

Avalanche Hazard Management and Rescue Preparedness Blaine County

About the Author

This report has been compiled by Manuel Genswein, international visitor during the winter season 22/23 in the Sawtooth US Forest Service Avalanche Center. The purpose of the USFS international visitors program is to stimulate knowledge exchange with scientists from outside of the US for the mutual benefit of increasing efficiency in research and safety in the different fields of expertise of the USFS. As the program has a scientific goal, all advice and training provided by Manuel Genswein has been for free and there are no conflicts of interest. Manuel Genswein has worked for 30 years in 32 nations in the domain of avalanche safety and rescue.

Avalanche Hazard Management

Foreword

For the backcountry, the USFS Sawtooth Avalanche Center provides a daily forecast for the avalanche hazard following national and international standards. The level of expertise and professionalism of the Sawtooth Avalanche Center staff is very high. Despite of the fact that it is a rather small avalanche center, it has become a driver of innovation for the national forecasting platform with multiple employees working partly for the National Avalanche Center.

While the situation concerning the backcountry forecasting is excellent, the Avalanche Hazard Management for residential areas, road managed by the towns, the county and the Idaho Department of Transportation is clearly insufficient, leading to the very concerning and dissatisfactory situation that avalanches reach into the residential areas and damage unevacuated houses frequently. The same is true concerning the road network. In the 22/23 winter season, many avalanches have closed several open roads, some road stretched multiple times at the same location. On multiple occasions, it was pure luck that no cars or pedestrians were caught and killed. Photos and reports of cars stuck between avalanches and video footage of pedestrians running for their lives to escape an avalanche in the very last moment have been the alarming outcome of this season.

In Sun Valley, one lives in many aspect “on the sunny side of life” – but even here, one day, you will run out of luck. The winter season 22/23 has shown very critical moments, the population of the Wood River Valley put the concept of “luck” to a very hard test... at one point, you will have used up the bonus points of luck... A very serious, very painful event costing many lives and causing enormous damage is only a question of time.

In the European Alps, we have lived for thousands of years in the mountains and learned as a society – and today supported by evidence-based methods, systems and strategies – where it is reasonably safe to build houses and other infrastructure, how to protect such areas, and when are the critical moments where road closures and evacuation measures are required.

Based on the above mentioned facts and the expertise of modern, evidence based avalanche hazard management, I highly advise Blaine County and the towns within Blaine country to consider and implement the following measures.

Residential Areas, Roads, Public Parks/Playgrounds, X-Country Trails

- **Create and update Avalanche Hazard Maps** for the exposed residential areas and roads in the town and county. Avalanche hazard maps are the fundamental base for all further decisions.
- **Hire an experienced commercial avalanche consulting company to support the project and to help to build up local expertise.** The Sawtooth Avalanche Center may be instrumental in formulating the professional requirements. The situation that there is only one commercial avalanche consulting company left in the US and that the average age of their employees is high, is in many aspects suboptimal.
- There are two areas in the US which have a serious avalanche problem in residential areas: the Wood River Valley and Juneau AK. **The only sustainable approach is to build up expertise and operational know-how in avalanche hazard mapping and avalanche hazard management in the in the concerned counties and towns, thus the Wood River Valley. Initially, the expertise of an external avalanche consulting company will be necessary, but the definition of the goal of their work shall clearly be to support building up local expertise.**
- It is important that the people who are developing the future of avalanche hazard management for the county and towns in the Wood River Valley live here and see all aspects of the problem throughout multiple winter seasons. They need to be here on site in critical avalanche hazard situations.
- **Use existing local expertise** of the staff of the Sawtooth Avalanche Center, Janet Kalam and Bruce Smith.
- **Object forecasting for roads and residential areas is necessary to identify the required measures to keep the residential areas and roads reasonably safe.** Follow the ALARP “As Low As Reasonable Possible” approach. Operational avalanche forecasting may be hired as a service, the option of contract the US Forest Service Avalanche Center should be seriously considered.
- **Until the avalanche hazard can be reduced by permanent avalanche structures, the only option is to limit exposure to the hazard:**
 - a. Preventative, temporary road closures and stopping snow removal
 - b. Preventative, temporary x-country trail closures and stopping track grooming
 - c. Preventative, temporary park and playground closures
 - d. Preventative, temporary evacuations of high exposure residential areas
 - e. An “**Avalanche Emergency Management Commission**” (see below) shall always be in place and manage in avalanche danger levels HIGH and EXTREME.
 - Be aware that the restrictions will only affect a very low number of days per year in a 10 years average – and on those days, the benefit of implementing restriction is very high!
- **Evaluate options for building avalanche structures** above the most endangered parts of the residential areas (base information: avalanche hazard mapping). Evaluate options for FEMA-support in close collaboration with the Emergency Manager of Blaine County.
- **Verify if the building code** (town, county) is strict and specific enough for buildings in avalanche zones in residential areas. It is recommended to take the Swiss (or Austrian) building code as a template for the verification. For this purpose, I recommend building a workgroup including city planners and civil engineers of some of the local structural engineering companies (see appendix). The protection principles of a solid, proven European building code, which has been tested in hundred of events and is based on solid, scientific evidence needs to be implemented in the structure of an US building code. If this task is

carried out by local civil engineers in collaboration with local city planners, it is possible to build up an in-depth common understanding. This process needs to run under supervision of an external avalanche consulting company or the Swiss Institute of Snow and Avalanche Research.

- Roads: Closer collaboration with the IDT Shoshone office should be notified when the Avalanche Danger is anticipated to go to HIGH or EXTREME. Planning of the road outside of the blue and red zones.
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- Plan for options to selectively shut off the electricity grid, water lines, sewer lines and gas pipelines to the endangered residential areas. We identified that the situation concerning the gas pipelines is unresolved. This is a particularly delicate and safety related point and need to be treated with priority.
- Signage for summer trails that can indicate when they are to be closed.

Avalanche Emergency Management Commission

- **Constitute and Avalanche Emergency Management Commission**
- The Emergency Management Commission is **automatically activated as soon as the Sawtooth Avalanche Center anticipates that the avalanche danger level will reach HIGH or EXTREME**. Early information will allow proper implementation of the necessary measures and inform the affected part of the population with appropriate lead time. Whenever possible, the Avalanche Emergency Management Commission shall be activated no later than 24hrs before the avalanche hazard reaches HIGH or EXTREME and it will remain active until the avalanche danger level drops below HIGH.
- The **commission implements the following measures when the hazard requires it:**
 - Preventative, temporary **road closures and stopping snow removal**
 - Preventative, temporary x-country trail closures and stopping track grooming
 - Preventative, temporary park and playground closures
 - Preventative, temporary **evacuations of high exposure, unprotected residential areas** (Plan on how to provide shelter for these people. Information that rescue will not be possible in areas and on roads for the given duration the evacuation order or road closure.).
- The commission acts as a coordinative body between all affected governmental and private institutions in the county. In particular all communications to the public shall be centrally coordinated by this body to avoid overlapping or contradictory information. Evaluate options for cell phone tower based SMS general broadcasts (= distribution to all mobile phones connected to specific towers/antennas).
- The staff of the Sawtooth Avalanche Center and/or additional forecasting and avalanche observation resources need to focus in a phase of HIGH or EXTREME avalanche hazard on their forecasting task. Their only focus is to provide as reliable as possible avalanche hazard information.
- Based on the avalanche hazard, the Avalanche Emergency Management Commission decides rules based (flowcharts, checklists, protocols) which measures need to be implemented.
- Increase level of rescue readiness by putting rescue resources and avalanche dogs on call with a pre-defined response time. Reoccurring training for Urban Avalanche Search and Rescue (UAvSAR) is mandatory for an efficient rescue response.

The following representatives of institutions have actively agreed to participate in the following planning meeting and as future members of the Avalanche Emergency Management Commission:

- Seth Martin (Ketchum Fire)
- Scott Savage (Sawtooth Avalanche Center)
- Chris Corwin (Blaine County)
- Jeff GIESE
- Brian Yaeger
- Mike Baledge
- Bass Sears
- Eric Rector
- Steve Thomason
- Christy Heitsmann

The following representatives of institutions have been proposed to participate:

- Shawn Binyon (BCSD)
- Representative of the Sheriffs Office

First planning meeting and review to the check list(s) and action plan: April 13th 11:30am

The planning meeting has been postponed by the Emergency Manager of the county for unknown reasons. A pro-active role of the County Emergency Manager is crucial for a timely and efficient implementation of most measures proposed in this concept.

Manuel Genswein is willing to provide the necessary information for this proposed meeting, which needs to take place in the near future.

Idaho Central Mountain Rescue Group

In the 2022/2023 winter season, based on the initiative of Manuel Genswein of the Sawtooth Avalanche Center, a multi-step rescue skills and rescue simulation training has been carried out in collaboration with the fire brigades, ski patrols, guides services and heli-ski company. It resulted in a successful, complex rescue simulation with five buried subjects, the involvement of a technical rescue helicopter from the heliski company, two air-ambulance helicopters and the local hospital. All components of a complex, multi-agency avalanche rescue mission were applied:

- Communication concept
- Coordination concept and ICS
- Transport of rescue resources with technical and air ambulance helicopters to the accident site
- Search with different search means (transceiver, Recco, avalanche dog teams, probe lines)
- Excavation strategies
- Pre-hospital avalanche patient care
- Transport of the patient with different means of transport and proper handing over of the critical information for the proper treatment of an avalanche patient (AvaLife)
- Handling of an MCI situation in the emergency department of the local hospital, including triage criteria for forwarding specific patients to ECLS capable hospitals (AvaLife/HOPE)

Ketchum Fire is foreseen to act as the base for all organized avalanche rescue missions.

All parties mentioned above have invested a lot of their own time and resources to make this successful program possible. I would like to point out in particular: Sun Valley Heliski (Alex Kittrell, Christopher Templeton), MD Terry O'Connor, Ketchum Fire as lead agency.

A detailed, multi-page summary, debrief and action plan concerning the above mentioned rescue simulation has been prepared by Ketchum Fire in collaboration with MD Terry O'Connor (medical aspects), Christopher Templeton (Sun Valley Heliski, air rescue aspects) and Manuel Genswein (avalanche rescue aspects).

It is now necessary that the initial passion and personal volunteer efforts are replaced by a formal structure and proper financing of the Idaho Central Mountain Rescue Group. All participating individuals and organizations are mountain and / or rescue professionals and provide their time and expertise for something which clearly needs to be a public service. In spite of the fact that everyone supported this project with a lot of passion, this is NOT their hobby. It is in the very best interest of a county for which mountain and ski tourism is a major part of the economy to be able to provide adequate rescue preparedness. The very surprising and very disappointing fact that the Blaine County Sheriff's Office has never actively participated in any of the activities or meeting during the entire season in any topic mentioned in this protocol shows that reliable and professional rescue work cannot be put into the hands of non-mountain, non-avalanche professional volunteer groups. The Swiss visitor to SAC gives to protocol that he has trained rescue groups in numerous US counties over 25 years and has never experienced the total absence of a Sheriff's office to this extent.

The collaborators of the Idaho Central Mountain Rescue Group deserve the full institutional and financial support of Blaine country and the further steps of the institutionalization of the rescue group as well as a sustainable method of financing ongoing training, rescue and communication equipment needs to be found.

Preliminary Cost Calculation to Continue Training Based on the Season 22/23 Concept

Costs of participation of Ski Patrol, Heliski and Guiding Companies

- Total of 2 Ski Patrols and 2 Guiding Companies
 - 3 staff members 3 days per season @ 350 USD/day -> 3150 USD / organization -> 12600 USD / year
- Heliski Company including helicopter time
 - 4 staff members 3 days per season @ 350 USD/day -> 4200 USD / year
- Helicopter time
 - 5000 USD / year
- Rescue and communication equipment
 - 2500 USD / year

Total Preliminary Cost Calculation to Continue Training Based on the Season 22/23 Concept: 24300 USD / year. This is a very affordable amount looking at the fact that ski and mountain tourism is a major part of the local economy. Continuation of the successful common training scheme started in the 22/23 season shall be continued and required a minimum funding.

Closing Remarks

Concerning all three topics mentioned in this protocol, it is advised to increase the level of awareness of the society at large, the political leadership, town councils and county councils as soon as possible.

The financial means and political support required to properly and efficiently solve all these challenges will need broad support and therefore, active communication with a common voice will be key to success.

The Sawtooth Avalanche Center with its USFS visitor Manuel Genswein have initiated several of the mentioned activities, trainings and meetings mentioned in this protocol. As my season will end here in in this beautiful, sunny valley, I wish all of you a successful continuation of these projects and I continue to be available to support you!

Originating from a different linguistic and cultural background, you might have sometimes felt pushed hard by the direct way of expressing things in Switzerland, my home country. It was never meant as a criticism. ***It is now in your hands and your ethical and professional responsibility to make sure that the community of this mountain tourism region does not need to suffer the painful losses we had to experience in the European Alps before we strictly implemented the measures proposed in this meeting protocol.*** You are in the very fortunate situation to have one of the most competent avalanche centers in North America situated in your county. As a federal institution, they have certain rules on how they are able to support all of the mentioned activities. I hope that the towns and county administrations find a creative solution for a formal agreements with USFS to use the Sawtooth Avalanche Center expertise. It was a great pleasure and honor for me to be the 22/23 winter season visitor at the Sawtooth Avalanche Center – thank you very much Scott & all Sawtooth Avalanche Center staff.

Appendix

List of potential local companies to be implemented as part of the proposed action plan to build up local expertise in avalanche hazard mapping, building code for structures in avalanche zones and projects to build avalanche structures:

Hazard Mapping:

Galena-Benchmark Engineering

David Patrie

Email: dave@bma5b.com

Office: 208-726-9512

(*) engineers of this company have contacted Manuel Genswein during the 22/23 winter season and in 3 work meetings, Manuel Genswein has shown them how to start to build up dynamic avalanche modelling and avalanche hazard mapping using the RAMMS software.

Geotechnical Engineering:

Butler Associates, Inc

Steve Butler

Email: svgeotech@gmail.com

Cell: 208-720-6432

Lidar Drone Surveying:

Orion Surveying – subcontracts out of our office

Steve Shwartz

Email: steve@os5b.com

Cell: 208-721-3849

Structural Engineering:

Maxwell Structural Design Group

Craig Maxwell

Email: craig@maxwellsds.com

Phone: 208-721-2171

RLB Architectura:

Michael Bulls (Architect but will know who to contact for structural)

Email: mbulls@rlb-sv.com

Phone: 298-726-5608

Bouiss & Associates, PA

Michael Bouiss

Email: mbouiss@gmail.com

Phone: 208-726-3606