Section 3.3 AVALANCHE

2014 SHMP Update
Avalanche is addressed in the 2014 update as a new hazard section, to ensure consistency with the mitigation planning requirements detailed in 44 CFR §201.4(c)(2)(i). Research included: • Identification of characteristics, locations and previous occurrences • Research for probability, vulnerability, and losses • Review of local hazard mitigation plans for hazard ranking, vulnerability and loss

3.3.1 Avalanche Profile

Hazard	Definition and Key Terms
Avalanche	A downhill fall of snow: a rapid downhill flow of a large mass of snow or ice dislodged from a mountainside or the top of a precipice.

Characteristics

An avalanche is a mass of snow sliding down a mountainside, normally occurring on terrain where snow is deposited on slopes of 20 degrees or more. Avalanches are also called "snowslides"; however, there is no difference in these terms[1]. Snow accumulates to sufficient depths on high mount peaks and slopes to create conditions conducive to avalanches. While avalanche danger increases during and immediately after major snowfalls, as well as during thaws, avalanches can occur in any situation where snow, slope and weather conditions combine to create the proper conditions.

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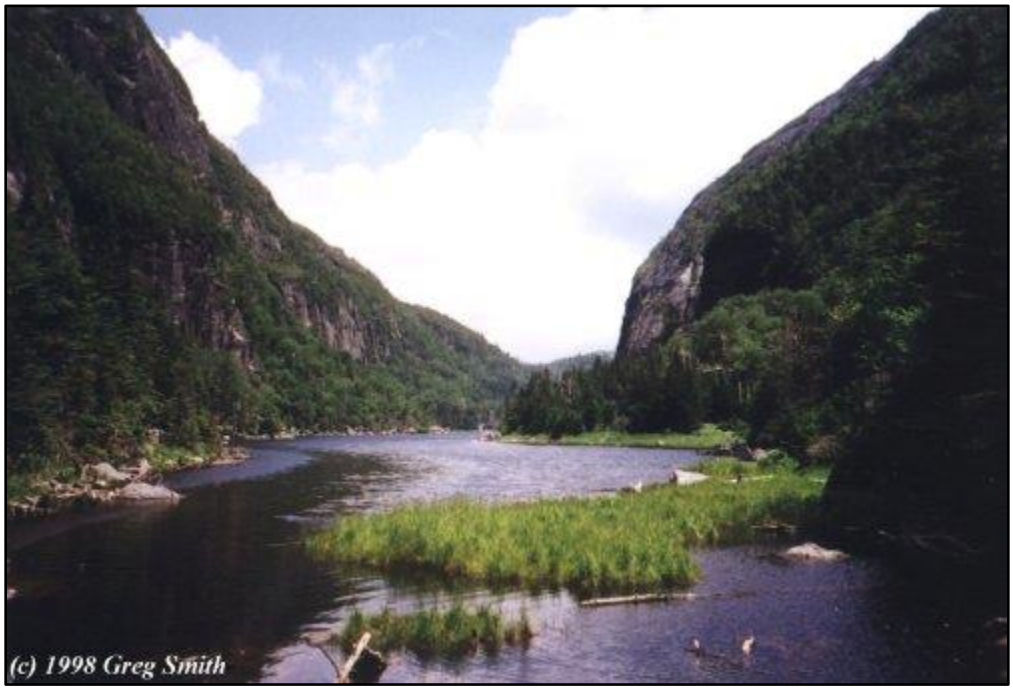
Location

Avalanches have occurred typically in the back country of the Adirondack Mountains. Avalanche Lake, which sits between the vertical cliffs of Avalanche Mountain and Mount Colden, has been the site of at least two previous avalanches which caused elevation of the bed of Avalanche Lake[2].

[1] Avalanche Preparedness Brochure, New York State Department of Environment and Conservation (NYSDEC).
[2] NYS DEC



Source: http://www.adirondack-park.net/lakes/avalanche.lake.html **; Avalanche Lake, Adirondack Mountains, New York**

Previous Occurrences

Rare, localized avalanches have occurred in some mountainous regions of the state. A large avalanche occurred on August 20, 1869, creating a number of landslides on Mount Colden, the rubble from which substantially raised the level of Avalanche Lake. Another avalanche in 1942 caused further slides that raised the lake level by 10 feet[3].

One avalanche incident has been reported between 1996 and 2013 (National Climatic Data Center, NOAA). An avalanche in Western Essex County on February 19, 2000 took one life and caused 5 injuries; however, no property damage was reported.

Additional unconfirmed occurrences from one source[4] reported a total of 14 avalanche incidents, some involving fatalities or injuries, attributing the avalanches to skiers, snowshoers, or ice climbers, usually on steep, open terrain such as a cliff or a slide. Unofficial reports[5] of some incidents include:

- March 8, 1975 - Three ice climbers suffered severe injuries when they were caught in an avalanche on a cliff near Chapel Pond.

[3] McMartin, Barbara and Bill Ingersoll. (2004) *Discover the Adirondack High Peaks*. (3rd Ed.) Discover the Adirondack series, Canada Lake, NY: Lake View Press.
[4] "A Short History of Adirondack Avalanches", Phil Brown, The Adirondack Almanac, February 1, 2010
[5] Ibid.

- March 15, 1975 - A snowshoer was on a slide path on Macomb Mountain when an avalanche swept him five hundred feet. He was partially buried but managed to escape injury.
- April 1990 - A veteran ice climber was standing at the bottom of the North Face of Gothics when an avalanche occurred. He was able to dig himself out and climb the slope.
- March 1997 - An avalanche swept two backcountry skiers down a steep slide on Mount Colden. Although the skiers were bruised, trees prevented their descent and they were able to ski out.
- An avalanche occurred on "Angel Slide", Wright Peak on February 27, 2010, catching two skiers in the incident.

Because avalanches occur in back-country areas of the Adirondack Mountains, the New York State Department of Environmental Conservation (DEC) has developed an Avalanche Preparedness brochure, targeted to people who pursue winter sports in the area, about the potential for avalanches and how to be better prepared. The DEC brochure[6] provides these suggestions for basic avalanche awareness:

- Know basic avalanche rescue techniques
- Check the snow depth
- Check how much new snow has fallen
- Practice safe route finding
- Check the degree of the slope
- Check the terrain
- Carry basic avalanche rescue equipment
- Never travel alone
- Let someone know where you are going
- Do not be afraid to turn around
- Use common sense

Probability of Future Occurrences

- Based on the history of one previous occurrence, avalanches are likely to occur in the same area that was previously impacted by the hazard, but are infrequent (occurrence expected once every 8-50 years).

[6] *Avalanche Preparedness in the Adirondacks,* NYSDEC, www.dec.ny.gov/docs/lands_forests_pdf/**avalanche**.pdf

Justification for Not Performing Vulnerability/Loss Assessment

Avalanche occurrences are typically local in scale; and, while past occurrences have resulted in loss of life, the magnitude of an event is not considered likely to cause a life safety threat to large populations. The HAZNY-Mitigation ranking process identified Avalanche as a "low" hazard with a score of 15. (See **Section 3.2.1**.) Consequently, it is determined that there is not sufficient evidence that Avalanche has a high level of overall risk to justify further analysis for the 2014 SHMP update.

The additional information provided in the Risk Assessment sections below serves as guidance for impact and consequence analysis for local hazard mitigation and operational planning.

3.3.2 Assessment of Vulnerability by Jurisdiction

Avalanches have occurred only in the Adirondack Mountains, most often on slopes between 30 and 50 degrees. Based on review of the 56 FEMA-approved local hazard mitigation plans (LHMP), Essex and Yates Counties identify avalanche as a hazard; however, Essex County's Hazard Mitigation Plan (2011) ranks the hazard as moderately low and Yates County ranks it as low. The Yates County LHMP (2011) notes that, "The steeply sloped areas of Yates County are heavily treed and vegetated, which along with climatic factors associated with the Finger Lakes and local topography, tend to minimize the kind of snow pack and risk associated with an avalanche".

Although Essex County identifies avalanche as a moderately low hazard, the County's Hazard Mitigation Plan provided the following information related to avalanche:

> "Avalanche: In February of 2002 a backcountry avalanche in the high peak region of the county took the life of a cross-country skier. The area was known to be prone to avalanche but it is rare that the quantity of snow exists at one time."

3.3.3 Assessment of Vulnerability of State Facilities

State buildings and facilities are typically not vulnerable to avalanches, as they generally occur in undeveloped areas. There is a very low possibility that state park facilities could be damaged, but there is no historical incidence of this occurring and the probability for future events in areas where state-owned facilities are located is low.

3.3.4 Estimate of Potential Losses by Jurisdiction

There is no recorded incidence of property loss associated with the one documented event in Essex County. Because avalanches tend to occur in undeveloped back-country areas, no future losses are anticipated.

3.3.5 Estimate of Potential Losses of State Facilities

While state park and preservation lands could potentially be impacted by avalanche, they have previously occurred in state-owned undeveloped areas and there is little potential for losses associated with state facilities.

3.3.6 Data Limitations and Key Documents

- Only two of the FEMA-approved local hazard mitigation plans in New York State identify avalanche as a hazard. One county plan (Essex) provides information on a previous occurrence that resulted in one fatality, but does not indicate that there were any property losses resulting from the event.
- New York State Adirondack Park Agency (avalanche history)
- National Climatic Data Center (NCDC)(avalanche history)
- New York State Department of Environmental Conservation (avalanche characteristics and preparedness measures)