MAIN BASE AREA

PROS

- Lodge well located relative to Mixing Bowl, Valley, and Mid-Station Shuttle Chairlifts, and Cloudsplitter Gondola.
- Sundecks relate very well to sun and views.
- Drop off well located, but layout could be improved.
- Well located learners area.
- Rental shop conveniently located to main entrance and learners area.

CONS

- Main entrance to lodge lacks definition.
- Bear Double Chairlift is not well located relative to Lodge/skier staging area.
- Location of ticket booths is difficult to find from dropoff area.

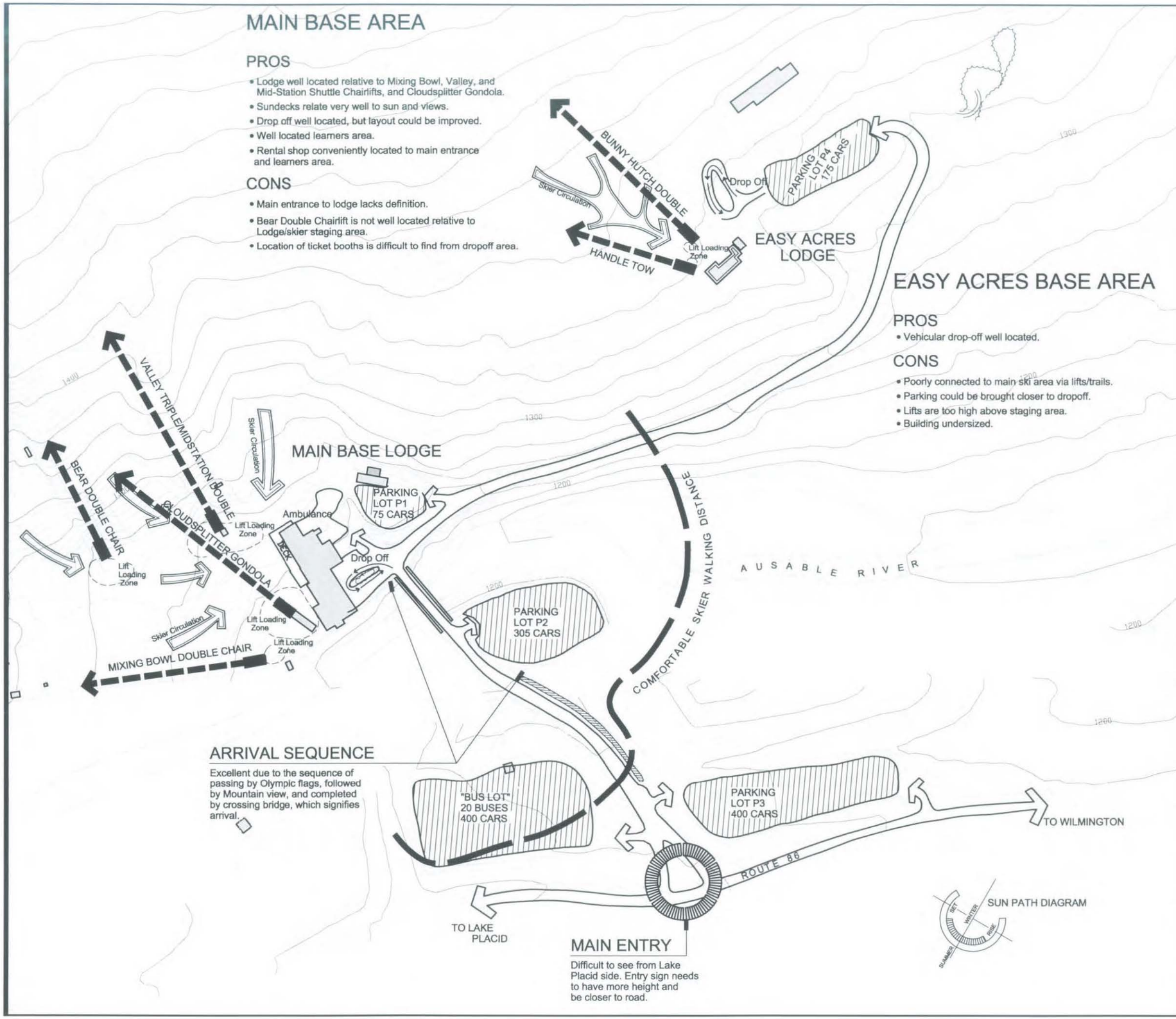
EASY ACRES BASE AREA

PROS

- Vehicular drop-off well located.

CONS

- Poorly connected to main ski area via lifts/trails.
- Parking could be brought closer to dropoff.
- Lifts are too high above staging area.
- Building undersized.



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LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

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150 0 75 150 300 600

Scale: 1" = 300'

Contour Interval = 5 Feet

NORTH

TITLE:

BASE AREA INVENTORY AND ANALYSIS

DATE: March 2002

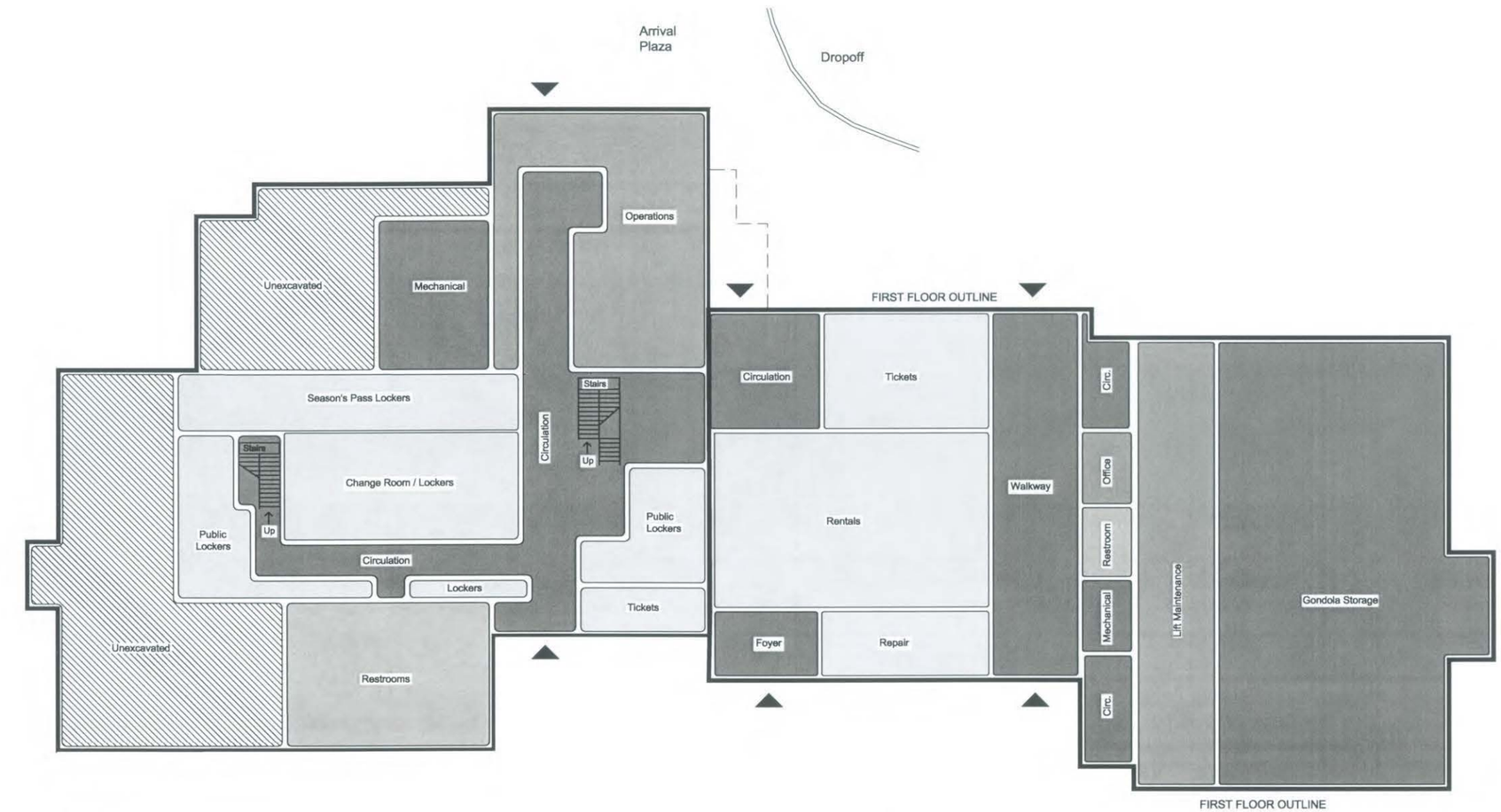
FIGURE #: II-12

PROJECT NUMBER: 01102

FILE: [whiteface]

LEGEND

- Food and Beverage
- Customer Service
- Restrooms
- Operations
- Circulation, Storage, Mechanical



To Skiing

EXISTING
GROUND FLOOR

0 8 16 32ft

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AND UNIT MANAGEMENT PLAN

TITLE:

MAIN BASE LODGE
SPACE-USE SCHEMATIC

EXISTING GROUND FLOOR

DATE: March 2002

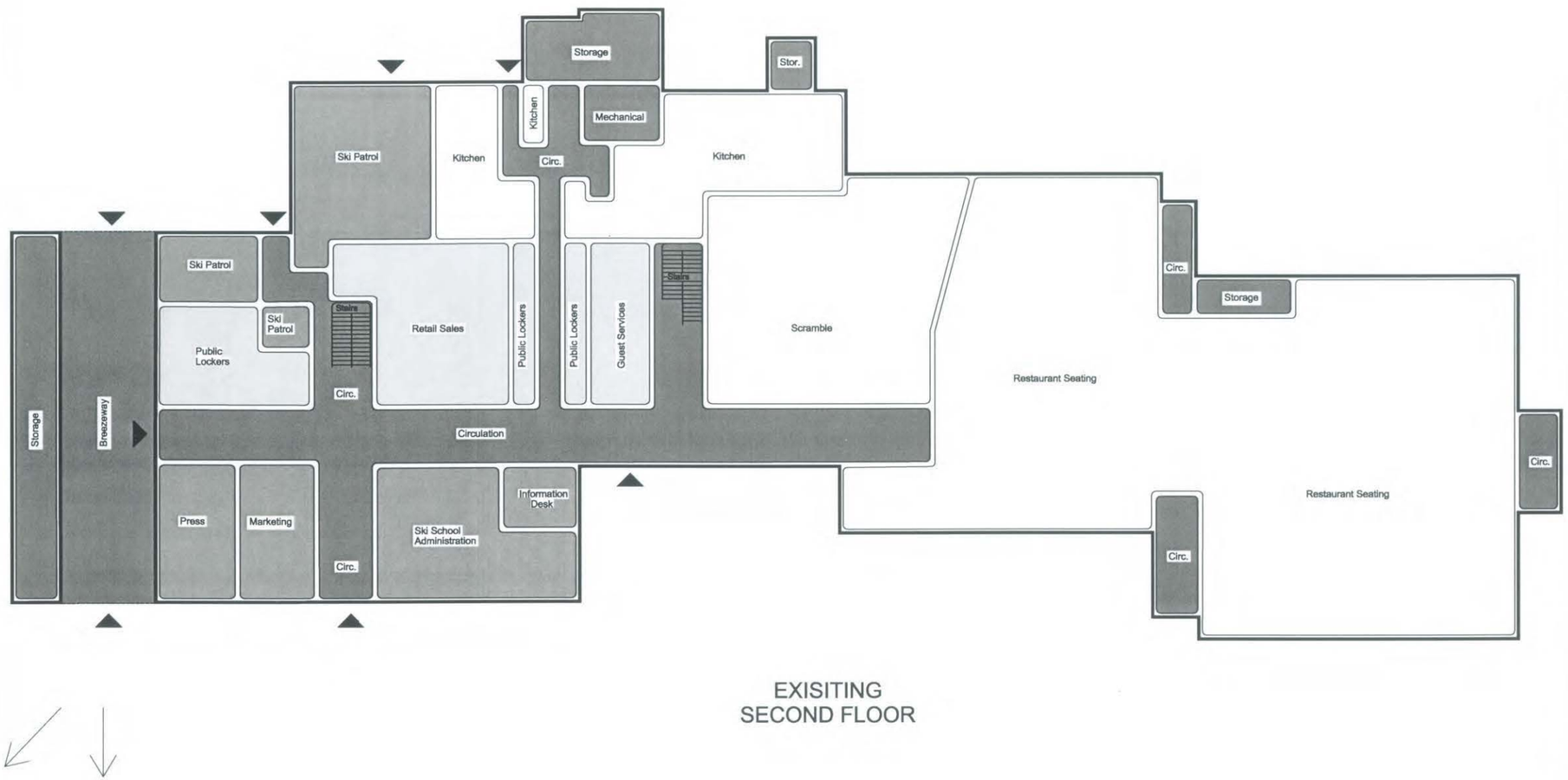
FIGURE #: II-13

PROJECT NUMBER: 01102

FILE: [whiteface]

LEGEND

- Food and Beverage
- Customer Service
- Restrooms
- Operations
- Circulation, Storage, Mechanical



EXISITING
SECOND FLOOR

0 8 16 32ft

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TITLE:

MAIN BASE LODGE SPACE-USE SCHEMATIC

EXISTING SECOND FLOOR

DATE: March 2002

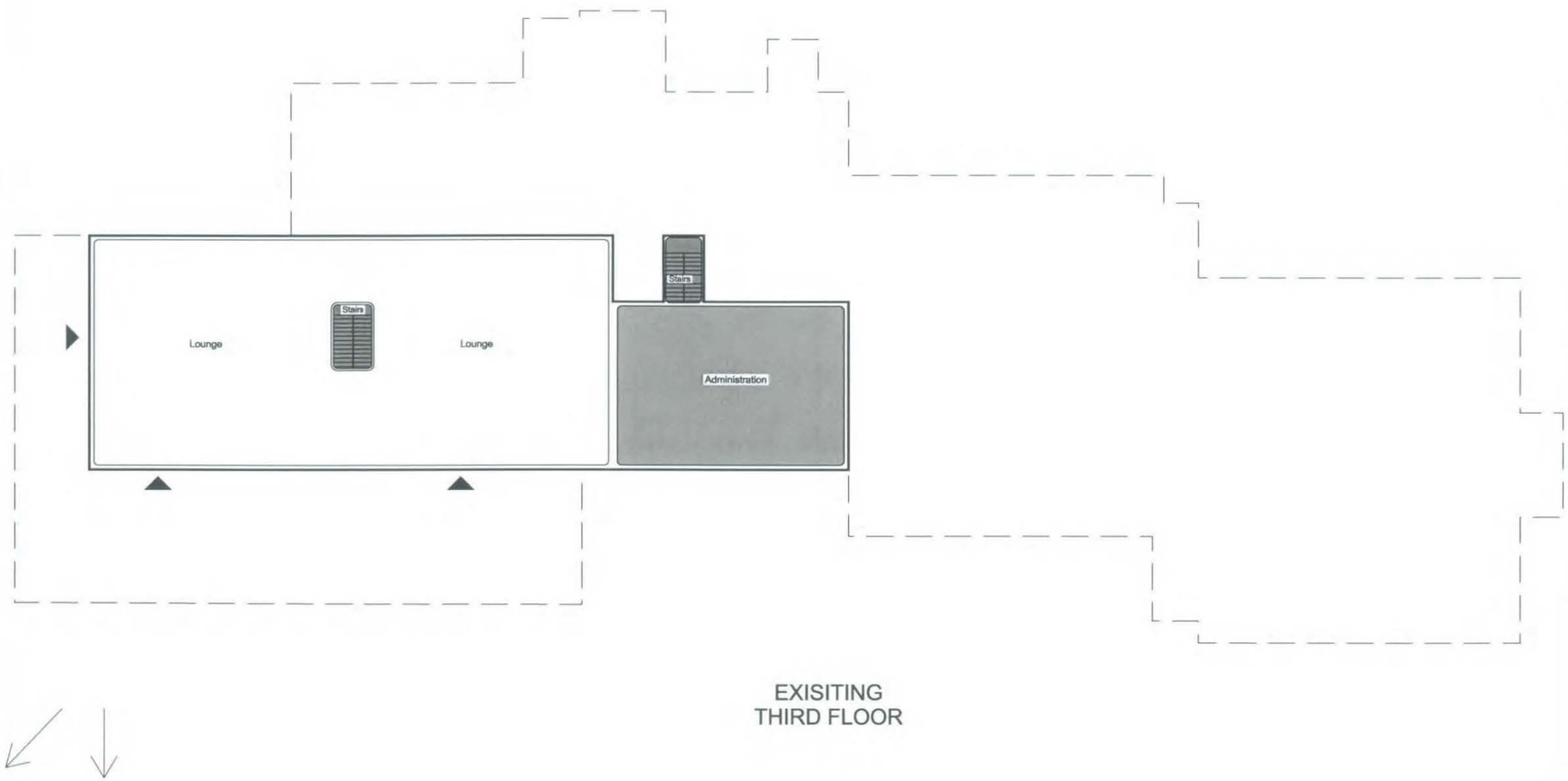
FIGURE #: II-14

PROJECT NUMBER: 01102

FILE: [whiteface]

LEGEND

- Food and Beverage
- Customer Service
- Restrooms
- Operations
- Circulation, Storage, Mechanical



EXISITING
THIRD FLOOR

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COMPREHENSIVE MANAGEMENT
AND PLANNING REVIEW
AND UNIT MANAGEMENT PLAN

TITLE:
BASE LODGE
SPACE-USE SCHEMATIC
EXISTING THIRD FLOOR

DATE: March 2002

FIGURE #: II-15

PROJECT NUMBER: 01102

FILE: [whiteface]

Main Base Area

The primary skier support services are located in the Base Lodge. This building houses the main cafeteria, lounge, ticket sales, rental and repair shop, retail shop, ski school sales, public lockers, gondola garage, lift maintenance department and administration.

The Base Lodge is currently undergoing major changes that will enhance customer service and the general appeal of the building. Phase I of the construction project, which is nearly complete, involves enclosing the area directly beneath the cafeteria on the second level. This new area includes a new entrance, entry foyer, rental shop and tuning shop. The old rental shop space (2,486 square feet) will be used for public changing and storage space and additional seasonal locker rentals.

Phase II calls for a larger reception and ticket area for the purpose of a one-stop shopping area for all lift tickets, rentals and ski school packages. This phase will also involve the relocation of the ski school operations and desk from the second level to the first floor of the Base Lodge near the present ticket sales location. Until Phase II is completed, the Base Lodge entrance foyer will be used as a ticket sales area for ski school and/or rental packages. Individual lift tickets will still be purchased in the present ticket location on the slope side of the Base Lodge.

In addition to the physical improvements to the Base Lodge, the computer ticketing system will also be updated, creating more efficient sales points.

These improvements to the Base Lodge will greatly expedite the arrival process – tickets, rentals, ski school – promoting greater customer satisfaction prior to beginning the day on the slopes.

The Cloudspin Lounge on the upper floor of the Base Lodge is well located relative to the maze area for the Valley and Mid-station Shuttle chairlifts because there is little grade change between them. It is also well located to the maze area for the Cloudsplitter Gondola; guests may slide down to the mazing area from the lounge sundecks. The sundecks are also well situated because they allow patrons to view activity in the lift line and on the slopes coming in to the maze.

The function of the Base Lodge on the mountain-side has pros and cons. The beginner skier areas (Mixing Bowl chairlift maze, ski school meeting area, and first timer learning area) are well located relative to the lodge so that new skiers can find them quickly. The terminal for the Cloudsplitter Gondola is well located to the lodge, and specifically to the exit of the rental shop, and is very visible for unfamiliar guests. Conversely, the lower terminal of the Bear double chairlift is not well situated since getting to it involves an arduous 500 foot uphill walk from the Base Lodge. This walk may be avoided by riding the Mixing Bowl double chairlift and skiing down to the Bear double, which is convenient unless the Mixing Bowl chair is overcrowded.

Mid-station Lodge

The Mid-station Lodge is located at the top of the Mid-station Shuttle chairlift. It contains cafeteria style eating on the main floor and a bistro restaurant and washrooms on the lower level. There is a small, well-placed sundeck off the main floor.

The building is located in the middle of the Upper and Lower Valley ski runs which causes skiers to circulate to either side. The bottom terminals of Little Whiteface and Mountain Run chairlifts are located very close to the building as well. Significant circulation problems exist because of the placement of the building.

Easy Acres Lodge

The Easy Acres Lodge is located at the base of the Bunny Hutch chairlift approximately one third of a mile north of the main base area. The primary activities include several play areas for young children (separated by age group), meeting areas for older ski school children, cafeteria and small kitchen, washrooms, and instructor space. Skiers can stage out of this area if they choose, however, there is no direct lift serviced link to the main base area.

Easy Acres Lodge is very congested and uncomfortable during busy weekends and holiday periods. A temporary structure, made up of two adjoining 12'x36' trailers, has been installed on the north side of the lodge to help alleviate this congestion. This new space contains a ticket sales area, which frees up additional rental space in the lodge.

Although the temporary addition does mitigate some of the congestion, there is still insufficient restaurant and program space making the lodge uncomfortable for employees and guests. The Easy Acres Lodge should be expanded and improved in order to sufficiently support the excellent children's services and programs provided by Whiteface.

b) Location and Size of Functions

Table II-13 shows the size, in square feet, of all existing Visitor Service/Operations functions by building location.

TABLE II-13
EXISTING SPACE USE BY FACILITY/LOCATION (SQ.FT.)

Space Use Functions	Main Lodge	Easy Acres	Mid-Stn. Lodge	Total
Restaurant Seating	12,792	1,638	6,633	21,063
Kitchen/Scramble	5,312	260	880	6,452
Bar/Lounge	5,304	0	200	5,504
Restrooms	1,408	296	360	2,064
Retail Sales	1,280	0	0	1,280
Rental/Repair Shop	3,770	800	0	4,570
Ski School	1,408	406	0	1,814
SkiWee/Drop-in Center	0	3,684	0	3,684
Public Lockers	4,318	0	150	4,468
Ticket Sales	2,686	864	0	3,550
Ski Patrol/First Aid	1,488	0	315	1,803
Administration	2,731	0	0	2,731
Employee Lockers/Lounge	1,050	0	0	1,050
Storage/Mechanical	1,659	400	477	2,536
Circulation	7,642	1,391	1,755	10,788
TOTAL SQ. FT.	**52,848**	**9,739**	**10,770**	**73,357**

Source: Whiteface

Based upon the CCC of 5,070 skiers, Table II-14 compares the current space use allocations of the main visitor service and operational functions to industry standards for a resort of similar size and market orientation to Whiteface Mountain.

TABLE II-14
TOTAL SPACE USE REQUIREMENTS (SQ.FT.)
CCC=5,070

Space Use Functions	Whiteface Mountain	Industry Average Low	Industry Average High	Difference Low	Difference High
Restaurant Seating	21,063	20500	25100	563	-4,037
Kitchen/Scramble	6,452	5,500	6,700	952	-248
Bar/Lounge	5,504	3,200	3,900	2,304	1,604
Restrooms	2,064	2,700	3,300	-636	-1,236
Retail Sales	1,280	1,600	2,000	-320	-720
Rental/Repair Shop[16]	4,570	4,500	6,500	70	-1,930
Ski School	1,814	3,700	4,500	-1,886	-2,686
SkiWee/Drop-in Center	3,684	4,100	5,000	-416	-1,316
Public Lockers	4,468	900	1,100	3,568	3,368
Ticket Sales/Guest Services	3,550	3,200	3,900	350	-350
Ski Patrol/First Aid	1,803	1,800	2,200	3	-397
Administration	2,731	2,300	2,800	431	-69
Employee Lockers	1,050	1,400	1,700	-350	-650
Storage/Mechanical	2,536	1,100	1,400	1,436	1,136
Circulation/Waste	10,788	6,400	7,800	4,388	2,988
TOTAL SQ. FT.	**73,357**	**62,900**	**77,900**	**10,457**	**-4,543**

Source: SE GROUP, Whiteface
Note: Rental space based on existing fleet of 1,200 skis (24% of existing CCC), 200 blades (4% of existing CCC) and 200 snowboards (4% of existing CCC).

[16]Approximately 5% of rental/repair space should be allocated to the repair shop.

c) *Description of Functions*

Restaurant Seating

Existing food and beverage service seating is divided between the Base Lodge, Easy Acres, and the Mid-station Lodge. Seats in the Cloudspin Lounge have been included in the total Base Lodge seats because there is food service in this facility. A total of 1,453 food service seats are provided, including the Ausable Room in the Base Lodge. Outdoor restaurant seating totals 300. The breakdown of seating locations is shown below in Table II-15.

TABLE II-15
EXISTING RESTAURANT SEATING

Location	Facility	Seats	
		Indoor	Outdoor
Base Lodge	Cafeteria	368	60
	Ausable Room	362	0
	Cloudspin Lounge	299	192
	Total Base Lodge	**1029**	**252**
Easy Acres	**Cafeteria**	**94**	
Mid-station Lodge	Cafeteria	238	48
	Bistro Restaurant	95	
Cloudsplitter Lodge	**Total Mid-station Cafeteria/Bar**	**333**	**48**
	TOTALS	**1,456**	**300**

Source: SE GROUP, Whiteface

A key factor in evaluating restaurant capacity is the turnover rate of the seats. That is, the number of times a seat will be utilized in a day. Several factors influence the turnover rate including the ski resorts' climate, market orientation, and the type of food service provided. At Whiteface Mountain a seat turnover rate of 3 has been utilized, taking into account all existing food service areas. Based upon this rate and a total of 1,456 seats, Whiteface Mountain has a seating capacity of 4,368 skiers. With a mountain capacity of 5,070 there is deficit of seating of 234 seats.

Outdoor seats are not utilized for this analysis, as they cannot be used on a regular basis at Whiteface Mountain. Alternatively, the ski area must also provide a certain amount of outdoor seating for occasions when warmer temperatures

prevail. The extent of outdoor seating provided by Whiteface Mountain (17% of all seating) is low. The Mid-station Lodge is particularly lacking in outdoor seating.

Table II-14 indicates that the square footage of the existing restaurant seating at Whiteface Mountain is on the low end of the industry averages. This deficit is particularly evident at the Mid-station Lodge where approximately one half of the total CCC of the lifts and trails is centered, but where only 32% of the total food service space is allocated. Any additional seating capacity should be focused on the middle or upper mountain to address the current imbalance, and at Easy Acres to accommodate peak period crowds.

Kitchen and Scramble

Kitchen space and food serving (scramble) areas in the Base Lodge and Mid-station Lodge are adequate for the current mountain capacity. The Easy Acres kitchen and food serving spaces are undersized. The food court in the Base Lodge functions particularly well, and is considered state-of-the-art in the ski industry.

Waste disposal areas for kitchens are well located and visually screened.

Bar/Lounge

The bar/lounge is situated on the third floor of the Base Lodge and is called the Cloudspin Lounge. It has 222 seats, and a stage area for bands and a small food service area. Additional minor bar service is available in the Mid-station Bistro. Space devoted to bar/lounge is above industry averages. Many visitors eat lunch in the Cloudspin Lounge and this takes pressure off the other food service areas on busy days, particularly the main cafeteria.

Restrooms

Table II-16 illustrates the existing number and distribution of restrooms. Based upon the existing CCC of 5,070 per day, the current men's and women's restroom facilities are below industry standards. The number of facilities required to accommodate the mountain capacity is indicated at the bottom row of Table II-16.

TABLE II-16
EXISTING RESTROOM FACILITIES

Facility	Men			Women	
	Urinals	Toilets	Sinks	Toilets	Sinks
Main Base Lodge	9	7	6	12	8
Easy Acres	2	4	3	6	3
Mid-station Lodge	3	4	4	8	4
TOTAL	**14**	**15**	**13**	**26**	**15**
Required[a]	21	17	13	42	25

Source: SE GROUP, Whiteface

[a] Based upon standards developed by SE GROUP.

Retail Sales

The retail shop is not well situated relative to other skier services in the main base lodge. Ideally, all guests should encounter this shop as they arrive at the ski area. On the other hand, the shop is easily accessible for skiers coming into the lodge during the day from the slopes.

The shop is not adequately sized to match the capacity of the mountain.

Rental/Repair Shop

A new rental area, in the new enclosure directly beneath the cafeteria, has been completed. Consisting of 3,770 square feet, this facility has an adjoining entry foyer for ticket sales which is conveniently adjacent to the main entrance to the lodge from the drop-off area, and a tuning shop on the slope side of the lodge. Lockers are provided within the main rental area.

The new location of the rental facility within the Base Lodge has greatly improved guest service, especially for beginners and first time guests. The rental shop is now conveniently located adjacent to the main entrance of the Base Lodge. There is ample room for filling out forms and purchasing equipment within the general ticketing area. Guests may also purchase lift tickets at this location. The shop is laid out to expedite the rental process, both at the beginning and end of the day. The rental shop exits directly onto the slopes, close to the gondola terminal.

The number of rental units (1,200 skis, 200 snowblades and 200 snowboards) is adequate to meet demand on all but the busiest days. The recently completed space allocated for rental shop is adequate. The new layout of the equipment area is very efficient.

Ski School

Ski school operations are located on the 2nd floor of the Base Lodge building. Ski School administration, private lesson sales, and instructor change/locker room are grouped together in the same area and occupy 1,814 square feet, which is considerably below industry standards. Additional lesson sales will be located in the new rental shop ticketing area.

Phase II of the Base Lodge renovations include moving the ski school to the first level of the Base Lodge near the present ticket sales area. This ground level area faces the Mixing Bowl and the lesson reservations window will be very visible to customers going to, or coming from, the slopes. Access from the ski school staff space into the Base Lodge will provide a convenient connection with the new ticket sales area where ski school personnel plan to meet, greet and educate potential customers.

SkiWee/Drop-in Center

The SkiWee/Drop-in Center facility is located on the main and lower floors of the Easy Acres building. It is well located relative to the ski lifts and trails serving these skiers. This facility is open to ages one and up. Many resort child care facilities also include newborns which encourages young families to visit the resort.

Space related to this facility is below industry standards. Despite the recent addition of temporary structures there is still insufficient restaurant and program space making the lodge uncomfortable for employees and guests.

Public Lockers

The majority of public lockers (membership and public) are located on the first and second levels of the Base Lodge. There are a small number of public lockers in the Mid-station Lodge. Additional lockers and changing area are available in

the old rental shop location. The number of lockers and amount of floor space allocated to them is adequate for the existing mountain capacity.

Ticket Sales and Guest Services

Lift tickets are sold at four outside window locations on the first level (mountain side) of the Base Lodge. They are also sold at the Easy Acres Lodge. Package tickets - packages including rentals, lessons and lift tickets - may be purchased at the new rental shop ticketing area. The Guest Services desk is located on the second level of the Base Lodge, adjacent to the cafeteria. This is a highly visible location. The floor space and number of ticket windows allocated to lift tickets and guest services is adequate.

Phase II improvements will include the development of a larger reception and ticket area adjacent to the drop-off area of the Base Lodge, for the purpose of a one-stop shopping area for all lift tickets, rentals and ski school packages.

Ski Patrol/First Aid

This facility is well located on the 2nd floor of the Base Lodge, with good access from the ski runs and for the arrival of ambulance vehicles. There is also a small space for ski patrollers and toboggans in the Mid-station Lodge. The space allocated to this is similar to industry standards.

Administration

The majority of administrative functions are located on the top floor of the Base Lodge. Overall space is more than ample, and the location within the building is good. There is a need for additional office and conference space for marketing staff, which is currently limited to a small office space on the first floor.

The lobby space for administration is far too small to serve its current purpose, which includes season pass photos and some complimentary ticketing. Visitors must line up on the stairway below the lobby area on a busy day.

Employee Lockers

This activity is located on the first level of the Base Lodge in the northeast corner near the drop off area. This is a prime location for important skier arrival services or retail space.

Storage/Mechanical

The amount of storage and mechanical space provided in all buildings is slightly more than typical for a ski area the size of Whiteface Mountain. Additional records storage space is needed.

Circulation/Waste

Circulation space is far greater than required. Some areas where this is evident include: the long circulation space in the Mid-station Lodge required to get through the cafeteria from the main entrance to the stairway, and the oversized hallways on the 2nd floor of the Base Lodge.

3. Roads and Parking

a) Roads

Whiteface Mountain Ski Center is located off of Route 86. This highway is in good traveling condition. Turning lanes for left and right traffic movement are provided at the Route 86 and the Ski Center access road intersection. The access road from Route 86 to the Base Lodge and Easy Acres is a two lane paved road that is in good condition.

Traffic Volumes

Traffic counts were provided by the New York State Department of Transportation (NYSDOT). The traffic counts for Route 86 between the Intersection of Route 431 and the entrance road to Whiteface were taken in a year 2000 survey and indicate a traffic volume of 2,350 vehicles per day based on an Average Annual Daily Traffic (AADT). Counts between the access road to Whiteface Mountain Ski Center and Route 73 in Lake Placid were taken in 2000 and indicate a traffic volume of 2,720 vehicles per day AADT.

Arrival Sequence

Direct access to the mountain is from New York State Route 86. This access consists of dual roads approximately 180 feet apart, which converge to a single two-lane road at a point of access to the "Bus Lot" parking lot. A large identification sign for the resort is located in a landscaped island, which is formed by the two access roads.

Once on the entry road, drivers pass a long row of national flags, which introduces the ski area's image as the "Olympic Mountain". Cars and pedestrians continue across the Ausable River on a bridge, which strongly signals arrival at the main base area. A directional decision must be made (to the drop off, other parking, or Easy Acres), which is aided by an attendant.

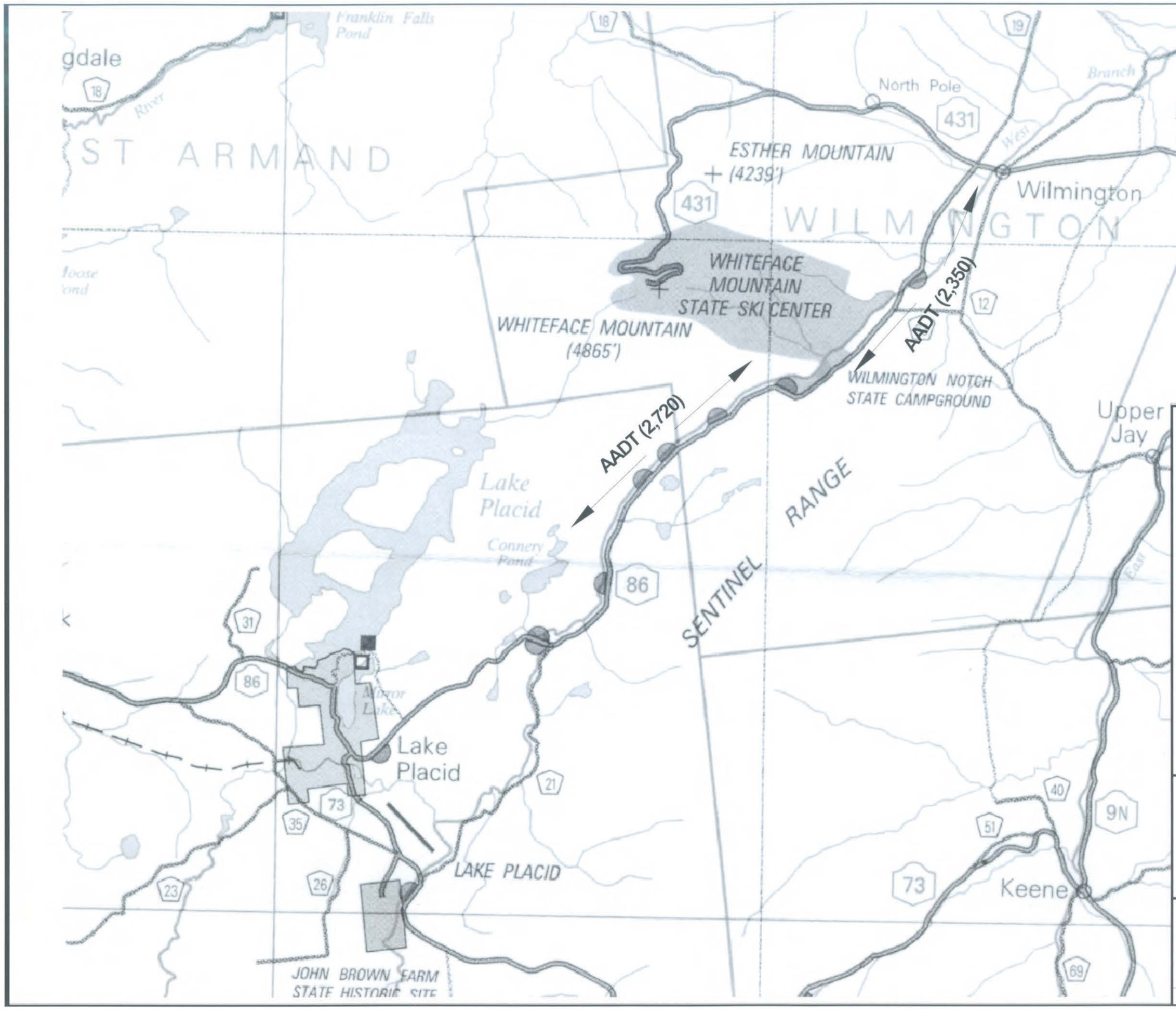
The arrival sequence to the Base Lodge entry area terminates at the newly constructed drop off area which directs access directly to the Base Lodge lobby area or to the back of the base lodge and gondola station through the building with an open passage. Planned future improvements to the Base Lodge building will be to further enhance a positive arrival feeling by construction of a formal Base Lodge lobby at the entrance.

b) Parking

Parking is available in five primary parking lots, with additional space available along the internal roads. The total parking available at Whiteface is 1,513 cars.

Lot 1, which is located adjacent to the Alpine Training Center, has a capacity of 75 cars and is ideally located close to the drop off. Lot 2 is across the bridge and holds 305 cars. Lot 3 is close to Route 86 and has a capacity of 400 cars. Most of these parking spaces lie beyond a comfortable walking distance from the Base Lodge and skiers are shuttled in. The "Bus Lot" has functioned primarily as a car lot in recent times, and its capacity is 400 cars and 20 buses. Most of these spaces are also dependent on the shuttle service. Lot 4 is located at the Easy Acres Lodge and provides convenient parking for 175 cars at this facility. An additional 86 cars can be parked along the access road to Easy Acres, and 72 cars can be parked on the main entrance road east of the bridge.

The area can accommodate virtually unlimited buses since drivers historically take their buses in to Lake Placid until pick-up time in the afternoon, thereby alleviating parking loads.



LEGEND:

AADT = Average Annual Daily Traffic

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Scale: (NOT TO SCALE)

NORTH

TITLE:	DATE: March 2002
TRAFFIC VOLUMES MAP	EXHIBIT: II-16
PROJECT NUMBER: 01102 FILE: [whiteface]	

Bus access to the Base Lodge is a major problem due to the very limited maneuvering space available. Bus traffic creates unsafe conditions in the drop off area especially for the pedestrians. Ideally, buses should not be allowed to cross the bridge into the tight drop off space presently available. Various alternatives for bus access should be evaluated. This includes evaluating the following:

- Special drop off area to be created at the Bus Parking Lot with convenient shuttle service available.
- New turnaround and drop off area to be constructed prior to the Ausable River Bridge crossing.
- Construct a second bridge to create a sufficient drop off space for passenger cars and buses. Easier traffic circulation will be provided by the second bridge since the access to the outgoing travel lane on the ski center main access road will be on the easterly side of the two bridges.

Additional alternatives to be considered are presented in Section VI. D. Alternative Parking/Circulation Improvements.

Parking should be capable of handling 125% of the ski resorts' CCC, which equates to 6,338 skiers, so that peak day crowds can find adequate parking. Approximately 75% of all skiers will arrive by car and with an average car occupancy of 3 skiers, 1,584 parking spaces would be required. Adding in employee parking requirements brings the total to 1,711. With 1,513 spaces currently available, Whiteface has a deficit of approximately 200 spaces. The parking requirements are noted below in Table II-17.

TABLE II-17
EXISTING AND REQUIRED PARKING[17]
CCC=5,070

Total skier capacity arriving by auto (75% of the 6,338 peak capacity)	4,753
Number of skiers per auto	3
Total auto parking spaces required	1,584
Plus: employee parking (8% of 1,584)	127
Total auto parking spaces required (skiers and employees)	**1,711**
Autos per acre	133
Total acres required for autos	**12.9**
Total skier capacity arriving by bus (25% of the 6,338 peak capacity)	**1,584**
Number of skiers per bus	44
Total buses	**36 (20)[18]**
Buses per acre	35
Total acres required for buses	**0.6**
Total acres required for cars and buses	**13.5**
Total acres available (including roadsides currently used for parking)[19]	**12.0**
Total acre deficit	**1.5**

Source: SE GROUP, Whiteface

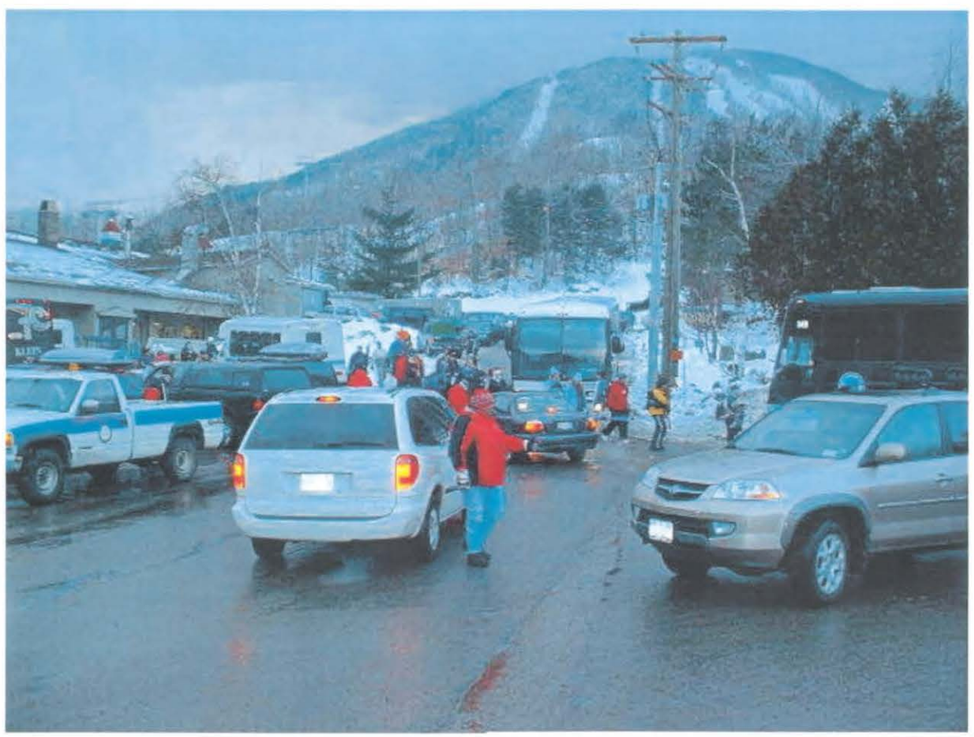
The area experiencing most frequent parking problems is the Easy Acres facility. This area is over its capacity nearly every weekend. The Base Lodge area has a need to utilize the Huntington fields on Fox Farm Road two to three times per year for parking. This area is approximately ten minutes away and can accommodate up to 600 cars.

[17]Figures rounded to the nearest 10.

[18]Historically only up to 20 buses remain parked at the resort, while the rest go to Lake Placid. The number of 20 has been used for calculations.

[19]Car parking on the side of the road has been included in the total of existing parking capacity. For planning purposes, however, this parking will not be included since it does not represent the optimum situation.

View due east along access road of a typical Saturday evening departure. Note the line of cars and buses lined up along the bridge waiting to enter the skier pick-up area. Note pedestrians mixing with vehicular traffic, and buses accepting skiers with equipment who must cross incoming vehicles in order to access buses.



View facing west of evening departure. Vehicles enter from the right from the upper parking areas, and exit left across bridge toward viewer. Note mix of skiers with buses, shuttles and private vehicles, all accessing three lane pick-up area. Traffic control is labor intensive. Note also that the ambulance access point at the ski center is located at the base of the mountain, on the far side of the pick-up area.

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Prepared By:

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the LA group

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Ivan Zdrahal Associates, PLLC

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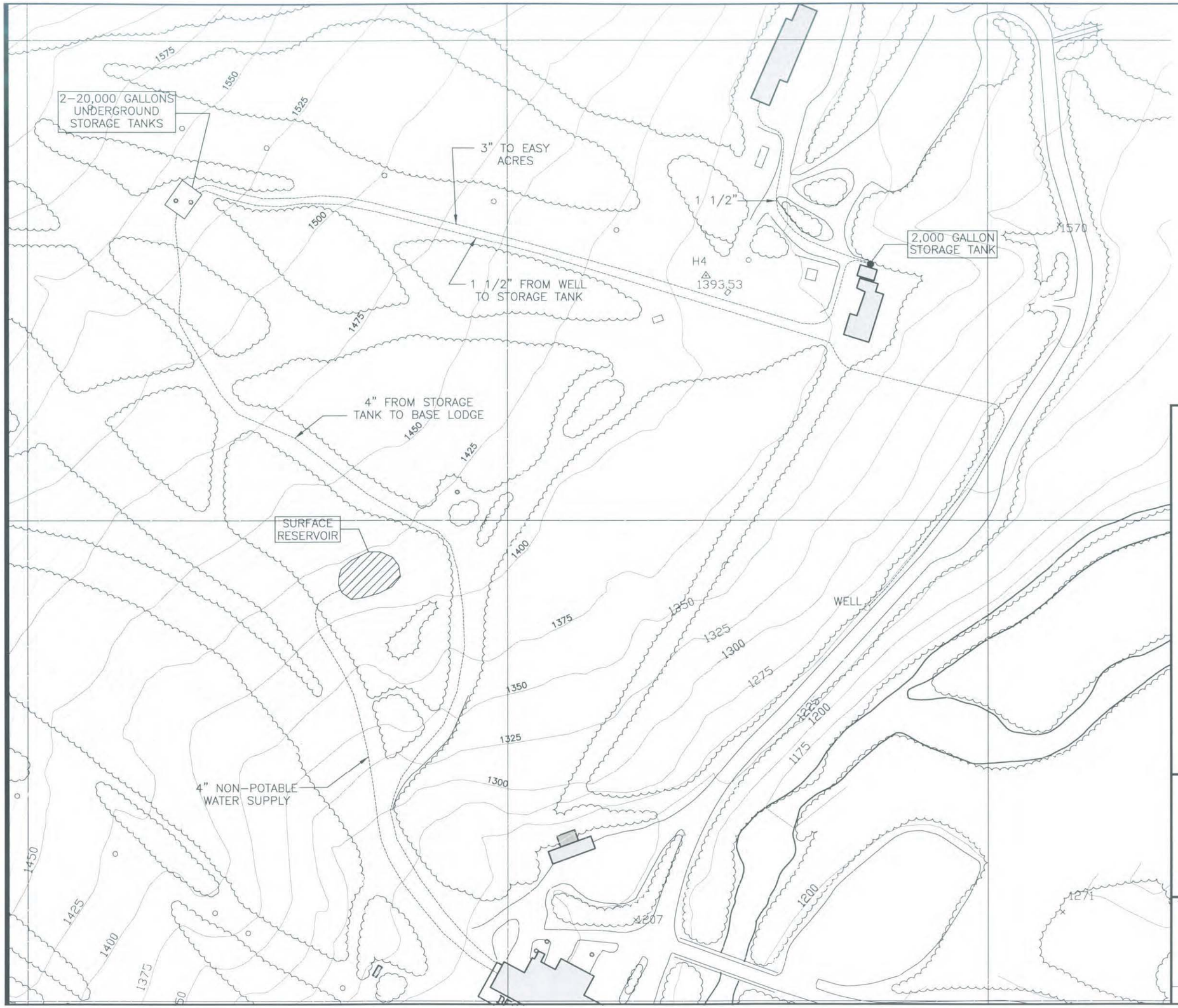
TITLE:	DATE: MARCH 2002
EXISTING CONDITIONS AT SKI CENTER PICK-UP AND DROP-OFF AREA	FIGURE #: II-17
PROJECT NUMBER: 01102 / FILE: WHITEFACE 2001 UMP	



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COMPREHENSIVE MANAGEMENT AND PLANNING REVIEW AND UNIT MANAGEMENT PLAN

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Scale: 1" = 200'
Contour Interval = 5 Feet
NORTH

TITLE:

POTABLE WATER SUPPLY SYSTEM

DATE: March 2002

FIGURE #: **II-18**

PROJECT NUMBER: 01102

FILE: [whiteface]

4. Potable Water

Potable Water is supplied to the following facilities at the Ski Center:

- Base Lodge
- Easy Acres Lodge
- Maintenance Garage
- Mid-station Lodge

a) Base Lodge/Easy Acres Lodge/ Maintenance Garage

Potable water for the Base Lodge is provided from a 500 feet deep well located near the Easy Acres Lodge access road. The well has a reported yield of 55 gpm. However, based on reports of motor failure resulting from excessive drawdowns, the actual yield may be closer to 30 gpm.

Water is pumped via a 1½ inch PVC main to two 20,000 gallon storage tanks located above Home Run Trail. From this point, the water flows by gravity through a 4 inch main to the Base Lodge. In addition, a 3-inch polyethylene gravity feed line from the 20,000 gallon storage tanks supplies a 2,000 gallon storage tank outside the Easy Acres Lodge. The water is then pumped to the Easy Acres Lodge and the Maintenance Garage (see Exhibit II-18).

It appears that during some periods of time of high demand, the existing well source cannot keep up with demand which results in over pumping of the well. It should be noted that this is the only source of potable water. Development of an additional source for increased capacity and redundancy is a priority.

A second well approximately 800 feet deep has been drilled, but its yield is only 15 gpm.

The Base Lodge is using non-potable water for flushing of toilets. This system should be checked to eliminate any possibility of interconnection with potable water. (This was done in accordance with NYSDOH requirements.)

Safe yield of the existing well should be established in order to determine need and capacity for additional water source.

b) Mid Station Lodge

Potable water for the Mid-Station Lodge is provided by a shallow dug well (4 feet deep with concrete tile) located 50 feet south of power line #32 (approximately 50 feet above the Mid-station Lodge) at the junction of Upper Valley and McKenzie Run Trails. The well provides potable water via a 1½ inch gravity feed line to a 6,000 gallon storage facility located inside the Mid-station Lodge. The water is chlorinated and pumped into the cafeteria and restroom areas of the lodge. The capacity of the dug well has not been determined. However, the yield is observed to far exceed the peak demands of the lodge.

5. Sanitary Wastewater

There are four sanitary wastewater systems at Whiteface Mountain Ski Center which provide service to the Base Lodge, Mid-Station Lodge, Easy Acres and Maintenance Garage.

A single State Pollution Discharge Elimination System (SPDES) permit was issued by the NYDEC in September 1993 for the Base Lodge, Easy Acres, and Mid-Station Lodge. The Easy Acres system was partially rebuilt in 2000 by constructing a new pump station and installation of new septic tanks.

No violations of the permit have been reported by the NYSDEC. As such, the existing systems are adequately treating the permitted daily flow rates of each facility.

a) Base Lodge

The SPDES permit for the Base Lodge lists the design flow for the wastewater system as 25,000 gpd (gallons per day). Effluent from the Base Lodge flows by gravity to a 24,000 gallon septic tank. The effluent then flows by gravity across the Ausable River Bridge to a pumping station. The pumping station houses two – 20 h.p., 400 gpm capacity pumps which alternately pump the effluent to the main leachfields. Each leachfield is 95 feet by 104 feet in size. The leachfields are located adjacent to the main Ski Center entrance approximately 200 feet from Route 86.

Field observation of each leachfield area did not disclose any visible problems. Metering of potable and non-potable water should be implemented as soon as possible to determine actual loading on the disposal system.

b) Easy Acres Lodge

The existing wastewater disposal system was partially reconstructed in the fall of 2000. The following improvements were constructed:

- The plumbing inside the building was adjusted to separate kitchen and restroom wastewater.
- 1,000 gallon grease trap and 3,000 gallon septic tank was installed.
- New 5 feet I.D. pumping station was installed. This station will be able to handle projected future design flows of 5,600 gpd (as established in the 1996 UMP).

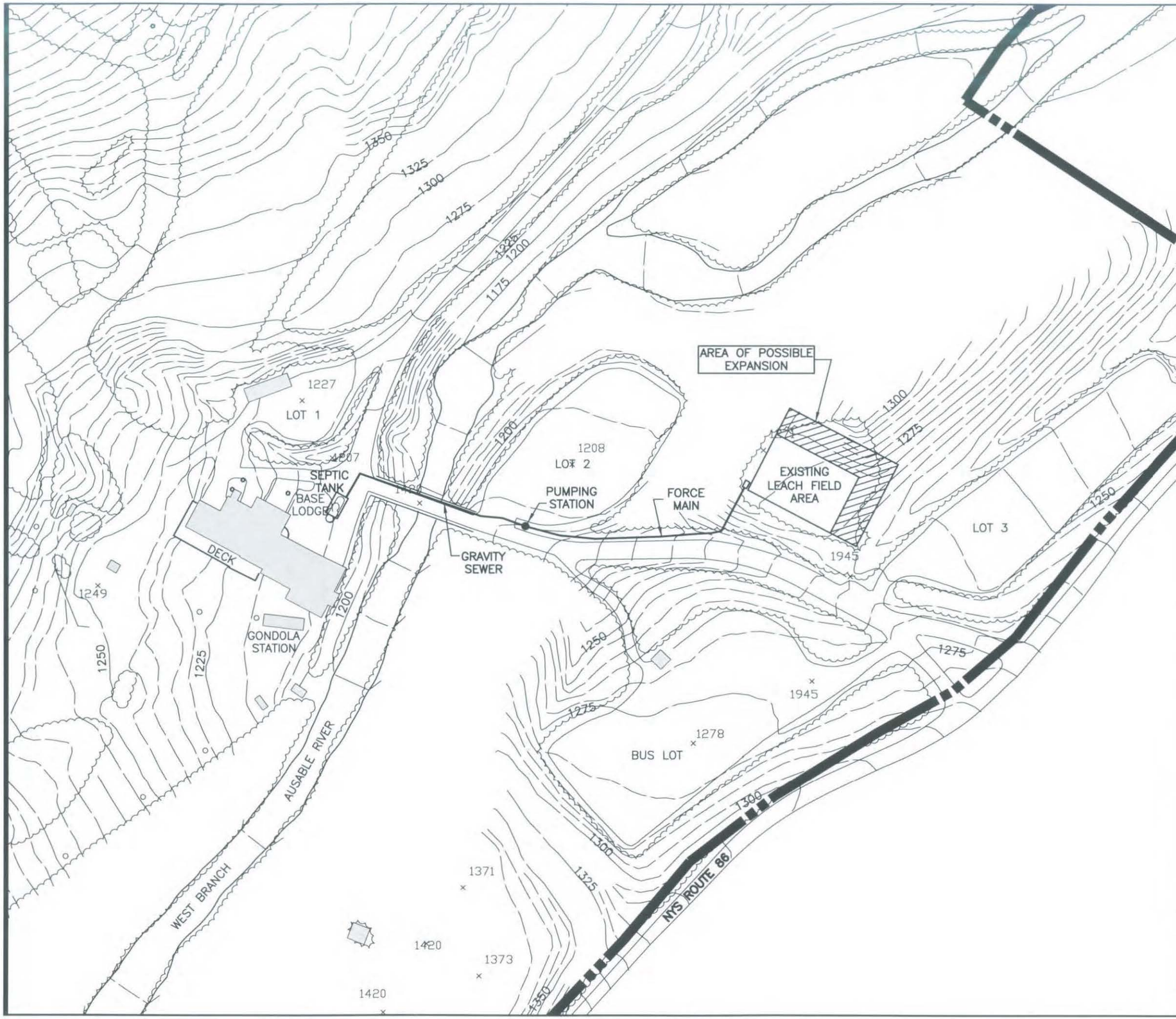
The capacity of the existing system is approximately 1,950 gpd based on four – 8 foot O.D., 12 feet deep seepage pits. The present permit allows discharge of 1,880 gpd (see Exhibit II-20).

c) Mid-Station Lodge

The SPDES permit for the Mid-Station Lodge lists the design flow for the wastewater system as 5, 530 gpd. Effluent flows by gravity to an 8,650 gallon septic tank located adjacent to the southeast corner of the lodge. Effluent then flows by gravity to a pumping station located adjacent to the septic tank. The pumping station houses two – 3 h.p. 100 gpm capacity pumps which alternately pump the effluent to two leachfields. The leachfields are located approximately 230 feet to the north of the lodge. The western leachfield is 90 feet by 45 feet and the eastern leachfield is 85 feet by 43 feet.

d) Maintenance Garage

Wastewater from the Maintenance Garage is treated and disposed of via a septic system located on the east side of the building. The septic system is comprised of a 1,000-gallon septic tank, a distribution box and two drywells. System installation occurred in September 1979.



WHITEFACE

Prepared For:

OLYMPIC REGIONAL DEVELOPMENT AUTHORITY
LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

COMPREHENSIVE MANAGEMENT AND PLANNING REVIEW AND UNIT MANAGEMENT PLAN

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Scale: 1" = 200'

Contour Interval = 5 Feet

NORTH

TITLE:

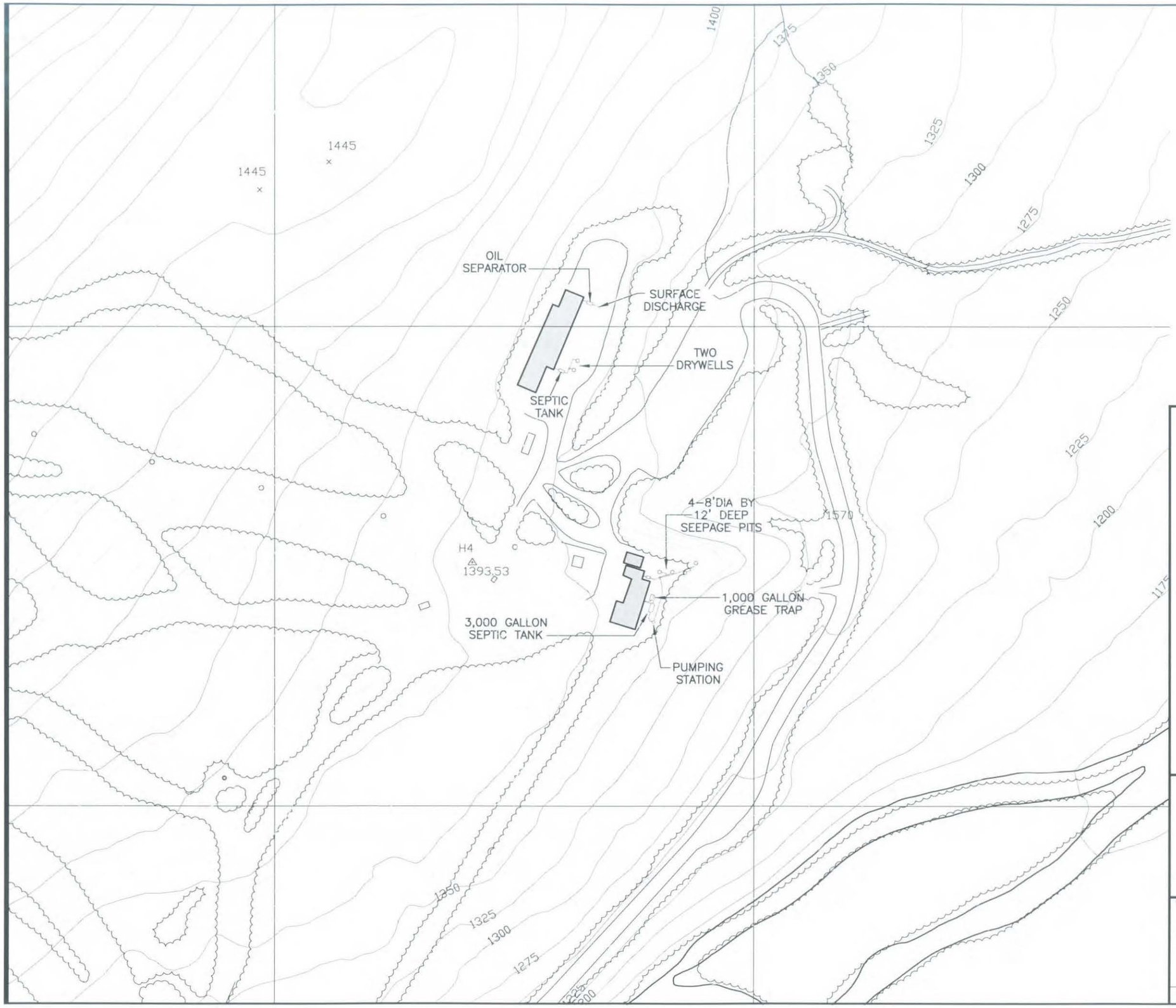
WASTEWATER DISPOSAL BASE LODGE SYSTEM

DATE: March 2002

FIGURE: II-19

PROJECT NUMBER: 01011

FILE:



WHITEFACE

Prepared For:

OLYMPIC REGIONAL DEVELOPMENT AUTHORITY
LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

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Scale: 1" = 200'
Contour Interval = 5 Feet
NORTH

TITLE:

WASTEWATER DISPOSAL EASY ACRES LODGE

DATE: March 2002

FIGURE #:

II-20

PROJECT NUMBER: 01102

FILE: [whiteface]

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Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning

Ivan Zdrahal Associates, PLLC

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Scale: 1" = 200'

Contour Interval = 5 Feet

NORTH

TITLE:

WASTEWATER DISPOSAL MID STATION LODGE

DATE: MARCH 2002

FIGURE #:

II-21

PROJECT NUMBER: 01102

FILE: [whiteface]

In addition to the septic system, floor drains in the Maintenance Garage area are connected to a separate 500 gallon oil/water separator. Ultimately, the effluent for the oil/water separation discharges at ground surface. The surface discharge will be eliminated by installation of a drywell.

6. Drainage

This section provides a brief evaluation of the ski resort main drainage components. The following areas have been reviewed:

- Drainage course which flows from Whiteface Cirque.
- Drainage system from Route 86 along "Bus Lot" and under parking Lot 2.

Whiteface Cirque Drainage

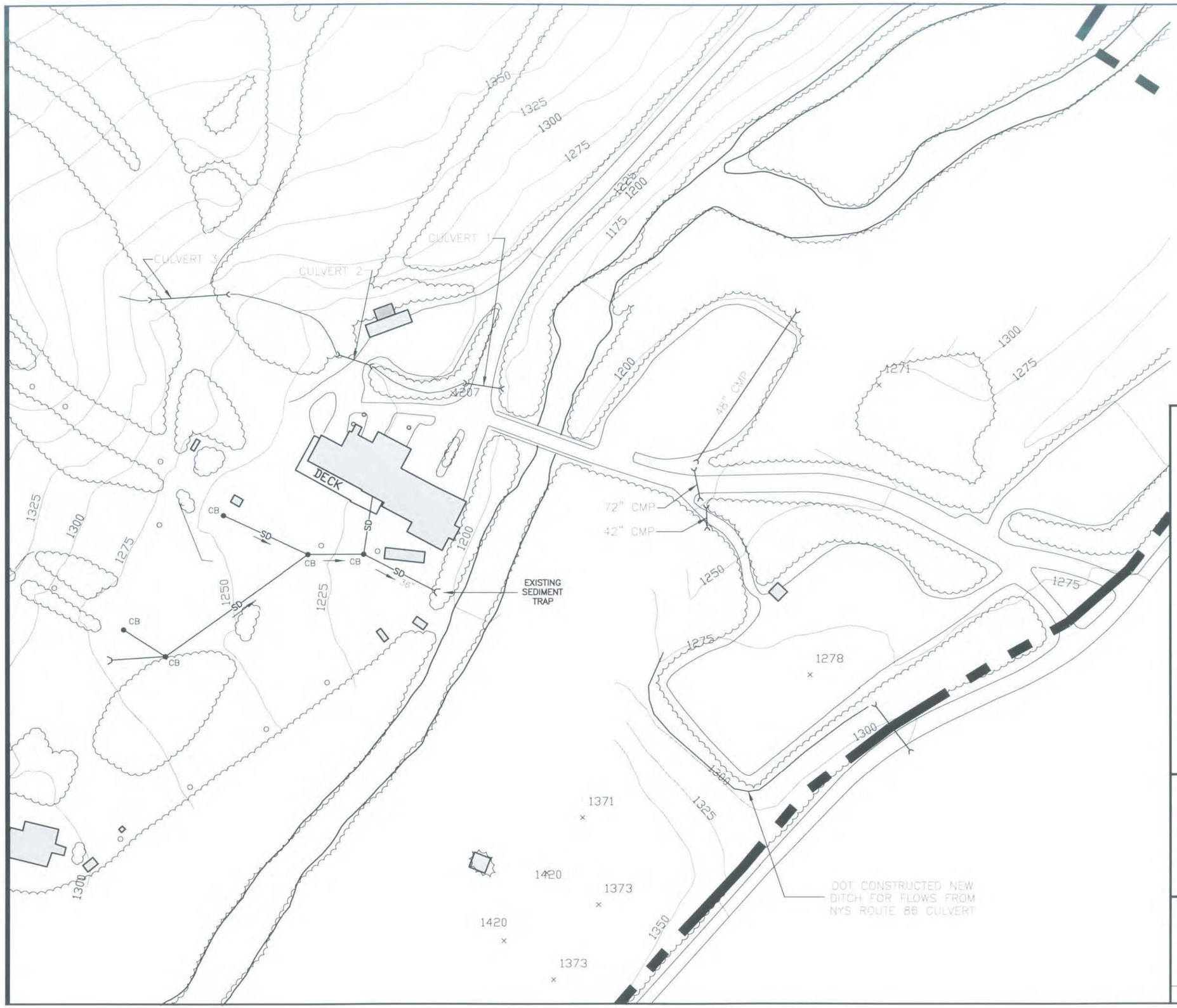
This drainage course enters into the Ausable River just downstream from the Ski Center access road bridge. There are five (5) major culverts altogether. Its location and size is shown on Exhibits II-22 and II-23. All culverts should be evaluated for structural integrity and hydraulic adequacy (especially culvert No. 1). Consideration should be given to protect these culverts to prevent clogging with debris during major storms as it occurred during the 1996 storm.

Route 86, Bus Lot and Lot 2 Drainage Course

Location of this system is shown on Exhibit II-22. After the 1996 flood, the NYSDOT did make improvements to the Route 86 culvert and installed a new drainage channel which directs flows around the Bus Lot parking.

Other

Remaining drainage system at the Ski Center consists of several small diameter piping systems, ditches and swales. Large parking areas are drained by sheet flow to adjacent wooded areas. Slope areas where concentrated runoff discharges occur should be regularly checked for erosion.



NOTES:

CULVERT 1:

7'x9' CMP ARCH PIPE

CULVERT 2:

TRIPLE – 42", 48" & 72" CMP (42" & 48" PARTIALLY CLOGGED WITH STONES). CULVERT IS IN BAD SHAPE, CAN'T TAKE HIGH FLOWS, WATER RISES TO A POINT THAT IT OVERTOPS ROAD.

CULVERT 3:

11'x7'9" CMP ARCH PIPE

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LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

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Scale: 1" = 200'

Contour Interval = 5 Feet

NORTH

TITLE:

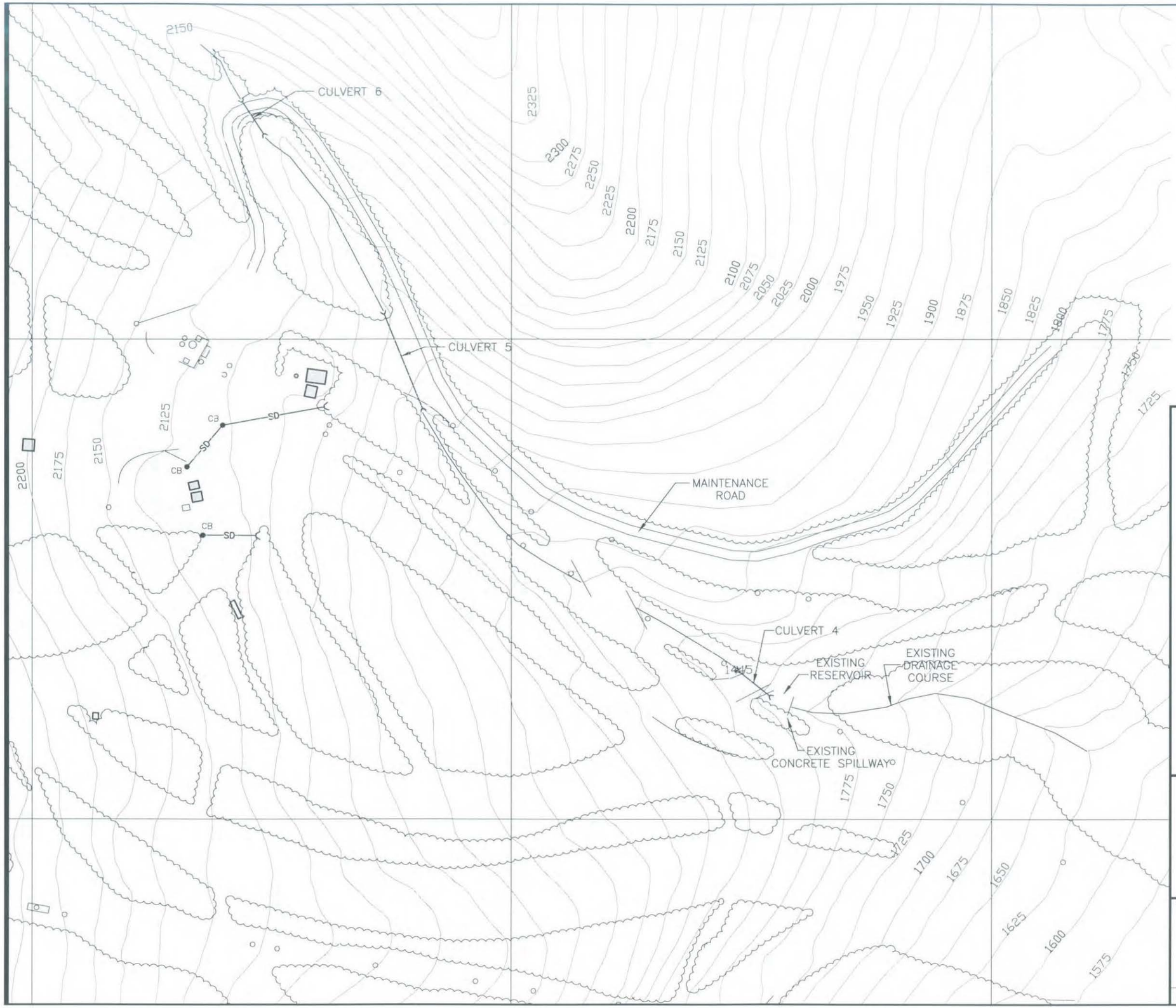
DRAINAGE SYSTEM BASE LODGE

DATE: March 2002

FIGURE #: II-22

PROJECT NUMBER: 01102

FILE: [whiteface]



NOTES:

CULVERT 4: DANNY'S BRIDGE CULVERT 9'x6'5" CMP ARCH

CULVERT 5: 9'x6'5" CMP ARCH

CULVERT 6: 10' DIA. CMP CULVERT

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LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

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Scale: 1" = 200'

Contour Interval = 5 Feet

NORTH

TITLE:

DRAINAGE SYSTEM MID STATION LODGE

DATE: March 2002

FIGURE #: II-23

PROJECT NUMBER: 01102

FILE: [whiteface]

7. Electrical Distribution

a) General Description

Electrical service for the facility is provided by five (5) circuits. Circuits 1 and 2 start directly from the incoming New York State Electric and Gas (NYSEG) 34.5 KV incoming line. Remaining circuits (3, 4 and 5) start at Unit A and B switchgear. Single line diagram of these circuits is presented in Exhibit II-23. This diagram was developed from the one that was included in the 1996 Unit Management Plan and is updated with new circuits based on information provided by the facility's electrician. A thorough verification of this diagram must be completed prior to its use for maintenance or planning and is only included to show general equipment connections and sizes.

As expected, the facilities electrical demand varies based on seasonal changes. Peak demands typically occur in January and February, and coincides with maximum snowmaking efforts.

The table below presents electrical demand and costs for the five seasons following the 1996 UMP Update.

Season	Highest Demand KWH	Total Annual KWH	Annual Cost ($)
95-96	7,867	12,706,725	1,190,849
96-97	7,770	13,951,779	1,285,431
97-98*	6,802	11,279,988	1,043,374
99-00	7,921	12,955,241	1,126,284
00-01	8,160	13,329,615	1,074,437

*A 6,000 CFM diesel air compressor was installed and in use by December for snowmaking purposes.

b) Pole Line

The majority of the lifts and mountain facilities are supplied by circuit No. 4 and the overhead line routed up the mountain. The poles and cross-arms appear to be in good condition. However, an annual inspection should be performed to assist in the identification of potential system weaknesses.

The remaining distribution system appears to be operational but system testing is needed to ascertain exact conditions. The following issues were identified for the present system:

- Need isolation switches for each circuit in the distribution system. Existing oil switch shuts down the whole ski complex.
- At pump house No. 1, need isolation switches for transformers and main line.
- "Kamlock" switches in pump house 1 and 3 need to be replaced.

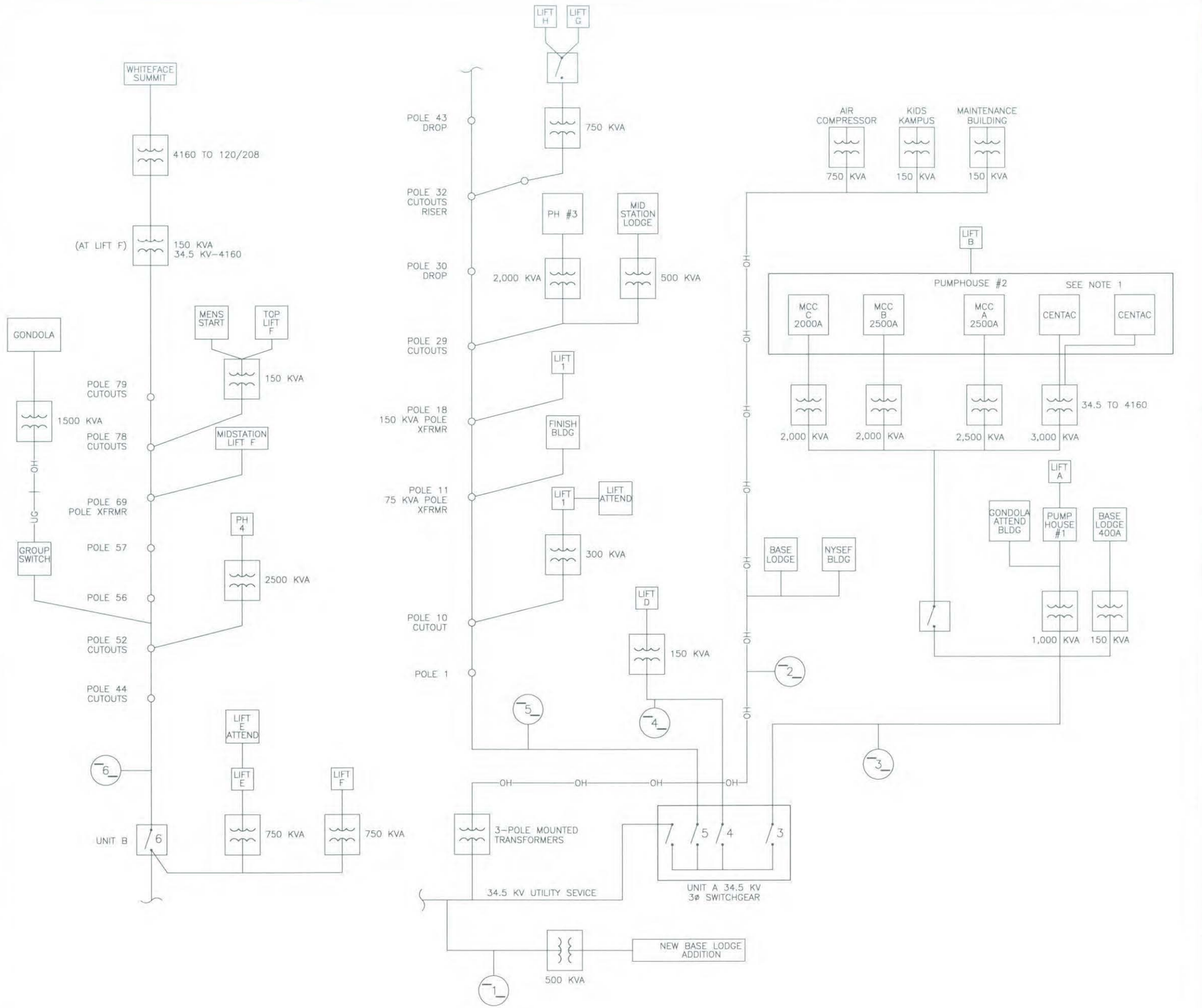
c) Testing

To fully establish current system conditions, a comprehensive testing and maintenance program should be considered. As a minimum, testing should include cabling, splices, equipment grounds, transformers (electrical and oil testing), switches (electrical and operations), and overcurrent protection devices for all equipment from the service down to, and including, the 480V switchboards. Along with testing, all equipment should be cleaned and repaired as necessary. Testing such as this will help establish current equipment conditions and a baseline for future testing and repairs. Future testing and maintenance should be considered annually. Additionally, testing is recommended to determine the demand profile for the facility to assist in developing an energy management plan.

As part of the system testing program, the enclosed single diagram should be verified and augmented. Access to the equipment, while de-energized, will permit a more thorough evaluation than allowed under this project.

d) Expansion

Based on the maximum capacity for the service entrance equipment, there appears to be spare capacity available. However, the verification of the one line diagram via the testing plan is needed to confirm exactly how much spare capacity exists in all the circuits.



FOR INFORMATION ONLY:

SINGLE LINE DIAGRAM ON INITIAL INVESTIGATION, MORE DETAILED INVESTIGATION REQUIRED TO FINALIZE DIAGRAM, PRIOR TO USING FOR MAINTENANCE, TROUBLE SHOOTING & FUTURE DESIGNS.

NOTES:

1. ONE ADDITIONAL CENTAC UNIT CAN BE ADDED TO PUMPHOUSE 2.

WHITEFACE

Prepared For:

OLYMPIC REGIONAL DEVELOPMENT AUTHORITY
LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

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Scale: 1" = 200'
Contour Interval = 5 Feet
NORTH

TITLE:

EXISTING SINGLE LINE ELECTRICAL DIAGRAM

DATE: MARCH 2002

FIGURE #: **II-24**

PROJECT NUMBER: 01102

FILE: [whiteface]

E. Inventory of Systems

1. Program Direction

a) The Authority

The New York State Olympic Development Authority (ORDA) was created by the State Legislature to institute a comprehensive, coordinated program of activities utilizing Olympic facilities, such as Whiteface Mountain Resort, in order to insure optimum year-round use and enjoyment (Chapter 404, Laws of 1981). The "Authority" consists of ten board members who shall include the Commissioners of Environmental Conservation, Commerce, and Parks and Recreation, and seven other members appointed by the Governor, by and with the advice and consent of the Senate.

b) Whiteface Mountain Resort Management

The Department of Environmental Conservation is the statutory custodian of the Whiteface Mountain Resort. The Authority, however, operates and manages the Whiteface Mountain Resort under an agreement with the Department of Environmental Conservation. Under this agreement, ORDA is to maintain the facility subject to DEC inspections; make capital improvements with DEC's prior written approval; establish a sinking fund for capital improvements; continue the level of prior public recreation; comply with specified prior agreements; and cooperate with DEC in completion of a Unit Management Plan Update and Amendment for the ski area. The Authority also manages the Mount Van Hoevenberg Recreation Area, Gore Mountain and Whiteface Mountain Memorial Highway under this agreement.

In March, 1991, DEC and ORDA consummated an inter-agency Memorandum of Understanding, superseding a 1984 Memorandum, for the continued use, operation, maintenance and management of the ski area by ORDA (See Appendix A).

c) United States Olympic Committee

Under an agreement entered into in October 1982, the Authority permitted the United States Olympic Committee the use of the Whiteface Mountain Resort facilities, along with other Authority facilities, for its training and competition

needs in connection with the Olympic Training Center located in Lake Placid, New York. The United States Olympic Committee does not have management authority under this agreement and cannot make any capital improvements to the premises.

d) New York Ski Educational Foundation

The Authority permits the New York Ski Educational Foundation (NYSEF) to conduct, under certain terms and conditions, its ski training, educational and competition programs at the Whiteface Mountain Resort. A specific building at Whiteface is dedicated to NYSEF.

2. Organization

a) Functions

The Olympic Regional Development Authority will operate the Whiteface Mountain Resort as necessary and in keeping with established legislation, plans and agreements.

b) Administration

Administrative functions are centralized for the Olympic Regional Development Authority. Programs of the Authority are directed by the CEO, working through department heads and venue managers. The organizational chart on the following page illustrates the administrative organization that covers all Olympic venues including Whiteface Mountain Resort.

c) Whiteface Mountain Resort Staff

Personnel at Whiteface Mountain Resort is comprised of approximately 40 permanent staff. The winter season requires the employment of 240 seasonal persons. The summer season requires employment of 41 seasonal positions to supplement the permanent staff.

3. Equipment

The equipment assigned to Whiteface Mountain Resort consists of automotive (such as trucks, tractors) and non-automotive (such as tables, chairs) items. A

current equipment inventory is maintained at Whiteface and the ORDA headquarters in Lake Placid and is available for public inspection.

4. **Contractual**

a) Concessionaire

On June 1, 1983, the Authority entered into an agreement with Centerplate whereby the Authority granted Centerplate a license consisting of exclusive rights to operate concessions including liquor/sales, food, and retail services at all ORDA Olympic facilities. Under the terms of the agreement, Centerplate Service America's
exclusive rights are subject to certain other contracts existing with the Authority, including, in the case of Whiteface Mountain Resort. Food concession inspections by the State Health Department occur about twice a year and adjustments to operations are made accordingly. Centerplate must provide ORDA annually with proof of any required liquor licenses.

Proposals are currently being sought by ORDA from concessionaires, and ORDA is scheduled to select a vendor by April 2004.

5. **Fiscal**

Annual expenditures and budgeting is divided into three (3) general categories.

a) Annual Maintenance and Operation

Such expenditures include routine costs, which do not extend or change the life or usefulness of the capital facility. This includes the allocation of funds for personnel services, supplies, utilities, contractual, administrative, and maintenance services. Revenues generated at Whiteface are used directly to defer annual maintenance and operation costs.

b) Rehabilitation and Improvement

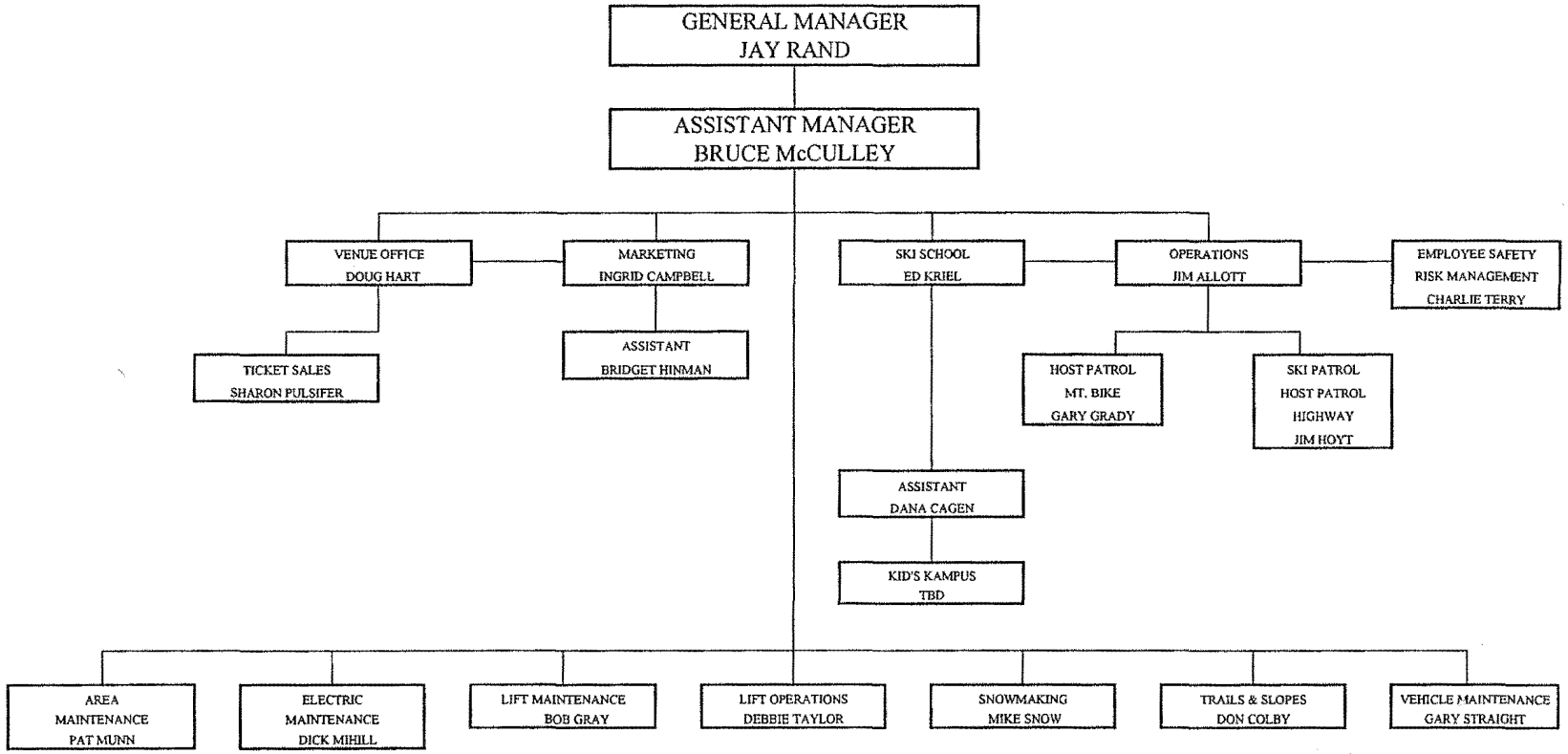
Rehabilitation and improvement expenditures are defined as those which extend or change the useful life of existing capital facilities. This includes general repair projects such as installation of new plumbing in existing buildings or a new roof over an existing building.

c) Capital

Capital expenditures are defined as the initial construction, development and acquisition costs of new facilities, resources and furnishings or for major reconstruction of facilities.

WHITEFACE MT. SKI CENTER

MANAGEMENT CHART



III. MANAGEMENT AND POLICY

A. Management Philosophy

The general goals, as specified in the 1996 Whiteface UMP, which continue to be applicable to this 2004 UMP Update are as follows:

1. To continue the planning process for Whiteface that is consistent with the Adirondack Park State Land Master Plan and Article XIV of the NYS Constitution. Whiteface is quite unique because it is a designated Intensive Use Area within the Forest Preserve that has received special authorization under Article XIV of the NYS Constitution. As an Intensive Use Area, Whiteface's basic management guidelines include providing facilities for intensive forms of outdoor recreation by the public. At the same time, Whiteface development will blend with the Adirondack environment and have minimum adverse impacts on surrounding State lands. A careful approach to enhancements at Whiteface will provide continued opportunity for the public to enjoy a unique experience, gain an appreciation for sensitive development, and expose large numbers of people to the Forest Preserve.

2. To continue the maintenance and operation of Whiteface Mountain Ski Center at a constant level over the ensuing five-year management period that will contribute to a stabilizing effect on Olympic region employment, economics, public recreation and governmental administration.

3. To continue the on-going improvement and modernization of parking lots, lodges and guest service facilities, ski trails, snowmaking and lift facilities at Whiteface that will add to the public accessibility, increase user safety, and enhance recreational pursuits.

In addition, the following more specific goals have been established specifically for this 2004 UMP Update.

1. Given the demographic trends in the North American ski and recreation market, there should be a clear family focus related to the upgrading and expansion of facilities.

2. At present there are several areas of imbalance throughout the Ski Center, in particular:

   - There is a need to establish a better balance between the uphill carrying capacity of the

lift systems and the downhill carrying capacity of the trails,

- There is a shortage of intermediate terrain on Little Whiteface,

- There is a need to develop a greater diversity of alternative recreation opportunities such as glade skiing and snowshoeing.

3. Whiteface Ski Center and ORDA have been in the business of world-class skiing events and providing high quality training for current and future world-class athletes for many years. One of the many goals of this current UMP is to identify management actions that will improve the ability and capacity for Whiteface to provide quality training opportunities for future Olympians and to attract hold a greater number of world-class alpine events.

4. One of the primary goals of this UMP update is to identify and formalize the commitment that ORDA and Whiteface have made to creating an atmosphere of environmentally-sensitive business practices. This commitment is plainly evidenced by ORDA'S allocation of funds and efforts to study the ecology of Bicknell's thrush before embarking on any actions that could possibly negatively affect this important bird species. This effort is precedent-setting in New York State. To date, no detailed studies have been performed, or have even been specifically proposed, to elucidate a critical analyses of how to best protect this species in New York's Adirondack region. This far-reaching effort being put forth by ORDA and Whiteface for the study of the ecology of Bicknell's thrush will contribute greatly to the protection of the Bicknell's thrush worldwide.

5. In addition, Whiteface has recently participated in the creation of the National Ski Areas Association Sustainable Slopes Charter, which outlines a series of best management practices related to the investigation and implementation of proactive, environmentally-friendly management actions that embody the philosophy of ORDA and Whiteface.

The following sections of the 2004 UMP Update have been prepared with the above objectives in mind. ORDA realizes that for Whiteface to compete in the northeastern ski market through the year 2009, it must provide state-of-the-art facilities which will attract skiers. Equally important, these objectives must be pursued within the context of the provisions of Article IV, as well as the SLMP, in order to perpetuate ORDA's commitment to a unique Forest Preserve skiing experience that Whiteface provides. In addition, in order for the Lake Placid region to be competitive in attracting future major events, Whiteface must offer the high quality facilities

expected by world-class athletes.

B. Regulatory Issues

There are many regulatory bodies that affect the operation and possible expansion of Whiteface Mountain. They are as follows:

1. New York State Constitution Article XIV

According to Article XIV of the NYS Constitution, Forest Preserve Lands are to be kept wild, with certain authorized uses and exceptions. The certain authorized uses and exceptions as they relate to Whiteface are as follows:

a) Ski Trails

The number of miles of ski trails that may be constructed and maintained on the north, east and northwest slopes of Whiteface Mountain in Essex County is 25 miles; and the maximum width of such trails is 200 feet provided that no more than 5 miles of such trails shall be in excess of 120 feet wide.

In addition to the above, the Constitution discusses buffer zones between ski trails and features such as other ski trails, access roads, maintenance areas, electrical distribution equipment and surrounding facilities. However, there are no clear criteria regarding the width of these buffer zones in relation to topography, drainage, outcrops, soil stabilization, public use carrying capacity, safety considerations, machinery requirements, and aesthetic concerns.

b) Vegetative Cutting

Article XIV states that Forest Preserve land, as currently fixed by law, either presently owned or acquired in the future by the State, will be kept forever as wild forest lands. As such, Forest Preserve lands cannot be leased, sold, or exchanged, or be taken by any public or private corporation. Timber on Forest Preserve land cannot be removed, sold or destroyed. In the interest of public safety and in consideration of the development of protective and recreational facilities, it has been necessary for the Department of Environmental Conservation, as the managing authority for Forest Preserve lands, to periodically ascertain the

limitations of legislative intent from the State Attorney General pertaining to the cutting, removal and destruction of trees.

In instances where cutting has not been sanctioned by constitutional amendment, the opinion and interpretation of the State's Attorney General has been sought on allowable cutting activities. One such opinion, dated January 18, 1934 pertaining to ski trail construction, states "ski trails (cross-country) may be constructed by the Conservation Department in the Forest Preserve when cutting trees to any material degree will not be necessary and the wild forest character of the Preserve will not be impaired."

In addition, trees may be removed for several other purposes. An Attorney General's opinion dated February 5, 1935 authorizes the removal of trees in the Forest Preserve that endanger public safety.

An Attorney General's opinion dated September 20, 1934 allows the use or removal of vegetation for surveying triangulation stations, where these stations serve as an aid to the conservation work of the State, and where the number of small trees used or removed for the work appear immaterial.

The cutting of trees to establish scenic vistas is addressed in an Attorney General's opinion of January 17, 1935. In this opinion, vistas may be established as long as the work is "carried on with care in order that the tree removal may not be sufficient to pass the point of immateriality." Before the creation of a vista, alternate locations in the area and alternate methods of achieving the view must be considered. For example, a more sparsely wooded site might be found, or an observation platform erected.

The salvage of windfall timber is authorized when it is determined that it represents a fire hazard in an opinion dated July 26, 1945. Salvaged timber cannot be sold or given away to anyone who may sell it, but it can be used for any project under Department of Environmental Conservation jurisdiction. Refer to the September 2, 1998 letter, provided in Appendix C from the NYSDEC Regional Forester noting the permissibility of milling lumber on-site for on-site use.

In addition to authorizing tree cutting for ski trails, Article XIV permits cutting for appurtenances associated with the trails. ORDA, as with the previous DEC management, considers appurtenances to the ski trails to be those improvements and structures necessary to operate a modern, state-of-the-art ski center for safe, enjoyable skiing. Generally, these include such facilities as ski lifts, lodges, service roadways, parking lots, utility and water lines and other buildings and improvements needed for the operation and management of the ski center. Appurtenances are constructed on a case-by-case basis based upon criteria of effective use, safe engineering design and minimum disturbance to vegetation and other natural features. They are performed in accordance with this UMP Update and Amendment and the 1991 DEC/ORDA MOU, as well as in accordance with the guidelines and criteria expressed in the Adirondack Park State Land Master Plan.

Attached in Appendix D is a February 17, 1977 letter from the NYSDEC General Counsel's office detailing the width to be accorded to ski center appurtenances, i.e., snowmaking lines, ski trail mergers, areas where trails and lifts coincide, and trail width necessary for ski trail grooming, skier safety, and compliance with international standards.

DEC's established policy regarding cutting, removal and destruction of trees and other vegetation on all forest preserve lands is found in the Policies and Procedures of the Commissioner of Environmental Conservation (Organization and Delegation Memorandum #84-06 as amended). This policy recognizes the tree cutting sanctioned through constitutional amendment (e.g., ski trails) and by the Attorney General's Opinions above. Adherence to the commissioner's tree cutting policy is mandated in the DEC/ORDA Memorandum of Understanding of 1991. A copy of the MOU is provided in Appendix A. All vegetation cutting at the Whiteface Mountain Ski Center must, and will be, in accordance with this policy.

The removal of cut trees may be done in any manner consistent with the guidelines of the SLMP, the UMP Update and Amendment and Article 8 of the ECL.

c) Non-Alienation

Article XIV of the State Constitution provides that Forest Preserve Lands "...shall not be leased, sold or exchanged to any corporation public or private."

2. Adirondack State Land Master Plan (SLMP)

As was indicated in the 1987 and 1996 Whiteface UMP's, the Adirondack State Park SLMP, adopted in 1971, provides general guidelines and criteria for the preservation, management and use of State Forest Preserve lands in the Adirondack Park by all State agencies. Under the plan, Whiteface Mountain Ski Center is classified as an Intensive Use Area:

"an area where the State provides facilities for intensive forms of outdoor recreation by the public."

The SLMP provides that the primary management guidelines for Intensive Use Areas is to provide the public opportunities for a variety of outdoor recreational pursuits in a setting and on a scale in harmony with the relatively wild and undeveloped character of the Adirondack Park.

The SLMP further states that:

"Priority should be given the rehabilitation and modernization of existing Intensive Use Areas and the complete development of partially developed existing Intensive Use Areas before the construction of new facilities is considered."

"The primary management guideline for Intensive Use Areas will be to provide the public opportunities for family group camping, developed swimming and boating, downhill skiing, cross country skiing under competitive or developed conditions on improved cross country ski trails, visitor information and similar outdoor recreational pursuits in a setting and on a scale that are in harmony with the relatively wild and undeveloped character of the Adirondack Park."

"All intensive use facilities should be located, designed and managed as to blend with the Adirondack environment and to have the minimum adverse impact possible on surrounding state lands and nearby private holdings. They will not be situated where

they will aggravate problems on lands already subject to or threatened by overuse, such as the eastern portion of the High Peaks Wilderness, the Pharaoh Lake Wilderness or the St. Regis Canoe Area or where they will have a negative impact on competing private facilities. Such facilities will be adjacent to or serviceable from existing public road systems or water bodies open to motorboat use within the Park."

"Construction and development activities in Intensive Use Areas will:

- avoid material alteration of wetlands;
- minimize extensive topographic alterations;
- limit vegetative clearing; and,
- preserve the scenic, natural and open space resources of the intensive use area."

"No new structures or improvements at any Intensive Use Area will be constructed except in conformity with a final adopted unit management plan for such area. This guideline will not prevent the ordinary maintenance, rehabilitation or minor relocation of conforming structures or improvements."

"Since the concentrations of visitors at certain intensive use facilities often pose a threat of water pollution, the State should set an example for the private sector by installing modern sewage treatment systems with the objective of maintaining high water quality. Standards for the State should in no case be less than those for the private sector and in all cases any pit privy, leach field or seepage pit will be at least 150 feet from the mean high water mark of any lake, pond, river or stream."

"Existing ski centers at Gore and Whiteface should be modernized to the extent physical and biological resources allow."

This UMP Update and Amendment for Whiteface Mountain Ski Center has considered all the above provisions for the SLMP. As a result, the UMP represents a document, when implemented, that will enhance Whiteface Mountain and the surrounding region in conformance with the SLMP.

3. 1996 Unit Management Plan

The 1996 UMP for Whiteface is still in effect for the Ski Center. Included in Section I of this update (see Table I-1) is a detailed status of management actions adopted in the 1996 UMP.

Amendments made to the 1996 UMP since its adoption include the following:

June 1997-Approval to exchange 3 acres of trail widening approved in the 1996 UMP for widening of the Skyward Trail and construction of a cross-over trail from the Skyward Trail to the Cloudspin Trail.

June 1999-Approval of three amendments to widen Upper Excelsior-Lower Northway and Skyward Trails and construct four emergency evacuation routes to access the gondola lift line.

June 2000-Approval to create 13 acres of glade skiing between the Upper Empire and Upper Northway trails, and to use the gondola to transport mountain bikers and their bikes to access three designated mountain bike routes.

June 2001-Approval to widen trail 19a an additional 11 feet, minor tree removal on the Upper Parkway Trail, widening of the Upper Thruway Trail to 132 feet to meet FIS standards, and a new exit off of the Lower Valley Trail.

Many of the management actions approved under the 1996 UMP update have been carried out. Some 1996-approved action still remain to be undertaken, and their implementation will be carried out under the specific conditions established in the 1996 UMP, as well as this 2004 UMP update.

4. Environmental Conservation Law

Section 9-09031 of the Environmental Conservation Law places the "care, custody and control" of the Whiteface Mountain Ski Center with the Department of Environmental Conservation.

5. **Olympic Regional Development Authority Act**

The Olympic Regional Development Act (Article 8, Title 28, NYS Public Authorities Law) establishes the Olympic Regional Development Authority (ORDA) and sets forth its responsibilities, functions and duties. The management of Whiteface was transferred to ORDA pursuant to Chapter 99 of the Laws of 1984. This authority was implemented by an agreement between the DEC and ORDA on April 1, 1984.

6. **DEC - ORDA Memorandum of Understanding**

The DEC and ORDA implement their mutual responsibilities for management of Whiteface through a Memorandum of Understanding (MOU) dated March 8, 1991 (see Appendix A). The MOU sets forth mutually agreeable methods and procedures by which managerial requirements are implemented. The MOU also establishes the means by which the 1996 and 2004 Updates and Amendments are to be implemented. Such means generally involve notification, inspection and review of actions to ensure compliance with the UMP Update and Amendment and applicable regulations.

IV. PROPOSED MANAGEMENT ACTIONS AND PROJECTED USE

A. Introduction

The following section of the Whiteface Ski Center UMP Update and Amendment identifies recommended management actions to upgrade the ski facilities and supporting infrastructure. Recommended actions include New Management Actions proposed in this UMP Update, as well as Conceptual Actions that, if and when they are proposed, will be the subject of future UMP amendments with accompanying SEQRA reviews.

The overall objectives of the upgrading plan are to:

- bring all of the facilities into balance in a manner whereby the Ski Center will comfortably accommodate peak days,
- improve the ability for Whiteface to compete in the modern ski industry through optimizing skier visits and revenues and providing an attractive venue for summer visitors,
- create a pleasing, user-friendly environment that enhances the opportunities for generating four-season tourism and other economic stimuli in the region,
- continue the on-going improvement and modernization of parking lots, lodges and guest service facilities, ski trails, snowmaking and lift facilities at Whiteface to add to the public accessibility, increase user safety, and enhance four-season recreational pursuits,
- develop a clear family focus for all programs and facilities,
- identify management actions that will improve the ability and capacity for Whiteface to attract and hold a greater number of alpine events, and
- identify and formalize the commitment that ORDA and Whiteface have made to create an atmosphere of environmentally sensitive business practices. Whiteface has recently participated in the creation of the National Ski Areas Association Sustainable Slopes Charter, which outlines a series of best management practices related to the investigation and implementation of proactive, environmentally-friendly management actions.

The goal of planning for a ski center is to balance all of the components of the facility (including parking, ski terrain type and amount, lift capacity, lodge capacity and sewer and water services) in order to have a well run ski center that is easily accessed, that is utilized by its patrons comfortably and safely, and is able to be managed and maintained efficiently and cost-effectively. Most importantly at Whiteface these considerations must be developed with great

sensitivity for the Forest Preserve. This UMP represents the continuation of a planning process for Whiteface that takes into account the Adirondack Park State Land Master Plan and Article XIV of the NYS Constitution. Whiteface is very unique because it is a designated Intensive Use Area within the Forest Preserve. As an Intensive Use Area, Whiteface's basic management guidelines include providing facilities for intensive forms of outdoor recreation by the public. At the same time, Whiteface is still required to blend with the Adirondack environment and have minimum adverse impacts on surrounding State lands.

The format of this section is broken down to two basic components. The first component identifies the full recommended upgrading plan in terms of improvements to lifts, trails, snowmaking, base area, lodges, parking, and utilities. The second component of this section has broken the full upgrading program into five phases wherein the first phase is intended to begin in the spring of 2004. Each phase describes the proposed management actions and an estimate of associated costs.

The first priorities of the phasing program are to:

- replace the Mid-station Shuttle double chair and the Valley triple chair with a high-speed detachable quad (completed in summer 2002),
- construct intermediate trails from the summit of Little Whiteface (#73) (completed by June 2002 Amendment to 1996 UMP),
- finish widening the Easy Acres terrain,
- upgrade the snowmaking system in order to permit Whiteface to be more resilient to the variations of weather in the northeast,
- complete the Phase II improvements to the Base Lodge,
- upgrade and expand the Easy Acres Lodge, and
- construct the Lot #5 parking area.

Further priorities include completing on-mountain improvements focused on bringing the lift and trail pods into balance in terms of uphill and downhill carrying capacities, widening the Downhill piste for homologation, and completing Base Lodge renovations. Concurrently, improvements have been recommended in each phase regarding the surface condition of certain trails in order to allow them to be skied by a greater range of skier ability levels.

One of the results of the full upgrading program is that the Comfortable Carrying Capacity of the Ski Center will increase from the current figure of 5,070 skiers at one time to 5,640 skiers.

B. Justification for Proposed Upgrading of Whiteface

There are two overriding reasons to implement the recommendations presented in this UMP Update and Amendment: (1) to maintain market share and the related $38 million impact to the region from the current business levels, and (2) to increase market share and thereby increase the positive regional economic impact. A detailed argument for these two reasons is provided below.

1. Defensive Move to Maintain Current Level of Economic Impact

Currently, Whiteface has an economic impact to the Lake Placid Region of almost $38 million, which could potentially decline if the ski facilities are not maintained at a competitive level. This decline would result in increased regional unemployment, lower tax revenues, lower property values, a decrease in sponsorship dollars supporting ORDA, and an overall decline in New York State tourism.
The three primary defense reasons compelling continued improvements to the four-season recreation product are to:

- keep pace with competitors,
- mitigate the adverse effect of marginal snow years, and
- justify any future price increases.

A brief description of these factors is provided below.

a) Competitive Position

With the consolidation of the ski industry, the ever-increasing demands of the skiing public, decreasing customer loyalty, and the slower growth in the overall U.S. ski industry, Whiteface more than ever faces increased competition in retaining its skier base.

Whiteface is facing the stiffest competition in the industry - the biggest resort in the East, Killington; the well-funded Quebec areas (Mont Tremblant and Mont Ste. Anne), and the Western mega-resorts in Colorado, Utah, and California. In order for Whiteface to even maintain its current market share, it needs to not only maintain the current levels of service and product offerings, but also invest in improvements commensurate with the improvements being made by its

competitors. Otherwise, industry competition has shown that those areas that are not able to keep pace with customer demands and other resorts will soon be forced out of business. Evidence of this trend is shown by the dramatic decrease in the number of operating ski areas in the past 10 years.

b. Mitigate Effects of Weather with Snowmaking

A key factor in operating a successful ski area is to be able to offer skiers a long ski season with excellent conditions - regardless of the natural snowfall levels and wind conditions. Thus, Whiteface needs to improve its snowmaking capacities in order to provide a consistent product and to create a form of insurance or protection against the pitfalls of years with poor snowfall. As experienced with the results of the 2001-02 ski season, poor natural snowfall is a very real threat to operating a viable ski area business.

c. Justify Price Increases while Maintaining Perceived Value

Whether it is to keep pace with the rate of inflation or escalating costs, ski areas need to be able to demand annual price increases in order to maintain profitability and also to reach the higher profitability level that allows for continued capital re-investment. However, consumers are unwilling to pay these higher prices without realizing improvements in the products and services offered, or in the relative value of the overall experience. Whiteface has made marked improvements to its product since the 1996 UMP, however, Whiteface's product is still perceived to be lower than that provided by its competitors. Its prices also are lower than those charged by the larger competitors. Thus, for Whiteface to be able to improve its profitability, it needs to be able to realize higher per capita revenue from its skiers, and it thereby needs to make continued improvements in order to justify these price increases.

2. Offensive Move to Increase Skier Volume and Economic Impact

As opposed to trying just to maintain the current skier volume, Whiteface needs to increase its business to become a more profitable and self-sustaining growth operation. Growing skier visit volume involves increasing skier frequency and creating new skiers. To be successful, all of these efforts require that Whiteface provide an excellent product and service offering, while maintaining a competitive pricing structure.

Increasing Skier Frequency – Recent trends in the recreation industry indicate that people are taking shorter vacations (2-4 days) and are choosing destinations that are closer to home. In addition, current demographics indicate that baby-boomers and their children represent the two largest population groups. As such, destinations that are focused on families and offer a variety of attractions in one spot are most successful. This is true for both the summer and the winter months. Increasing the four-season recreational offerings at Whiteface will increase the appeal of the mountain and the Lake Placid area as a vacation destination.

Creating New Skiers – In recent years the National Ski Areas Association (NSAA) has focused on increasing the number of people being introduced to snow sports and, more importantly, insuring that the first-timer's experience encourages repeat participation. To bring new skiers to the sport this conversion rate (turning first-timers into repeat participants) must be increased. In addition to specialized lesson programming, incentive packages, and individual attention, creating a positive experience for a first-timer includes minimizing hassles and confusion throughout the day. To increase its conversion rate, Whiteface must focus on improving base area sequencing and guest service facilities. Guests must be able to easily drop-off passengers and gear close to the Base Lodge. Ticketing areas and rental facilities must be easy to find, adequately sized and convenient to the snow surface. Restrooms must also be easy to find, and conveniently placed. Restaurants and cafeterias must provide enough seating for the lunchtime rush, and be pleasant spaces to sit and relax.

C. Proposed Ski Center Upgrading Plan

1. Lifts

TABLE IV-1
PROPOSED LIFT SPECIFICATIONS

Map Ref.	Lift Name	Lift Type	Vert. Rise (ft.)	Slope Length (ft.)	Avg. Grade (%)	Actual Design Capacity (persons/hr.)	Year Installed/ Upgraded
A	*Mixing Bowl*	Triple	92	*887*	*10%*	*1,200*	1984
B	*Bear*	Quad	*325*	*1,712*	19%	*1,800*	1984
C	Bunny Hutch	Triple	258	1,792	14%	1,600	1986/97
D	*Mid-Station Shuttle (Removed)*						
E	*Valley Triple (Removed)*						
F	Summit Quad	Quad	1,830	4,706	39%	1,500	1997
G	*Little Whiteface*	*Quad*	1,555	4,515	34%	*1,800*	1988
H	*Mountain Run (Removed)*						
I	*Freeway*	Double	*1,400*	*3,749*	*37%*	800	1979
J	*Handle Tow*	Surface	*40*	*350*	*11%*	400	1992
K	Cloudsplitter Gondola	Gondola (8)	2,432	8,487	29%	1,800	1999
L	*New Detachable Quad*	*Det. Quad*	*1,314*	*6,265*	*21%*	*2,400*	*TBD*
*M**	*Double Chair*	*Double*	*1,565*	*3,682*	*43%*	*1,200*	*TBD*
	TOTAL					***14,500***	

Source: SE GROUP, Whiteface
Italics denote change from Existing Conditions
* Denotes Conceptual Actions

Discussion

As set forth in the above table, it is recommended that the following lift improvements be made in the upgrading program of this UMP Update. The hourly capacities of the lifts, where possible, have been established so that they more closely match the downhill terrain they serve than is the case with the existing lifts.

- **Mixing Bowl (A):** The existing lift should be upgraded from a double chair to a triple chair. The lift will be lengthened 200' and the top station will be re-aligned towards the southeast to allow for more beginner terrain and better unloading capability.

- **Bear (B):** The existing double chair should be replaced with a fixed grip quad chair, and the bottom terminal should be relocated as shown on the map to make it more easily accessible to the novice and low intermediate skiers.
- **Mid-Station Shuttle (D) and Valley Triple (E):** The existing double chair and triple chair should be replaced with a high-speed detachable quad (L). The mid-station of the Valley Triple should be eliminated. (Completed summer 2002).
- **Little Whiteface and Mountain Run (G and H):** In order to balance uphill and downhill capacities and still provide acceptable service to the Little Whiteface ski terrain, the removal of the Lift H double chair and the replacement of the Lift G double chair with an 1800 per hour fixed grip quad is recommended. As a means of making the popular lower portion of Little Whiteface directly accessible to skiers using Lift G, the mid-station unload should be retained and redesigned to accommodate the four seater chairs.
- **Freeway (I):** The top terminal of this lift should be lowered approximately 60 vertical feet and the lift should be shortened approximately 500 feet. This will help accommodate the intermediate skiers on the proposed new trail from Little Whiteface (Trail 73), and allow smooth access from the Freeway chair to Parkway, Thruway, Draper's Drop, and associated terrain.
- **Handle Tow (J):** This beginner lift should be replaced with a surface conveyor lift and realigned with the bottom terminal extended to a point where it is more easily accessible (in terms of elevation) to the first day skier.
- **Double Chair (M): Conceptual Action.** A double chair would service a new "Tree Island" pod of expert terrain north of the Summit Quad. The bottom terminal would be situated in the vicinity of the bottom terminal of the existing Summit Quad and the top terminal of the new detachable quad (Lift L).

In addition, all of the aerial lifts should be equipped with restraining bars and all but the shortest lifts should also be equipped with foot rests. In order to reduce wind exposure and to accommodate those skiers uncomfortable with excessive heights, lift profiles should be maintained at, or as close to as possible, the minimum distance of 13' from the bottom of the chair seat to the snow surface on those sections of trails where skiing is allowed under the lift line. (NYS code requirement). This is of particular importance on those lifts serving the beginner, novice, and low intermediate skiers.

2. Alpine Ski Trails

TABLE IV-2
PROPOSED TERRAIN SPECIFICATIONS

Map Ref	Trail/Area Name	Slope Length (ft.)	Avg. Width (ft.)	Buffers		Appr. Area (ac.)	Skier Ability Level
				Snow-making	Lift		
1	*Upper Cloudspin*	*2,600*	*149*	*		*8.9*	*Expert*
2	*Lower Cloudspin*	*2,500*	*138*	*		*7.9*	*Adv. Inter.*
3	*Upper Skyward*	*800*	*177*	*		*3.3*	*Expert*
3a	*New- Niagara*	*150*	*150*	*		*0.5*	*Adv. Inter.*
4	*Lower Skyward*	*3,800*	*140*	*	*	*12.2*	*Adv. Inter*
5	**Paron's Run**	**2,600**	**107**	*		**6.4**	**Adv. Inter**
5a	*New Glade*	*1,700*	*250*			*9.8*	*Expert*
6	Excelsior	5,600	85	*		10.9	Inter.
*6a**	*New-Excelsior Bypass*	*300*	*110*	*		*0.8*	*Adv. Inter.*
7	Essex	1,000	83	*		1.9	Expert
8	Upper Northway	1,000	74	*		1.7	Expert
9	Lower Northway	1,700	87	*		3.4	Inter.
10	Connector	700	40	*		0.6	Adv. Inter.
11	*Approach*	*1,900*	*65*	*		*2.8*	*Adv. Inter.*
12	***Empire***	***5,600***	***60***			***2.2***	***Expert***
*12a**	*New*	*985*	*80*	*		*1.8*	*Inter.*
13	***Upper Mackenzie***	***1,000***	***95***	*		***2.2***	***Expert***
14	Lower Mackenzie	1,400	106	*		3.4	Adv. Inter
15	***Upper Wilderness***	***500***	***105***	*		***1.2***	***Expert***
16	Lower Wilderness	1,400	170	*		5.5	Adv. Inter.
17	Mountain Run	2,400	180	*	*	9.9	Adv. Inter.
18	***Upper Parkway***	***1,800***	***135***	*		***5.6***	***Adv. Inter.***
19	***Lower Parkway***	***2,700***	***122***	*	*	***7.6***	***Inter.***
20	*Upper Thruway*	*1,000*	*165*	*		*3.8*	*Adv. Inter.*
21	***Lower Thruway***	***1,400***	***113***	*		***3.6***	***Inter.***
22	***Upper Valley***	***2,000***	***106***	*	*	***4.9***	***Low Inter.***
23	***Lower Valley A***	***1,500***	***74***	*	*	***2.5***	***Low Inter.***
23	Lower Valley B	900	200	*	*	4.1	Low Inter.
23	Lower Valley C	1,700	160	*	*	6.2	Novice
24	Burton's	600	30	*		0.4	Inter.
25	*Broadway*	*1,700*	*135*	*		*5.3*	*Inter.*
26	Easy Street A	400	10	*		1.0	Low Inter.
26	Easy Street B	1,700	65	*		2.5	Low Inter.
27	Boreen	5,600	86	*		11.1	Low Inter.
27a	*New Glade*	*1,425*	*175*			*5.7*	*Inter.*
28	***Danny's Bridge [Terrain Park]***	***1,100***	***86***	*		***2.2***	***Expert***
29	*River Run*	*1,000*	*110*		*	*2.5*	*Inter.*
30	*Mixing Bowl*	*1,100*	*150*	*	*	*3.8*	*Beginner*

Map Ref	Trail/Area Name	Slope Length (ft.)	Avg. Width (ft.)	Buffers		Appr. Area (ac.)	Skier Ability Level
				Snow-making	Lift		
31	Wolf	1,800	58	*		2.4	Novice
31a	***Fox***	***2,500***	***71***	*		***4.1***	***Low Inter.***
32	Bear	1,700	150	*		5.9	Expert
33	Deer	950	50		*	1.1	Novice
34	Silver-upper	1,000	73	*		1.7	Novice
34	***Silver-lower***	***1,000***	***90***	*		***2.1***	***Beginner***
34	*Silver-Kampus Kruiser*	*500*	*73*	*		*0.8*	*Beginner*
35	*Gold*	*1,800*	*135*	*	*	*5.6*	*Novice*
36	***Bronze***	***1,650***	***90***	*		***3.4***	***Novice***
36a	*New Glade*	*950*	*175*			*3.8*	*Low Inter.*
37	Home Run	500	25	*		0.3	Novice
38	Follies	2,400	60	*		3.3	Inter.
39	Valvehouse Road	300	50	*		0.3	Expert
40	***Silver Shoot***	***700***	***60***	*		***1.0***	***Novice***
41	Main Street	400	60	*		0.6	Novice
42	Runner Up – upper	400	30	*		0.3	Low Inter.
42	Runner Up – lower	400	30	*		0.3	Low Inter.
43	Medalist	1,600	50			1.8	Novice
44	Round-a-bout	1,100	50	*		1.3	Novice
45	Easy Way	500	25	*		0.3	Low Inter.
46	Upper Boreen	800	40			0.7	Low Inter.
47	Calamity Jane	400	70	*		0.6	Inter.
48	*Ladies Bridge*	*500*	*110*	*		*1.3*	*Inter.*
49	*Lower Gap*	*300*	*110*	*		*0.8*	*Inter.*
50	Riva Ridge	1,400	25	*		0.8	Adv. Inter.
51	Cloudspin Cut	400	25	*		0.2	Adv. Inter.
52	*Yellow Brick Road-REVEG*	-	-			-	-
53	Upper Switchback	600	25	*		0.3	Adv. Inter.
54	Lower Switchback	600	25	*		0.3	Adv. Inter.
55	Crossover Loop	600	25	*		0.3	Adv. Inter.
56	Glen	450	25			0.3	Adv. Inter.
57	Victoria Shoot	250	100	*		0.6	Adv. Inter.
58	Lower Empire	350	80	*		0.6	Inter.
59	Weber's Way	400	120	*		1.1	Inter.
[1]60	1900 Road	700	25	*		0.4	Adv. Inter.
61	2200 Road	300	60	*		0.4	Adv. Inter.
62	High Country Glade	1,550	150			5.3	Adv. Inter
63	Low Road	200	70			0.3	Inter.
64	Tom Cat	400	38	*		0.3	Inter.

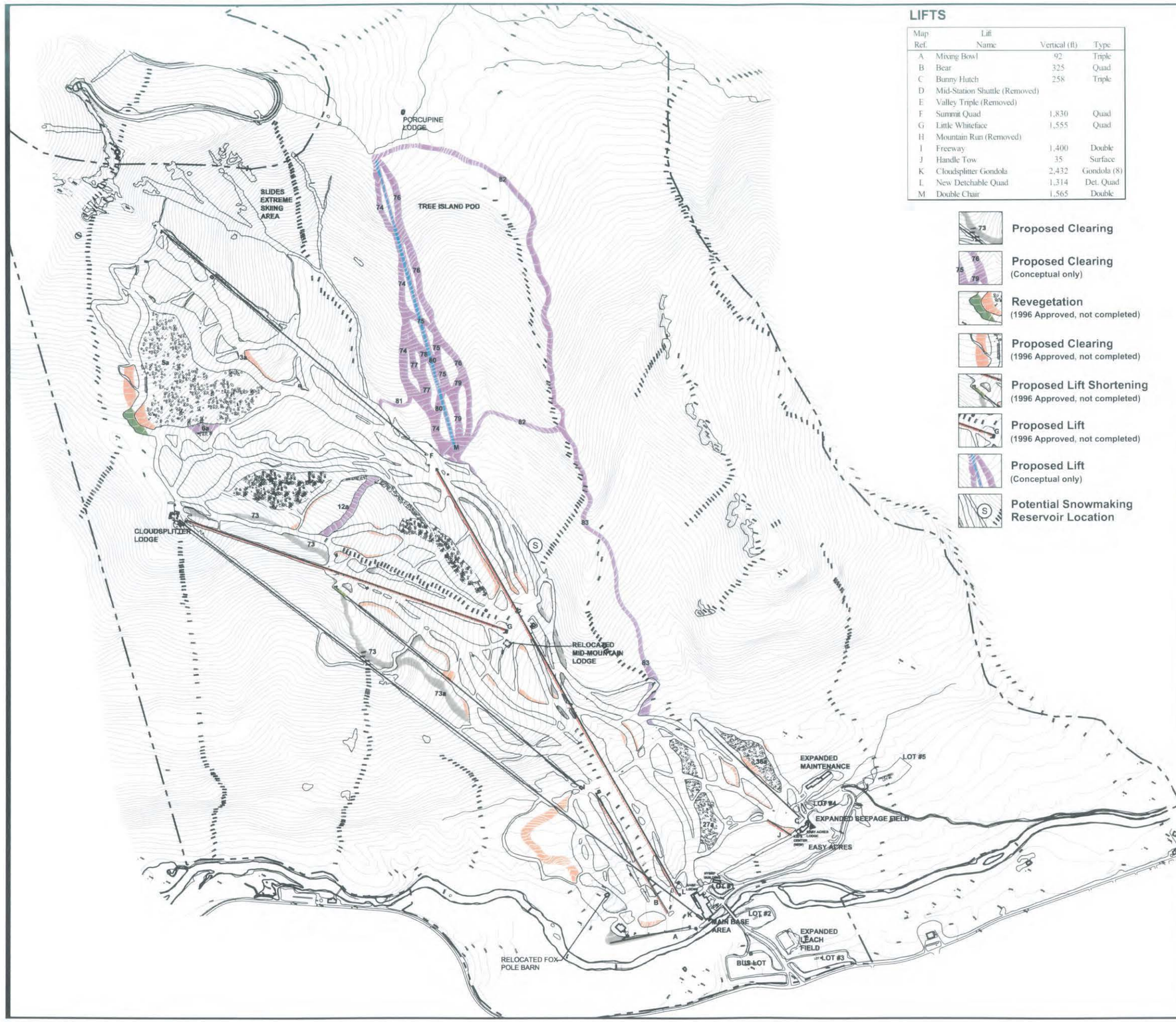
[1] Constructed summer 2002 per June 2002 Amendment to 1996 UMP.

Map Ref	Trail/Area Name	Slope Length (ft.)	Avg. Width (ft.)	Buffers		Appr. Area (ac.)	Skier Ability Level
				Snow-making	Lift		
65	On Ramp	600	25	*		0.3	Adv. Inter
66	Wolf Run	550	80	*		1.0	Novice
67	Summit Express	550	80	*		1.0	Inter.
68	Brookside [Terrain Park]	1,800	100	*		4.1	Expert
69	Cloudsplitter Glade	300	500			3.4	Expert
70	10th Mtn Division Glade	1,000	450			10.3	Expert
71	Draper's Drop	1,700	130	*		5.1	Inter.
72	Parkway Exit	200	100	*		0.5	Inter.
73	*New Intermediate Trail*[1]	*3,500*	*90*	*		*7.2*	*Inter.*
73a	*New Adv. Intermediate Trail*[1]	*1,150*	*100*	*		*2.6*	*Adv. Inter.*
*74**	*New Trail – Island Pod*	*3,790*	*60*	*	*	*5.2*	*Expert*
*75**	*New Trail – Island Pod*	*1,360*	*70*	*		*2.2*	*Expert*
*76**	*New Trail – Island Pod*	*3,770*	*60*	*		*5.2*	*Expert*
*77**	*New Trail – Island Pod*	*990*	*80*	*		*1.8*	*Expert*
*78**	*New Trail – Island Pod*	*410*	*70*	*	*	*0.7*	*Expert*
*79**	*New Trail – Island Pod*	*800*	*75*	*		*1.4*	*Expert*
*80**	*New Trail – Island Pod*	*320*	*60*	*	*	*0.4*	*Expert*
*81**	*New Escape Trail*	*540*	*35*	*		*0.4*	*Expert*
*82**	*New Intermediate - Upper*	*6,390*	*55*	*		*8.1*	*Inter.*
*83**	*New Intermediate - Lower*	*3,750*	*50*	*		*4.3*	*Inter.*
	TOTAL	24.45	miles			290.6	Acres

Source: SE GROUP, Whiteface

Italics denote change from Existing Conditions, ***Bold denotes improvements approved in 1996 UMP, as listed on the following page.***

*** Denotes Conceptual Action**



LIFTS

Map Ref.	Lift Name	Vertical (ft)	Type
A	Mixing Bowl	92	Triple
B	Bear	325	Quad
C	Bunny Hutch	258	Triple
D	Mid-Station Shuttle (Removed)		
E	Valley Triple (Removed)		
F	Summit Quad	1,830	Quad
G	Little Whiteface	1,555	Quad
H	Mountain Run (Removed)		
I	Freeway	1,400	Double
J	Handle Tow	35	Surface
K	Cloudsplitter Gondola	2,432	Gondola (8)
L	New Detchable Quad	1,314	Det. Quad
M	Double Chair	1,565	Double

Proposed Clearing

Proposed Clearing
(Conceptual only)

Revegetation
(1996 Approved, not completed)

Proposed Clearing
(1996 Approved, not completed)

Proposed Lift Shortening
(1996 Approved, not completed)

Proposed Lift
(1996 Approved, not completed)

Proposed Lift
(Conceptual only)

Potential Snowmaking Reservoir Location

TRAILS

Map Ref.	Trail/Area Name				
1	Upper Cloudspin	27	Boreen	53	Upper Switchback
2	Lower Cloudspin	27a	New Trail-glades	54	Lower Switchback
3	Upper Skyward	28	Danny's Bridge [Terrain Park]	55	Crossover Loop
3a	New - Niagara	29	River Run	56	Glen
4	Lower Skyward	30	Mixing Bowl	57	Victoria Shoot
5	Paron's Run	31	Wolf	58	Lower Empire
5a	New Trail-glades	31a	Fox	59	Weber's Way
6	Excelsior	32	Bear [Half Pipe]	60	1900 Road
6a	New-Bypass	33	Deer	61	2200 Road
7	Essex	34	Silver- upper	62	High Country Glade
8	Upper Northway	34	Silver- lower	63	Low Road
9	Lower Northway	34	Silver- Kampus Kruiser	64	Tom Cat
10	Connector	35	Gold	65	On Ramp
11	Approach	36	Bronze	66	Wolf Run
12	Empire	36a	New Trail-glades	67	Summit Express
12a	New Trail	37	Home Run	68	Brookside [Terrain Park]
13	Upper Mackenzie	38	Follies	69	Cloudsplitter Glade
14	Lower Mackenzie	39	Valvehouse Road	70	10th Mtn Division Glade
15	Upper Wilderness	40	Silver Shoot	71	Draper's Drop
16	Lower Wilderness	41	Main Street	72	Parkway Exit
17	Mountain Run	42	Runner Up - upper	73	New Intermediate Trail
18	Upper Parkway	42	Runner Up - lower	73a	New-Trail
19	Lower Parkway	43	Medalist	74	New Trail - Island Pod
20	Upper Thruway	44	Round-a-bout	75	New Trail - Island Pod
21	Lower Thruway	45	Easy Way	76	New Trail - Island Pod
22	Upper Valley	46	Upper Boreen	77	New Trail - Island Pod
23	Lower Valley A	47	Calamity Lane	78	New Trail - Island Pod
23	Lower Valley B	48	Ladies Bridge	79	New Trail - Island Pod
23	Lower Valley C	49	Lower Gap	80	New Trail - Island Pod
24	Burton's	50	Riva Ridge	81	New Escape Trail
25	Broadway	51	Cloudspin Cut	82	New Intermediate - Upper
26	Easy Street A	52	Yellow Brick Road	83	New Intermediate - Lower
26	Easy Street B				

WHITEFACE

Prepared For:

OLYMPIC REGIONAL DEVELOPMENT AUTHORITY
LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

COMPREHENSIVE MANAGEMENT AND PLANNING REVIEW AND UNIT MANAGEMENT PLAN

600 0 300 600 1200 2400
Scale: 1" = 1200'
Contour Interval = 5 Feet
NORTH

TITLE:

PROPOSED SKI CENTER

DATE: MARCH 2004

FIGURE #:

IV-1

PROJECT NUMBER: 01102

FILE: [whiteface]

The recommended trail improvements noted above for the following trails were approved in the 1996 UMP, but have not been completed:

- Upper Cloudspin, Empire, Upper Mackenzie, Upper Wilderness, Upper Parkway, and Lower Thruway.

Discussion

As a result of the recommended trail additions and deletions which are shown on Exhibit IV-1, including Conceptual Actions, the skiable terrain would increase from 211.4 to 290.6 acres, a total of 79.2 acres or 37%.

The upgraded trail design reflects the desire to provide additional acreage at critical locations throughout the mountain in order to improve the flow of skier traffic, segregation of ability levels, and diversity of terrain. For the most part this involves the widening and reshaping of existing trails and the addition of new trails, or sections thereof, where the terrain is suitable.

The most significant increase in skiable terrain comes from the addition of the conceptual "Tree Island" pod situated north of the Summit Quad pod. This pod would be comprised of a series of weaving, intertwined, and interconnected narrow (40 – 80 foot width) expert trails, utilizing the natural terrain and tree cover wherever possible. There would also be a long, scenic intermediate run following the primary ridge down towards Easy Acres. These trails would be serviced by a double chairlift (potentially the relocation of the Mid-Station Shuttle double chair) and would add more than 30 acres of skiable terrain.

Where trail acreage has been deleted from the upgrading plan due to what is considered to be terrain which no longer contributes to the skiability of the mountain, Temporary fencing will be used to block off these routes (except those required for vehicle use) and they will be allowed to revegetate. Once revegetation is complete, the fencing can be removed.

It is recommended that all of the new trail acreage be shaped to a fall line configuration and that it be shaped to a smooth surface. The shaping should include

the placement of sufficient water bars to prevent soil erosion, and the use of, suitable seed mixture, and straw mulch to aid in the control of erosion.

Section IV.D of this report, the phasing plan, identifies the recommended sequencing for each of the trail improvements. The following descriptions divide the skiable terrain into five separate areas: the upper mountain, Little Whiteface, the lower mountain, the Easy Acres area (formerly Kid's Kampus) and the Tree Island Pod.

- Upper Mountain: The upgrading to occur on the Upper Mountain focuses on the Downhill/FIS trail homologation standards. Trail 3a, Niagara, would be used to connect Upper Skyward to Upper Cloudspin. A new 9.8-acre expert glade, Trail 5a, would be constructed in the forest between Paron's Run, Excelsior, Connector and Upper Cloudspin. These are Conceptual Actions.

- Little Whiteface: One of the high priority goals of the upgrading program for Little Whiteface is the addition of an intermediate trail from the summit. This will start from the top terminal of Cloudsplitter Gondola and run parallel to the upper section of Approach. The new trail will cross Approach twice as it descends the ridge to the previous top terminal of the Freeway double chair, which will be lowered ~500 feet to accommodate the new traffic flow. The trail will continue towards the gondola lift line and then return to join Lower Parkway.

  An additional intermediate trail, 12a, would be added, beginning at the approach near the top of Upper Mackenzie. Trail 12a is a Conceptual Action.

  This improvement will not only *directly* add nearly 5 acres of intermediate skiing on Little Whiteface, but it will effectively lower the ability level of Approach to an intermediate rating, as users of Approach will now have an intermediate option. As such, this single new trail construction will effectively add *two* intermediate runs from Little Whiteface, bringing the total to three (including Excelsior). This much-needed improvement should significantly improve the intermediate skiing experience for round-trip Gondola passengers, and all skiers on Little Whiteface.

Other improvements to the Little Whiteface terrain include selective widening to Empire, Upper Mackenzie, Upper Wilderness, Upper Parkway and Lower Thruway.

Lower Mountain: The improvements on the lower mountain consist mainly of the widening of certain low intermediate, and intermediate trails in order to satisfy FIS requirements for Downhill homologation. A minimum 40 meter-wide route must be established through the Mid-station area. Routing the Downhill course down Broadway, Ladies Bridge, and Lower Gap, circumventing the mid-station/ Mid-station lodge intersection is recommended. Each of these trails will be widened to a minimum of 40 meters. This solution will allow downhill races to occur without disturbing the traffic patterns on Lower Valley, allowing intermediate skiers to descend Little Whiteface and upper mountain areas without interfering with race events.

Other selective widening on the Lower Mountain terrain should include Broadway, Upper Valley and Lower Valley A. A new 5.7-acre intermediate glade, Trail 27a, is proposed along the northern edge of Boreen. This area will span the entire area between Boreen and Medalist, providing a unique and exciting glade-skiing experience for many intermediate skiers and riders.

Easy Acres pod (formerly Kid's Kampus): Selective widening of Bronze, Gold, Silver, and Silver Shoot in order to lower the effective ability levels of these trails and improve traffic flow patterns in this designated novice learning pod is recommended. These suggestions were approved in the 1996 UMP, however, not all improvements have been implemented. A new glade, Trail 36a, should be constructed in the region between Gold and Bronze. This 3.8-acre low-intermediate glade will provide a very exciting skiing experience that low ability level skiers rarely have the opportunity to enjoy.

It is also recommended that a children's snow play area be constructed on the south side of the lodge. This area should be fenced off and be set up with learning and play stations for children 3-6 years old. A "magic carpet" type of surface should be installed.

Tree Island Pod: As a Conceptual Action, this new pod would be established north of the Summit Quad pod. Situated around a double chair, the trail network would consist of several weaving, intertwined, and interconnected narrow (40 – 80 foot wide) expert trails, utilizing the natural terrain and tree cover as much as possible. The trails would incorporate tree islands, traditional glades, and open, narrow trails to create a unique skiing experience unlike anything in the northeast. There would also be a long, scenic intermediate run following the primary ridge down towards Easy Acres. Snowmaking would be installed on this pod to allow consistent conditions for the entire season.

The new Tree Island Pod is intended to provide an alternative to the traditional ski trail experience yet it would also be different than the typical glade skiing experience. The main differences are that the island pod would have snowmaking and the narrow trails would be groomed. Additionally, the pod has been designed to have very low terrain densities as a result of the limited capacity of the double chairlift. If and when it comes time to flag the trees in this area for cutting, it should be done with very close attention and sensitivity to preserve the natural setting. It may, in fact, require years of successive flagging to ensure that not too many trees are cut in the initial stages of development.

As shown in the table above, there would be 290.6 acres of ski trails at Whiteface when the upgrading program, including Conceptual Actions, is completed. These trails are 129,080 feet in length, which yields a total of 24.45 miles, which is 0.55 mile less than the maximum of 25 miles stipulated in Section I of Article XIV of the New York State Constitution. Of the total 24.45 miles, 2.7 miles (or 14,400 lineal feet) of open trails are in excess of 120' wide, which is 2.3 miles less than the 5-mile maximum allowed. These maximum widths assume that there are exclusions of 50' for a lift and 15' for a snowmaking line, which can apply to any trail on which they are present.

The sections of trails that exceed the 120 foot *adjusted* width are as follows. The raw trail widths (shown in the table above) reflect actual cleared swaths. Width adjustments are made to the swath measurement to reflect snowmaking infrastructure and lift lines to determine the adjusted trail width measurement, for the purposes of

satisfying the guidelines of Article XIV. The following trails exceed the 120 foot maximum width limit, after adjustments have been made for lift lines and snowmaking infrastructure.

Map Ref	Slope Length	Average Width
1	2,600	149
2	2,500	138
3	800	177
16	1,400	170
18	1,800	135
20	1,000	165
23B	900	200
25	1,700	135
32	1,700	150
TOTAL	**14,400**	

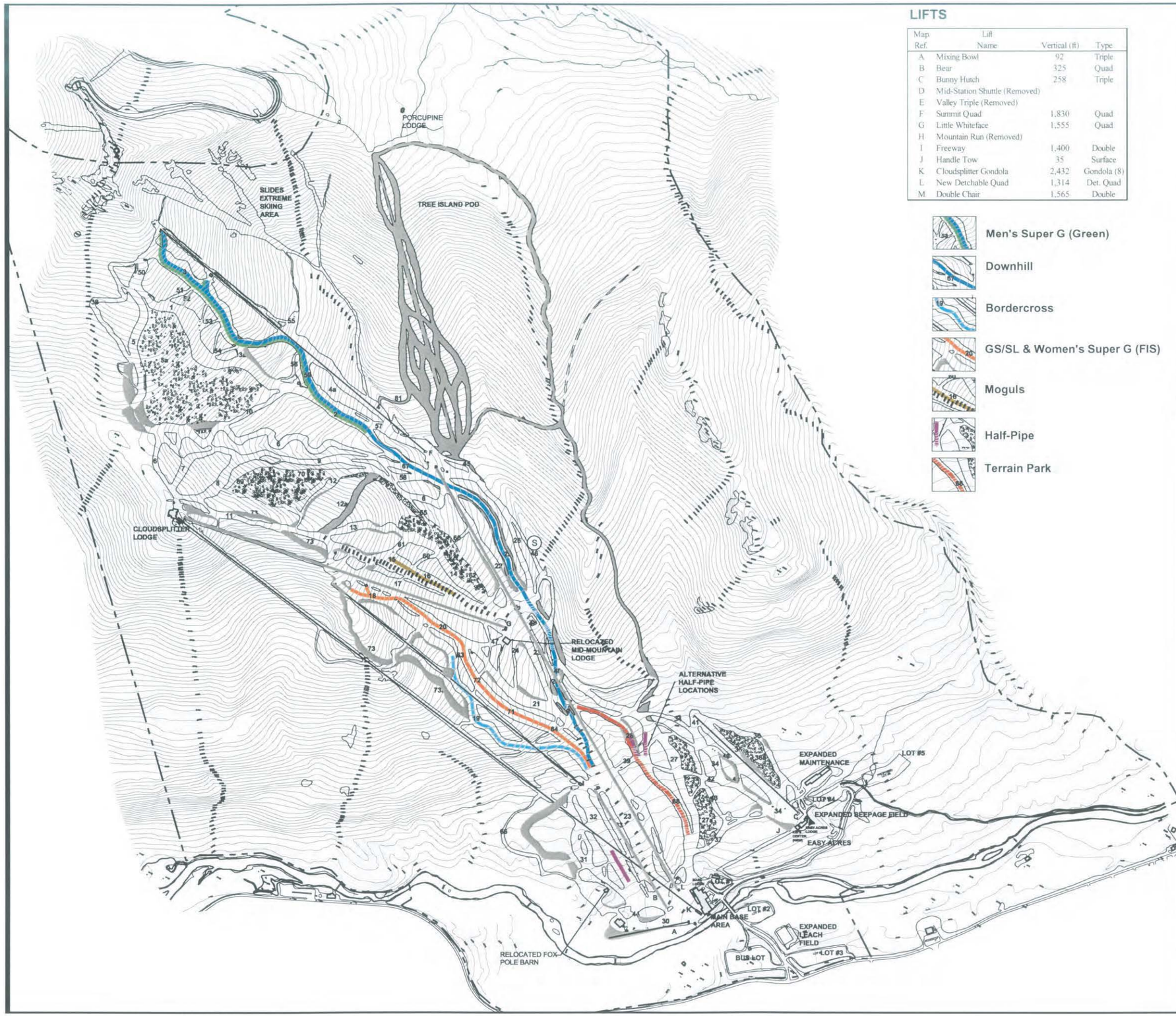
FIS – Race and Event Trail Homologations

As noted in the discussion above, there will be several modifications to existing trails in order to obtain Downhill (DH) FIS homologation. One criteria of homologation is the establishment of a 40-meter minimum width on the entire Downhill piste. In some sections the Downhill trail will need to be even wider. There are several alternatives for establishing a high caliber Downhill piste at Whiteface and there may be different routes for Continental Cup races vs. World Cup races. For the World Cup and Continental Cup events, the minimum vertical drop for a men's race is 800m, although exceptions may be made to 750m for World Cup and 650m for Continental Cup.

At Whiteface, a Continental Cup race may be held whereby the finish area is set above the mid-station restaurant, thereby alleviating any issues having to do with minimum widths in the vicinity of the mid-station restaurant. The following trails will be used to establish the DH piste for a Continental Cup: Upper Skyward, Lower Cloudspin, and Broadway.

For a World Cup event, where more vertical drop is required, the same upper mountain route may be used as for the Continental Cup but the piste must extend

(Exhibit IV-2, FIS Homologated Trails and Events) further down the mountain. In this case, the ideal World Cup DH piste would pass directly through the area that is



LIFTS

Map Ref.	Lift Name	Vertical (ft)	Type
A	Mixing Bowl	92	Triple
B	Bear	325	Quad
C	Bunny Hutch	258	Triple
D	Mid-Station Shuttle (Removed)		
E	Valley Triple (Removed)		
F	Summit Quad	1,830	Quad
G	Little Whiteface	1,555	Quad
H	Mountain Run (Removed)		
I	Freeway	1,400	Double
J	Handle Tow	35	Surface
K	Cloudsplitter Gondola	2,432	Gondola (8)
L	New Detchable Quad	1,314	Det. Quad
M	Double Chair	1,565	Double

Men's Super G (Green)

Downhill

Bordercross

GS/SL & Women's Super G (FIS)

Moguls

Half-Pipe

Terrain Park

TRAILS

Map Ref.	Trail/Area Name				
1	Upper Cloudspin	27	Boreen	53	Upper Switchback
2	Lower Cloudspin	27a	New Trail-glades	54	Lower Switchback
3	Upper Skyward	28	Danny's Bridge [Terrain Park]	55	Crossover Loop
3a	New - Niagara	29	River Run	56	Glen
4	Lower Skyward	30	Mixing Bowl	57	Victoria Shoot
5	Paron's Run	31	Wolf	58	Lower Empire
5a	New Trail-glades	31a	Fox	59	Weber's Way
6	Excelsior	32	Bear [Half Pipe]	60	1900 Road
6a	New-Bypass	33	Deer	61	2200 Road
7	Essex	34	Silver- upper	62	High Country Glade
8	Upper Northway	34	Silver- lower	63	Low Road
9	Lower Northway	34	Silver- Kampus Kruiser	64	Tom Cat
10	Connector	35	Gold	65	On Ramp
11	Approach	36	Bronze	66	Wolf Run
12	Empire	36a	New Trail-glades	67	Summit Express
12a	New Trail	37	Home Run	68	Brookside [Terrain Park]
13	Upper Mackenzie	38	Follies	69	Cloudsplitter Glade
14	Lower Mackenzie	39	Valvehouse Road	70	10th Mtn Division Glade
15	Upper Wilderness	40	Silver Shoot	71	Draper's Drop
16	Lower Wilderness	41	Main Street	72	Parkway Exit
17	Mountain Run	42	Runner Up - upper	73	New Intermediate Trail
18	Upper Parkway	42	Runner Up - lower	73a	New-Trail
19	Lower Parkway	43	Medalist	74	New Trail - Island Pod
20	Upper Thruway	44	Round-a-bout	75	New Trail - Island Pod
21	Lower Thruway	45	Easy Way	76	New Trail - Island Pod
22	Upper Valley	46	Upper Boreen	77	New Trail - Island Pod
23	Lower Valley A	47	Calamity Lane	78	New Trail - Island Pod
23	Lower Valley B	48	Ladies Bridge	79	New Trail - Island Pod
23	Lower Valley C	49	Lower Gap	80	New Trail - Island Pod
24	Burton's	50	Riva Ridge	81	New Escape Trail
25	Broadway	51	Cloudspin Cut	82	New Intermediate - Upper
26	Easy Street A	52	Yellow Brick Road	83	New Intermediate - Lower
26	Easy Street B				

WHITEFACE

Prepared For:

OLYMPIC REGIONAL DEVELOPMENT AUTHORITY
LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

the LA group

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

COMPREHENSIVE MANAGEMENT AND PLANNING REVIEW AND UNIT MANAGEMENT PLAN

600 0 300 600 1200 2400

Scale: 1" = 1200' Contour Interval = 5 Feet

NORTH

TITLE:

FIS HOMOLOGATED TRAILS & EVENTS

DATE: MARCH 2002

FIGURE #: **IV-2**

PROJECT NUMBER: 01102 FILE: [whiteface]

currently occupied by the mid-station restaurant. Therefore, the mid-station restaurant should be relocated as mentioned in the 1996 UMP and reiterated in this UMP Update. Other alternatives for holding a World Cup DH event prior to moving the mid-station restaurant include the use of Broadway (by-passing Upper Valley), a portion of Boreen, Ladies Bridge, River Run, and Lower Gap. Alternatively, Upper and Lower Valley could be used if the piste could pass through the mid-station area and to the north side of the restaurant. Both of these alternatives will require special exceptions to be made to the FIS trail criteria. In all cases noted herein, the proposed DH pistes will end at the designated central finish area on the Lower Valley run.

Given the importance and specificity of the design criteria for a modern Downhill piste, It is recommended that ORDA/Whiteface use the design services of Mr. Bernhard Russi, one of the foremost race trail designers in the world, to undertake the detailed design of this trail route.

Other trails that will be used in the future may also require some upgrading in order to meet current and future FIS certification standards. The objective of the competition certification program is to maintain an up to date "inventory" of race and event trails that will demonstrate Whiteface's commitment to providing top quality, world-class terrain and facilities for training and holding major events.

It is a recommendation of this UMP Update that Whiteface establish a central finish area to serve the maximum number of alpine race events. The logical place to put such a finish arena would be in the area at the top of Bear Lift and the bottom of the new Draper's Drop trail. All necessary electronic and communications equipment should be permanently in place and other facilities for athletes, coaches, media, and spectators should be located there.

3. Ability Level Breakdown

For the purposes of Mountain Planning, SE GROUP uses six ability level classifications, whereas North American standards dictate only three ability levels. While the North American standards are in place at Whiteface, planning and terrain considerations require a more precise differentiation than three major levels. As such, the report will refer to the six levels outlined above. The North American standards are included here for easy comparison and conversion for the reader.

The six ability levels are defined by the following gradient limits:

Max Gradient	SE GROUP	North American
0% to 12%	Beginner	Green
13% to 25%	Novice	
26% to 30%	Low Intermediate	Blue
31% to 40%	Intermediate	
41% to 50%	Advanced Intermediate	Black
> 50%	Expert	

Source: SE GROUP, Whiteface

It should be noted that trail widths have an influence on ability levels wherein narrow widths tend to make trails more difficult to negotiate and wider dimensions making them easier. At Whiteface for example, because of their narrow widths, some of the trails served by Lift C (Bunny Hutch) are classified as low intermediate rather than novice in spite of the fact that their grades are less than 25%.

SE GROUP analyzes terrain by capacity, rather than acreage. Acreage, while a common traditional measurement of distribution, does not accurately reflect the comfortable carrying capacity of the terrain, as the acceptable densities of skiers varies significantly by ability level. For instance, due to slower skiing speeds, beginner trails can accommodate 20 to 25 skiers at one time on a given acre, while some expert terrain can accommodate only two or three skiers on this same area, as skiing speeds, turn shapes, and skier habits are very different for expert skiers and novice skiers. As such, the analysis compares the actual terrain capacity at Whiteface to industry averages.

The ability level classification breakdown by terrain capacity is set forth in the following table. The right column in each ability level represents what can be considered the ideal skill level distribution in Whiteface's skier market, while the left column reflects existing terrain capacity of each ability level at Whiteface.

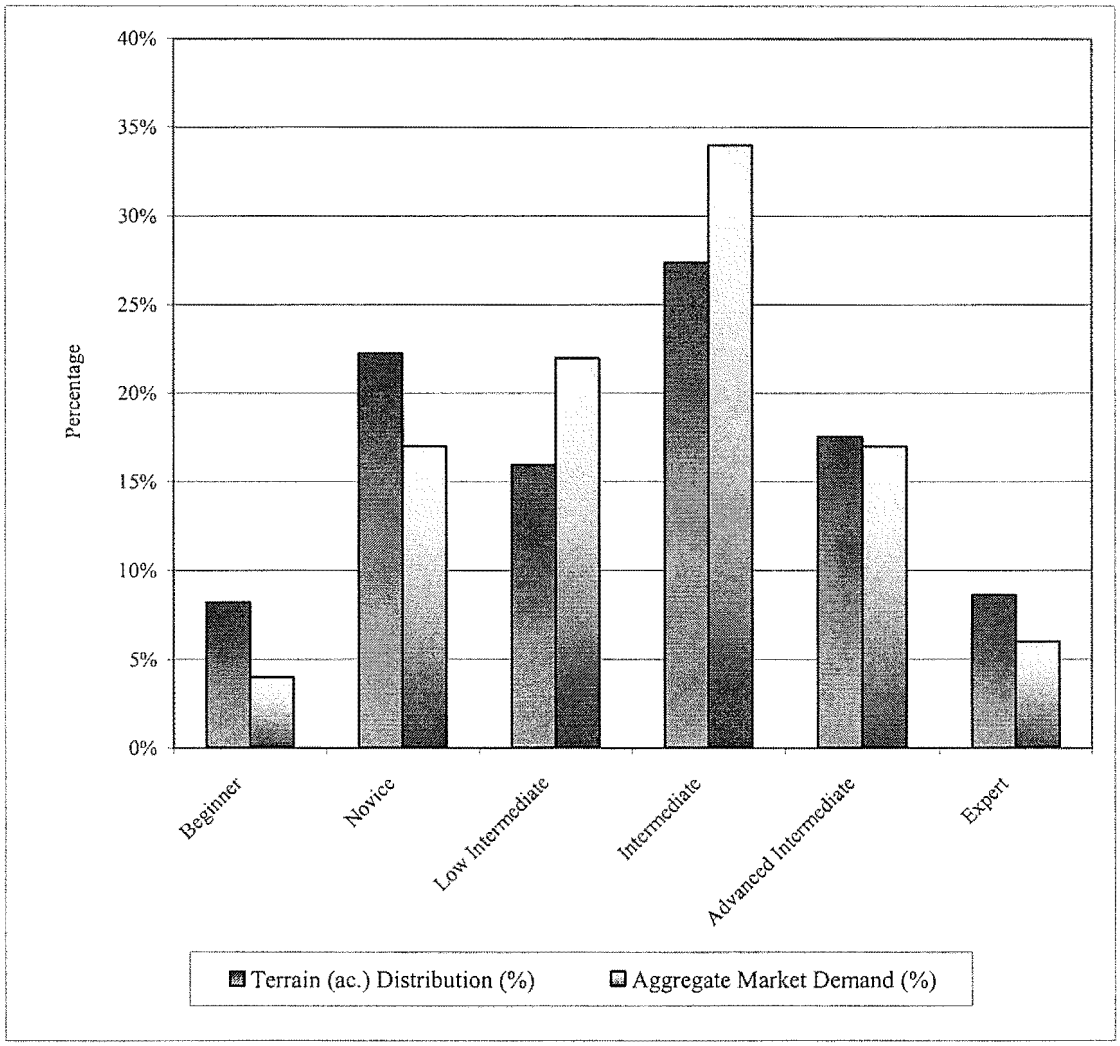
TABLE IV-3
PROPOSED ABILITY LEVEL DISTRIBUTION

Slope Ability Levels	Terrain Area (ac.)	Terrain CCC (guests)	Distribution by Capacity	Aggregate Market Demand
Beginner	6.7	569	8.2%	4%
Novice	30.4	1,539	22.2%	17%
Low Intermediate	31.5	1,104	16.0%	22%
Intermediate	75.8	1,895	27.4%	34%
Advanced Intermediate	71.5	1,215	17.6%	17%
Expert	74.7	598	8.6%	6%
TOTAL	**290.6**	**6,919**	**100%**	**100%**

Source: SE GROUP, Whiteface

The figure below illustrates the differences in available terrain from industry averages.

FIGURE IV-1
PROPOSED ABILITY LEVEL BREAKDOWN



Source: SE GROUP, Whiteface

As shown in the preceding table, there is an overall improvement in the breakdown of ability levels as a result of the trail improvements, particularly in the beginner, novice, and intermediate categories. Although the low intermediate and expert categories no longer correspond exactly to the ideal distribution of ability levels as they did under existing conditions, they still compare reasonably favorably with the ideal. The loss of low intermediate terrain is a result of the re-classification of several trails serviced by Bunny Hutch as novice, rather than low intermediate, due to trail widening. The increase in expert terrain is mostly due to the construction of conceptual Tree Island pod, which is comprised primarily of expert terrain.

The improvement in the intermediate category, while noteworthy, is still slightly less than ideal. Perhaps in the future additional terrain analysis will yield more potential intermediate terrain, but due to constraints in the mountain mass and existing trail layout, this improvement is the most economically feasible alternative for Whiteface to undertake at this point in time. Due to the work to be performed on Little Whiteface, intermediate terrain would increase from 22% of terrain capacity to 27.4% of capacity. While mathematically small, this would be a significant improvement in the skiing experience for intermediate skiers at Whiteface.

It is important to note that the surplus of lower ability levels (beginner and novice) is less severe of an issue than an equivalent shortage of lower ability level terrain. The reason for this is that while lower ability level terrain is still available to higher ability level skiers, higher ability terrain is inaccessible to low-level skiers.

4. Comfortable Carrying Capacity

TABLE IV-4
ANALYSIS OF COMFORTABLE CARRYING CAPACITY

Map Ref.	Lift Name	Slope Length (ft.)	Vert. Rise (ft.)	Actual Design Capacity (person/hr)	VTF/Day (000)	CCC (guests)
A	Mixing Bowl	887	92	*1,200*	*662*	*220*
B	Bear	*1,712*	*325*	*1,800*	*3,510*	*530*
C	Bunny Hutch	1,792	258	1,600	2,312	370
D	*Mid-Station Shuttle (Removed)*					
E	*Valley Triple (Removed)*					
F	Summit Quad	4,706	1,830	1,500	17,294	720
G	Little Whiteface	4,515	1,555	*1,800*	*16,654*	*850*
H	*Mountain Run (Removed)*					
I	Freeway	3,749	1,400	800	7,056	330
J	Handle Tow	*450*	*40*	400	96	50
K	Gondola	8,487	2,432	1,800	18,058	*830*
L	*New Detachable Quad*	*6,265*	*1,314*	*2,400*	*18,922*	*1,350*
*M**	*New Double Chair*	*3,682*	*1,565*	*1,200*	*10,986*	*390*
	TOTAL			***14,500***	***95,388***	***5,640***

Source: SE GROUP, Whiteface
Italics denote change from Existing Conditions
*** Denotes Conceptual Actions**

Discussion

Comfortable Carrying Capacity (CCC) is defined as the optimum level of utilization of a ski area (the number of skiers that can be accommodated at any given time) which guarantees a pleasant recreational experience while at the same time preserving the quality of the environment.

The CCC figure is based on a combination of the uphill hourly capacity of the lifts, the downhill capacity of the trail systems, the total vertical rise of the lifts, and the total amount of time spent in the waiting lines, on the lifts themselves, and in the downhill descent.

The capacity figures are based on maximum waiting lines of ten minutes on the Gondola (K) and the New Detachable Quad (L); eight minutes on the Summit Quad (F), the Little Whiteface Quad (G), and the Freeway Double (I); and three to five minutes on all other lifts.

It is common practice among ski area operators, and one that has been generally accepted by the ski industry, to exceed the stated CCC on approximately ten to twenty days during the season by a total of 25%. In the case of the upgrading program at Whiteface, this represents an increase in CCC of almost 1,410 skiers, from 5,640 to 7,050 during those days. As stated in the Existing Conditions, SE GROUP feels this is an acceptable policy at many resorts, but it is not believed that Whiteface can comfortably accommodate that quantity of skiers. Given the mountain's unique layout, Whiteface would find significant crowding and skier flow issues on days when visitors exceed the new CCC of 5,640.

5. <u>Terrain Density</u>

One of the critical elements in estimating total capacity and a way of making certain that the figures are applicable, is to determine the density of skiers per acre of skiable terrain. Using the trail and capacity figures developed above, the density breakdown for the ski area is as follows.

TABLE IV-5
PROPOSED TRAIL DENSITY ANALYSIS

Lift			Guest Dispersement				Density Analysis				
			Guests				Terrain				
Map Ref.	Name	CCC	Support Facility/ Milling	In Lift Lines	On Lift	On Terrain	Area (ac.)	Actual Density (guests/ac.)	Desired Density (guests/ac.)	Diff. (+/-)	**Density Index (%)**
A	Mixing Bowl	220	55	48	35	82	5.1	16	21	-5	**77**
B	Bear	530	133	120	110	167	16.3	10	16	-6	**63**
C	Bunny Hutch	370	93	64	91	122	18.1	7	13	-6	**51**
D	Mid-Station Shuttle (Removed)										
E	Valley Triple (Removed)										
F	Summit Quad	720	180	180	212	148	56.9	3	4	-1	**72**
G	Little Whiteface	850	213	204	256	177	58.6	3	4	-1	**72**
H	Mountain Run (Removed)										
I	Freeway	330	83	96	97	54	28.9	2	6	-4	**31**
J	Handle Tow	50	13	16	7	14	0.8	17	23	-6	**73**
K	Gondola	830	208	165	129	328	32.9	10	8	2	**132**
L	New Detach. Quad	1,350	338	320	334	358	43.3	8	8	0	**101**
M*	New Double Chair	390	98	90	133	69	29.7	2	4	-2	**57**
TOTAL		5,640	1,414	1,303	1,404	1,519	290.6	6.7	8.2	-1.5	**82**

Source: SE GROUP, Whiteface

*** Denotes Conceptual Actions**

Discussion

The table above is derived from assumptions about which trails are serviced by which lifts, the actual daily capacity of lifts, and the comfortable density of skiers by ability levels. The table accounts for individuals using the support facilities, in the lift mazes, riding the lifts, and on the terrain. As an example, the Summit Quad will service 56.9 acres of terrain. Given that the quad chairlift will accommodate 720 skiers *per day*, it is assumed that, on average, 180 of these visitors are using support facilities at any given time, 180 skiers are in the lift line, 212 are riding the lift, and 148 are actually on the terrain. Given the total pod acreage of 56.9, there are an estimated 3.3 skiers per acre. The *desired* terrain density, taking into consideration the type of terrain and the anticipated ability level of skiers in that pod, is 4.2. This implies that the actual density of skiers is slightly lower than what is desired in the Summit Quad pod.

Mathematically speaking, the density index is 72, which means that actual density is 72% of the desired density. A density index greater than 100 indicates that there is not enough terrain to service the skier type and current lift capacity. A density index less than 100 indicates that more skiers could be comfortably accommodated on the terrain, and the lift capacity is not adequate to service the expanse of terrain in the pod. This analysis is very important in regards to determining which pods have a terrain deficit, or which lifts need a capacity upgrade.

The proposed lift and terrain improvements would yield the following changes in density at Whiteface:

- The density index of Mixing Bowl would increase only slightly, from 76 to 77, as the chairlift will be upgraded to a triple, and the terrain acreage will increase.
- The density index of Bear would decrease from 66 to 63, as the chairlift will be upgraded to a quad and Trail 31a would be built.
- The density index of the New Detachable Quad, servicing the terrain previously serviced by both the Mid-Station Shuttle and the Valley Triple, would be 101. Previously, the density indices were 112 and 128 for the double and triple, accordingly.
- The densities of the Summit Quad, Little Whiteface, Freeway, and the Handle Tow would not change significantly.

- The addition of intermediate terrain to Little Whiteface would help lower the density index on Cloudsplitter Gondola from 154 to 132. This is due to increased terrain and new skier distribution and flow patterns. It is important to note that the density would improve (density index will decrease) even with the capacity of the gondola *increasing* from 680 to 830 CCC, due to new skier flow patterns and more round-trip riders.

Overall, the density index of Whiteface's terrain would increase from 79 to 82, signaling an improved use of available terrain, improved lift capacity, and an improved lift system that better manages and distributes skiers. The more efficient use of terrain and even distribution of skiers should allow trails to maintain better surface conditions. This positive effect will be very noticeable to Whiteface skiers.

6. Grooming

The following tables depict recommendations in regards to terrain grooming at Whiteface, once the proposed actions have been completed. It is recommended that the following trails *not* be groomed on a daily basis:

TABLE IV-6
TERRAIN NOT GROOMED

Trail	Name	Acreage
4	Skyward (Lower)	12.2
5a*	New Glade	9.8
7	Essex (Upper)	1.9
8	Northway (Upper)	1.7
12	Empire	2.2
13	Mackenzie (Upper)	2.2
14	Mackenzie (Lower)	3.4
27a	New Glade	5.7
36a	New Glade	3.8
62	Glade	5.2
69	Cloudsplitter Glade	3.4
70	10th Mtn Division Glade	10
*74-80**	*New Tree Island Pod*	*10*
TOTAL		**71.5**

Source: SE GROUP, Whiteface
*** Denotes Conceptual Actions**

It is anticipated that roughly half of the Tree Island pod would not be groomed, or 10 acres. This would bring the total ungroomed terrain to 71.5 acres. The following table summarizes the grooming vehicles in use at Whiteface:

TABLE IV-7
GROOMING VEHICLE INVENTORY

Vehicles	Year	Condition
Pisten Bully 200	2001	Excellent
Pisten Bully 260DW	1995	Good
Bombardier ME Plus	1995	Fair
LMC 3700C	1992	Poor
Pisten Bully 200	1999	Excellent
Pisten Bully 300 (Winch)	1999	Very Good
Pisten Bully 280	1996	Very Good

Source: Whiteface

TABLE IV-8
GROOMING – TERRAIN & VEHICLES

Total Skiable Acreage	291.2
Acres Not Groomed Daily	71.5
Total Groomed Acreage	219.7
Ratio of Groomed Acreage to Vehicles	30 to 1
Number of Vehicles Required	7
Number of Vehicles Available	7
Vehicle Surplus (Deficit)	0

Source: SE GROUP, Whiteface

The ratio of one grooming vehicle for every 30 acres of skiable terrain reflects the predominance of advanced and expert terrain at Whiteface and the fact that it is necessary to use winch cats on some of these trails due to their steep grades. It assumes a single shift operation with overtime allowed when required to complete the grooming cycle.

Given the amount of groomed terrain, there is currently an adequate number of grooming vehicles. Of course, grooming vehicles will need to be replaced on a rotating basis to ensure an efficient, operational fleet.

7. Snowmaking System Upgrading Plan

a) Snowmaking Coverage Objectives

The existing snowmaking system at Whiteface Mountain covers approximately190 acres of terrain. The following table lists the existing trails currently covered with snowmaking and the objective snow depth required for opening the trail.

TABLE IV-9
EXISTING SNOWMAKING ACREAGE

Map Ref.	Trail/Area Name	Appr. Area (acres)	Skier Ability Level	Snow Depth (inches)	Snow Volume (ac-ft)
EXISTING SNOWMAKING TERRAIN					
1	*Upper Cloudspin*	*8.9*	Expert	36	26.7
2	*Lower Cloudspin*	*7.9*	Adv. Inter.	28	18.5
3	*Upper Skyward*	3.3	Expert	36	9.8
4	Lower Skyward	12.2	Adv. Inter.	28	28.5
5	Paron's Run	5.2	Adv. Inter.	28	12.0
6	Excelsior	10.9	Inter.	24	21.9
7	Essex	1.9	Expert	36	5.7
8	Upper Northway	1.7	Expert	36	5.1
9	Lower Northway	3.4	Inter.	24	6.8
10	Connector	0.6	Adv. Inter.	28	1.5
11	Approach	2.8	Adv. Inter.	28	6.6
13	Upper Mackenzie	1.8	Expert	36	5.5
14	Lower Mackenzie	3.4	Adv. Inter.	28	7.9
15	Upper Wilderness	0.9	Expert	36	2.8
16	Lower Wilderness	5.5	Adv. Inter.	28	12.7
17	Mountain Run	9.9	Adv. Inter.	28	23.1
18	Upper Parkway	5.0	Adv. Inter.	28	11.6
19	*Lower Parkway*	*7.4*	Inter.	24	14.9
20	Upper Thruway	3.2	Adv. Inter.	28	7.5
21	Lower Thruway	3.5	Inter.	24	7.1
22	Upper Valley	4.1	Low Inter.	20	6.9
23	Lower Valley A	2.4	Low Inter.	20	4.0
23	Lower Valley B	4.1	Low Inter.	20	6.9
23	Lower Valley C	6.2	Novice	16	8.3
24	Burton's	0.4	Inter.	24	0.8
25	*Broadway*	*5.3*	Inter.	24	10.5
26	Easy Street A	1.0	Low Inter.	20	1.7
26	Easy Street B	2.5	Low Inter.	20	4.2
27	Boreen	11.1	Low Inter.	20	18.4

Map Ref.	Trail/Area Name	Appr. Area (acres)	Skier Ability Level	Snow Depth (inches)	Snow Volume (ac-ft)
28	Danny's ridge [Terrain Park]	1.8	Expert	48	7.1
30	Mixing Bowl	2.6	Beginner	12	2.6
31	Wolf	2.4	Novice	16	3.2
32	Bear [Half Pipe]	5.9	Expert	36	17.6
34	Silver- upper	1.7	Low Inter.	20	2.8
34	Silver- lower	2.1	Novice	16	2.8
34	Silver- Kampus Kruiser	0.8	Beginner	12	0.8
35	Gold	5.6	Novice	16	7.4
36	Bronze	3.3	Low Inter.	20	5.5
37	Home Run	0.3	Novice	16	0.4
38	The Follies	3.3	Inter.	24	6.6
39	Valve House Road	0.3	Expert	36	1.0
40	Silver Shoot	0.5	Low Inter.	20	0.8
41	Main Street	0.6	Novice	16	0.7
42	Runner Up – upper	0.3	Low Inter.	20	0.5
42	Runner Up – lower	0.3	Low Inter.	20	0.5
44	Round-a-bout	1.3	Novice	16	1.7
45	Easy Way	0.3	Low Inter.	20	0.5
47	Calamity Lane	0.6	Inter.	24	1.3
48	*Ladies Bridge*	*1.3*	Inter.	24	2.5
49	Lower Gap	0.3	Inter.	24	0.7
50	Riva Ridge	0.8	Adv. Inter.	28	1.9
51	Cloudspin Cut	0.2	Adv. Inter.	28	0.5
52	Yellow Brick Road	0.1	Adv. Inter.	28	0.3
53	Upper Switchback	0.3	Adv. Inter.	28	0.8
54	Lower Switchback	0.3	Adv. Inter.	28	0.8
55	Crossover Loop	0.3	Adv. Inter.	28	0.8
57	Victoria Shoot	0.6	Adv. Inter.	28	1.3
58	Lower Empire	0.6	Inter.	24	1.3
59	Weber's Way	1.1	Inter.	24	2.2
60	1900 Road	0.4	Adv. Inter.	28	0.9
61	2200 Road	0.4	Adv. Inter.	28	1.0
64	Tom Cat	0.3	Inter.	24	0.7
65	On Ramp	0.3	Adv. Inter.	28	0.8
66	Wolf Run	1.0	Novice	16	1.3
67	Summit Express	1.0	Inter.	24	2.0
68	Brookside [Terrain Park]	4.1	Expert	48	16.5
71	Draper's Drop	5.1	Inter.	24	10.1
72	Parkway Exit	0.5	Inter.	24	0.9
		189.5 acres			**405.8 ac-ft**

Source: Sno.matic Controls & Engineering Inc., Whiteface

Snowmaking is proposed for the following existing trails:

TABLE IV-10
PROPOSED SNOWMAKING FOR EXISTING TERRAIN
(including proposed trail widening)

Map Ref.	Trail/Area Name	Appr. Area (acres)	Skier Ability Level	Snow Depth (inches)	Snow Volume (ac-ft)
5	*Paron's Run Widening*	*1.2*	Adv. Inter	28	2.8
12	*Empire*	*2.2*	Expert	36	6.6
13	*Upper McKenzie Widening*	*.4*	Expert	36	1.2
15	*Upper Wilderness*	*.3*	Expert	36	.9
18	*Upper Parkway*	*.6*	Adv. Inter.	28	1.4
19	*Lower Parkway*	*.2*	Inter.	24	.4
20	*Upper Thruway*	*.6*	Adv. Inter.	28	1.4
21	*Lower Thruway*	*.1*	Inter.	24	.2
22	*Upper Valley*	*.8*	Low Inter.	20	1.3
23	*Lower Valley A*	*.1*	Low Inter.	20	.2
29	*River Run*	*2.5*	Inter.	24	5.0
30	*Mixing Bowl*	*1.2*	Beginner	12	1.2
33	Deer	1.1	Novice	16	1.5
36	Bronze	.1	Novice	16	.1
40	Silver Shoot Widening	.5	Novice	16	.7
43	Medalist	1.8	Novice	16	2.4
46	Upper Boreen	0.7	Low Inter.	20	1.2
49	Lower Gap	.5	Inter.	24	1.0
52	Yellow Brick Road Reveg.	-.1	Adv. Inter.	28	-.2
56	Glen	0.3	Adv. Inter.	28	0.6
63	Low Road	0.3	Inter.	24	0.6
		15.4 acres			**30.5 ac-ft**

Source: Sno.matic Controls & Engineering Inc., Whiteface

Snowmaking is proposed for all of the additional terrain that would be added (except for gladed trails). Installing snowmaking piping at the same time that the trail is constructed provides the most economical method of trail construction since it eliminates the duplication of equipment operation and re-vegetation efforts.

TABLE IV-11
PROPOSED SNOWMAKING FOR NEW TERRAIN

Map Ref.	Trail/Area Name	Appr. Area (acres)	Skier Ability Level	Snow Depth (inches)	Snow Volume (ac-ft)
PROPOSED TERRAIN WITH SNOWMAKING					
3a	New Niagara	*.5*	*Adv. Inter.*	28	
*6a**	*New Excelsior Bypass*	*.8*	Adv. Inter.	28	1.9
*12a**	*New*	*1.8*	*Inter.*	24	3.6
31a	*Fox*	*4.1*	*Low Inter.*	20	6.8
73	*New Intermediate Trail*	*7.2*	*Inter.*	24	14.4
73a	*New Adv. Intermediate*	*2.6*	*Adv. Inter.*	28	6.1
*74**	*New Trail-Island Pod*	*5.2*	*Expert*	36	15.6
*75**	*New Trail - Island Pod*	*2.2*	*Expert*	36	6.6
*76**	*New Trail - Island Pod*	*5.2*	*Expert*	36	15.6
*77**	*New Trail - Island Pod*	*1.8*	*Expert*	36	5.4
*78**	*New Trail - Island Pod*	*0.7*	*Expert*	36	2.1
*79**	*New Trail - Island Pod*	*1.4*	*Expert*	36	4.2
*80**	*New Trail - Island Pod*	*0.4*	*Expert*	36	1.2
*81**	*New Escape Trail*	*0.4*	*Expert*	36	1.2
*82**	*New Intermediate – Upper*	*8.1*	*Inter.*	24	16.2
*83**	*New Intermediate – Lower*	*4.3*	*Inter.*	24	8.6
		46.7 acres			**110.6 ac. ft**

Source: Sno.matic Controls & Engineering Inc., Whiteface

*** Denotes Conceptual Action**

REVISIONS

No.	DATE	DESCRIPTION	DRAWN BY	APP'D BY

NOTES / LEGEND

- ASBUILT PIPING
- ASBUILT PIPING AIR ONLY
- ASBUILT PIPING WATER ONLY
- PUMP HOUSE
- VALVE HOUSE
- ASBUILT PIPING TO REMOVE OR RELOCATE
- ASBUILT STRUCTURE TO REMOVE OR RELOCATE
- PROPOSED PIPING
- PROPOSED PIPING UPGRADE
- PROPOSED PIPING UPGRADE WATER ONLY
- PROPOSED PIPING UPGRADE AIR ONLY
- FAN GUN SNOWMAKING AREA
- PUMP HOUSE
- VALVE HOUSE
- PROPOSED PIPING WATER ONLY
- PROPOSED PIPING AIR ONLY
- PROPOSED FAN GUN WIRING
- PROPOSED WATER PIPE SIZING
- PROPOSED AIR PIPE SIZING

DRAFT

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NOT FOR CONSTRUCTION

WHITEFACE

Sno.matic Controls & Engineering Inc.

USA: Eastern Office
55 Mechanic Street
Lebanon, NH 03766
Phone (603) 448-1600 Fax (603) 448-1661
email: info@snomatic.com
Western Office
Phone (303) 671-0800 Fax (303) 671-0271

JAPAN: Tokyo Office
3-3301-1619

KOREA: Seoul Office
822-762-1945
snomatic@unitel.co.kr

CLIENT

WHITEFACE MOUNTAIN RESORT

PROJECT TITLE

WHITEFACE SNOWMAKING SYSTEM

DRAWING TITLE

PROPOSED SNOWMAKING AIR AND WATER PIPING

Designed by: S. BARTHOLD	Approved by: M. PURCELL
Project no.: 115.1	Drawn by: J. WILKINSON
Revision: 4/18/02	Scale: 1" = 500'-0" D SIZE
Drawing no.: WF-GE-01.DWG	Sheet no.: ___ - ___

The following table summarizes the total snowmaking objectives for the terrain at Whiteface:

TABLE IV-12
SNOWMAKING TERRAIN OBJECTIVES SUMMARY

Terrain Description	Appr. Area (acres)	Snow Volume (ac-ft)
Existing Terrain with Snowmaking	189.5	405.8
Existing Terrain with Proposed Snowmaking	15.4	30.5
Total Existing Terrain with Snowmaking	204.9	436.3
Proposed Terrain with Snowmaking*	46.7	110.6
Total Terrain with Snowmaking*	251.6	546.9
Total Terrain with No Snowmaking*	39.0	
Total Skiable Terrain	**290.6**	

Source: Sno.matic Controls & Engineering Inc., Whiteface

*** Denotes Conceptual Actions Included**

b) Snowmaking Technology Analysis

Present snowmaking technologies can be categorized into direct and indirect processes. Direct processes utilize the cooling capacity of ambient air at sub-freezing conditions to produce snow. This involves generating a spray of water droplets, nucleating and freezing these droplets, and depositing the droplets on the trail or slope. Indirect processes utilize refrigeration systems to either produce flake ice or to control the climate inside a structure. Indirect processes have been installed primarily in Asia and indoor facilities, and are not considered for Whiteface due to energy expense and capital costs constraints.

There are three basic types of direct snowmaking equipment, internal mix compressed air/water systems, external mix compressed air/water tower guns, and fan systems. Each type of snowmaking equipment has certain benefits and drawbacks.

Internal Mix Compressed Air/Water Equipment

The original snowmaking devices used compressed air to shatter a water stream into a spray, and propel this spray into the air to provide enough time airborne to freeze the droplets before they hit the ground. Many modifications have been

made to the nozzle configurations of this equipment, but the basic approach is identical to the original design. A major advantage of this technology is that it is very flexible in terms of the type of snow that can be created, or the temperatures at which this snow is made.

To use this equipment, dual pipelines are installed, one containing pressurized water and the other containing compressed air. Snowmaking nozzles or guns mounted on a small sled, tripod or tower are connected to the main pipelines by flexible hoses. The water hydrant allows the water pressure and flow to be adjusted, which impacts the amount of compressed air consumed, the size of water droplet that is formed, and the type of snow produced. The snow quality of internal mix compressed air/water equipment is very adjustable, providing that temperatures are below 28 to 30° F WB.

Internal mix snowguns are inexpensive and are very portable. This makes it easy to purchase large numbers of guns to operate on different sections of the trails. It is not uncommon to have one of these guns operating every 75-100 feet down the length of a trail to produce enough snow to open a slope in one night.

The primary disadvantage of this process is the energy consumed by the compressed air. At higher temperatures, compressed air can make up 95% of the total energy consumption of the snowgun. This translates directly to operating costs, which can be very high for internal mix snowguns. A secondary disadvantage is the noise created when large quantities of compressed air expand out of the nozzle. This can make internal mix technology unacceptable in environmentally sensitive areas.

External Mix Compressed Air/Water Equipment

External mix snowguns were originally developed in the mid 1970's, but have become popular only in the last decade. These guns utilize high-pressure water passing through nozzles located on a 20-35 foot tower to generate a spray. A secondary stream of either compressed air or compressed air/water mixture is directed into the primary spray at a location approximately 1-2 feet from the nozzle. This secondary stream provides nucleating particles to the primary stream.

Nozzle manufacturers with varying amounts of water and compressed air volumes have developed a variety of external mix configurations. Typically, the towers are fixed on the sides of the trail due to their height, which can restrict operations when unfavorable winds are experienced.

Recently, several manufacturers' have advanced the portability of this style of snowgun technology. Sled mounted versions are available, though difficulties arise due to the weight/center of gravity, and the fact that sleds can be easily buried if not often moved frequently. Other developments include lighter towers that can be hand carried, mounts which can be drilled into the snow with a hand tool, and mechanical mounts that make it easier to raise and lower the guns. In addition, a water-only tower gun has been introduced which produces snow at colder temperatures. This gun does not have any nucleation equipment, so it therefore requires nucleating additives.

The primary advantage of these types of tower guns is the ability to create large volumes of snow with minimal energy, especially at lower temperatures. In addition, water flows through the guns are typically constant through a wide range of pressures, though generally the higher the water pressure the more consistent the snow production and the higher the snow quality. External mix guns do not typically require any adjustment by the snowmaking crews. Because the guns use little compressed air, they are both inexpensive to operate and create minimal noise disturbances. The disadvantage of these guns is susceptibility to inclement winds (due to both location and height of the towers), the fact that most are normally fixed at one location, the inability to adjust the type of snow being produced without changing out nozzle assemblies, and difficulties in generating a uniform snow cover over wide trails.

Whiteface has high winds, especially at the upper elevations. The potential for high amounts of drift loss at these elevations makes it difficult to justify the use of tower guns.

Fan Snowmaking

Fan snowmaking guns were developed in the late 1960's to provide better efficiencies and lower operating costs. These guns use a multitude of small pressure nozzles to project a spray into the airflow of a ducted axial fan. The equipment is mounted on a small, wheeled carriage, with snow quality adjusted by turning on or off banks of nozzles.

To assist in the nucleation of the spray, a small air/water gun is used to generate fine ice particles. A small on-board vane compressor typically feeds this nucleating gun.

The development of multi-nozzle fan guns, which use many small nozzles built into the air duct, has significantly improved the performance of fan guns. Traditionally considered a colder weather gun, fans have now become the preferred technology for many resorts in mild climates.

Fan snowmaking guns offer the best energy efficiency of all technologies (except for water-only tower guns). In addition, fan guns are quiet and project the snow far onto the trail. However, fan guns are large and typically require a grooming machine to move them (especially in steep and rolling terrain). In addition, fan guns are less adaptable to operations that must resurface wide areas of terrain with limited depths due to the high capital cost of each fan gun. Finally, fan guns require electrical cable to be installed on the sides of the trail. While the electrical cable is typically similar in cost to the compressed air lines fan guns can replace, costs increase for long trails or areas where wiring cannot be conveniently buried. A matrix of advantages/disadvantages for each type of equipment is included below:

ADVANTAGES	DISADVANTAGES
INTERNAL MIX AIR/WATER	
--Adjustable snow quality at all temps	--high energy requirements
--Portable	--Loud
--Low cost per nozzle	--Variable adjustment
--Good projection	--High Operating Costs
EXTERNAL MIX AIR/WATER	
--Low operating cost	--limited temp range per setup
--Easy on/off	--Limited projection
--Limits compressor investment	--Fixed snow characteristics
--High productivity	--Often fixed, not portable
FAN	
--Low operating cost	--More difficult to move
--Low noise	--High Labor requirement
--Good projection	--High cost per nozzle
--Variable snow quality adjustment	--Requires electrical distribution

A table of energy costs for some snowguns of these types is included below (based on Whiteface's present levelized electrical rate of 0.072$/kwh).

Air/Water--Internal mix (based on Ratnik Snow Giant)

Temp	A/W	Ft^3/kW-hr	$/ac-ft (snow)
28	25	4.13	$760
25	18	5.73	$547
20	10	10.32	$304
15	7	14.75	$213
10	5	20.64	$152

Air/Water—External Mix (based on HKD Millennium)

Temp	GPM	Ft^3/kW-hr	$/ac-ft (snow)
28			
25	15	38.71	$203
20	15	38.71	$203
15	40	102.22	$76
10	40	102.22	$76

Fan System (based on Lenko/SMI with cold water)

Temp	GPM	Ft^3/kW-hr	$/ac-ft (snow)
28	25	20.05	$156
25	40	32.09	$98
20	78	62.557	$50
15	100	80.21	$39
10	140	112.30	$28

There are variations in energy consumption between specific gun set-ups within these categories, especially in external mix towers where performance depends on the type of gun and the nozzles selected for operation.

c) *Trends in Snowmaking Operations*

Present trends in snowmaking operations are driven by several factors. The first is a demand for higher quality skiing surfaces. Improvements in snowmaking technology and a highly competitive business environment provide a significant advantage to resorts that provide good snow surfaces through abundant snowmaking capacity. To retain a good surface throughout the season, many resorts produce a fairly dry and light snowpack early in the year as opposed to traditional "base" coverage. While this often increases operating expenses, the snow does not degrade as quickly to hardpack or ice after a thaw or peak traffic day.

A second trend has been toward the use of external mix towers and fan guns to provide faster coverage rates at colder temperatures. This in turn has led to a rapid increase in water pumping capacity, and often to substantial investments in

storage reservoirs as well. The benefit is that coverage can be achieved very quickly when conditions are ideal and operating costs are low. A core capacity of equipment is normally retained to provide for marginal snowmaking production and to achieve coverage during warmer seasons. However, the snow that can be produced with this equipment during temporary cold periods helps minimize the numbers of hours of operation during warm periods when costs are high.

A third trend stems from a strong domestic economy and low unemployment rates which results in limited availability of reliable seasonal labor for snowmaking. This has made it difficult for large resorts to obtain enough staff to safely operate their system, and has placed a premium on equipment that is easy to operate without extensive experience. Automatic snowmaking plants (automation of pumps, compressors, and/or guns) are becoming more common as a result of these factors.

From an economic vantage point, the difference in energy costs between producing snow using conventional air/water internal mix vs. low energy technology is over $200,000 per year, assuming 518 acre-ft of snow is produced at an average operating temperature of 20-25 degrees. On the other side, the loss of 10-15,000 skier visits due to poor early season snow quality would eliminate the benefit of this operating savings. In view of this, it is recommended that Whiteface invest in low energy technology where it applies, while focusing on diversity of technology that provides for rapid production rates and premium snow quality.

d) Snowmaking Production Analysis

To determine the optimal capacity and configuration for the expanded snowmaking plant at Whiteface a snowmaking system production model was developed. This model integrates:

Water availability from the West Branch of the Ausable River.
Temperature/climate data from the NOAA weather site in Lake Placid at elevation 1940' (approximately mid-mountain).
Historic operational efficiencies from historic data collected at similar snowmaking system.
Snow requirements defined in Table IV-12.

Field data collected from various snowgun manufacturers through testing programs.

The following assumptions provided additional data required to complete the analysis:

HKD or McKinney External Mix tower guns.

25 kW fan guns.

Ratnik Snow Giant air/water guns.

Minimum of 8 hours of consecutive temperatures below 28°F wetbulb (WB) for early season snowmaking (before January 1).

Minimum of 16 hours of consecutive temperatures below 28°F wetbulb (WB) for mid/late season snowmaking (after January 1).

Snowmaking System Start-up on or after November 15 of each year.

De-rating factor for manual snowmaking operations at 65% of ideal performance levels. This accounts for start-up/shutdown losses, snowgun adjustments, switching from trail to trail for setup, and general operating conditions for a manual snowmaking system. This percentage was developed from historical and field data collected from similar manual snowmaking systems.

Snowmaking objective: Cover 100% of the snowmaking terrain in 80% of the years before Christmas.

Four snowmaking systems were investigated for Whiteface:

1. The model was used to predict the snow production potential of the existing snowmaking system capacity of 4,200 gpm/29,500 cfm/2 fans/12 towers. This system is predicted to produce approximately 284 acre-feet of snow before Christmas week in 80% of the years, falling 30% short of the objective of 409 acre-feet (see Table IV-13).

2. To achieve the goal of covering the existing snowmaking terrain by Christmas in 80% of the years, the pumping capacity is increased to 5,000 gpm and 100

external mix air/water tower snowguns[2] are added, as well as an additional 2 fan guns. This system produces approximately 418 acre-feet of snow by Christmas (see Table IV-14 for summary).

3. To provide adequate coverage on the existing trails that presently do not have snowmaking (in addition to trail widening recommendations), additional fan guns are proposed on the lower flatter terrain. By increasing to 10 fans, all existing terrain is covered by Christmas in 80% of the years. The predicted production amount under this scenario is 459 acre-ft by Christmas as opposed to the objective of 440 acre-ft (see Table IV-15 for summary).

4. The final system is for Build-out conditions with the conceptual Tree Island Pod. This system would require an increase in:
   - Water and air capacity to 6,000 gpm and 34,500 cfm
   - Increased numbers of external air/water tower snowguns (150).

This system would produce approximately 567 acre-feet of snow by Christmas in 80% of the years. See Table IV-16 for a summary of production.

e) Snowmaking Water Analysis

Whiteface Mountain currently withdraws water from the West Branch of the Ausable River. Water withdrawals are limited by the State to periods when the river flow downstream of the intake exceeds 38 cfs. In order to determine the quantity of storage necessary to offset potential withdrawal restrictions, a supply/demand study was developed.

The USGS abandoned their gauging station on the West Branch of the Ausable River in 1968, though substantial water flow data exists before this date. There are more recent gauging records on the East Branch of the Ausable and on the Ausable River, however, these records cannot be statistically correlated with the early data on the West Branch.

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[2] Note that if all tower guns are permanently mounted, additional tower guns will need to be purchased. Most fixed towers operate less than 150 hours before the area around the gun has sufficient snow, so that other guns must be available to provide the total amount of production expected from a mobile gun.

Based on these variances, water flow data was collected from the West Branch gauging station (located 5 miles east of Lake Placid[3]). The drainage watershed for this station is 116 square miles in area, with the gauge at 1621' in elevation. Thirty years of daily flow data from 1938 through 1968 were analyzed to determine weekly waterflow exceedance probabilities throughout the snowmaking season. This data was then prorated to the watershed above the snowmaking water intake[4], and compared to estimated snowmaking demands based on the weather analysis. The results are included in Table IV-17.

[3] Station 02010004 located at Latitude 44° 18' 40", Longitude 73° 55' 00"

[4] The watershed above the existing snowmaking water intake is +/- 130 square miles.

TABLE IV-13
SNOWMAKING SYSTEM PRODUCTION
EXISTING SNOWMAKING SYSTEM

Production Statistics[1]			
	acre-feet of snow		
	90%	80%	70%
November 20	13	17	21
December 1	61	73	77
December 15	171	189	219
December 25	261	284	310
January 1	358	370	386
January 31	672	688	752

1. Production Percentile indicates the minimum volume of snow that could be statistically produced. IE. By December 25, 261 acre-feet of snow would be produced in at least 90% of the years.

Production Assumptions	
System Water Capacity	4200gpm
System Compressed Air Capacity	29500cfm @ 100 PSI
Number of Fan Guns	2each @ 25 kW
Number of Tower Guns	12each fixed
Hours before Startup Early Season	8hrs
Hours before Startup Mid Season	16hrs
Startup Temperature	28Degrees F Wet Bulb
Startup Date	November 15
System Operation Efficiency	35%Production loss
Water Cooling Gain	0%Production gain

TABLE IV-14
SNOWMAKING SYSTEM PRODUCTION
EXPANDED EXISTING SNOWMAKING SYSTEM

Production Statistics[1]			
	acre-feet of snow		
	90%	80%	70%
November 20	15	24	29
December 1	89	103	109
December 15	252	272	318
December 25	382	418	448
January 1	518	540	554
January 31	985	1010	1107

1. Production Percentile indicates the minimum volume of snow that could be statistically produced. IE. By December 25, 382 acre-feet of snow would be produced in at least 90% of the years.

Production Assumptions	
System Water Capacity	5000gpm
System Compressed Air Capacity	29500cfm @ 100 PSI
Number of Fan Guns	4each @ 25 kW
Number of Tower Guns	100each fixed
Hours before Startup Early Season	8hrs
Hours before Startup Mid Season	16hrs
Startup Temperature	28Degrees F Wet Bulb
Startup Date	November 15
System Operation Efficiency	35%Production loss
Water Cooling Gain	0%Production gain

TABLE IV-15
SNOWMAKING SYSTEM PRODUCTION
EXPANDED EXISTING SNOWMAKING SYSTEM FOR ALL EXISTING TERRAIN

Production Statistics[1]			
	acre-feet of snow		
	90%	80%	70%
November 20	17	27	32
December 1	100	115	121
December 15	279	299	352
December 25	426	459	490
January 1	565	592	613
January 31	1069	1097	1213

1. Production Percentile indicates the minimum volume of snow that could be statistically produced. IE. By December 25, 426 acre-feet of snow would be produced in at least 90% of the years.

Production Assumptions	
System Water Capacity	5000gpm
System Compressed Air Capacity	29500cfm @ 100 PSI
Number of Fan Guns	10each @ 25 kW
Number of Tower Guns	100each fixed
Hours before Startup Early Season	8hrs
Hours before Startup Mid Season	16hrs
Startup Temperature	28Degrees F Wet Bulb
Startup Date	November 15
System Operation Efficiency	35%Production loss
Water Cooling Gain	0%Production gain

TABLE IV-16
SNOWMAKING SYSTEM PRODUCTION
SNOWMAKING SYSTEM BUILD-OUT FOR ALL EXISTING AND PROPOSED TERRAIN

Production Statistics[1]			
	acre-feet of snow		
	90%	80%	70%
November 20	20	34	40
December 1	124	141	149
December 15	344	369	435
December 25	529	567	602
January 1	694	731	755
January 31	1315	1353	1497

1. Production Percentile indicates the minimum volume of snow that could be statistically produced. IE. By December 25, 529 acre-feet of snow would be produced in at least 90% of the years.

Production Assumptions	
System Water Capacity	6000gpm
System Compressed Air Capacity	34500cfm @ 100 PSI
Number of Fan Guns	10each @ 25 kW
Number of Tower Guns	150each fixed
Hours before Startup Early Season	8hrs
Hours before Startup Mid Season	16hrs
Startup Temperature	28Degrees F Wet Bulb
Startup Date	November 15
System Operation Efficiency	35%Production loss
Water Cooling Gain	0%Production gain

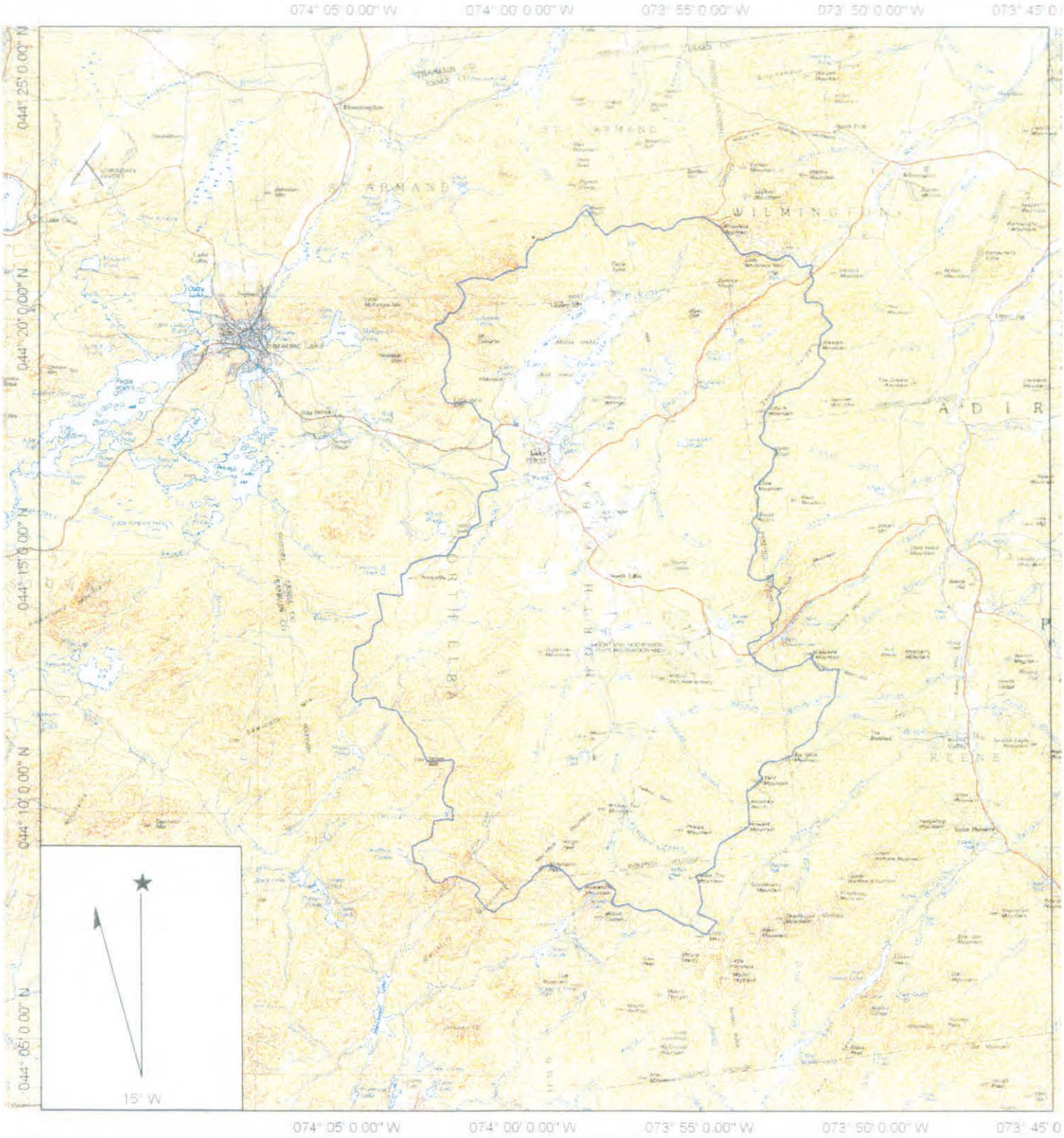
TABLE IV-17
WEEKLY WATER DEMAND (MG) AT BUILD OUT

	Weekly Demand/Supply[5] (MG)	Cumulative Deficit (MG)
11/1 - 11/7	22	0.0
11/8 - 11/14	22	0.0
11/15 - 11/21	15	0.0
11/22 - 11/28	9	0.0
11/29 - 12/5	7	0.0
12/6 - 12/12	5	0.0
12/13 - 12/19	1	0.0
12/20 - 12/26	0	0.0
12/27 - 1/2	-4	3.8
1/3 - 1/9	6	0.0
1/10 - 1/16	-5	4.8
1/17 - 1/23	-2	7.2
1/24 - 1/30	3	4.7

Source: Sno.matic Controls & Engineering Inc., Whiteface

These figures indicate that a storage capacity of 5 MG to 8 MG would be necessary at build out to fully provide water for snowmaking during a dry year. This storage would provide the snowmaking system with water for 14 to 22 hours of continuous snowmaking at full pumping capacity without recharge. The recommended storage would also balance the conditions encountered during frazil (slush ice) production and low water flows, as well as reducing the impact of high sediment loads in the river.

[5] Maximum weekly demand for 90th percentile year snowmaking demand and 99th river waterflow exceedance probability.



Name: LAKE CHAMPLAIN SOUTH
Date: 9/26/2001
Scale: 1 inch equals 3.156 miles

Location: 044° 14' 49.7" N 073° 59' 15.9" W
Caption: WHITEFACE SNOWMAKING WATERSHED
(+/-130 SQ. MILES)

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f) Water System Improvements

To achieve the production capacity defined in Section IV.7.d, Whiteface should expand the pumping capacity at facilities P2, P3, and P4 as follows[6]:

River Withdrawal (P1)	6,000 gpm
Lower Mountain System (P2)	6,000 gpm
Mid Mountain System (P3)	5,800 gpm
Upper Mountain System (P4)	2,850 gpm (existing capacity)

The increased water capacity would increase production rates and improve snowmaking efficiency during colder temperatures. This reduces overall production hours and reduces operating costs because more snow can be made during optimal conditions.

Intake System

In order to achieve these pumping rates, Whiteface must first resolve restrictions at the existing intake that limit withdrawals to approximately 3,000 gpm. This restriction is the result of high velocity entering the pump well, relatively low depths over the suction bells of the pump, and plugging through debris or frazil ice. Options include:

Water enters the existing structure through a serpentine channel installed to deposit sediment. After flowing into an external basin, the water runs through a relatively small opening into the main pump chamber. The high velocity through this chamber creates vortexing issues with the first pump and level constraints on the last pump. To reduce this velocity to below 2 feet/second while pumping 6,000 gpm, the entrance area for the water will need to be increased to at least 7 square feet. This can be done by removing the plywood baffle boards in front of the pumps (thereby eliminating the serpentine channel) or by cutting holes in the concrete behind the pumps (chamber behind the pumps is connected to side channel).

During cold nights at the beginning of the season (before an ice cover has developed on the river), water withdrawals are hampered by frazil or "slush" ice. Frazil ice is formed when turbulent sections of the stream generate ice crystals

[6] Pumping capacity breakdown is based on approximate acreage percentage serviced by each pump station

that run suspended in the river and coat any surface they hit. Once the stream is frozen over, the ice cover provides an insulating blanket, which eliminates frazil. With a deep intake above the flume, frazil impacts would be significantly reduced, especially since the backwater of the flume helps promote the development of an ice cover.

For the existing intake structure, several other options are available:

Sugarloaf in Maine has successfully eliminated frazil by installing a water manifold with orifices at the edge of the intake screen. This creates a continual jet of water running over the surface of the screen.

Install a warm water return from the water-cooling system for the compressed air system and dump that water into the intake pit. This would utilize the existing abandoned 12" supply line adjacent to the Mixing Bowl Lift, and would only be used during frazil conditions and would not elevate stream temperatures.

If water storage is constructed, the impact of frazil is lessened since water can be withdrawn from storage during periods of frazil.

A solution to the frazil ice problem is currently being explored.

PH 1

Aside from the withdrawal issues, PH 1 already has a capacity of 6,000 gpm. However, the suction pressure entering all of the upper pumphouses, as well as at critical trail junctures (VH at top of Northway, VH on Upper McKenzie) is less than 150 psi (often close to 100 psi). This pressure is too low for efficient snowmaking on these sections, especially with tower based technology which typically requires 300 psi minimum. It is recommended that additional stages be added to the PH 1 pumps to bring the discharge pressure from 240 feet TDH (approx. 100 psi) to 350 feet TDH (approx 50 psi). This will require increasing the motor size to 250 HP, and changing out the existing starters. However, the additional 50 psi of pressure will significantly improve system pressures throughout the system, and will not exceed the suction rating of existing pumps or valving.

PH 2

The existing capacity of PH 2 is 4,200 gpm, so that two additional 900-gpm pumps are required. Installation of these pumps will require the existing aftercooler to be moved. The pumps will match the existing 350 HP vertical turbine units. Electrical support will be simplified if these pumps are installed at the same time that a centrifugal compressor is installed to replace 3 rotary screws (see air section).

PH 3

To increase the water capacity at PH 3 to 5,800 gpm will require the addition of two 1000 gpm pumps in conjunction with the existing snowmaking pumps. These pumps can be installed in the unfinished "cutout" area of the structure. One pump can be installed without changing out the existing 2,000 KVA transformer; the second pump will likely require a larger transformer.

PH 4

Proposed piping modifications will decrease the terrain serviced by PH 4; therefore, the pumping capacity at this location can remain at the existing 2,850 gpm[7].

TREE ISLAND POD

Snowmaking coverage of the Tree Island Pod would require the installation of a new pump house at the base of this pod. The capacity required to cover this snowmaking pod is 2,100 gpm. Based on the existing snowmaking pumping heads the discharge head of the new pumps is 1,185'. The power requirements for this pump house are approximately 900 Hp (671 kW).

g) Air System Improvements

The 1996 UMP analyzed the proposed plan to replace the existing rotary screw compressors, which are nearing the end of their life span. To date Whiteface has replaced two of the old rotary screw compressors with new 800 Hp centrifugal compressors. It is recommended that Whiteface continue replacing the existing rotary screw compressors, based on the payback analysis as outlined in Table IV-18.

[7] Lower Northway and Excelsior as well as Upper Empire to be covered with PH 3 pressures.

If and when Whiteface expands to cover the Tree Island Pod terrain with snowmaking the plant air capacity would need to expanded from 29,500 cfm to 34,500 cfm. It is recommended that Whiteface install a single 5,000 cfm centrifugal compressor to increase the snowmaking air plant capacity. Installation of this compressor would require the expansion of the existing closed loop water-cooling system.

The existing air-to-air aftercooler for the existing diesel air compressor has a damaged core. As part of its ongoing maintenance program Whiteface plans to repair the core. This is a common occurrence in many air-to-air aftercoolers throughout North America. Analysis of the cause of the damage appears to be due to the expansion/contraction of the supply/discharge piping in/out of the air-to-air aftercooler. Based on an assumed length of 100' between the compressor and the air-to-air aftercooler the pipe expansion is approximately 1.13". A 12" diameter braided steel connector has a lateral deflection length of 3/8" (0.375") with 100 psi of air pressure. This results in 22,620 psi of stress placed on the end connections when rigidly attached to end components. This stress is probably causing the damage to the air-to-air aftercooler core units. To eliminate this it is recommended that a stainless steel expansion joint be installed inline. These provide up to 1¼" of longitudinal axial expansion. It is also recommended to install a braided wire connector on the inlet and outlets of the air-to-air aftercoolers.

TABLE IV-18
WHITEFACE SCREW VS. CENTRIFUGAL COMPRESSOR PAYBACK ANALYSIS

		CFM	BHP	
Typical Screw Compressor	IR SSR 1500 H	1500	393	3.8 CFM/HP
	Motor Efficiency	93.2%		
	Assumed Transformer	95.0%		
	KW (ignoring power factor)	331	KW	4.53 CFM/KW
Add 800 HP Centac	IR Centac	4075	885	4.6 CFM/HP
	Motor Efficiency	95.3%		
	Assumed Transformer	95.0%		
	KW (ignoring power factor)	729	KW	5.59 CFM/KW
Efficiency Improvement				23%
Operating Hours (typical)		1800 hours		
Electrical Cost	Demand	9.19 $/KW-month		

	Inter. Credit	3$/KW-month
	Net	6.19$/KW-month
	On Peak	7.87cents/KW-hr
	Off Peak	5.51cents/KW-hr
months of operation	4	
Demand Charge--Screw	$8,199	
Energy Charge--Screw	$39,874	
Annual Electric Cost--Screw	$48,073	
Annual Cost per cfm--Screw	$32.05	
months of operation	4	
Demand Charge--Centac	$18,056	
Energy Charge--Centac	$87,814	
Annual Operating Cost--Centac	$105,870	
Annual Cost per cfm--Centac	$25.98	
Capital Cost --Centac	$150,000	
Capital Cost--MCC	$35,000	
Install. Cost	$50,000	
Total Cost	$235,000	
Cost/CFM	$57.67	
Annual Payback	9.50	years
Approximate Separator Cost--Screw	$18,000	
Repair cost per cfm	$12.00	
Payback for screw needing seperator	7.53	years

h) Mountain Infrastructure

Expansion of the snowmaking system proposed in this UMP will require an increase in the mountain distribution capacity. Also, much of the older pipe installed prior to the 1980 Olympics are reaching the end of their life expectancy. Installation of new pipe and snowmaking hydrants should take place at any time trail improvements occur. Exhibit IV-3 shows two distribution plans illustrating the water and compressed air piping for both the existing conditions and proposed upgraded pipe.

The goal of the compressed air mountain distribution system is to provide an even balance of 36,000 cfm of compressed air capacity to the primary nodes of the distribution system.

Since the water distribution system is above ground, the piping system is designed to provide a continuous flow of water to the summit of each zone in an energy efficient manner. The downhill pipelines are designed to provide even pressure loss in accordance with the slope pitch. The discharge points have also been centralized to minimize the drain losses.

As the system capacity increases and the existing guns and hoses become worn from normal wear and tear, it is important to replace and expand the inventory to minimize movement of equipment and maximize operational efficiency.

This UMP proposes that Whiteface significantly increase the number of external mix air/water snowmaking guns to at least 300 at build-out. This will allow Whiteface to maximize water throughput at colder, more efficient snowmaking temperatures and meet the snowmaking objectives. This minimizes the capital and operational expenses, while reducing the number of snowmaking operation hours.

On steeper terrain, traditional internal mix guns should be increasingly mounted on fixed towers. This substantially reduces the time and effort required to get a gun on-line, and improves the productivity of the gun as well. This type of investment in fixed towers on difficult terrain has provided a substantial boost to operations at similar resorts.
As noted in the snowmaking technology section of this UMP, fan technology provides an effective method of producing snow on novice/beginner terrain. The technological advances by manufacturers have increased the reliability and temperature production ranges of fan snowmaking. Therefore, it is proposed that Whiteface install fan technology snowmaking in the Easy Acres learning terrain. This terrain is identified in Exhibit IV-3.

i) Process Control

It is important to accurately monitor and control snowmaking equipment to ensure efficient and cost-effective operations, as well as to avoid damage to machinery. At present, Whiteface controls snowmaking operations at PH2, using a large analog control panel that monitors conditions in that building as well as providing start/stop capability for PH-1. PH 3 and PH 4 are operated locally, without

relaying any information to the main control facility. Records on operating values are kept diligently by hand on daily record sheets.

In the last few years, expansions at PH 3 and 4 have included the addition of pneumatically operated control valves to maintain constant water discharge pressures. The control of these valves is done through local PLC's (programmable logical controllers) in each building. Neither PH 2 nor PH 1 presently have any pressure control or PLC's.

The focus of future process control enhancements at Whiteface should be as follows:

1. Install PLC-based control provisions at each equipment site to allow remote operations.
2. Improve instrumentation to measure critical snowmaking parameters including ambient wet-bulb temperature (temp and %RH), water flow and energy consumption.
3. Incorporate a computer based monitoring/data acquisition system to collect system data and provide real time reports to management on production rates, equipment status, and cost of operations.
4. Invest in hydrant automation as technology continues to develop.

These enhancements are further described below:

(i) Remote Operations via PLC

All types of PLC's can communicate to remote locations using control wiring, phone pairs, fiber optic cable, or radio modem. This sets up a data network making it possible to access information and control devices from any location on the network. Most data networks utilize send and receive channels, which require 2 pair of phone wiring, fiber optic, etc. between each station. Properly installed, PLC's are very robust devices, but the weakest link is typically the communication system. Therefore, it is very important that each location have provisions to safely operate equipment locally as well as via the network.

Since Whiteface already has two Allen Bradley PLC's (PH3 and PH4), the logical alternative is to install additional Allen Bradley PLC's at PH2 and the compressor station. Depending on the existing communication cable running

between PH1 and PH2, it may be more economical to run PH1 through the PH2 PLC (each signal then requires it's own pair of wires, so approximately 12-20 pairs would be needed).

Some minor modifications at PH 3 and PH 4 will be required to allow for remote operation of equipment. Starters must be equipped with HAND/OFF/AUTO provisions, amperage CT's installed, and additional instrumentation as described in the following section.

To allow the operator to interface with the network, a simple touch screen panel and/or a computer monitoring system can be installed. The touch screen system is simple and economical, but limits the amount of information available at one time. It is recommended that each new PLC panel be equipped with graphical touch screens, and a central computer be installed running "SCADA" software (supervisory control and data acquisition). This computer can present information on all facilities in a graphical and informative format, as well as collecting and distributing data to a variety of locations.

(ii) Instrumentation Enhancements

There are critical items of instrumentation which are missing from the present system at Whiteface, making it difficult to effectively manage system operations. First and foremost is a water flowmeter at any of the pumphouses. Without accurate flow information, it is impossible to know if the system is operating up to potential, how much water is being lost through drains at the end of the piping, whether pumps are operating efficiently, etc. The most important location for a flowmeter is PH 2, since all water for snowmaking stems from this building.

A second critical requirement is ambient temperature and %RH sensors at various locations on the mountain. At the outset, PH 2, PH 3, and PH 4 represent good locations for weather sensors since these are close to PLC's. In lightning prone environments, weather instrumentation often gets damaged, so these units should incorporate transient surge protection, as well as the ability to change out the electronics unit in an economical manner.

A third critical requirement is power consumption at each facility. For most pump houses, monitoring amperage of motors is typically adequate. At larger locations, such as PH 2, it is useful to monitor the utility meter (or meters) to be able to determine power consumption. This can be done for the resort as a whole to provide a means for controlling demand charges, calculating daily energy expenses, and checking utility billings.

(iii) Control Enhancements

From a control standpoint, it is desirable to ensure that pumps are controlled to maintain constant pressure in the system. This is typically done using a throttling control valve (PH 3 and PH 4), or a variable frequency drive (VFD). A VFD is more efficient than a control valve, but does not permit operation of the pump system at varying pressures. In addition, the high static pressure requirements of snowmaking limits the range of speed adjustment, and therefore, the amount of power that is saved. It is not cost-effective to replace existing control valves with VFD's unless this conversion is highly subsidized by the utility. However, as the water capacity of the system is expanded, VFD's represent an excellent choice in lieu of additional constant speed starters.

A VFD is highly recommended for PH 1, since this location has large volume pumps (2,000 gpm each), which will benefit from the ability to operate at reduced flow levels. PH 2 will also benefit from VFD's in order to maintain constant water system pressures.

The existing IR centrifugal compressors utilize on-board control panels that are no longer supported by Ingersoll Rand, therefore, putting the operation of the compressor at risk in the event of a board failure. These boards can be upgraded with PLC based units that will communicate with other PLC's on the network, though the cost is fairly high. It is recommended that at least one compressor board be upgraded so that Whiteface can retain one of the old boards in inventory[8].

[8] Ingersoll Rand no longer stocks the original compressor control panels.

(iv) Supervisory Computer

A supervisory computer provides a graphic window on snowmaking operations, and accumulates operating records in a database. This information is used to develop daily, weekly, and monthly reports on snowmaking operations, including production volumes, energy expenditures, temperature variation, cost per gallon, etc. In addition, relationships can be explored such as typical flow rates at varying temperatures, so that projections can be made from weather forecasts on what snowmaking coverage is possible prior to an important weekend or event.

One benefit of this type of supervisory system is that information can be distributed in a number of ways. Initially, reports can be distributed via networked printers, fax machines, email, etc. In addition, it is not difficult to provide a number of view stations (including phone dial-up linkages) so that managers can view all information in real time from remote locations. This is often handy for snowmaking supervisors to review alarms/make adjustments from home, rather than having to travel into the plant during off hours. Finally, it is also possible to transmit selected operating graphics to a password accessed web page, allowing anyone with proper clearance to review current or historical operating parameters.

This type of supervisory system has become fairly common in snowmaking operations. It is important to bear in mind that this type of system specializes in the collection, distribution, and analysis of real-time data, and is therefore not limited to snowmaking operations. Resort wide power usage is another parameter that is often brought into these systems to provide better energy management and cost control. Other useful operating data that is often incorporated includes features such as:

- Stream flow and reservoir level measurements.
- Lift Operating status.
- Snow reporting on locations that snow has been made in the last 24 hours.
- Grooming reports/Trails Open and Closed.
- Weather information for snow reports.

This type of system could coordinate the accumulation and reporting of data from other ORDA facilities as well, but that is outside the scope of this analysis.

(v) Hydrant/Gun Automation

Automated hydrants and snowguns provide benefits in production, labor reduction, and snow quality control. Typical improvements in production rates vary from 25 to 50%, depending on the experience of the operators of a manual system.

This improvement comes at a significant cost due to the expense of communication and power wiring, vaults, actuators, and controls. A typical snowmaking hydrant will produce 1 to 1.5 acre-ft of snow (1/2 acre x 2 to 3' depth) at an annual energy expense of $300 to $500 per acre-ft. With a 50% productivity gain, the energy savings is only $150 to $250 per acre-ft (in reality less than this since only the compressed air portion of energy is reduced by automation). This makes it difficult to cost justify fixed automated hydrants on an energy basis which typically cost more than $5,000 each.

On the other hand, hydrants in high profile areas (high traffic areas, competition slopes) or steep, remote areas requiring labor consuming operations may represent good choices for automation. It is anticipated that the cost of automation will decrease over time, making this alternative increasingly attractive.

In the mean time, other automation elements should be investigated. One opportunity exists in fan guns, which will self-regulate based on the ambient temperatures. Since the automation portion travels with the gun, the cost of automation is amortized over the entire operating hours of the gun. Automated fan guns represent an excellent opportunity for energy savings, especially in the lower, gradual trail areas.

External mix towers are operated by simple on/off valving, drastically reducing the time required to set-up and adjust the guns. This equipment can be automated at a lower cost through a variety of alternatives including:

- Manually charging an entire line and thereby starting all the guns that have been connected. This requires special equipment in the valving areas supporting the line to be charged. This is the least expensive, but least desirable form of automating since it impacts distribution of air and water, and can create more labor issues (if a hose blows, gun isn't connected correctly, wind varies along the trail, etc) than it saves.

- Automatically charging an entire line via automating the valve house. This is worth investigating in a new installation where gun placement, hoses, etc. can be carefully controlled.

- Automatically operating each gun with an on/off mechanism. This is generally less expensive than implementing internal mix automation, which requires the ability to adjust the water hydrant based on temperature.

While automation provides a lot of potential for higher production rates, it is recommended that Whiteface first implement features allowing plant equipment to be operated from one location and system performance to be monitored and managed. This will provide better data tools to assess the benefits of automation, and a stable platform from which to integrate automated trails.

8. Visitor Services and Ski Center Operations

a) Facilities Overview

Main Base Area

The main base area will be upgraded to alleviate five primary concerns:
the arrangement of key skier arrival functions,
the sense of entry to the lodge at the drop off area,
bus drop-off and parking,
provision of upgraded facilities for the New York Ski Education Foundation office and conference space for marketing staff and
the amount of maintenance and storage space.

Improvements to the Base Lodge will focus on completing the Phase II improvements to enhance customer service and the general appeal of the building. These improvements include:

a larger reception and ticket area for the purpose of a one-stop shopping area for all lift ticket, rentals and ski school packages (4,000sf additional space),
a second retail shop adjacent to the new reception and ticket area (replacing 860sf administration space),
the relocation of the ski school operations and desk from the second level to the first floor of the Base Lodge near the present ticket sales location (replacing 880sf of locker and ticketing space and adding 770sf),
a VIP room (700sf) and coffee shop (700sf) to be established in the relocated ski school space,
additional rest rooms created at the rear of the existing retail shop (utilizing 750sf of the retail shop space),
an expansion of the ski patrol/first aid space (680sf),
additional offices, storage and conference space for administration 350sf),
the relocation of employee lockers/lounge space to the breezeway storage space (950sf) and
an update of the computer ticketing system, creating more efficient sales points.

These improvements to the Base Lodge will greatly expedite the arrival process – tickets, rentals, ski school – promoting greater customer satisfaction prior to beginning the day on the slopes.

The arrival area will be enlivened through this re-arrangement of key skier arrival functions at the edge of the drop-off area. The long term parking in the drop off area should be deleted to allow adequate space for the drop-off requirements of both shuttle buses and cars for the increased mountain capacity. A larger pedestrian arrival plaza should be developed adjacent to the northeast corner of the building in front of the drop-off area to accommodate milling, ski/board storage and drop-off/pick-up functions.

Charter bus drop-off would be relocated to a roadside area on the way up to Easy Acres. A safe pedestrian route between this area and the Base Lodge would be

established. Parking for buses would be in the new Lot #5. This would help to alleviate the congestion at the Base Lodge drop-off area.

NYSEF Training Center Building

This project involves construction of a two-story log building which will function as the administrative and training center for the NYSEF operation at the Whiteface Ski Center.

The Olympic Region in the Adirondack Mountains of Upstate New York offers one of the best opportunities for winter sports training in the United States. The New York Ski Educational Foundation (NYSEF) – founded in 1973 – is the region's non-profit organization whose primary function is to offer athletic training in snow sports to the youth of the Olympic Region, the State of New York and the nation. Through a cooperative working relationship with the Olympic Regional Development Authority (ORDA), NYSEF is able to provide training utilizing world-class facilities to athletes from youth to young adults.

To accomplish its mission, NYSEF operations at the Whiteface Ski Center needs a new training and administrative facility which will adequately service athletes, coaches and administrative requirements of the NYSEF operation at the Whiteface Ski Center. See Exhibits IV-8A through IV-8H.

- The proposed building will be a log construction with outside dimensions of 80 x 45 feet. Ten (10) foot wide roof covered deck will be adjacent to the buildings first floor along its southerly and easterly elevation.

- The building will consist of three floor levels – basement, first floor and mezzanine.

- The basement floor will contain lockers, storage, coach's office, restrooms and mechanical and has direct access (walkout basement) to the outside from the building's east side. The remainder of the basement floor will be below grade along south, north and west side of the building.

- The first floor area will contain administrative offices, conference room and large, open meeting area. The main access point to the first floor will be on the south side of the building.

- A 45 x 30 feet mezzanine will be located on the second floor. This area will be used for storage.

The site for the proposed building is located approximately seventy (70) feet northwesterly from the ski center base lodge building's west end. Existing improvements on the site and its immediate vicinity include the following:

- Existing 15' x 20' storage building
- Existing overhead electric lines to the west and north
- Existing Boreen ski trail to the south
- Existing asphalt drive to the east
- Existing gravel road access from the asphalt drive to the ski trail

The site is cleared with exception of approximately 3,300 SF of wooded area located to the north and west of the existing shed. The wooded area contains seventeen (17) trees greater than 3" dbh.

The site is sloping generally in the easterly direction with slopes ranging from 10 to 20 percent.

Alpine Training Center (Former NYSEF Building)

Improvements to the Alpine Training Center building will focus on the following (See Exhibits IV-9 through IV-12):

- Improvements to first floor level without increasing floor space (see Fig. IV-9).
- Addition of approximately 960 SF to second floor plan (see Fig. IV-10).
- Addition of approximately 940 SF conference space to the upper level floor plan (see Fig. IV-11).

- Improvement to the façade of the existing building (see Fig. IV-12).
- Providing water and sewer service to the building (see Fig. IV-16 and IV-17). This building does not currently have toilet facilities; occupants are using the facilities in the Base Lodge building.

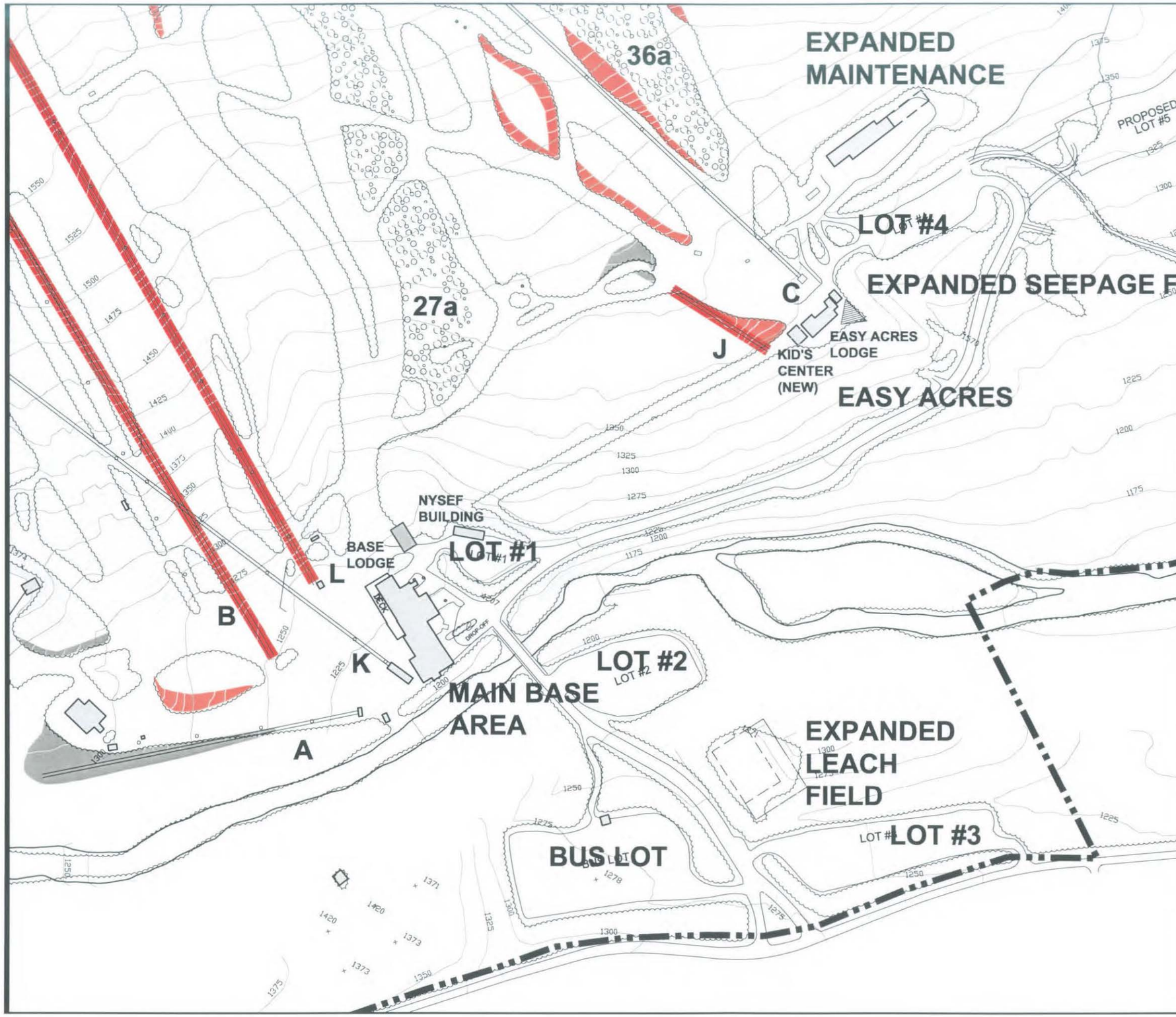
No expansion of existing parking facilities (Lot#1) is proposed.

Mid-station Lodge

The Mid-station Lodge will be relocated approximately 150 feet to the south of its current position to improve skier circulation in this area and particularly on the Lower Valley trail.

Easy Acres Lodge

An additional 5,000 square feet building (Kid's Center) should be constructed adjacent to the existing lodge. All Ski Wee/Drop-In Center functions will be located in this new building. The existing lodge should be renovated to alleviate the current congestion and accommodate the skier capacity in the Easy Acres lift/trail system. A snow play area for young children should be created adjacent to the new building. A magic carpet should be installed to provide a special learning environment for young children.



WHITEFACE

Prepared For:
OLYMPIC REGIONAL DEVELOPMENT AUTHORITY
LAKE PLACID, NEW YORK

Prepared By:

SE GROUP

IZA Engineering & Planning
Ivan Zdrahal Associates, PLLC

COMPREHENSIVE MANAGEMENT AND PLANNING REVIEW AND UNIT MANAGEMENT PLAN

150 0 75 150 300 600
Scale: 1" = 300'
Contour Interval = 5 Feet
NORTH

TITLE:
BASE AREA SITE PLAN

DATE: MARCH 2004

FIGURE #: IV-5

PROJECT NUMBER: 01102

FILE: [whiteface]

Little Whiteface Cloudsplitter Lodge

The Little Whiteface Cloudsplitter Lodge is not proposed for construction as part of this UMP/GEIS. Plans for this lodge are only conceptual at this time. Construction of this lodge will require a future update to this UMP with an associated SEQRA review.

The new Cloudsplitter Lodge would be located at the summit of Little Whiteface, adjacent to the upper terminal of the Cloudsplitter Gondola. This lodge, in connection with the gondola, would become a desirable year-round destination for the resort. The lodge would be approximately 13,500 square feet and would include:

restaurant/cafeteria,
bar/lounge,
kitchen/scramble,
restrooms and
ski patrol/first aid.

The building would be operated year-round, with guest services provided during daytime operating hours. It would also offer an opportunity to provide services for special functions (weddings, conferences, etc.). The convertibility of the interior space for such functions will be an important design factor that will need to be addressed in the final design phase.

The building orientation and its design elements would maximize views and convenience of access to all functional elements. Outside decks would be in areas for maximum enjoyment of views and sun and sited in such a way as to prevent areas where wind would deposit excessive drifts. The roof top observation deck would offer a 360° panoramic view of the surrounding mountains.