Belleayre Mountain Ski Center UMP-DEIS

Appendix AE
Visual Impact Assessment

February 2011

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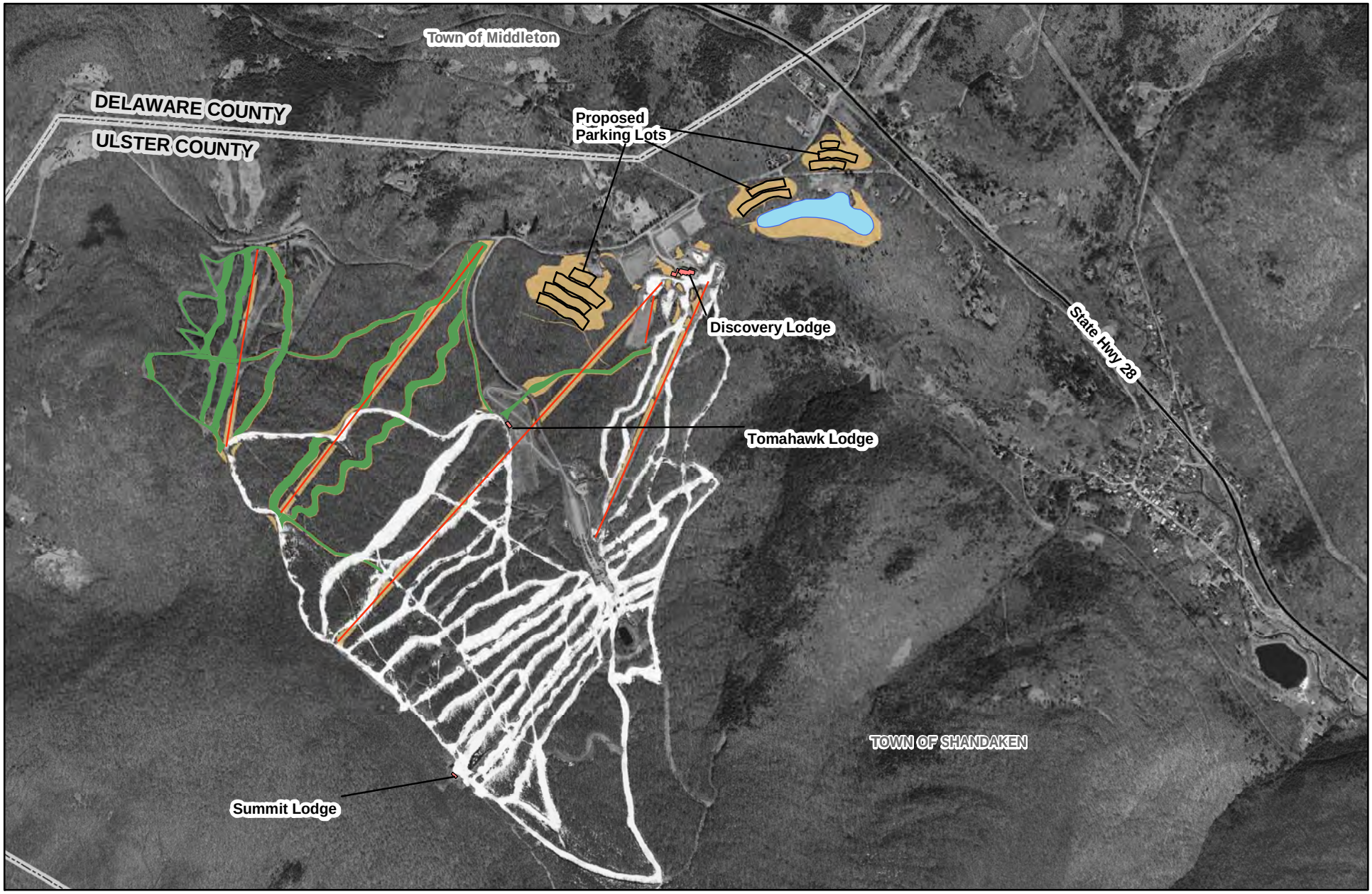
1 Introduction

Ecology and Environment, Inc. (E & E) has prepared this visual impact assessment (VIA) of the proposed expansion of the Belleayre Mountain Ski Center (the Project) for the New York State Department of Environmental Conservation (NYSDEC) pursuant to the issuance of an amendment to the Unit Management Plan (UMP). This VIA is an appendix to NYSDEC's Draft Environmental Impact Statement (DEIS) for the Amendment of the UMP (UMP-DEIS). The VIA has been written in accordance with the Final Scoping Document, Belleayre Mountain Ski Center Unit Management Plan—DEIS and Modified Belleayre Resort at Catskill Park Supplemental DEIS (Scoping Document) (NYSDEC 2008) and NYSDEC's Program Policy DEP-00-1, "Assessing and Mitigating Visual Impacts" (July 31, 2000). This VIA describes the visual and aesthetic characteristics and resources of the area surrounding the Belleayre Mountain Ski Resort and the visibility and visual character of the proposed Project, identifies the individuals and groups that may be affected by the Project, evaluates the impact of the Project on those resources, and recommends mitigations as necessary.

The Project includes creating new ski slopes to the west of the existing slopes, installing three new chair lifts and two replacement chair lifts, new maintenance and ticket-purchase buildings, expansion of the Discovery and Sunset Lodges, a new snowmaking supply pond, new parking lots, and improvement of snowmaking systems (Figure 1-1).

NYSDEC guidance in "Assessing and Mitigating Visual Impacts" notes that a 5-mile radius provides a "safe" visual assessment study area but also notes that greater distances should also be considered. This VIA thus evaluates Project visibility as far as 25 miles away for specific resources, particularly those identified as a concern in the Final Scoping Document for the Belleayre Unified Management Plan, Draft Environmental Impact Statement (February 28, 2008), while also providing an assessment of specific resources and general visual impacts within 5 miles of the Project (the visual assessment study area.



Ski Center Project Facilities
Belleayre Mountain Ski Center

Figure 1-1

- Proposed Ski Lift Centerline (July, 2009)
- Proposed Tree Cutting Area
- Proposed Trail Clearing (July, 2009)
- Parking Lot
- Proposed Snow Making Pond (July, 2009)

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2 Existing Conditions and Project Description

2.1 Description and Aesthetic Qualities of the Existing Landscape

Belleayre Mountain has been a downhill ski center since 1949, located on 2,178 acres of state forest preserve lands. The alpine ski slopes—about one mile wide—are located on the north slope of the mountain, extending from the peak at an elevation of 3,429 feet to the base lodge (Discovery) at 2,025 feet. Currently, 47 slopes are accessible from eight lifts. Three surface lifts are near the base of the slopes and five chair lifts provide access to the upper slopes, with loading and unloading stations, towers, and cables about 30 feet high. The facility also maintains 6.4 kilometers of cross country ski trails and 23.7 miles of hiking trails.(NYSDEC, 2010) (New Reference:

The total area managed as the Belleayre Ski Center comprises 2,178 acres, 155 of which are cleared and groomed for skiing. Gravel and paved parking areas are located near the base at Discovery Lodge and midway up the mountain near the base of the Tomahawk Lift. Roadways provide access to Discovery Lodge and Overlook Lodge from County Road 49A (Gelli-Curci Road).

The number of buildings and other structures on the mountain are minimal. Discovery Lodge (Figure 2-1) is located at the bottom of the slopes, the Overlook and Longhouse Lodges are located midway, and the Sunset Lodge is located at the top of Belleayre Mountain. These buildings are low and dark in color and blend into the landscape. Other structures, which are single-story industrial style buildings, include maintenance buildings for vehicles and snowmaking equipment. These buildings are located at the base of the hill or near the midway lodge areas.

Pine Hill Lake and Belleayre Beach, which are not included in the UMP, are located below the ski center along Route 28 and are operated as swimming locations during the summer months. In addition to Pine Hill Lake, two ponds, one near the base of the hill, and one just above the Overlook Lodge, provide water for snowmaking. The rest of the resort area is forested.

2.2 Description and Aesthetic Qualities of the Proposed Project

The UMP proposes the creation of new ski slopes to the west of the existing slopes, with three new chair lifts and two replacement chair lifts, new maintenance and ticket-purchase buildings, expansion of Discovery (Figure 2-2) and Sunset Lodges, a new snowmaking supply pond, new parking lots, and improvement of snowmaking systems. These additions and improvements will require clearing 95.7 acres of forest. 53.9 acres will be new ski slopes. The new buildings and equipment on the upper areas of the hill will have exterior finishes that will blend into the landscape.

Figure 2-1 Existing Discovery Lodge, North Façade, from Parking Lots along Route 49A (Gelli-Curci Road)

Figure 2-2 Artist's Rendition of Proposed Discovery Lodge Renovation, West Façade

3 Visual Assessment Methodology

The method used to assess potential visual impacts follows NYSDEC's guidance in "Assessing and Mitigating Visual Impacts." The visual assessment process consisted of the following steps:

1. Developing an inventory of local and statewide significant aesthetic resources and describe the existing visual/aesthetic character of the landscape

2. Characterizing viewer groups

3. Evaluating Project visibility using viewshed mapping and balloon studies

4. Preparing daytime and nighttime simulations of the project from sensitive and representative viewpoints

5. Determining the significance of the visual and aesthetic impacts by evaluating the project's consistency or /contrast with existing landscape components and the effect of this on user groups

6. Evaluating mitigation measures as suggested in "Assessing and Mitigating Visual Impacts" (New York State Department of Environmental Conservation 2000).

3.1 Aesthetic and Visual Resources Inventory

An inventory of aesthetic and visual resources was developed using a multi-step study process. In this document, aesthetic resources refer to locations within the study area that have aesthetic value; visual resources are a subset of those resources that potentially could have a view of the Project (see Section 4, Inventory of Visual Resources). Locations of any of the following aesthetic resources (as described in NYSDEC's "Assessing and Mitigating Visual Impacts") within a 25-mile radius of the Project were documented:

- Properties on or eligible for inclusion on the list of state or National Register of Historic Places (NRHP)

- State parks

- Urban cultural parks

- State forest preserves
- National Wildlife Refuges
- National natural landmarks
- National park recreation areas, seashores, or forests
- Rivers designated as national or state wild rivers or as scenic or recreational rivers
- Sites, areas, lakes, reservoirs, or highways designated or eligible for designation as scenic (e.g., Seaway Trail)
- Scenic areas of statewide significance
- State nature and historic preservation areas
- Bond Act properties purchased under the exceptional scenic beauty or open space category.

Locally significant aesthetic resources and areas of intensive land use were considered in developing the inventory. Organizations consulted to compile this list included the Catskill 3500 Club (2009) and the Catskill Center (2009). Local NYSDEC (Belleayre Mountain) personnel and Catskill guides were also consulted to provide input on important local resources. The inventory also includes those identified in the survey of historic structures by Larson Fisher Associates in fall 2008 identified and documented relevant historical buildings within the 5-mile area. Details of this study are presented in Section 4.12, Cultural Resources, of the DEIS.

The Project site is unique because its elevation allows views from beyond the 5-mile study area recommended by NYSDEC and New York State Historic Preservation Office (SHPO) guidance. Potential vistas from various mountain peaks, including any operational fire towers and overlooks on public hiking trails outside of the 5-mile radius also were evaluated. During the public scoping process, 23 specific locations were identified as aesthetic resources to be included in the evaluation:

1. Tremper Mountain
2. Panther Mountain
3. Cornell Mountain
4. Slide Mountain
5. Table Mountain
6. Overlook Mountain
7. Twin Mountain

8. Sugarloaf Mountain
9. Plateau Mountain
10. Hunter Mountain
11. Westkill Mountain
12. North Dome Mountain
13. Bearpen Mountain
14. Fir Mountain
15. Giant Ledge
16. Halcott Mountain
17. Balsam Lake Mountain
18. Mill Brook Ridge Trail
19. Dry Brook Ridge
20. Vly Mountain
21. German Hollow Trail
22. Cathedral Glen
23. Devil's Path hiking trails

3.2 Characterization of User Groups

After the preliminary inventory of aesthetic resources was developed, viewer and user groups were determined based on the types of resources found in the area. Viewer groups are those potentially impacted by the visual effect of the Project. A description of user groups is provided in Section 4.

3.3 Evaluation of Project Visibility

Project visibility was assessed using a variety of methods to provide the best evaluation of potential and actual visibility based on geography, vegetation, and atmospheric conditions. A detailed evaluation of the Project's visibility is found in Section 5.

3.3.1 Atmospheric Visibility

Atmospheric conditions will have a significant influence on the visibility of the Project from distant locations. To assess the percentage of days of during the year that regional conditions would allow visibility of the project to be seen, visibility data were collected from the national weather service reporting station at Stewart Airport. This data is used by pilots to assess the distances they can see as they enter or leave an airspace, and Stewart Airport provides the closest location this information is recorded. From data collected in 2007, the number of days of visibility from 5, 10, 15, and over more than 20 miles away were totaled for each season.

3.3.2 Zone of Visual Influence (ZVI)

An evaluation of area topography using digital mapping software was conducted to determine the location of line-of-sight observations of the existing and planned facilities. Design drawings and lay-out plans of the proposed Project elements were used to locate new buildings, ski lifts, ski slopes, parking lots, and the snowmaking pond on area maps. Digital terrain modeling was then used to create viewshed maps in order to estimate the visibility of the existing and proposed fa-

cilities from the surrounding region, i.e., the ZVI. A topographic model of the 5-mile study area was made first without incorporating the location of any vegetation.

The Project site and study area is heavily forested, and therefore a more realistic model was developed that included tree cover on the Project site. Since abrupt elevation changes could allow views from within forested areas, vegetation beyond the immediate Project Area was not included in the modeling: Field observation was used to assess and confirm if vegetation would block views from specific locations. The ZVI of views of the Project, incorporating both topography and vegetation on the Project site, was developed for both the 5-mile study area and a 25-mile radius.

3.3.3 Viewshed Mapping

To assess the visibility of the Project from the mountains identified during the scoping process, a viewshed for each summit was developed. While the ZVI demonstrates the locations within the area that could potentially provide a view of the new Project elements on Belleayre Mountain, these individual viewsheds identified the areas of Belleayre Mountain that are visible from specific viewer locations. By assessing the view from the highest point of each peak without vegetation, viewshed mapping documented how much of the ski area could be visible from the peak or the trails.

3.3.4 Visual Line-of-Sight Profiles

Line-of-sight profiles are diagrammatic elevations that document the change in elevation between two points, providing another demonstration of visibility. The figures are created to scale; however, the vertical scale is exaggerated to demonstrate the line of sight within the figure. Using topography only, profiles were developed to document the line of sight from each of the mountain peaks to Belleayre Mountain. These figures, which accompany each mountain viewshed map, provide a diagram of the topography between the viewpoint and the Project site, identifying topography that will block the view.

In addition to the line-of-sight diagrams from each of the mountain peaks identified in the scoping process, three additional cross sections were prepared to demonstrate the line of sight from Fleishmanns, Pine Lake, and Highmount. These more specific diagrams were developed using existing topographic information, tree cover, and building locations assessed during field studies, aerial photographs, and Project element descriptions and locations. These profiles illustrate the type and extent of screening from locations adjacent to the Project Area.

Field Verification and Investigation

Using the ZVIs, viewsheds, and line-of-sight diagrams of the mountain locations, several mountains were chosen for further field investigations. Each of the viewpoints was considered using the viewshed analysis described above. If the viewpoint potentially had a line-of-sight view to Belleayre Mountain, it was identified for further investigation. Some of the viewpoints were direct lines. Because of

the difficulty in accessing some of the mountain top locations, the locations chosen provided the most prominent examples. Locations identified for field verification and documentation were hiked and views looking back to Belleayre were photographed.

To evaluate views within the 5-mile study area, maps indicating the ZVI and visual resources within a 5-mile radius were developed to identify resources that could have a view of the Project. These maps were used by field personnel to observe and verify visibility throughout the Project Area. Field work consisted of driving roads, walking hiking trails, and visiting sensitive receptors identified as having views of the area.

3.3.6 Field Visits and Balloon Study

On April 30 and May 1, 2008, eight 4-foot diameter, colored balloons (red and blue) were flown along the proposed lift lines to provide orientation when assessing visibility within the 5-mile radius. Balloon locations and heights were recorded using a global positioning system (GPS). Leaves were not yet on the trees and packed snow on the existing trails had not yet melted yet, providing a sizable visual reference.

Three teams covered the study area to evaluate the visibility from previously identified visual resource locations as well as additional locations throughout the 5-mile study area and beyond. The teams hiked to locations chosen by NYSDEC and ski resort staff to be the most prominent or typical views; these included Balsam Lake Mountain, West Kill Mountain, and Tremper Mountain. Reference photographs at a 50-mm aperture (to best simulate the perception of the human eye) were taken to document visibility where it was available or to document lack of visibility from previously identified visual resources. The 4-foot diameter balloons were not visible to the unaided eye at the 5-mile range or beyond.

Additional field visits assessed visibility during leaf-on conditions and accessed additional mountain locations and trails. In September 2008, several teams hiked to mountain peaks that had been identified as prominent and with typical views to observe and photograph the views from these locations and determine the need for investigations at other nearby peaks. These teams, accompanied by knowledgeable local NYSDEC staff and Catskill guides, assessed the visibility from the peaks and trails. Leaf-on photographs from locations within the study area that had a line-of-sight view of the proposed new construction at the Project site were also obtained to demonstrate the visibility (or lack of visibility) under these conditions.

3.3.7 Documentation of Existing Views

To provide reference views for evaluation, the photographs taken from mountain peaks were evaluated and annotated to identify the mountains visible within the view. These photographs accompany the viewshed and line-of-sight diagram figures for the locations they represent, providing a reference to the visibility of mountains from different distances and to a representative scale and contrast in order to evaluate the level of visibility and impact at various distances.

3.4 Development of Visual Simulations

Eleven viewpoints, incorporating twelve photographs, were selected from the available photographs for the development of photo simulations. These viewpoints were selected because of their historical or cultural importance or to best represent a variety of the most prominent and/or typical views, based on Project visibility, number of viewers, sensitive sites, landscape similarity, viewer groups, and the number of similar views. Descriptions of the visual simulations are provided in Section 5.

To provide a visual representation of the proposed Project, "wireframe" reference points created with digital mapping software were superimposed on the photographs, using site-specific locations and viewing (geometric) data collected from existing maps and the field study, including elevation and reference points within the photographs that provide the baseline view for the simulated photos (Figure 3-1). Visual reference points with known coordinates (balloon locations, existing radio towers, and packed snow or trail clearings) that are visible in each photograph were used to locate the Project elements. Photographs taken during leaf-off conditions were selected for simulation because their greater range of visibility and prominent view of the snow-covered slopes provided the greatest impact.

3.5 Evaluation of Visual Impacts

Assessing the significance of aesthetic impacts of a project involves reviewing all the maps, figures, and simulations described above. However, visual character and aesthetic quality is still a subjective evaluation, with each person likely to have a different opinion on what would be considered an impact on character and quality. Thus, the impact assessment classifies the Project's compatibility, contrast, and scale as well as the change to the aesthetic character of the landscape and the impacts on users. The discussion focuses on the existing landscape and to what extent the proposed Project components are obviously different from or in sharp contrast to current surrounding land use patterns. It also considers the extent to which the proposed land use changes, which would be visible to users of aesthetic resources, would eliminate or significantly reduce the public's enjoyment of the aesthetic qualities of that resource. A detailed impact assessment is found in Section 6, Impact Evaluation.

3.6 Evaluation of Mitigation Measures

Evaluating mitigation of impacts on the visual setting and aesthetic qualities involves assessing proposed measures (such as design elements) that limit impact and improve aesthetic qualities. A more detailed evaluation of mitigative measures is found in Section 5, Visual Mitigation.

Figure 3-1 Wireframe Proposed Project Layout at Owl's Nest Restaurant, Simulation C-1

4 Inventory of Aesthetic and Visual Resources

As described in Section 1, an inventory of aesthetic resources was conducted using the resource types listed in NYSDEC guidance and those identified specifically during scoping. In addition to the 23 aesthetic resources specified in the Final Scoping Document, Belleayre Mountain Ski Center Unit Management Plan -DEIS and Modified Belleayre Resort at Catskill Park Supplemental DEIS (Final Scoping Document) more than 150 aesthetic resources in the counties of Delaware, Greene, and Ulster were identified.. The full inventory included all resources within 5 miles of the Project and an evaluation of notable visual resources beyond the 5 miles where the elevation could provide a view of the Project. Attachment A, Table 1, provides the full inventory of aesthetic resources collected for this investigation, and Figure 4-1 [back pocket] shows the locations of these resources.

An historical structures inventory was conducted in accordance with New York SHPO requirements (see Section 4.12 of the DEIS). This study identified 88 structures or resources within a 5-mile radius of the Project, which are listed in Table 2 of Attachment A and located on the map in Figure 4-2 [back pocket].

The types of aesthetic resources are described below.

4.1 Recreational Resources

Catskill Park consists of 700,000 acres of publicly owned (40%) and privately owned (60%) lands in the Catskill Mountains. The park has 98 peaks that are more than 3,000 feet high and spans four counties: Delaware, Greene, Sullivan, and Ulster counties. The Catskill Forest Preserve state-owned land in Catskill Park, which is managed by NYSDEC, accounts for more than 287,514 acres. Local recreational parks, such as Pine Lake and the playing fields in Fleischmanns, are also considered recreational resources.

Access to visual resources include trails, roadways, and residential areas. The 5-mile study area includes several public and private trails (Table 4-1) as well as trails that lead to summits and vistas that provide views throughout the Catskills (Table 4-2).

Table 4-1 Public and Private Trails within the 5-Mile Study Area

German Hollow Trail	Cathedral Glen Trail	Devil's Path trails
Dry Brook ridge Trail	Belleayre Ridge Trail	Pine Hill, West Branch Trail
Mine Hollow Trail	Oliverea-Mapledale Trail	Seager-Big Indian Trail

Table 4-2 Summits and Vistas Beyond 5 Miles of the Project

Tremper Mountain	Panther Mountain	Cornell Mountain
Slide Mountain	Table Mountain	Overlook Mountain
Twin Mountain	Sugarloaf Mountain	Plateau Mountain
Hunter Mountain	Westkill Mountain	North Dome Mountain
Bearpen Mountain	Fir Mountain	Giant Ledge
Halcott Mountain	Balsam Lake Mountain	

4.2 Historic and Cultural Resources

Of the 88 historical structures identified in the historical structures survey completed by Larson Fisher, 44 were determined to be of historical significance. The Catskills has a rich history of agriculture, commerce, industry, transportation, and recreation. In particular, the region's long and distinctive history in farming and seasonal resort tourism characterizes most of the cultural landscape. The historical structures identified are primarily associated with historic agricultural and recreation (resort tourism), except for two properties that are commercial and one that contains an historic schoolhouse. Architectural distinctiveness plays a role in each case, and the farmsteads are also significant in their depiction of the region's settlement history. Three properties have already have been listed on the NRHP: the Pakatakan Artists Colony in Arkville, Skene Memorial Library in Fleischmanns, and Bnai Israel Synagogue in Fleischmanns.

Six properties have been determined to be eligible for the NRHP: the Turner estate, the Country estate, Suttner estate, the Wild Acres hotel, and the Leach farmstead, all in Shandaken. The commercial building on the southwest corner of intersection of Route 28 and Dry Brook Road in Middletown also has been determined to be eligible for the NRHP.

4.3 Residential Resources

Housing in the area is rural and dispersed. Year-round and seasonal homes are located throughout the area, with concentrations in the village centers and towns such as Fleischmanns, Pine Hill, and Arkville. Many local residents have chosen the area for its natural beauty and access to recreational resources. Field investigations included observing and recording views from concentrations of residential buildings and noting prominent of typical views from residential resources throughout the area. According to the U.S. Census, in 2000 there were 7,987 housing units within the three towns in the study area and a total of 133,152 housing units located in the Tri-County area (U.S. Bureau of Census 2008).

4.4 Roads and Highways

There are minor roads and major roads that could provide travelers with views of the project. Route 28 is the main road east/west across the Catskill Mountains, running west from Hudson, past the Belleayre Mountain Ski Area, to Oneonta. Route 42 is about 5 miles east of the site, where it runs north/south between Shandaken to Lexington. Route 49A (Gelli-Curci Road) runs along the north and west boundary of the Project site. Route 30 runs through Margaretville about 6 miles to the west of the site. Other minor routes, such as Red Kill Road, provide access to residential and recreational areas throughout the Project Area.

4.5 User Groups

Recreational Skiers. During the 2007-2008 ski season, 181,509 skiers visited the Belleayre Mountain during the 148 days the facility was open for skiing that winter. Other ski resorts in the region, such as Plattekill, Windham Mountain, and Hunter Mountain attract many skiers to the area. While downhill skiing is most popular because of the mountainous area, cross-country skiers are also attracted to the trails in the area.

Other Recreational Uses

In addition to skiing, other recreational activities in the area include hiking, mountain biking, hunting, and swimming. These activities occur throughout the region and throughout the year.

Residential

The Project Area includes the Town of Middletown in Delaware County and the Town of Shandaken in Ulster County. In 2008 these communities had estimated populations of 4,045 and 3,426 full-time permanent residents, respectively (ESRI, Inc. 2008). The study area includes three towns in the Route 28 corridor between Boiceville and Margaretville—Middletown, Shandaken, and Olive; the total population was 12,210 in 2008. This region is rural: a 2000 population density of 31.7 persons per square mile makes Delaware County one of the most rural counties in New York State.

Business

Delaware, Ulster, and Greene counties have businesses in manufacturing, retail, health care and social services, education, accommodations, and food service. Most businesses in the 5-mile study area are concentrated along Route 28 or in the village centers of Fleischmanns, Margaretville, or Arkville.

Tourism

Tourism, which plays a critical role in the area's economy, is based around the amenities found in Catskill Park. Most visitors come for recreation or to experience the natural surroundings.

Transportation

Route 28 is a main thoroughfare through the Catskills, used for transportation of goods and materials to and from businesses in the region, and also by visitors and residents.

5 Visual Assessment

5.1 Project Visibility

Assessing the visibility of the Project requires determining the extent of the area where the Project may be visible and considering atmospheric conditions, topography, and tree cover. The potential for visibility is best demonstrated with Zone of Visible Influence (ZVI) maps and line-of-sight profile diagrams. In addition, demonstrating the parts of the Project that are visible and what they will look like from representative locations is provided through photo simulations.

On clear days in the winter and into the spring, existing slopes of the Ski Center are highly visible from elevated locations south of the project area, as the contrast of the snow against the forested areas is easy to recognize. During the summer and fall, with the snow gone, this contrast is not as noticeable because of the full vegetation in the area and the green grass of the slopes, although the slopes are still recognizable. Topography and tree cover block the view of most of the chair lifts and buildings from the surrounding area. Lift 7 is visible because of its unique triangular shape and bright blue color, but generally the built structures at the Ski Center are not visible from the surrounding area because of topography, distance, or atmospheric conditions. Although blocked by topography and tree cover from most locations, the large parking areas near Discovery Lodge are visible from the slopes of Halcott Mountain, while the tiered parking areas near Tomahawk Lift are surrounded by trees and are not visible.

5.1.1 General Visibility in the Catskills

Atmospheric conditions will have a significant influence on the visibility of the Project from distant locations. To assess the percentage of days of the year that the region experiences conditions that allow the Project to be visible, visibility data were collected from the National Weather Service for the Catskill Region from the closest reporting station at Stewart Airport, about 40 miles to the south. Looking at data on distances of visibility recorded in 2007, the number of days of visibility within each season (or quarter of the year) from 5, 10, and more than 15 miles away were calculated. Figure 5-1 [back pocket] provides tables that indicate the number of days per year that views from these distances were available in 2007. Only 31% of days exhibit conditions that allow more than 15 miles of visibility in the Catskills, and 62% of the time, visibility is significantly limited beyond 10 miles.

The interference of atmospheric conditions was also observed during field studies. Field teams returned to the Project Area several times to obtain clear photographs, and atmospheric conditions interfered with a clear view of the site from far distances despite blue sky conditions (see Attachment B).

5.1.2 Zone of Visual Influence

An evaluation of area topography using computer software was conducted to determine where line-of-sight observations of the existing and planned facilities are available. Design drawings and lay-out plans of the proposed Project elements were used to locate new buildings, ski lifts, ski slopes, parking lots, and the snowmaking pond on area maps. Digital terrain modeling was then used to create ZVI mapping. Figure 5-2 represents the ZVI in a 5-mile radius around the Project site, not incorporating vegetation and using topography only.

However, the Project site and study area is heavily forested, and therefore a more realistic model was developed that included tree cover located on the Project site. Since drastic elevation changes could allow views from within forested areas, vegetation beyond the immediate Project area was not included in the modeling. Figure 5-3 represents the 5-mile radius of the ZVI, incorporating both topography and vegetation on the Project site. (Figure 4-1 [backpocket] illustrates the viewshed of the 25-mile radius.)

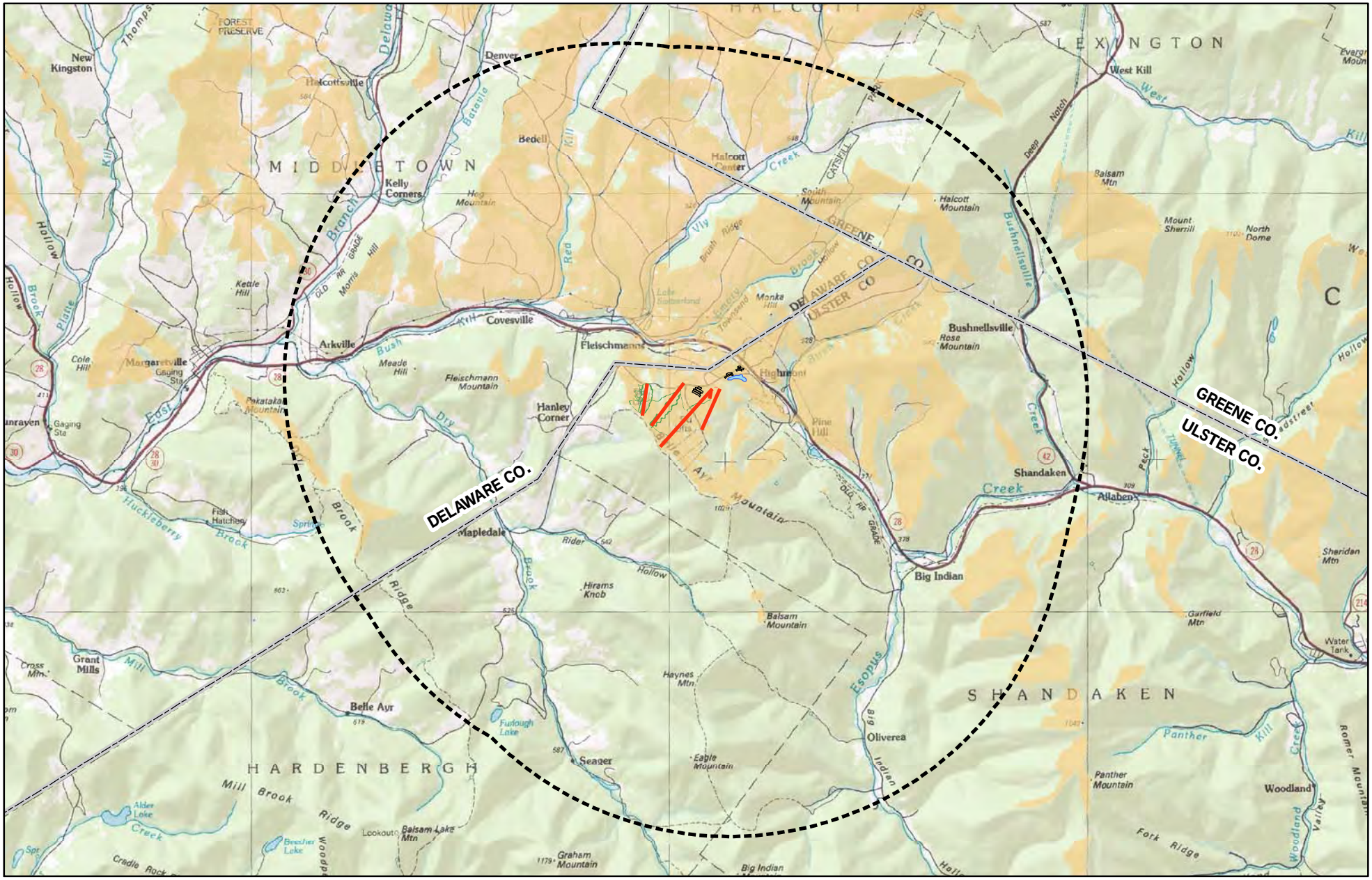
Many locations throughout the study area do not have a view of Belleayre Mountain because of topography and vegetation. Because of the topography and vegetative cover on Belleayre, 98% of the region within 25 miles of the site will not have a view, and 79% of the region within 5 miles will not have a view.

5.2 Evaluation of Visibility from Mountain Summits and Trails

Eighteen mountain summits were identified during the scoping process as valuable aesthetic resources that require evaluation in the DEIS (Table 5-1). This evaluation was completed using digital terrain modeling, on-line research, interviews with local guides, and field observations. Figures that summarize the evaluations, with viewsheds, line-of-sight profiles, details on each visual resource, and photographs taken from these peaks (when available) are provided in Attachment B.

ZVI viewshed maps from the mountain summits listed in Table 5-1 were developed to assess whether topography would allow the Belleayre Ski area and its facilities to be seen. Tree cover was not considered in the individual mountain viewshed analyses. By assessing the view from the highest point of each peak without accounting for its vegetation, the analysis documents how much of the ski area could be visible from the peak or the trails that access the peak. Line-of-sight profiles were also developed to document the line of sight from each of the mountain peaks to Belleayre Mountain. These profiles provide a diagram of the topography between the viewpoint and the Project site, identifying topography that will block the view. If the viewshed and line-of-sight profiles showed that

the point potentially had a line-of-sight view to Belleayre Mountain, the site was selected for further investigation.



Viewshed From Proposed Ski Lifts Using Bare USGS Digital Elevation Model (Topography only)
Belleayre Mountain Ski Center

Figure 5-2

- Proposed Ski Lifts (July, 2009)
- Proposed Trail Clearing (July, 2009)
- 5 Mile Project Area
- County Boundary
- Not Visible
- Visible
- Proposed Snow Making Pond (July, 2009)
- Parking Lot (July, 2009)
- DiscoveryLodge

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Source: USGS 1:24,000 topographic quad; USGS Digital Elevation Model, 1998

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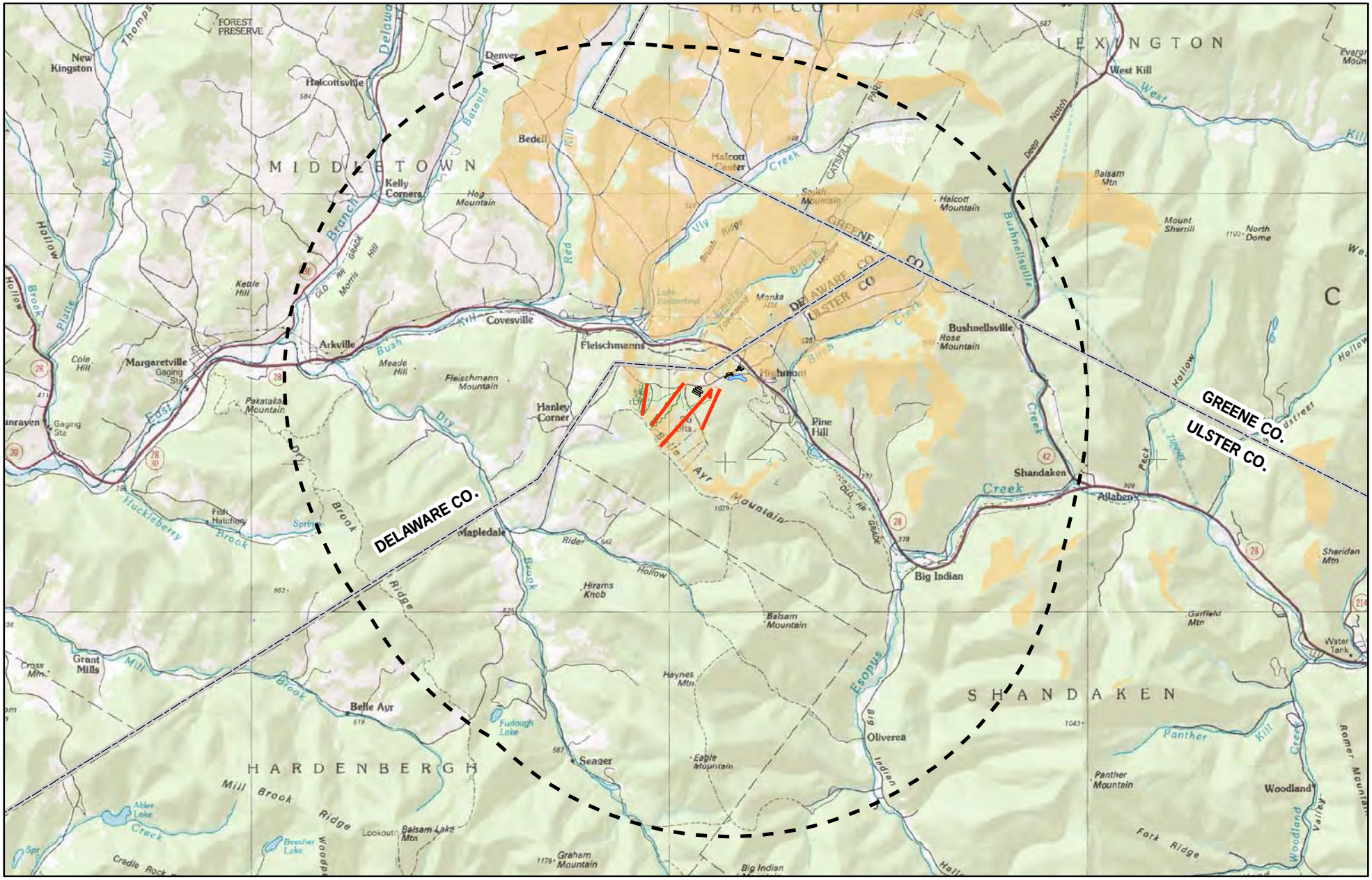

Viewshed From Proposed Ski Lifts using Digitized Forest Cover on Belleayre Mountain (Forest & Topography)
Belleayre Mountain Ski Center

Figure 5-3

- Populated Place
- Proposed Ski Lifts (July, 2009)
- Proposed Trail Clearing (July, 2009)
- 5 Mile Project Area
- County Boundary
- Not Visible
- Visible
- Parking Lot (July, 2009)
- Proposed Snow Making Pond (July, 2009)
- DiscoveryLodge

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Source: USGS 1:24,000 topographic quad; USGS Digital Elevation Model, 1998; Forest Cover digitized from NYS Digital Orthophoto, 2004

Date:

Table 5-1 Summary of Visibility of Project from Mountaintop Viewpoints

Mountain Viewpoint	Elevation (feet)	Distance from Belleayre (miles)	Visibility
Tremper	2,740	13	Existing trails are visible from fire tower; new ski slopes will be visible. Lifts and buildings will not be visible. See Attachment C, simulation C-11.
Panther	3,720	7	Belleayre Mountain is visible, but the angle prevents a view of ski slopes
Cornell	3,708	11	No View
Slide	4,204	10	No View
Table	3,806	12	No View
Overlook	3,150	22	Belleayre not discernable from surrounding mountains
Twin	3,647	20	Belleayre not discernable from surrounding mountains
Sugarloaf (East)	3,782	18	Belleayre not discernable from surrounding mountains
Sugarloaf (West)	2,100	20	No View
Plateau	3,855	18	Belleayre not discernable from surrounding mountains
Hunter	4,040	15	Belleayre not discernable from surrounding mountains
Westkill	3,880	11	Belleayre visible during winter months but usually blocked by vegetation in other seasons
North Dome	3,610	8	View would be similar to views from Halcott Mountain but not as prominent. No trail access.
Bearpen	3,610	10	Belleayre likely visible during winter months. View would be similar to views from Halcott Mountain but not as prominent. No access.
Fir	3,619	6	No View
Giant Ledge			Belleayre Mountain is visible, but the angle prevents view of ski slopes
Halcott	3,527	5	No access to peak. Views of ski slopes available from southern slope, with some views of new parking and lifts. See simulations in Appendix C.
Balsam Lake	3,723	7	No View
Vly	3,529	8.5	No view due to vegetation at viewpoint. No trail access
Red Hill	3,000	14	No View

The viewshed analysis determined that the views from the summits of Cornell, Slide, Table, Sugarloaf West, Fir, and Balsam Lake Mountains do not include the ski slopes of Belleayre Mountain. The analysis was further verified in the field by accessing the Balsam Lake Mountain tower and observing the view towards Belleayre Mountain from, the closest and most accessible of the summits that provide views of the southern slope of Belleayre Mountain.

The viewshed and line-of-sight profiles of the remaining summits were reviewed to evaluate these potential views based on distance, angle, and complexity of near-field views. Beyond 5 miles, only the ski slopes were visible to the naked eye. This was confirmed during field observations, as shown in Figure 5-4. This photograph, which was used to create simulation C-5 (Attachment C-1), was tak-

en from about 3 miles from Belleayre Mountain, facing the existing slopes; the ski lifts are not visible and Overlook Lodge is barely discernable. The visibility of ski lifts on the hillside is largely a function of the angular acuity of the human eye. Normal (20/20) vision provides the ability to resolve an object with one or two degrees of arc (Encyclopedia Britannica Online 2009). This means that at 1 mile, a person with good vision (i.e., 20/20) can discern an object that is about 3 feet in width or length from its surroundings, and at 5 miles an object smaller than 15 feet is not discernable under clear conditions. The cables are not visible, even from a mile away, and the chairs, which are about 9 feet across (quad chair), are not visible beyond 3 miles.

Figure 5-4 Photograph of Belleayre Mountain from Krump Road

Since the slopes are at ground level and surrounded by trees, only views that are facing the slopes will show existing and new ski slopes. The view from Tremper Mountain (Figure 5-5), which was used to create simulation C-11, shows how the view of the slopes is blocked if viewed from an angle. Based on this observation, it was determined that the view from the summit of Panther Mountain does not include the ski slopes of Belleayre Mountain, and the views from Tremper, Overlook, Sugarloaf East, Twin, and Plateau Mountains will be partially blocked.

Figure 5-5 Facing Belleayre Mountain from the Tower on Tremper Mountain

In summit views, the effect on quality and the ability to discern an object in a view is reduced by an increase in distance and also by the complexity of the view between the object and the viewer. The view of a single object across a simple landscape, such as a lighthouse from a location on the water many miles away, is noticeable and notable within the view. However, if a landscape is complicated with objects in the view, particularly in the near- to mid-range of the view, it is more likely that the object at a far distance will not affect quality and will be difficult to discern from the surrounding landscape. The view from Tremper Mountain in Figure 5-5 shows the West Kill Wilderness area in the foreground and mid-ground, in front of Belleayre Mountain, which is in the background. (Attachment B-1, Viewshed B-1, and Attachment C, Simulation C-11 further demonstrate the view from Tremper Mountain.)

The complicated landscape that is visible between Belleayre and Overlook, Sugarloaf East, Twin, Plateau, and Hunter Mountains is demonstrated by the line-of-sight profiles of these views (see figures in Attachment B). Moreover, from these distant summits, Belleayre represents a small fraction of the far-field view. At 5 miles, the widest view of the entire Belleayre Ski Center, including existing and proposed slopes, would be within just 5% of the 360-degree field of view available at most summits; at 15 miles this is less than 2%. The views from Overlook Mountain and Tremper are examples of the challenge of discerning Belleayre Mountain with accuracy from these distances.

As noted in Section 5.1 above, distance also has a significant effect on the impact the Project will have on a view. Records of visibility in the Catskills indicate that air quality will provide significant interference to views beyond 10 miles 62% of the time.

Selection of summits for field investigations. Based on an assessment of these conditions and in conference with NYSDEC guides who know the area well, it was determined that three summits would provide important information to further assess the visible impacts at the listed mountain summits. The chosen summits were hiked on May 1, 2008 and pictures were taken looking back to Belleayre Mountain.

- **Tremper Mountain** was selected because its line-of-sight view and access to a tower would guarantee an unblocked view. Tremper is also 13 miles from Belleayre and would provide a closer but similar view to the views from Overlook, Sugarloaf East, Twin, Plateau, and Hunter Mountains.

- **Westkill Mountain** was selected because of its line-of-sight view, its location directly opposite the Belleayre slopes, and because it is accessible from the West Kill and Devil's Path trails. Although the view from the summit was not accessible by a trail, a view from the trail was possible. This summit also provided a view similar to views from North Dome and Hunter Mountains.

- **Balsam Lake Mountain** was also selected to confirm that summits south of Belleayre would not have a view of the Project. Balsam Lake Mountain provides a tower for excellent views and is only 7 miles from Belleayre Mountain. (Photographs and observations from this field work are recorded in Attachment B.)

Halcott Mountain is located within the 5-mile radius of the Project; although the summit is not accessible, there are many views of Belleayre from the southern face, and the field work included investigation of roadways on the mountain. (See Attachment C, Simulations C-1 and C-6).

A review of photographs obtained from the May 1, 2008 field work determined that further site investigations were necessary to confirm assumptions that mountain views will be limited beyond 10 miles. In particular, views from West Kill were blocked by vegetation and thus did not represent the best view from the mountains to the northeast. In September 2008, teams climbed the summits of Hunter, Overlook, Panther, Giant Ledge, and Slide. In addition, the Dry Brook Ridge, German Hollow Trail, and Cathedral Glen Trails were hiked to verify viewshed analysis that there are no views of the Project from these trails. Tremper and Balsam Lake Mountain also were accessed again to obtain leaf-on pictures.

5.3.1 Evaluation of Visibility within the 5-Mile Study Area

An inventory of aesthetic resources was developed using NYSDEC guidance for types of resources. More than 150 resources in the counties of Delaware, Greene, and Ulster were considered. In addition, a historical structures inventory was conducted in accordance with New York SHPO requirements (see Section 4.12 of the DEIS). Of the 88 structures identified, 41 structures within a 5-mile radius of the Project were determined to be of historical significance (see Table 2, Attachment A).

Visual resources, or resources that could have views of the Project, were distinguished from the list of resources by identifying which of the aesthetic resources were located within the ZVI. (See Figure 4-2). Based on topography and vegetation on Belleayre only, 16 of the aesthetic resources identified within 5 miles of the Project area had potential views of the Project. These resources are listed in Table 5-2, with a notation of the simulation that represents the view from these locations. Unless a more prominent view was discovered nearby, photographs from the locations were used to create the simulations.

Table 5-2 Visual Resources with Potential Views of the Project

Name/Description	Street No.	Street	Town	Simulation
2-story wood frame farmhouse, barns and outbuildings; meadows	25	Red Kill Rd	Middletown	C-10
2-story wood frame farmhouse, barn, outbuildings, meadows	800	Moseman Rd	Middletown	C-3, C-7
2-story wood frame farmhouse, barn and meadows	480	Bellows Rd	Middletown	C-6
Villa Heidenfeld / 2-story wood frame boarding house	940	Halcott Rd (Del Co Rt 37)	Middletown	C-2
2-story wood frame farmhouse, barn and meadows	905	Breezy Hill Rd	Middletown	C-2
Breezy Hill Inn / 2-story wood frame tourist house, outbuildings	835	Breezy Hill Rd	Middletown	C-2
2-story wood frame farmhouse, barn and meadows	729	Breezy Hill Rd	Middletown	C-2
2-story wood frame tourist house	307	Breezy Hill Rd	Middletown	C-2
1.5-story wood frame house and garage	50	Barley Rd	Shandaken	C-1
1.5-story wood frame farmhouse, barn, meadows	1594	Lower Birch Creek Rd	Shandaken	C-5
1-story, wood frame one-room schoolhouse and privy	1463	Lower Birch Creek Rd	Shandaken	C-5
2-story wood frame house, 2 cottages, shop	209	Ulster & Delaware Tpk	Shandaken	See line-of-sight profile from Highmount
2-story wood frame house, stone gate, wood frame chapel, landscape		Gunnison/Kraft Rd	Middletown	See line-of-sight profile from Fleischmanns

Table 5-2 Visual Resources with Potential Views of the Project

Name/Description	Street No.	Street	Town	Simulation
Fleischmanns Historic District	---	Main, Wagner, andother streets	Middletown	Most of district has no visibility. See Simulation C-2 and line-of-sight profile from Fleischmanns
Ulster & Delaware Railroad	---	Ulster & Delaware RR right-of way	Middletown & Shandaken	See line-of-sight profile from Highmount
Catskill Park Trail System -- 6 trails in viewshed	---	Catskill Park	Middletown & Shandaken	Only Belleayre Trail, directly on the Project site, will have views

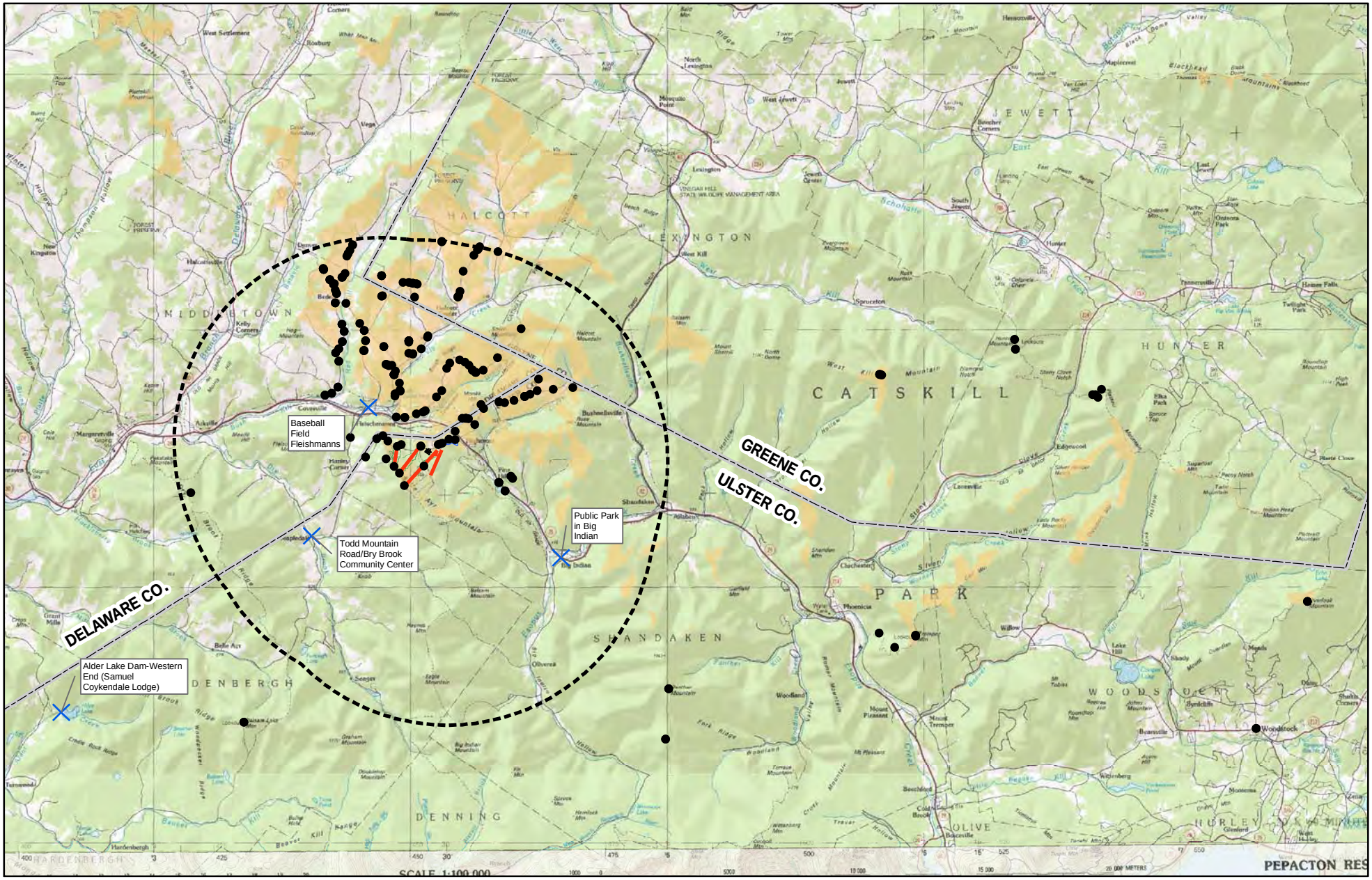
Field Observations

Using the maps of all visual resources and the ZVI, three teams travelled throughout the area to observe the visual quality of the region and visibility of Belleayre Mountain.

Photographs were taken using a digital camera with settings of approximately 50 mm to simulate normal human eyesight relative to scale. Using the map of visual resources as a guide, the location selected for each photograph was judged by the field observer to be the most unobstructed line-of-sight to the project area from the subject visual resource. Although the Project site and surrounding area is heavily forested, drastic elevation changes, roadways, fields, and clearings created specifically to appreciate the view could allow views from within forested areas. Since vegetation beyond the immediate Project area was not included in the modeling, field observations were used to assess and confirm whether vegetation would block views from specific locations.

In addition to listed visual resources, photographs documented locations not specifically identified but providing clear views of Belleayre Mountain. Residential views were considered when collecting photographs from the study area. Photograph location coordinates were recorded in the field using a handheld GPS unit. Over several visits, more than 200 photographs were collected from the area, documenting views towards Belleayre Mountain (see Figure 5-6).

Cathedral Glen, Dry Brook, German Hollow, Mill Brook Ridge, and parts of the Westkill/Devil's Path trails were hiked to observe views towards Belleayre. These field observations confirmed that the ski slopes of Belleayre Mountain are not visible from the trails because of vegetation on the trails or the orientation of the view. The only views of the Project from these trails would be on the Cathedral Glen Trails, which join existing Ski Center trails near the top of Belleayre Mountain.



0 0.5 1 2 3 4 Miles

Photo Location Map
Belleayre Mountain Ski Center

Figure 5-6

- Proposed Ski Lifts (July, 2009)
- Proposed Trail Clearing (July, 2009)
- 5 Mile Project Area
- County Boundary
- Parking Lots (July, 2009)
- Not Visible
- Visible
- Proposed Snow Making Pond (July, 2009)
- Night Sky Location
- Photo Location

N

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Source: USGS 1:24,000 topographic quad; USGS Digital Elevation Model, 1998

Date:

Many locations throughout the region do not have a view of Belleayre Mountain because of topography and vegetation. ZVI maps incorporating topography and vegetative cover on only Belleayre (Figures 4-1 and 5-3) show 98% of the region within 25 miles of the site will not have a view, and 79% of the region within 5 miles will not have a view. During the field investigations, personnel observed that this visibility is further limited by vegetation from the viewpoints throughout the region: 91% of the 5-mile study area is covered by vegetation.

5.4 Visual Simulations

5.4.1 Photo Simulations

Based on a review of ZVIs, visual resource locations, concentrations of residential areas, and all photographs taken in the field, 12 photographs from 11 locations were selected to best simulate the visual impact of the Project. Figure 5-7 is a map of the simulation locations, which are listed in Table 5-3. (Simulations are provided in Attachment C.)

These locations were chosen to provide a variety of angles and distances that capture the Project elements, considering nearby visual resources and visibility. Proposed ski slopes, parking areas, and ski lifts have been simulated on the photographs to represent the new proposed view. While it is unlikely that the ski lifts would be visible beyond 3 miles (as shown in Figure 5-5), the proposed locations of the ski lift have been simulated to be highly visible to provide a reference for the viewer.

Table 5-3 Summary of Photo-Simulations

Simulation	Location (Street)	Distance (Miles to Discovery Lodge)	Direction of View
C-1	Owl's Nest Restaurant	1.8	SE
C-2	Breezy Hill Rd.	2.3	SSE
C-3	Oak Ridge Rd.	2.6	SSW
C-4	Brush Ridge Rd.	2.6	SW
C-5	Upper Birch Creek Rd.	3	SW
C-6	Top of Bellows Rd.	3.1	SW
C-7	Little Red Kill	3.4	SE
C-8	Kaftas Rd.	4.4	SE
C-9	De Nacola Rd.	4.7	SE
C-10	Dimmick Mtn Rd.	5.4	SE
C-11	Mt. Temper fire tower	12.6	NW

5.4.2 Line-of-Sight Profiles

In addition to the line-of-sight diagrams from each of the mountain peaks identified in the scoping process, three additional cross sections were prepared to demonstrate the line of sight from Fleishmanns, Pine Lake, and Highmount (see Attachment D). These more specific diagrams were developed using existing topographic information, tree cover assessed during field studies, aerial photographs, and Project element descriptions and locations. These profiles illustrate the type and extent of screening from locations adjacent to the Project area.

5.4.3 Nighttime Visibility

During Project scoping, it was determined that the visual impact study will include visibility at night and the issues of nighttime "sky glow" and direct glare. The visual impact of night-time lighting on the night sky is a concern in many communities. The Dark Sky Society defines light pollution as "glare, light trespass, and light which is reflected into the night sky, contributing to sky glow, through the use of unshielded, misplaced, excessive, or unnecessary outdoor night lighting"(Dark Sky Society 2009). Light pollution from ski resorts represents a challenge because the resorts are often located in rural areas, where natural darkness is prevalent, but where lighting can also bounce off snow on the slopes or be trapped by low clouds or snowmaking operations. Nighttime skiing requires significant lighting to provide safe conditions for skiers. During snowmaking activities, lighting is necessary for the safety of personnel working with the snowmaking equipment. There are no plans to provide night-time skiing at Belleayre Mountain, which eliminates the source of most light pollution concerns associated with ski centers in general.

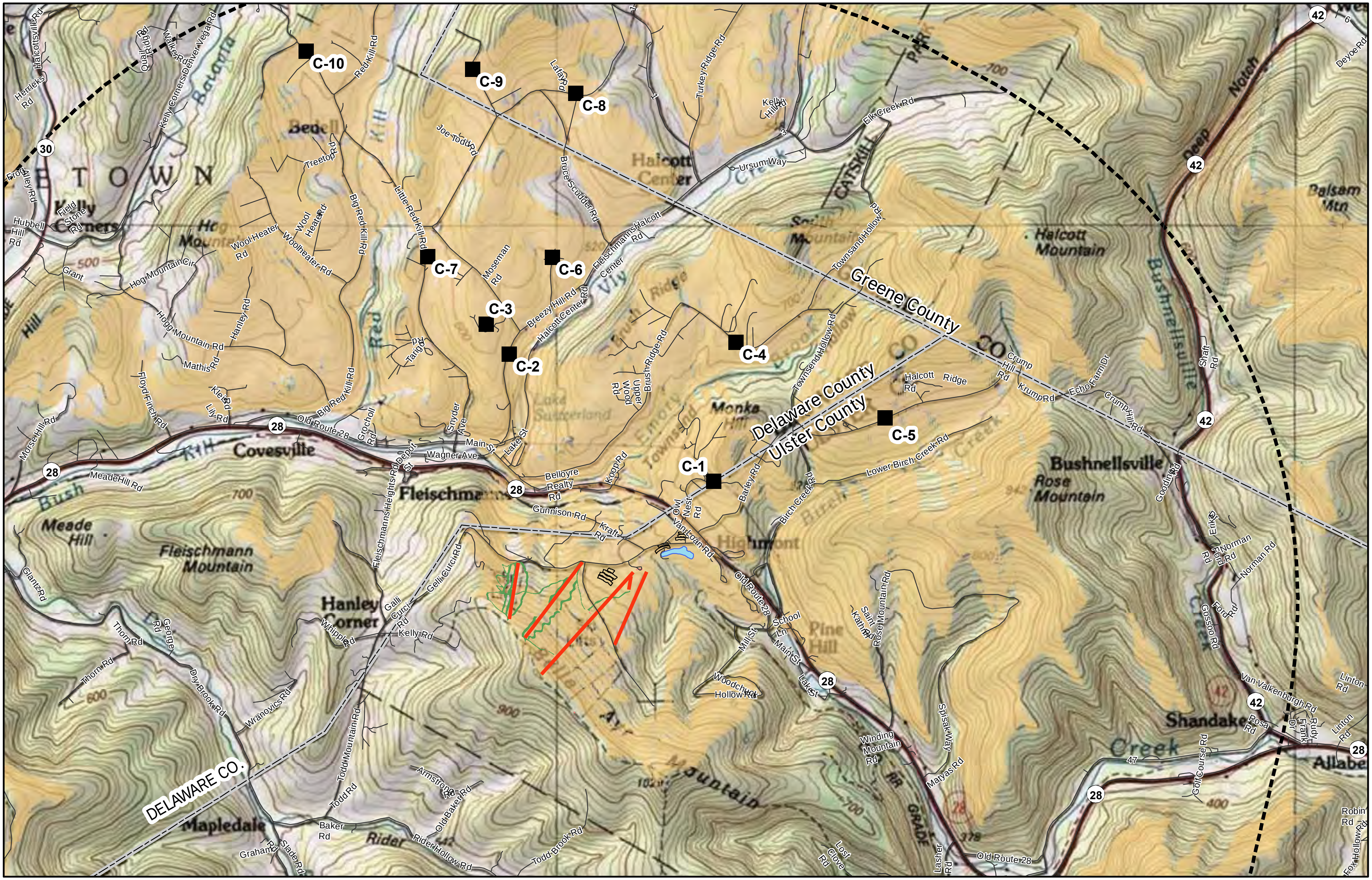
The variety of possible lighting scenarios in different weather conditions prevents an accurate simulation of potential light pollution. Since lighting on the mountain will remain the same or will be reduced, the potential for light pollution no-build and build conditions will remain the same—only changes in weather conditions provide a change in the different levels of light pollution from Belleayre. To document current lighting conditions and provide a demonstration of potential light pollution under different conditions, nighttime photographs were taken from various locations in the region. These pictures were taken when snow cover remained on the ski trails, but snow cover was not present in the foreground of the photographs. These locations were chosen to represent local visual resources and represent views from various directions, distances, and ambient lighting conditions. Refer to Figure 5-6 for Nighttime simulation photo locations. The locations chosen for these simulations were as follows:

- Route 28 East-bound Parking Area at Big Indian
- Alder Lake
- Dry Brook Community Center
- Fleishmanns Sports Fields

Different aperture settings represent a different skyglow and light trespass conditions. Attachment E provides the photo simulations and discussion of impacts.

Lighting impacts can be mitigated to significantly limit light pollution. The amount and type of light pollution is affected by the amount and type of lighting used and the positioning or aim of the lighting. The lighting on the new slopes will be designed to limit light pollution. Lighting on all new buildings will also be designed to control light pollution, in accordance with Leadership in Energy and Environmental Design (LEED) standards.

Since night skiing is not allowed, the need for lighting is significantly reduced. Snowmaking activities will continue to occur after hours, requiring lighting for the safety of workers. With new snowmaking equipment that can be controlled and monitored remotely, the need for lighting on the hill is reduced. In addition, some pole-mounted lights that currently exist will be removed. Buildings will have security lights around them, but these will be designed to minimize stray light. The overall night lighting will therefore be reduced by the proposed action, resulting in a reduced nighttime visual impact.



0 0.5 1 Miles

Simulation Location Map
Belleayre Mountain Ski Center

Figure 5-7

- Proposed Ski Lifts (July, 2009)
- Proposed Trail Clearing (July, 2009)
- County Boundary
- Parking Lots (July, 2009)
- Not Visible
- Visible
- Proposed Snow Making Pond (July, 2009)
- Simulation Points

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Source: USGS 1:24,000 topographic quad; USGS Digital Elevation Model, 1998

Date:

5.5 Visual Mitigation

The Project has been designed to mitigate visual impact and improve the aesthetic quality of Belleayre Mountain. New ski lifts are streamlined to be lower in profile than the existing ski lifts and will be painted colors that blend into the wooded landscape. Parking lots will be terraced and tree cover will be preserved to block views of the lots. External finishes of the new buildings will also be chosen to blend into the landscape, using earth- tone colors and non-reflective glass.

To prevent light pollution, outdoor lighting will be designed to meet the standards of the International Dark Sky Association. Cut-off light fixtures will be used in new applications, and the facility will not be equipped with lighting to allow night skiing.

6 Visual Impact Evaluation

To assess the significance of the aesthetic impact of the proposed Project, all the maps, figures, and simulations described above were reviewed, along with the assessment of field observations and research. While visibility of the Project can be estimated and verified, which is the first task of this assessment, the evaluation of visual impacts on those locations where views are possible is a difficult task. Visual character and aesthetic quality is a subjective evaluation, with each person likely to have a different opinion on what would be considered impact on character and quality. NYSDEC policy states, "aesthetic impact occurs when there is a detrimental effect on the perceived beauty of a place or structure. Significant aesthetic impacts are those that may cause a diminishment of the public enjoyment and appreciation of an inventoried resource" (NYSDEC 2000).

The goal of this assessment has been to provide the reader with a clear and scientific understanding of the visibility of the Project and to assess visual impact based on the Project's compatibility, contrast, and scale as well as any changes in the aesthetic character of the landscape and the impact on user groups.

The changes to the Belleayre Ski Center will be blocked from view by topography and vegetation from most locations in the region. As demonstrated in the simulations and line-of-sight profiles, distance, angle, and seasonal changes in vegetation will often prevent the viewers from recognizing built structures from the locations where visibility is possible.

The new ski slopes, like the existing ones, will be highly visible from some locations in the winter months because the white, groomed snow provides a high contrast with the forested areas of the mountain. Since Belleayre currently includes existing ski slopes and the new slopes are of similar length and width, the new expansion is compatible with the existing site. While the new slopes will be visible features of the landscape from certain locations, the 47 acres of new slopes represent an increase in 27% of groomed trails at Belleayre; thus, the expansion is not excessive in scale compared with the size of the existing Ski Center. The new lifts and other built structures will not be visible from mountaintop viewpoints because of the distances involved. Based on the similarity of the Project's contrast and scale with existing visual elements on the landscape, the visual presence of the Project will not have a detrimental effect on the perceived beauty of the surrounding location.

Access to and public enjoyment of surrounding historical, recreational, and commercial land uses will not be impacted by the visual character or visibility of the Project. Access for recreational skiing and hiking will be improved as a result of the project, as the Ski Center will improve existing facilities, provide new trails, and provide for more skiers.

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