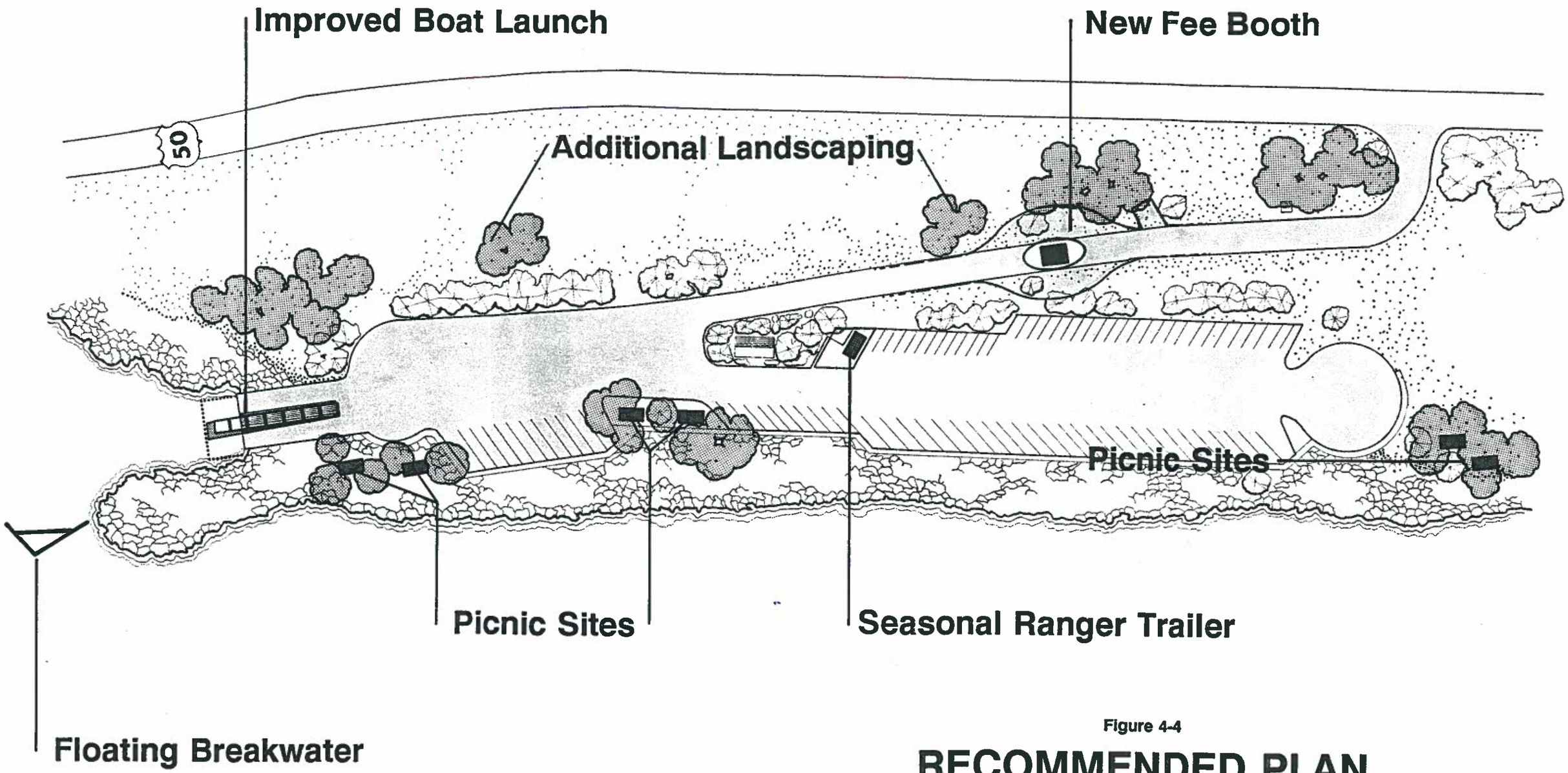


Figure 4-4

RECOMMENDED PLAN

Cave Rock Management Area

Lake Tahoe-Nevada State Park
Development Plan

0 75' 150' 300' N 1989

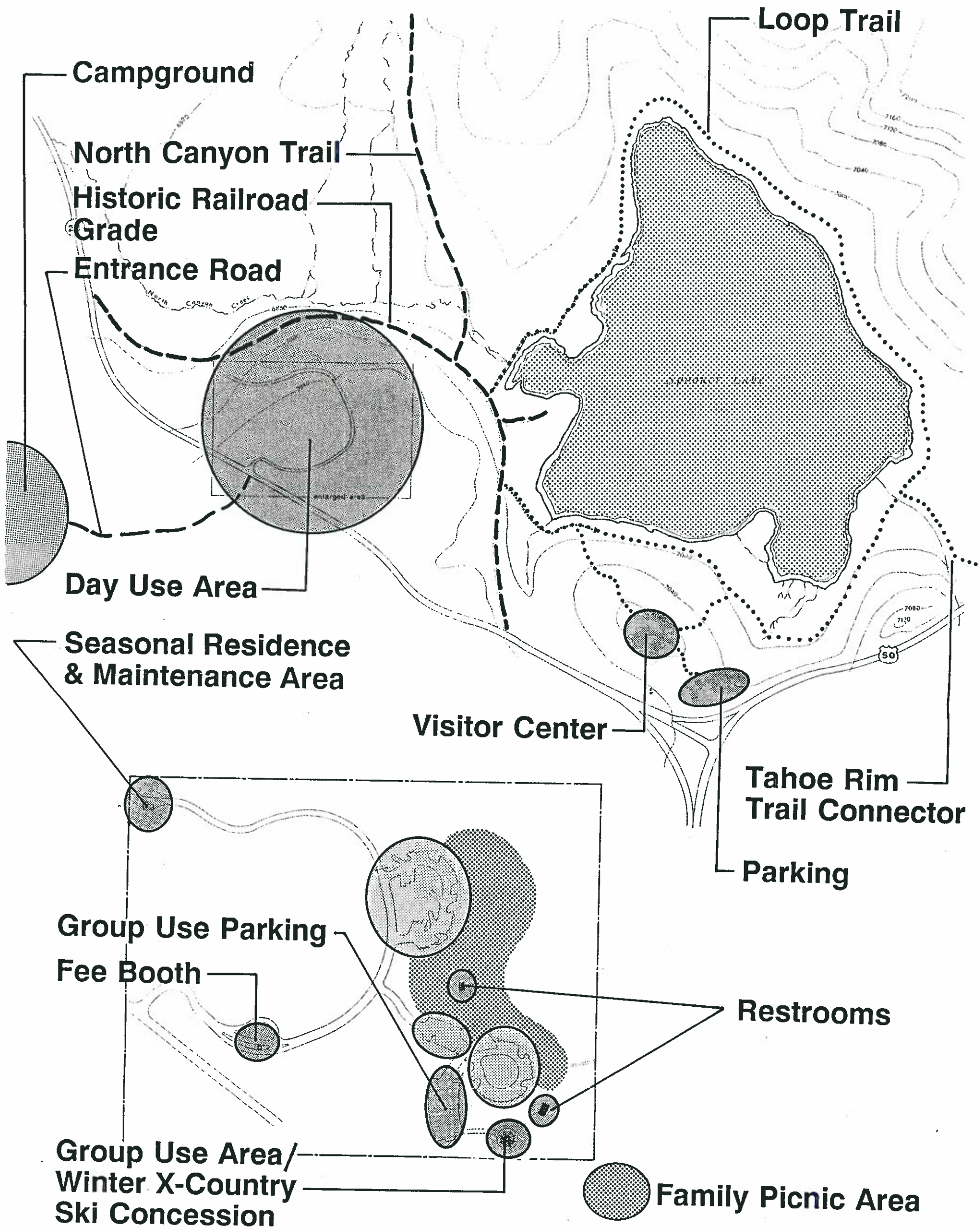


Figure 4-5

RECOMMENDED PLAN

Spooner Lake Management Area

Lake Tahoe–Nevada State Park
Development Plan

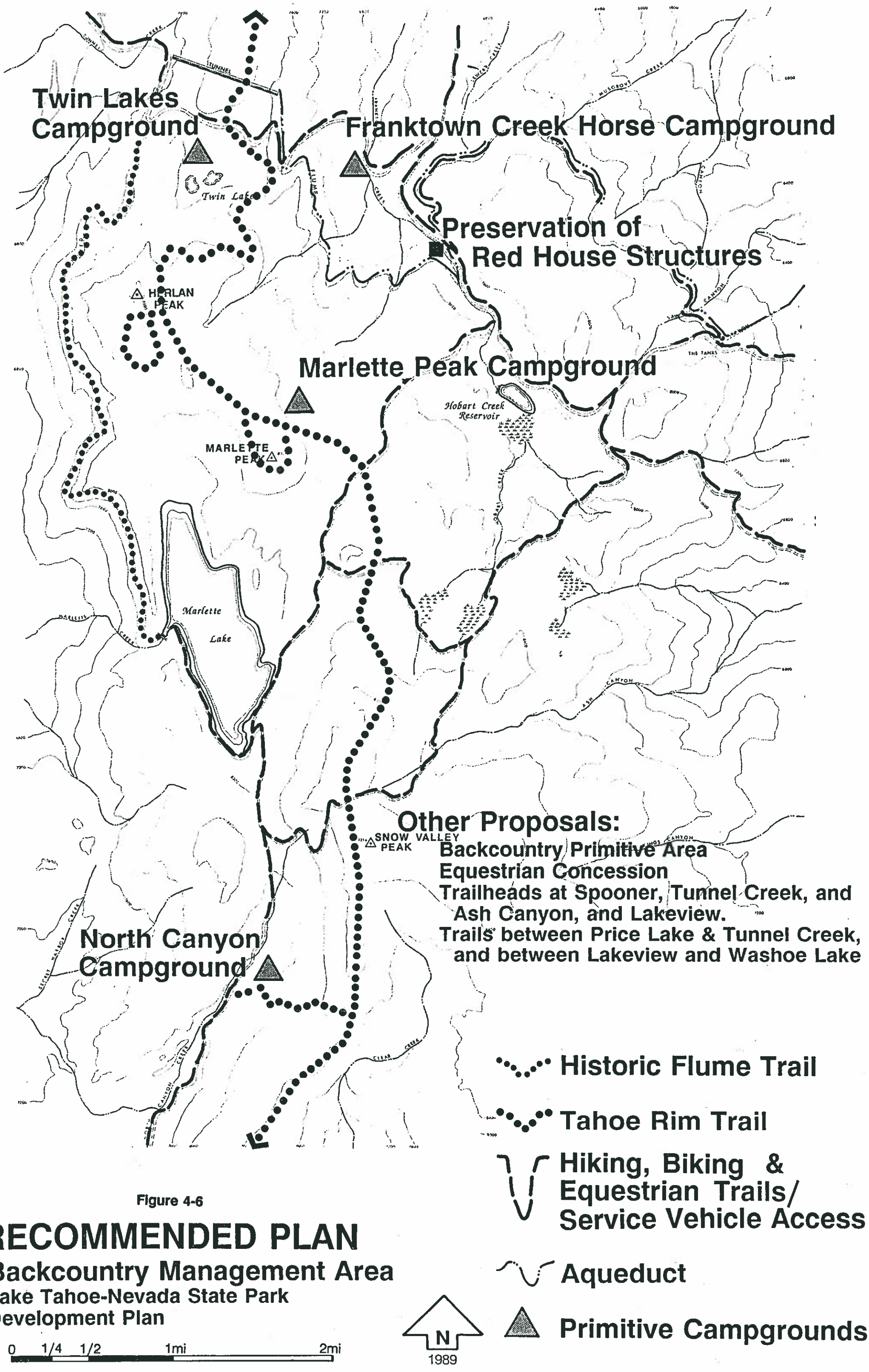


Figure 4-6

RECOMMENDED PLAN

Backcountry Management Area

Lake Tahoe-Nevada State Park
Development Plan

Figure 4-7

RECOMMENDED PLAN

Highway 28 Management Area

Lake Tahoe-Nevada State Park Development Plan

0 250' 1000'
125' 500'

N 1989

Restrooms

Access Trails

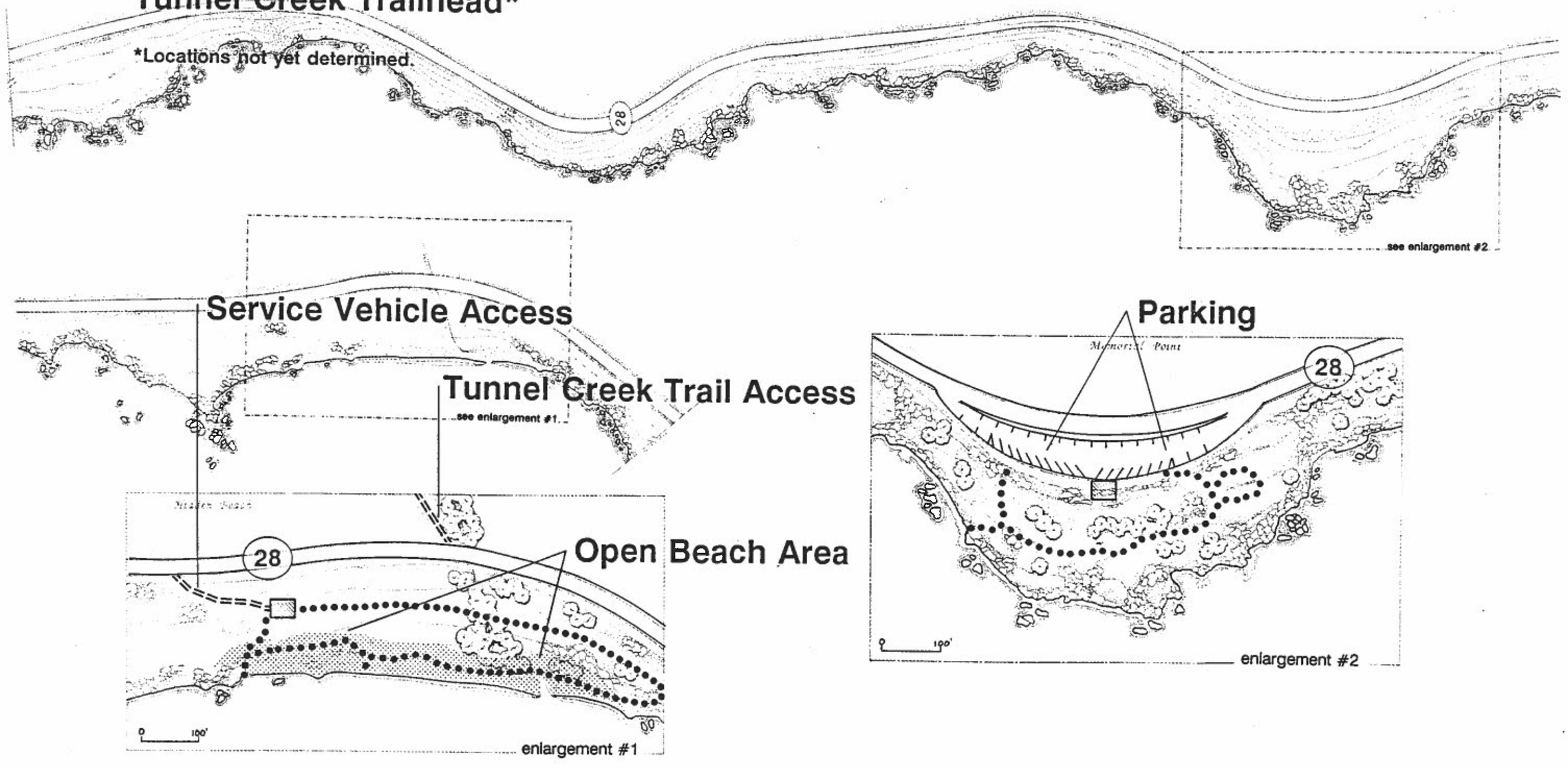
Access Roads

Other Proposals:

Bike Trail*

Tunnel Creek Trailhead*

*Locations not yet determined.



3. FACILITIES LOCATION MATRIX

The following table (Table 4-1) shows the number and type of facilities proposed for Lake Tahoe-Nevada State Park at plan build-out.

Table 4-1
FACILITIES LOCATION MATRIX

	Sand Harbor	Cave Rock	Spooner Lake	Back-country	Highway 28
Marine Recreation:					
Boat Launch	*	*			
Open Beach Area	*	*			*
Catch/Release Fishing Area			*		
Picnicking:					
Group	1		1		
Family	54	6	25		
Camping:					
Group			1		
Family			60±		
Primitive				16-20 sites	
Visitor Center	1		1		
Information:					
Major	*		*		
Minor		*		*	*
Trails	*		*	*	*
Trailheads	1		1	3	1
Staff Residences:					
Permanent	4				
Seasonal		1	1		
Office/ Maintenance Area	1		1		

* Indicates location of facility/activity in Management Area.

4. PLANTING SCHEME

The following table (Table 4-2) is a list of candidate species which are adaptable to the Tahoe Basin and approved for planting by the Tahoe Regional Planning Agency. The final selection of plants should be guided by the existing site conditions, availability of materials, and maintenance requirements, as well as a coherent design concept.

Table 4-2
RECOMMENDED SPECIES LIST AT LAKE TAHOE

Common Name	Scientific Name
Trees:	
Mountain alder	Alnus tenuifolia
White fir	Abies concolor
Red fir	Abies magnifica
Incense cedar	Calocedrus decurrens
Lodgepole pine	Pinus contorta
Jeffrey pine	Pinus jeffreyi
Ponderosa pine	Pinus ponderosa
Sugar pine	Pinus lambertiana
Aspen	Populus tremuloides
Black cottonwood	Populus trichocarpa
Willow species	Salix spp.
Shrubs:	
Mountain maple	Acer glabrum
Western serviceberry	Amelanchier alnifolia
Pinemat manzanita	Arctostaphylos nevadensis
Greenleaf manzanita	Arctostaphylos patula
Big sagebrush	Artemisia tridentata
Whitehorn	Ceanothus cordulatus
Squawcarpet	Ceanothus prostratus
Tobacco brush	Ceanothus velutinus
Rabbit brush	Chrysothamnus nauseosus
Creek dogwood	Cornus stolonifera
Bittercherry	Prunus emarginata
Chokecherry	Prunus virginiana
Bitterbrush	Purshia tridentata
Huckleberry oak	Quercus vaccinifolia
Golden currant	Ribes aureum
Wax currant	Ribes cereum
Sierra currant	Ribes nevadense
Wood's rose	Rosa woodsii

Thimble berry	Rubus parviflorus
Willow	Salix spp.
Western blue elderberry	Sambuscus caerulea
Red elderberry	Sambucus microbotrys
Mountain spiraea	Spiraea densiflora
Creeping snowberry	Symphoricarpos mollis
Mountain snowberry	Symphoricarpos vaccinoides
Ninebark	Physocarpus capitatus

Grasses:

Canby bluegrass	Poa canbyi
Big bluegrass	Poa ampla
Mountain brome	Bromus marginatus
Smooth brome	Bromus inermis
Tall fescue	Festuca elatior
Hard fescue	Festuca ovina var. Durar
Red fescue	Festuca rubra
Sheep fescue	Festuca ovina var. Covar
Meadown foxtail	Alopecurus pratensis
Hairgrass	Deschampsia caespitosa
Indian ricegrass	Dryzopsis hymenoidis
Orchardgrass	Dactylis glomerata
Perennial ryegrass	Lolium perenna
Squirreltail	Sitanion hystrix
Timothy	Phleum pratense
Bluebunch wheatgrass	Agropyron spicatum
Intermediate wheatgrass	Agropyron intermedium
Slender wheatgrass	Agropyron trachycaulum
Pubescent wheatgrass	Agropyron tricophorum

5. EVALUATION OF THE PLAN

a. Evaluation of the Plan Pertaining to Issues

Chapter One outlines several issues considered during this update. The following is an evaluation of how well the proposed plan addresses those issues.

1. SCORP Identified Issues

This plan provides expanded and enhanced recreation opportunities in all management areas. This will help meet an increasing demand for recreation opportunities in the area.

By improving launch facilities and other water related activities, as well as enhancing access to mountainous areas and providing camping, this plan addresses the need expressed by Nevadans to enhance water-oriented and other outdoor activities.

2. User Conflicts/Visitor Impacts

Efforts to minimize visitor impacts on the park's sensitive areas are ongoing, and include fencing, revegetation, and signing where appropriate. Visitor centers and kiosks will provide environmental education opportunities, which should have a positive effect on reducing adverse human impacts.

This plan specifically addresses some of these impacts.

a. Additional boater parking at Sand Harbor will help minimize congestion and overflow parking along Highway 28, and better utilize the capacity of the existing four ramps.

b. Developed and/or designated trails at Hidden Beach and Memorial Point will reduce the existing erosion problem in these areas. The proposed bike trail will help to alleviate pedestrian and bicycle congestion, while providing non-motor vehicle dependent access. Sanitary facilities will also be provided in these areas.

c. Redesign of the parking lots at Spooner Lake will allow easier snow removal, as well as easier access for horse trailers.

d. Additional primitive campgrounds will serve the increasing numbers of backcountry hikers and backpackers.

e. Replacing the deteriorating boat launch at Cave Rock will reduce congestion, by making launch and retrieval easier. Addition of the floating breakwater will increase boater safety.

3. Public Identified Issues

This plan addresses many of the concerns and suggestions submitted by the public throughout the planning process. Improved launch facilities, expanded boater parking, better developed access along Highway 28, and designation of the backcountry primitive area will meet many of these concerns.

4. Governor's Tourism Program Identified Issues

By enhancing and expanding the outdoor recreation activities available in this park, this plan directly addresses several important aspects of the Governor's Tourism Program. Preservation and interpretation of historic and natural features, enhancement of trails, the addition of camping facilities and visitor centers, and improved group facilities directly address this program.

b. Evaluation of the Plan Pertaining to Goals and Objectives

This plan meets the stated goals and objectives by improving and enhancing existing facilities and recreation activities, and increasing interpretive opportunities.

c. Evaluation of the Plan Pertaining to Plan Concept

This development plan adheres to the plan concept by strengthening the recreational features and opportunities of the park, while preserving its natural resources.

C. IMPLEMENTATION

1. DEVELOPMENT PHASES

Phasing recommendations were based on: importance to the plan concept and recreational needs, necessity for user safety or park maintenance, and the ability to implement the proposal(s).

Phase I:

- Improvements at Cave Rock, including boat launch, fee booth, picnic sites, landscaping and seasonal residence
- Designation of Backcountry Primitive Area
- Enhancement of existing primitive campgrounds, addition of new primitive campgrounds
- Improvements to Hidden Beach and Memorial Point
- Remodeling of comfort station #4, Sand Harbor
- Upgrade remaining comfort stations, Sand Harbor
- Completion of the Tahoe Rim Trail
- Stabilization of Red House structures.
- Seasonal residence, Spooner Lake
- Improvements to Sand Harbor maintenance area

Phase II:

- Additional boater parking at Sand Harbor
- Sand Harbor visitor center/park office
- Sand Harbor to Marlette trail
- Additional staff residences, Sand Harbor
- Re-alignment of Spooner Lake day use parking
- Outdoor skating rink, Sand Harbor
- Maintenance/shop area, Spooner Lake

Phase III:

- Additional comfort station, Spooner Lake
- Spooner Lake visitor center
- Ash Canyon and Tunnel Creek trailheads
- Sanitary facilities near Marlette Lake

Phase IV:

- Campground
- Aeration and North Canyon Creek Diversion to Spooner Lake
- Initiate further consideration of horse concession
- Lakeview and Spooner Summit trailheads

Ongoing:

- Land exchange, purchase and/or management agreements

2. ACQUISITION SCHEDULE

The opportunity to exchange land with the U.S. Forest Service has been identified during this planning process, in order to improve administration and management. An alternative to land exchange would be to enter into a management agreement for use of national forest lands for recreation improvements or for special activities. Under such an agreement, the identity of national forest land would be maintained through appropriate signing, and by notation on park maps and brochures. Private

parcels would eventually be eliminated within the park on a willing seller or life tenancy basis.

Figure 4-8, Lands for Exchange, Purchase, or Management Agreement, identifies these national forest and private parcels, as well as those state lands which could be considered in exchange.

D. SIGN PLAN

1. On-Site

Signs on-site at the park should be informative and clear. All directional and informational signs should follow the sign manual in verbiage and design. A coherent sign plan will be developed during site planning.

2. Off-Site

Signs located off-site direct visitors to the park and specific use areas. This plan recommends placing signs along Highways 28 and 50, identifying various management areas. Figure 4-9 illustrates the locations and general appearance of these signs.

3. Special Areas

Special signs or bulletin boards to educate visitors about safe boat launching procedures are recommended in the ramp areas. Interpretive and informational displays are planned for the Highway 28 Management Area and at the trailheads. At the primitive campsites, signs advising users against campfires during the fire season are advised. In addition to directional signs, "Pack it in, pack it out" and "Fire hazard area" signs are proposed at the trailheads.

At the tent and trailer campground near Spooner Lake, and at the Lakeview trailhead, signs will be added which advise users not to trespass on surrounding private property.

4. Sign Manual

The signs proposed in this plan follow the direction provided in the sign manual. All signs, including directional and those posting park rules, should follow the established standards.

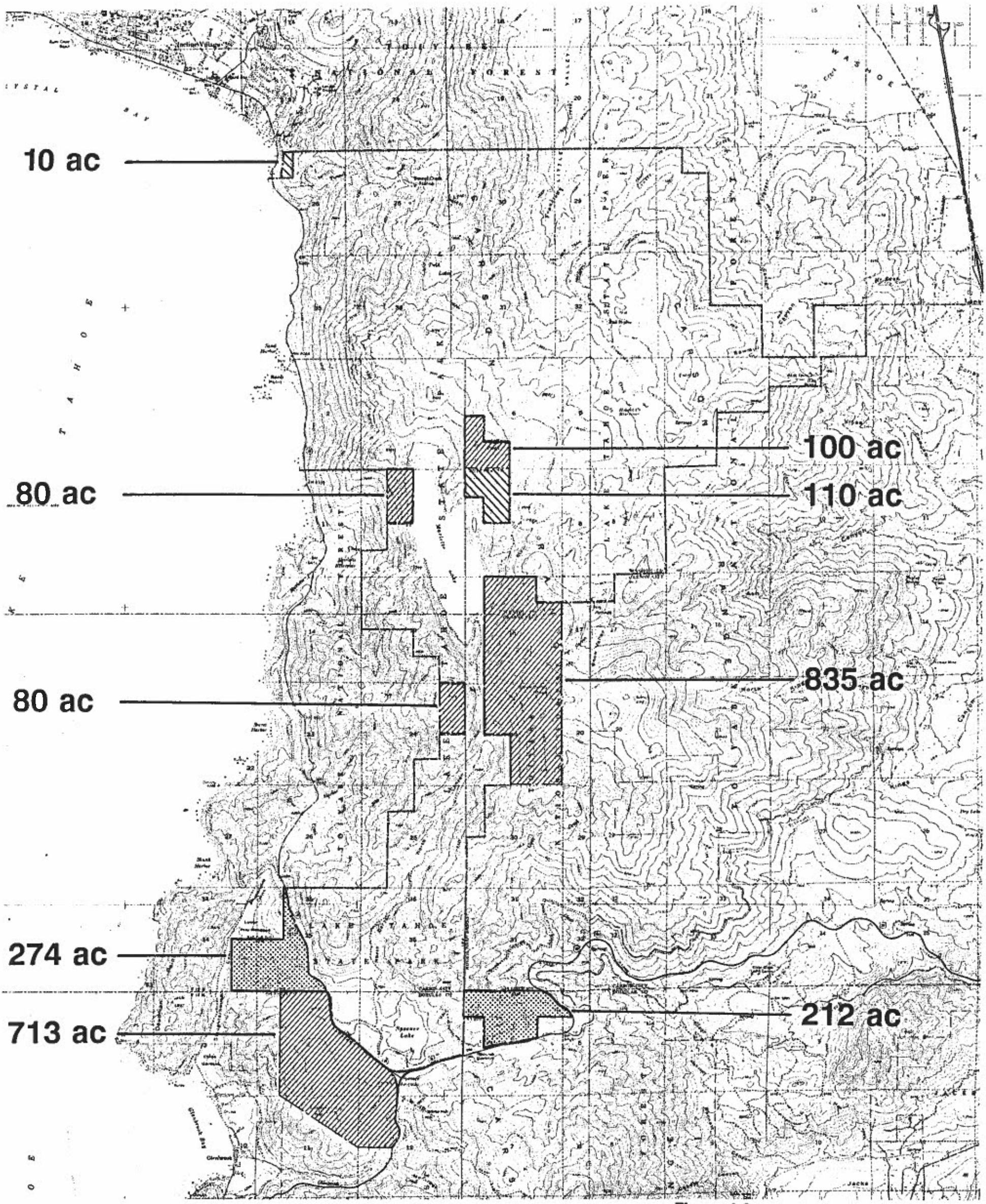


Figure 4-8

LEGEND:

Lands suitable for consideration in exchange, purchase or management agreement.

Private

National Forest Lands

State lands to be used in exchange:

* Acreage figures are approximate.

LANDS FOR EXCHANGE, PURCHASE, OR MANAGEMENT AGREEMENT

Lake Tahoe-Nevada State Park

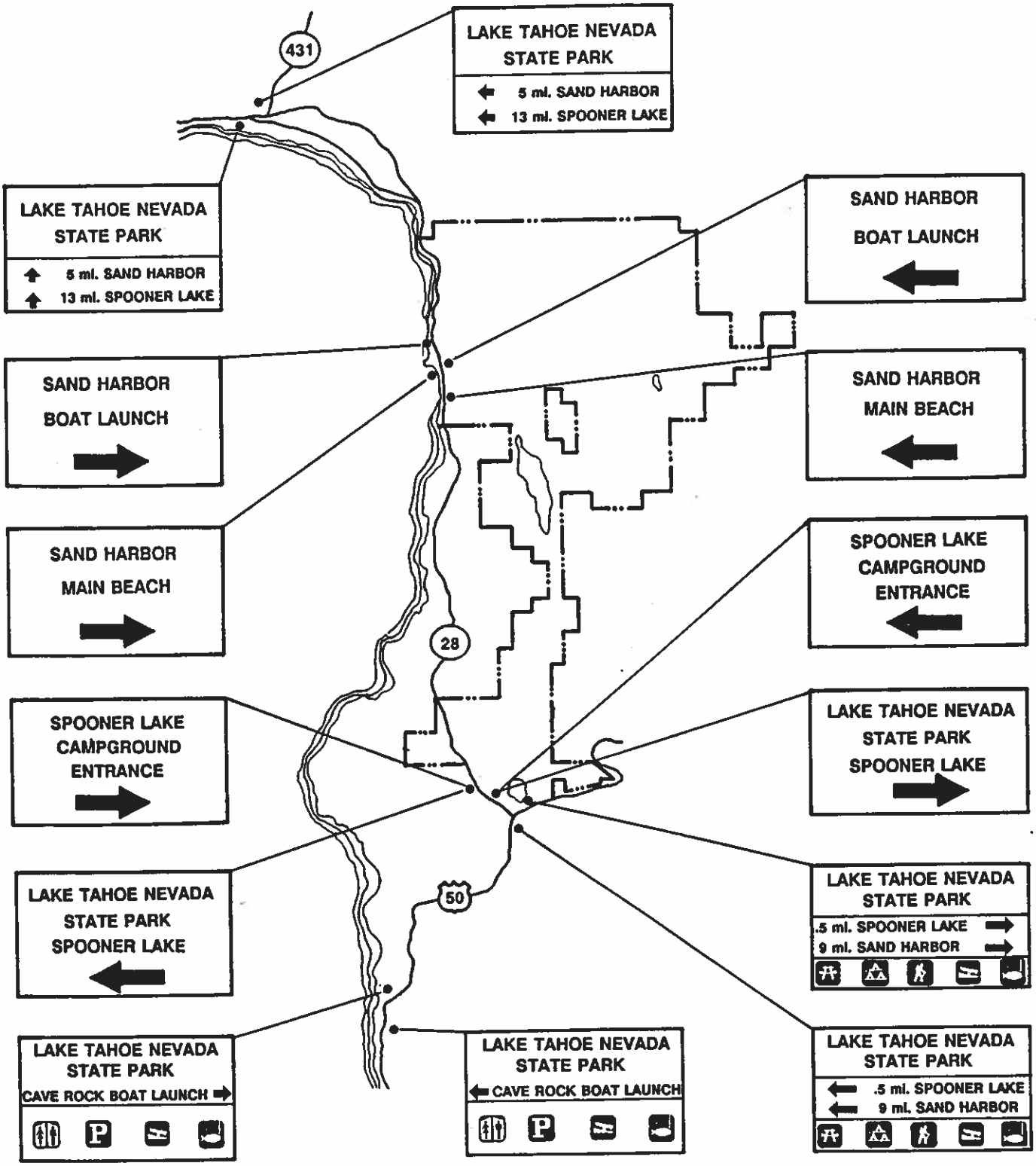
Development Plan

N

0 1/4 1/2 1mi 2mi 3mi

1989

Figure 4-9
OFF-SITE DIRECTIONAL SIGNS



BIBLIOGRAPHY

Text Sources: Written

Alcorn, J. R. The Birds of Nevada. 1988.

Elliott, Russell R. History of Nevada, 2nd edition. 1987.

Fiero, Bill. Geology of the Great Basin. 1986.

Galloway, John Debo. Early Engineering Works Contributory to the Comstock. UNR Bulletin, Geology and Mining Series No. 45. 1947.

Houghton, Sakamoto and Gifford. Nevada's Weather and Climate. 1975.

Market Systems Research for Nevada Division of State Parks. Recreation in Nevada: 1986 Statewide Telephone Survey. 1986.

Market Systems Research for Nevada Division of State Parks. 1987-88 Park User Survey (SCORP). 1988.

Nevada Bureau of Mines and Geology. 7.5' Quadrangles: Carson City, Genoa, Glenbrook, Marlette

Nevada Commission on Tourism. Master Plan. 1987.

Nevada Department of Wildlife.

Nevada Division of Forestry. Marlette-Hobart Management Plan. 1978.

Nevada Division of State Parks. Draft System Plan. 1987.

Nevada Division of State Parks. Policy Manual. 1987.

Nevada Division of State Parks. Statewide Comprehensive Outdoor Recreation Plan (SCORP), Recreation in Nevada. 1987.

Nevada Office of Community Services. Nevada Statistical Abstract. 1986 and 1988.

Nevada State Museum, Dept. of Anthropology. Further Archaeological Investigations at Spooner Lake, Douglas County, Nevada. 1980.

Scott, Edward B. The Saga of Lake Tahoe. 1957.

Short Line Enterprises for the Nevada State Museum. Carson & Tahoe Lumber & Fluming Company's Lake Tahoe Narrow Gauge Railroad Locomotive No. 2 "Glenbrook": Restoration Feasibility Investigation. 1982.

Soil Conservation Service. Soil Survey of: Carson City Area, 1979; Douglas County Area, 1984; Tahoe Basin Area, 1974; and Washoe County, Southern Part, 1983.

Tahoe Regional Planning Agency. Regional Plan Maps: (1) Prime Fish Habitat Overlay; (2) Stream Habitat Quality Overlay; and (3) Special Species Overlay, 1987.

Tahoe Regional Planning Agency and the U.S. Forest Service, Historical and Cultural Committee. Cultural and Historical Significance of the Lake Tahoe Region: A Guide for Planning. 1971.

Tahoe Regional Planning Agency and the U.S. Forest Service, Technical Committee. Fisheries of Lake Tahoe and Its Tributary Waters: A Guide for Planning. 1971.

Tahoe Regional Planning Agency and the U.S. Forest Service, Geology Committee. Geology and Geomorphology of the Lake Tahoe Region. 1971.

Tahoe Regional Planning Agency and the U.S. Forest Service, Technical Committee. Wildlife of the Lake Tahoe Region: A Guide for Planning. 1971.

Tahoe Regional Planning Agency and the U.S. Forest Service, Vegetation Committee. Vegetation of the Lake Tahoe Region: A Guide for Planning. 1971.

U.S. Forest Service, California Region. General Plan for Management of National Forest Lands in the Lake Tahoe Basin. Review Draft. 1973.

U.S. Forest Service, Lake Tahoe Basin Management Unit. Proposed Land and Resource Management Plan. 1985

U.S. Forest Service, Lake Tahoe Basin Management Unit. Wildlife and Fisheries Analysis of the Management Situation. 1984.

WIRTH and Associates for Nevada Division of State Parks. A Land Use Plan for Lake Tahoe State Park, Nevada. 1972.

Text Sources: Interviews

Ballweber, John. Nevada State Railroad Museum: Research Assistant. March, 1989.

Becker, Alice. Nevada Historic Preservation and Archaeology: State Archaeologist. April, 1989.

Brown, Cecil. Continental Telephone. June, 1986.

Clemmer, Glen. Nevada Natural Heritage. March 1989.

Driscall, Bob. Nevada Bell. June, 1986.

Guss, Jim. Sierra Pacific Power: Incline Village. June, 1986.

Hoefer, Jonathan. U.S. Forest Service, Lake Tahoe Basin Management Unit: Land Management Planner. May, 1986.

McDowell, Robert. U.S. Forest Service, Lake Tahoe Basin Management Unit: Recreation Staff Officer. May, 1986.

Nevada Bureau of Mines and Geology. 7.5 Minute Quadrangles: Carson City, 1977, Genoa, 1980, Glenbrook, 1985, and Marlette, 1986.

Shafer, Vern. Southwest Gas Corporation: Incline Village. June, 1986.

Shaffer, Jean. Tahoe Regional Planning Agency: Principal Planner. June, 1986 and March, 1989.

Soderberg, Helen. U.S. Forest Service, Lake Tahoe Basin Management Unit: Wildlife Biologist. March 1989.

Strain, Andrew. Tahoe Regional Planning Agency: Cartographer. May, 1986.

Todd, Larry. Incline Village General Improvement District: Engineering. June, 1986.

Warren, Mark. Nev. Dept. of Wildlife: Reno. March, 1989.

Ziegler, David. Tahoe Regional Planning Agency: Chief Planner. May, 1986.

Appendix 1

ALTERNATIVES SUMMARY

This summary describes the proposed alternatives presented at the public workshop on July 9, 1986.

Alternative A

Sand Harbor - The existing facilities and site character would essentially remain unchanged. Only three significant changes would take place.

1. Comfort station #4 (adjacent to the outdoor stage area) on the main beach would be remodeled and partially converted into a food, beverage and sundries concession, under state license. The architectural character of the building would be maintained, and no building expansion would occur beyond the existing roof line.

2. An additional staff residence is proposed for construction adjacent to the existing residences on Highway 28.

3. Parking in the boat launch area would be managed to increase the boat parking capacity of the existing 42 vehicle with trailers spaces and 16 single car spaces, without physically expanding the existing parking lots (for a variety of reasons, it is not feasible to expand the parking areas). This would be accomplished by implementing two variations of a plan which would restrict the number of towing vehicles that could be parked in the designated boat parking area on holidays and peak weekends.

   Plan A - Whenever the first of the two existing boat parking lots becomes full, any additional visitors will be allowed to park only their boat trailer in the second parking lot. The towing vehicles would be required to disengage and park elsewhere. .. in the main day use parking lot or along the highway where parking is permitted. This would increase the current number of boats that would be served by the existing launch facilities by approximately 50% (60 boats total).

   Plan B - Both boat parking lots would be managed as described above for lot #2 on designated holidays and peak weekends. This would more than double the existing boat launching capacity of the area to approximately 100 boats. Consideration could be given for a shuttle bus to pick up and drop off drivers at Incline Village, Memorial Point and the main day use (beach) parking lots.

Spooner Lake - A significant percentage of proposed park facilities would be developed in the vicinity of Spooner Lake, in addition to the existing 89 parking spaces, picnicking, comfort station, group use area and trailhead facilities. This would necessitate provision

of a small package sewer treatment plant that would be connected to the existing Tahoe Basin sewer export line from Incline Village, which passes through the Spooner area on its way to Carson Valley.

1. A new RV and tent campground (no utility hook-ups) would be developed across Highway 28 from Spooner Lake on US Forest Service lands. The campground would accommodate 60 - 80 campsites and encompass approximately 15 - 20 acres. The campground would be constructed and managed by the Nevada Division of State Parks under a management agreement or land exchange with the USFS. Each site would have a vehicle pull-off, picnic table, B-B-Q grill and tent pad. One water spigot per four campsites would be provided. Comfort stations with flush toilets and showers would serve the area. A trailer dump station would also be included.

2. A Visitor Center with 75 PAOT (persons at one time) capacity and 20 - 25 parking spaces would be developed at or near the existing Spooner Summit Fire Station. The center would feature self-service visitor information, educational displays and toilets for Tahoe Basin visitors.

3. The existing cross-country ski concession would be eliminated; no plowing of the existing trailhead parking area or trail grooming would occur. The existing snowplay area at the junction of Highways 50 and 28 would remain, with some plowing as provided by the Nevada Department of Transportation.

4. A small seasonal maintenance shop and seasonal ranger residence would be erected in the vicinity of the existing maintenance shed.

5. An aerator would be placed on Spooner Lake by the Nevada Department of Wildlife to improve the survival rate of the trophy fish in the lake during periods of low dissolved oxygen. An alternative is to construct a diversion pipeline from North Canyon Creek to Spooner Lake to provide a constant flow of oxygenated water during the winter months when the low oxygen problem is most prevalent.

6. A Tahoe Rim Trail trailhead would be developed on the north side of Highway 50 at Spooner Summit with parking and interpretive signs. The existing picnic area across the highway will provide a comfort station and picnicking facilities. A new trail would connect the Spooner Summit Trailhead with the existing Spooner Lake/North Canyon Trailhead.

Cave Rock - No significant changes to the existing facilities, except for replacement of the existing boat dock, is proposed in this alternative.

Backcountry Area - Provisions will be made for more readily available access to the high country by hikers, horseback riders and mountain bikers. A series of loop trails will be developed utilizing existing trails to the extent possible. A primary objective will be completion of the Tahoe Rim Trail through the length of the 13,700 acre state park, for use by hikers and horseback riders. In addition, connector trails would be developed

between Lakeview and Washoe Lake State Park, as well as between Price Lake and the Tunnel Creek Trail via Little Valley. Due to the existence of research plots on the University of Nevada property in Little Valley, strict access controls and other mitigating measures would be necessary should the University permit use of the existing road by hikers and horseback riders.

The focal point will be a series of primitive campsites spaced periodically along the network of existing and proposed trails. The campsites would be generally clustered into small groups of four or five individual sites. Each campsite cluster (campground) would feature a fire ring, sani-hut, tent pad and a developed water source (spring or hand pump well). A firewood stack and Adirondack (three sided) shelter would be optional. Portable backpacker stoves would be required during the fire season. At least one primitive campground (Marlette Peak Camp) would be reserved for horses and would include a series of tie racks and a water trough.

Two partially completed primitive campgrounds with a total of four campsites are currently available. The one on Franktown Creek along the Tunnel Creek Trail will remain. The North Canyon Trail site would be relocated to the summit between Marlette Lake and North Canyon. Other potential sites include Snow Valley Peak, Marlette Peak and Twin Lakes along the Rim Trail, along the Ash Canyon Trail above Hobart Creek Reservoir and on Franktown Creek just below Hobart Lake. Several property parcels would be exchanged, acquired or brought under a management agreement with USFS. Inholdings would eventually be eliminated on a willing seller or life tenancy basis. Particularly crucial is the Snow Valley Peak USFS parcel.

Trailheads - The Backcountry would be serviced by a series of new trailheads, in addition to the existing trailheads at Spooner Lake, Spooner Summit and Davis Creek County Park. Additional trailheads would be established on public lands at Lakeview, Ash Canyon, Kings Canyon and Incline Village. A major trailhead/sno-park would be established at Tahoe Meadows. Most trailheads would feature 12-25 parking spaces and an information kiosk; the Tahoe Meadow Trailhead would consist of a series of parking areas totaling approximately 200 spaces and would also feature all-weather comfort stations.

The Ash Canyon Trailhead would provide OHV access to the existing park boundary, where a small semi-developed campground of 5-6 sites would be designated (no OHV would be allowed past this point per existing policy).

The Incline Trailhead would provide parking at the junction of Tahoe Blvd. and Lakeshore Drive, on the existing state highway right-of-way. This trailhead would feature access to the Rim Trail and Backcountry via the historic Tunnel Creek Road, which reportedly has prescriptive public access rights across adjacent private property to the park boundary. In addition, this trailhead would provide access from a proposed horseback riding concession at the Ponderosa Ranch. This operation would be owned and managed by the Ponderosa Ranch and could feature all day or even overnight trail rides into the Backcountry, under agreement with State Parks, utilizing the park trail system and horse camp facility.

Other trailheads are discussed below.

East Shore/Highway 28 - A series of parking nodes just off Highway 28 are proposed, with trailheads to designated beaches and waterfront areas. Parking along the highway would be entirely eliminated. In addition, one beach would be managed for campers. Management of the individual sites would take place by either State Parks or USFS, depending on location.

Memorial Point provides an existing vista point with off highway parking. Two trails to the lakeshore with interpretive signs are proposed. Management will continue to take place by State Parks.

Chimney Beach would be converted to a campers' beach with no day use parking provided. An RV and tent campground would be developed across the road, accommodating 60-80 sites. Facilities would be similar to those described above for the Spooner campground. In addition, trail access to Marlette Lake would be maintained. Construction and management of this campground would be by State Parks under a cooperative management agreement or land trade with the USFS. Sewage would be exported to Sand Harbor for treatment via a new pipeline.

The Secret Harbor Beaches would continue to be operated by USFS. A trailhead parking area would be developed for approximately 50 vehicles, with a comfort station and information kiosks near Secret Harbor Creek. A connector trail would be developed to tie into the existing trail.

Skunk Harbor would be converted into a group use area (by reservation only). The existing "hunting lodge" would be partially restored with a concrete floor, repaired roof and open doorways and windows for use as a group shelter. A comfort station and water would have to be redeveloped. A trailhead would be developed near the highway to reduce the volume of traffic utilizing the existing a road to the lodge (i.e. shuttle or car pooling).

Mount Rose Highway Vista - The State currently owns approximately 5 acres adjacent to the existing scenic vista, which has been designated for transfer to the USFS. Additional parking, interpretive displays, a public phone and an information kiosk are possibilities.

Alternative B

Some aspects of Alternative B are similar or even identical to Alternative A. The major differences are discussed below.

Sand Harbor - Proposals for Sand Harbor in this alternative are identical with the previous alternative, with three significant differences. Conversion of a portion of comfort station #4 into a concession would not take place. Rather, one or more hand cart vending stands would be operated under a State Park concession permit, selling such items as ice cream, hot dogs, cold soft drinks, photographic film and suntan lotion.

The boat launch parking situation would also differ from the previous alternative. The status quo would essentially be maintained, with no effort to manage for additional boat parking on holidays and peak weekends.

This alternative also suggests the possibility of utilizing the Sand Harbor boat launch parking and dock facilities to accommodate tour boats in the evenings when the parking area would otherwise be virtually empty. Under this plan, a tour boat would dock at Sand Harbor, taking on board passengers who have parked at Sand Harbor for a tour of the Lake. Including Sand Harbor as a scheduled stopping point for one or more current tour boat operators could probably be the most practical option, although Sand Harbor could serve as the point of origin for a tour boat route.

Spooner Lake - Several major differences would occur in accordance with this alternative at Spooner Lake.

1. An RV and tent campground would again be located across Highway 28 from Spooner Lake. This campground would be connected to the existing day use area and entrance road with a new overpass to control access. Under this alternative, the campground would be larger, including 120-150 campsites encompassing 30-40 acres. Some or all of the sites could have full utility hook-ups for RV's. As an alternative to operation by park ranger staff, such a facility could be considered for a concession operation with charges corresponding to commercial rates charged in private campgrounds with full utility hook-ups.

2. A major visitor center with 150 PAOT is proposed on State Park land at the junction of Highways 50 and 28, overlooking Spooner Lake. Included would be approximately 40 parking spaces and up to 25 adjacent picnic sites. This visitor center would be operated by a full time staff comprised of State Park, USFS and/or commercial enterprise (chamber of commerce) personnel. Besides providing general Tahoe Basin information, a Teleguide service would be established to find accommodations for visitors. Environmental education and interpretive displays would be a primary feature. Staff offices and public toilets would also be included.

3. Instead of a horse concession operation operating from the Ponderosa Ranch, a horse concession with barn and corrals would be established adjacent to the Spooner Meadows (near the existing utility shed, north of the picnic/day use area).

4. The cross-country ski concession would be expanded and improved. The existing group use ramada would be converted into a seasonally enclosed structure with removable exterior partitions for the concession operation. Trails would be groomed on a daily basis, and the parking area plowed. Ski equipment rentals/sales and ski instructions would be offered. A snack bar with hot food and beverages would also be provided. A daily and season trail pass would be offered; State Park season pass holders would be offered a half price season trail pass. An option would require the concessionaire to honor the State Park seasonal pass for trail use.

5. Instead of providing an aerator for the Spooner Lake fishery, the water level of Spooner Lake would be maintained at a higher (full) level. This would require archeological mitigation measures encompassing some 20-25 acres of land (mostly above the high water mark), costing in excess of one-half million dollars.

Cave Rock - Under this alternative, the boat dock will be replaced and the existing breakwater would be extended to provide additional protection from wave and wind action during boat launching and retrieval operations.

Backcountry Area - The general concept of this alternative plan is similar to Alternative A. However, their are several significant differences:

1. An alternate route for horses using the Tahoe Rim Trail is proposed for virtually the entire length of the park. Essentially, the horses would be directed to a route located on existing roads and trails within the park. Traffic on the Rim Trail proper, within the park, would then be limited to hikers and backpackers.

2. Some of the proposed primitive campsites would be in a different location than proposed in Alternative A. The locations would correlate more closely with soil suitability. Both of the existing primitive camps would remain in the same location, but would undergo expansion from two to five sites each. The Franktown Creek camp would be converted to a horse (equestrian) camp. Other primitive camp locations include a site near Tunnel Creek Station, Marlette Peak, Hobart Creek and Snow Valley Peak.

3. As in Alternative A, several property parcels would be exchanged, acquired or brought under a management agreement. Inholdings would eventually be eliminated on a willing seller or life tenancy basis. The only significant difference between the alternatives is a parcel between Marlette Lake and the Lake Tahoe shore.

Trailheads - Trailhead locations are essentially the same in both alternatives, with similar facilities. However, no connector trail to Washoe Lake State Park is proposed in this Alternative. In addition, the Incline Trailhead is replaced by a smaller trailhead at Tunnel Creek that would also serve Hidden Beach. The Tunnel Creek Trail would begin at this new trailhead instead of at the Ponderosa Ranch; no horseback riding concession agreement would be made with the Ponderosa Ranch.

The Tahoe Meadows Trailhead would be developed as a "California-Nevada Sno-park" in accordance with a plan concept previously recommended as a preferred alternative for helping to address the winter sports parking problem along the Mount Rose Highway. Under this concept, the State of Nevada and the U.S. Forest Service would enter into a cooperative agreement with the California Department of Parks and Recreation, which manages the California Sno-Park System. This combined Sno-Park system would then provide partial funding for construction of the parking facilities, comfort stations and other trailhead amenities. The fund would also pay for snow plowing of the parking area(s) in winter.

An additional trailhead would be developed below Slide Mountain's east side for 12-25 cars. The most ideal place would be about one mile off of the Mount Rose Highway in the meadow on USFS land at the base of Slide Mountain. An existing jeep trail provides access to the site, although a short stretch of the road traverses private property. Due to avalanche danger, this trailhead could probably not serve winter users. The Ash Canyon Trailhead would include ten RV and tent campsites with minimal facilities; the OHV campsites proposed in Alternative A higher in the canyon are omitted. Unauthorized vehicular access on Ash Canyon Road above the proposed trailhead would be prohibited.

The Kings Canyon Trail would remain open to off-road vehicles. Trailheads along Highway 28 are discussed below.

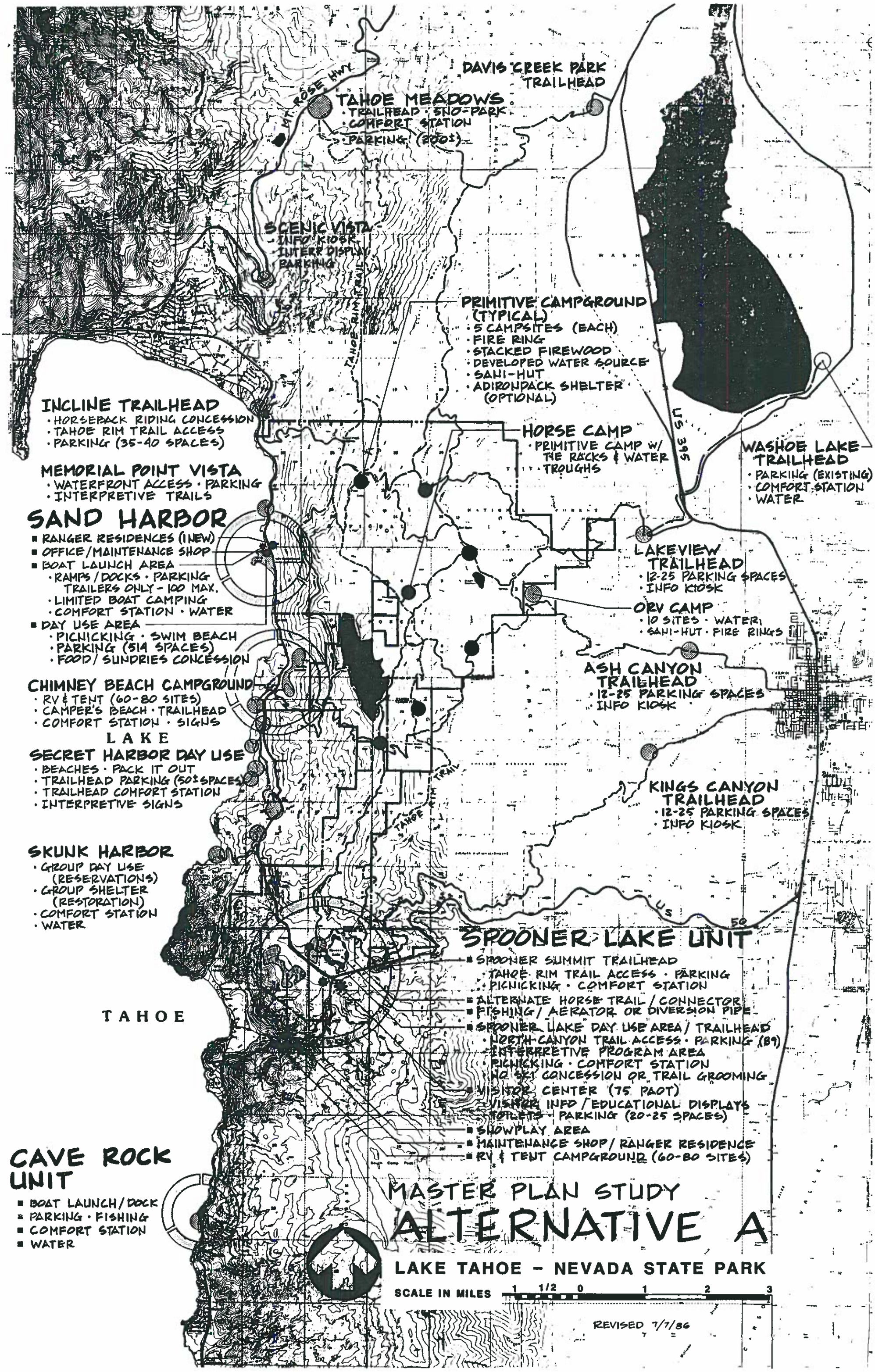
East Shore/Highway 28 - As in Alternative A, a series of parking nodes off of Highway 28 are proposed, with trailheads to designated beaches and waterfront areas. Again, parking along the highway would be eliminated. Management of the individual sites would take place by either Nevada State Parks or the USFS.

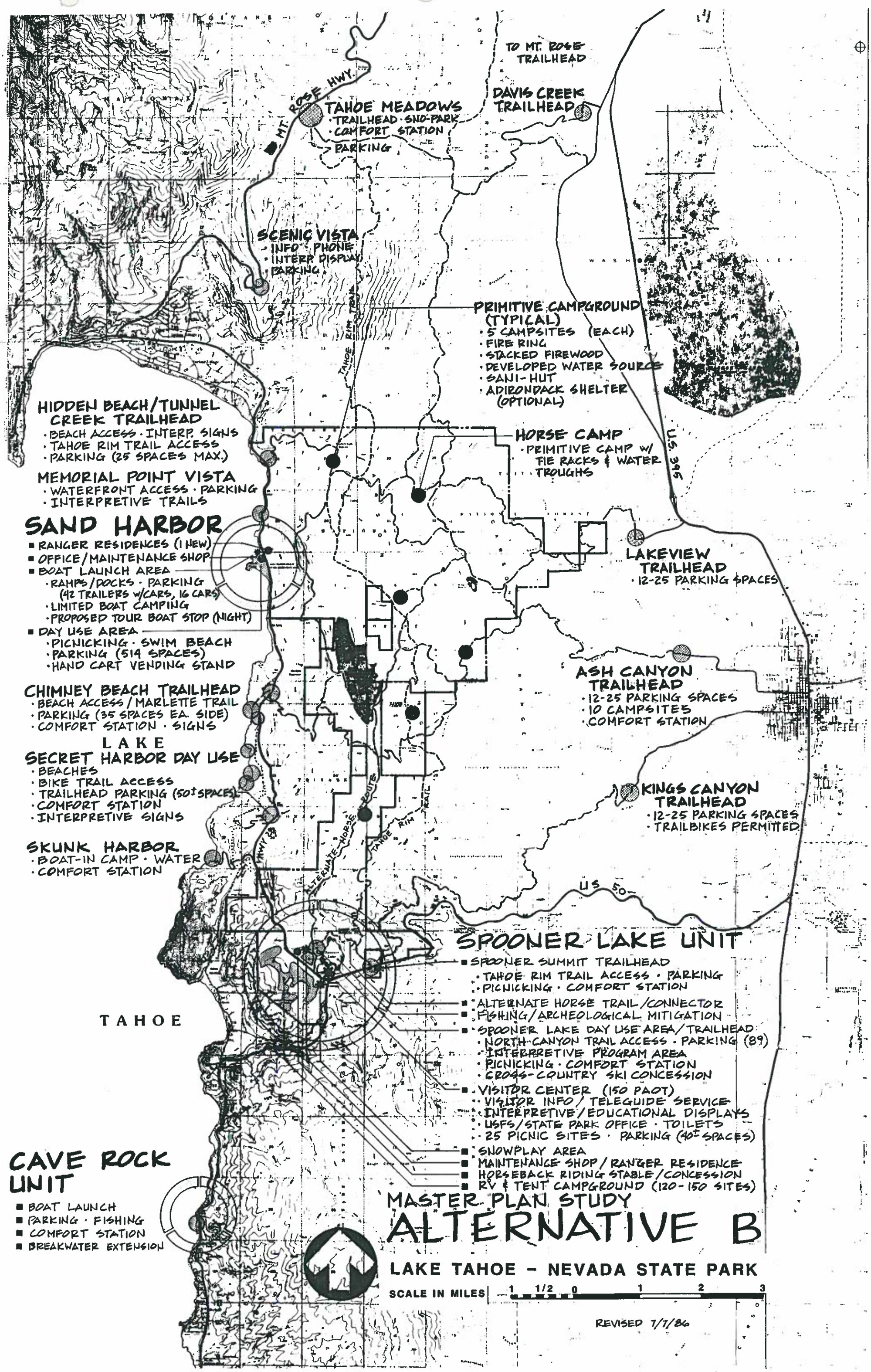
No Chimney Beach campground is proposed in this alternative. Consequently, no campers' beach is proposed. Rather, a day use trailhead is proposed with a comfort station and other trailhead amenities. More strict enforcement of regulations prohibiting glass containers on the beach and littering will be necessitated.

The Secret Harbor Beaches would be served by a treated surface bike trail beginning at the Chimney Beach Trailhead and continuing southward through Glenbrook to Highway 50. The bike trail would be located between Highway 28 and the lakeshore, utilizing existing roads or trails where possible. The bike trail would provide access for utility vehicles to service comfort stations and trash containers located along the trail in close proximity to the beaches. This varies from the other alternative which proposes comfort stations and trash containers only at the trailheads beside the highway.

Skunk Harbor would be a designated boat-in camp with a developed water source and comfort station. No day use would be encouraged and no trailhead would be provided to serve the area. The "hunting lodge" remnants would not be renovated.

Mount Rose Highway Vista - Same as Alternative A.


DAVIS CREEK PARK
TRAILHEAD
MT. ROSE HWY.
TAHOE MEADOWS
· TRAILHEAD · SNO-PARK
· COMFORT STATION
· PARKING (200±)
SCENIC VISTA
· INFO KIOSK
· INTERP DISPLAY
· PARKING
TAHOE RIM TRAIL
PRIMITIVE CAMPGROUND
(TYPICAL)
· 5 CAMPSITES (EACH)
· FIRE RING
· STACKED FIREWOOD
· DEVELOPED WATER SOURCE
· SANI-HUT
· ADIRONDACK SHELTER
(OPTIONAL)
INCLINE TRAILHEAD
· HORSEBACK RIDING CONCESSION
· TAHOE RIM TRAIL ACCESS
· PARKING (35-40 SPACES)
HORSE CAMP
· PRIMITIVE CAMP W/
THE RACKS & WATER
· TROUGHS
US 395
WASHOE LAKE
TRAILHEAD
· PARKING (EXISTING)
· COMFORT STATION
· WATER
MEMORIAL POINT VISTA
· WATERFRONT ACCESS · PARKING
· INTERPRETIVE TRAILS
SAND HARBOR
■ RANGER RESIDENCES (1 NEW)
■ OFFICE/MAINTENANCE SHOP
■ BOAT LAUNCH AREA
· RAMPS / DOCKS · PARKING
TRAILERS ONLY - 100 MAX.
· LIMITED BOAT CAMPING
· COMFORT STATION · WATER
■ DAY USE AREA
· PICNICKING · SWIM BEACH
· PARKING (514 SPACES)
· FOOD / SUNDRIES CONCESSION
LAKEVIEW
TRAILHEAD
· 12-25 PARKING SPACES
· INFO KIOSK
ORV CAMP
· 10 SITES · WATER
· SANI-HUT · FIRE RINGS
CHIMNEY BEACH CAMPGROUND
· RV & TENT (60-80 SITES)
· CAMPER'S BEACH · TRAILHEAD
· COMFORT STATION · SIGNS
ASH CANYON
TRAILHEAD
· 12-25 PARKING SPACES
· INFO KIOSK
LAKE
SECRET HARBOR DAY USE
· BEACHES · PACK IT OUT
· TRAILHEAD PARKING (50± SPACES)
· TRAILHEAD COMFORT STATION
· INTERPRETIVE SIGNS
TAHOE RIM TRAIL
KINGS CANYON
TRAILHEAD
· 12-25 PARKING SPACES
· INFO KIOSK
SKUNK HARBOR
· GROUP DAY USE
(RESERVATIONS)
· GROUP SHELTER
(RESTORATION)
· COMFORT STATION
· WATER
US 50
SPOONER LAKE UNIT
■ SPOONER SUMMIT TRAILHEAD
· TAHOE RIM TRAIL ACCESS · PARKING
· PICNICKING · COMFORT STATION
■ ALTERNATE HORSE TRAIL / CONNECTOR
■ FISHING / AERATOR OR DIVERSION PIPE
■ SPOONER LAKE DAY USE AREA / TRAILHEAD
· NORTH CANYON TRAIL ACCESS · PARKING (89)
· INTERPRETIVE PROGRAM AREA
· PICNICKING · COMFORT STATION
· NO SKI CONCESSION OR TRAIL GROOMING
■ VISITOR CENTER (75 PAOT)
· VISITOR INFO / EDUCATIONAL DISPLAYS
· TOILETS · PARKING (20-25 SPACES)
■ SNOWPLAY AREA
■ MAINTENANCE SHOP / RANGER RESIDENCE
■ RV & TENT CAMPGROUND (60-80 SITES)
TAHOE
CAVE ROCK
UNIT
■ BOAT LAUNCH / DOCK
■ PARKING · FISHING
■ COMFORT STATION
■ WATER
MASTER PLAN STUDY
ALTERNATIVE A
LAKE TAHOE - NEVADA STATE PARK
SCALE IN MILES
1 1/2 0 1 2 3
REVISED 7/7/86


TO MT. ROSE TRAILHEAD
MT. ROSE HWY.
TAHOE MEADOWS
· TRAILHEAD · SNO-PARK
· COMFORT STATION
· PARKING
DAVIS CREEK TRAILHEAD
SCENIC VISTA
· INFO · PHONE
· INTERP. DISPLAY
· PARKING
TAHOE RIM TRAIL
PRIMITIVE CAMPGROUND (TYPICAL)
· 5 CAMPSITES (EACH)
· FIRE RING
· STACKED FIREWOOD
· DEVELOPED WATER SOURCE
· SANI-HUT
· ADIRONDACK SHELTER (OPTIONAL)
HIDDEN BEACH/TUNNEL CREEK TRAILHEAD
· BEACH ACCESS · INTERP. SIGNS
· TAHOE RIM TRAIL ACCESS
· PARKING (25 SPACES MAX.)
MEMORIAL POINT VISTA
· WATERFRONT ACCESS · PARKING
· INTERPRETIVE TRAILS
HORSE CAMP
· PRIMITIVE CAMP W/ TIE RACKS & WATER TROUGHS
U.S. 395
SAND HARBOR
■ RANGER RESIDENCES (1 NEW)
■ OFFICE/MAINTENANCE SHOP
■ BOAT LAUNCH AREA
· RAMPS/DOCKS · PARKING (42 TRAILERS W/CARS, 16 CARS)
· LIMITED BOAT CAMPING
· PROPOSED TOUR BOAT STOP (NIGHT)
■ DAY USE AREA
· PICNICKING · SWIM BEACH
· PARKING (514 SPACES)
· HAND CART VENDING STAND
LAKEVIEW TRAILHEAD
· 12-25 PARKING SPACES
CHIMNEY BEACH TRAILHEAD
· BEACH ACCESS / MARLETTE TRAIL
· PARKING (35 SPACES EA. SIDE)
· COMFORT STATION · SIGNS
ASH CANYON TRAILHEAD
· 12-25 PARKING SPACES
· 10 CAMPSITES
· COMFORT STATION
LAKE
SECRET HARBOR DAY USE
· BEACHES
· BIKE TRAIL ACCESS
· TRAILHEAD PARKING (50± SPACES)
· COMFORT STATION
· INTERPRETIVE SIGNS
KINGS CANYON TRAILHEAD
· 12-25 PARKING SPACES
· TRAILBIKES PERMITTED
SKUNK HARBOR
· BOAT-IN CAMP · WATER
· COMFORT STATION
ALTERNATE HORSE ROUTE
TAHOE RIM TRAIL
U.S. 50
SPOONER LAKE UNIT
■ SPOONER SUMMIT TRAILHEAD
· TAHOE RIM TRAIL ACCESS · PARKING
· PICNICKING · COMFORT STATION
■ ALTERNATE HORSE TRAIL/CONNECTOR
■ FISHING/ARCHEOLOGICAL MITIGATION
■ SPOONER LAKE DAY USE AREA/TRAILHEAD
· NORTH CANYON TRAIL ACCESS · PARKING (89)
· INTERPRETIVE PROGRAM AREA
· PICNICKING · COMFORT STATION
· CROSS-COUNTRY SKI CONCESSION
■ VISITOR CENTER (150 PAOT)
· VISITOR INFO / TELEGUIDE SERVICE
· INTERPRETIVE/EDUCATIONAL DISPLAYS
· USFS/STATE PARK OFFICE · TOILETS
· 25 PICNIC SITES · PARKING (40± SPACES)
■ SNOWPLAY AREA
■ MAINTENANCE SHOP / RANGER RESIDENCE
■ HORSEBACK RIDING STABLE/CONCESSION
■ RV & TENT CAMPGROUND (120-150 SITES)
TAHOE
CAVE ROCK UNIT
■ BOAT LAUNCH
■ PARKING · FISHING
■ COMFORT STATION
■ BREAKWATER EXTENSION
MASTER PLAN STUDY
ALTERNATIVE B
LAKE TAHOE - NEVADA STATE PARK
SCALE IN MILES
1 1/2 0 1 2 3
REVISED 7/7/86

Appendix 2

SUMMARY OF PUBLIC COMMENTS

The following public comments were obtained during the workshop held on July 9, 1986, and from written comments received throughout the planning process.

Comments from public workshop regarding development alternatives:

General Comments:

- Concern expressed about long-range maintenance costs.
- User fees should be reinvested in park facilities and maintenance of facilities.
- Prefer low intensity use of park land.
- Development should maintain quality experience.
- Developed facilities are not needed as a part of this experience.

Sand Harbor:

- Provide coin operated showers at Sand Harbor.
- Repair boat dock bumpers; prefer white color to avoid discoloring boat finishes.
- Concern expressed about alternative requiring boaters to disengage trailers at Sand Harbor Boat Launch Area and park their vehicles elsewhere. General consensus was that this idea was impractical; at the very least, trail period is needed.
- Consider a mountain bike concession at Sand Harbor or Spooner.
- Forget about tour boats at Sand harbor.
- Don't like proposal for food/beverage and sundries concession at Sand Harbor, especially if it involves a hand cart or other portable means.
- Don't like the gravel resurfaced parking lot finish; too hard on feet.
- Area should be left in its current conditions.
- Don't like idea of parking boat trailers at the boat launch and parking vehicles elsewhere.
- Don't like proposed tour boats at Sand Harbor.
- Opposition to concessions at Sand Harbor.

Spooner Lake:

- Like cross-country ski concession, but don't like idea of having to pay to ski up to Marlette Lake.
- Ski concession will provide a beneficial recreation experience for the area as a whole.
- Ski trails should be improved and better groomed, with warming huts along the way.
- A discount should be given to season pass holders.
- Proposed campground should be kept at a minimal size, with no RV hookups.
- Leave RV and group camping development to private enterprise.
- East shore should be left the way it is.
- Proposed visitor center should be kept small, with only interpretive displays; no commercialization should be allowed.

Highway 28:

- Hidden Beach garbage is not being taken care of in April and May (before seasonal staff are available).
- Prefer to have a bike trail along entire east shore of lake; charge a user fee to support bike trail.
- Like idea of servicing beach support facilities from proposed bike trail.
- Prefer limited access, use and facilities at Skunk Harbor.
- Bike path should be accessible to pedestrians, and their safety should be a concern.
- Trail design in Boulder City should be investigated, as these trails support both cyclist and pedestrian traffic successfully.
- The campground proposed at Chimney Beach was found unnecessary.
- Restoration of building at Skunk Harbor was encouraged.

Backcountry:

- It is difficult/impossible to keep ORV's out.
- Don't like Adirondack shelters; tends to concentrate use; inflexible if camp location needs to be moved; not needed here since weather is not that severe.
- Maintain ORV access to park boundary on Ash Canyon Road.
- Trailheads should be left as they are now. Future use will be too much for the backcountry to handle without destruction of resources.
- Parking at Tahoe Meadows should be left alone. Speed limit should be reduced for safety.
- Making people pay for parking at Tahoe Meadows would force them to park illegally, and would send Nevada money out of state to pay for Cal-Trans maintenance.
- Primitive campgrounds should remain primitive, with no shelters, firewood or fire rings.
- Concern raised over trailheads; increased traffic, litter and fire danger. Access should be left to those entering under their own power.
- Maintain ORV access to park boundary in Ash Canyon.
- Concern expressed regarding horse concession and increased horse traffic. This would cause severe erosion.

Written comments - First Public Review Period (1986):

General Comments:

- Funds should be used to maintain existing facilities, rather than develop new ones which would not be properly maintained. (3)
- The park should not become commercialized, either through visitor centers or concessionaires. (1)
- Concern was expressed that State Parks is "biting-off more than it can chew" with proposed developments. State Parks can barely handle what it already has. (4)

Sand Harbor:

- Don't like the idea of tour boats. (1)
- Sand Harbor should remain essentially unchanged. (1)
- Opposition to concessions. (1)

Spooner Lake:

- Support seasonal residence and shop area. (1)
- The concessionaire shouldn't control the entire park. (1)
- Spooner Lake should be left as is, without any further development. (1)
- If visitor center is built at Spooner Lake, leave it as a small, self-serving facility. (1)
- Support warming huts. (1)
- Campground should be phased in. (1)
- Should not add groomed trails. (1)
- Support of ski concession. (1)

Highway 28/East Shore:

- Petition submitted opposing "No Parking" barriers on Highway 28 at Hidden Beach; 188 signatures.
- Concerns expressed regarding the bike trail through Glenbrook. (15)
- East shore of Tahoe should remain primitive and undeveloped. (2)
- Support of parking nodes. (1)

Backcountry:

- Support of California-Nevada snow park at Tahoe Meadows. (1)
- Would like to see equestrian facilities at Ash Canyon and Lakeview, and an equestrian path under the freeway in Washoe Valley. (1)
- Concern that horse use will deteriorate backcountry trails. (1)
- Keep motorized traffic off trails and out of the backcountry. (1)
- Equestrian users should be routed to trails other than those susceptible to erosion, ie: Tahoe Rim Trail. (2)

Cave Rock:

- Support of proposals. (1)

Written comments - Final Public Review Period (1989):

General Comments:

- The park as a whole is being over-developed. (4)
- Proposals seem extreme and extensive in scope. (3)

- Visitors to the parks prefer the "natural" experience. Those who want more have the commercialized areas to turn to. Leave the park alone. (2)
- Development should take place cautiously, without loosing the natural character of the park. (3)
- Presently undeveloped areas should be kept for those who don't want developed recreation sites. (7)
- Opposing concessionaires "taking over" and making a profit from use of public land. (4)
- State Parks should look into leasing parking space from existing, privately-owned parking lots, rather than building new ones. A shuttle could bring visitors to the park. The Ponderosa Ranch parking lot was mentioned. (1)
- Trails and camping maps should be better provided for the public at each park office. (1)

Sand Harbor:

- Support of improving comfort station #4. (1)
- Concern that boating and swimming which take place together at the Sand Harbor boat launch will inevitably lead to severe accidents. Swimmers should be directed to the swim beach, where they are safe from boaters and under the protection of life guards, or a life guard should be added to the boater's beach. (1)
- Boat launch should be limited to the number of vehicles and trailers which can be parked there. This would help alleviate congestion of swimmers and boaters. (2)
- Trailers should not be allowed to park at the scenic pull-out (Memorial Point). This prohibits use of that area for what it was designed as. (1)
- Concern over boaters drinking while boating, particularly with the presence of swimmers. Suggest banning alcohol from the boater beach with signs announcing this policy. (1)
- Support enlarging boater parking lot. (3)
- Support of providing ice-skating rink. (1)
- Would like to see a food and beverage concession. (1)

Spooner Lake:

- Several comments in opposition to the visitor center. Spooner is the last publically accessible "natural" environment on the east shore and should not be developed. (19)
- If a visitor center is built, it should be very small-scaled, and not include tourist information/facilities. (4)
- The charm and solitude of Spooner should not be lost to development. (9)
- Overpass connecting Spooner with campground would be expensive and an eyesore. (9)
- Visitor center should not have any commercialism, but rather be a "natural" place. (3)
- If tourist information in necessary, it should be provided before reaching Spooner Summit, such as near the DOT sand bunker. (2)
- Tourist travelling on Hwys. 28 and 50 should not be directed to Spooner Lake. (5)

- A large map directing tourists and visitors should be placed before reaching Spooner Summit so people will know where they are going before reaching an already congested intersection. (1)
- Opposition to the campground. Concerned about high impact use of a natural, delicate resource, increased foot traffic to the lake, increased vandalism and threat of forest fires. (11)
- Wildlife and natural habitat in Slaughterhouse Canyon and Pray Meadows should be preserved, and would be greatly impacted by the close proximity of a campground. (1)
- A public meeting should be held to inform Glenbrook residents of the proposed campground, since it is in close proximity to them. This meeting will allow them to learn of the States full intention and allow them to better respond. (2)
- Only low impact camping should be allowed. (1)
- Existing campgrounds should be enlarged and improved rather than building new ones. (2)
- Campground should be minimal in size and out of sight from the highways. (2)
- Group camp should be excluded from campground, as groups tend to distract from the peace and serenity that others are looking for. (1)
- Support of overpass and short trails from campground to Capt. Pomin Point. (1)
- Not in favor of improving Spooner Lake in any way, as it is not a natural lake. (1)
- Warming huts are not necessary for cross-country skiers. (2)
- Snow shoeing should be included in cross-country concession. (1)
- Diversion pipeline is a good idea to improve fish habitat. (2)
- State Parks should take over the USFS rest area at Spooner Summit. (1)
- Support of campground. (3)

Highway 28/East Shore:

- Money should be put into hiring someone to supervise the east shore rather than further developing it. Sufficient staff are not available to manage what is already there, so don't develop it any further. (3)
- Don't like the idea of parking nodes, as they will not solve the increasing demand of parking along the highway. (11)
- Nodal parking will not solve the parking problem along the highway. Concern that vehicle break-ins will increase, as will illegal camping and campfires. Erosion of many people using limited access points will increase, as will overuse of adjacent beaches. (4)
- Parking nodes should be limited, and serve as fee areas to supplement the park's budget. (1)
- Need paved turnouts and viewpoints. (1)
- The primitive character of the east shore should be preserved and not developed as the west shore has been. (10)
- Support of Highway 28 bike trail. (3)
- Opposed to using chemical toilets due to lack of maintenance. Propose use of vault toilets. (1)

Backcountry:

- Opposition from Lakeview homeowners to the proposed Lakeview trailhead. (184)
- Suggestions that this trailhead be moved out of a residential area. (5)
- Support of Lakeview trailhead. (2)
- Concern that trailhead not be developed beyond parking only. (1)
- Hiking trail should be developed in addition to Hobart Road. (1)
- Opposition to a trail between Lakeview and Washoe Lake State Park, as it would receive little use. (2)
- Don't like idea of primitive campgrounds. (2)
- Sanitary facilities should be provided at trailheads. (1)
- Campsites, sanitary facilities and water source contradict the intention of creating a "natural area, with opportunities for solitude or primitive recreation." (2)
- Primitive campsites should have picnic tables. (1)
- Should consider the self-contained bathroom that burns the waste. (1)
- Opposed to horse concession. Horses should be restricted to existing roads, so as not to ruin hiking trails. Any horse concessionaire would consider the trails "his," and would want to charge private individuals for their up-keep, as the ski concessionaire has done. (4)
- Horseback riding is adequately provided in the basin, such as at the Ponderosa Ranch and Zephyr Cove.(2)
- Ponderosa Ranch would be interested in enlarging their horseback rides into the backcountry, in conjunction with their existing trails. (1)
- Providing a horse concession would open the door to all kinds of other concessions. None are needed or should be encouraged by State Parks. (2)
- Look into use of historic roads for trails. (1)
- Support of primitive campgrounds. (2)
- Water source at some campgrounds may prove difficult and expensive. Suggest identifying these as "dry" sites, and advising hikers to provide their own water. (1)
- Favor "arrested decay" of Red House structures. (1)
- Support designation of primitive area. (3)
- Don't like the idea of trading away park land for USFS land. Support acquiring USFS and private lands. (1)
- Concern that bikers dominate the trails and are not courteous to hikers and horseback riders. Suggest signage encouraging them to announce their approach, reduce their speed, and be friendly to others. (1)
- Support of cooperative effort between USFS and Parks for management of backcountry area. (2)

Cave Rock:

- Improvements at Cave Rock are necessary and are supported. (3)

Appendix 3

VEGETATION SPECIES LIST FOR THE TAHOE BASIN

Part A: The following vegetation species list has been taken directly from: Vegetation of the Lake Tahoe Region: A Guide for Planning, TRPA and USFS: Vegetation Committee, 1971.

Type O: Open water. Includes standing or flowing water in lakes, creeks, rivers, and lagoons.

Common names	Scientific names
Open water	
Bolander quillwort	*Isoetes bolanderi*
Common cattail	*Typha latifolia*
Quillwort	*Isoetes muricata var. hesperia*
Pondweed, Richardson	*Potamogeton richardsonii*
Sedges	*Carex spp.*
Waterweed	*Elodea canadensis*
Swamps and pools	
Beaked sedge	*Carex rostrata*
Blister sedge	*C. vesicaria*
Indian pond lily	*Nymphaea polysepala*
Manna grass, northern	*Glyceria borealis*
Manna grass, tall	*G. elata*
Marsh marigold	*Caltha howellii*
Narrowleaf bur-reed	*Sparganium angustifolium*
Quillwort	*Isoetes braunii*
Vernal pools	
Lowland cudweed	*Gnaphalium palustre*
Meadow barley	*Hordeum brachyantherium*
Pull-up muhly	*Muhlenbergia filiformis*

Type 1: Bare ground (natural), Alpine. Areas practically devoid of vegetation because of a limitation imposed by a natural, physical, or climatic factor. Most of these areas are near the summit of ridges or mountain tops; often rocky high elevation or snow flush areas.

Bedstraw	*Galium grayanum*
Douglas chaenactis	*Chaenactis douglasii*
Elephanthead lousewort	*Pedicularis groenlandica*
Barestem eriogonum	*Eriogonum nudem*
Graphite eriogonum	*E. lobbii*
Fleabane	*Erigeron barbellalatus*
Gayophytum	*Gayophytum nuttallii*
Gilia	*Gilia leptalea*
Stemless goldenweed	*Haplopappus acaulis*
Goosefoot violet	*Viola purpurea*
Knotweed	*Polygonum davisiae*
Mint	*Monardella odoratissima*
Phacelia	*Phacelia mutabilis*

Common names	Scientific names
Heretic penstemon	*Penstemon heterodoxus*
Rush	*Juncus mertensiana*
Rush	*J. nevadensis*
Saxifrage	*Saxifraga bryophora*
Sibbaldia	*Sibbaldia procumbens*
Sierra primrose	*Primula suffrutescens*
Sticky currant	*Ribes viscosissimum*
Windflower	*Anemone drummondii*

Type 1a: Bare ground (disturbed). Areas of sparse vegetation because of man-caused or related factors, usually in lowland areas; most species are introduced weeds.

Vernal pools

Coyote tobacco	*Nicotiana attenuata*
Fleabane	*Conyza canadensis*
Flixweed	*Descurainia sophia*
Lamb's quarters	*Chenopodium alba*
Lupine	*Lupinus lepidus var. farreyi*
Russian thistle	*Salsola kali*
Squirreltail (or bottlebrush)	*Sitanion hystrix*
Willow herb	*Epilobium glaberrimum*
Wiregrass (or yardgrass)	*Polygonum aviculare*

Type 2: Herbaceous. Vegetation is made up of many combinations of species of low growing, non-woody herbs and grasses (may include a thin scattering of trees or shrubs) in meadows, marshes, or grass areas.

Wet marsh or meadow

Aster	*Aster alpegius*
Awl bulrush	*Scirpus congdonii*
Hairgrass, slender	*Aira elongata*
Hairgrass, tufted	*A. caespitosa*
Monkeyflower, meadow	*Mimulus primuloides*
Monkeyflower, common	*M. guttatus*
Oatgrass, American	*Danthonia americana*
Rush	*Juncus mertensianus*
Sedge, abruptbeak	*Carex abrupta*
Sedge, awl	*C. nervina*
Sedge, sheep	*C. illota*
Sedge	*C. heteroneura*
Sedge	*C. leporinella*
Shootingstar, Sierra	*Dodecatheon jeffreyi*
Woodrush, Donner	*Luzula subcongesta*
Woodrush	*L. intermedia*

Mesic herb

Pale agoseris	*Agoseris glauca*
Balsamroot	*Balsamorhiza sagittata*
Alpine brodiaea	*Brodiaea lutea var. ixiodes*
Buckwheat	*Eriogonum latifolium var. nudum*
Bulbrooted melic	*Melica bulbosa*
California bromegrass	*Bromus carinatus*
Chaenactis	*Chaenactis douglasii*
Checkerbloom	*Sidalcea glaucescens*

Common names	Scientific names
Cinquefoil, gland	*Potentilla glandulosa*
Cymopterus	*Pterixia terebinthina*
Star gilia	*Ipomopsis aggregata*
Groundsmoke	*Gayophytum nuttallii*
Helianthella, California	*Helianthella californica*
Mariposa lily	*Chalochortus leichthinii*
Mint pennyroyal	*Monardella odoratissima*
Mule ears	*Wyethia mollis*
Needlegrass	*Stipa californica*
Wild ryegrass	*Elymus canadensis*
Squirreltail grass	*Sitanion hystrix*
Stickseed	*Hackelia longituba*

Sphagnum bog

Bentgrass, Thurber	*Agrostis thurberiana*
Bog orchid	*Habenaria dilatata*
Cinquefoil, marsh	*Potentilla palustris*
Laurel, pale	*Kalmia polifolia*
Manna grass, tall	*Glyceria elata*
Pondweed	*Potamogeton gramineus*
Rush	*Juncus longistylus*
Sedge	*Dulichium arundinaceum*
Sedge	*Carex kelloggii*
Sedge	*C. ormantha*
Sedge	*C. vesicaria*
Sundew, roundleaf	*Drosera rotundifolia*
Twinberry	*Lonicera cauriana*
Valerian, western	*Valeriana occidentalis*
Willow, Lemmon's	*Salix lemmonii*

Wet mesic meadow

Agoseris, pale	*Agoseris glauca*
Aster	*Aster alpigenus*
Aster, thick stem	*A. integrefolius*
Bentgrass	*Agrostis ampla*
Bluegrass, Kentucky	*Poa pratensis*
Brodiaea, white	*Brodiaea hyacintha*
Checkerbloom	*Sidalcea oregana*
Clover, alpine	*Trifolium longipes*
Fleabane	*Erigeron peregrinus*
Fleabane, meadow	*E. coulteri*
Hairgrass, tufted	*Aira caespitosa*
Grays lovage	*Ligusticum grayi*
Meadow barley	*Hordeum brachyantherium*
Parishia yampha	*Perideridia parishii*
Polemonium, western	*Polemonium occidentalis*
Corn lily	*Veratrum californicum*
Reedgrass	*Calamagrostis spp.*
Sedge	*Carex spp.*
Timothy, alpine	*Phleum alpinum*

Type 4: Sagebrush. Shrubs are dominant plants—typically sagebrush. bitterbrush, rabbitbrush, mule ears, and, on the east side of the Basin, mountain mahogany. Bunch grasses may be scattered sparsely. Soils are poor, unstable (usually sandy), and very well drained. Top soils dry out rapidly in summer.

Common names	Scientific names
Big sagebrush	*Artemisia tridentata*
Bitterbrush	*Purshia tridentata*
Buckwheat, marum-leaved	*Eriogonum mariflorum*
Buckwheat, sulfur-flowered	*E. umbellatum*
Buckwheat, Wright's	*E. wrightii*
Curlleaf mountain mahogany	*Cercocarpus ledifolius*
Dwarf sagebrush	*Artemisia arbuscula*
Sierra monkey flower	*Mimulus coccineus*
Mule ears	*Wyethia mollis*
Needlegrass	*Stipa lemmoni*
Rabbitbrush	*Chrysothamnus nauseosus*
Squirreltail grass	*Sitanion hystrix*

Type 6: Montane chaparral.

Associations of the "hard" woody shrubs almost of impenetrable density. The type is excellent cover for watersheds but also a very high fire hazard.

Arrowleaf balsamroot	*Balsamorhiza sagittata*
Bitterbrush	*Purshia tridentata*
Bitter cherry	*Prunus emarginata*
Brewer's monkey flower	*Mimulus breweri*
Bush chinquapin	*Castinopsis sempervirens*
Checkerbloom	*Sidalcea glaucescens*
Douglas chaenactis	*Chaenactis douglasi*
Green manzanita	*Arctostaphylos patula*
Huckleberry oak	*Quercus vaccinifolia*
Large-flowered stephanomeria	*Stephanomeria lactucina*
Mountain whitethorn	*Ceanothus cordulatus*
Mule ears	*Wyethia mollis*
Rabbitbrush	*Chrysothamnus spp.*
Squirreltail grass	*Sitanion hystrix*
Waxberry	*Symphoricarpos acutus*

Type 7: Riparian shrub.

Association of shrubby species with an understory of herbs along streams, lakes, lagoons, marshes, and meadows. Sites are mostly seepage areas but occasionally are associated and merging with the wet broadleaf type.

Willow thicket

Bedstraw	*Galium bifolium*
Columbine	*Aquilegia formosa*
Creek dogwood	*Cornus californica*
Groundsel	*Senecio triangularis*
Lupine, Washington	*Lupinus polyphylus*
Mountain alder	*Alnus tenuifolia*
Ranger's buttons	*Sphenosciadium capitellatum*
Willow, Pacific	*Salix lasiandra*
Willow, Scouler's	*S. scouleriana*
Willow herb	*Epilobium hornmanei*

Alder thicket

Alumroot	*Heuchera micrantha*

Common names	Scientific names
Arnica	*Arnica amplexicaulis*
Brewer's mitterwort	*Mitella breweri*
Elderberry	*Sambucus racemosa spp.*
Indian paintbrush	*Castilleja miniata*
Lady fern	*Athyrium alpestre*
Larkspur	*Delphinium glauca*
Lupine, Washington	*Lupinus polyphylus*
Monkey flower, common	*Mimulus guttatus*
Monkey flower, pink	*M. lewisii*
Willow, Jepson's	*Salix jepsonii*
Willow, Lemmon's	*S. lemmonii*

WOODLAND TREE TYPES

Type 9: Broadleaf.

Areas on which the dominant vegetation is broadleaf trees generally growing in closed canopy stands. Their occurrence generally indicates moist deep soils.

Low elevations

Aspen	*Populus tremuloides*
Black cottonwood	*P. trichocarpa*
Cowparsnip	*Heracleum lanatum*
Creek dogwood	*Cornus californica*
Dogwood	*C. sessilis*
Giant hyssop	*Agastache urticifolia*
Groundsel	*Senecio triangularis*
Honeysuckle, twin-flower	*Lonicera conjugialis*
Mountain alder	*Alnus tenuifolia*
Ranger's buttons	*Sphenosciadium capitellatum*
Thimbleberry	*Rubus parviflorus*
Willow, Pacific	*Salix lasiandra*
Willow, Scouler's	*S. scouleriana*

High elevations

Alumroot	*Heuchera micrantha*
Arnica	*Arnica amplexicaulis*
Brewer's mitterwort	*Mitella breweri*
Elderberry	*Sambucus racemosa spp.*
Indian paintbrush	*Castilleja miniata*
Lady fern	*Athyrium alpestre var. americanum*
Larkspur	*Delphinium glauca*
Lupine, Washington	*Lupinus polyphylus*
Monkey flower, common	*Mimulus guttatus*
Monkey flower, pink	*M. lewisii*
Willow, Jepson's	*Salix jepsonii*
Willow, Lemmon's	*S. lemmonii*

CONIFER TYPES

Type 14: Pine.

Open, nearly pure pine stands where pines form approximately 80 percent or more of the vegetation cover. This type is most common on east, south, and southwest exposures.

Balsamroot	*Balsamorhiza sagittata*
White fir	*Abies concolor*

Common names	Scientific names
Hedgenettle	*Agastache urticifolia*
Mule ears	*Wyethia mollis*
Pennyroyal	*Monardella odoratissima*
Penstemon	*Penstemon deustus*
Phacelia	*Phacelia mutabilis*
Jeffrey pine	*Pinus jeffreyi*
Lodgepole pine	*P. contorta var. murryana*
Ponderosa pine	*P. ponderosa*
Big sagebrush	*Artemisia tridentata*
Mountain whitethorn	*Ceanothus cordulatus*

Type 17: Mixed conifer.

Various combinations of evergreen conifers, sparse grasses, herbs, and low shrubs. Most of the commercial conifer species found in the Lake Tahoe Region are in this type.

Brewer's golden aster	*Chrysopsis breweri*
Balsamroot	*Balsamorhiza sagittata*
Bitterbrush	*Purshia tridentata*
Bitter cherry	*Prunus emarginata*
Bush chinquapin	*Castinopsis sempervirens*
Cedar, incense	*Libocedrus decurrens*
Douglas' chaenactis	*Chaenactis douglasii*
Red fir	*Abies magnifica*
White fir	*A. concolor*
Hedgenettle	*Agastache urticifolia*
Huckleberry oak	*Quercus vaccinifolia*
Green manzanita	*Arctostaphylos patula*
Brewer's monkey flower	*Mimulus breweri*
Mule ears	*Wyethia mollis*
Pennyroyal	*Monardella odoratissima*
Phacelia	*Phacelia mutabilis*
Penstemon	*Penstemon deustus*
Pine, Jeffrey	*Pinus jeffreyi*
Pine, lodgepole	*P. contorta var. murryana*
Pine, ponderosa	*P. ponderosa*
Pine, sugar	*P. lambertiana*
Squirreltail grass	*Sitanion hystrix*
Stephanomeria, large flowered	*Stephanomeria lactucina*
Tobacco snowbrush	*Ceanothus velutinus*
Waxberry	*Symphoricarpos acutus*
Mountain whitethorn	*Ceanothus cordulatus*

Type 18: Fir.

Areas where true firs are the dominant trees This type is most common on north and east exposures.

High elevations

Currant, sticky	*Ribes viscosissimum*
Fir, red	*Abies magnifica*
Brewer's golden aster	*Chrysopsis breweri*
White hawkweed	*Hieracium albiflorum*
Mountain hemlock	*Tsuga mertensiana*
Kelloggia	*Kelloggia galloides*
Lousewort	*Pedicularis semibarbata*
Lupine, Anderson's	*Lupinus andersoni*
Pine, Jeffrey	*Pinus jeffreyi*
Pine, western white	*P. monticola*

Low elevation

Red fir	*Abies magnifica*

Common names	Scientific names
White fir	*A. concolor*
Sierra gooseberry	*Ribes roezlii*
Jeffrey pine	*Pinus jeffreyi*
Woodland pine drops	*Pterospora andromedea*
Princenut	*Chimaphila umbellata*
Sweet cicely	*Osmorrhiza chilensis*
Waxberry	*Symphoricarpos acutus*

Type 19: Lodgepole.

Areas where lodgepole pine is completely dominant, but in older well-drained stands white fir may occur. Most sites are wet mesic and are often adjacent to herbaceous meadows. Lodgepole stands are also pioneer trees on dry rocky sites in red fir elevations, and the associated plants are similar to the red fir types.

Wet type

Arnica	*Arnica diversifolia*
Arrowleaf groundsel	*Senecio triangularis*
Meadow barley	*Hordeum nodosum*
Bent grass	*Agrostis ampla*
Corn lily	*Veratrum californicum*
Common horsetail	*Equisetum arvense*
Lodgepole pine	*Pinus contorta murrayana*
Mountain alder	*Alnus tenuifolia*
Musk monkey flower	*Mimulus moschatus*
Ranger's buttons	*Sphenosciadium capitellatum*
Reedgrass	*Calamagrostis spp.*
Scouler's willow	*Salix scouleriana*
Tufted hair grass	*Aira caespitosa*
Western wildrye	*Elymus canadensis*

Mesic type

Western aster	*Aster occidentalis*
Bolander's bluegrass	*Poa bolanderi*
Cinquefoil	*Potentilla glandulosa*
Gray's lovage	*Ligusticum grayi*
Mountain clover	*Trifolium cyathiferum*
Mountain violet	*Viola purpurea*
Nebraska sedge	*Carex nebraskensis*
Ross sedge	*Carex rossii*
Waterleaf phacelia	*Phacelia hydrophylloides*
Rock cress	*Arabis holbellii*
Spike trisetum	*Trisetum spicatum*

ALPINE TYPES

Type 20: Alpine.

Grasses, forbs, shrubs and trees found at high elevations where temperatures are extreme and soils are poor.

Sierra chaenactis	*Chaenactis nevadensis*
Elephant heads	*Pedicularis groenlandica*
Fleabane	*Erigeron barbellatus*
Gilia	*Gilia leptalea*
Mountain hemlock	*Tsuga mertensiana*
Western juniper	*Juniperus occidentalis*

Common names	Scientific names
Davis' knotweed	*Polygonum davisiae*
Wild onion	*Allium platycaule*
Sugar pine	*Pinus lambertiana*
Western white pine	*P. monticola*
Whitebark pine	*P. albicaulis*
Sierra primrose	*Primula suffrutescens*
Rush	*Juncus mertensiana*
Saxifrage	*Saxifraga bryophora*
Sibbaldia	*Sibbaldia procumbens*
Drummond's windflower	*Anemone drummondi*

WILDLIFE SPECIES COMMON OF THE LAKE TAHOE BASIN*

Amphibians and Reptiles	
Long-toed Salamander	Ambystoma macrodactylum
Great Basin Spadefoot Toad	Scaphiopus intermontanus
Pacific Treefrog	Hyla regilla
Leopard Frog	Rana pipiens
Mountain Yellow-legged Frog	Rana muscosa
Bullfrog	Rana catesbeiana
Western Pond Turtle	Clemmys marmorata
Western Fence Lizard	Sceloporus occidentaialis
Sagebrush Lizard	Sceloporus graciosus
Western Skink	Eumeces skiltonianus
Northern Alligator Lizard	Gerrhonotus ceoeruleus
Rubber Boa	Charina bottae
Racer	Coluber constrictor
Coachwhip	Masticophis flagellum
Striped Whipsnake	Masticohpis taeniatus
Gopher Snake	Pituophis melanoleucus
Common Kingsnake	Lampropeltis getulus
California Mountain Kingsnake	Lampropletis zonata
Common Garter Snake	Thamnophis sirtalis
Western Terrestrial Garter Snake	Thamnophis elegans
Western Aquatic Garter Snake	Thamnophis couchi
Western Rattlesnake	Crotalus viridis
Birds	
Common Loon	Gavia immer
Horned Grebe	Podiceps auritus
Eared Grebe	Podiceps nigricollis
Western Grebe	Aechmophorus occidentalis
Pied-billed Grebe	Podilymbus podiceps
Great Blue Heron	Ardea herodias
Least Bittern	Ixobrychus exilis
American Bittern	Botaurus lentiginosus
Canada Goose	Branta canadensis
Mallard	Anas platyrhynchos
Gadwall	Anas strepera
Pintail	Anas acuta
Green-winged Teal	Anas crecca
Cinnamon Teal	Anas cyanoptera
American Wigeon	Anas americana
Northern Shoveler	Anas clypeata
Wood Duck	Aix sponsa

Redhead	Aythya americana
Ring-necked Duck	Aythya collaris
Canvasback	Aythya valisineria
Greater Scaup	Aythya marila
Lesser Scaup	Aythya affinis
Common Goldeneye	Bucephala clangula
Bufflehead	Bucephala albeola
Ruddy Duck	Oxyura jamaicensis
Common Merganser	Mergus merganser
Turkey Vulture	Cathartes aura
Northern Goshawk	Accipiter gentilis
Sharp-shinned Hawk	Accipiter striatus
Cooper's Hawk	Accipiter cooperii
Golden Eagle	Aquila chrysaetos
Bald Eagle	Haliaeetus leucocephalus
Osprey	Pandion haliaetus
Merlin	Falco columbarius
Prairie Falcon	Falco mexicanus
Peregrin Falcon	Falco peregrinus
American Kestrel	Falco sparverius
Blue Grouse	Dendragapus obscurus
Mountain Quail	Oreortyx pictus
Virginia Rail	Rallus limicola
Sora Rail	Porzana carolina
American Coot	Fulica americana
Semipalmated Plover	Charadrius semipalmatus
Killdeer	Charadrius vociferus
Common Snipe	Gallinago gallinago
Spotted Sandpiper	Actitis macularia
Willet	Catoptrophorus semipalmatus
Least Sandpiper	Calidris minutilla
Short-billed Dowitcher	Limnodromus griseus
Long-billed Dowitcher	Limnodromus scolopaceus
Western Sandpiper	Calidris mauri
American Avocet	Recurvirostra americana
Wilson's Phalarope	Phalaropus tricolor
Herring Gull	Herring gull
California Gull	Larus californicus
Ring-billed Gull	Larus delawarensis
Forster's Tern	Sterna Forsteri
Band-tailed Pigeon	Columba fasciata
Rock Dove	Columba livia
Mourning Dove	Zenaida macroura
Western Screech Owl	Otus kennicotti
Flammulated Owl	Otus flammeolus
Great Horned Owl	Bubo virginianus

Pygmy Owl	Glaucidium gnoma
Spotted Owl	Strix occidentalis
Long-Eared Owl	Asio otus
Saw-whet Owl	Aegolius acadicus
Common Nighthawk	Phalaenoptilus nuttallii
Vaux's Swift	Chaetura vauxi
Wight-throated Swift	Aeronautes saxatalis
Anna's Hummingbird	Calypte anna
Roufous Hummingbird	Selasphorus rufus
Calliope Hummingbird	Stellula calliope
Belted Kingfisher	Cerlyle alcyon
Pileated Woodpecker	Dryocopus pileatus
Lewis' Woodpecker	Melanerpes lewis
Williamson's Sapsucker	Sphyrapicus thyroideus
Hairy Woodpecker	Picoides villosus
Downy Woodpecker	Picoides pubescens
White-headed Woodpecker	Pocoides albolarvatus
Black-backed Woodpecker	Picoides arcticus
Willow Flycatcher	Empidonax traillii
Hammond's Flycatcher	Empidonax hammondii
Dusky Flycatcher	Empidonax oberholseri
Western Wood-Pewee	Contopus sordidulus
Olive-sided Flycatcher	Contopus borealis
Horned Lark	Eremophila alpestris
Violet-green Swallow	Tachycineta thalassina
Tree Swallow	Tachycineta bicolor
Northern Rough-winged Swallow	Stelgidopterys serripennis
Barn Swallow	Hirundo rustica
Cliff Swallow	Hirundo pyrrhonota
Steller's Jay	Cyanocitta stelleri
Black-billed Magpie	Pica pica
Clark's Nutcracker	Nucifraga columbiana
Mountain Chickadee	Parus gambeli
Bushtit	Psaltriparus minimus
White-breasted Nuthatch	Sitta carolinensis
Red-breasted Nuthatch	Sitta canadensis
Pygmy Nuthatch	Sitta pygmaea
Brown Creeper	Certhia americana
American Dipper	Cinclus mexicanus
House Wren	Troglodytes aedon
Winter Wren	Troglodytes troglodytes
Bewick's Wren	Thryomanes bewickii
Canyon Wren	Catherpes mexicanus
Rock Wren	Salpinctes obsoletus
American Robin	Turdus migratorius
Varied Thrush	Ixoreus naevius
Hermit Thrush	Catharus guttatus

Swainson's Thrush	Catharus ustulatus
Western Bluebird	Sialia mexicana
Mountain Bluebird	Sialia currucoides
Townsend's Solitaire	Myadestes townsendi
Golden-crowned Kinglet	Regulus satrapa
Ruby-crowned Kinglet	Regulus calendula
Water Pipet	Anthus spinoletta
European Starling	Sturnus vulgarus
Solitary Vireo	Vireo solitarious
Warbling Vireo	Vireo gilvus
Orange-crowned Warbler	Vermivora celata
Yellow Warbler	Dendroica petechia
Nashville Warbler	Vermivora ruficapilla
Yellow-rumped Warbler	Dendroica coronata
Black-throated Gray Warbler	Dendroica nigrescens
Townsend's Warbler	Dendroica townsendi
Hermit Warbler	Dendroica occidentalis
MacGillivray's Warbler	Oporornis tolmiei
Common Yellowthroat	Geothlypis trichas
Wilson's Warbler	Wilsonia pusilla
House Sparrow	Passer domesticus
Western Meadowlark	Sturnella neglecta
Yellow-headed Blackbird	Xanthocephalus xanthocephalus
Red-winged Blackbird	Agelaius phoeniceus
Northern Oriole	Icterus galbula
Brewer's Blackbird	Euphagus cyanocephalus
Brown-headed Cowbird	Molothrus ater
Western Tananger	Piranga ludoviciana
Black-headed Grosbeak	Pheucticus melanocephalus
Lazuli Bunting	Passerina amoena
Evening Grosbeak	Coccothraustes vespertinus
Purple Finch	Carpodacus purpureus
Cassin's Finch	Carpodacus cassinii
House Finch	Carpodacus mexicanus
Pine Grosbeak	Pinicola enucleator
Gray-crowned Rosy Finch	Leucosticte arctoa
Pine Siskin	Carduelis pinus
Lesser Goldfinch	Carduelis psaltria
Red Crossbill	Loxia curvirostra
Green-tailed Towhee	Pipilo chlorurus
Rufous-sided Towhee	Pipilo erythrophthalmus
Savanna Sparrow	Passerculus sandwichensis
Chipping Sparrow	Spizella passerina
Brewer's Sparrow	Spizella breweri
White-crowned Sparrow	Zonotrichia leucophrys
Golden-crowned Sparrow	Zonotrichia atricapilla

Fox Sparrow	Passerella iliaca
Lincoln's Sparrow	Meolospiza lincolnii
Song Sparrow	Melospiza meodia

Mammals

Vagrant Shrew	Sorex vagrans
Dusky Shrew	Sorex obscurus
Water Shrew	Sorex palustris
Trowbridge Shrew	Sorex trowbridgii
Broad-footed Mole	Scapanus latimanus
Little Brown Myotis	Myotis lucifugus
Yuma Myotis	Myotis yumanensis
Long-eared Myotis	Myotis evotis
Fringed Myotis	Myotis thysanodes
Long-legged Myotis	Myotis volans
California Myotis	Myotis californicus
Silver-haired Bat	Lasiurus noctivagans
Big Brown Bat	Eptisicus fuscus
Pika	Ochotona princeps
Snowshoe Hare	Lepus americanus
White-tailed Jackrabbit	Lepus townsendii
Black-tailed Jackrabbit	Lepus californicus
Nuttall Cottontail	Sylvilagus nuttallii
Mountain Beaver	Apoldontia rufa
Least Chipmunk	Eutamias minimus
Yellow pine Chipmunk	Eutamias amoenus
Townsend Chipmunk	Eutamias townsendii
Long-eared Chipmunk	Eutamias quadrimaculatus
Lodgepole Chipmunk	Eutamias speciosus
Yellow-bellied Marmot	Marmota flaviventris
Belding Ground Squirrel	Spermophilus beldingi
California Ground Squirrel	Spermophilus beecheyi
Golden-mantled Ground Squirrel	Callospermophilus
Western Gray Squirrel	Sciurs griseus
Douglas Squirrel	Tamiasciurus douglasii
Northern Flying Squirrel	Glaucomys sabrinus
Mountain Pocket Gopher	Thomomys monticola
Northern Pocket Gopher	Thomomys talpoides
Great Basin Pocket Mouse	Perognathus parvus
Beaver	Castor canadensis
Western Harvest Mouse	Reithrodontomys megalotis
Deer Mouse	Peromyscus maniculatus
Brush Mouse	Peromyscus boylii
Pinon Mouse	Peromyscus truei
Bushy-tailed Woodrat	Neotoma cinerea
Heather Vole	Phenacomys intermedius
Montane Vole	Microtus montanus

Long-tailed Vole	Microtus longicaudus
Muskrat	Ondatra zibethica
Western Jumping Mouse	Zapus princeps
Porcupine	Erithizon dorsatum
Coyote	Canis latrans
Red Fox	Vulpes fulva
Black Bear	Ursus americanus
Gray Fox	Urocyon cinereoargenteus
Raccoon	Procyon lotor
Marten	Martes americana
Fisher	Martes pennanti
Ermine	Mustela erminea
Long-tailed Weasel	Mustela frenata
Mink	Mustela vison
Wolverine	Gulo Gulo
Badger	Taxidea taxus
Western Spotted Skunk	Spiogale gracilis
Stripped Skunk	Mephitis mephitis
River Otter	Lutra canadensis
Mountain Lion	Felis concolor
Bobcat	Felis rufus
Mule Deer	Odocoileus hemionus

Source: Soderberg, U.S. Forest Service, Lake Tahoe Basin Management Unit, March 1989.

Appendix 3

VEGETATION SPECIES LIST FOR THE TAHOE BASIN

Part A: The following vegetation species list has been taken directly from: Vegetation of the Lake Tahoe Region: A Guide for Planning, TRPA and USFS: Vegetation Committee, 1971.

Type O: Open water. Includes standing or flowing water in lakes, creeks, rivers, and lagoons.

Common names	Scientific names
Open water	
Bolander quillwort	*Isoetes bolanderi*
Common cattail	*Typha latifolia*
Quillwort	*Isoetes muricata var. hesperia*
Pondweed, Richardson	*Potamogeton richardsonii*
Sedges	*Carex spp.*
Waterweed	*Elodea canadensis*
Swamps and pools	
Beaked sedge	*Carex rostrata*
Blister sedge	*C. vesicaria*
Indian pond lily	*Nymphaea polysepala*
Manna grass, northern	*Glyceria borealis*
Manna grass, tall	*G. elata*
Marsh marigold	*Caltha howellii*
Narrowleaf bur-reed	*Sparganium angustifolium*
Quillwort	*Isoetes braunii*
Vernal pools	
Lowland cudweed	*Gnaphalium palustre*
Meadow barley	*Hordeum brachyantherium*
Pull-up muhly	*Muhlenbergia filiformis*

Type 1: Bare ground (natural), Alpine. Areas practically devoid of vegetation because of a limitation imposed by a natural, physical, or climatic factor. Most of these areas are near the summit of ridges or mountain tops; often rocky high elevation or snow flush areas.

Bedstraw	*Galium grayanum*
Douglas chaenactis	*Chaenactis douglasii*
Elephanthead lousewort	*Pedicularis groenlandica*
Barestem eriogonum	*Eriogonum nudem*
Graphite eriogonum	*E. lobbii*
Fleabane	*Erigeron barbellalatus*
Gayophytum	*Gayophytum nuttallii*
Gilia	*Gilia leptalea*
Stemless goldenweed	*Haplopappus acaulis*
Goosefoot violet	*Viola purpurea*
Knotweed	*Polygonum davisiae*
Mint	*Monardella odoratissima*
Phacelia	*Phacelia mutabilis*

Common names	Scientific names
Heretic penstemon	*Penstemon heterodoxus*
Rush	*Juncus mertensiana*
Rush	*J. nevadensis*
Saxifrage	*Saxifraga bryophora*
Sibbaldia	*Sibbaldia procumbens*
Sierra primrose	*Primula suffrutescens*
Sticky currant	*Ribes viscosissimum*
Windflower	*Anemone drummondii*

Type 1a: Bare ground (disturbed). Areas of sparse vegetation because of man-caused or related factors, usually in lowland areas; most species are introduced weeds.

Vernal pools

Coyote tobacco	*Nicotiana attenuata*
Fleabane	*Conyza canadensis*
Flixweed	*Descurainia sophia*
Lamb's quarters	*Chenopodium alba*
Lupine	*Lupinus lepidus var. farreyi*
Russian thistle	*Salsola kali*
Squirreltail (or bottlebrush)	*Sitanion hystrix*
Willow herb	*Epilobium glaberrimum*
Wiregrass (or yardgrass)	*Polygonum aviculare*

Type 2: Herbaceous. Vegetation is made up of many combinations of species of low growing, non-woody herbs and grasses (may include a thin scattering of trees or shrubs) in meadows, marshes, or grass areas.

Wet marsh or meadow

Aster	*Aster alpegius*
Awl bulrush	*Scirpus congdonii*
Hairgrass, slender	*Aira elongata*
Hairgrass, tufted	*A. caespitosa*
Monkeyflower, meadow	*Mimulus primuloides*
Monkeyflower, common	*M. guttatus*
Oatgrass, American	*Danthonia americana*
Rush	*Juncus mertensianus*
Sedge, abruptbeak	*Carex abrupta*
Sedge, awl	*C. nervina*
Sedge, sheep	*C. illota*
Sedge	*C. heteroneura*
Sedge	*C. leporinella*
Shootingstar, Sierra	*Dodecatheon jeffreyi*
Woodrush, Donner	*Luzula subcongesta*
Woodrush	*L. intermedia*

Mesic herb

Pale agoseris	*Agoseris glauca*
Balsamroot	*Balsamorhiza sagittata*
Alpine brodiaea	*Brodiaea lutea var. ixiodes*
Buckwheat	*Eriogonum latifolium var. nudum*
Bulbrooted melic	*Melica bulbosa*
California bromegrass	*Bromus carinatus*
Chaenactis	*Chaenactis douglasii*
Checkerbloom	*Sidalcea glaucescens*

Common names	Scientific names
Cinquefoil, gland	*Potentilla glandulosa*
Cymopterus	*Pterixia terebinthina*
Star gilia	*Ipomopsis aggregata*
Groundsmoke	*Gayophytum nuttallii*
Helianthella, California	*Helianthella californica*
Mariposa lily	*Chalochortus leichthinii*
Mint pennyroyal	*Monardella odoratissima*
Mule ears	*Wyethia mollis*
Needlegrass	*Stipa californica*
Wild ryegrass	*Elymus canadensis*
Squirreltail grass	*Sitanion hystrix*
Stickseed	*Hackelia longituba*

Sphagnum bog

Bentgrass, Thurber	*Agrostis thurberiana*
Bog orchid	*Habenaria dilatata*
Cinquefoil, marsh	*Potentilla palustris*
Laurel, pale	*Kalmia polifolia*
Manna grass, tall	*Glyceria elata*
Pondweed	*Potamogeton gramineus*
Rush	*Juncus longistylus*
Sedge	*Dulichium arundinaceum*
Sedge	*Carex kelloggii*
Sedge	*C. ormantha*
Sedge	*C. vesicaria*
Sundew, roundleaf	*Drosera rotundifolia*
Twinberry	*Lonicera cauriana*
Valerian, western	*Valeriana occidentalis*
Willow, Lemmon's	*Salix lemmonii*

Wet mesic meadow

Agoseris, pale	*Agoseris glauca*
Aster	*Aster alpigenus*
Aster, thick stem	*A. integrefolius*
Bentgrass	*Agrostis ampla*
Bluegrass, Kentucky	*Poa pratensis*
Brodiaea, white	*Brodiaea hyacintha*
Checkerbloom	*Sidalcea oregana*
Clover, alpine	*Trifolium longipes*
Fleabane	*Erigeron peregrinus*
Fleabane, meadow	*E. coulteri*
Hairgrass, tufted	*Aira caespitosa*
Grays lovage	*Ligusticum grayi*
Meadow barley	*Hordeum brachyantherium*
Parishia yampha	*Perideridia parishii*
Polemonium, western	*Polemonium occidentalis*
Corn lily	*Veratrum californicum*
Reedgrass	*Calamagrostis spp.*
Sedge	*Carex spp.*
Timothy, alpine	*Phleum alpinum*

Type 4: Sagebrush.

Shrubs are dominant plants—typically sagebrush, bitterbrush, rabbitbrush, mule ears, and, on the east side of the Basin, mountain mahogany. Bunch grasses may be scattered sparsely. Soils are poor, unstable (usually sandy), and very well drained. Top soils dry out rapidly in summer.

Common names	Scientific names
Big sagebrush	*Artemisia tridentata*
Bitterbrush	*Purshia tridentata*
Buckwheat, marum-leaved	*Eriogonum mariflorum*
Buckwheat, sulfur-flowered	*E. umbellatum*
Buckwheat, Wright's	*E. wrightii*
Curlleaf mountain mahogany	*Cercocarpus ledifolius*
Dwarf sagebrush	*Artemisia arbuscula*
Sierra monkey flower	*Mimulus coccineus*
Mule ears	*Wyethia mollis*
Needlegrass	*Stipa lemmoni*
Rabbitbrush	*Chrysothamnus nauseosus*
Squirreltail grass	*Sitanion hystrix*

Type 6: Montane chaparral. Associations of the "hard" woody shrubs almost of impenetrable density. The type is excellent cover for watersheds but also a very high fire hazard.

Arrowleaf balsamroot	*Balsamorhiza sagittata*
Bitterbrush	*Purshia tridentata*
Bitter cherry	*Prunus emarginata*
Brewer's monkey flower	*Mimulus breweri*
Bush chinquapin	*Castinopsis sempervirens*
Checkerbloom	*Sidalcea glaucescens*
Douglas chaenactis	*Chaenactis douglasi*
Green manzanita	*Arctostaphylos patula*
Huckleberry oak	*Quercus vaccinifolia*
Large-flowered stephanomeria	*Stephanomeria lactucina*
Mountain whitethorn	*Ceanothus cordulatus*
Mule ears	*Wyethia mollis*
Rabbitbrush	*Chrysothamnus spp.*
Squirreltail grass	*Sitanion hystrix*
Waxberry	*Symphoricarpos acutus*

Type 7: Riparian shrub. Association of shrubby species with an understory of herbs along streams, lakes, lagoons, marshes, and meadows. Sites are mostly seepage areas but occasionally are associated and merging with the wet broadleaf type.

Willow thicket

Bedstraw	*Galium bifolium*
Columbine	*Aquilegia formosa*
Creek dogwood	*Cornus californica*
Groundsel	*Senecio triangularis*
Lupine, Washington	*Lupinus polyphylus*
Mountain alder	*Alnus tenuifolia*
Ranger's buttons	*Sphenosciadium capitellatum*
Willow, Pacific	*Salix lasiandra*
Willow, Scouler's	*S. scouleriana*
Willow herb	*Epilobium hornmanei*

Alder thicket

Alumroot	*Heuchera micrantha*

Common names	Scientific names
Arnica	*Arnica amplexicaulis*
Brewer's mitterwort	*Mitella breweri*
Elderberry	*Sambucus racemosa spp.*
Indian paintbrush	*Castilleja miniata*
Lady fern	*Athyrium alpestre*
Larkspur	*Delphinium glauca*
Lupine, Washington	*Lupinus polyphylus*
Monkey flower, common	*Mimulus guttatus*
Monkey flower, pink	*M. lewisii*
Willow, Jepson's	*Salix jepsonii*
Willow, Lemmon's	*S. lemmonii*

WOODLAND TREE TYPES

Type 9: Broadleaf. Areas on which the dominant vegetation is broadleaf trees generally growing in closed canopy stands. Their occurrence generally indicates moist deep soils.

Low elevations

Aspen	*Populus tremuloides*
Black cottonwood	*P. trichocarpa*
Cowparsnip	*Heracleum lanatum*
Creek dogwood	*Cornus californica*
Dogwood	*C. sessilis*
Giant hyssop	*Agastache urticifolia*
Groundsel	*Senecio triangularis*
Honeysuckle, twin-flower	*Lonicera conjugialis*
Mountain alder	*Alnus tenuifolia*
Ranger's buttons	*Sphenosciadium capitellatum*
Thimbleberry	*Rubus parviflorus*
Willow, Pacific	*Salix lasiandra*
Willow, Scouler's	*S. scouleriana*

High elevations

Alumroot	*Heuchera micrantha*
Arnica	*Arnica amplexicaulis*
Brewer's mitterwort	*Mitella breweri*
Elderberry	*Sambucus racemosa spp.*
Indian paintbrush	*Castilleja miniata*
Lady fern	*Athyrium alpestre var. americanum*
Larkspur	*Delphinium glauca*
Lupine, Washington	*Lupinus polyphylus*
Monkey flower, common	*Mimulus guttatus*
Monkey flower, pink	*M. lewisii*
Willow, Jepson's	*Salix jepsonii*
Willow, Lemmon's	*S. lemmonii*

CONIFER TYPES

Type 14: Pine. Open, nearly pure pine stands where pines form approximately 80 percent or more of the vegetation cover. This type is most common on east, south, and southwest exposures.

Balsamroot	*Balsamorhiza sagittata*
White fir	*Abies concolor*

Common names	Scientific names
Hedgenettle	*Agastache urticifolia*
Mule ears	*Wyethia mollis*
Pennyroyal	*Monardella odoratissima*
Penstemon	*Penstemon deustus*
Phacelia	*Phacelia mutabilis*
Jeffrey pine	*Pinus jeffreyi*
Lodgepole pine	*P. contorta var. murryana*
Ponderosa pine	*P. ponderosa*
Big sagebrush	*Artemisia tridentata*
Mountain whitethorn	*Ceanothus cordulatus*

Type 17: Mixed conifer. Various combinations of evergreen conifers, sparse grasses, herbs, and low shrubs. Most of the commercial conifer species found in the Lake Tahoe Region are in this type.

Brewer's golden aster	*Chrysopsis breweri*
Balsamroot	*Balsamorhiza sagittata*
Bitterbrush	*Purshia tridentata*
Bitter cherry	*Prunus emarginata*
Bush chinquapin	*Castinopsis sempervirens*
Cedar, incense	*Libocedrus decurrens*
Douglas' chaenactis	*Chaenactis douglasii*
Red fir	*Abies magnifica*
White fir	*A. concolor*
Hedgenettle	*Agastache urticifolia*
Huckleberry oak	*Quercus vaccinifolia*
Green manzanita	*Arctostaphylos patula*
Brewer's monkey flower	*Mimulus breweri*
Mule ears	*Wyethia mollis*
Pennyroyal	*Monardella odoratissima*
Phacelia	*Phacelia mutabilis*
Penstemon	*Penstemon deustus*
Pine, Jeffrey	*Pinus jeffreyi*
Pine, lodgepole	*P. contorta var. murryana*
Pine, ponderosa	*P. ponderosa*
Pine, sugar	*P. lambertiana*
Squirreltail grass	*Sitanion hystrix*
Stephanomeria, large flowered	*Stephanomeria lactucina*
Tobacco snowbrush	*Ceanothus velutinus*
Waxberry	*Symphoricarpos acutus*
Mountain whitethorn	*Ceanothus cordulatus*

Type 18: Fir. Areas where true firs are the dominant trees This type is most common on north and east exposures.

High elevations

Currant, sticky	*Ribes viscosissimum*
Fir, red	*Abies magnifica*
Brewer's golden aster	*Chrysopsis breweri*
White hawkweed	*Hieracium albiflorum*
Mountain hemlock	*Tsuga mertensiana*
Kelloggia	*Kelloggia galloides*
Lousewort	*Pedicularis semibarbata*
Lupine, Anderson's	*Lupinus andersoni*
Pine, Jeffrey	*Pinus jeffreyi*
Pine, western white	*P. monticola*

Low elevation

Red fir	*Abies magnifica*

Common names	Scientific names
White fir	*A. concolor*
Sierra gooseberry	*Ribes roezlii*
Jeffrey pine	*Pinus jeffreyi*
Woodland pine drops	*Pterospora andromedea*
Princenut	*Chimaphila umbellata*
Sweet cicely	*Osmorrhiza chilensis*
Waxberry	*Symphoricarpos acutus*

Type 19: Lodgepole.

Areas where lodgepole pine is completely dominant, but in older well-drained stands white fir may occur. Most sites are wet mesic and are often adjacent to herbaceous meadows. Lodgepole stands are also pioneer trees on dry rocky sites in red fir elevations, and the associated plants are similar to the red fir types.

Wet type

Arnica	*Arnica diversifolia*
Arrowleaf groundsel	*Senecio triangularis*
Meadow barley	*Hordeum nodosum*
Bent grass	*Agrostis ampla*
Corn lily	*Veratrum californicum*
Common horsetail	*Equisetum arvense*
Lodgepole pine	*Pinus contorta murrayana*
Mountain alder	*Alnus tenuifolia*
Musk monkey flower	*Mimulus moschatus*
Ranger's buttons	*Sphenosciadium capitellatum*
Reedgrass	*Calamagrostis spp.*
Scouler's willow	*Salix scouleriana*
Tufted hair grass	*Aira caespitosa*
Western wildrye	*Elymus canadensis*

Mesic type

Western aster	*Aster occidentalis*
Bolander's bluegrass	*Poa bolanderi*
Cinquefoil	*Potentilla glandulosa*
Gray's lovage	*Ligusticum grayi*
Mountain clover	*Trifolium cyathiferum*
Mountain violet	*Viola purpurea*
Nebraska sedge	*Carex nebraskensis*
Ross sedge	*Carex rossii*
Waterleaf phacelia	*Phacelia hydrophylloides*
Rock cress	*Arabis holbellii*
Spike trisetum	*Trisetum spicatum*

ALPINE TYPES

Type 20: Alpine.

Grasses, forbs, shrubs and trees found at high elevations where temperatures are extreme and soils are poor.

Sierra chaenactis	*Chaenactis nevadensis*
Elephant heads	*Pedicularis groenlandica*
Fleabane	*Erigeron barbellatus*
Gilia	*Gilia leptalea*
Mountain hemlock	*Tsuga mertensiana*
Western juniper	*Juniperus occidentalis*

Common names	Scientific names
Davis' knotweed	*Polygonum davisiae*
Wild onion	*Allium platycaule*
Sugar pine	*Pinus lambertiana*
Western white pine	*P. monticola*
Whitebark pine	*P. albicaulis*
Sierra primrose	*Primula suffrutescens*
Rush	*Juncus mertensiana*
Saxifrage	*Saxifraga bryophora*
Sibbaldia	*Sibbaldia procumbens*
Drummond's windflower	*Anemone drummondi*