Ski Area Wayfinding

Integrating Digital Maps with the Mountain Experience

ICA Commission on Mountain Cartography

9th Mountain Cartography Workshop

Banff, Canada, April 2014

Mike Floyd

The Problem

- Skiing: the bigger the terrain, the better
- But wait…..
- Skier numbers are declining across the industry
- Ski Patrol: people get hurt and lost; patrollers respond, putting their lives on the line
- Risk Management: protect employees and guests
- Cartography as a wayfinding tool

How often do significant injuries occur?

- Skier injury rate: 1 per 1000 skier days
- Snowboarding injury rate: 1 per 600 days
- On an average midwinter weekend day: 30-60 people are injured and receive treatment from ski patrol
- Number of injuries is consistent, nature and severity changes with snow conditions
- Injury rates in Colorado decreased until 2006, increasing since then

  -X-Games/Red Bull effect?

Why do people get hurt?

- Skiing/riding too fast for conditions
- Distracted
- Terrain was too difficult
- Tried a shortcut and ended up confused then lost then injured

Who gets hurt?

- Predominantly beginner and intermediate skiers
  - most injuries are minor extremity injuries
  - Less than 50% require surgery
- Advanced skiers are injured less often but more severely
- 8% of patrol dispatches are for uninjured guests who are “lost”
  - 95% of these guests are from Latin America

What if people had better information to make decisions?

- Town of Vail wayfinding project started summer 2013
  - People who feel at ease in their surroundings are more likely to spend $$$
- Above average snowfall during the winter of 2013-2014
  - More rescues occurred in remote areas within the ski area
  - More snow means additional work for patrollers (avalanche mitigation, digging out ski lift towers, etc.)

Proposed Solutions

- Maps by cartographers NOT graphic designers
  - International guests in mind
  - Create a visual hierarchy
- Quantify the dangerous places using GIS data derived from accident reports
  - Is this a dangerous place or just high volume of traffic?

Proposed solutions (cont.)

- QR codes at key locations
  - Informal and formal surveys reveal a pattern of people getting lost in the same places

Scan for directions

Proposed Outcomes (cont.)

- Different map product for kiosks, folded maps, and mobile devices
- GIS data available for other mountain departments
  - Snowmaking lines, utilities, roads, avalanche mitigation

COPPER MTN
VAIL PASS
BLUE SKY BASIN
CHINA BOWL
PETE'S BOWL
EARL'S BOWL
MID-VAIL
GAME CREEK
LIONSHEAD

The Front Side
CAUTION: SNOWCATS, SNOWMOBILES, AND SNOWMAKING EQUIPMENT MAY BE ENCOUNTERED AT ANY TIME.
Blue Sky Basin
Back Bowls
Front Side
BLUE SKY BASIN
PATROL HEADQUARTERS
BUFFALO'S
HENRY'S HUT
WILDWOOD
EAGLE'S NEST
Adventure Ridge
Take a vacation from your vacation at Adventure Ridge. Tubing, ski biking, Kids snowshoeing just more at the top of the Eagle Bahn Gondola.
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GOLDEN PEAK
SUMMIT HOUSE
BLACK FOREST
VAIL VILLAGE
LIONSHEAD
LIONSHEAD VILLAGE
CASCADE VILLAGE
Express Lift
Downloading Lift
Chairlift
Surface Lift
Carpet Lift
Easiest
More Difficult
Most Difficult
Freestyle Terrain
Extreme Terrain
Area Boundary/Closure
Road or Catwalk
Slow Zone
Vail Ski and Snowboard School
Adaptive Skiing Office
Children's Ski and Snowboard School
Kids Adventure Zone
Nature Discovery Center
Ski cottage
Ski Patrol
Automatic External Defibrulator
Vail Sports Patrol
Bus Stop
Full Service Restaurant
Dining Court, Grill
Picnic Area
Quick Eats
Ski/Snowboard Storage
Restrooms
Parking
Information
Accessibility For Individuals With Disabilities

WINDOWS ROAD
RAMSHORN
POWERLINE GLADE
NEW
MOUNTAINTOP EXPRESS™ LIFT
THE SKIPPER
HUNKY D
S. LOOK MA
WILDWOOD EXPRESS™ LIFT
LOOK MA
CHALLENGE
THE 10th
MID-VAIL
ELEVATION
10,150 ft
3,094 m
ELEVATION
10,250 ft
3,125 m
CADY'S CAFE
SPRUCE FACE
UPPER LION'S WAY
GITALONG ROAD
BEN'S FACE
CHAOS CANYON

The Front Side
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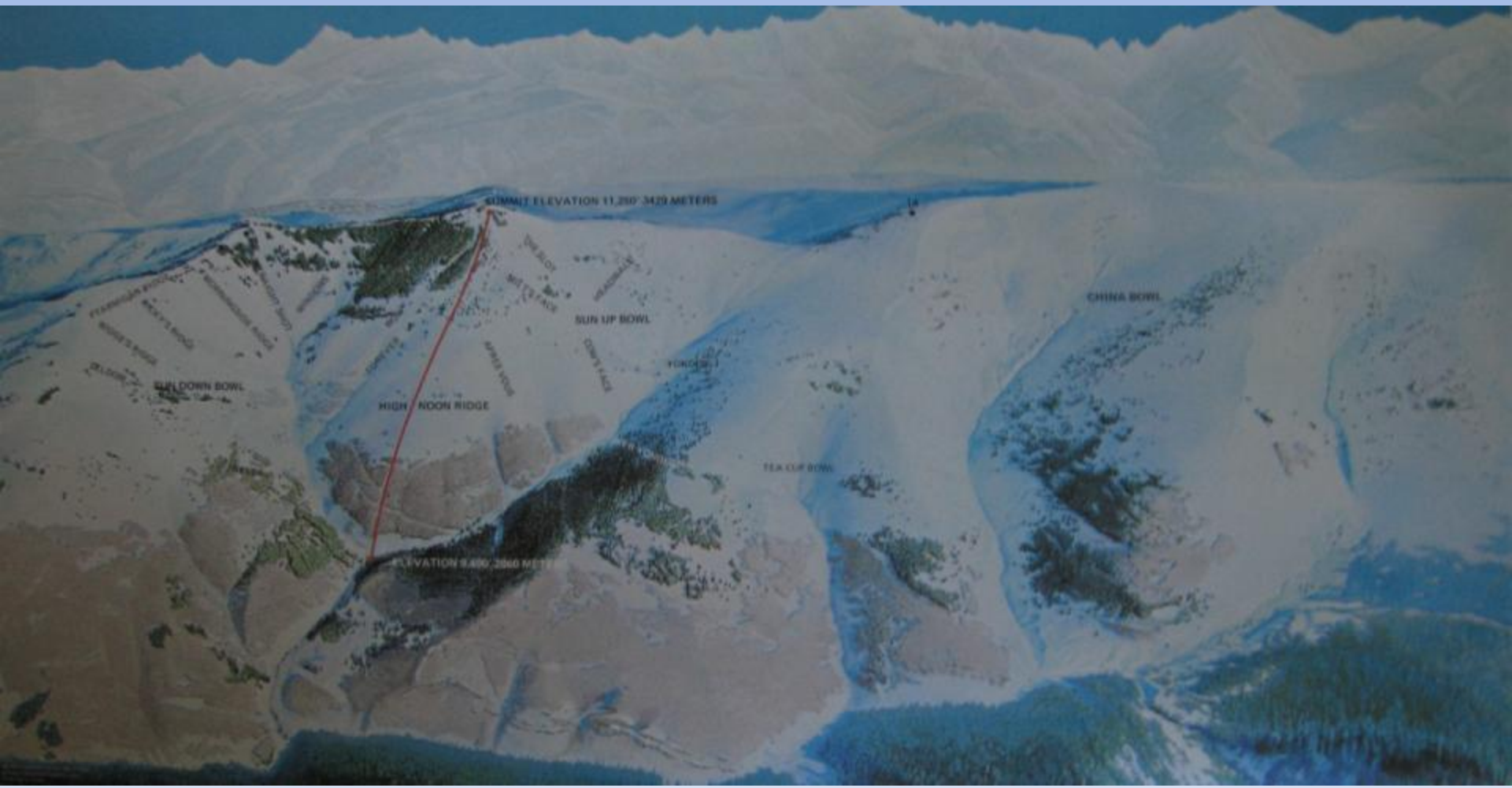
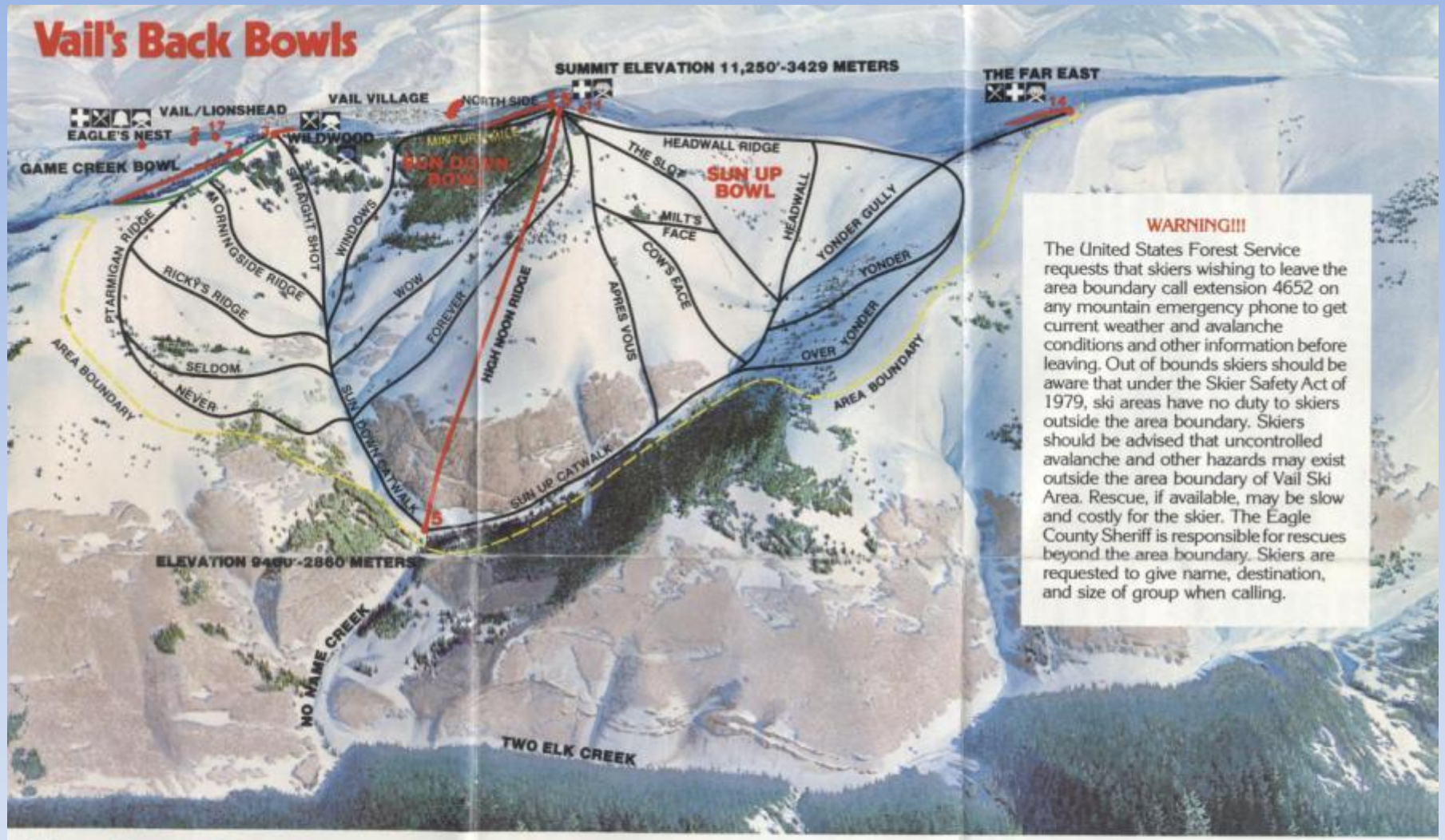
WILDWOOD
LOST BOY
WILDCARD
TINE WOODS
BACCARAT
LOST BOY
DEUCES WILD
FARO
OUZO
OUZO GLADE
SHOWBOAT
GAME CREEK EXPRESS
DEALER'S CHOICE
GAME TRAIL
EAGLE'S NEST RIDGE
EAGLE'S NEST
Adventure Ridge
AVANTI
COORSHACK
PIKA
PRACTICE
CUB'S WAY
COLD FEET

1975


SUMMIT ELEVATION 11,250' 3429 METERS
SUN UP BOWL
CHINA BOWL
HIGH NOON RIDGE
TEA CUP BOWL

1980



The Back Bowls

Vail's Back Bowls are famous for uninterrupted expanses of deep powder skiing and are recommended for expert skiers only. Access to the bowls closes at 3:00.

Sun Up Bowl

Served by Chair 5. Ski down from the top of Chairs 4, 11 or 14. Natural conditions exist.

Sun Down Bowl

Also served by Chair 5. Ski down from the top of Chairs 3, 4, 7 or 11. Natural conditions exist.

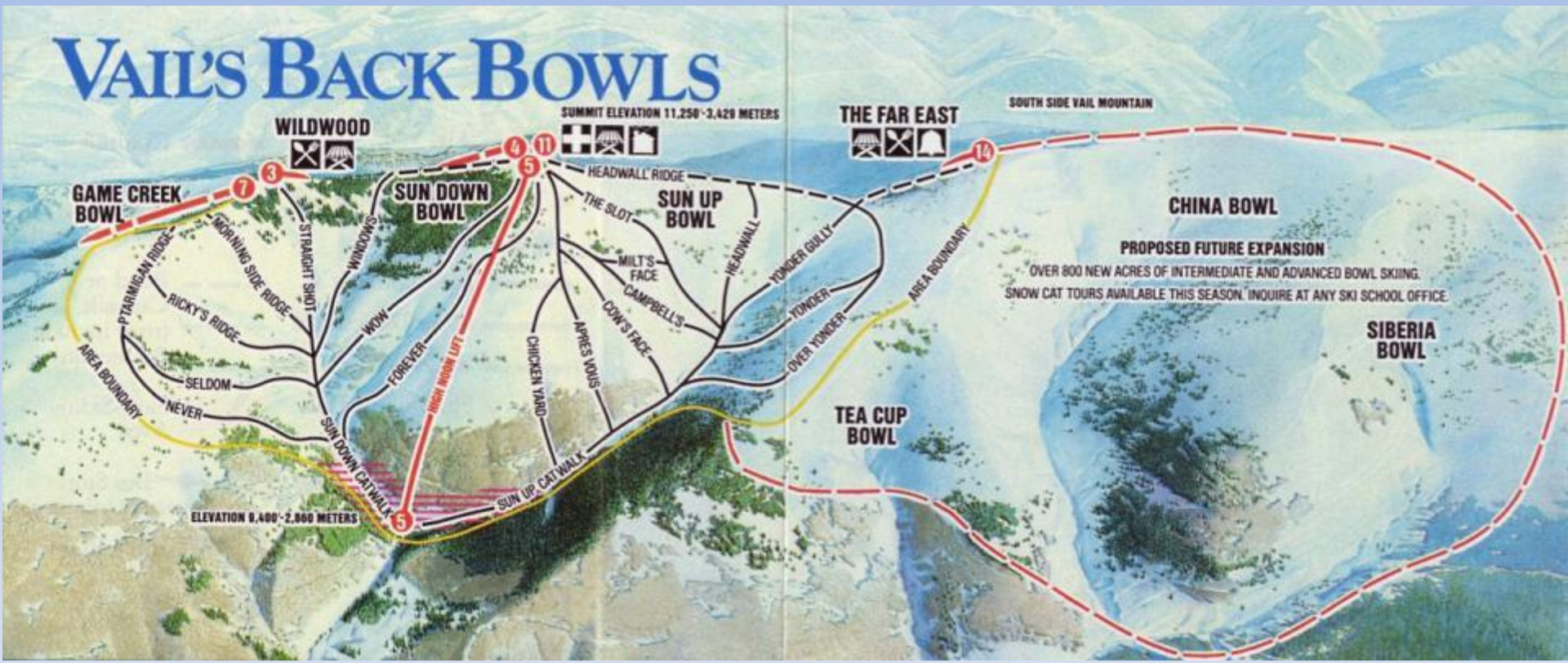
Bowl Hints

1. Be prepared for varying snow and terrain conditions.
2. Check with Ski Patrol, Hosts or Hostesses for current conditions.
3. Remember, Sun Up and Sun Down Bowls close at 3:00.
4. Check Lift Status Boards for Chair 5 before entering these bowls.

Help keep Vail Mountain the beautiful place it is. Please do not litter! Save your trash for the litter cans at the bottom and top of all lifts.

Suggestions may be directed to:
Bob Hamilton, Director of Marketing
Vail Associates, Inc., Box 7, Vail, Colorado 81657.
303/476-5601.

1987


VAIL'S BACK BOWLS
WILDWOOD
SUMMIT ELEVATION 11,250'-3,429 METERS
THE FAR EAST
SOUTH SIDE VAIL MOUNTAIN
GAME CREEK BOWL
SUN DOWN BOWL
SUN UP BOWL
HEADWALL RIDGE
THE SLOT
CHINA BOWL
PROPOSED FUTURE EXPANSION
OVER 800 NEW ACRES OF INTERMEDIATE AND ADVANCED BOWL SKIING.
SNOW CAT TOURS AVAILABLE THIS SEASON. INQUIRE AT ANY SKI SCHOOL OFFICE.
PTARMIGAN RIDGE
MORNING SIDE RIDGE
STRAIGHT SHOT
WINDOWS
MILT'S FACE
CAMPBELL'S
HEADWALL
YONDER GULLY
YONDER
OVER YONDER
AREA BOUNDARY
RICKY'S RIDGE
WOW
FOREVER
HIGH NOON LIFT
CHICKEN YARD
APRES VOUS
COW'S FACE
SIBERIA BOWL
AREA BOUNDARY
SELDOM
NEVER
SUN DOWN CATWALK
SUN UP CATWALK
TEA CUP BOWL
ELEVATION 9,400'-2,865 METERS

1999

WILDWOOD
GAME CREEK BOWL
SUN DOWN BOWL
SUN UP BOWL
CHINA BOWL
SIBERIA BOWL
INNER MONGOLIA BOWL
OUTER MONGOLIA BOWL
TEA CUP BOWL
NEW THIS SEASON – BLUE SKY BASIN

2014

The Back Bowls™
PATROL HEADQUARTERS
BUFFALO'S
HENRY'S HUT
Advanced skiers and riders: fastest way to Lionshead and Vail Village is from PHQ. Take High Noon Express Lift (#5) via Sun Up Bowl
The fastest way to Two Elk restaurant is to ski down Whiskey Jack and ride the Sourdough Express (#14)
WILDWOOD™
TWO ELK LODGE™
GAME CREEK BOWL
PTARMIGAN RIDGE
WIDGE'S RIDGE
RICKY'S RIDGE
MORNING SIDE RIDGE
SUN DOWN BOWL
STRAIGHT SHOT
WINDOWS
WOW
FOREVER
SELDOM
NEVER
O.S.
HIGH NOON EXPRESS LIFT
SUNDOWN CATWALK
SUN UP CATWALK
HEADWALL RIDGE
SLEEPYTIME ROAD
SUN UP BOWL™
HEADWALL
THE SLOT
MILT'S FACE
CAMPBELL'S
COW'S FACE
APRES VOUS
CHICKEN YARD
YONDER GULLY
YONDER
OVER YONDER
SUN UP LIFT
EMPEROR'S CHOICE
RED ZINGER
MORNING THUNDER
SLEEPYTIME ROAD
TEA CUP EXPRESS LIFT
TEA CUP BOWL
MARMOT VALLEY
WAPITI
DRAGON'S TEETH
JADE GLADE
GENGHIS KHAN
SWEET N SOUR
POPPYFIELDS WEST
POPPYFIELDS
CHINA BOWL™
CHOPSTIX
POPPYFIELDS EAST
SHANGRI-LA
SHANGRI-LA GLADE
GREEN TEA EXPRESS LIFT
SILK ROAD
MONGOLIA
SILK ROAD
GOBSY PARK
SIBERIA BOWL™
BOLSHOI BALLROOM
INNER MONGOLIA BOWL™
OUTER MONGOLIA BOWL
RED SQUARE
RASPUTIN'S REVENGE
ORIENT EXPRESS
SILK ROAD
DAWG HAUS
PETE'S EXPRESS™ LIFT
SKYLINE EXPRESS™ LIFT
ELEVATION 11,375 ft 3,467 m
ELEVATION 11,455 ft 3,492 m
Express Lift
Chairlift
Area Boundary/Closure
Most Difficult
More Difficult
Easiest
Road or Catwalk
Ski Patrol
Automatic External Defibrulator
Dining Court, Grill
Quick Eats
Picnic Area
Restrooms
Accessibility for Individuals With Disabilities
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VistaMap

Desired Outcomes

- Injury rates decrease
- Number of patrol dispatches decreases
- Guest experience improves

Less Desired Outcomes

- Relocate the problem
  - People still get hurt, but they are finding new and equally treacherous places to do it

Thanks for listening!

Mike Floyd

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Cedar Canvas Cartography, Vail, CO, USA