# III. DEVELOPMENT ANALYSIS

The purpose of the Development Analysis section is to blend the information and/or constraints identified in the Inventory section with acceptable ski industry planning and design parameters. Specifically, the constraints imposed by climate, surficial geology, topographic features, natural hazards, forest cover, existing development and visual quality objectives have "shrunk" the overall size and development potential of the area.

## .1 Mountain Planning Parameters

In order to determine the potential skier carrying capacity of the terrain within the Sun Valley study area, we will utilize the planning parameters established in the Inventory section of this report, and listed in Table III.1.

**TABLE III.1**
**SUN VALLEY**
**PLANNING PARAMETERS**

| Skill Classification | Skill Mix | Acceptable Terrain Gradients | Skier Demand VTF/Day | Skier Densities (Skiers/Acre) At Area | On Slope |
|---|---|---|---|---|---|
| 1 Beginner | 5 % | 8 – 15% | 3,090 | 20 | 8 |
| 2 Novice | 10% | 15 – 25% | 6,950 | 20 | 8 |
| 3 Low Intermediate | 20% | 25 – 35% | 9,270 | 16 | 6 |
| 4 Intermediate | 30% | 30 – 40% | 12,360 | 16 | 6 |
| 5 High Intermediate | 20% | 35 – 45% | 16,680 | 12 | 5 |
| 6 Advanced | 10% | 45 – 60% | 19,460 | 6 | 3 |
| 7 Expert | 5% | 60% + | 27,800 | 8 | 4 |

## .2 Mountain Design Analysis

Accurate topographic mapping is a prerequisite for good mountain planning. During the technical assessment phase, the planning team utilized new topographic mapping at a scale of 1" = 400' with 5-foot contour intervals of Bald Mountain and 1" = 200' of Dollar Mountain. The Bald Mountain slope map encompasses approximately 10,950 acres, while the Dollar Mountain slope map encompasses approximately 1,040 acres. Figure 10 illustrates the Fall Line Analysis for Bald Mountain and Figure 11 illustrates the Fall Line Analysis for Dollar Mountain.

Utilizing the provided topographic mapping, the most critical analysis map for the ski area design and evaluation process was prepared: the Slope Analysis Map (Figures 12a and 13a for Bald and Dollar Mountain, respectively). The Slope Analysis Map delineates the areas that can be negotiated by the various skier ability levels, as well as areas that are considered too flat or too steep for skiing and snowboarding.

The natural slope gradients were carefully measured and color-coded into the following five classifications:

| Slope Gradients | Color | Type of Skiing |
|---|---|---|
| 0 - 8% | white | flats, marginal skiing |
| 8 - 25% | green | beginner and novice skiing |
| 25 - 45% | yellow | intermediate skiing |
| 45 - 70% | blue | advanced and expert skiing |
| 70% + | red | unskiable, safety zones |

These maps were then utilized in the evaluation of the terrain and play a critical role in developing conceptual alternatives.

## .3 Terrain Capacity Analysis

We have analyzed the natural terrain within the Bald Mountain and Dollar Mountain study areas which possesses good ski potential, to accurately establish the area's overall ski development potential. The Terrain Capacity Analysis Map (Figures 12a and 13a) graphically illustrates major terrain “pods” within the study area on both mountains which possess good potential for ski development. The pods were selected by consulting the Slope Analysis Map and observing the following criteria:

- continuous fall line skiing from top to bottom
- suitable upper and lower lift terminal locations (e.g., 0.5 acres less than 25 percent slope)
- good slope continuity to allow interesting skiing from top to bottom for one or more skier ability levels
- natural slope gradients primarily greater than eight percent and less than 70 percent

Within each terrain pod, the upper and lower points are joined to establish the total vertical rise, horizontal distance, straight line slope and steepest 100-foot vertical pitch. The total pod area was calculated and major unskiable areas (slopes greater then 70 percent, local knolls, etc.) subtracted. The above data comprises the inputs to our ski terrain capacity computer program. The final program input is a judgement which identifies the “primary” skier skill classification for each terrain pod. The program outputs are as follows:

**SKI TERRAIN** - net developable ski terrain within the pod. Set at 35 percent of the useable terrain within the pod to maintain Visual Quality Objectives (VQO).

**TOTAL SKIERS** - in pod at acceptable skier densities.

**DEMAND VTF (000)** - vertical transport feet required to service the total skiers.

**LIFT CAPACITY/HR.** - the net hourly lift capacity necessary to maximize the development of each pod.

The Terrain Capacity Analysis Map and program printouts provide a reliable indication of the maximum development potential of each pod and the lift capacity necessary to balance with the terrain.

Bald Mountain

The terrain within the Bald Mountain study area (inside and outside of the existing Permit Area) is comprised of 15 pods suitable for ski development, covering 2,497 acres. These pods have a potential of supporting approximately 11,740 skiers on 1,273 acres of developed terrain at the design densities previously shown in Table III.1. Table III.2 lists the technical specification for the pods both inside and outside of the existing Bald Mountain ski facility permit area.

*Warm Springs and Guyer Ridge Terrain*

**TABLE III.2**
**BALD MOUNTAIN**
**TERRAIN CAPACITY ANALYSIS**

| Terrain Pod | A | B | C | D | E | F | G | H | I | J | K |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Top Elevation (ft.) | 8,700 | 8,680 | 9,020 | 9,140 | 9,020 | 9,020 | 7,480 | 7,720 | 9,000 | 8,080 | 9,020 |
| Bottom Elevation (ft.) | 6,320 | 7,380 | 7,980 | 7,520 | 7,440 | 7,460 | 6,620 | 6,040 | 6,360 | 6,600 | 5,912 |
| Total Vertical (ft.) | 2,380 | 1,300 | 1,040 | 1,620 | 1,580 | 1,560 | 860 | 1,680 | 2,640 | 1,480 | 3,108 |
| Horizontal Distance (ft.) | 6,037 | 3,768 | 2,184 | 3,207 | 3,253 | 3,975 | 2,981 | 4,294 | 6,657 | 3,726 | 7,851 |
| Slope Distance (ft.) | 6,489 | 3,986 | 2,419 | 3,593 | 3,616 | 4,270 | 3,103 | 4,611 | 7,161 | 4,009 | 8,444 |
| Average Slope % | 39% | 35% | 48% | 51% | 49% | 39% | 29% | 39% | 40% | 40% | 40% |
| Skill Class | 7 | 4 | 5 | 6 | 7 | 6 | 5 | 7 | 6 | 5 | 5 |
| Skier Density/Acre | 8 | 16 | 12 | 6 | 8 | 6 | 12 | 8 | 6 | 12 | 12 |
| VTF Demand/Day | 27,800 | 12,360 | 16,680 | 19,460 | 27,800 | 19,460 | 16,680 | 27,800 | 19,460 | 16,680 | 16,680 |
| Total Area (Ac.) | 247.1 | 232.0 | 87.5 | 171.3 | 293.6 | 74.6 | 96.9 | 287.6 | 297.6 | 132.4 | 190.1 |
| % Ski Terrain Developable | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% | 50% |
| Available Ski Terrain | 123.6 | 116.0 | 43.7 | 85.6 | 146.8 | 37.3 | 48.4 | 143.8 | 148.8 | 66.2 | 95.0 |
| **Total Skiers** | **990** | **1,860** | **520** | **510** | **1,170** | **220** | **580** | **1,150** | **890** | **790** | **1,140** |
| **Zonal Skiers** | | | | | | | | | | | **9,820** |
| Demand VTF (000) | 4,369 | 3,649 | 1,377 | 1,575 | 5,163 | 680 | 1,536 | 5,075 | 2,749 | 2,092 | 3,018 |
| Required Lift Capacity/Hr | 1,836 | 2,807 | 1,324 | 972 | 3,268 | 436 | 1,786 | 3,021 | 1,041 | 1,413 | 971 |

**TABLE III.2 - CONTINUED**
**BALD MOUNTAIN**
**TERRAIN CAPACITY ANALYSIS**

| Terrain Pod | L | M | N | O | TOTAL |
|---|---|---|---|---|---|
| Top Elevation (ft.) | 8,420 | 8,500 | 9,140 | 9,040 | |
| Bottom Elevation (ft.) | 5,900 | 8,140 | 7,660 | 7,080 | |
| Total Vertical (ft.) | 2,520 | 360 | 1,480 | 1,960 | 25,568 |
| Horizontal Distance (ft.) | 6,543 | 1,892 | 4,087 | 3,690 | |
| Slope Distance (ft.) | 7,012 | 1,926 | 4,347 | 4,178 | 69,164 |
| Average Slope % | 39% | 19% | 36% | 53% | |
| Skill Class | 6 | 2 | 5 | 6 | |
| Skier Density/Acre | 6 | 20 | 12 | 6 | |
| VTF Demand/Day | 19,460 | 6,950 | 16,680 | 19,460 | |
| Total Area (Ac.) | 133.3 | 56.3 | 125.7 | 71.3 | 2,497.0 |
| % Ski Terrain Developable | 50% | 50% | 50% | 50% | |
| Available Ski Terrain | 66.7 | 28.1 | 62.9 | 35.7 | 1,248.6 |
| **Total Skiers** | **400** | **560** | **750** | **210** | **11,740** |
| **Zonal Skiers** | | **960** | | **960** | |
| Demand VTF (000) | 1,236 | 618 | 1,986 | 649 | |
| Required Lift Capacity/Hr | 490 | 1,716 | 1,342 | 331 | 22,753 |

The Terrain Pod Balance Statement for the terrain within the existing Bald Mountain permit area is shown in Table III.3. The eleven pods (A-K) contained within the permit area cover total of 2,110 acres and have the potential to service approximately 9,820 skiers on 1,055 acres of trails. Plate III.1 illustrates that the skill level distribution of the natural terrain is heavily skewed toward the higher skill classes, with a total lack of terrain in the lower skill classes.

**TABLE III.3**
**BALD MOUNTAIN - INSIDE PERMIT AREA (PODS A-K)**
**TERRAIN BALANCE**

| Skill Classification | Acres | Skiers | Balance | Ideal |
|---|---|---|---|---|
| 1 Beginner | 0.0 | 0 | 0.0% | 5% |
| 2 Novice | 0.0 | 0 | 0.0% | 10% |
| 3 Low Intermediate | 0.0 | 0 | 0.0% | 20% |
| 4 Intermediate | 116.0 | 1,860 | 18.9% | 30% |
| 5 High Intermediate | 253.3 | 3,030 | 30.9% | 20% |
| 6 Advanced | 271.7 | 1,620 | 16.5% | 10% |
| 7 Expert | 414.2 | 3,310 | 33.7% | 5% |
| **Total** | **1,055.2** | **9,820** | **100%** | **100%** |

| | | |
|---|---|---|
| Optimum Density = | 9.7 | Skiers/Acre |
| Weighted Demand = | 17,257 | VTF/Skier/Day |

**BALD MOUNTAIN - INSIDE PERMIT AREA**
**TERRAIN BALANCE**

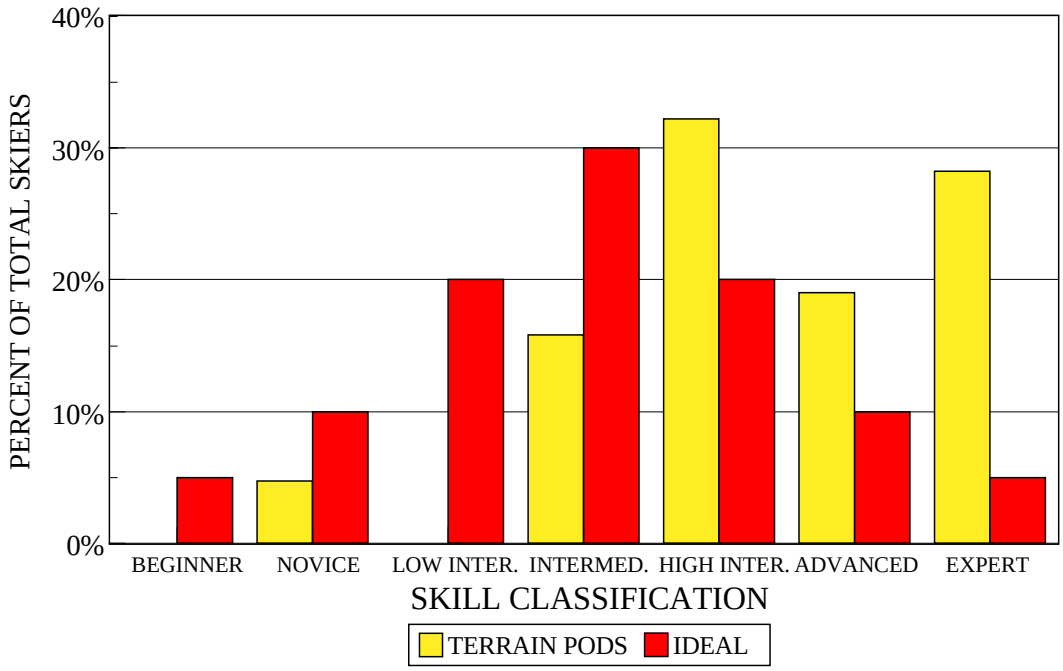


**PLATE III.1**

The Terrain Pod Balance Statement for the total Bald Mountain study area (Table III.4 and Plate III.2) documents that the skill level distribution of the natural terrain is unbalanced with respect to the ideal skier skill level distribution. The Bald Mountain study area has a shortage of beginner, novice, low intermediate and intermediate, and a significant surplus of terrain in the higher skill levels.

**TABLE III.4**
**BALD MOUNTAIN - TOTAL STUDY AREA (PODS A-O)**
**TERRAIN BALANCE**

| Skill Classification | Acres | Skiers | Balance | Ideal |
|---|---|---|---|---|
| 1 Beginner | 0.0 | 0 | 0.0% | 5% |
| 2 Novice | 28.1 | 560 | 4.8% | 10% |
| 3 Low Intermediate | 0.0 | 0 | 0.0% | 20% |
| 4 Intermediate | 116.0 | 1,860 | 15.8% | 30% |
| 5 High Intermediate | 316.2 | 3,780 | 32.2% | 20% |
| 6 Advanced | 374.1 | 2,230 | 19.0% | 10% |
| 7 Expert | 414.2 | 3,310 | 28.2% | 5% |
| **Total** | **1,248.6** | **11,740** | **100%** | **100%** |

| | | |
|---|---|---|
| Optimum Density = | 10.2 | Skiers/Acre |
| Weighted Demand = | 16,843 | VTF/Skier/Day |

**BALD MOUNTAIN - TOTAL STUDY AREA**
**TERRAIN BALANCE**

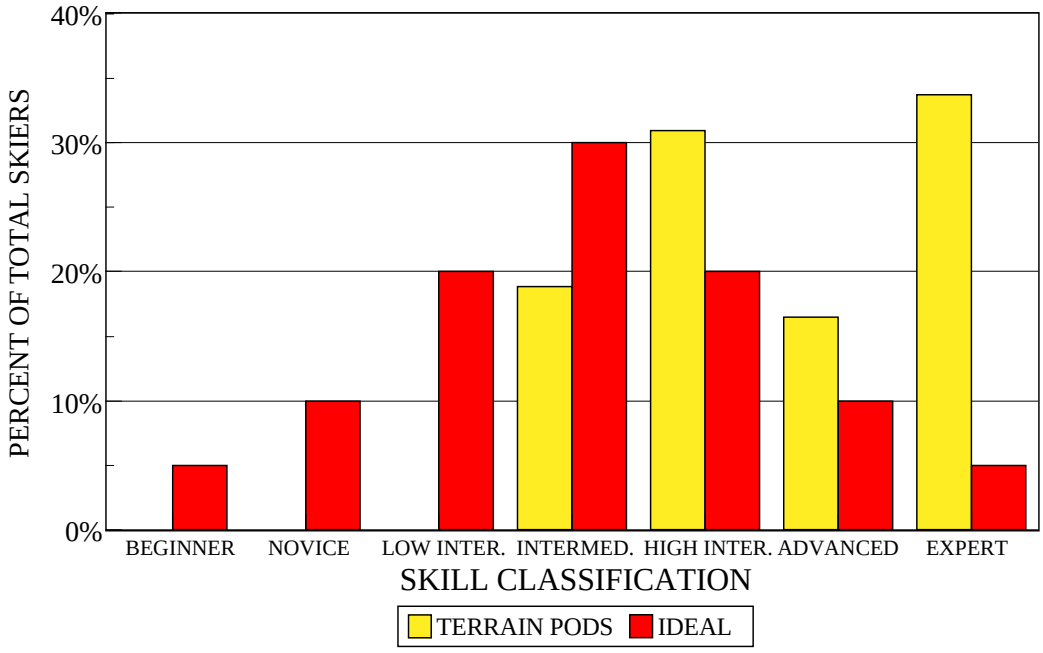


**PLATE III.2**

## Dollar Mountain

The terrain within the Dollar Mountain study area contains 14 pods suitable for ski development, covering 258 acres. These pods have a potential of supporting approximately 2,210 skiers on 140 acres of developed terrain at the design densities shown in Table III.1. Table III.5 lists the technical specification and capacities of each pod at Dollar Mountain.

**TABLE III.5**
**DOLLAR MOUNTAIN**
**TERRAIN CAPACITY ANALYSIS**

| **Terrain Pod** | **A** | **B** | **C** | **D** | **E** | **F** | **G** | **H** | **I** | **J** | **K** | **L** | **M** | **N** | **TOTAL** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Top Elevation (ft.) | 6,120 | 6,099 | 6,125 | 6,107 | 6,637 | 6,609 | 6,583 | 6,550 | 6,354 | 6,643 | 6,145 | 6,457 | 6,505 | 6,505 | |
| Bottom Elevation (ft.) | 5,952 | 5,935 | 5,945 | 5,858 | 6,102 | 6,025 | 6,127 | 6,140 | 5,985 | 5,990 | 5,980 | 6,080 | 6,115 | 6,050 | |
| Total Vertical (ft.) | 168 | 164 | 180 | 249 | 535 | 584 | 456 | 410 | 369 | 653 | 165 | 377 | 390 | 455 | 5,155 |
| Horizontal Distance (ft.) | 1,330 | 1,050 | 870 | 730 | 1,460 | 1,760 | 1,530 | 1,170 | 1,400 | 1,700 | 1,350 | 1,240 | 1,770 | 1,790 | |
| Slope Distance (ft.) | 1,341 | 1,063 | 888 | 771 | 1,555 | 1,854 | 1,597 | 1,240 | 1,448 | 1,821 | 1,360 | 1,296 | 1,812 | 1,847 | 19,893 |
| Average Slope % | 13% | 16% | 21% | 34% | 37% | 33% | 30% | 35% | 26% | 38% | 12% | 30% | 22% | 25% | |
| Skill Class | 1 | 2 | 3 | 2 | 3 | 3 | 3 | 4 | 4 | 6 | 1 | 4 | 3 | 4 | |
| Skier Density/Acre | 20 | 20 | 16 | 20 | 16 | 16 | 16 | 16 | 16 | 6 | 20 | 16 | 16 | 16 | |
| VTF Demand/Day | 3,090 | 6,950 | 9,270 | 6,950 | 9,270 | 9,270 | 9,270 | 12,360 | 12,360 | 19,460 | 3,090 | 12,360 | 9,270 | 12,360 | |
| Total Area (Ac.) | 8.9 | 12.7 | 13.4 | 3.3 | 15.9 | 35.0 | 31.0 | 33.0 | 9.5 | 26.9 | 6.8 | 17.9 | 18.4 | 25.7 | 258.3 |
| % Ski Terrain Developable | 80% | 65% | 65% | 80% | 50% | 50% | 50% | 50% | 65% | 50% | 80% | 50% | 50% | 50% | |
| Available Ski Terrain | 7.1 | 8.3 | 8.7 | 2.6 | 7.9 | 17.5 | 15.5 | 16.5 | 6.2 | 13.4 | 5.5 | 8.9 | 9.2 | 12.9 | 140.2 |
| **Total Skiers** | **140** | **170** | **140** | **50** | **130** | **280** | **250** | **260** | **100** | **80** | **110** | **140** | **150** | **210** | **2,210** |
| **Zonal Skiers** | | | | | | | | **1,420** | | | | | | **790** | |
| Demand VTF (000) | 69 | 188 | 206 | 55 | 191 | 412 | 368 | 510 | 196 | 247 | 54 | 275 | 221 | 412 | |
| Required Lift Capacity/Hr | 409 | 1,144 | 1,144 | 222 | 358 | 705 | 807 | 1,244 | 532 | 378 | 327 | 729 | 566 | 905 | 9,469 |

*Dollar Mountain Terrain*

The Terrain Pod Balance Statement for the terrain within the Dollar Mountain study area is shown in Table III.6. Plate III.3 illustrates that the skill level distribution of the natural terrain is heavily skewed toward the lower skill classes, with a total lack of terrain in the higher skill classes.

**TABLE III.6**
**DOLLAR MOUNTAIN**
**TERRAIN BALANCE**

| Skill Classification | Acres | Skiers | Balance | Ideal |
|---|---|---|---|---|
| 1 Beginner | 12.6 | 250 | 11.3% | 5% |
| 2 Novice | 10.9 | 220 | 10.0% | 10% |
| 3 Low Intermediate | 58.8 | 950 | 43.0% | 20% |
| 4 Intermediate | 44.5 | 710 | 32.1% | 30% |
| 5 High Intermediate | 0.0 | 0 | 0.0% | 20% |
| 6 Advanced | 13.4 | 80 | 3.6% | 10% |
| 7 Expert | 0.0 | 0 | 0.0% | 5% |
| **Total** | **140.2** | **2,210** | **100%** | **100%** |

| | | |
|---|---|---|
| Optimum Density = | 16.5 | Skiers/Acre |
| Weighted Demand = | 9,702 | VTF/Skier/Day |

**DOLLAR MOUNTAIN**
**TERRAIN BALANCE**

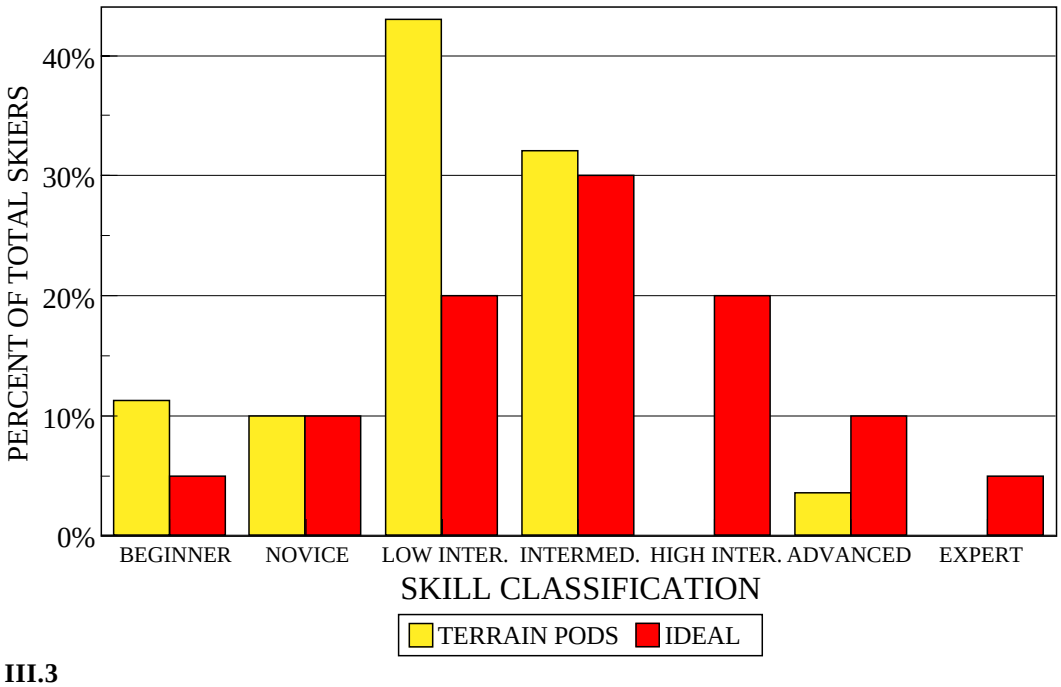


**PLATE III.3**

The Terrain Pod Balance Statement for the total Sun Valley skiing terrain, including terrain within both the Bald Mountain and Dollar Mountain study areas is listed in Table III.7. Plate III.4 documents that the skill level distribution of the natural terrain of these two adjacent mountains is fairly well balanced with respect to the ideal skier skill level distribution. This is due to the combination of the lower end terrain at Dollar, and the mid and upper skill class terrain at Bald Mountain. However, even when combined, the overall balance shows excesses of terrain in the higher skill classes from high intermediate to expert.

**TABLE III.7**
**BALD MOUNTAIN AND DOLLAR MOUNTAIN - COMBINED STUDY AREAS**
**TERRAIN BALANCE**

| Skill Classification | Acres | Skiers | Balance | Ideal |
|---|---|---|---|---|
| 1 Beginner | 12.6 | 250 | 1.8% | 5% |
| 2 Novice | 39.0 | 780 | 5.6% | 10% |
| 3 Low Intermediate | 58.8 | 950 | 6.8% | 20% |
| 4 Intermediate | 160.5 | 2,570 | 18.4% | 30% |
| 5 High Intermediate | 316.2 | 3,780 | 27.1% | 20% |
| 6 Advanced | 387.5 | 2,310 | 16.6% | 10% |
| 7 Expert | 414.2 | 3,310 | 23.7% | 5% |
| **Total** | **1,388.8** | **13,950** | **100%** | **100%** |

| | | |
|---|---|---|
| Optimum Density = | 11.2 | Skiers/Acre |
| Weighted Demand = | 15,712 | VTF/Skier/Day |

**BALD MOUNTAIN AND DOLLAR MOUNTAIN - COMBINED STUDY AREAS**
**TERRAIN BALANCE**

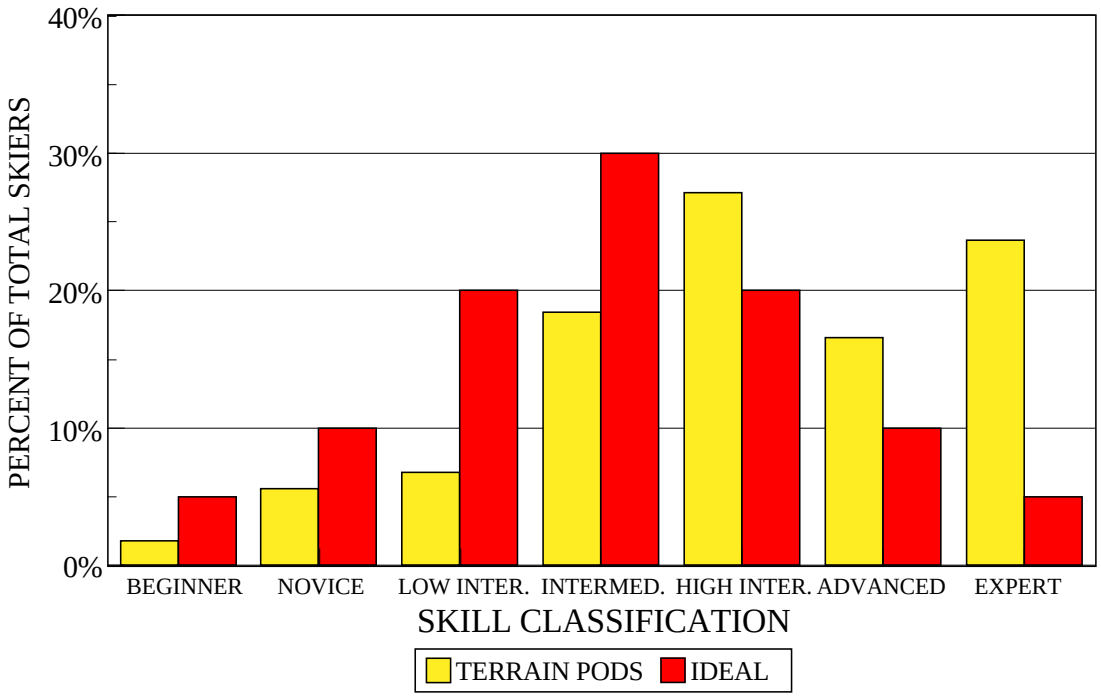


**PLATE III.4**