

## **VOLCANO ANNEX W**

### **W1. Purpose, Situation, and Assumptions**

#### **W1.1 Purpose**

The purpose of this Volcano Hazard-Specific Annex is to guide and coordinate agencies and organizations during volcanic eruptions affecting Park County. Volcanoes can threaten lives and property depending on the extent and proximity of the eruption and may require a coordinated response. General incident management principles and disaster and emergency processes should be applied to any volcano incident, but this annex provides additional information specific to these types of incidents.

#### **W1.2 Situation Overview**

Park County has several volcano hazards, some nearby and others more distant. The most probable volcano hazard is ashfall from the Cascade Range hundreds of miles to the west, including Mount St. Helens, Mount Rainer, and Mount Hood. Ash from distant volcanic eruptions can be carried in the upper level winds and then fall far from the source. Ashfall as thick as several inches is possible in some cases. Volcanic ash is corrosive, and therefore, can cause problems. Dry ash is more manageable than wet ash. When wet, volcanic ash becomes thick and glue-like.

Volcanic ashfall can clog air intakes of buildings and damage engines of vehicles and other equipment. Aircraft can be particularly threatened, and therefore, air restrictions may be required for extended periods of time. Electric and communications infrastructure can be damaged by the corrosive ash, especially when wet and heavy; wet ash conducts electricity. Dry ash on roadways can reduce visibilities and wet ash is slippery. Volcanic ash can pose a threat to livestock, as the ash that falls to the ground can contain enough fluoride to harm animals. Individuals with respiratory problems may be sensitive to airborne ash, and when thick enough, the general population may as well. In extreme cases, the heavy amounts of ash may cause roof and structure collapses.

Although extremely unlikely within the time scale of this plan, the Yellowstone Caldera, just to the south of Park County in Yellowstone National Park, could erupt resulting in devastation throughout the region. The interval for these types of events is on the scale of millions of years. Smaller eruptions with localized impacts are more likely but are still on the scale of thousands of years. Over the next few hundred years, Yellowstone hazards will most likely be limited to ongoing geyser and hot-spring activity, occasional steam explosions, and moderate to larger earthquakes.

If a caldera-forming eruption occurred in Yellowstone, the impacts would be felt worldwide. The impact to Park County would likely be complete devastation from thick ash deposits and hot volcanic gases.

The more likely non-explosive lava eruptions would probably have little direct impact to Park County with the risk greatest in southern Park County and decreasing to the north.

Possible volcano losses include:

- Vehicle and equipment losses.
- Electric and communications infrastructure losses.
- Forage and livestock losses.
- Aircraft restrictions and associated economic losses.
- Respiratory illnesses.
- Structure and contents losses.
- Deaths and injuries.

### **W1.3 Planning Assumptions**

- The extent and location of volcanic ashfall will depend on upper level wind conditions.
- The geographic extent of volcano impacts may range from localized at a single site to county and region wide.
- The duration of ashfall may range from hours to weeks.
- Some warning may exist prior to an eruption or ashfall.
- Extreme impacts, more than have been seen in Park County historically, are possible.

## **W2. Concept of Operations**

The decision points that follow are the responsibility of incident management. Note that not all decision points may be necessary and some decision points may be combined during rapidly escalating situations.

- *Decision Point: Ashfall is predicted over Park County.*

When ashfall is predicted to occur in Park County, usually from a distant volcano, public awareness and education becomes the primary objective. Depending on the severity of the anticipated ashfall, the message may vary but will often include information on:

- Protecting equipment (turning off engines, closing air intakes, not driving, etc.)
- Sheltering-in-place (closing windows and doors, turning off air conditioners, having adequate supplies of food and water, etc.)
- Protecting animals and livestock (bringing inside, providing clean food and water, etc.)
- Preparing and protecting generators

Additional actions officials may take include:

- School closures
- Government office closures
- Issuance of public health advisories
- Emergency travel only restrictions
- Air travel restrictions

- *Decision Point: Ashfall has occurred in Park County.*

Once the ash has fallen, the primary objective becomes removing the ash. Locations for disposing of the ash need to be identified, ideally in locations where dispersion by wind and runoff can be minimized. Local officials may need to prioritize its removal from buildings, equipment, and roadways. Some closures and restrictions may need to stay in place until an initial level of clean up has been completed. Home and business owners may need guidance on if or how to remove the ash. Clean up efforts can take weeks to months.

- *Decision Point: Volcanic activity is occurring within Yellowstone National Park.*

Small volcanic eruptions and lava flows could occur within the Yellowstone Caldera, and in fact, are much more likely than a super-eruption. Impacts from these types of events would likely be limited to and cause disruptions in the Park. Since many Park employees reside in and many visitors travel through Park County, the County may assist with providing public information. See the [Public Information Annex](#) for additional information on this function. Law enforcement may also be requested to assist with area closures.

- *Decision Point: Eruption of the Yellowstone Caldera is forecast in the near future.*

If a super-eruption of the Yellowstone Caldera is forecast, the most prudent action is to evacuate the region, unless scientists indicate that Park County is safe from the impacts. Such an evacuation would likely be a long-term event and might be seen more as a migration to safer areas. Local officials could work with communities outside the most hazardous locations to provide residents with options for relocation. Temporary shelter in communities outside Park County and even Montana may need to be considered in situations where the warning time is short. See the [Population Protection Annex](#) for additional information on evacuations and the [Warning Annex](#) for the associated warning information. Mutual aid from nearby jurisdictions would likely be unavailable in these cases due to the regional, and even global, nature of the hazard.

### **W3. Organization and Assignment of Responsibilities**

The responsibilities listed here are specific to this hazard. Note that all entities, whether listed or not, are also responsible for their basic disaster and emergency responsibilities as outlined in the [Base Plan, Section 3.2](#), as applicable.

The following entities are not specific to jurisdiction. Therefore, in an emergency, the jurisdiction(s) affected will have the responsibility for these roles, and other non-affected jurisdictions may also be involved through mutual aid.

### All Entities

- Take action to protect facilities, infrastructure, and vehicles from ashfall.

### Disaster and Emergency Services

- Monitor volcano and ashfall forecasts and provide information to the appropriate agencies.

### 911 Dispatch

- Receive weather alerts from the National Weather Service and notify responders and other agencies, as appropriate.

### Public Health

- Monitor public health conditions, including air quality.

### Water and Sewer Departments / Districts

- Be prepared to shut down or isolate public utilities and services if threatened with contamination.

### Street and Road Departments

*including Montana Department of Transportation*

- Clear roadways of ash.

### Other Entities

- Perform other duties as needed and assigned.

## **W4. Direction, Control, and Coordination**

Incident Command for volcano incidents will most likely be Unified Command between Principal Executive Officers / Local Elected Officials, Public Health, Law Enforcement, and Disaster and Emergency Services. Additional information on the direction and control function can be found in the [Direction and Control Annex](#) and [Base Plan, Section 4](#).

## **W5. Information Collection and Dissemination**

### **W5.1 Information Collection for Planning**

Table W5.1A lists the key information needed and possible sources when preparing for and conducting operations during volcano incidents.

Table W5.1A Possible Information Sources

Information Type	Source
Aviation Information	- Federal Aviation Administration
Volcanic Activity	- Yellowstone Volcano Observatory - Cascades Volcano Observatory
Weather Forecasts and Alerts	- National Weather Service, Billings

## W5.2 Public Information

Information regarding the public information function can be found in the [Public Information Annex](#).

The following information should be provided to the public, as appropriate:

- Description of current situation
- Anticipated impacts
- Protective actions needed or recommended, including information for animals
- Closures

## W6. Communications

See the [Communications Annex](#) for more details on emergency communications in Park County.

## W7. Administration, Finance, and Logistics

### W7.1 Finance/Administration

For additional information on the Finance/Administration function, particularly the importance of recordkeeping, see the [Base Plan, Section 7.1](#).

### W7.2 Logistics

For additional information on disaster and emergency logistics, see the [Base Plan, Section 7.2](#).

## W8. Plan Development and Maintenance

See the [Base Plan, Section 8](#) for additional information on annex development, review, revision, and exercise.

## **W9. Authorities and References**

### **W9.1 Authorities / References**

None.

### **W9.2 Acronyms**

See the [Base Plan, Section 9.4](#) for the list of acronyms used in this plan.

## **W10. Attachments**

None.