Alpine Meadows™

2015 Master Plan

PREPARED BY:

SE GROUP

USDA Forest Service
Tahoe National Forest

ALPINE MEADOWS SKI AREA

2015 MASTER PLAN

March 2015

Prepared for:

Tahoe National Forest

Prepared by:

SE GROUP

www.segroup.com

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I. INTRODUCTION

The purpose of this Master Plan (MP) is to provide future direction for the development of Alpine Meadows Ski Area (Alpine Meadows) to ensure a balance of facilities and a variety of amenities that afford an exceptional guest experience. This MP provides a thorough assessment of existing operations and facilities at Alpine Meadows—identifying both opportunities and constraints—and presents a comprehensive plan for future improvements to the resort. This document replaces the current MP for Alpine Meadows, which was prepared in 2007.

A portion of the Alpine Meadows existing lift, trail, and infrastructure network is operated on National Forest System (NFS) lands that are administered under a special use permit (SUP) by the Tahoe National Forest (TNF). This MP has been prepared in compliance with the terms and conditions of the Alpine Meadows Forest Service-issued 40-year Term SUP, which was reissued in 2011, and is consistent with general direction provided in the TNF's 1990 Land and Resource Management Plan. Chapter II of this MP provides more information on Forest Service administration of the Alpine Meadows SUP.

This MP is a dynamic document, which may be amended periodically to accommodate technological innovations and evolving guest expectations over a roughly ten-year planning horizon. It is important to note that Forest Service "acceptance" of this MP does not convey "approval" of any projects contained herein. Implementation of any projects on NFS lands within the Alpine Meadows SUP area is contingent upon site-specific environmental review and approval under the National Environmental Policy Act (NEPA). Upon Forest Service acceptance of a site-specific set of projects from this MP, a NEPA review will commence.

A. LOCATION

Alpine Meadows conducts its operations—including the lift and trail network, guest service facilities, infrastructure, and other assets—on private, state, and NFS lands administered by the TNF in Placer County, CA. Located in the Lake Tahoe Region, Alpine Meadows is approximately 3.3 miles west of Route 89, about 7 miles north-east of Tahoe City, CA, and about 13 miles south of Truckee. Refer to Figure 1 for more information on Alpine Meadow's location.

B. RESORT SUMMARY

The resort, and related operations, encompass an area of approximately 2,278 acres, mixed between private property, state-owned property, and the Forest Service-administered SUP area. Of this, approximately 1,580 acres are in-bounds skiable terrain, with 1,050 of that being lift-serviced, and the remaining being hike-to. The lowest elevations at Alpine Meadows are at the base area, and specifically the bottom terminal of Subway Chair (6,850 feet above mean sea level [amsl]). The highest elevations are at the top of the Summit Express (8,485 feet above mean sea level [amsl]), and Ward Peak, the highest hike-to point along the ridge (8,637 feet amsl). Thus, lift-served vertical drop at Alpine Meadows is 1,635 feet, and its total skiable vertical drop is approximately 1,800 feet.

The ski area attracts its guests primarily from local markets, but a significant portion of resort visitation is from the Lake Tahoe regional and national destination markets. Alpine Meadows has earned a reputation for its intimate, uncrowded setting; abundant, quality snow (averaging 450 inches annually); fun and diverse developed and hike-to terrain; and outstanding views of the Sierra Mountains and Lake Tahoe.

Alpine Meadows operates 11 chairlifts and two carpet conveyors. Skiable terrain includes 75 lift-served, named alpine trails and routes that total approximately 753 acres. The remainder of the alpine terrain is comprised of open bowls and glades. Snowmaking operations at Alpine Meadows encompass 130 acres, and include top-to-bottom coverage on the frontside.

Skier support facilities and services are provided in the base area, primarily in one large base lodge, and include rental equipment, lift ticket sales, ski school, first aid, guest services, restrooms, public lockers, children's ski school, and food and beverage services. One on-mountain restaurant is also operated. No overnight accommodations are available at Alpine Meadows.

Lodging options for destination guests include an estimated 100 units of lodging at the intersection of Highway 89 and Alpine Meadows Road, and plentiful lodging in both Tahoe City and Truckee—with an estimated 10,000 hotel and lodging beds in the Truckee/North Shore area. The U.S. Census Bureau reports that in 2010 Tahoe City/Sunnyside had 1,557 residents; Truckee had 16,180, and Placer County had 348,432 (note that Truckee is located in Nevada County, not Placer County). There is a significant local ski base, with a large number of second homes and seasonal rental units. However, as stated, most visitation to Alpine Meadows is attributable to day visitors, who are attracted to the less-crowded feel of Alpine Meadows over its more high-profile neighbors of Squaw Valley and Northstar-at-Tahoe. With both Sacramento and Reno lying within a two-hour drive of Alpine Meadows, there are plenty of nearby population centers.

Since the 2005/06 season, annual visitation at Alpine Meadows has averaged about 270,000, with a peak of nearly 325,000.[1] The 2013/14 season saw a decrease in annual visitation due to below average snowfall totals (which was experienced across the national industry). With a typical season starting around the first of December and ending in May, Alpine Meadows typically operates 150 days or more per season. However, the entire mountain/facility is usually not open until Christmas, and sometimes later. Note that the visitation level equates to an approximate 40% utilization rate, which is similar to other resorts in the vicinity.[2]

C. LAND OWNERSHIP

Land ownership at Alpine Meadows is somewhat complex. The resort operates on a total of 2,278 acres, divided among three separate categories of land ownership:

1. NFS lands administered under a 40 year Ski Area Term SUP by the TNF. These lands cover a total of 1,407 acres, or 62% of the total land area. NFS lands are divided between the main ski area and the Deer Park area. The main ski area portion covers 1,285 acres, while the Deer Park portion covers 122 acres. The Deer Park area, located at the intersection of Highway 89 and Alpine Meadows Road, was amended to the SUP in 2000, and is included in the 2011 SUP renewal.
2. State of California owned lands, leased to Alpine Meadows from the California Tahoe Conservancy. This property totals 427 acres, or 19% of the total.
3. Alpine Meadow's private property, held by Alpine Sierra Ventures, LLC. This property totals 444 acres, or 19% of the total.

Refer to Figure 2 for more information on location and land ownership.[3]

[1] The annual visitation cited in this plan includes visits from the public, as well as non-working employees. Visitation numbers provided to the USFS annually for report/payment do not include non-working employee visits.
[2] *Utilization* is the analysis of actual annual skier visits compared to the potential visitation based on the ski area's Comfortable Carrying Capacity, which is discussed in greater detail in Chapter IV.
[3] Note: all boundaries shown on Figure 2 should be considered approximate, do not represent boundary surveys, and should be used for planning purposes only.

D. BACKGROUND AND DEVELOPMENT HISTORY

Alpine Meadows opened with three lifts for the 1961/62 ski season. Originally named Ward Peak, it was developed by a group of avid skiers from San Francisco shortly after the 1960 Olympic Winter Games as a more relaxed and laid-back alternative to Squaw Valley. A number of families pooled resources to develop the resort, less as a business venture and more for their love of skiing. The official founder was John Reily.

The ski area was purchased in 1970 by Nick Badami. By 1973 the ski area operated seven double chairlifts, five surface lifts, and a day lodge, with a total capacity of around 4,500 skiers. At this time, the first development plan was created for the resort. This plan was revised in 1983 with the completion of an Environmental Assessment and updated in August of 1983 with the Alpine Meadows Development Tune-up Project. Additional environmental review was conducted and approved for the projects in the Tune-up Project report.

Badami sold the resort to Powdr Corp in 1993, although he stayed on with that company as Chairman of the Board until 2003. Powdr Corp operated Alpine Meadows until 2007, when JMA Ventures, owners of the Homewood Mountain Resort on the west shore Lake Tahoe, purchased it.

In September 2011 Alpine Meadows was purchased by KSL Capital Partners, LLC.—the owners of adjacent Squaw Valley Ski Resort. The two resorts will retain their distinct identities but unite under common management dominated by Squaw's Valley's parent company. The new umbrella entity over both resorts is known as Squaw Valley Ski Holdings, LLC.

The most recent projects at Alpine Meadows were the 2005 replacement of the Sherwood Bowl Chair with a high-speed quad chairlift, and a major remodeling of indoor food service space in the base lodge.

E. THE NICHE MARKET OF ALPINE MEADOWS

Since its inception in the 1960s Alpine Meadows has been known for its abundant, high quality snow, fun and diverse terrain, and uncrowded slopes. Over the decades it has strived to capitalize on these defining characteristics while maintaining the laid-back atmosphere that guests have come to expect.

Alpine Meadows is, and always has been, a "local's favorite" for skiers from the Lake Tahoe area, west to the Bay Area. It is known for the intimate, uncrowded skiing experience that it offers—reminding guests of "how skiing is supposed to be." It has terrain that is both challenging and diverse (both lift-served and hike-to), with extensive above-treeline skiing. In addition to these factors, its abundant snow, free close-in parking and outstanding views further define the resort.

As discussed, Alpine Meadows is primarily a day-use/regional destination resort, attracting people from the Lake Tahoe region, Reno, Sacramento, and the Bay Area. It has a strong local following from residents of these areas and also capitalizes on the Tahoe region's destination market. For example, destination skiers who stay at Northstar-at-Tahoe or Sugar Bowl, may elect to ski at Alpine Meadows for one day of their week-long vacation. While not many skiers travel to Alpine Meadows as a destination resort in-and-of itself, the ski area benefits from being in the Tahoe region by accommodating visitors also skiing at nearby resorts. Similar to most ski areas, Alpine Meadows hosts the majority of its guests on weekends and during holiday periods.

F. ABSTRACT OF THE PROPOSED UPGRADE PLAN

The Upgrade Plan included in Chapter V is summarized below:

1. Base Area/Guest Services

- Relocate maintenance shop
- Lodge remodel/ADA (Americans with Disabilities Act) upgrades
- Utilities infrastructure replacement – phone, electrical, internet, fiber-optic, etc. in base area snow beach
- Create transportation hub and replace existing building at Deer Park
- Upgrades to Ice Bar and Chalet

2. Lifts

- Hot Wheels Chair– replace with detachable quad and extend
- Scott Chair – replace with new or newer lift
- Subway/Meadow chairs– combine two lifts with single lift;
- Rollers Chair– new lift and associated trails on Estelle Peak[4]
- Interconnect Gondola – new gondola connecting Alpine Meadows to Squaw Valley

3. Snowmaking

- Repair main line from pump house
- Ongoing water research & development including Scott well and other possible sources
- Raise the Deer Park well booster vault
- New snowmaking line installations – air, water, power for fan guns on East Creek, Yellow Trail, Loop Road/Weasel East-West tie-in, Terry's return, and the planned Estelle skiway

[4] Throughout this document, references are made to both the Rollers terrain and Estelle terrain. Rollers terrain refers to terrain that can be repeat-skied from the planned Rollers Chair. Estelle terrain refers to terrain that can be accessed from the Rollers Chair but returns skiers to the base area. Both the Rollers and Estelle terrain are located on Estelle Peak. Refer to Figure 8 – Upgrade Projects for more detail.

- Snowmaking line replacements – air, water, power for fan guns on Subway, Dance Floor, Charity, Werner
- Tower fan gun installations along the Dance Floor terrain park

4. Trail Grading Projects

- Red Ridge
- Yellow Trail
- Ladies Slalom
- East Creek
- rock mound at Contemplation Point
- Alpine Bowl road connect
- Alpine Bowl Chair Barn replacement/grading
- Meadow trail cross-slope
- Charity access above Terrain Park

5. Other Projects

- Mountain signage/boundary signs – boundary management signage with better definition of gates, closures and permanently open areas
- Electronic guest info signs
- Summit East wind fence – install east wind deflector at top terminal of Summit Express
- On-Snow Fuel Dispenser – provide on-snow fueling of snow cats at shop
- Summer road maintenance/repair – Scott Road, Sherwood Road, South Peril Road
- Power Feeds at Alpine Bowl and Summit Express
- Estelle skiway construction and power feed to planned Interconnect Gondola

G. GOALS AND OBJECTIVES OF THIS MASTER PLAN

As a result of evolving expectations and demands in today's skier/rider market, resorts are increasingly focusing on raising service standards, improving the recreational experience, and addressing shortcomings in their terrain offerings and operations. In essence, Alpine Meadows must strive to improve its offerings in order to remain viable in the competitive destination and Lake Tahoe day skier/rider market.

With this concept in mind, this MP is dedicated to improving the opportunities for people to enjoy public lands on the TNF. Starting with Chapter I and culminating with the Upgrade Plan in Chapter V, this MP identifies and capitalizes on the current recreational/operational assets and opportunities of Alpine Meadows, and addresses its constraints.

This conceptual planning document essentially serves as a "road map" for future improvements at Alpine Meadows. By identifying the type, size, capacity, and location of improvements that are appropriate to achieve the goals of the resort, this document establishes the direction and priorities for the physical improvement of mountain and base area facilities at Alpine Meadows over roughly the next decade. Thus, this document provides a comprehensive portrayal of how Alpine Meadows will function as a cohesive resort across public lands. It is expected that additional site-specific design will be warranted and completed at the time individual projects are proposed for analysis, approval, and implementation on NFS lands.

It is important to note that this is intended to be a dynamic document, which may be amended periodically in response to changes in the Alpine Meadows market, the evolution of the ski/snowboard industry, and technological innovations.

Since setting an all-time record in 2010/11 the national ski industry has seen annual skier visits fluctuate, showing a general decline over the past three seasons. In 2013/14 nationwide skier visits totaled 56.5 million. Over the last ten seasons (from 2004/05 through 2013/14), the average number of skier visits recorded nationally was 57.4 million. The 2013/14 season was approximately 1.6% below this ten-year average, due to a variety of factors, including below-average snowfall and warm temperatures throughout portions of the country. Overall, the industry has operated at generally increasing levels of visitation since the 2000/01 season, achieving 57 to 60 million visits in the better years, and 54 to 55 million visits in the lower years, both above levels from previous decades.

Ski areas in the Pacific Southwest region (California, Nevada, and Arizona) experienced the worst season in 19 years in 2013/14, with 5.2 million skier visits. This total was 29.6% below the region's 19-year historic average of 7.3 million. The region as a whole received 32% below average snowfall, which led to later openings than normal. Above-average late-season snowfall allowed some resorts to stay open later than normal, but this was typically not enough to make up for the lacking early season. More specifically, California experienced a 29% decrease in skier visits in 2013/14, due to below-average snowfall and warm temperatures throughout much of the year. It is important to note that despite the distinct national economic downturn in 2008 and the following years, national skier visits have shown remarkable resilience by posting four of the six highest total visits on record since 2008.[5] These high level of visits are a strong indicator of the industry's durability in challenging economic times.

To address the growth in both the national and Tahoe skier markets, and more importantly to meet guest expectations, Alpine Meadows must continue to develop and improve on-mountain and base area facilities across the ski area. The development of additional facilities at Alpine Meadows is in

[5] Kottke National End of Season Survey 2013/14. National Ski Areas Association. July 2014.

direct response to evolving consumer demands and the competitive regional destination ski market. The improvements illustrated within this MP were designed to enhance the recreation experience for guests of Alpine Meadows.

The niche market of Alpine Meadows in the ski industry (defined previously) and the clientele it serves helped cultivate the concepts found throughout this MP. This document identifies numerous opportunities that, when implemented, will greatly improve the recreational experience at Alpine Meadows and assist in ensuring the resort's viability. Through planning efforts, the following major opportunities were identified:

- Provide a lift connection between Alpine Meadows and Squaw Valley.
- Improve the first-time and learning progression ski experience at Alpine Meadows by providing an appropriate learning progression in an uncongested area and developing additional beginner and lower ability level terrain.
- Replace/modify the Hot Wheels Chair, thereby improving access to intermediate level terrain and improve circulation to/within the Sherwood area.
- Construct the new Rollers Chair, providing access to a significant amount of existing terrain on Estelle Peak that is currently very difficult to access.
- Address several notable problem areas on existing ski trails through grading projects.
- Enhance the overall recreation experience by improving upon existing, and providing additional, convenient on-mountain and base area guest services.

Each of these concepts is detailed in the Upgrade Plan in Chapter V, which strives to achieve the goal of maintaining a desired skiing experience with comfortable terrain capacities.

II. DESIGN CRITERIA & FOREST SERVICE DIRECTION

Establishing design criteria is an important concept in resort master planning. Chapter II provides an overview of the basic design criteria upon which Chapter IV (Existing Ski Area Facilities) and Chapter V (Upgrade Plan) are based. With the exception of Forest Service Policy and Direction, information presented in Chapter II is general in nature and related to the concept of resort master planning, rather than to Alpine Meadows specifically. Chapters III, IV, and V present information specific to the resort.

A. DAY SKI/REGIONAL DESTINATION RESORTS

Regional destination resorts largely cater to a "drive" market. While day-use guests play a large role, the regional destination resort also appeals to vacationers. At regional destination resorts, lodging typically is a component, but due to the average length of stay, and perhaps guests' vacation budgets, lodging and related services and amenities are usually less extensive than what might be expected at a larger destination resort which attracts national and international visitors. Where the regional destination resort has evolved from within, or adjacent to, an existing community, services are often supplied by proprietors in the existing community. Such is the case at Alpine Meadows and its relationship to the nearby towns of Tahoe City and Truckee. Even though the services offered at Alpine Meadows cater directly to guests of the resort, proprietors within these towns also supply services to recreationists/vacationers, which helps maintain the balanced lifestyle that permanent residents and second home owners tend to enjoy.

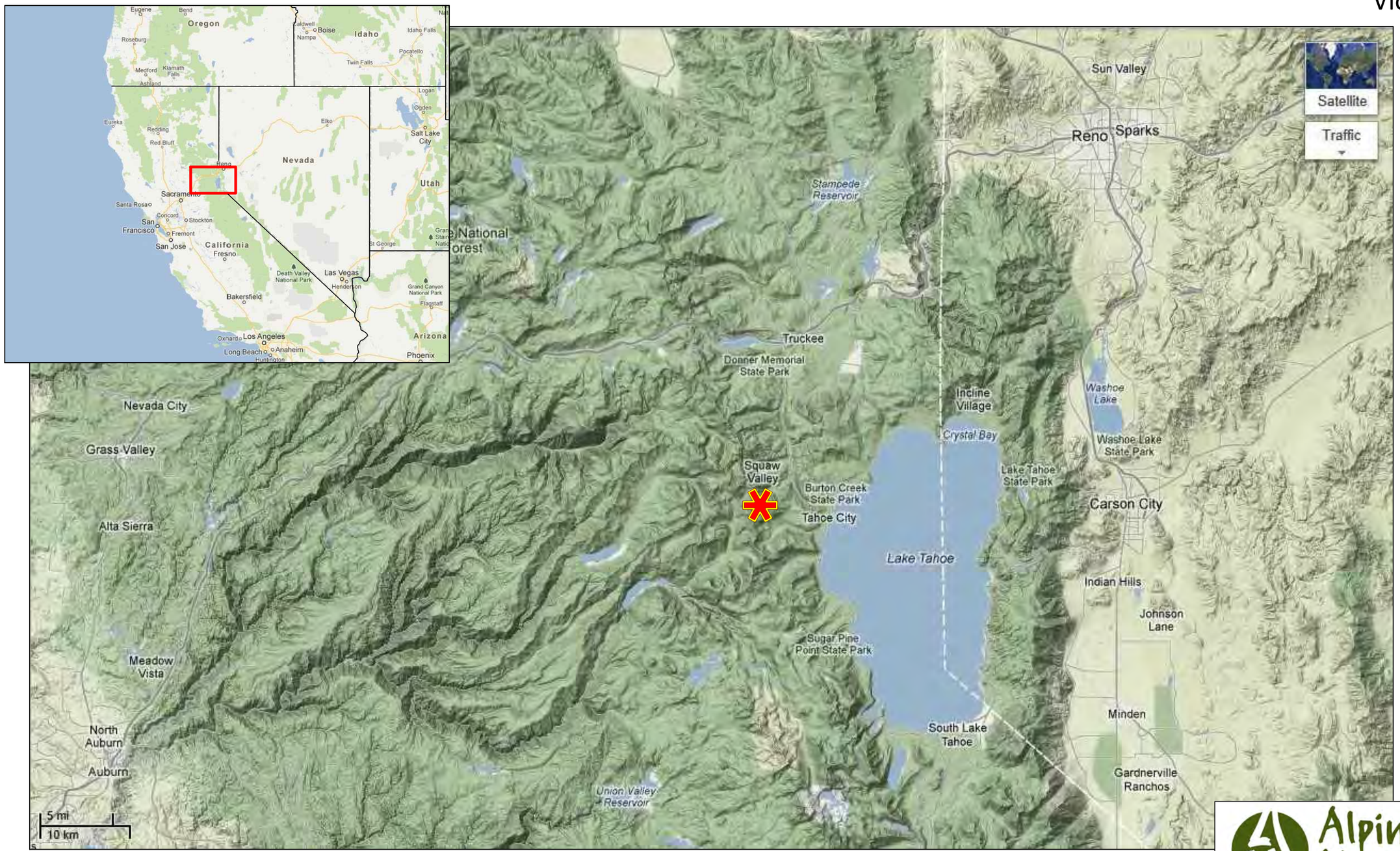
B. BASE AREA DESIGN

The relationship between planning at a resort's base area developments and on-mountain lift and terrain network is critically important. This relationship affects the overall function and perception of a resort.

Design of the base lands for a mountain resort involves establishing appropriate sizes and locations for the various elements that make up the development program. The complexity and interrelationship of these elements varies considerably depending on the type of resort and its intended character. However, fundamental objectives of base area planning are to integrate the mountain with the base area for the creation of an attractive, cohesive, and functional recreational and social experience. This is essential to create the feeling of a *mountain community*, and can only be achieved by addressing base area components such as (but not limited to): guest service

Vicinity Map

Figure 1



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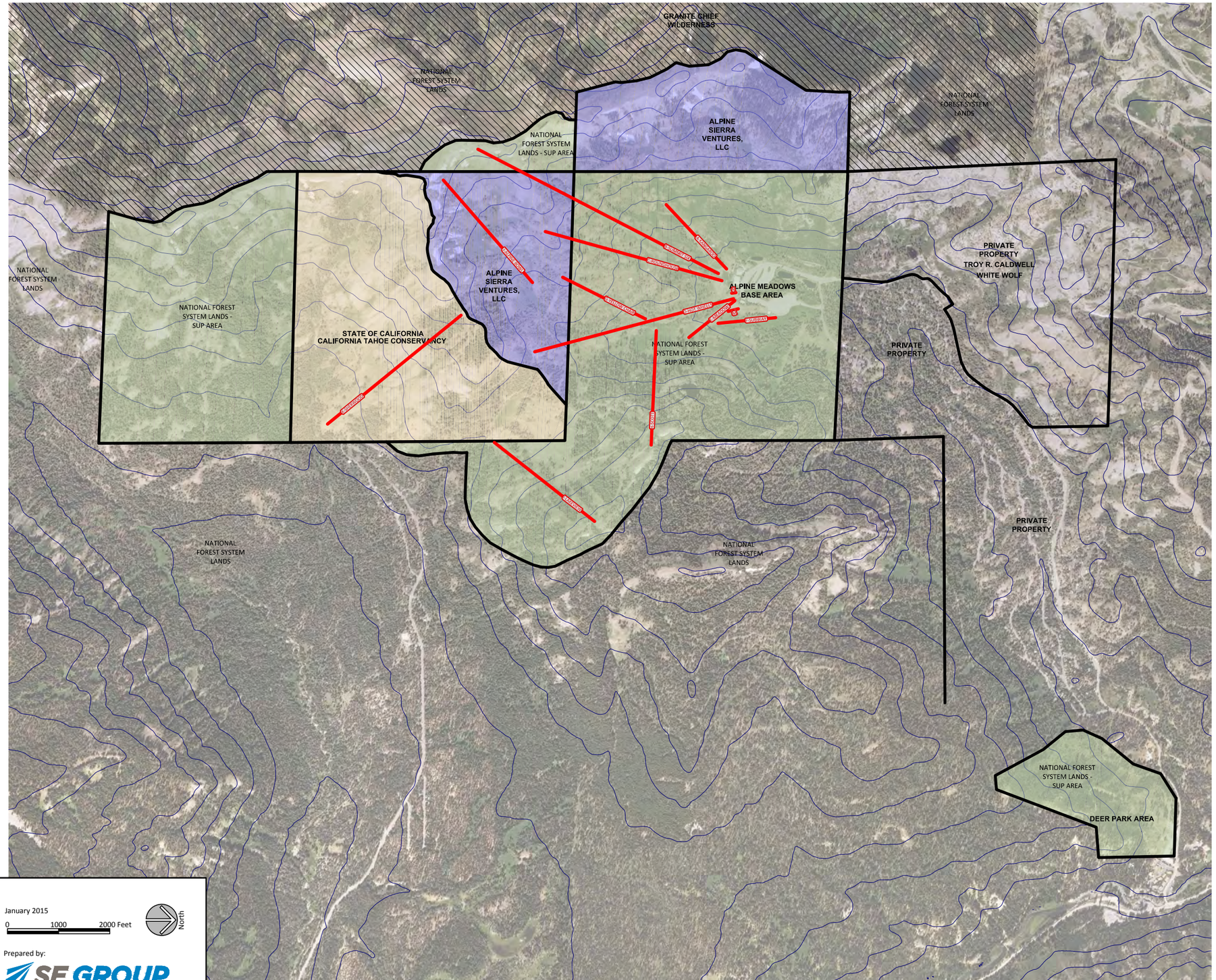
Property Ownership

Figure 2



LEGEND

- Alpine Sierra Ventures LLC
- National Forest System lands - SUP Area
- State of CA Tahoe Conservancy
- Wilderness Area

January 2015

0 1000 2000 Feet

North

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locations; skier/rider circulation; pedestrians; parking/access requirements; and mass-transit drop-offs.

Planners rely on resort layout as one tool to establish resort character. The manner in which resort elements are inter-organized, both inside the resort core and within the landscape setting, along with architectural style, help to create the desired character.

Skier service facilities are located in base area and on-mountain buildings. Base area staging locations, or portals, are "gateway" facilities that have three main functions:

- Receiving arriving guests (from a parked car, a bus, or from adjacent accommodations)
- Distributing the skiers onto the mountain's lift and trail systems
- Providing the necessary guest services (e.g., tickets and rentals)

C. MOUNTAIN DESIGN

1. Trail Design

a. Slope Gradients and Terrain Breakdown

Terrain ability level designations are based on slope gradients and terrain features associated with the varying terrain unique to each mountain. In essence, ability level designations are based on the maximum sustained gradient calculated for each trail. While short sections of a trail can be more or less steep without affecting the overall run designation, a sustained steeper pitch may cause the trail to be classified with a higher difficulty rating.

The following general gradients are used to classify the skier difficulty level of the mountain terrain.

Table II-1:
Terrain Gradients

Skier Ability	Slope Gradient
Beginner	8 to 12%
Novice	to 25%
Low Intermediate	to 35%
Intermediate	to 45%
Advanced Intermediate	to 55%
Expert	over 55%

The distribution of terrain by skier ability level and slope gradient is compared with the market demand for each ability level. It is desirable for the available ski terrain to be capable of accommodating the full range of ability levels reasonably consistent with market demand. The market breakdown for the overall skier market is shown in Table II-2.

Table II-2:
Industry-wide Skier Ability Breakdown

Skier Ability	Percent of Skier Market
Beginner	5%
Novice	15%
Low Intermediate	25%
Intermediate	35%
Advanced	15%
Expert	5%

b. Trail Density

The calculation of capacity for a ski area is based in part on the target number of skiers and riders that can be accommodated, on average, on a typical acre of terrain at any one given time. The criteria for the range of trail densities for North American ski areas are listed in the Table II-3.

Table II-3:
Skier Density per Acre

Skier Ability	Trail Density
Beginner	25–40 skiers/acre
Novice	12–30 skiers/acre
Low Intermediate	8–25 skiers/acre
Intermediate	6–20 skiers/acre
Advanced Intermediate	4–15 skiers/acre
Expert	2–10 skiers/acre
Alpine Bowls	0.5 skier/acre

These density figures account for the skiers that are actually populating the trails and do not account for other guests who are either waiting in lift lines, riding the lifts, or using the milling areas or other support facilities. Empirical observations and calculations indicate that, on an average day, approximately 40% of the total number of skiers/riders at a typical resort is on the trails at any given time. Additionally, areas on the mountain, such as merge zones, convergence areas, lift milling areas, major circulation routes, and egress routes, experience higher densities periodically during the day.

Since Alpine Meadows represents a style of ski resort that is known for uncrowded ski runs, open bowls, and wide glades, the lower end of these ranges was used for analyzing the terrain.

c. Trail System

A resort's trail system should be designed to provide a wide variety of terrain to meet the needs of the entire spectrum of ability levels as well as the resort's particular market. Each trail should provide an interesting and challenging experience within the ability level for which the trail is designed. Optimum trail widths vary depending upon topographic conditions and the caliber of the skier/rider being served. The trail network should provide the full range of ability levels consistent with each level's respective market demand.

In terms of a resort's ability to retain guests, both for longer durations of visitation and for repeat business, one of the more important factors has proven to be variation in terrain. This means providing developed runs for all ability levels: some groomed on a regular basis and some not—bowls, trees, and terrain parks and pipes. This concept is explored in greater detail in Chapter IV.

In summary, a broad range of terrain satisfies skiers/riders from beginner through expert ability levels within the natural topographic characteristics of the ski area.

d. Terrain Parks

Terrain parks, areas dedicated to the development and maintenance of a collection of alternative terrain features, have become part of most mountain resorts' operations. Terrain parks have become a significant factor in attracting and retaining market share, and as such are an important aspect of operations. The presence of terrain parks at mountain resorts has changed various operational and design elements. The demand for grooming can increase, as terrain parks often require specialized or dedicated operators, grooming machines, and equipment. Terrain parks typically require significant quantities of snow, either natural or man-made, often increasing snowmaking demand. Terrain parks can affect circulation on the mountain, as the parks are often points of destination.

2. Lift Design

The goal for lift design is to serve the available terrain in an efficient manner, i.e., having the minimum number of lifts possible while fully accessing the terrain and providing sufficient uphill capacity to balance with the available downhill terrain capacity. In addition, the lift design has to take into consideration such factors as: wind, round-trip utilization of the terrain pod, access needs, interconnectability between other lift pods, the need for circulation space at the lower and upper terminal sites, and the presence of natural resources (e.g., visual impacts, wetlands, and riparian areas). The vertical rise, length and ride time of lifts across a mountain are important measures of overall attractiveness and marketability of any resort.

3. On-Mountain Guest Services

On-mountain guest service facilities are generally used to provide food service (cafeteria-style or table service), restrooms, and limited retail, as well as ski patrol and first aid services, in closer proximity to upper-mountain terrain. This eliminates the need for skiers and riders to descend to the base area for similar amenities. It has also become common for resorts to offer ski/board demo locations on-mountain, so skiers and riders can conveniently test different equipment throughout the day.

4. Capacity Analysis and Design

In ski area planning, a "design capacity" is established, which represents a daily, at-one-time guest population to which all ski resort functions are balanced. The design capacity is a planning parameter that is used to establish the acceptable size of the primary facilities of a ski resort: ski lifts, ski terrain, guest services, restaurant seats, building space, utilities, parking, etc.

Design capacity is commonly expressed as "Comfortable Carrying Capacity (CCC)," "Skier Carrying Capacity (SCC)," "Skiers at One Time (SAOT)," and other ski industry specific terms. These terms refer to a level of utilization that provides a pleasant recreational experience, without overburdening the resort infrastructure. Accordingly, the design capacity does not normally indicate a maximum level of visitation, but rather the number of visitors that can be "comfortably" accommodated on a daily basis. Design capacity is typically equated to a resort's fifth or tenth busiest day, and peak-day visitation at most resorts is at least 10% higher than the design capacity.

CCC is the term used in this document to represent the Alpine Meadows design capacity. As described above, CCC is synonymous with SCC and SAOT.

The accurate estimation of the CCC of a mountain is a complex issue and is the single most important planning criterion for the resort. Related skier service facilities, including base lodge seating, mountain restaurant requirements, restrooms, parking, and other guest services are planned around the proper identification of the mountain's true capacity.

CCC is derived from the resort's supply of vertical transport (the vertical feet served combined with the uphill hourly capacities of the lifts) and demand for vertical transport (the aggregate number of runs desired multiplied by the vertical rise associated with those runs). The CCC is calculated by dividing vertical supply (VTF/day) by vertical demand, and factors in the total amount of time spent in the lift waiting line, on the lift itself, and in the descent.

<u>Note</u>: It is not uncommon for resorts to experience peak days during which visitation exceeds the CCC by as much as 25%. However, from a planning perspective, it is not recommended to

consistently exceed the CCC due to the resulting decrease in the quality of the recreational experience, and thus the resort's market appeal.

D. BALANCE OF FACILITIES

The mountain master planning process emphasizes the importance of balancing recreational facility development. The sizes of the various guest service functions are designed to match the CCC of the mountain. The future development of a resort should be designed and coordinated to maintain a balance between accommodating guest needs, resort capacity (lifts, trails, and other amenities such as tubing), and the supporting equipment and facilities (e.g., grooming machines, day lodge services and facilities, utility infrastructure, access, and parking). Note that it is also important to ensure that the resort's CCC balances with these other components, facilities, and services at the resort. Since CCC is primarily derived from the resort's lift network, it is possible to have a CCC that is effectively lower than the capacity of other resort components.

E. APPLICABLE FOREST SERVICE POLICY AND DIRECTION

This MP is not an approval document; it is a planning document which has been prepared in response to the business and operational goals of Alpine Meadows, within the parameters of its Forest Service-administered SUP. All planned projects will be subject to site-specific analysis and approval in accordance with NEPA before implementation can occur. In conjunction with preparation of this MP, a preliminary review of the 1990 TNF Land and Resources Management Plan (1990 Forest Plan) was conducted to identify any potential inconsistencies between planned projects and relevant management direction for NFS lands within the Alpine Meadows SUP area. Upon site-specific NEPA analysis of any projects contained herein, a more thorough Forest Plan consistency review will be performed.

The Forest Service is authorized to approve certain uses of NFS lands under the terms of SUPs.[6] Generally, SUPs for recreational developments are issued and administered for uses that serve the public, promote public health and safety, and provide land stewardship. As discussed in Chapter I, the Alpine Meadows 40-year SUP was reissued in 2011. In accomplishing these objectives, the Alpine Meadows SUP authorizes the following:

> *"Alpine Meadows Ski Resort. LLC. of Alpine Meadows Ski Resort, LLC. Squaw Valley USA. P.O. Box 2007, Olympic Valley. CA 96146 (hereafter called the holder) is hereby authorized to use National Forest System lands, on the Tahoe National Forest, for the purposes of constructing, operating, and maintaining winter sports resort including food service, retail sales, and other ancillary facilities located on National Forest*

[6] 16 United States Code 497

System lands, described herein, known as the Alpine Meadows Ski Resort, LLC. and subject to the provisions of this term permit."

NFS lands within the Alpine Meadows SUP boundary total 1,407 acres, or 62% of the resort's total acreage (the remainder is composed of private and State of California lands). NFS lands are divided between the main ski area and the Deer Park area. The main ski area portion covers 1,285 acres, while the Deer Park portion covers 122 acres.

1. 1990 TNF Land and Resource Management Plan

Land and Resource Management Plans define the direction for managing each National Forest across the country. The 1990 Forest Plan provides guidance for all resource management activities on the Forest.

The TNF is located in the north central Sierra Nevada Mountains in California. The TNF is bounded on the north by the Plumas National Forest, on the east by the Toiyabe National Forest and Lake Tahoe Basin Management Unit (LTBMU), and on the south by the Eldorado National Forest. The TNF encompasses almost 1.2 million acres, divided into five administrative units (Ranger Districts): Downieville, Foresthill, Nevada City, Sierraville, and Truckee. The Alpine Meadows SUP is administered by the Truckee Ranger District. Recreation use is high on the TNF because many areas of high scenic beauty and recreational appeal are located within a short distance of the metropolitan areas of Reno, Sacramento, and San Francisco (all within a four-hour drive of the TNF).

Per the 1990 Forest Plan, all developed winter sports facilities (ski resorts) are in the *Rural* class of the Recreational Opportunity Spectrum (ROS) and are located near the Sierra Nevada crest. As of 1990, the downhill ski resorts operating under an SUP (partially or entirely on NFS lands) were approaching "full use." These include Alpine Meadows, Donner Ski Ranch, Boreal, Squaw Valley, and Sugar Bowl. No new downhill ski areas have been developed in recent years, and the 1990 Forest Plan notes that overcrowding on peak days and weekends lessens the recreation experience.[7]

The 1990 Forest Plan indicates that MPs for existing downhill ski resorts could increase capacity, and notes the potential for interconnecting ski areas along the Sierra Nevada crest exists, which could provide better dispersal and opportunities for skiers.[8]

[7] USDA Forest Service. 1990. Tahoe National Forest Land and Resource Management Plan. p. III-4
[8] Ibid.

a. Goals and Desired Future Conditions

The Forest-wide management goals describe the desired future condition of the TNF's resources that the 1990 Forest Plan aims to achieve. The recreational goals include:

- Provide a broad spectrum of dispersed and developed recreation opportunities in accordance with identified needs and demands.
- Recreation management will be in concert and cooperation with appropriate city, County, State, and other Federal agencies.

Forest-wide goals for visual management are to: "Maintain visual quality at the Visual Quality Objective (VQO) level specified in each management area, as a minimum, but maintain higher visual quality wherever practical and compatible with other goals.

b. Forest-Wide Standards and Guidelines

Forest-wide Standards and Guidelines (S&Gs) direct all management practices and activities on the TNF. The Forest-wide S&Gs establish the baseline conditions, or the minimum standards and policies, which must be met when implementing the 1990 Forest Plan. These S&Gs apply to all areas of the TNF, and are a higher-level form of direction than management practices (discussed below). Standards are principles requiring a specific level of attainment (i.e., a rule to measure against). Guidelines are an indication or outline of policy or conduct.

Occasionally, a practice proposed for a management area may be partially incompatible with one or more of the Forest-wide S&Gs. In these instances, the Forest-wide S&Gs will take precedence in resolving the incompatibility. An exception to this occurs when a management area is specifically exempt from a standard. In other cases, on-site conditions may dictate the need for a variance from Forest-wide S&Gs, Practices, or Management Area Direction. Variances must be justified in the appropriate project analysis document. The recurrence of variances could result in a Forest Plan amendment.

Recreation

Although downhill skiing is not specifically identified in the 1990 Forest Plan's S&Gs (Chapter V), the Management Area direction for Scott (086) indicates that the Alpine Meadows SUP area is in Roaded Natural ROS class.[9] The 1990 Forest Plan discusses Roaded Natural as follows:[10]

> *Area is characterized by a predominantly natural-appearing environment with moderate evidences of the sights and sounds of humans. Such evidences usually harmonize with the natural environment. Interaction among users may be low to*

[9] Ibid. p. V-448
[10] Ibid. p. V-21

moderate, but evidence of other users is prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

Users should have about equal probability to either experience affiliation with other user groups or be isolated from sights and sounds of people.

Opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive type of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.

Activity opportunities include: Viewing outstanding scenery, enjoying unique and/or unusual environments, hiking, cross-country ski touring and snowshoeing, horseback riding, canoeing, sailing, other, non-motorized watercraft use, swimming, diving (skin or scuba), fishing, photography, camping, snowplay, hunting (big, small game, upland birds and waterfowl). nature study, acquiring general knowledge/understanding, unguided hiking, general information, motor-driven ice and snowcraft, OHV touring. power boating, picnicking, gathering forest products, auto touring, water skiing and other water sports, automobile camping, trailer camping, viewing interpretive signs, organization camping, lodges, resort-commercial public services, resort-lodging.

Visual Resource Inventory

- Determine the inherent visual quality (variety classes) and sensitivity levels of an area to provide basic data and interpretations needed for land and resource management planning. Also includes the development of those interpretations termed inventory Visual Quality Objectives.
- Determine the visual absorption capability of an area to provide basic data on interpretations needed for land and resource management plans.
- Determine the existing visual condition of the landscape to provide a base from which to measure change.
- Develop and administer plans for visual resource projects. Includes plans prepared for resource improvement, special studies, demonstration areas, and other activities that display developed techniques or methodologies for advanced visual resource management. Includes the development or participation in project EAs and/or EISs.
- Rehabilitate and restore facilities, lands, and resources to the visual quality objectives adopted in approved management plans.

- Monitor the effects of land use on the visual resource. Includes activities initiated for the purposes of management decision, benchmark, or compliance monitoring.

c. Management Practices

Unlike Forest S&Gs, which apply Forest-wide, management practices are area-specific standards and guidelines. A management prescription is a combination of compatible management practices used in conjunction with management area standards and guidelines to support a specific management emphasis.

Per the 1990 Forest Plan, downhill skiing is in Management Practice A10.[11] This refers to downhill skiing occurring on a developed winter sports facility operated under a SUP. Units are measured in People At One Time (PAOT) and Recreational Visitor (RV) days.

d. Management Areas

The TNF is divided into 106 geographic subdivisions called management areas (MAs). The management direction for each MA includes a management emphasis, a set of standards and guidelines, and a list of available management practices.

086 Scott

The Alpine Meadows SUP area is located in the Scott Management Area.[12] The area contains a proposed campground, the trailhead for the Five Lakes access trail (one of the most popular day hikes on the Forest), as well as the corrals for Alpine Stables. Also within the area are SUPs for the Alpine Meadows Fire Department/Water District, telephone lines, cable television transmission lines, power lines, and road uses.

Per the 1990 Forest Plan, Alpine Meadows has expressed a desire to expand onto additional NFS lands. The Deer Park Ski Area closed for downhill skiing in 1984, and consequently Alpine Meadows is currently using the base facilities as a remote parking area.

Within Alpine Meadow's resort boundary, the SUP area is contiguous with skiable terrain managed by the Lake Tahoe Basin Management Unit (Ward Valley to the south) and terrain managed by Squaw Valley Resort, LLC (to the north). A portion of the area is within the legal jurisdictional boundaries of the California-Tahoe Regional Planning Agency.

The 1990 Forest Plan notes that ski industry expansion represents the primary opportunity, and raises the principal issues, in the MA. Expansions are reviewed in relation to traffic, community services, and utility capacities, and can result in secondary impacts to the Lake Tahoe Basin.

[11] Ibid. p. V-53
[12] Ibid. p. V-446

Expansion in or near the Lake Tahoe Basin is dependent upon access via Highway 89 and is likely to receive close examination.

The 1990 Forest Plan also states that development of private sector ski area maintenance, operation, and planning will be emphasized during the planning period. This may include development of bed space at the ski base facility. Project-level planning will coordinate increased capacities with off-site capabilities.

The desired future condition in this management area will resemble the unit's existing condition (Roaded-Natural appearing) except where ski expansion is approved. In those areas where base facilities are approved, there will be a shift from Roaded Natural appearing to *Rural* classification as development occurs. New base facilities will be rural in character.

Upslope ski runs and facilities should be subordinate to the overall landscape. The expansion should only happen in coordination with the development of adequate support services.

S&Gs relevant to the operations and activities at Alpine Meadows in the Scott Management Area include:

- ROS – Roaded Natural; Rural for base facilities of ski areas and for the private land within the area.
- VQO – Partial Retention for upslope facilities and ski runs. Modification for base facilities and campgrounds. Modification within the developed sites. The sites will, however, meet the Partial Retention VQO when viewed as middleground from travel routes and other occupancy sites. Partial Retention for acres seen in the foreground from subdivisions.
- Forest-wide S&Gs – All apply.
- Other – Project-level analysis will need to assess the capabilities of the support communities and off-site impacts of further developments.

2. Visual Management and the Built Environment Image Guide

a. Visual Management System

The goal of landscape management on all NFS lands is to manage for the highest possible visual quality, commensurate with other appropriate public uses, costs, and benefits. The Forest Service began operating under the guidance of the Visual Management System (VMS) for inventorying, evaluating, and managing scenic resources on NFS lands in the mid-1970s. The VMS is defined in National Forest Landscape Management, Volume 2.[13] The VMS provides a system for measuring the

[13] USDA Forest Service. 1974. USDA Forest Service Agricultural Handbook 462 – National Forest Landscape Management, Volume 2.

inherent scenic quality of any forest area as well as a measurement of the degree of concern for that quality. It also establishes objectives for alteration of the visual resource.[14]

Visual Quality Objectives

Per the VMS, NFS lands are assigned VQOs that define the degree of acceptable change to the visual resource from human created management activities. VQOs are based on the physical characteristics of the land and the sensitivity of the landscape setting as viewed by humans. VQOs define how the landscape will be managed, the level of acceptable modification permitted in the area, and under what circumstances modification may be allowed.

The initial VQO recommendations for the TNF are that 44% of the Forest (348,000 acres) be managed for Retention, 43% (342,000 acres) be managed for Partial Retention, 11% (89,000 acres) be managed for Modification, and 2% (14,000 acres) be managed for Maximum Modification.[15] However, it is noted that VQOs on the TNF need to be specified for all areas because VQOs have not been adopted for the entire Forest. Recreation use needs to be balanced to avoid overcrowding in certain developed sites during weekends, holidays, and other heavy use periods.[16] Developed recreation management direction needs to specify the management areas where recreation facilities should be developed, the capacity of the facilities, and development priority. Existing developed recreation uses should be reviewed and changes in future management direction identified where needed, especially where conflicts have occurred on existing recreational sites adjacent to private lands. Facilities currently operated under SUP should be reviewed prior to the permit's termination date. Visual resource direction should specify the VQOs to be met in each management area.

As previously indicated, the VQOs for the Alpine Meadows SUP area include:

- Partial Retention for upslope facilities and ski runs
- Modification for base facilities
- Modification within the developed sites (the sites will, however, meet the Partial Retention VQO when viewed as middleground from travel routes and other occupancy sites)
- Partial Retention for acres seen in the foreground from subdivisions

[14] In 1995 the Scenery Management System (SMS) was introduced to inventory and analyze aesthetic values on NFS lands. However, the SMS has not been adopted by all national forests (including the TNF), and, until such time that it is (e.g., per Forest Plan revisions), the VMS will continue to be used for inventorying, evaluating, and managing scenic resources.
[15] USDA Forest Service. 1990. Tahoe National Forest Land and Resource Management Plan. p. III-9
[16] Ibid.

b. Built Environment Image Guide

In 2001 the Forest Service adopted the Built Environment Image Guide (BEIG) as a way of incorporating "thoughtful design and management" of the built environment across National Forests and grasslands.[17] The Forest Service defines the built environment as "the administrative and recreation buildings, landscape structures, site furnishings, structures on roads and trails, and signs installed or operated by the Forest Service, its cooperators, and permittees.[18] Per the BEIG, the cultural context of the built environment influences appropriate building designs, and the amount and type of surrounding development requires careful consideration. For example, "The size, style, and materials chosen for a regional [Forest Service] office in a large city would be much different than those for a ranger station in a small town."[19]

The BEIG provides guidance for improving the image, sustainability, and overall quality of Forest Service facilities consistent with the Agency's role as a leader in land stewardship. To achieve this aim, the BEIG:[20]

- Describes an approach to designing recreation and administrative facilities that highlights key elements of the Agency's national identity and image.
- Describes a process to "fit" facilities within the context of their ecological, physical and cultural settings.
- Establishes architectural character types for National Forests and grasslands across eight provinces, nationwide.
- Incorporates the principles of sustainability as an integral part of architectural character.
- Illustrates the role everyone plays in maintaining a quality facility.

To ensure sensitive responses to the contexts of ecology and culture, the BEIG addresses eight geographic areas—known as "provinces"—across the country. The TNF is within the North Pacific Province.[21]

The North Pacific Province includes the national forests and scenic areas in northern California, northwestern Oregon and Washington, and the coastal region of Alaska. This is a land of dramatic landscapes and climate and diverse cultural influences. These elements are frequently celebrated through a regional architectural style called Cascadian. The landscape has been altered but not nearly tamed by human settlement. It is still being shaped by volcanoes, glaciers, seismic movement, and tidal surges.

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[17] USDA Forest Service, 2001. The Built Environment Image Guide for the National Forests and Grasslands.
[18] Ibid. p. ii
[19] Ibid. p. 5
[20] Ibid. p. 2
[21] Ibid. Chapter 4.7

Architectural guidelines for the North Pacific Province (including siting, massing/scale, base, walls, windows/openings, roofs, materials, and color) are identified in the Chapter 4.7 of the BEIG. The architectural design of proposed structures on NFS lands would be subject to Forest Service review and approval during future project proposal. The BEIG will be an important component of this review.

III. SITE INVENTORY

Chapter III provides a brief overview of some of the unique characteristics of the SUP area that were taken into consideration in the preparation of this document.

A. TOPOGRAPHY AT ALPINE MEADOWS

The topography at Alpine Meadows can be generally described as two large bowls, with a ridge between, surrounded by smaller bowls and peaks. The topography at Alpine Meadows is typical of this portion of the Sierra Nevada range, consisting of a series of ridges and glaciated bowls with relatively flat terrain in the valleys. The northern bowl is defined by KT-22 peak and the ridge dividing Squaw Valley from Alpine Meadows to the north. Scott Peak lies on the eastern ridge of the northern bowl and provides the bowl's only west-facing slopes. The high point of the ski area, Ward Peak, is located on the east-west ridge that divides the northern bowl from the southern bowl. The southern bowl is well defined to the north and west. To the east and south, the southern bowl opens toward Lake Tahoe. The western boundaries of both the northern and southern bowls are defined by the same distinct ridge. The ski terrain lies on the north, east, south, and west facing slopes of these bowls. This is an ideal topographic scenario for a ski area, as it provides a variety of aspects as well as efficient access and circulation to the terrain. The ridge separating the northern and southern bowls provides the most significant challenge to circulation within the ski area. Slopes range from near vertical in cliff zones to almost flat in the base area. This type of topography allows for a range of ski opportunities.

The highest elevations are Ward Peak at 8,637 feet amsl and Scott Peak at 8,175 feet amsl. The lowest elevations at are located around the base area, specifically the bottom terminal of Subway Chair at 6,850 feet amsl. Thus, total vertical drop at Alpine Meadows is approximately 1,800 feet.

B. SLOPE GRADIENTS AT ALPINE MEADOWS

As discussed in Chapter II, terrain ability level designations are based on slope gradients and terrain features associated with the varying terrain unique to each mountain. Regardless of the slope gradient for a particular trail, if it feeds into a trail that is rated higher in difficulty, its ability level must be rated accordingly (e.g., Leisure Lane). Conversely, if a trail is fed only by trails of a higher ability level than the maximum slope of the trail would dictate, it also must be rated accordingly (e.g., Sandy's Corner).

Slope gradients at Alpine Meadows are depicted in Figure 5.

- **0 to 8% (0 to 5 degrees):** too flat for skiing and riding, but ideal for base area accommodations and other support facility development
- **8 to 25% (5 to 15 degrees):** ideal for beginners and novices, and typically can support some types of development
- **25 to 45% (15 to 25 degrees):** ideal for intermediates, and typically too steep for development
- **45 to 70% (25 to 35 degrees):** ideal for advanced and expert skiers/riders, and pose intermittent avalanche hazards
- **> 70% (>35 degrees):** too steep for all but the highest level of skiing/riding. These areas are typically allocated as expert-only and are closely managed by the resort operator for avalanche control.

As displayed in Figure 5, slope gradients covering all ability levels are present. As described in the topography section above, the terrain at Alpine Meadows is largely characterized by bowls and sub-bowls, and ridges and sub-ridges. The bottoms of the bowls and sub-bowls tend to be quite flat, often even too flat for consistent skiing. The terrain dropping off the ridges and sub-ridges tends to be quite steep, in many cases steeper than desired for skiing. This presents challenges for consistent fall-line skiing, but there are areas of consistent grades within the ski area. For example, intermediate-level slopes are mostly found in the transition zones between steeper and gentler grades. However, in the Sherwood and Lakeview area, areas of consistent intermediate grades do exist. In general, the gradients typically do not remain continuous for extended periods (i.e., from the top to the bottom of the lifts). Ideally, continuously skiable paths of each ability level of terrain would be found. The most consistent novice terrain is found off Subway and Meadow chairs, the most consistent intermediate terrain is found off the Sherwood Express, and the most consistent advanced terrain is found off the Scott Chair.

C. SOLAR ASPECT AT ALPINE MEADOWS

Slope aspect plays an important role in snow quality and retention. The variety of exposures at Alpine Meadows present opportunities to provide a range of slope aspects that allow guests to respond to changes in sun angle, temperature, wind direction, and shadows. Typical constraints in relation to the various angles of exposure are discussed below:

- **North-facing:** ideal for snow retention, minimal wind scour, minimal sun exposure
- **Northeast-facing:** ideal for snow retention, minimal wind scour, minimal sun exposure
- **East-facing:** good for snow retention, some wind scour, morning sun exposure

- **Southeast-facing:** fair for snow retention, moderate wind scour, morning and early afternoon sun exposure
- **South-facing:** at lower elevations, poor for snow retention, moderate wind scour, full sun exposure
- **Southwest-facing:** poor for snow retention, high wind scour, full sun exposure
- **West-facing:** good for snow retention, high wind scour, late morning and afternoon sun exposure
- **Northwest-facing:** good for snow retention, moderate wind scour, some afternoon sun

A solar aspect analysis is shown in Figure 4.

As described in the topography section above, due to the large bowls that contain the ski area, Alpine Meadows has predominant exposures in all directions. This full range of exposures is ideal, allowing for good snow retention while providing a variety of sun exposures and snow conditions. East facing slopes provide decent snow retention and also have good sun exposure, particularly in the mornings. North-facing slopes provide better snow retention, and are mostly confined to the front side of the mountain, near the Summit Express, Roundhouse Express, and Alpine Bowl Chair. These areas have the most consistently good snow conditions. The west-facing slopes off Scott Peak, accessed from both the Scott and Lakeview chairs, are protected from the sun in the mornings but get sun exposure in the afternoons. These areas are also prone to wind exposure, as the predominant winds come from the southwest. The south-facing slopes off Sherwood Express receive a lot of sun exposure, and are thus popular on cold, sunny days. Also, these slopes get strong morning sun in the spring which creates excellent corn snow skiing conditions.

Note the following sections of Chapter III are based, in part, on information included in the 2007 Alpine Meadows MP.

D. AVALANCHE HAZARDS

Avalanche hazards exist on all aspects of the Alpine Meadows terrain. The hazard is well-known to Forest Service and Alpine Meadows personnel responsible for the avalanche hazard reduction program. This program is updated on an annual basis and is on file with the Forest Service as part of the ski area's annual operating plan. In general, the avalanche hazard is managed through use of hand charge explosives, airborne projectile explosives (either artillery fired or air cannon, such as Avalauncher®), and skier compacted slopes. An avalanche barrier has been constructed to the northeast of the parking lot.

E. SOILS

An analysis of the existing soils was conducted as part of the original MP for Alpine Meadows. The analysis delineated six units of soil types, typical of the Sierra Nevada in this area. Development of ski terrain, access roads, and utility systems has allowed additional characterization of the soils and their potential for erosion and revegetation. Alpine Meadows maintains an on-going erosion control program and is in the process of correcting erosion damage to mountain work roads.

F. HYDROLOGY

The hydrology at Alpine Meadows is mainly influenced by snowmelt runoff and summer thunderstorms. Alpine Meadows averages around 370 inches of annual snowfall at the base, and over 450 inches at the upper elevations. Snowmelt occurs rapidly and drains to Bear Creek to the north and Ward Creek to the South. Some percolation of snowmelt into soil layers occurs. Wetland and riparian areas are found along drainages, springs, and in valley areas north of the base lodge. Ward Creek is a tributary to Lake Tahoe. Bear Creek is a tributary to the Truckee River. Bear Creek is listed as an impaired waterway on the California State Water Resources Control Board (SWRCB) 303d list. The SWRCB is in the process of considering delisting Bear Creek. The SWCRB report for delisting indicates that "Additionally two bio-assessment studies show that conditions are healthy and there is no evidence of acute impairment from ski resort operations (the basis for the original listing)." The entire document is on file at the Truckee Ranger District. In 2009 Alpine Meadows completed construction of a series of water quality facilities under the Lahontan Regional Water Quality Control Board Waste Discharge orders.

G. AIR QUALITY

Alpine Meadows is within the Mountain County (Placer County portions) and Lake Tahoe (Ward Valley portions) districts of the California air basins. The Placer County Air Pollution Control District enforces local, state, and federal air pollution regulations in the Placer County area of the ski area. Placer County is listed as not meeting federal and state air quality standards for certain pollutants, such as PM10. Site-specific air quality information is very limited. The effects on air quality will be evaluated with each proposed project.

H. FISH AND WILDLIFE

Site-specific NEPA analysis of Forest Service sensitive, management indicator, and federally-listed threatened and endangered species will need to be conducted based on up-to-date information provided by the TNF, US Fish and Wildlife Service, and State of California.

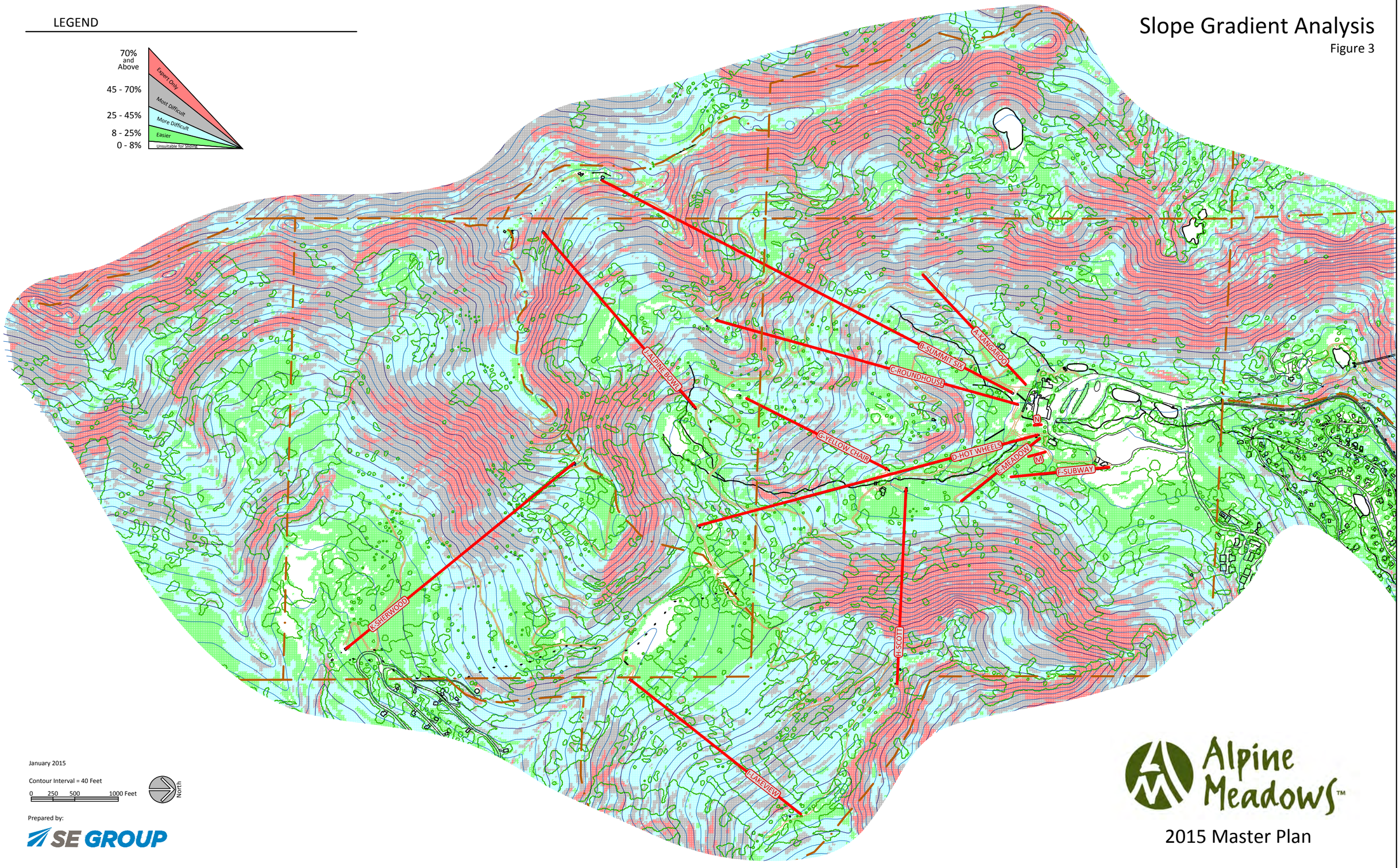
I. VEGETATION AND WETLANDS

Vegetation at Alpine Meadows is typical of terrain north of Lake Tahoe in the Sierra Nevada range. Commonly found trees include Ponderosa Pine, Lodgepole Pine, Jeffrey Pine, White Fir, Aspen, and Alder. Plant communities were characterized in the 1973 MP and have been updated in each subsequent environmental analysis. However, site-specific surveys and environmental analysis will be necessary for any subsequent NEPA process.

Wetlands are present in drainages in the base area and throughout the project area. Again, site-specific wetland surveys and delineations will be necessary to support any future NEPA process.

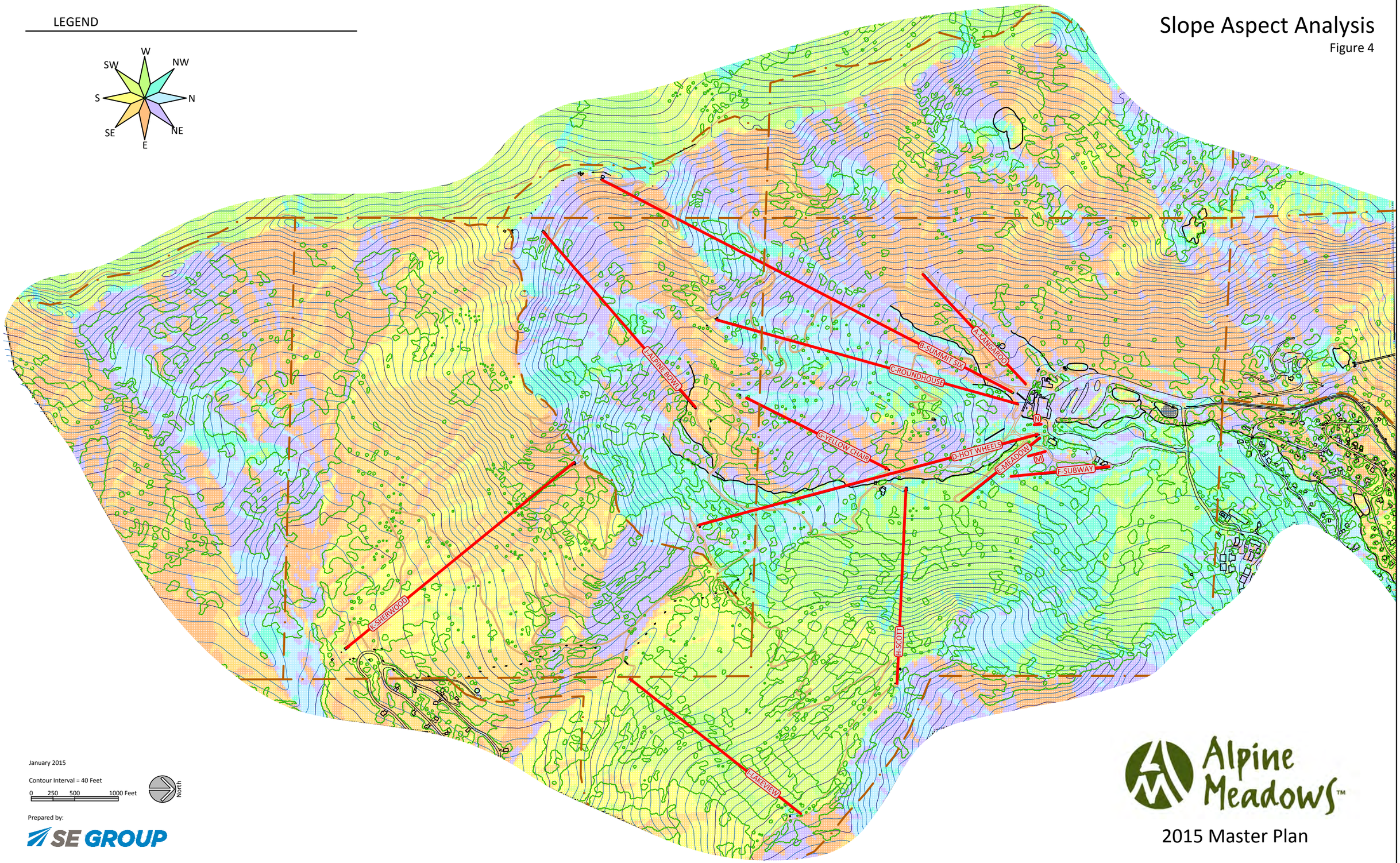
Slope Gradient Analysis

Figure 3



Slope Aspect Analysis

Figure 4



IV. EXISTING FACILITIES

The following section contains an examination and analysis of existing facilities at Alpine Meadows. Completion of a thorough resort inventory is the first step in the master planning process and involves the collection of data pertaining to the resort's existing facilities. This inventory includes lifts, trails, the snowmaking system, base area structures, guest services, other resort functions/activities, day-use parking, operations, mountain roads, and utilities/infrastructure. The analysis of the inventoried data involves the application of industry standards to existing conditions at Alpine Meadows. This process allows for the comparison of the resort's existing facilities to those facilities commonly found at resorts of similar size and composition.

The overall balance of the existing resort is evaluated by calculating the capacities of various facility components and then comparing these capacities to the resort's CCC. This examination of capacities helps to identify strengths, weaknesses, opportunities, and constraints as a resort. The next step is the identification of improvements which would bring the existing facilities into better equilibrium, and assist the resort in meeting the ever-changing expectations of its marketplace. Accomplishing these objectives will result in a well-balanced resort which provides an adequate array of services and experiences to satisfy guest expectations for a quality recreation experience.

The examination of existing facilities presented in this chapter correlates with Figure 5 (entire ski area) and Figure 6 (base area detail).

A. SUMMARY OF THE EXISTING GUEST EXPERIENCE

Determining the resort CCC is an important first step in evaluating the overall guest experience because it enables planners to understand the overall balance of the recreational facility. Empirical observations and a close examination of principal components at Alpine Meadows reveal the existing mountain is fairly well balanced, indicating that any opportunities for expansions should address the full spectrum of skier ability levels, while focusing on particular areas to correct some small existing imbalances.

A resort's CCC is computed by analyzing the resort's supply of, and demand for, vertical lift transport. The existing CCC at Alpine Meadows was determined to be 5,570 guests. From a terrain standpoint, the resort's trail network has a trail density of approximately 6 skiers-per-acre; this density is on the low side of industry averages. This is a desirable situation that ensures an uncrowded experience, even on peak days. The analysis does indicate an imbalance between lift capacity and terrain capacity.

Generally speaking, the current guest experience at Alpine Meadows is good. There is a friendly atmosphere, a "locals" feel, the facilities are well maintained, the snow is typically abundant, and the skiing/riding is excellent. On most weekdays and non-peak weekends, actual daily visitation levels at the resort are below the calculated CCC, meaning that long lift lines are relatively uncommon.

However, despite these strong points, there is room for improvement regarding a few aspects of the ski area's facilities. While several of the existing lifts are relatively new and are in good condition, there are several that are reaching the end of their life expectancy and will need to be replaced. Most of the lifts access available terrain efficiently, but circulation and access could be improved. Additionally, there is a very large portion of the ski area—encompassing all terrain north of the Summit and Kangaroo chairs—that is not lift-accessed.

B. EXISTING LIFT NETWORK

Alpine Meadows currently operates one detachable six-pack chair, two detachable quads, two fixed-grip triples, five fixed-grip doubles, and two conveyor lifts. The resort's existing total uphill design lift capacity has been calculated at 18,778 people per hour (pph). Table IV-1, below, summarizes the technical specifications for the existing lifts, and Figure 5 illustrates the location of existing lifts.

Overall, the Alpine Meadows lift network services the available terrain efficiently and effectively. The primary difficulties at the resort lie in circulating between the frontside and backside. Many of the older lifts are within, or approaching, the average life expectancy for fixed-grip lifts of 35 years.

Note that one of the most difficult circulation issues at Alpine Meadows is accessing the Sherwood area from the base area. Currently the most common method is to ride the Hot Wheels Chair, then ride the Scott Chair, ski to the bottom of the Lakeview Chair and ski down Ray's Rut to the bottom of the Sherwood Express. This is lengthy and difficult, particularly since Ray's Rut has a narrow width, snow cover issues due to sun and wind, and a very flat section in the middle. It is also possible to access Sherwood from the Alpine Bowl Chair, but this route can be challenging, involving some hiking, and is usually only done by advanced ability-level skiers.

Table IV-1:
Lift Specifications – Existing Conditions

Map Ref.	Lift Name, Lift Type	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Grade (%)	Actual Design Capacity (pers/hr)	Rope Speed (fpm)	Carrier Spacing (ft)	Year Installed
A	Kangaroo/C-2	7,384	6,928	455	1,724	1,790	26	1,200	450	45	1975
B	Summit/DC-6	8,485	6,930	1,555	5,292	5,590	29	2,150	1,000	167	1996
C	Roundhouse/DC-4	7,871	6,922	949	3,586	3,756	26	2,400	1,000	100	1993
D	Hot Wheels/C-3	7,555	6,904	651	4,023	4,108	16	1,800	450	45	1998
E	Meadow/C-2	7,077	6,905	171	1,153	1,167	15	1,128	400	43	1971
F	Subway/C-2	6,965	6,852	114	1,132	1,140	10	1,200	350	35	1979
G	Yellow/C-2	7,626	7,068	558	1,810	1,910	31	1,200	450	45	1972
H	Scott/C-3	8,116	7,065	1,050	2,238	2,524	47	1,500	450	54	1998
I	Lakeview/C-3	8,240	7,437	803	2,494	2,631	32	1,800	450	45	1984
J	Alpine Bowl/C-2	8,451	7,528	923	2,654	2,873	35	1,200	450	45	1980
K	Sherwood/DC-4	8,027	7,093	934	3,368	3,529	28	2,000	1,000	120	2005
M	Ski School Carpet	6,930	6,912	18	201	202	9	600	100	10	2008
N	Kids Ski School Carpet	6,897	6,892	5	85	85	6	600	100	10	2010

Source: SE Group
c = carpet conveyor
s = surface lift
C-2 = fixed-grip double chairlift
C-3 = fixed-grip triple chairlift
C-4 = fixed-grip quad chairlift
DC-4 = detachable quad chairlift
DC-6 = detachable six passenger chairlift

1. Kangaroo

Kangaroo is a fixed-grip double, was installed in 1975, and provides access to the Kangaroo area and Nick's Run. This area has a consistent pitch and is primarily used for races and race training.

2. Summit Express

The Summit Express is a detachable six-pack chair and was installed in 1996. It is one of two detachable lifts found right in front of the base lodge. This lift provides out-of-base access to a very large amount of terrain. Most of the steep, expert-level, hike-to, and bowl skiing is accessible from this chair, making it very popular. There is no lower ability level skiing available off this lift. This lift services the most vertical of any lift at Alpine Meadows, over 1,500 vertical feet. This lift is also used to access both the Alpine Bowl and Yellow chairs. The top terminal of this lift is very susceptible to wind, particularly from the east, and thus is susceptible to wind closures.

3. Roundhouse Express

The Roundhouse Express is the other detachable lift located in front of the base lodge. This lift was installed in 1993 and is a detachable quad. Also a very popular lift, it accesses the frontside terrain, but does not go up to the ridge like the Summit Express does. This lift accesses many intermediate-level trails, but not any lower ability level terrain. This lift is also used to access both the Alpine Bowl and Yellow chairs.

4. Hot Wheels

Hot Wheels is a fixed-grip triple that was installed in 1998. This lift serves several very important functions. First, it accesses the Weasel ski trail which is one of the best, most consistent, low-intermediate trails at Alpine Meadows. This trail is used extensively by the public and the ski school. The terrain served by Hot Wheels is an important "next step" in skiers' learning progression after graduating from the beginner-level surface lifts, and the Meadow and Subway chairs in the base area. Second, it is the only lift that provides direct access to the entire backside and on-mountain lifts (Scott, Lakeview, and Sherwood). As such, it is used extensively as an access lift. Third, it is the most reliable lift in terms of weather closures. During occasional severe wind and weather events, many of the other lifts have to be closed but, due to the weather patterns in its specific location, the Hot Wheels Chair can usually be operated in any weather.

5. Meadow and Subway

The Meadow and Subway chairs provide access to all novice-level terrain at Alpine Meadows. Built in 1971 and 1979 respectively, they represent some of the oldest operating lifts at the ski area. They are critical for ski school teaching.

6. Yellow

Built in 1972, the Yellow Chair is the second oldest currently operating Chair at Alpine Meadows. Accessed from Summit, Roundhouse, or Hot Wheels chairs, it serves about 550 vertical feet of intermediate and advanced-level terrain.

7. Scott

The Scott Chair accesses excellent advanced and expert-level terrain. With one of the steepest average grades of any chairlift in the country, it provides the second most vertical at Alpine Meadows. This lift is also used extensively to access the Lakeview Chair. This lift is very popular—on peak days it is common to find the longest lift lines of anywhere on the mountain at the Scott Chair (which is a function of higher demand and lower hourly capacity). The lift was originally built in the early-1970s as a double but was rebuilt with new chairs and bottom terminal in 1998, and was converted into a triple chair. Those improvements have allowed the lift to remain operationally functional, but the remaining original components are close to 40 years old.

8. Lakeview

Lakeview Chair not only provides access to some of the most consistent and high quality intermediate terrain at the resort, but also (as the name implies) gives spectacular views of Lake Tahoe. For both of these reasons, is the lift serves one of the most popular areas on the mountain. Built in 1984, it is a fixed-grip triple and serves about 800 vertical feet of terrain. This lift also can serve as an intermediate step to access the Sherwood Express.

9. Alpine Bowl

Built in 1980 the Alpine Bowl Chair is a fixed-grip double and provides access to primarily advanced and expert terrain off the ridge. One intermediate-level trail is accessible from this chairlift, and is accessed from the Summit or Roundhouse Express lifts and provides access to about 900 vertical feet of terrain. An interesting aspect of this lift is that the top terminal and unloading area are enclosed in a chair barn. The purpose of this structure is to protect the lift and riders from strong wind, snow, and avalanches. However, the design of this chair barn limits its functionality, and the materials are showing signs of their age.

10. Sherwood Express

The Sherwood Express is the newest chairlift at Alpine Meadows, as it was built in 2005. It provides access to almost 1,000 vertical feet of intermediate and advanced-level ski terrain. This area is very popular, as it has consistent grades, wide open bowl skiing, and excellent views. The lift faces south, so the terrain it serves is susceptible to solar degradation of the snow pack, but this also presents excellent corn snow skiing conditions in the spring. It is worth noting that this area lies entirely

within the TRPA boundary and as such is subject to restrictions for development. As noted in Figure 2, most of this area is on land leased from the California Tahoe Conservancy.

11. Conveyor Lifts

There are two conveyor lifts of varying lengths located in the vicinity of the base area and Subway area. The exact locations and utility of these lifts can vary, as conveyor lifts are portable. However, they are used very effectively for teaching, particularly for first-time participants. The current location of the carpets is shown on Figure 6, but will vary depending on programming and use.

C. EXISTING TERRAIN NETWORK

1. Terrain Variety

Terrain variety is the key factor in evaluating the quality of the actual skiing and riding guest experience (as opposed to lift quality, restaurant quality, or any other factor). In Ski Magazine's Reader Resort Ratings, "terrain variety" is ranked as the second most important criterion in readers' choice of a ski destination, behind only snow quality, and ahead of such other considerations as lifts, value, accessibility, resort service, and others. This is a relatively recent industry trend, representing an evolution in skier/rider tastes and expectations. The implication of the importance of terrain variety is that a resort must have a diverse, interesting, and well-designed developed trail system, but also must have a wide variety of alternate-style terrain, such as mogul runs, bowls, trees, open parks, in-bounds "backcountry-style" (i.e., hike-to) terrain, and terrain parks and pipes. At resorts across the nation, there is a growing trend favoring these more natural, unstructured, "semi-backcountry" types of terrain, since the availability of this style of terrain has become one of the more important factors in terms of a resort's ability to retain guests, both for longer durations of visitation and for repeat business.

To provide the highest quality guest experience, resorts should offer groomed runs of all ability levels and some level of each of the undeveloped terrain types. Undeveloped terrain is primarily used by advanced and expert-level skiers/riders during desirable conditions (e.g., periods of fresh snow, spring corn, etc.). Even though some of these types of terrain only provide skiing/riding opportunities when conditions warrant, they represent the most intriguing terrain, and typically are the areas that skiers/riders strive to access. To provide the highest quality guest experience, resorts should offer a wide variety of terrain, including each of the terrain types discussed above, to the extent practical. Even though some of these terrain types only provide opportunities when conditions warrant, variety is increasingly becoming a crucial factor in guests' decisions on where to visit.

2. Developed Alpine Trails

The existing developed Alpine terrain network is depicted on Figure 5. The developed, or formalized, terrain network at Alpine Meadows consists of the resort's named, defined, lift-serviced, maintained trails. Despite the importance of undeveloped, alternate-style terrain, formalized runs represent the baseline of the terrain at any resort, as they are where the majority of guests ski and ride. Additionally, developed terrain is usually the only place to ski/ride during the early season, periods of poor or undesirable snow conditions, avalanche closures, and in certain weather conditions. As such, the developed trail network represents an accurate picture of the acreage utilized by the average skier/rider on a consistent basis, as well as that used by virtually all guests during the aforementioned conditions. Therefore, the full capacity of the resort must be accommodated by the total acreage of the *developed* terrain network, rather than relying on undeveloped terrain (which is not always available).

At Alpine Meadows, it is difficult to differentiate between the developed terrain and the undeveloped terrain, as such a significant quantity of the terrain is above treeline or just generally open and skiable. Many of the trails at Alpine Meadows (particularly in the Basin area) were not cut into tree stands, but rather exist in natural open bowls, chutes, openings, and in above-treeline areas. Since there is not a distinct edge to most of the trails, it is difficult to define a fixed area for the developed trails. This influences the actual usage patterns for the ski area; skiers are found skiing across the entire width of any given bowl area. In quantifying the acreage of developed terrain, a distinct area can be used where trails are defined by tree edges. In open areas where the trails are not defined by tree edges, a greater width with less-distinct boundaries is used.

Based on the rationale presented in the preceding paragraphs, and for the purposes of this analysis, the developed trail network is calculated by accounting for the full widths of lift-accessible bowls, but does not include densely-treed, inaccessible, or hike-to areas. This developed trail network is the basis for the trail acreage calculations, skier/rider classification breakdown, trail capacity, and density formulas. If this analysis were to account for terrain outside of the developed trail network, it would have a misleading effect on those calculations, that is, lower trail densities, higher capacities, and an incorrect skier/rider classification breakdown. However, terrain outside of the developed network (in this case, the glades and hike-to terrain) is crucial to terrain variety and the overall quality of the guest experience, and thus is addressed later in this section.

The developed trail network accommodates beginner through expert-level guests on 75 lift-served, named trails or trail segments spanning approximately 753 acres. Most beginner and intermediate runs are groomed on a regular basis.

Key aspects of terrain at Alpine Meadows are explored in the following discussions.

a. Beginner and Teaching Terrain

As discussed, all beginner and novice terrain is accessed off the conveyor lifts, Subway, or Meadow chairs. There are no novice routes off any of the lifts that access the upper mountain. As a result, the amount of beginner and teaching terrain is limited. There is additional terrain available below the Subway lift, in an area known as the Lower 40, which was previously accessed by a surface lift. The double fall line of the Meadow beginner area is a significant constraint to first-time and progressing skiers. The natural slope directs skiers into a minor drainage rather than following the alignment of the lift, which is challenging for beginner skiers.

b. Intermediate/Cruiser Terrain

Much of the intermediate-level cruising terrain is found off of the Roundhouse Express, Lakeview Chair, and Sherwood Express, with some lower-angle cruiser terrain also accessed off of the Hot Wheels Chair.[22] The terrain off of Roundhouse Express is fairly well defined, as it is located in treed areas and thus the trails have distinct edges. This, combined with the area's aspect provides this terrain with more protection than other parts of the ski area, and makes it popular on windy days.

These areas represent the majority of the intermediate terrain at Alpine Meadows, and are well used. The cruiser terrain off of the Sherwood Express is excellent but tends to be underutilized due to aforementioned difficulty in accessing the Sherwood Express area. This underutilization puts pressure on the other intermediate areas.

c. Open Bowls

Many lifts access open bowl skiing, as that is the prevailing topographic feature of Alpine Meadows. Bowls can be accessed from the Summit and Sherwood Express lifts, and the Alpine Bowl and Scott chairs. These areas represent some of the best powder and bowl skiing available. Additional open bowl terrain can be accessed from the Summit Express and Alpine Bowl Chair by hiking. Hike-to terrain is discussed in more detail, below, under "Undeveloped and Gladed Expert Terrain." Note that to the north of the Summit Express, there is a very large amount of open skiable terrain that is within the boundary of the resort. This area extends to Estelle Lake, and continues down the ridge to an area known as "The Buttress." All of this terrain is controlled and open, but is very difficult to access, as it requires at least a half-hour hike. Due to this requirement, it is only skied by a small percentage of the visitors to the resort, and as such is significantly underutilized.

[22] Cruiser terrain is described as relatively long ski trails with enough vertical drop that skiers/riders are able to continuously link varying radius turns with minimal interference from cross traffic or breaks in the fall-line. These trails are relatively wide with very good visibility and are groomed on a routine basis.

d. Yellow Chair Terrain

The terrain accessible from Yellow Chair is very rocky and uneven. While that characterization could be true of all of Alpine Meadows terrain, it is particularly apparent in the area off of Yellow Chair. This nature of the terrain makes it difficult to maintain snow coverage, meaning that these trails often have exposed rocks and a significant amount of effort in grooming is required to keep the trails open. Selected grading of some terrain in this area, coupled with increased snowmaking coverage, would significantly improve the experience of this area.

Table IV-2 below lists the specifications for all the developed terrain at Alpine Meadows, including the bowls.

Table IV-2: Terrain Specifications – Existing Conditions

Map Ref.	Trail Area/Name	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
A1	Nick's Run	7,369	6,933	436	1,777	435	17.8	25	35	Low Intermediate
B1	Sun Spot	8,470	7,814	656	1,970	472	21.4	36	69	Expert
B2	Wolverine Saddle	8,479	8,252	227	1,151	54	1.4	21	57	Expert
B3	Peril Ridge	8,406	7,804	602	1,781	239	9.8	38	86	Expert
B4	D-6	8,387	8,051	336	704	251	4.1	55	75	Expert
B5	D-7	8,235	7,929	306	691	296	4.7	50	64	Expert
B6	D-8	8,212	7,887	325	718	193	3.2	51	68	Expert
B7	North Peril	8,127	7,837	289	719	123	2.0	45	65	Expert
B8	Peter's Peril	8,100	7,902	198	603	257	3.6	35	50	Advanced
B9	Wolverine Bowl	8,283	7,800	482	1,400	431	13.9	37	60	Expert
B10	Wolverine	7,837	7,574	263	768	173	3.1	38	89	Expert
B11	Face Cliffs	7,805	7,477	328	704	164	2.7	54	85	Expert
B12	The Face	7,814	7,276	539	1,416	312	10.1	42	70	Expert
B13	Waterfall	7,915	6,965	950	3,140	214	15.4	32	76	Expert
B14	Three Sisters	7,960	7,222	738	1,634	484	18.1	52	76	Expert
C1	Rock Garden	7,860	7,536	324	1,187	362	9.9	29	43	Intermediate
C2	Sympathy Face	7,861	7,601	260	919	425	9.0	30	62	Expert
C3	Werner's Schuss	7,867	7,583	284	768	276	4.9	40	44	Intermediate
C4	Boomerang	7,581	7,294	287	951	240	5.2	32	45	Intermediate
C5	Charity	7,604	7,064	540	1,985	288	13.1	28	44	Intermediate
C6	Banana Chute	7,454	7,104	350	1,042	209	5.0	36	60	Expert
C7	Loop Road	7,522	7,381	141	1,395	135	4.3	10	15	Intermediate
D1	Return Road	7,668	7,542	126	1,591	21	0.8	8	22	Intermediate
D2	East Creek	7,545	7,274	271	1,330	158	4.8	21	30	Low Intermediate
D3	Weasel Run	7,539	7,539	638	4,125	176	17.5	16	34	Low Intermediate
D4	Hot Wheels Gully	7,363	7,150	214	1,022	114	2.7	22	48	Advanced

Table IV-2: Terrain Specifications – Existing Conditions

Map Ref.	Trail Area/Name	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
E1	Meadow Run	7,075	6,913	162	1,119	300	7.7	15	21	Novice
F1	Subway Run	6,946	6,853	93	997	247	5.7	9	20	Novice
G1	Yellow Trail	7,625	7,069	557	2,070	347	16.5	28	50	Advanced
G2	Fall Line	7,621	7,237	385	1,236	209	5.9	33	55	Advanced
G3	Ladies Slalom	7,470	7,070	400	1,164	282	7.5	37	53	Advanced
G4	Dance Floor	7,548	7,121	427	1,596	472	17.3	28	42	Intermediate
G5	Sandy's Corner	7,116	7,116	194	1,364	279	8.7	14	23	Intermediate
H1	Scott Ridge Run	8,115	7,525	589	2,477	163	9.3	25	52	Advanced
H2	Chute That Seldom Slides	8,107	7,370	737	2,251	193	10.0	35	50	Advanced
H3	Scott Chute	8,090	7,070	1,020	2,407	854	47.2	48	84	Expert
H4	Gentian Gully	8,068	7,160	908	2,488	438	25.0	40	72	Expert
H5	Butcher Block Rock	8,016	6,873	1,143	2,835	470	30.6	45	88	Expert
H6	Promise Land	7,874	6,956	918	1,919	464	20.4	55	78	Expert
H7	Lower 40 Face	7,282	6,917	365	1,087	308	7.7	36	59	Expert
I1	Outer Limits	8,256	7,456	800	2,686	271	16.7	31	45	Intermediate
I2	Scotty's Beam	8,226	7,683	543	1,467	239	8.0	40	48	Advanced
I3	Mountain View	8,225	7,703	522	1,419	199	6.5	40	48	Advanced
I4	Leisure Lane	8,227	8,054	173	1,355	116	3.6	13	29	Low Intermediate
I5	Twilight Zone	8,016	7,444	572	1,987	262	12.0	30	42	Intermediate
I6	Winter Road	8,100	7,886	214	766	190	3.3	29	34	Low Intermediate
I7	Summer Road	8,026	7,823	203	836	223	4.3	25	42	Intermediate
I8	Shooting Star	7,648	7,446	202	709	122	2.0	30	43	Intermediate
I9	Scott Meadow	7,673	7,434	239	1,572	263	9.5	15	29	Low Intermediate
I10	Standard Run	7,710	7,539	171	712	424	6.9	25	33	Low Intermediate
I11	Bobby's Run	7,673	7,535	138	875	217	4.4	16	27	Low Intermediate
I12	Lakeview to Weasel	7,538	7,483	55	1,282	106	3.1	4	18	Novice

Table IV-2: Terrain Specifications – Existing Conditions

Map Ref.	Trail Area/Name	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
I13	Skateboard Alley	7,523	7,097	427	1,909	162	7.1	23	33	Low Intermediate
I14	Ray's Rut	7,409	7,182	227	2,811	107	6.9	8	35	Intermediate
J1	Alpine Bowl	8,438	7,769	669	2,232	498	25.5	32	43	Intermediate
J2	Palisades	8,447	7,953	494	1,582	247	9.0	35	109	Expert
J3	Keyhole	8,437	7,939	498	1,089	285	7.1	54	96	Expert
J4	Lower Saddle	8,246	7,935	311	883	323	6.6	38	60	Expert
J5	Terry's Return	7,932	7,602	330	1,175	321	8.7	30	54	Advanced
J6	High Yellow Face	8,274	7,535	739	1,665	359	13.7	50	76	Expert
J7	High Yellow Gully	8,234	7,510	724	1,481	270	9.2	57	89	Expert
K1	Our Father	8,030	7,580	450	1,075	142	3.5	49	106	Expert
K2	Counterweight Gully	7,994	7,500	494	1,174	227	6.1	48	89	Expert
K3	Sherwood Cliffs	8,011	7,492	520	1,678	128	4.9	34	80	Expert
K4	Hidden Knoll's	7,915	7,544	371	1,038	502	12.0	40	77	Expert
K5	South Face	8,021	7,111	910	3,065	872	61.4	32	64	Expert
K6	South Face Access	8,023	7,997	26	600	60	0.8	4	9	Intermediate
K7	Robin Hood	8,010	7,717	293	1,115	153	3.9	27	35	Intermediate
K8	Maid Marian	7,927	7,782	145	641	149	2.2	23	30	Low Intermediate
K9	Reily's Run	7,916	7,423	493	1,802	141	5.8	29	41	Intermediate
K10	Sherwood Face	7,758	7,105	652	2,601	443	26.4	26	57	Expert
K11	Sherwood Run	7,784	7,265	520	1,909	529	24.0	28	39	Intermediate
M1	Teaching Terrain	6,930	6,912	18	202	133	0.6	9	10	Beginner
N1	Teaching Terrain	6,897	6,892	5	85	132	0.3	6	8	Beginner
	TOTAL				108,243		753.0			

e. Terrain Distribution by Ability Level

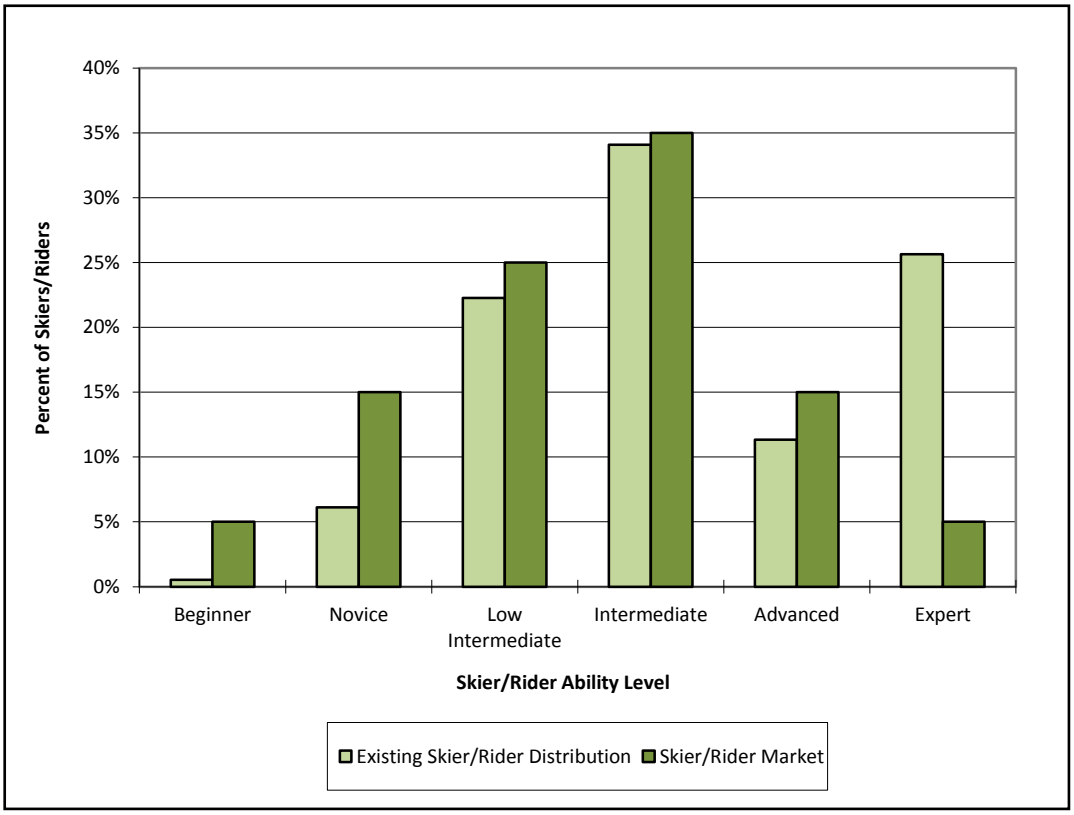
The terrain distribution at Alpine Meadows through the full range of ability levels is relatively close to the ideal breakdown for the regional destination skier/rider market. The terrain classification breakdown of the existing resort is set forth in the following table and chart. The last column in this table represents what can be considered the skill level distribution in the relevant skier/rider market and provides a comparison with the actual skier/rider distribution at Alpine Meadows.

Table IV-3:
Terrain Distribution by Ability Level – Existing Conditions

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Actual Skier/Rider Distribution (%)	Relevant Skier/Rider Market (%)
Beginner	0.9	26	1	5
Novice	16.5	297	6	15
Low Intermediate	77.1	1080	22	25
Intermediate	165.3	1653	34	35
Advanced	78.6	550	11	15
Expert	414.6	1244	26	5
TOTAL	753.0	4,850	100	100

Source: SE Group

Chart IV-1:
Terrain Distribution by Ability Level – Existing Conditions



Source: SE Group

The above chart illustrates a relatively close match between existing terrain distribution at Alpine Meadows and the market demand for low intermediate, intermediate, and advanced ability levels. The deficiency of beginner and novice terrain is reflected by the small amount of terrain accessed by the carpets and Subway and Meadow chairs. The amount of expert-level terrain is clearly a significant surplus over market demand. This reflects the reputation of Alpine Meadows of having a large amount of challenging expert terrain.

3. Undeveloped and Gladed Expert Terrain

Undeveloped terrain is one of the main draws to Alpine Meadows; the topography within the SUP area includes steeps, chutes, bowls, and glades intermingled within, and outside of, the developed and maintained terrain network.

As discussed previously under "Developed Alpine Trails," for the purposes of this analysis, the developed trail network includes most of the open bowls but not the glades and hike-to terrain. Were this analysis to account for terrain outside of the developed trail network, it would have a misleading effect on all of the calculations discussed above. However, terrain outside of the

developed network is very important to terrain variety and the overall quality of the guest experience.

This MP puts undeveloped terrain at Alpine Meadows into three categories: lift-served gladed terrain, hike-to terrain, and backcountry terrain. Each category is discussed separately.

a. Lift-Served Gladed Terrain

Gladed areas are found between, and to the sides of, the existing developed ski trails. A characteristic of Alpine Meadows (true of many Tahoe area ski resorts) is that it is skiable "wall-to-wall" due to the open areas and naturally-open gladed tree stands. Examples of these areas are the tree stands off of the Scott Chair and Roundhouse Express. Depending on snow conditions, these areas are heavily used by advanced and expert skiers. There are 297 acres of lift-accessible gladed terrain available at Alpine Meadows.

b. Hike-To Terrain

The existing hike-to terrain is primarily found off the ridge along the western edge of the ski area, accessed from Summit Express and Alpine Bowl Chair. Skiers can either hike to the north or south along the ridge to access large amounts of terrain. These areas are shown on Figure 5. Hiking to the north gives access to the Estelle Peak area, including Beaver Bowl, Estelle Bowl, Bernie's Bowl, and other areas.[23] This area is skied back to the base area, essentially repeat-skied off the Summit Express. This area encompasses about 250 acres of terrain. Hiking to the south gives access to terrain on the backside, including CB Chute, Sun Bowl, and Big Bend Bowl. This area is skied to the bottom of the Sherwood Express, requiring multiple lift rides to return. This area encompasses about 280 acres.

c. Backcountry Terrain

In addition to the in-bounds terrain previously discussed, there are also opportunities to ski outside of Alpine Meadows, into backcountry terrain located on adjacent NFS lands. This open boundary policy allows virtually unrestricted access to these surrounding public lands.

This terrain is accessed off three ridgeline chairs: Scott, Lakeview, and Summit. These areas are indicated in Figure 5. In the case of the Scott and Lakeview terrain, it is accessed by skiing to the northeast off the backside of the top of the two chairs, then skied out to existing roads, or returning to the base of the Subway Chair. From the Summit Express, terrain is skied to the west and south, returning to the Sherwood Express. A program is underway in collaboration with the Forest Service to develop a backcountry access point system. Backcountry use is particularly popular during big powder days, when a significant number of skiers will ski out of the boundary and down to existing roads.

[23] The Rollers terrain described in the Upgrade Plan in Chapter V is currently closed to skiing.

4. Terrain Parks

Terrain parks have become a vital part of most mountain resorts' operations, and are now considered an essential mountain amenity. Popularity of terrain parks continues to increase, and is dependent on regional location of the resort, demographics of the resort's target guests, and, significantly, the quality of the parks. A key component to a resort's overall terrain park strategy is progression, which refers to increasing levels of difficulty in the parks.

To offer skiers and riders of all abilities the chance to improve their freestyle skills, Alpine Meadows currently builds, operates, and maintains numerous terrain parks, with a good progression from first-time park users to experts. The parks are located top to bottom at the resort. Current parks include: the Subway learn-to-ride park for beginners; the Tiegel park for entry-level/novice users; Loop Road for beginners/intermediates, and Jib Garden, Dance Floor, and Terry's for intermediate and advanced-level park users. Alpine Meadows constantly evaluates optimum locations and varies park elements and locations frequently. Alpine Meadows will continue this practice as conditions warrant, in locations that are appropriate based on the evolving needs of park users.

D. EXISTING CAPACITY ANALYSIS

1. Comfortable Carrying Capacity

The reader is referred to Chapter II (Section 4) for a detailed discussed of capacity analysis and design, defined at CCC.

A detailed calculation of CCC was completed for this MP, as shown in the table below. The CCC of Alpine Meadows was calculated at 5,570 guests per day.

Table IV-4:
Comfortable Carrying Capacity – Existing Conditions

Map Ref.	Lift Name, Lift Type	Slope Length (ft)	Vertical Rise (ft)	Actual Design Capacity (guests/hr)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Misloading/ Lift Stoppages (%)	Adjusted Hourly Cap. (guests/hr)	VTF/Day (000)	Vertical Demand (ft/day)	CCC (guests)
A	Kangaroo/C-2	1,790	455	1,200	7.00	0	5	1,140	3,635	14,536	250
B	Summit/DC-6	5,590	1,555	2,150	7.00	10	10	1,720	18,719	20,421	920
C	Roundhouse/DC-4	3,756	949	2,400	7.00	10	5	2,040	13,551	16,407	830
D	Hot Wheels/C-3	4,108	651	1,800	7.00	10	15	1,350	6,155	7,685	800
E	Meadow/C-2	1,167	171	1,128	7.00	0	20	902	1,083	4,033	270
F	Subway/C-2	1,140	114	1,200	7.00	0	20	960	763	2,743	280
G	Yellow/C-2	1,910	558	1,200	7.00	0	5	1,140	4,455	15,345	290
H	Scott/C-3	2,524	1,050	1,500	6.75	15	10	1,125	7,977	25,162	320
I	Lakeview/C-3	2,631	803	1,800	6.50	0	10	1,620	8,452	14,974	560
J	Alpine Bowl/C-2	2,873	923	1,200	6.75	0	5	1,140	7,100	19,762	360
K	Sherwood/DC-4	3,529	934	2,000	6.50	0	5	1,900	11,541	21,784	530
M	Ski School Carpet	202	18	600	7.00	0	10	540	67	718	90
N	Kids Ski School Carpet	85	5	600	7.00	0	10	540	19	279	70
	TOTAL	31,305		18,778				16,117	83,517		5,570

Source: SE Group

2. Density Analysis

An important aspect of resort design is the balancing of uphill lift capacity with downhill trail capacity. Trail densities are derived by comparing the uphill, at-one-time capacity of each individual lift pod (CCC) with the trail acreage associated with that lift pod.

At any one time, skiers and riders are dispersed throughout the resort, using guest facilities and milling areas, waiting in lift mazes, riding lifts, or descending on ski terrain. For the trail density analysis, 25% of each lift's CCC is presumed to be "inactive" (i.e., using guest service facilities or milling areas and otherwise not actively skiing or riding lifts).

The active skier/rider population can be found in lift lines, on lifts, or on trails. The number of people waiting in line at each lift is a function of the uphill hourly capacity of the lift and the assumed length of wait time at each lift. The number of people on each lift is the product of the number and capacity of uphill carriers. The remainder of the skier/rider population (the CCC minus the number of guests using guest facilities, milling in areas near the resort portals, waiting in lift mazes, and actually riding lifts) is assumed to be descending.

Trail density is calculated for each lift pod by dividing the number of guests on the trails by the amount of trail area that is available within each lift pod. The trail density analysis compares the calculated trail density for each lift pod to the desired trail density for that pod (i.e., the product of the ideal trail density for each ability level and the lift's trail distribution by ability level).

Again, it is important to point out that the trail density analysis considers only the acreage associated with the developed trail network. Since Alpine Meadows attracts a large amount of advanced and expert-level skiers, it is typical to see a large portion of the skiers at the resort utilizing the hike-to, backcountry, glades, and other types of undeveloped terrain. However, it is important for a resort to have enough developed terrain to accommodate the full capacity of the resort, as there are many days that skiing the undeveloped terrain is undesirable due to snow levels or weather conditions. As a result, the density analysis presented here looks at the capacity of the developed terrain.

The density analysis for Alpine Meadows is illustrated in the following table. This table shows that the average trail density at Alpine Meadows is 6 skiers-per-acre, a density that is on the low end of the industry standard range.[24] This situation is certainly desirable from the perspective of the recreational experience, as low skier/rider densities are a defining factor in the quality of the recreational experience. However, this also indicates an imbalance, as it shows that there is not enough lift capacity to efficiently serve the available terrain.

[24] Specific trails, particularly the egress trails towards the end of the day, can consistently have high densities.

In practice, even though these calculated densities are low, actual peak densities are often even lower. This is a result of the popularity of powder days at Alpine Meadows. Typically, many of the peak visitation days at Alpine Meadows are on the big powder days. On these days, many of the skiers are skiing on the undeveloped terrain, on the hike-to areas, and in backcountry areas that are outside of the SUP area. This significantly reduces the numbers of skiers on the developed trails, reducing the density numbers. Conversely, on days when conditions dictate that most skiers would want to be skiing on the developed trails, the visitation numbers tend to be lower, as many of the more experienced skiers do not ski at Alpine Meadows on those days. This again results in lower trail densities.

Table IV-5:
Density Analysis – Existing Conditions

Map Ref.	Lift Name, Lift Type	Daily Lift Capacity	Guest Dispersal				Density Analysis				Density Index
			Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Terrain (guests)	Terrain Area (acres)	Terrain Density (guests/ac)	Target Trail Density (guests/ac)	Diff. (+/-)	(%)
A	Kangaroo/C-2	250	63	10	76	101	17.8	6	14	-8	43
B	Summit/DC-6	920	230	143	160	387	107.8	4	3	1	133
C	Roundhouse/DC-4	830	208	170	128	324	55.9	6	8	-2	75
D	Hot Wheels/C-3	800	200	113	205	282	29.9	9	13	-3	69
E	Meadow/C-2	270	68	45	44	113	7.7	15	18	-3	83
F	Subway/C-2	280	70	40	52	118	5.7	21	18	3	117
G	Yellow/C-2	290	73	38	81	98	42.5	2	8	-6	25
H	Scott/C-3	320	80	38	105	97	160.8	1	4	-3	25
I	Lakeview/C-3	560	140	81	158	181	78.8	2	11	-9	18
J	Alpine Bowl/C-2	360	90	38	121	111	94.2	1	6	-5	17
K	Sherwood/DC-4	530	133	63	112	222	151.1	1	5	-4	20
M	Ski School Carpet	90	32	27	18	13	0.6	21	30	-9	70
N	Kids Ski School Carpet	70	25	27	8	10	0.3	39	30	9	130
	TOTAL	5,570	1,412	833	1,268	2,057	753.0	6	9	-3	66

Source: SE Group

The density figures included in the table above show that, for almost all of the individual lift/trail systems at Alpine Meadows, the actual trail densities are lower than the target design criteria, meaning that trails are generally less crowded than at most resorts. The exception to this is the Subway Chair, which is a reflection of the relatively small amount of terrain available off this lift. Notably, the primary bowl lifts (Alpine Bowl, Sherwood, and Scott) all have average densities of one skier per acre. Again, this is the result of the natural terrain type in these parts of the resort—large open bowls. As stated, the low densities are desirable from the standpoint of the quality of the skiing experience.

However, the low density numbers can also indicate under-utilization of the existing terrain, meaning that there could comfortably be more skiers/riders on the terrain at any one time than there are at current visitation levels. This situation indicates that the amount of effort required to properly maintain the quantity of terrain could be disproportionately high when compared to the overall number of skiers/riders on the mountain.

3. Lift and Terrain Network Efficiency

Overall resort efficiency is becoming an increasingly important factor in the ski industry. This relates not only to energy and operational efficiency, but also to efficiency of the design and layout of the resort. The idea behind ski area design efficiency is to have a well-balanced lift and trail network (i.e., the uphill lift capacity balances with the downhill trail capacity that it serves) that is efficiently served by the fewest number of lifts possible, while maintaining desired CCC rates, circulation routes, and service to the full spectrum of skier ability levels and types.

a. Lift Network Efficiency

Within the context of ski area design efficiency, the term "Lift Network Efficiency" refers to the amount of effort and cost required to operate and maintain the lift network, as compared to the number of guests served by the lift network. The energy and costs related to the lifts include, but are not limited to: power use, operational labor, maintenance costs and labor, increased indirect administrative costs, and various direct and indirect costs associated with higher staff levels to perform these tasks. From this standpoint, the most efficient scenario is to have the fewest number of lifts possible that can comfortably and effectively serve the capacity and circulation requirements of the resort.

One way to analyze Lift Network Efficiency is to calculate the average CCC per lift at a given resort. While this calculation does not relate to the overall capacity of the resort, it can indicate if: 1) the resort is not getting maximum utilization out of its lifts; or 2) if there are more lifts than necessary for the capacity levels of the resort. When calculating this average, conveyors used for teaching, as well as lifts that are used for access only, are not included. Optimally, and generally speaking, the average CCC per lift would likely be close to 1,000. Industry-wide, the average CCC per lift is

approximately 650. The average CCC per lift at Alpine Meadows is 490. This rating is below average, indicating that Alpine Meadows may operate more lifts than required to efficiently serve the available terrain. Another factor is low hourly capacities of the lifts—many of the lifts at Alpine Meadows operate at hourly capacities that are lower than the maximum for the given lift type. This results in lower overall CCC.

b. Terrain Network Efficiency

To further the above discussion, an offshoot of the terrain density analysis is an analysis that provides an indication of the efficiency of the terrain network as compared to the lift network serving it. In this usage, the term "Terrain Network Efficiency" refers to the amount of effort required to properly maintain the terrain (e.g., costs related to snowmaking, grooming, energy, ski patrol, summer trail maintenance, administration, etc). From this standpoint, the most efficient scenario is to have a quantity of terrain that closely meets the target density requirements. This can be easily achieved by reviewing the density analysis above, for a density index of 100% would imply that the resort had exactly the right amount of terrain to match target densities. Alpine Meadows has an index of 66%, with actual densities about two-thirds that of target densities. Thus, it can be assumed that the terrain network could be utilized in a more efficient manner.

However, it is important to note that the fully developed terrain network is used in these calculations, because it is largely the developed terrain that incurs the highest operational and maintenance costs. As stated previously, all of the open bowl areas are included in these calculations at Alpine Meadows, even though the full widths of the bowls likely do not incur the same maintenance costs as do, for example, the defined trails off Roundhouse Express. As a result, it can reasonably be assumed that the Terrain Network Efficiency is likely higher than the 66% would indicate. Since glades and hike-to terrain do not incur these costs, increasing the quantity of alternate, undeveloped terrain not only meets the demand and current industry trend for this style of terrain, but also increases a resort's terrain network efficiency.

E. EXISTING GUEST SERVICES FACILITIES, FOOD SERVICE SEATING & SPACE USE ANALYSIS

1. Guest Services

Guest services are provided primarily at the base area of Alpine Meadows. Additionally there are limited on-mountain facilities. Existing guest service facilities are identified on Figures 5 and 6.

a. Base Area Guest Services

The vast majority of guest services are provided in the base lodge. This is a large building that defines the base area of the resort. Adjacent to the lodge is the maintenance building, providing mountain operations space. The employee building contains employee space for ski school, lifts,

trail crew, parking staff, and ski patrol. The Subway building primarily houses the Tahoe Adaptive Ski School, but also provides ticket sales and a café with limited food service.

b. On-Mountain Guest Services

On-mountain skier services are limited to The Chalet and the Ice Bar. The Chalet is a small facility located close to the bottom terminal of Scott Chair, so it is convenient for skiers from Scott, Hot Wheels, and Yellow chairs. The Ice Bar is a small snack and drink stand located at the bottom of the Sherwood Express. Since there is no indoor space, this facility is not included in the space use calculations, but it does provide intermittent drinks and snacks for backside skiers. There are also restrooms available in this location.

2. Space Use Analysis

Sufficient existing guest service space should be provided to accommodate the existing resort CCC of 5,570 guests per day. A distribution of the CCC to each facility location is utilized to determine guest service capacities and space requirements at base area and on-mountain facilities. The CCC is distributed between each guest service facility location according to the number of guests that would be utilizing the lifts and terrain associated with each facility. Since the on-mountain guest services are very limited, almost all skiers return to the base area for services. This does not indicate a lack of demand for on-mountain facilities, but rather that there is no full service option currently available. This is an identified constraint for Alpine Meadows, as guests typically expect on-mountain food service and restrooms.

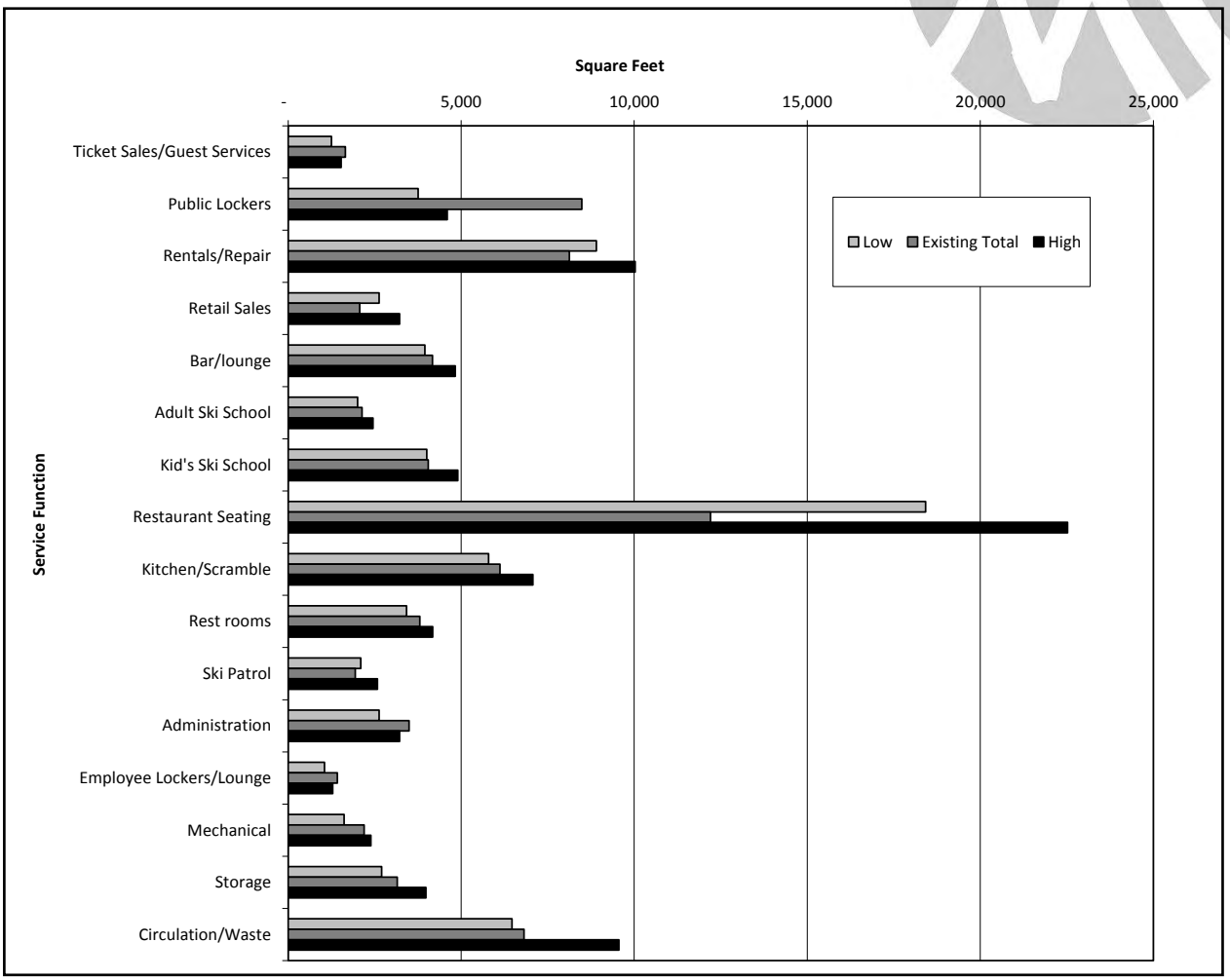
In addition to distributing the CCC amongst the base area and on-mountain facilities, guest service capacity needs and the resulting spatial recommendations are determined through a process of reviewing and analyzing the current operations to determine specific guest service requirements that are unique to the resort.

Based upon a CCC of 5,570 skiers, Chart IV-2, below, compares the current space use allocations of the guest service functions to industry norms for a resort of similar market orientation and regional context as Alpine Meadows. Square footage contained in this chart is calculated to illustrate how Alpine Meadows compares to industry averages, and should not be considered as absolute requirements.

Service functions include:

- **Restaurant Seating:** All areas designated for food service seating, including: restaurants, cafeterias, and brown bag areas. Major circulation aisles through seating areas are designated as circulation/waste, not seating space.
- **Kitchen/Scramble:** Includes all food preparation, food service, and food storage space.
- **Bar/Lounge:** All serving and seating areas, often designated as restricted use, for the serving and consumption of alcoholic beverages. Since used for food service, seats are included in seat counts.
- **Restrooms:** All space associated with restroom facilities (separate women, men, and employees).
- **Guest Services:** Services including resort information desks, kiosks, and lost and found.
- **Adult Ski School:** Includes ski school booking area and any indoor staging areas. Storage directly associated with ski school is included in this total.
- **Kid's Ski School:** Includes all daycare/nursery facilities, including booking areas and lunch rooms associated with ski school functions. Storage and employee lockers directly associated with ski school are included.
- **Rentals/Repair:** All rental shop, repair services, and associated storage areas.
- **Retail Sales:** All retail shops and associated storage areas.
- **Ticket Sales:** All ticketing and season pass sales areas, and associated office space.
- **Public Lockers:** All public locker rooms. Any public lockers located along the walls of circulation space are included, as well as the 2 feet directly in front of the locker doors. Includes seasonal and daily lockers.
- **Ski Patrol/First Aid:** All first aid facilities, including clinic space. Storage and employee lockers directly associated with ski patrol are included in this total.
- **Administration/Employee Lockers & Lounge/Storage:** All administration/ employee/storage space not included in any of the above functions.

Chart IV-2:
Total Space Use and Recommendations – Existing Conditions



Source: SE Group

Table IV-6:
Industry Average Space Use
Base Area – Existing Conditions

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Recommended Low Range	Recommended High Range	Low	High
Ticket Sales/Guest Services	1,654	1,250	1,530	404	124
Public Lockers	8,484	3,760	4,600	4,724	3,884
Rentals/Repair	8,130	8,910	10,030	(780)	(1,900)
Retail Sales	2,071	2,630	3,220	(559)	(1,149)
Bar/lounge	4,171	3,950	4,830	221	(659)
Adult Ski School	2,135	2,010	2,450	125	(315)
Kid's Ski School	4,050	4,010	4,900	40	(850)
Restaurant Seating	11,674	17,090	20,890	(5,416)	(9,216)
Kitchen/Scramble	5,149	5,370	6,560	(221)	(1,411)
Restrooms	3,277	3,170	3,880	107	(603)
Ski Patrol	1,940	1,950	2,390	(10)	(450)
Administration	3,498	2,630	3,220	868	278
Employee Lockers/Lounge	1,425	1,050	1,290	375	135
Mechanical	1,800	1,560	2,300	240	(500)
Storage	2,942	2,600	3,840	342	(898)
Circulation/Waste	6,575	6,240	9,210	335	(2,635)
TOTAL SQUARE FEET	68,975	68,180	85,140	795	(16,165)

Source: SE Group
Notes:
1. Rentals represent 40% of CCC (+/-2400units)
2. Outdoor deck space is an additional 10,800 sq. ft.

Table IV-7:
Industry Average Space Use
Chalet – Existing Conditions

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Recommended Low Range	Recommended High Range	Low	High
Ticket Sales/Guest Services	-	-	-	-	-
Public Lockers	-	-	-	-	-
Rentals/Repair	-	-	-	-	-
Retail Sales	-	-	-	-	-
Bar/lounge	-	-	-	-	-
Adult Ski School	-	-	-	-	-
Kid's Ski School	-	-	-	-	-
Restaurant Seating	528	1,330	1,630	(802)	(1,102)
Kitchen/Scramble	970	420	510	550	460
Restrooms	529	250	300	279	229
Ski Patrol	-	150	190	(150)	(190)
Administration	-	-	-	-	-
Employee Lockers/Lounge	-	-	-	-	-
Mechanical	399	60	90	339	309
Storage	210	100	140	110	70
Circulation/Waste	240	230	350	10	(110)
TOTAL SQUARE FEET	2,876	2,540	3,210	336	(334)

Source: SE Group
Note: Outdoor deck space is 3,680 sq. ft.

Table IV-8:
Industry Average Space Use
Resort Total – Existing Conditions

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Recommended Low Range	Recommended High Range	Low	High
Ticket Sales/Guest Services	1,654	1,250	1,530	404	124
Public Lockers	8,484	3,760	4,600	4,724	3,884
Rentals/Repair	8,130	8,910	10,030	(780)	(1,900)
Retail Sales	2,071	2,630	3,220	(559)	(1,149)
Bar/lounge	4,171	3,950	4,830	221	(659)
Adult Ski School	2,135	2,010	2,450	125	(315)
Kid's Ski School	4,050	4,010	4,900	40	(850)
Restaurant Seating	12,202	18,420	22,520	(6,218)	(10,318)
Kitchen/Scramble	6,119	5,790	7,070	329	(951)
Restrooms	3,806	3,420	4,180	386	(374)
Ski Patrol	1,940	2,100	2,580	(160)	(640)
Administration	3,498	2,630	3,220	868	278
Employee Lockers/Lounge	1,425	1,050	1,290	375	135
Mechanical	2,199	1,620	2,390	579	(191)
Storage	3,152	2,700	3,980	452	(828)
Circulation/Waste	6,815	6,470	9,560	345	(2,745)
TOTAL SQUARE FEET	71,851	70,720	88,350	1,131	(16,499)

Source: SE Group

As shown in Chart IV-2 and Tables IV-6 through IV-8 above, Alpine Meadows guest use space is within the recommended range, but tends to fall at the bottom end of the range. It is very important to note that the analysis shows a notable imbalance. A close inspection of the tables shows that many categories are within, or very close to, the recommended range, but there are large deficiencies in some categories and surpluses in other categories. Importantly, it is the services related to space directly used by guests that are deficient. The largest deficiencies are in Restaurant Seating, Rentals, and Retail. These are all areas that would directly affect the guest experience. Also, all of these functions have substantial revenue-generation potential, so the shortages could be adversely affecting the resort's effective yield per skier. The shortage of restaurant seating is particularly noteworthy, since restaurant seating is typically in very high demand, as well as being an important profit center. The restaurant seating deficiency is something that should be addressed, as it directly affects the experience of virtually all guests. The surplus shown for public lockers is a benefit, as Alpine Meadows has high demand for lockers, both daily and seasonal. Since there is such high demand, there is no surplus.

3. Food Service Seating

Food service seating at Alpine Meadows is provided at the base area and the Chalet.

A key factor in evaluating restaurant capacity is the turnover rate of the seats. A turnover rate of 2 to 5 times throughout the day is the standard range utilized in determining restaurant capacity. Sit-down dining at resorts typically results in a lower turnover rate, while "fast food" cafeteria style dining is characterized by a higher turnover rate. Furthermore, weather has an influence on turnover rates at resorts, as on snowy days guests will spend more time indoors than on sunny days. Based on observed operating characteristics at Alpine Meadows, a turnover rate of 3.5 was used for the various facilities in this MP, as shown in the table below.

The following table summarizes the seating requirements at Alpine Meadows.

Table IV-9:
Recommended Restaurant Seating

	Base Area	Chalet	Resort Total
Lunchtime Capacity (CCC + other guests)	5,426	423	5,849
Average Seat Turnover	3.5	3.5	3.5
Existing Indoor Seats	1,272	35	1,307
Required Seats	1,550	121	1,671
Difference	*-278*	*-86*	*-364*
Existing seating capacity (existing seats x turnover)	4,452	123	4,575
Existing Outdoor Seats	670	85	755
Difference including Outdoor Seats	*392*	*-1*	*391*
Seating capacity including Outdoor Seats	6,797	420	7,217

Source: SE Group
CCC + other guests is accounting for the non-skiing guests who come to Alpine Meadows with larger groups or families that use the guest service facilities just as the skiing guest does. Other guests are being calculated at 5% of CCC.

As shown in the table above, there is a noticeable deficiency of indoor seats. On good weather days, this deficiency is mitigated by outdoor seating, where there is actually a surplus of seats.

F. EXISTING PARKING CAPACITY

Parking for Alpine Meadows guests is available across multiple lots located in both the base area and the Deer Park area. Existing parking areas are identified on Figure 6 and detailed in the table below.

Table IV-10:
Parking Capacity – Existing Conditions

Parking Area	Spaces
Main Lots	1,600
Chalet Road Shoulder	60
Deer Park	300
White Wolf	200
TOTAL	2,160

Source: Alpine Meadows Ski Area
Note: White Wolf Parking is used under a rental agreement

Vehicle occupancy counts confirm that average car occupancy at Alpine Meadows is 2.5 people per car, which aligns with national averages of 2.3 to 2.8 people per car.

The parking areas are typically full ten times per season which results in vehicles being redirected at the intersection of Highway 89. Currently, ski area personnel are used to provide alternative parking information (such as the satellite parking lots) or requiring skiers to find other means of getting to the ski area. These activities increase congestion along Alpine Meadows Road due to skiers stopping to ask questions and turning around on the road to depart due to lack of parking or information. Occasionally, this congestion may extend on to Highway 89.

Also note that, particularly during periods of large snowfall, the quantity of parking can be reduced significantly. This is the result of the snow needing to be cleared from the lots and stored on the edges. This can remove up to 150 usable parking spaces.

Alpine Meadows provides shuttle service from the remote parking areas to the base. Congestion on Alpine Meadows Road can affect the shuttle times and, in worst case scenarios, shuttles can take up to 30 minutes from parking to ticket window.

Squaw Valley operates up to four free shuttles between Squaw Valley and Alpine Meadows, and the resorts have been the primary financial contributor to a regional free skier shuttle service administered by the Truckee North Tahoe Transportation Management Association (TNT TMA) over the past several years. Additionally, Tahoe Area Rapid Transit (TART) has hourly buses that stop at the Base Lodge along routes from both Truckee and Tahoe City. Alpine Meadows pays for

TART bus passes for employees on workdays. Shuttle routes are being evaluated to determine the most effective use of the routes.

Note that the use of the Deer Park facility and parking lot is an important aspect of Alpine Meadow's parking and transit strategy. The existing building at Deer Park is in disrepair and could be replaced with a new transportation hub building. This facility could act as a hub for all of these shuttles and buses.

Table IV-11 analyzes existing skier parking capacity. As indicated, Alpine Meadows has an existing slight deficit (28 spaces) of parking based on its existing CCC. Essentially, this indicates a relatively close balance between existing resort capacity and parking capacity. Note that this calculation is somewhat augmented by the behavior of many local skiers. Particularly on powder days, Alpine Meadows sees a large number of local skiers arriving before the ski area opens, skiing for a couple of hours, and often leaving by 11:00 a.m. In these situations, the parking staff will refill those spaces with guests showing up later in the morning, in effect adding a turnover rate to the parking lots. While this is not accounted for on the calculations below, this can effectively add around 150 parking spaces.

Table IV-11:
Recommended Parking – Existing Conditions

	Total
CCC	5,570
Number arriving via Shuttle	370
Net number requiring parking	5,200
Guests arriving by car	5,044
Guests arriving by charter bus	156
Required car parking spaces	1,868
Required charter bus parking spaces	4
Equivalent car spaces (1 bus=4.5 car)	20
Required employee car parking spaces	300
Total required spaces	2,188
Existing parking spaces	2,160
surplus/deficit	-28
Existing parking/Shuttle capacity	5,392

Source: SE Group and Alpine Meadows Ski Area
Notes:
Shuttle numbers are: 100 from Sherwood shuttle, 120 from Squaw express.
50 from North Shore shuttle, 100 from TART.
Employee parking demand is reduced to 300 (from approximately 450) by the resort providing free TART passes to employees and providing employee carpooling incentives.

It is important to note that, while parking capacity is fairly close to CCC, this balance can only be achieved if all parking capacity is realized and if shuttle services are fully utilized. If either of these factors change, then a significant shortage of parking can occur. This is a frequently observed scenario at Alpine Meadows, where there typically seems to be a shortage of parking, particularly in the base area lots.

G. EXISTING RESORT OPERATIONS

1. Ski Patrol/First Aid

Alpine Meadows has Ski Patrol facilities located in the base area, as well as duty stations at the top of the Summit and Sherwood Express, and the Scott and Lakeview chairs. From these facilities, ski patrol has access to all points of the developed trail network. Well-appointed first aid facilities are located in the base area.

2. Snowmaking Coverage

The snowmaking system at Alpine Meadows has the ability to make snow on 130 acres of terrain, although this can be expanded up to 200 acres by dragging hoses from hydrants to adjacent trails. Typically starting in October and operating through mid December, the system has a capacity of 2,500 gallons per minute (gpm) of water. The system uses a combination of 60 air/water guns and nine fan guns. Water is supplied from 6.8 million gallons of storage in the three storage ponds in the base area. Alpine Meadows purchases water for snowmaking from the Alpine Springs County Water District. Around 30 million gallons are purchased, with a flow rate of about 1,200 gpm.

Existing snowmaking coverage and pipelines are shown on Figure 7. Snow is made on the following trails:

- Alpine Bowl
- Rock Garden
- Dance Floor
- Werner's Schuss
- Boomerang
- Charity
- Ladies Slalom
- Sandy's Corner
- Weasel Run
- East Creek (only by dragging hoses)
- Scott Ridge

- Nicks Run
- All beginner areas

While there is sufficient water for the quantity of snow made during the season at this time, the quantity of storage is lower than desirable. The purpose of water storage for snowmaking is to enable high production rates during optimal conditions. When conditions are optimal in the fall, it is crucial to have enough water to make as much snow as possible. This allows for the most efficient operation, resulting in lower energy use per unit. Alpine Meadows currently does not have sufficient water storage in the three reservoirs to take advantage of these opportunities. Alternatively, if additional water sources were developed, the water supply flow rate could be increased, decreasing the need for additional storage.

3. Grooming

Alpine Meadows grooms approximately 300 to 400 acres of terrain per night, including virtually all of the beginner through intermediate terrain, along with some selected upper ability level areas. As is typical with most ski areas, terrain is groomed in two shifts, with approximately 3.25 acres groomed per vehicle, per hour.

4. Maintenance Facilities

Main maintenance facilities at Alpine Meadows are located at the base area, adjacent and to the west of the base lodge. The maintenance shop has a total area of about 10,000 square feet and supports snow-grooming equipment, snow removal equipment, and summer maintenance equipment. Lift maintenance and snowmaking equipment are also maintained and stored in this location. The facility is too small and the location is very tight as it is constrained by the base lodge, the parking lots, and the ski trails. In addition, the current location creates significant challenges for numerous operations, including: food deliveries, emergency response, fueling dock, and garbage dumpsters and removal. Another issue with the current location is that all snow vehicle (i.e., snow cats and snowmobiles) traffic has to cross directly in front of the lodge to access the mountain. This is a very congested area with lots of skier traffic—relocation of the facility could greatly reduce this situation. Options should be considered for replacing and relocating the facility. Additionally, moving the facility would free up the current location for other uses.

5. Power and Other Utilities

All power is supplied to Alpine Meadows by public utilities. The only constraints are the power feeds to the Alpine Bowl Chair and Summit Express, which need replacing and upgrading.

Another issue is the phone, electrical, internet, fiber-optic, and other wiring in the area immediately uphill (south) of the base lodge. This wiring is old and inefficient, in addition to being poorly located, installed, and documented. Most of it needs to be replaced and realigned.

6. Culinary Water and Sewer

Alpine Meadows is tied into municipal water and sewer systems, which have the ability to provide current and projected needs. Alpine Springs County Water District is currently planning for future upgrades.

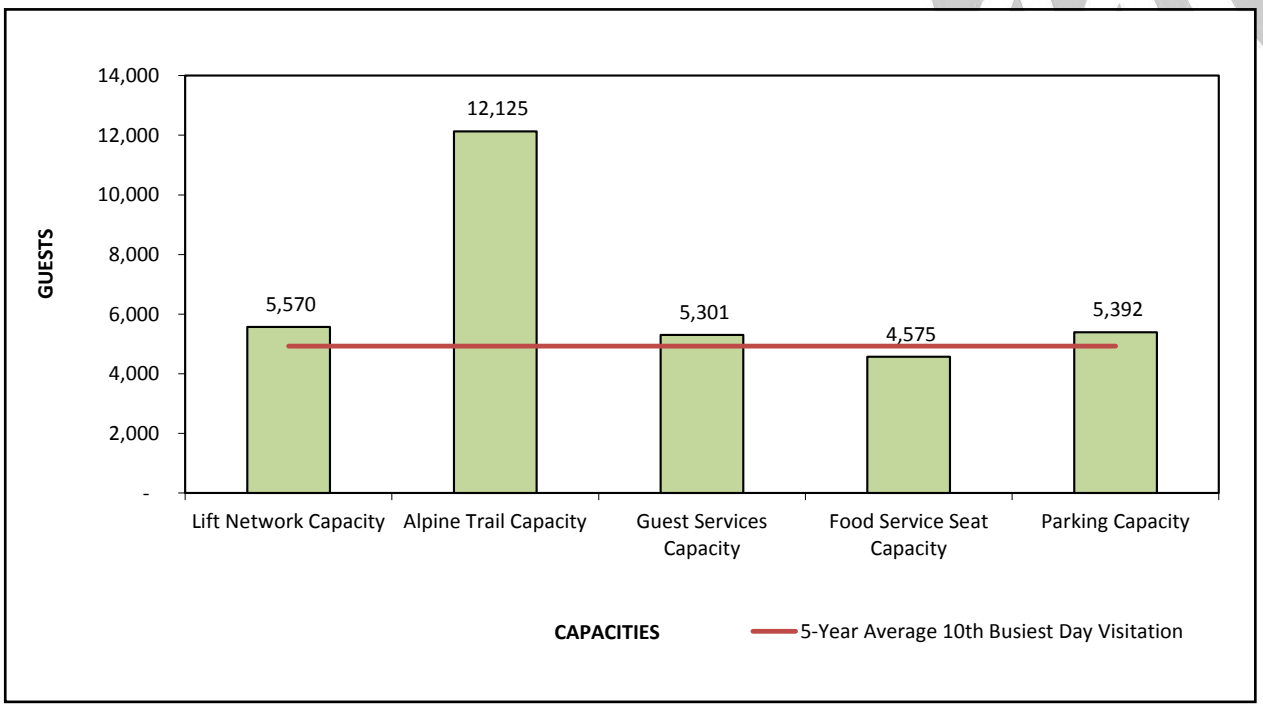
7. Mountain Roads

Approximately 8.5 miles of mountain roads exist at Alpine Meadows. These roads provide access throughout the SUP area for summer maintenance to all on-mountain facilities and all terminals of all lifts. Locations of mountain roads are shown on Figure 5.

H. RESORT CAPACITY BALANCE AND LIMITING FACTORS

The overall balance of the existing resort is evaluated by calculating the capacities of the resort's various facilities and comparing those facilities to the resort's CCC. The above discussed capacities are shown in Chart IV-3.

Chart IV-3:
Resort Balance – Existing Conditions

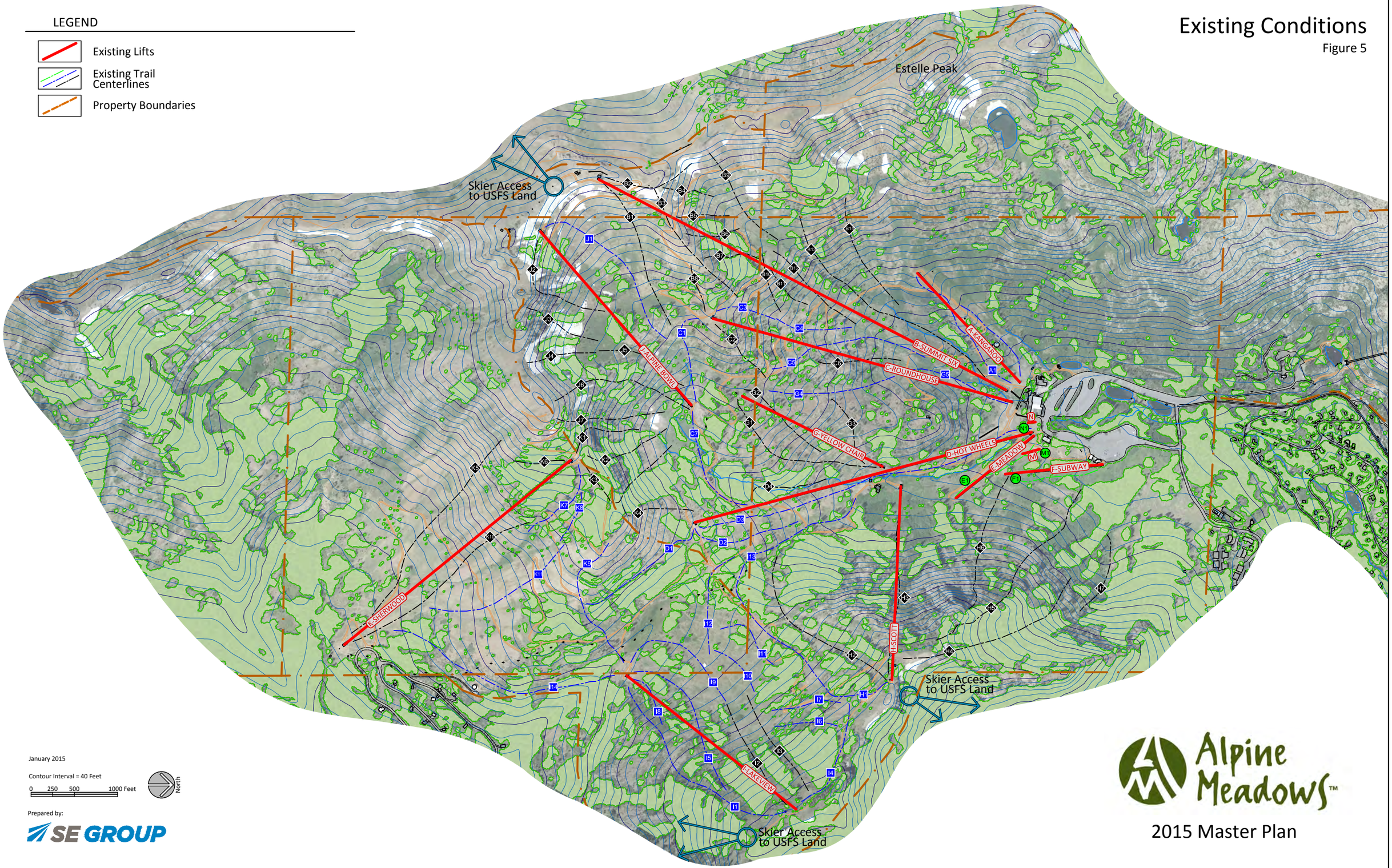


Source: SE Group

Chart IV-3 indicates that most of Alpine Meadows capacities are fairly well balanced. The surplus of terrain network capacity is reflected in low skier densities at Alpine Meadows, and does not present a particular issue, certainly not negative from the guests' standpoint. However, note that the capacities of parking, guest services, and food service seating are below the resort's existing CCC. Food service seating is about 1,000 people lower than CCC, indicating that restaurant seating is usually at a premium. Note that if outdoor seating is included in the food service seating calculation, it increases the capacity to 7,217. While this is well above CCC, outdoor seating is often not desirable. The reference line shown indicates the five-year average tenth busiest day visitation, of 4,925 guests. Note that the tenth busiest day visitation level is typically a good comparison to CCC, to see if the ski area is realizing effective utilization rates. It is also very common to see the tenth busiest day closely in line with the lowest capacity of the resort, as the component with the lowest capacity can be seen as the limiting factor of the resort. In the case of Alpine Meadows, the tenth busiest day visitation is lower than the CCC and more closely reflects the lower capacity of parking, guest services, and restaurant seating.

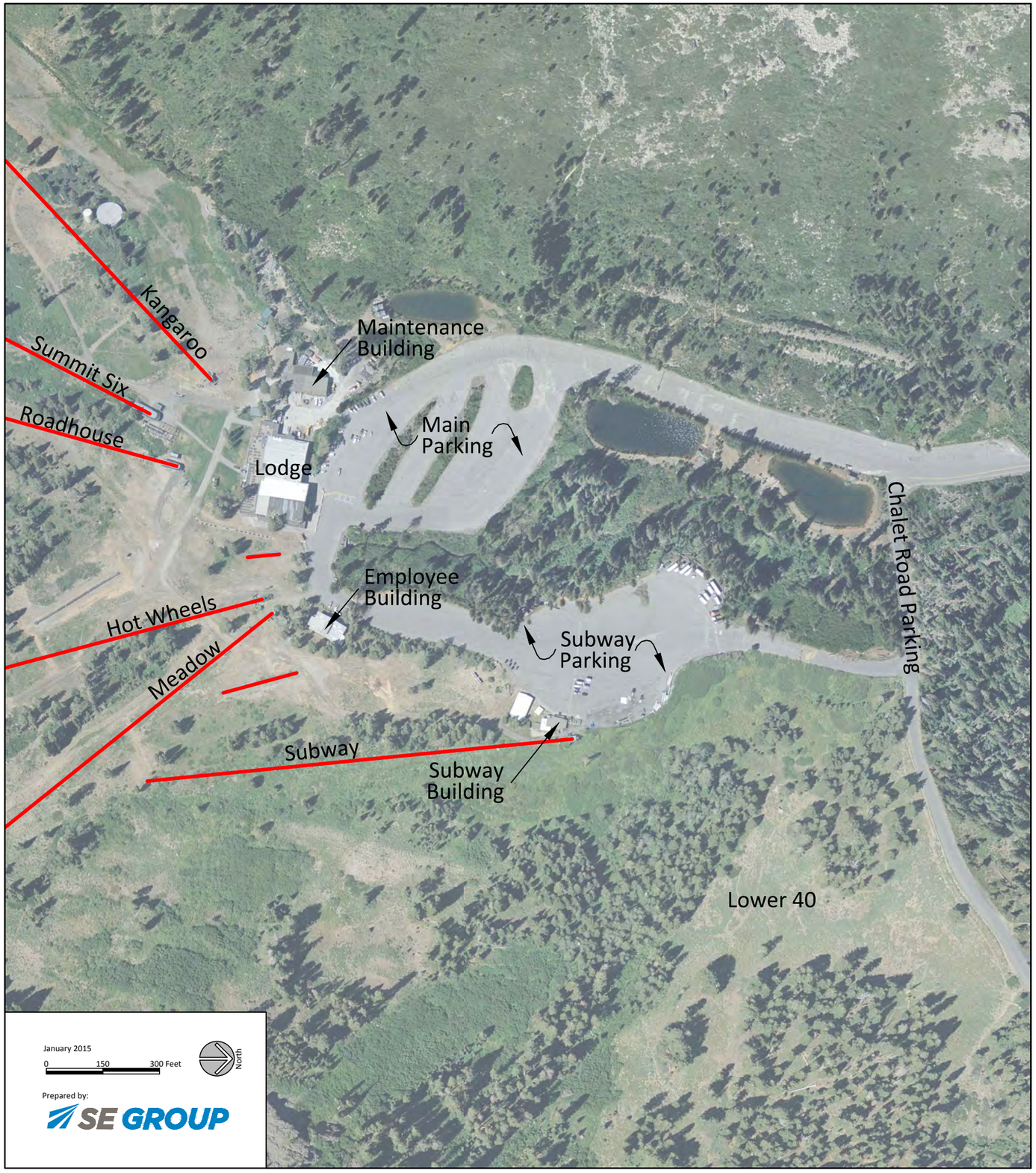
Existing Conditions

Figure 5



Existing Conditions
Base Area Detail

Figure 6

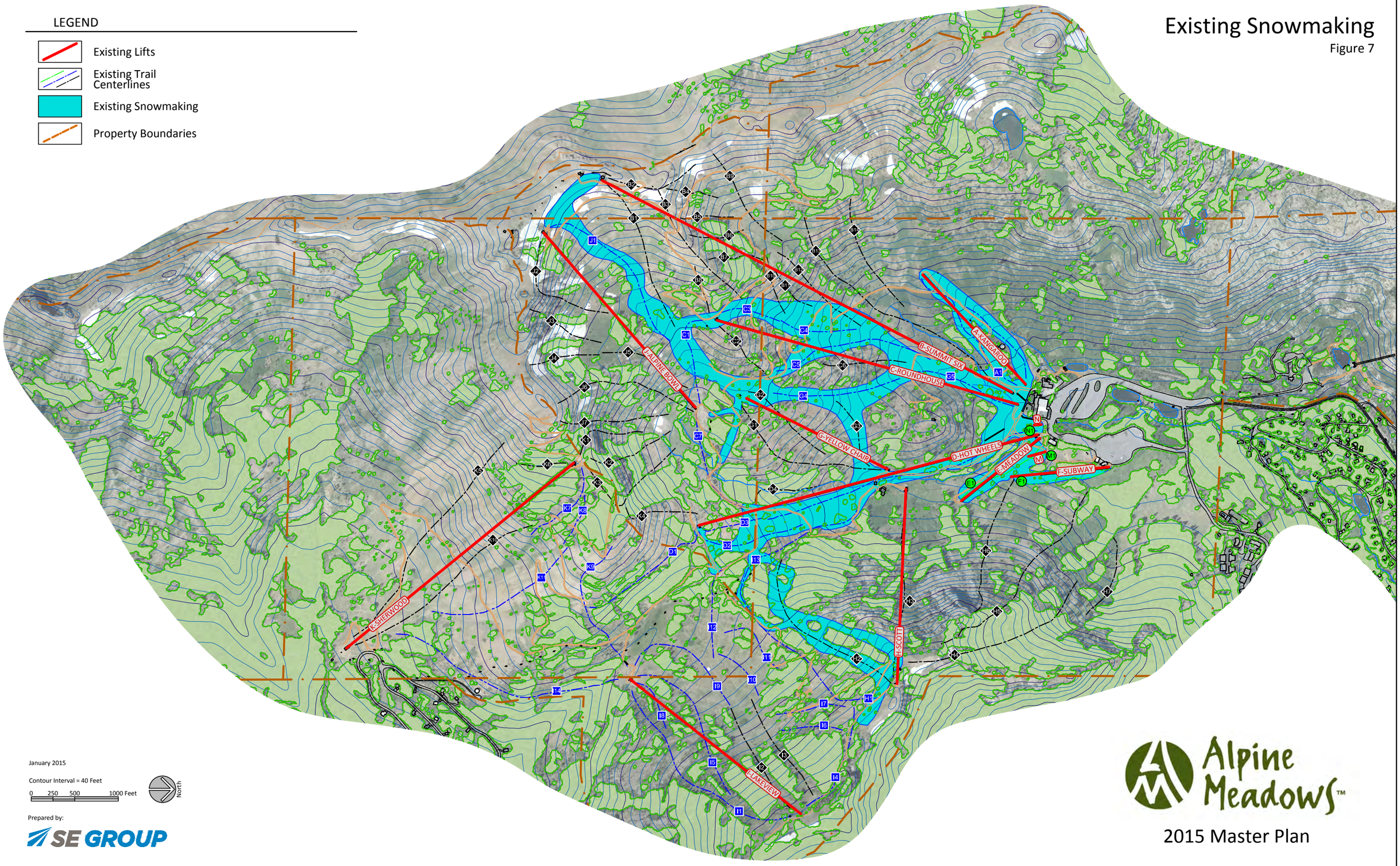


Alpine Meadows™

2015 Master Plan

Existing Snowmaking

Figure 7



2015 Master Plan

V. UPGRADE PLAN

This MP has been prepared in compliance with the terms and conditions of the Forest Service-issued 40-year Term SUP for Alpine Meadows. As stated previously, Forest Service "acceptance" of this MP does not convey "approval" of any projects contained herein. Implementation of any projects on NFS lands within the Alpine Meadows SUP area is contingent upon site-specific environmental review and approval via NEPA. Planned projects contained in this MP are conceptual in nature and may be refined in the future, as long as the original intent of a planned project is maintained.

The Upgrade Plan is depicted on Figure 8 and Figure 9.

A. SUMMARY

This Upgrade Plan focuses on the intentions of Alpine Meadows to enhance the total guest experience through a series of improvements and expansions. This would be achieved by implementation of strategic enhancements across the existing SUP area.

Since the developed terrain network currently has sufficient, if not surplus, terrain in most ability level categories, there is very little actual trail clearing planned. Approximately 47 acres of new trails are planned, in addition to selected grading on existing trails and other trail improvements. Undeveloped, hike-to terrain off the western ridge is planned to be lift-served with the addition of the Rollers Chair, which will provide access to the Estelle area, as well.

The Upgrade Plan includes strategic lift network improvements. The Hot Wheels Chair is planned to be replaced with a new detachable lift and extended up to the ridge that drops into Sherwood Bowl, improving mountain circulation and reducing lift ride times. The Subway and Meadow chairs are planned to be replaced with a single new lift, improving both the novice skier experience and the efficiency of the resort. A new lift is planned for the Rollers terrain on Estelle Peak, and a new gondola is planned to cross the White Wolf property, connecting Squaw Valley with Alpine Meadows. This gondola will have three separate stages, with two mid-stations, allowing for maximum functionality.

Skier services are planned to be improved and renovated. The base lodge will be remodeled and brought into full compliance with ADA regulations. Other base area projects include relocating the maintenance shop (which will free up space at the current shop location), on-mountain guest services improvements, utilities infrastructure replacement, and the development of a transportation hub building at Deer Park.

The existing snowmaking system at Alpine Meadows is planned to be improved by expanding coverage, particularly in the Yellow Chair area. Several snowmaking lines are planned to be replaced and power is planned to be added to enable additional fan gun placement.

Grading is planned for numerous locations on existing ski trails, to smooth and improve the skiing surface and reduce the amount of snow required to open the selected trails. A new skiway is also proposed for construction in the Estelle area, including snowmaking and a power feed to the planned Interconnect Gondola.

Other projects planned include new signs to better define boundary management and closures, electronic guest information signs, a wind fence to protect the top terminal of Summit Express, a new chair barn for the Alpine Bowl Chair, an on-snow fuel dispenser for snowcats, repair of various mountain roads, and replacement of power feed to Alpine Bowl Chair and Summit Express.

The net result of these projects would increase the existing CCC by about 700 to 6,290.

B. LIFT NETWORK

1. New Lift Installations

a. Rollers Chair

The planned Rollers Chair is proposed to be located entirely on Alpine Meadows private property. The bottom terminal would be located northwest of the base area on private land, near the intersection of NFS land within the SUP area, Alpine Meadows-owned land on Estelle Peak, and the White Wolf property (refer to Figure 8). The Rollers Chair would extend up to a point on the ridge below Estelle Peak. This top terminal location was chosen for protection from wind and storms. This chairlift would provide direct access to a large amount of excellent terrain, both in the Rollers area and below Estelle Peak, suitable for the development of intermediate and upper ability level skiing. The lift would be primarily accessed from the planned Interconnect Gondola (discussed below), with skiers unloading at the adjacent mid-station—arriving from both the Alpine Meadows base area and from Squaw Valley.

b. Interconnect Gondola

Since Alpine Meadows and Squaw Valley are jointly owned, there is an interchangeable lift ticket and shuttle service between the two base areas. However, the variety and quantity of ski terrain that is available to skiers at both Alpine Meadows and Squaw Valley would be increased considerably if there was a lift connection between the resorts.

The intent of the planned Interconnect Gondola is to provide a direct lift connection between the Alpine Meadows and Squaw Valley base areas, allowing for skiers and non-skiers alike to easily travel between the two resorts. Skiers will also have the ability to use the gondola to access ski

terrain at both resorts from mid-stations. The planned Interconnect Gondola alignment is depicted on Figure 9.

As discussed below, this multi-stage gondola plan allows for maximum flexibility and functionality, allowing for skiers to use the lift in multiple ways and allowing non-skiers to ride it as well. The following description is for skier who starts at the Alpine Meadows base area, but skiers could just as easily start at Squaw Valley.

Alpine Meadows Side

Starting at the Alpine Meadows side, skiers would load the gondola adjacent to the base lodge, near the Hot Wheels terminal. Skiers could choose to unload at the first mid-station (refer to Figure 9), primarily for the purpose of accessing the planned Rollers Chair. However, expert skiers may at times be permitted to ski the terrain (NFS lands) from this location back down to the Alpine Meadows base area, depending on snowpack, avalanche conditions, operational considerations, etc. Additionally, skiers could load the gondola at this point (after descending the Rollers terrain), either downloading to the Alpine Meadows base area or riding the gondola to Squaw Valley.

Squaw Valley Side

From the Alpine Meadows mid-station, the gondola would turn north, crossing over the privately-owned White Wolf property. Upon reaching Squaw Valley skiers would encounter another mid-station on the ridge between the KT-22 Express and the Cornice II Chair, where they could choose to unload or ride the gondola to the Squaw Valley base area. The Squaw Valley mid-terminal would be located on the Saddle trail, which is accessed off the KT-22 Express. Skiers could also load the gondola in this location (from KT-22), heading in either direction. The gondola would then turn, heading down to the Squaw Valley Village. The Squaw Valley base terminal would be located in the vicinity of the Olympic House base lodge.

It should be noted that loading and unloading the gondola from mid-stations (in both directions) would only be options to skiers of intermediate or higher ability levels. Beginner skiers and pedestrians would ride the entire length of the gondola from one base area to the other.

2. Lift Replacements & Upgrades

a. Subway/Meadow Chairs

Built in 1971 and 1979, respectively, the Subway and Meadow chairs represent some of the oldest operating lifts at the ski area, and they serve critical teaching terrain. These lifts are planned to be removed and replaced with a single, new lift extending from the existing bottom terminal of Subway Chair to the existing top terminal of Meadow Chair. The existing foundation and structure of the bottom terminal of Subway Chair would be retained to the maximum extent possible, and any new structure would be in the same footprint as the existing building, to avoid any impacts to

wetlands in the area. Some grading would also be done on the Meadow terrain to improve the skiing and remove the double fall line.

b. Hot Wheels Chair

As depicted on Figures 8 and 9, Hot Wheels Chair is planned to be replaced with a detachable chair and extended up to the ridge between the frontside and Sherwood Bowl. There would be a mid-unload (angled) station at the current top terminal location, to allow lower level skiers to ski the Weasel trail and provide access to the Scott and Yellow chairs.

The existing Hot Wheels Chair is used primarily by novice and low intermediate skiers. The terrain served by this lift is an important "next step" in skiers' learning progression after graduating from the beginner surface lifts and terrain served by Meadow and Subway chairs in the base area. However, the low rope speed of this fixed-grip lift results in a ride time that can exceed ten minutes. Replacing the existing Hot Wheels Chair with a high-speed detachable quad would cut the ride time in half and provide an easier loading process that would reduce lift slow-downs and stoppages. The upgrade would cause the Hot Wheels Chair to be more popular for learning skiers and ski school classes.

The planned replacement for the Hot Wheels Chair would also improve access to the desirable but remote Sherwood Bowl area. Currently, Sherwood Bowl can only be reached by hiking from the Alpine Bowl Chair or Summit Express, or by following a long, flat skiway traverse (Ray's Rut) that is difficult to negotiate. Ray's Rut requires a substantial amount of snow to open for skiing and is difficult to maintain due to cross-slope conditions and snow drifting. The current difficult and limited access to Sherwood Bowl causes the area to be underutilized.

As planned, Hot Wheels Chair would be extended to the ridge that separates Alpine Meadow's front-side from Sherwood Bowl, thus providing direct, high-speed lift access from the base area and frontside into Sherwood Bowl, and bypassing the current Ray's Rut and hiking access routes. The planned lift replacement would improve utilization and allow more skiers to enjoy the area more frequently.

Note: it is estimated that, on average, about three-quarters of the proposed lift's hourly capacity would unload at the mid-station for repeat-skiing back to the base of the lift. The remaining skiers would ride through the mid-station to the top terminal for access to Sherwood Bowl and other upper mountain areas. This assumption is used in all capacity calculations for this planned lift.

c. Scott Chair

The Scott Chair is planned to be upgraded with a detachable or fixed-grip lift. For purposes of calculations, it is assumed to be a fixed-grip lift. One option is to use the existing Hot Wheels Chair

(which is in very good condition) to replace the Scott Chair. The replacement would be in-place with the same top and bottom terminal locations.

d. Alpine Bowl Chair and Summit Express

The chair barn at the top terminal of Alpine Bowl Chair is planned to be replaced. The existing structure is old and restrictive. A new structure would allow for snowcat access on all sides of the building, and allow skiers to exit in both directions. Grading of the site would be required to achieve these goals.

A wind fence is planned to protect the top terminal of the Summit Express. This fence would be placed to deflect east winds.

Table V-1 includes detailed information on the lift specifications in the Upgrade Plan.

Table V-1:
Lift Specifications – Upgrade Plan

Map Ref.	Lift Name, Lift Type	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Plan Length (ft)	Slope Length (ft)	Avg. Grade (%)	Actual Design Capacity (pers/hr)	Rope Speed (fpm)	Carrier Spacing (ft)	Lift Maker/ Year Installed
A	Kangaroo/C-2	7,384	6,928	455	1,724	1,790	26	1,200	450	45	1975
B	Summit/DC-6	8,485	6,930	1,555	5,292	5,590	29	2,150	1,000	167	1996
C	Roundhouse/DC-4	7,871	6,922	949	3,586	3,756	26	2,400	1,000	100	1993
D	Hot Wheels Mid/DC-4	7,555	6,904	651	4,023	4,108	16	1,800	1,000	133	Upgraded
	Hot Wheels Top/DC-4	7,945	6,904	1,040	4,955	5,103	21	600	1,000	400	Upgraded
G	Yellow/C-2	7,626	7,068	558	1,810	1,910	31	1,200	450	45	1972
H	Scott/C-3	8,116	7,065	1,050	2,238	2,524	47	1,500	450	54	1998
I	Lakeview/C-3	8,240	7,437	803	2,494	2,631	32	1,800	450	45	1984
J	Alpine Bowl/C-2	8,451	7,528	923	2,654	2,873	35	1,200	450	45	1980
K	Sherwood/DC-4	8,027	7,093	934	3,368	3,529	28	2,000	1,000	120	2005
M	Ski School Carpet	6,930	6,912	18	201	202	9	600	100	10	2006
N	Kids Ski School Carpet	6,897	6,892	5	85	85	6	600	100	10	2010
O	Subway/Meadow	7,076	6,852	224	1,724	1,744	13	1,800	500	50	Planned Lift
P	Rollers/C4	8,285	7,702	583	2,451	2,558	24%	2,000	500	60	Planned Lift
Q	Interconnect Gondola/G8	6,891	6,219	672	12,909	13,863	5%	2,000	1,000	240	Planned Lift

Source: SE Group
c = carpet conveyor
s = surface lift
C-2 = fixed-grip double chairlift
C-3 = fixed-grip triple chairlift
C-4 = fixed-grip quad chairlift
DC-4 = Detachable quad lift
DC-6 = Detachable six passenger lift
DC-8 = Eight passenger Gondola

C. TERRAIN NETWORK

1. Terrain Variety

As discussed in Chapter IV, terrain variety is the key factor in evaluating the quality of the actual skiing and riding guest experience (as opposed to lift quality, restaurant quality, or any other factor). A resort must have a diverse, interesting, and well designed developed trail system, but also must have a wide variety of alternate style terrain, such as mogul runs, bowls, trees, glades, open parks, in-bounds "backcountry style" (i.e., hike-to) terrain, and terrain parks and pipes. The reader is referred to Chapter IV (Section C) for an in-depth discussion of the importance of terrain variety.

2. Developed Alpine Trails

As previously mentioned, there is very little actual trail clearing necessary to create developed trails included in this MP. Approximately 47 acres of newly-constructed terrain would be added off the Rollers Chair, in both the Rollers and Estelle area. The majority of the area would be left in a natural state. Several hundred acres of this terrain, which is currently skied via hike-to access from the Summit Express, would become lift-served.

Of note is the trail construction and grading that would be necessary to construct the planned Estelle Skiway, which is required to accommodate skier circulation from the Estelle area to the Summit Express area. The Estelle Skiway is identified as Trail P6 in Figure 8. Additionally, snowmaking will be required on this skiway to ensure coverage, as this would be the main skiing circulation route from the Rollers Chair back to the base area. Furthermore, this skiway is located at lower elevations and is expected to receive a considerable amount of solar exposure, as the surface of the trail would be essentially south-facing.

The planned trail configuration under the Upgrade Plan is depicted in Figure 8 and the proposed terrain specifications are detailed in the following table.

Table V-2:
Terrain Specifications – Upgrade Plan

Map Ref.	Trail Area/Name	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
A1	Nick's Run	7,369	6,933	436	1,777	435	17.8	25	35	Low Intermediate
B1	Sun Spot	8,470	7,814	656	1,970	472	21.4	36	69	Expert
B2	Wolverine Saddle	8,479	8,252	227	1,151	54	1.4	21	57	Expert
B3	Peril Ridge	8,406	7,804	602	1,781	239	9.8	38	86	Expert
B4	D-6	8,387	8,051	336	704	251	4.1	55	75	Expert
B5	D-7	8,235	7,929	306	691	296	4.7	50	64	Expert
B6	D-8	8,212	7,887	325	718	193	3.2	51	68	Expert
B7	North Peril	8,127	7,837	289	719	123	2.0	45	65	Expert
B8	Peter's Peril	8,100	7,902	198	603	257	3.6	35	50	Advanced Intermediate
B9	Wolverine Bowl	8,283	7,800	482	1,400	431	13.9	37	60	Expert
B10	Wolverine	7,837	7,574	263	768	173	3.1	38	89	Expert
B11	Face Cliffs	7,805	7,477	328	704	164	2.7	54	85	Expert
B12	The Face	7,814	7,276	539	1,416	312	10.1	42	70	Expert
B13	Waterfall	7,915	6,965	950	3,140	214	15.4	32	76	Expert
B14	Three Sisters	7,960	7,222	738	1,634	484	18.1	52	76	Expert
C1	Rock Garden	7,860	7,536	324	1,187	362	9.9	29	43	Intermediate
C2	Sympathy Face	7,861	7,601	260	919	425	9.0	30	62	Expert
C3	Werner's Schuss	7,867	7,583	284	768	276	4.9	40	44	Intermediate
C4	Boomerang	7,581	7,294	287	951	240	5.2	32	45	Intermediate
C5	Charity	7,604	7,064	540	1,985	288	13.1	28	44	Intermediate
C6	Banana Chute	7,454	7,104	350	1,042	209	5.0	36	60	Expert
C7	Loop Road	7,522	7,381	141	1,395	135	4.3	10	15	Intermediate
D1	Return Road	7,668	7,542	126	1,591	21	0.8	8	22	Intermediate
D2	East Creek	7,545	7,274	271	1,330	158	4.8	21	30	Low Intermediate
D3	Weasel Run	7,539	7,539	638	4,125	176	17.5	16	34	Low Intermediate

Table V-2:
Terrain Specifications – Upgrade Plan

Map Ref.	Trail Area/Name	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
D4	Hot Wheels Gully	7,363	7,150	214	1,022	114	2.7	22	48	Advanced Intermediate
E1	Meadow Run	7,075	6,913	162	1,119	300	7.7	15	21	Novice
F1	Subway Run	6,946	6,853	93	997	247	5.7	9	20	Novice
G1	Yellow Trail	7,625	7,069	557	2,070	347	16.5	28	50	Advanced Intermediate
G2	Fall Line	7,621	7,237	385	1,236	209	5.9	33	55	Advanced Intermediate
G3	Ladies Slalom	7,470	7,070	400	1,164	282	7.5	37	53	Advanced Intermediate
G4	Dance Floor	7,548	7,121	427	1,596	472	17.3	28	42	Intermediate
G5	Sandy's Corner	7,116	7,116	194	1,364	279	8.7	14	23	Intermediate
H1	Scott Ridge Run	8,115	7,525	589	2,477	163	9.3	25	52	Advanced Intermediate
H2	Chute That Seldom Slides	8,107	7,370	737	2,251	193	10.0	35	50	Advanced Intermediate
H3	Scott Chute	8,090	7,070	1,020	2,407	854	47.2	48	84	Expert
H4	Gentian Gully	8,068	7,160	908	2,488	438	25.0	40	72	Expert
H5	Butcher Block Rock	8,016	6,873	1,143	2,835	470	30.6	45	88	Expert
H6	Promise Land	7,874	6,956	918	1,919	464	20.4	55	78	Expert
H7	Lower 40 Face	7,282	6,917	365	1,087	308	7.7	36	59	Expert
I1	Outer Limits	8,256	7,456	800	2,686	271	16.7	31	45	Intermediate
I2	Scotty's Beam	8,226	7,683	543	1,467	239	8.0	40	48	Advanced Intermediate
I3	Mountain View	8,225	7,703	522	1,419	199	6.5	40	48	Advanced Intermediate
I4	Leisure Lane	8,227	8,054	173	1,355	116	3.6	13	29	Low Intermediate
I5	Twilight Zone	8,016	7,444	572	1,987	262	12.0	30	42	Intermediate
I6	Winter Road	8,100	7,886	214	766	190	3.3	29	34	Low Intermediate
I7	Summer Road	8,026	7,823	203	836	223	4.3	25	42	Intermediate
I8	Shooting Star	7,648	7,446	202	709	122	2.0	30	43	Intermediate
I9	Scott Meadow	7,673	7,434	239	1,572	263	9.5	15	29	Low Intermediate
I10	Standard Run	7,710	7,539	171	712	424	6.9	25	33	Low Intermediate

Table V-2:
Terrain Specifications – Upgrade Plan

Map Ref.	Trail Area/Name	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
I11	Bobby's Run	7,673	7,535	138	875	217	4.4	16	27	Low Intermediate
I12	Lakeview to Weasel	7,538	7,483	55	1,282	106	3.1	4	18	Novice
I13	Skateboard Alley	7,523	7,097	427	1,909	162	7.1	23	33	Low Intermediate
I14	Ray's Rut	7,409	7,182	227	2,811	107	6.9	8	35	Intermediate
J1	Alpine Bowl	8,438	7,769	669	2,232	498	25.5	32	43	Intermediate
J2	Palisades	8,447	7,953	494	1,582	247	9.0	35	109	Expert
J3	Keyhole	8,437	7,939	498	1,089	285	7.1	54	96	Expert
J4	Lower Saddle	8,246	7,935	311	883	323	6.6	38	60	Expert
J5	Terry's Return	7,932	7,602	330	1,175	321	8.7	30	54	Advanced Intermediate
J6	High Yellow Face	8,274	7,535	739	1,665	359	13.7	50	76	Expert
J7	High Yellow Gully	8,234	7,510	724	1,481	270	9.2	57	89	Expert
K1	Our Father	8,030	7,580	450	1,075	142	3.5	49	106	Expert
K2	Counterweight Gully	7,994	7,500	494	1,174	227	6.1	48	89	Expert
K3	Sherwood Cliffs	8,011	7,492	520	1,678	128	4.9	34	80	Expert
K4	Hidden Knoll's	7,915	7,544	371	1,038	502	12.0	40	77	Expert
K5	South Face	8,021	7,111	910	3,065	872	61.4	32	64	Expert
K6	South Face Access	8,023	7,997	26	600	60	0.8	4	9	Intermediate
K7	Robin Hood	8,010	7,717	293	1,115	153	3.9	27	35	Intermediate
K8	Maid Marian	7,927	7,782	145	641	149	2.2	23	30	Low Intermediate
K9	Reily's Run	7,916	7,423	493	1,802	141	5.8	29	41	Intermediate
K10	Sherwood Face	7,758	7,105	652	2,601	443	26.4	26	57	Expert
K11	Sherwood Run	7,784	7,265	520	1,909	529	23.2	28	39	Intermediate
L1	Teaching Terrain	6,966	6,926	41	262	134	0.8	11	12	Beginner
M1	Teaching Terrain	6,930	6,912	18	202	133	0.6	9	10	Beginner
N1	Teaching Terrain	6,897	6,892	5	85	132	0.3	6	8	Beginner

Table V-2:
Terrain Specifications – Upgrade Plan

Map Ref.	Trail Area/Name	Top Elev. (ft)	Bot. Elev. (ft)	Vert. Rise (ft)	Slope Length (ft)	Avg. Width (ft)	Slope Area (acres)	Avg. Grade (%)	Max Grade (%)	Ability Level
P1	Planned Run 1	8,283	7,754	529	2,844	92	6.0	19	42	Intermediate
P2	Planned Run 2	8,261	7,704	557	2,042	166	7.8	29	50	Advanced Intermediate
P3	Planned Run 3	8,234	7,820	414	1,267	206	6.0	35	55	Advanced Intermediate
P4	Planned Run 4	7,785	6,997	787	2,375	125	6.8	36	59	Expert
P5	Planned Run 5	7,624	7,142	482	1,189	122	3.3	45	61	Expert
P6	Planned Run 6	7,752	7,435	318	2,800	53	3.4	11	21	Intermediate
P7	Planned Run 7	8,235	7,706	529	2,747	58	3.7	20%	44%	Intermediate
P8	Planned Run 8	8,225	7,831	394	1,155	122	3.2	37%	51%	Advanced Intermediate
P9	Planned Run 9	8,047	7,772	275	940	114	2.5	31%	44%	Intermediate
P10	Planned Run 10	7,870	7,724	146	579	118	1.6	26%	37%	Intermediate
P11	Planned Run 11	8,124	7,705	419	1,300	94	2.8	35%	64%	Expert
	TOTAL				127,220		800.1			

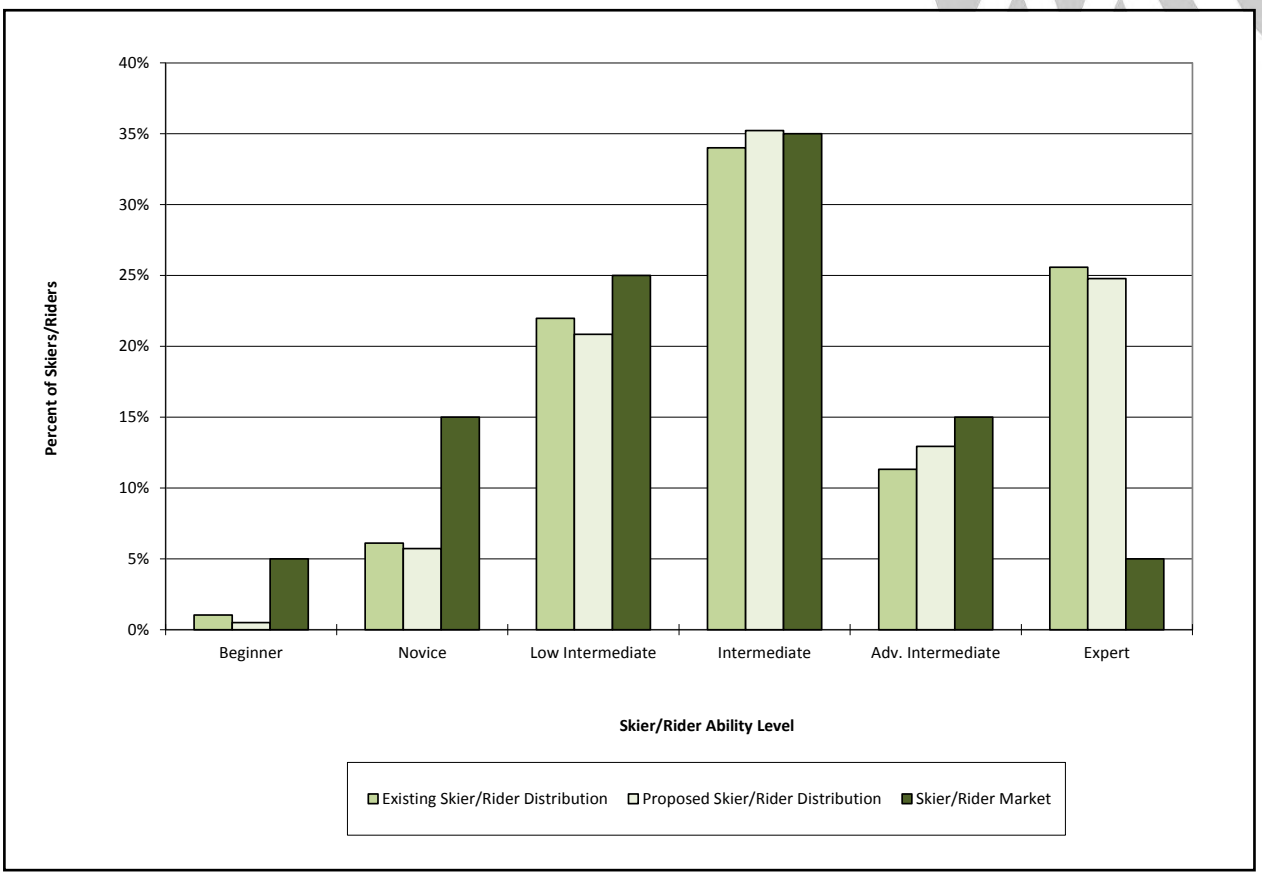
a. Terrain Distribution by Ability Level

The ideal breakdown of trail capacity by ability level should align with percentages of skiers by ability level, based on the regional destination skier market. The terrain classification breakdown of the Upgrade Plan is set forth in the following table and chart. The last column in this table represents what can be considered the ideal skill level distribution in the relevant market and provides a comparison with the planned conditions.

Table V-3:
Terrain Distribution by Ability Level – Upgrade Plan

Skier/Rider Ability Level	Trail Area (acres)	Skier/Rider Capacity (guests)	Alpine Meadows Skier/Rider Distribution (%)	Skier/Rider Market (%)
Beginner	0.9	26.2	1%	5
Novice	16.5	296.8	6%	15
Low Intermediate	77.1	1079.7	21%	25
Intermediate	182.4	1824.1	35%	35
Advanced Intermediate	95.7	669.6	13%	15
Expert	427.6	1282.7	25%	5
TOTAL	800.1	5,179	100%	100

Chart V-1:
Terrain Distribution by Ability Level – Upgrade Plan



Source: SE Group

Because this MP does not contemplate significant additions to the network of skiing terrain, the overall terrain distribution would not change appreciably. There are very slight improvements to distribution.

3. Planned Trail Grading Projects

Planned trail grading within the Upgrade Plan amounts to approximately 16.3 acres. Areas planned for grading are identified on Figure 8. Notable planned grading projects include:

- Red Ridge, Yellow Trail and Ladies Slalom: smooth out the rocky outcroppings and improve the skiability of these trails.
- East Creek: improve the ski access primarily for returning to the Scott Chair bottom terminal.
- Contemplation Point: remove the rock mound to make that portion of the run skiable.

- Alpine Bowl Road: connect the two existing sections of traverse from the tops of the Alpine Bowl Chair and Summit Express.
- Alpine Bowl Chair barn replacement/grading: improve the functionality of the top terminal of the Alpine Bowl Chair when the chair barn is replaced.
- Meadow trail cross-slope: remove the double fall-line.
- Charity access above Terrain Park: allow better access above Dance Floor to the Yellow Chair area.

4. Undeveloped and Gladed Expert Terrain

Undeveloped terrain is one of the main draws of Alpine Meadows; the topography within the SUP area includes steeps, chutes, bowls, and glades intermingled within, and outside of, the developed and maintained terrain network.

Undeveloped and gladed terrain will continue to be offered extensively at Alpine Meadows. With the addition of the Rollers Chair, a significant amount of area will become lift-served. The undeveloped terrain falls into three categories: lift-served gladed terrain, hike-to terrain, and backcountry terrain. Each category is discussed separately.

a. Lift-Served Gladed Terrain

Gladed areas will continue to be found between, and to the sides of, the existing ski trails. With the addition of the Rollers Chair, there will be a large amount of new lift-served gladed terrain. It is calculated that there are currently approximately 297 acres of lift-accessible gladed terrain available at Alpine Meadows; the terrain that will be served by the Rollers Chair will add approximately 110 acres, for a total of 407 acres. Depending on snow conditions, these areas are anticipated to be heavily used by advanced and expert skiers.

b. Hike-To Terrain

The hike-to terrain will remain unchanged, with the exception that some of the terrain in the Estelle Peak area will become lift-accessed via the planned Rollers Chair. The Rollers terrain is currently closed to skiing. The hike-to terrain is found off the ridge, accessed from the Summit Express, Alpine Bowl Chair, and planned Rollers Chair. While the Rollers Chair would make around 140 acres (including the developed trails) of this area lift-served, around 110 acres of hike-to terrain would still be available between the Summit Express and Rollers Chair, in the Beaver Bowl area. Hiking to the south of the Summit Express gives access to terrain on the backside, including CB Chute, Sun Bowl, and Big Bend Bowl. This area is skied to the bottom of the Sherwood Express, requiring multiple lift rides to return. This area encompasses about 280 acres.

c. Backcountry Terrain

It is anticipated that access to backcountry terrain will continue to remain available from Alpine Meadows. The reader is referred to the backcountry terrain discussion provided in Chapter IV. Note: the Rollers Chair may provide additional opportunities for access to backcountry terrain on adjacent NFS lands.

5. Terrain Parks

As described in Chapter IV, Alpine Meadows currently builds terrain parks throughout the resort to offer skiers and riders of all abilities the chance to improve their freestyle skills. The resort plans on continuing this practice as conditions warrant, in locations that are appropriate based on the varying and evolving needs of park users.

D. CAPACITY ANALYSIS

1. Comfortable Carrying Capacity

As detailed in Chapter IV, the existing CCC for Alpine Meadows is calculated at 5,570. Under the Upgrade Plan, the planned CCC would increase, as detailed in the following table, and has been calculated at 6,290 guests per day.

Table V-4:
Comfortable Carrying Capacity – Upgrade Plan

Map Ref.	Lift Name, Lift Type	Slope Length (ft)	Vertical Rise (ft)	Actual Design Capacity (guests/hr)	Oper. Hours (hrs)	Up-Mtn. Access Role (%)	Misloading/ Lift Stoppages (%)	Adjusted Hourly Cap. (guests/hr)	VTF/Day (000)	Vertical Demand (ft/day)	Daily Lift Capacity (guests)
A	Kangaroo/C-2	1,790	455	1,200	7.00	0	5	1,140	3,635	14,536	250
B	Summit/DC-6	5,590	1,555	2,150	7.00	10	10	1,720	18,719	20,421	920
C	Roundhouse/DC-4	3,756	949	2,400	7.00	10	5	2,040	13,551	16,407	830
D	Hot Wheels Mid/DC-4	4,108	651	1,800	7.00	5	5	1,620	7,386	9,576	770
	Hot Wheels Top/DC-4	5,103	1,040	600	7.00	75	5	120	874	15,201	60
G	Yellow/C-2	1,910	558	1,200	7.00	0	5	1,140	4,455	15,345	290
H	Scott/C-3	2,524	1,050	1,500	6.75	15	10	1,125	7,977	25,162	320
I	Lakeview/C-3	2,631	803	1,800	6.50	0	10	1,620	8,452	14,974	560
J	Alpine Bowl/C-2	2,873	923	1,200	6.75	0	5	1,140	7,100	19,762	360
K	Sherwood/DC-4	3,529	934	2,000	6.50	0	5	1,900	11,541	21,784	530
M	Ski School Carpet	202	18	600	7.00	0	10	540	67	718	90
N	Kids Ski School Carpet	85	5	600	7.00	0	10	540	19	279	70
O	Subway/Meadow/C3	1,744	224	1,800	7.00	0	10	1,620	2,543	4,179	610
P	Rollers/C4	2,558	583	2,000	6.50	0	5	1,900	7,202	11,397	630
Q	Interconnect Gondola/G8	13,863	672	2,000	7.00	100	0	-	-	-	-
	TOTAL	52,266		22,850				20,165	102,926		6,290

Source: SE Group

2. Density Analysis

As discussed in Chapter IV, an important aspect of resort design is the balancing of uphill lift capacity with downhill trail capacity. Trail densities are derived by contrasting the uphill, at-one-time capacity of each lift system (CCC) with the trail acreage associated with each lift pod. The trail density analysis considers only the acreage associated with the developed trail network. The density analysis for the Upgrade Plan is illustrated in the following table.

Table V-5:
Density Analysis – Upgrade Plan

Map Ref.	Lift Name and Type	Daily Lift Capacity	Guest Dispersal				Density Analysis				Density Index
			Support Fac./Milling (guests)	Lift Lines (guests)	On Lift (guests)	On Terrain (guests)	Terrain Area (acres)	Terrain Density (guests/ac)	Target Trail Density (guests/ac)	Diff. (+/-)	(%)
A	Kangaroo/C-2	250	63	10	76	101	17.8	6	14	-8	43
B	Summit/DC-6	920	230	143	160	387	91.1	4	4	0	100
C	Roundhouse/DC-4	830	208	170	128	324	55.9	6	8	-2	75
D	Hot Wheels Mid/DC-4	770	193	135	111	331	29.9	11	13	-2	85
	Hot Wheels Top/DC-4	60	15	10	10	25	42.5	1	5	-4	21
G	Yellow/C-2	290	73	38	81	98	42.5	2	8	-6	25
H	Scott/C-3	320	80	38	105	97	160.8	1	4	-3	25
I	Lakeview/C-3	560	140	81	158	181	78.8	2	11	-9	18
J	Alpine Bowl/C-2	360	90	38	121	111	94.2	1	6	-5	17
K	Sherwood/DC-4	530	133	63	112	222	108.5	2	5	-3	40
M	Ski School Carpet	90	32	27	18	13	0.6	21	30	-9	70
N	Kids Ski School Carpet	70	28	27	8	7	0.3	27	30	-3	90
O	Subadow/C3	610	153	81	94	282	13.4	21	18	3	117
P	Rollers/C4	630	158	101	162	209	63.9	3	6	-3	50%
TOTAL		6,290	1,596	962	1,344	2,388	800.1	6	9	-3	70%

Source: SE Group

Table V-5 shows that the overall density (skiers-per-acre) would increase from 5 to 6. Despite this increase, the existing uncrowded feel of the resort would remain. Note that the density number for the Rollers Chair does not include all of the terrain that is currently hike-to terrain that would become lift-served by this lift, so the actual densities on that terrain would be significantly lower.

3. Lift and Terrain Network Efficiency Analysis

As discussed in Chapter IV, overall resort efficiency is becoming an increasingly important factor in the industry, relating not only to energy/operational efficiency, but also to efficiency of the design and layout of the resort. The idea behind resort design efficiency is to have a well-balanced lift and trail network (i.e., the uphill lift capacity balances with the downhill trail capacity that it serves) that is efficiently served by the fewest number of lifts possible, while maintaining desired CCC rates, circulation routes, and service to the full spectrum of ability levels and types.

a. Lift Network Efficiency

As discussed in Chapter IV, this document analyzes Lift Network Efficiency by calculating the average CCC per lift. Optimally, and in general, the average CCC per lift would likely be close to 1,000. Industry-wide, the average CCC per lift is approximately 650. The existing average CCC per lift at Alpine Meadows is below average at 490. As discussed, this is related to the number of lifts operated as well as the generally low hourly capacities of the lifts at Alpine Meadows. With the addition of the planned lifts, and removal of two existing lifts, the total number of lifts would stay the same. With a small increase in CCC, the average would increase slightly to 550.

b. Terrain Network Efficiency

As discussed in Chapter IV, Terrain Network Efficiency refers to the amount of effort required to properly maintain a resort's terrain. From this standpoint, the most efficient scenario is to have a quantity of terrain that closely meets the target density requirements. As discussed in Chapter IV, an effective way to review terrain efficiency is to interpret the density analysis. Under the Upgrade Plan, the overall "Density Index" figure would increase from the existing figure of 66% to 70%. This represents a improvement, while still maintaining an excellent, low density, ski experience.

E. SKIER SERVICES FACILITIES AND FOOD SERVICE SEATING

1. Skier Services Locations

Alpine Meadows is not planning any new facilities or major expansions to skier services as a part of this MP. All skier service locations will stay the same as currently existing, with upgrades to the facilities.

Guest space needs will be addressed when the needs arise, with various options discussed in the sections below.

2. Space Use Analysis

A distribution of CCC is utilized to determine guest service capacities and space requirements for guest services at base area portals and on-mountain facilities. The CCC should be distributed between each guest service facility location according to the number of guests that would be utilizing the lifts and terrain associated with each facility. Sufficient guest service space should be provided to accommodate the planned CCC of 6,290 guests per day.

The following tables and text address the Upgrade Plan's space use needs at planned base area and on-mountain facilities. The space recommendations are directly related to the distribution of the resort's capacity to the various guest service facilities located in the base area and on-mountain. The tables show planned size ranges for the facilities, based on industry averages for space use by service function.

The following tables show recommended ranges for the facilities.

Table V-6:
Industry Average Space Use
Base Area – Recommended Upgrades

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Recommended Low Range	Recommended High Range	Low	High
Ticket Sales/Guest Services	1,654	1,420	1,730	234	(76)
Public Lockers	8,484	4,250	5,190	4,234	3,294
Rentals/Repair	8,130	10,060	11,320	(1,930)	(3,190)
Retail Sales	2,071	2,970	3,630	(899)	(1,559)
Bar/lounge	4,171	4,460	5,450	(289)	(1,279)
Adult Ski School	2,135	2,260	2,770	(125)	(635)
Kid's Ski School	4,050	4,530	5,540	(480)	(1,490)
Restaurant Seating	11,674	18,320	22,390	(6,646)	(10,716)
Kitchen/Scramble	5,149	5,760	7,040	(611)	(1,891)
Restrooms	3,277	3,400	4,160	(123)	(883)
Ski Patrol	1,940	2,090	2,560	(150)	(620)
Administration	3,498	2,970	3,630	528	(132)
Employee Lockers/Lounge	1,425	1,190	1,450	235	(25)
Mechanical	1,800	1,720	2,540	80	(740)
Storage	2,942	2,870	4,230	72	(1,288)
Circulation/Waste	6,575	6,880	10,150	(305)	(3,575)
TOTAL SQUARE FEET	68,975	75,150	93,780	(6,175)	(24,805)

Source: SE Group
Existing square footages are being compared to the recommended ranges (based on the planned CCC) to show the amount of space that would need to be added in order for the facilities to be in balance with the rest of the components of the upgrade plan.

Various options are available to increase the usable amount of skier service space. If the maintenance building is moved, it could be possible to expand the daylodge into that space, or to convert some of that existing space into other uses. For example, some existing uses could be converted and reassigned, allowing for more guest use space adjacent to the snowfront area.

The following table shows the planned size range and programming for the on-mountain facilities.

Table V-7:
Industry Average Space Use
On-Mountain Facilities – Recommended Upgrades

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Recommended Low Range	Recommended High Range	Low	High
Ticket Sales/Guest Services	-	-	-	-	-
Public Lockers	-	-	-	-	-
Rentals/Repair	-	-	-	-	-
Retail Sales	-	-	-	-	-
Bar/lounge	-	-	-	-	-
Adult Ski School	-	-	-	-	-
Kid's Ski School	-	-	-	-	-
Restaurant Seating	528	2,290	2,800	(1,762)	(2,272)
Kitchen/Scramble	970	720	880	250	90
Restrooms	529	430	520	99	9
Ski Patrol		260	320	(260)	(320)
Administration		-	-	-	-
Employee Lockers/Lounge		-	-	-	-
Mechanical	399	100	150	299	249
Storage	210	170	250	40	(40)
Circulation/Waste	240	400	600	(160)	(360)
TOTAL SQUARE FEET	2,876	4,370	5,520	(1,494)	(2,644)

Source: SE Group
Existing square footages are being compared to the recommended ranges (based on the planned CCC) to show the amount of space that would need to be added in order for the facilities to be in balance with the rest of the components of the upgrade plan.

Upgrades and expansions are planned for both the Chalet building and the Ice Bar. These projects will be addressed as demand dictates.

Table V-8:
Industry Average Space Use
Resort Total – Recommended Upgrades

Service Function	Existing Total	Recommended Range		Difference from Recommended	
		Recommended Low Range	Recommended High Range	Low	High
Ticket Sales/Guest Services	1,654	1,420	1,730	234	(76)
Public Lockers	8,484	4,250	5,190	4,234	3,294
Rentals/Repair	8,130	10,060	11,320	(1,930)	(3,190)
Retail Sales	2,071	2,970	3,630	(899)	(1,559)
Bar/lounge	4,171	4,460	5,450	(289)	(1,279)
Adult Ski School	2,135	2,260	2,770	(125)	(635)
Kid's Ski School	4,050	4,530	5,540	(480)	(1,490)
Restaurant Seating	12,202	20,610	25,190	(8,408)	(12,988)
Kitchen/Scramble	6,119	6,480	7,920	(361)	(1,801)
Restrooms	3,806	3,830	4,680	(24)	(874)
Ski Patrol	1,940	2,350	2,880	(410)	(940)
Administration	3,498	2,970	3,630	528	(132)
Employee Lockers/Lounge	1,425	1,190	1,450	235	(25)
Mechanical	2,199	1,820	2,690	379	(491)
Storage	3,152	3,040	4,480	112	(1,328)
Circulation/Waste	6,815	7,280	10,750	(465)	(3,935)
TOTAL SQUARE FEET	71,851	79,520	99,300	(7,669)	(27,449)

Source: SE Group
Existing square footages are being compared to the recommended ranges (based on the planned CCC) to show the amount of space that would need to be added in order for the facilities to be in balance with the rest of the components of the upgrade plan.

Specific areas of known shortages include:

- Need to address future snowboard rental needs;
- Ski School, both adult and kids, will need significant increases in space use as demand increases;
- Ski Patrol space may need even further increases when significant new terrain is opened, particularly in the steep Rollers/Estelle area; and
- Overall employee space will need increases.

3. Food Service Seating

The following table summarizes the seating requirements at Alpine Meadows, based on a logical distribution of the CCC to each service building/location.

Table V-9:
Recommended Restaurant Seating – Upgrade Plan

	Base Area	Chalet	Resort Total
Lunchtime Capacity (CCC + other guests)	5,815	727	6,542
Average Seat Turnover	3.5	3.5	3.5
Existing Indoor Seats	1,272	35	1,307
Required Seats	1,661	208	1,869
Difference	*-389*	*-173*	*-562*
Existing seating capacity (existing seats x turnover)	4,452	123	4,575
Existing Outdoor Seats	670	85	755
Difference including Outdoor Seats	*281*	*-88*	*193*
Seating capacity including Outdoor Seats	6,797	420	7,217

Source: SE Group
CCC + other guests is accounting for the non-skiing guests who come to Alpine Meadows with larger groups or families that use the guest service facilities just as the skiing guest does. Other guests are being calculated at 5% of CCC.

Seating and restaurant space recommendations are directly related to the lunchtime capacity. The lunchtime capacity is determined by the distribution of each lift pod's CCC. It is assumed that guests would prefer to dine at the facility closest to the area they are using. To allow for this convenience, it is important to provide restaurant seating to accommodate the lunchtime capacity requirement of the area. Restaurant seating should be supplied per the recommendations in the above table. As shown, a total of 562 indoor seats would be required at the completion of the Upgrade Plan to balance with the upgraded CCC. However, there are currently enough outdoor seats to accommodate the full increased CCC. Various options can be considered to increase the number of indoor seats, including the possibility of covering a portion of the deck.

F. PARKING CAPACITY

Table V-10 analyzes day skier parking capacity and needs under the Upgrade Plan.

Lowering the parking demand on peak days and spreading out the demand throughout the week is an important component to operations at Alpine Meadows. The merging of Alpine Meadows and Squaw Valley under single ownership is expected to even out visitation between the two areas. Shuttles between the two resorts will increase demand at Alpine Meadows, with the intent that a significant number of skiers will be arriving every day from shuttles from Squaw Valley. Additionally, the planned Interconnect Gondola would effectively run in parallel with the existing shuttle system, transporting even more skiers to Alpine Meadows. The extensive lodging available

at Squaw Valley will become used by Alpine Meadows skiers, who are very likely to take advantage of these connections between the resorts. This should have the added effect of increasing mid-week skiers at Alpine Meadows, since many of those are destination skiers. Additionally, Alpine Meadows plans to continue to improve the employee shuttle program while working with commercial bus service providers to reduce the demand for parking even more.

As stated, the Interconnect Gondola would run in conjunction with the existing shuttle system, reducing demand for the shuttle buses. This would effectively remove some of those buses, and presumably a number of private cars used to connect between the two resorts, from the roads. Additionally, the lift could help with parking management—meaning that if the parking lots were full at Alpine Meadows, skiers could park at Squaw Valley and use the Interconnect Gondola to access the Alpine Meadows terrain (or vice versa).

Also, as described in Chapter IV, parking is positively affected by local season pass skier behavior, where staff has observed spaces being vacated as early as 11:00 a.m. When this occurs parking staff refills those spaces.

In addition, various incentive programs to increase the average vehicle occupancy rate have been considered as a part of the overall transportation and parking plan. These incentive programs could include preferred parking or discounts given to members of cars carrying three or more guests.

Table V-10:
Recommended Parking – Upgrade Plan

	Total
CCC	6,290
Number arriving via Shuttle	500
Net number requiring parking	5,790
Guests arriving by car	5,616
Guests arriving by charter bus	174
Required car parking spaces	2,080
Required charter bus parking spaces	5
Equivalent car spaces (1 bus=4.5 car)	22
Required employee car parking spaces	330
Total required spaces	2,432
Existing parking spaces	2,160
surplus/deficit	-272

Source: SE Group and Alpine Meadows Ski Area
Note: This table assumes an increase in shuttle use and an increase in required employee parking spaces.

The above table shows a deficit of 272 parking spaces. While the above discussed measures should reduce the demand for parking, there will still be a demand for additional parking beyond what

currently exists. Various options exist for expanding parking, discussed below. Expansions of parking areas would require analysis of the onsite effects to wetlands and species dependent on wetlands. Potential expansions to parking would be required to be compatible with the existing Lahontan Regional Water Quality Board Waste Discharge Orders for Alpine Meadows and any future changes to water quality regulations.

The existing areas for parking between the Subway building and base lodge are encroached upon by construction debris and storage and remnants of snowmaking pipe and valves. The removal of the debris and material would increase the area available for parking and improve snow removal operations. The project could result in an additional 25 to 40 cars parked. It is possible to make minor extensions of the main parking area, near the entrance sign that could accommodate 20 to 30 new spaces.

Additional parking would be considered along Chalet Road, east of the Bear Creek Bridge, perpendicular to the road. Depending on final layout, approximately 50 to 75 spaces could be created. These spaces would be served with the same parking shuttle service as is currently operated by Alpine Meadows.

An area of approximately 5 acres, north of the existing parking lots and across Chalet Road, has been identified for the possibility of expansion of parking. This area has the potential to supply additional parking for approximately 300 cars. The area can be served with the existing skier shuttle system.

The potential for a parking structure, located either in the main parking area or in the Subway parking area, has been discussed over the course of operations and previous planning studies. Structured, or decked, parking (an above grade parking garage) could provide for additional parking without additional ground surface area disturbance. Early planning indicates that approximately 400 parking spaces could be developed in addition to the existing spaces. Limitations on the development of a parking structure are related to the cost of a structure and methods to finance the additional parking. Means would need to be found to accommodate additional surface water runoff from the garage decks and to provide for adequate circulation in and around the structure. As projects proceed, the parking structure concept will be considered further.

G. SKI AREA OPERATIONS

1. Ski Patrol/First Aid

With the construction of the Rollers Chair, a ski patrol duty station would be established adjacent to the top terminal. This new duty station would provide full downhill ski patrol access to the expanded terrain.

2. Snowmaking Coverage

Snowmaking is planned to cover approximately 21 additional acres of terrain. New snowmaking line installations would add air, water, and power for fan guns on the following trails:

- East Creek – this will allow snow to be made on the East Creek trail without having to drag hoses through tree islands. This trail is important as it represents a through-trail for Scott Chair skiers, rather than using Weasel trail;
- Yellow Trail – this popular trail is quite rocky and could be opened earlier and more consistently with the addition of snowmaking;
- Loop Road – this is an important circulation trail;
- the Fast Lane/Weasel East-West tie-in – looping the system in this area would allow for increased efficiency and additional coverage;
- Terry's Return – while this would primarily benefit the use of this area for terrain parks, it would also improve a tie-in with the Alpine Bowl system; and
- Snowmaking would be added to the planned Estelle Skiway (connecting the Rollers terrain to the Summit Express area) – due to the elevation, exposure, and high use of this skiway, snowmaking would be required to effectively operate it.

In addition, the following snowmaking projects are planned:

- Repair main line from pump house;
- Ongoing water research & development;
- Raise Deer Park well booster vault – well booster pumping vault;
- Snowmaking line replacements – air, water, and power for fan guns on Subway, Dance Floor, Charity, and Werner; and
- Tower fan gun installations –in Dance Floor terrain park.

Upgrades to the snowmaking system are shown on Figure 10.

Ongoing water research and development is a key to future improvements to the snowmaking system. These projects include the Scott well, which is an existing test well near the base of the Scott Chair, as well as other possible sources. The ability to increase the water supply flow rate would significantly improve the overall snowmaking system, as it would allow Alpine Meadows to more efficiently take advantage of favorable weather conditions, making snow more quickly and alleviating some of the need for additional water storage.

3. Maintenance Facilities

The maintenance facility is planned to be relocated, likely to an area in the vicinity of the Subway building. This location will allow for expansion of the facility to meet the existing and planned increased needs for groomer and other vehicle maintenance as well as freeing up the existing shop location for other uses.

The relocation of the shop would also help address numerous existing operational challenges, including: food deliveries, emergency response, fueling dock, and garbage dumpsters and removal. Each of these operations would be much easier to accommodate in a new location. Another issue that would be addressed is that snow vehicle (snow cats and snowmobiles) traffic would not have to cross directly in front of the lodge to access the mountain.

At either location of the current maintenance shop, or at a new location to be determined, an on-snow fuel dispenser would be installed to allow refueling of snowcats without driving off the snow and damaging both parking lot surfaces and snowcat grousers.

4. Mountain Roads

Road access exists for construction of all planned lift terminals, with the exception of the top terminal of the Rollers Chair. However, since there is a planned skiway (planned trail P6), that skiway would serve as construction access and as a summer maintenance road. The top terminal of the Rollers Chair would not be accessed by a road, and construction would occur via helicopter or other means.

Additionally, the South Peril Road will be widened.

5. Water Supply and Wastewater System

Since existing water and wastewater are tied into a municipal system, there are no issues regarding increased use.

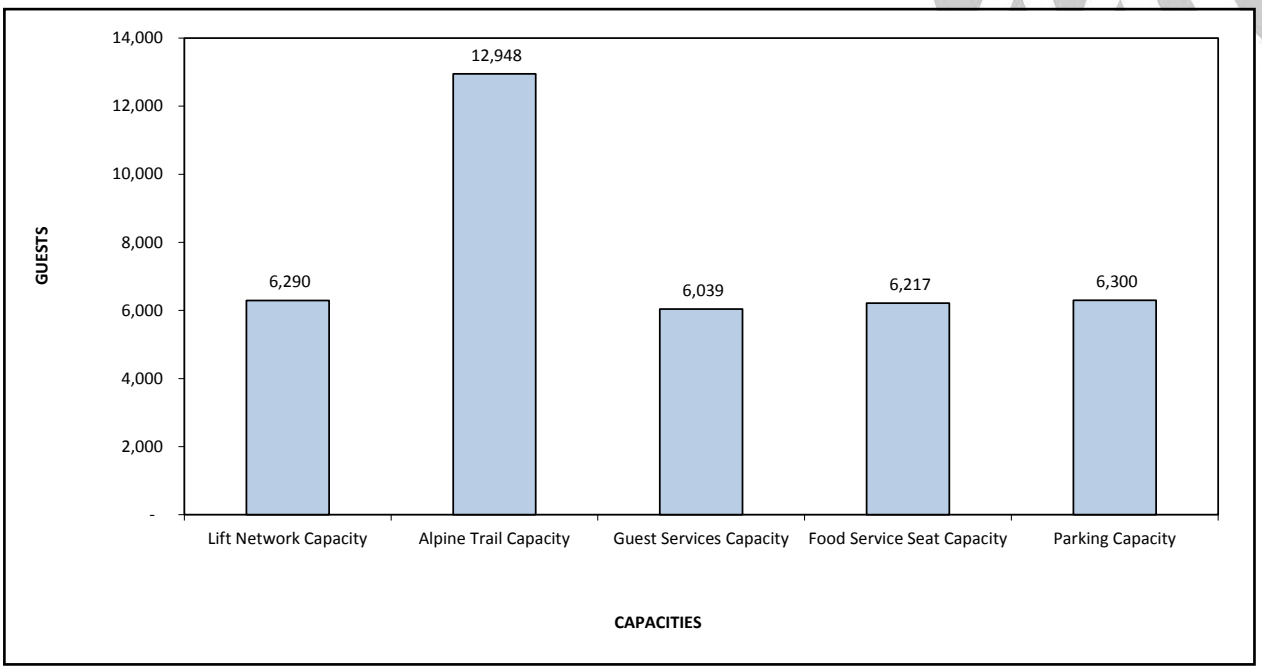
6. Power and Other Utilities

The power feeds to Alpine Bowl Chair and Summit Express are planned to be replaced and upgraded. The power, communications, and other utilities buried in front of the base lodge are planned to be replaced.

H. RESORT CAPACITY BALANCE AND LIMITING FACTORS

The overall balance of the Upgrade Plan is evaluated by calculating the capacities of the resort's various facilities and comparing those facilities to the resort's CCC. The aforementioned capacities are shown in Chart V-2.

Chart V-2:
Resort Balance – Upgrade Plan



The mountain master planning process emphasizes the importance of balancing recreational facility development. The sizes of the various skier service functions are designed to match the CCC of the mountain. Projects described in this Upgrade Plan for improvements to Alpine Meadows have been configured to match, as best as possible, the capacities of key resort operations, including lifts, terrain, guest services, food service seating, and parking with the resort CCC of 6,290 skiers.

As the above chart indicates, CCC would be increased slightly, and Alpine trail capacity would be increased commensurately. Increases to parking capacity would happen as demand dictates. It is hoped that capacity improvements can come from changes in parking demand and a projected increase in average vehicle occupancy. However, as discussed, as visits increase parking demand will be analyzed with various options available for increasing parking space. Parking capacity will be developed to remain aligned with demand.

I. *CONCEPTUAL* PROJECTS NOT CURRENTLY PLANNED FOR IMPLEMENTATION

In addition to the projects detailed in this section, there are other projects that have been considered in the past and should be retained for possible future consideration. Note that none of these projects are currently planned for implementation, but may be considered in the future. Although these projects are not anticipated to be implemented during the lifespan of this MP for various reasons (including financial considerations, current levels of demand, resort market

strategy, etc.), they are included in this section to account for potential future changes in Alpine Meadows' skier market. If any of these projects do become planned, this MP will be amended to include them. The projects listed here are as described in the 2007 MP.

1. Upper Mountain Surface Lifts

The upper bowls on Ward Peak and the west ridge bowls—Wolverine and Estelle—encompass several hundred acres of upper-mountain, open bowl terrain. This terrain is an important part of the recreation experience at Alpine Meadows. Hiking routes from the Sherwood Express access these bowls and the Summit Express.

Strategically placed surface lifts could increase the ability to repeat-ski in the bowls by reducing hiking time. The ability to maintain an acceptable surface lift profile in the wind and snow drifting conditions would be taken under consideration. A surface lift (Ward Peak) has been considered from near the top terminal of the Sherwood Express, extending west to High Yellow Peak on the Ward Peak ridgeline. This lift would be approximately 400 feet long. The alignment of the lift requires field review, but could be aligned north of the TRPA boundary. The west ridge was preliminarily studied for the potential of one or two surface lifts allowing access to Wolverine Bowl and/or up to near the summit of Ward Peak. Wind and snow conditions, and proximity to the Pacific Crest Trail are considerations in the evaluation. The Forest Service has indicated that visual quality concerns, as well as potential concerns from backcountry users would make any proposals along this ridge highly controversial. The potential projects continue to be outlined in this MP for possible future NEPA analysis but are not considered further by Alpine Meadows in this plan. Alpine Meadows would retain the possibility to re-open studies of the western Ward Peak surface lift as the ski area western permit boundary and skier access are assessed over time.

2. Additional Lift Replacements

The Alpine Bowl and Yellow chairs may be replaced in their current alignments. These chairlifts would likely be replaced with high speed, detachable four-place technology. The replacements would be linked to meeting guest expectations, competition from other ski areas, and project economics.

3. Parking

The boundaries and edges of the existing parking area can be extended in certain locations without tree or other significant vegetation removal. In most cases, the extensions would be no more than 10 to 12 feet. This extension work would result in an additional 20 to 30 cars parked in addition to the parking spaces created as a result of the maintenance program. Parking in excess of the calculated results of extensions and maintenance is possible after more detailed review and testing of parking and circulation alternatives. Lot 1, closest to the base lodge, is segregated by three narrow barriers of trees. The tree barriers reduce parking efficiency by adding to the number of

circulation routes in the parking lot and requiring pedestrian routes around the islands. The islands do provide some snow storage and may assist in water quality functions. The furthest north island, an area of approximately 30 feet by 30 feet (900 square feet), would be considered for removal to improve parking circulation at the same time as the parking edge modifications.

The parking lot drains and water quality system would be modified to accommodate this additional surface area. The other island areas would continue to be assessed for conversion into additional parking and circulation. Grade changes, water quality concerns and visual quality would be considered as planning proceeds. The Forest Service has indicated that the tree island areas provide wetland values and act as an important infiltration opportunity, which may have some effect on water quality, wildlife and aquatic species downstream. The Forest Service has also indicated that the islands provide needed visual quality mitigation and some definition of parking levels. These concerns limit the possibility of Forest Service approval of modifications to, or elimination of, the islands. The description of the possibilities is retained in this MP as a record of the consideration of such projects for potential future NEPA analysis, and to retain the possibility that future decision making would find modifications to the islands as a less damaging alternative that other solutions.

4. Chalet Replacement

The mid-mountain Chalet building is the only on-mountain food service building and is one of the oldest buildings at the resort. The building currently seats approximately 30 persons inside with deck space for 150 additional persons. Because of the attractive location, the building is overcrowded on weekends and peak holidays, resulting in service difficulties and lost potential revenue. The building's age and design preclude remodeling. To improve service to guests, this building could be replaced with a new building, in approximately the same location, or perhaps further uphill to the east, with additional indoor and outdoor seating capacity. Summer use for group activities would be a factor in the design. As part of the planning process, tree preservation, proximity to the creek and avalanche protection would be considered. Previous analysis has indicated that a barrier may be required for avalanche hazard reduction. The potential for a barrier would be a factor in the Chalet replacement planning. A new location for the chalet, closer to the existing Scott snowmaking pumphouse would also be considered as planning continues and potential avalanche hazards are studied.

5. Ice Bar Improvements

The Ice Bar provides casual snack service in the Sherwood Bowl area, remote from base area services. The building lacks indoor seating, a water supply and wastewater disposal. Replacement and expansion of the Ice Bar has been an on-going discussion with resort personnel and interested parties. Because of the location and setting of the Ice Bar, serious consideration would be given to

replacing the building and providing needed utility services. The building would be designed and sized to meet the requirements of the neighborhood.

6. Summer Uses

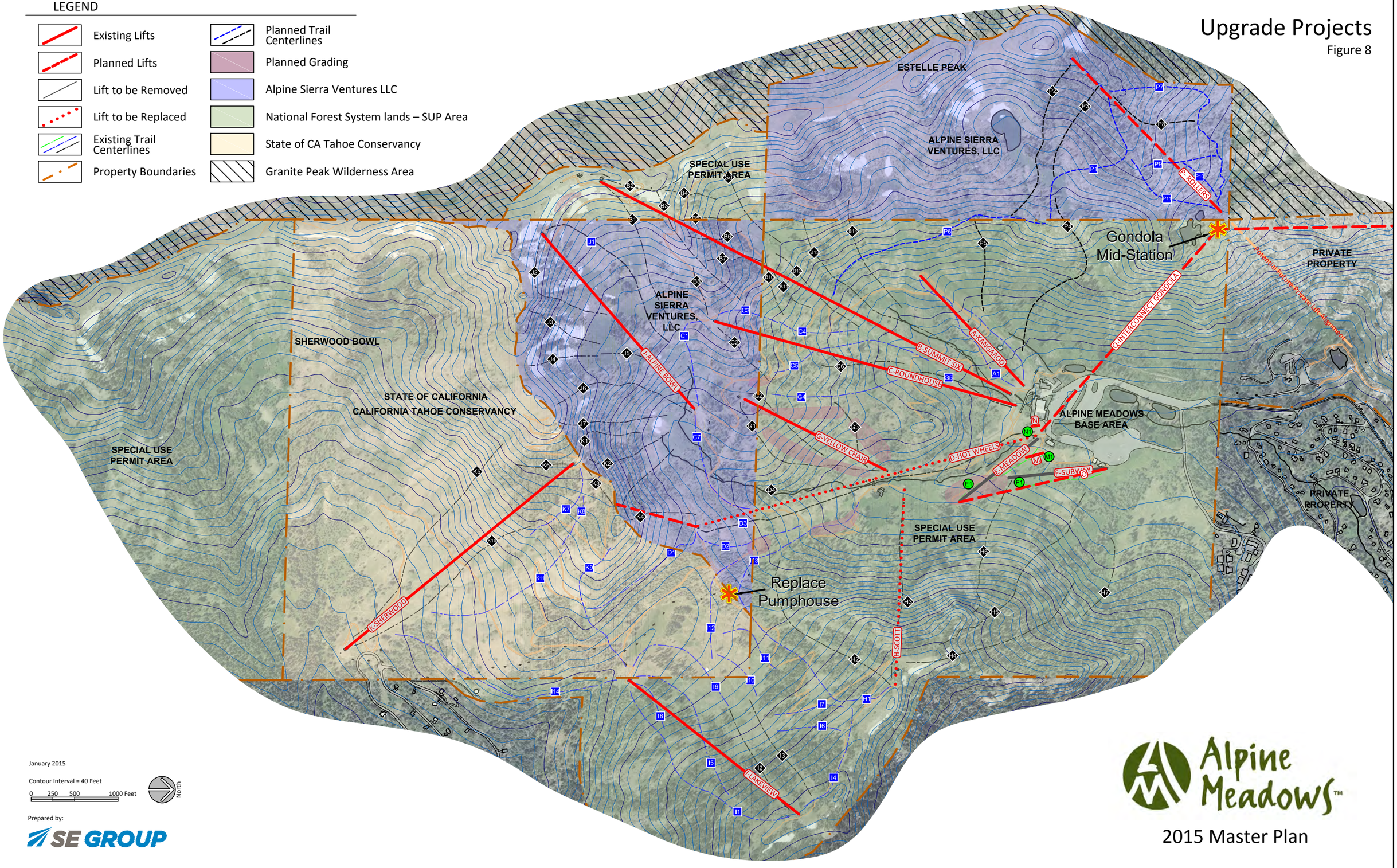
Planning for summer uses would be included in the analysis of building design and remodeling at both the base lodge and Chalet replacement. The focus would be on the use of the buildings and grounds during summer periods, rather than creation of more developed summer recreation. Additionally, there could be future interest relating to the use of the lift system for mountain biking or lift-served hiking, and the possibility of additional summer activities and attractions.

7. Lower 40 Area

The Lower 40 area is generally the area south of Chalet Road to the line of the old Lower 40 Poma lift. The area faces west with slopes of 10% to 20%. The wet meadow area that surrounds the lower terminal of the Subway Chair, and adjacent to the parking area near the Subway Building, separates any usable lands from the existing parking area. Several types of uses need additional consideration for this area. First, the area has the correct slope and size for expansion of children's skiing and overall beginner teaching areas. The main drawback to this is the distance of the area from the existing ski school, rental, and food facilities. This could be alleviated with a semi-permanent structure such as a "Sprung" structure, which is a tensioned fabric building in use at several other ski areas for this purpose. A lift could serve the terrain in approximately the same location as the original Lower 40 lift, which was removed in the 1980s. Second, the area is well suited for informal snowplay or a tubing park. The constraint on this approach is similar to the children's ski area; that is, distance to services. In addition, tubing would add increased demand on the existing parking situation, reducing the amount of parking available for skiers and riders. Additional parking could be planned on this site. The parking would be remote from the base area and lift system, and would put additional pressure on the Subway Chair. Suggestions of additional parking were not well received by the Forest Service until other opportunities had been utilized. The site is also suitable for the study of additional snowmaking pond storage. Some additional costs may be involved due to the slope of the property, but snowmaking demand may warrant more-detailed consideration. The Lower 40 area is located at the base of the Scott Peak Adventure Zone. Planning in this area could include lift service for the Adventure Zone, or to the upper portions of Scott Peak ridge. Longer-range planning includes consideration of the potential to lift service a linkage to the Deer Park area.

Upgrade Projects

Figure 8

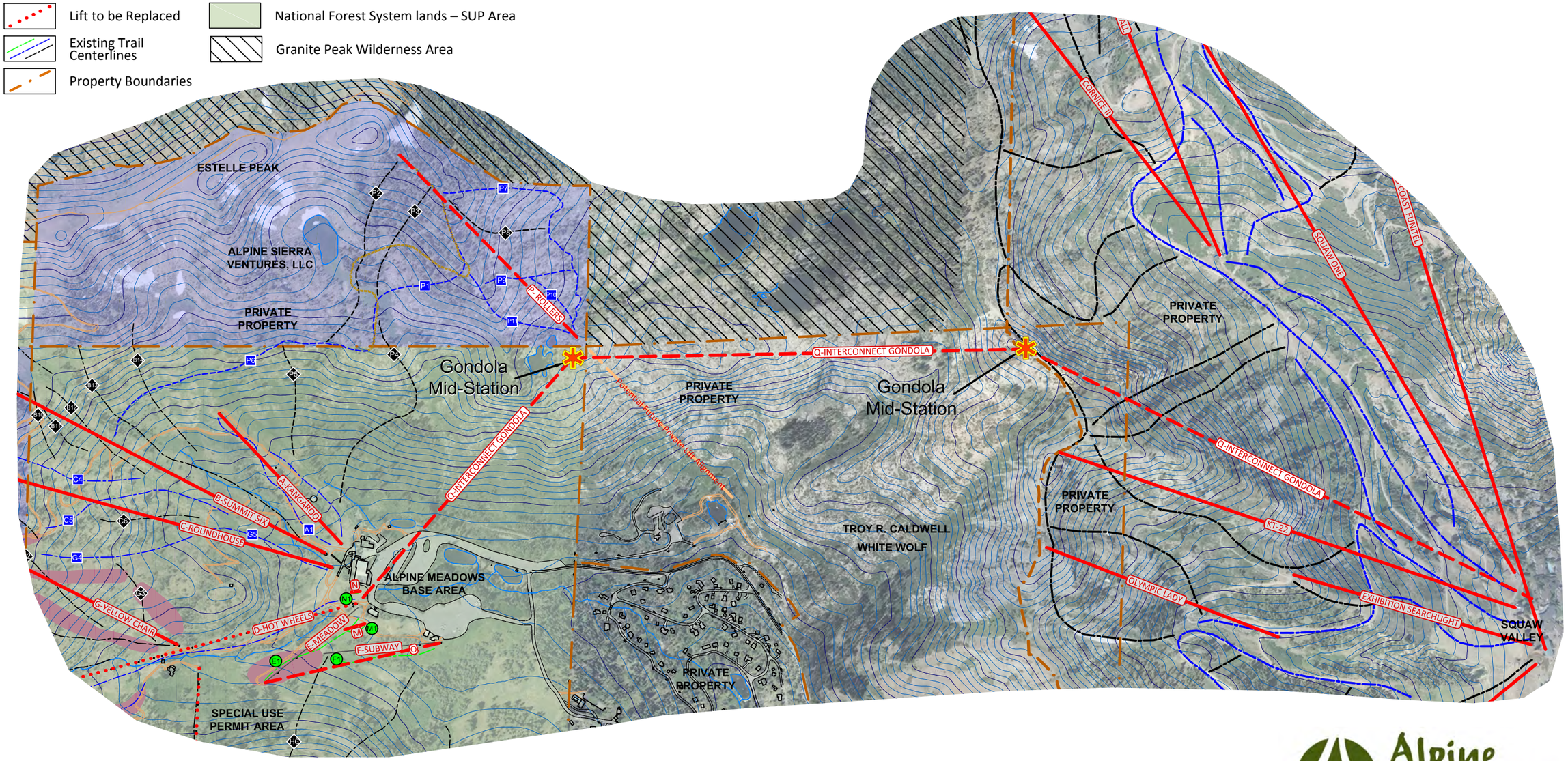


Alpine Meadows-Squaw Valley Interconnect

Figure 9

LEGEND

- Existing Lifts
- Planned Lifts
- Lift to be Removed
- Lift to be Replaced
- Existing Trail Centerlines
- Property Boundaries
- Planned Trail Centerlines
- Planned Grading
- Alpine Sierra Ventures LLC
- National Forest System lands – SUP Area
- Granite Peak Wilderness Area



January 2015

Contour Interval = 40 Feet

0 250 500 1000 Feet

North

Prepared by:

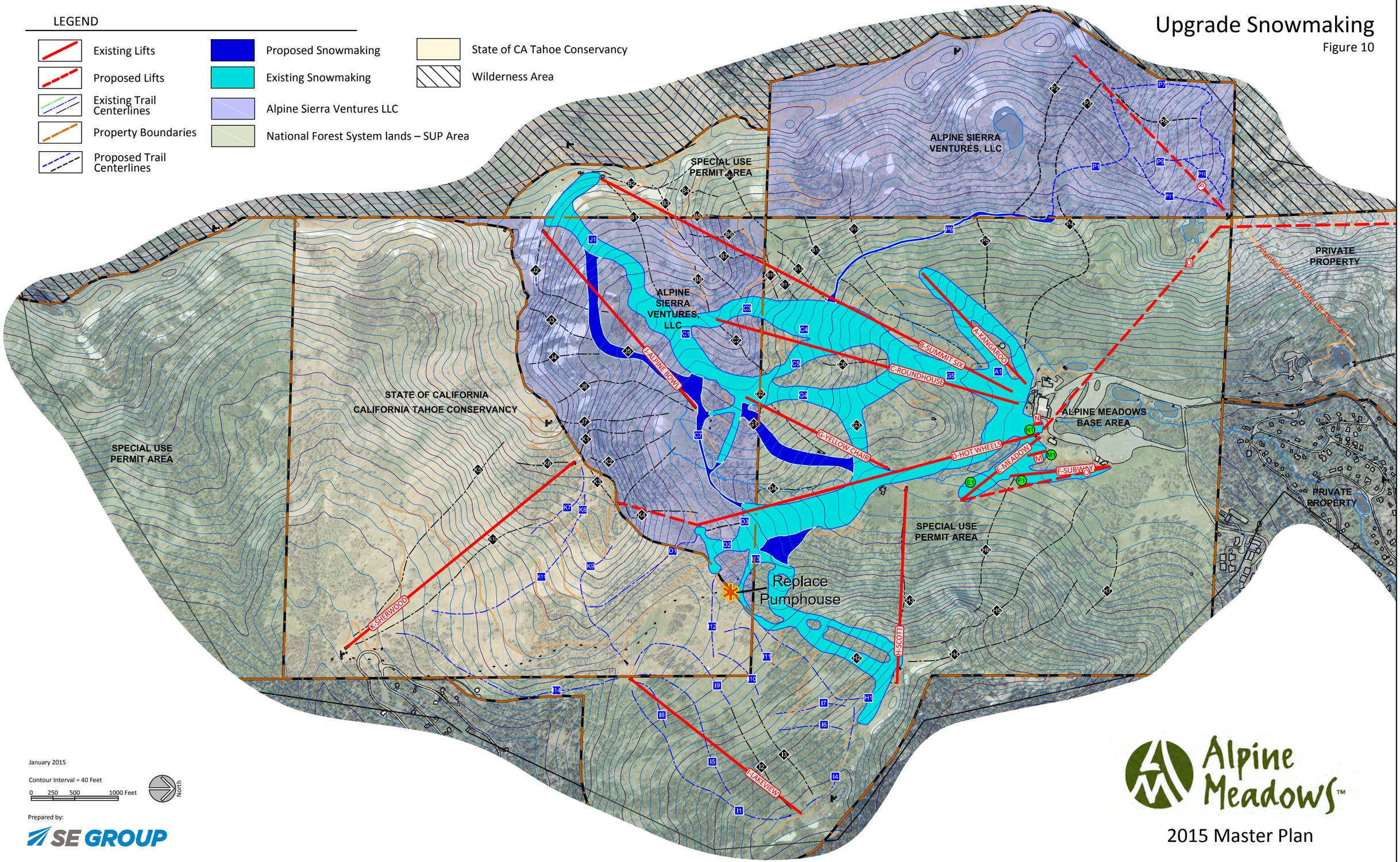
SE GROUP

Alpine Meadows™

2015 Master Development Plan

Upgrade Snowmaking

Figure 10



VI. GLOSSARY

Ability Level: The relative rank of a skier or snowboarder, or the relative rank given to alpine terrain. The six ability levels relied upon by SE Group are as follows: beginner, novice, low intermediate, intermediate, advanced, and expert.

Acre foot: The amount of water necessary to cover 1 acre to a depth of 1 foot, equals 43,560 cubic feet or 325,851 gallons.

Active Skiers and Snowboarders: Skiers and snowboarders are considered active if they are: (1) waiting in a lift line, (2) riding a lift, or (3) enjoying a downhill descent. Depending primarily upon weather and snow conditions, 70 to 85% of a resort's skiers and snowboarders are active. The remaining 15 to 30% of a resort's skiers and snowboarders are either using a resort's support facilities and amenities or are circulating in a resort's various staging and milling areas. These guests are considered non-active.

Best Management Practices (BMPs): Methods, measures, and practices specifically adopted for local conditions that deal effectively and practically with a given problem. BMPs include, but are not limited to, construction practices, structural and nonstructural controls, operations protocol, and maintenance procedures.

Cabin: An enclosed or semi-enclosed compartment used for transporting skiers and snowboarders. The term cabin is commonly used in aerial tramway discussions, whereas the term chair is used to reference the carrier relied upon by fixed-grip and detachable grip chairlifts.

Comfortable Carrying Capacity (CCC): Comfortable Carrying Capacity is a planning tool used to determine the optimum level of utilization that facilitates a pleasant recreational experience. This is a planning figure only and does not represent a regulatory cap on visitation. CCC is used to ensure that different aspects of a resort's facilities are designed to work in harmony, that capacities are equivalent across facilities, and sufficient to meet anticipated demand. CCC is based on factors such as vertical transport and trail capacities.

Conveyor Lift: A conveyor is a type of surface lift used to transport passengers in a standing position. Passengers slide onto the belt at the base of the conveyor and remain standing on the moving belt to the top, where they slide off the belt onto the snow. They are the easiest, least threatening form of lift, and as such are ideal for first-time beginner skiers or snowboarders, children's ski school, and tubing. Typically installed at snow level, the machinery and return belt are

located below the surface. Options include covers or enclosures and raised sections. Maximum speed is 200 feet per minute and maximum (practical) length is around 1,000 feet.

Cubic Foot Per Second (cfs): The unit used to measure stream flow or similar discharge. One cfs is equivalent to 449 gallons per minute, or approximately 2 acre feet per day.

Day-Use Skier/Snowboarder: Generally speaking, a skier or snowboarder that lives within the resort's day-use skier/snowboarder market. Given normal road and weather conditions, the day skier/snowboarder market is defined as the geographic area found within a 100-mile radius, or two-hour drive, of the resort. Day-use skiers and snowboarders drive to the resort and park in day-use lots.

Destination Skier/Snowboarder: Generally speaking, a skier or snowboarder that resides beyond a 250-mile, or five-hour, drive from the resort. On average, destination skiers and snowboarders stay at a resort for longer periods of time (i.e., ranging from three to seven days) and commonly comprise a majority of a resort's mid-week visitation. Destination skiers/snowboarders typically rely upon air travel and shuttle service for transport to the resort, and obligate overnight lodging and numerous other resort amenities.

Detachable Grip Chairlift: An aerial tramway system on which chairs circulate around the system—alternately attaching and detaching from a moving haul rope. Chairlift detachment occurs at the lower and upper terminals for ease of lift loading and unloading.

Developed Trail Network: The trails and other named terrain delineated on a resort's trail map. In addition to traditional trail corridors, the network might include named and patrolled bowls, glades, chutes, couloirs, hike-to areas, and tree skiing/snowboarding areas.

Express Lift: A chairlift that is comprised of detachable grip technology and the rope typically moves at a faster speed than fixed grip chairlifts. Also see Detachable Grip Chairlift.

Fall-Line: The path an object would naturally take as it descends a slope under the influence of gravity. Fall-line paths indicate the natural flow of potential trails, from the top of ridges to the elevations below. Fall-line terrain allows skiers and snowboarders to make equally weighted, left and right turns.

Fixed-Grip Chairlift: An aerial tramway system on which chairs remain attached to a haul rope.

Food Service Seat Turnover Rate: The turnover rate is used to evaluate a resort's aggregate food service seating capacity. The turnover rate is the estimated number of times a food service seat is used during a resort's peak food service operations. Sit-down dining at a resort lodge typically has a turnover rate of 3, while cafeteria-style dining is characterized by a turnover rate in the range of 4

to 5. In addition to the type of food service, a resort's climate also impacts turnover rate (i.e., cold and snowy climates have lower turnover rates).

Forest Plan: A comprehensive management plan prepared under the National Forest Management Act of 1976 that provides standards and guidelines for management activities specific to each National Forest.

Glades: are trees stands that have been thinned specifically in varying degrees to improve the skiing experience by increasing the spacing between individual trees. Stands with less thinning are sometimes described as "Tree Skiing" areas. Stands with tree clearing to the extent that they can be groomed are described as "Groomable Glades."

Glading: The removal of up to 10 percent to 40 percent of a slope's trees, which enables a tree stand to be skied or rode by a larger percentage of a resort's guests.

Gradient: The vertical distance divided by the horizontal distance (i.e., commonly known as "rise over run"), which is measured as a percent, or a degree. Slope gradient is used to determine the ability level distribution of a resort's alpine terrain.

Grooming: The preparation and smoothing of the developed trail network's snow surface, using large over-the-snow vehicles (commonly referred to as "snow cats" or "grooming machines"). Grooming machines are equipped with front-mounted blades to push snow and a rear-mounted implement to flatten and/or till the snow to an improved consistency.

Guest Services Facilities or Guest Services: Facilities or services that are supplied by a resort to accommodate guests and enhance the quality of the recreational experience. Examples of guest services facilities include: restaurants, warming huts, general information desks, resort lost and found departments, restrooms and lounges, ski school, daycare, public lockers and ski-check facilities, ski patrol, first aid clinics, etc.

Halfpipe: A channel constructed in the snow, ranging from 75 to 400 feet long, with consistent 6- to 12-foot walls on both sides. The walls of the channel are contoured from horizontal to vertical and the bottom of the channel is generally flat.

Management Area: Used by the Forest Plan to define where different management activities may be carried out and to show where different kinds of public uses occur.

Maze: A waiting area used to line up skiers and snowboarders just prior to lift loading (i.e., the corral area immediately adjacent to the loading point of the lift).

Mitigation: Actions taken to avoid, minimize, or compensate for adverse environmental impacts.

Morning Access Capacity: The resort's capacity to carry skiers and snowboarders to other, up-mountain lifts within an acceptable time frame. By comparing the aggregate staging requirement for each access lift to the access lift's uphill access capacity, the length of the access period for each access lift can be determined. Per industry standards, a destination resort should have dedicated access lifts (with sufficient hourly capacities) that supply the resort's up-mountain lifts with guests (numbers commensurate with lift hourly capacities) within an access period ranging from 90 to 120 minutes.

Mountain Work Roads: On-mountain primary and secondary roads that provide summertime access (for rubber tire vehicles) to all mountain buildings and lift terminal locations.

National Environmental Policy Act of 1969 (NEPA): A law enacted by Congress in 1969 that requires federal agencies to analyze the environmental effects of all major federal activities that may have a significant impact on the quality of the human environment.

National Forest System (NFS) lands: National Forests, National Grasslands, and other related lands for which the Forest Service is assigned administrative responsibility.

Off Fall-Line: The path an object takes as it crosses the fall-line slope. Off fall-line terrain compels skiers and snowboarders to make alternating long and short turns (turns that are not equally weighted) in order to accommodate the off fall-line condition. In some instances, and if properly designed, off fall-line terrain can be enjoyable to snowboarders.

Off-Piste: Alpine terrain not associated with a named and maintained ski trail.

Pod: A delineated parcel of land that, due to its favorable terrain characteristics, is suitable for lift and trail development. Pods are areas of relatively consistent terrain (both slope gradient and fall-line) that may be serviced by one or more lifts and may be easily integrated into the existing skier and snowboarder circulation patterns.

Prominent Ridge: The line of separation (i.e., a divide) between drainage basins.

Quad: A common abbreviation for a four-passenger chairlift.

Quarterpipe: A channel constructed in the snow the same as a halfpipe, but consisting of one wall instead of two. It may be shorter in length than a halfpipe and may face downhill or across the fall-line.

Round-Trip Interval (RTI): The round-trip interval represents the aggregate time spent waiting in the lift line, riding the lift, and skiing or riding a particular trail of the lift. The RTI is used to calculate the number of runs an average skier/snowboarder is expected to take on a particular lift

over the course of a day. Ultimately, the RTI is used to calculate the daily vertical demand of an average skier/snowboarder.

Shoulder Seasons: Generally speaking, the spring and fall seasons.

Ski-In/Ski-Out Lodging: Overnight accommodations that are so close to the slopes that guests can conveniently ski, ride, or walk to the resort. Also referred to as slopeside lodging, the prevalence of this type of lodging is considered when a resort's parking and guest drop-off areas are sized.

Skier/Snowboarder Circulation Analysis: An on-slope survey in which skier and snowboarder circulation characteristics are recorded for the full spectrum of ability levels. The on-slope survey is performed for each lift, yielding an accurate determination of the lift's average RTI and Alpine CCC.

Skiway: A trail that allows skiers and snowboarders to traverse the mountain and avoid additional chairlift rides. Skiways, or traverses, are also used in pods of intermediate, advanced intermediate, and expert terrain to provide an appropriate descent for guests of beginner and novice ability levels. A skiway is typically designed to maintain an average slope gradient of 10%.

Special Use Permit (SUP): A legal document, similar to a lease, issued by the U.S. Forest Service. These permits are issued to private individuals or corporations to conduct commercial operations on National Forest System lands. They specify the terms and conditions under which the permitted activity may be conducted.

Staging: An area, or zone, where guests assemble and are prepared for a particular recreational pursuit. Examples of staging areas include milling and maze areas, check-in and guest drop-off areas, plazas, etc.

Surface Lift: A lift on which passengers are propelled by means of a circulating overhead wire rope while remaining in contact with the snow surface. Connection between the overhead wire and the passenger is by means of a towing device (e.g., T-bar, J-bar, platter, etc.) attached and circulating with the lift's haul rope. (Note: For definitional purposes, conveyor and belt lifts are considered surface lifts.)

Target Trail Density: The number of skiers and snowboarders that can slide on an acre of trail at any given time without causing uncomfortable crowding on the trail. Acceptable trail density is measured in skiers and snowboarders per acre. As a general rule, the difficulty of the trail and acceptable trail density share an inverse relationship.

Terrain Park: An area dedicated to the development and maintenance of a collection of alternative terrain features, which may include, but is not limited to, elements like halfpipes, quarterpipes, big air hits, ollies, spines, jibbing elements, barrel bonks, table tops, etc.

Trail Density Per Acre: The number of skiers and snowboarders that occupy an acre of trail at any one given time. Trail density is reported in a persons-per-acre ratio.

Uphill Hourly Capacity: A calculation of the number of skiers and snowboarders transported—per hour—from the lower to the upper terminal of the lift. A resort's combined uphill hourly capacity is the aggregation of the resort's individual lift capacities.

Utilization Rate: A comparison of a resort's actual annual skier visits to the theoretical annual ski area design capacity. Calculated by dividing the actual annual visitation by a number that represents the theoretical annual design skier capacity, which is obtained by multiplying the resort's CCC by the number of operating days. Typical utilization rates vary from 25% to 55% (depending on market niche, geographical location, etc.).

Vertical Demand: The vertical demand of a lift is the by-product of the lift's vertical rise, the average round-trip interval (i.e., number of runs per hour), and the number of hours the lift is used by an average skier or snowboarder. In short, vertical demand is the product of the lift's vertical rise and the number of runs skied/rode in a day of typical operation.

Vertical Transport Feet per Hour (VTF/hr.) (000): The number of persons a lift is able to transport 1,000 vertical feet in one hour. VTF/hour is derived by multiplying a lift's uphill capacity (measured in persons per hour) by the lift's vertical rise (measured in feet) and dividing by 1,000.