NATURAL RESOURCES

# WILDFIRE-ASSOCIATED LANDSLIDE EMERGENCY RESPONSE TEAM REPORT

## 2024 Easy Fire

**Skagit and Okanogan Counties, Washington**

by Josh Hardesty, Nancy Calhoun, and Kate Mickelson

WASHINGTON
GEOLOGICAL SURVEY
WALERT Report
October 2024

WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES
WASHINGTON GEOLOGICAL SURVEY

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**PLATES**

*(Plates are located at the end of this document)*

# Wildfire-Associated Landslide Emergency Response Team Report for the 2024 Easy Fire

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## INTRODUCTION

A Wildfire-Associated Landslide Emergency Response Team (WALERT) assessment was conducted to evaluate the potential risk posed by flash floods and debris flows from the Easy Fire in Skagit and Okanogan Counties, Washington. Wildfires can significantly change the hydrologic response of a watershed so that even modest amounts of rainfall can produce dangerous flash floods and debris flows. Increased runoff, flash floods, and debris flow hazards may remain elevated for several years after the fire. Notably, on the night of August 11–12, 2024, while the Easy Fire continued to burn, several debris flows originated on slopes within the fire perimeter.

WALERT assessed areas downstream of slopes burned by the wildfire to determine whether debris flows or flooding could impact infrastructure, structures, and other areas where public safety is a concern. Further information about these hazards is provided in Appendix A.

WALERT looked for historical evidence of debris flows using field reconnaissance, lidar interpretation, and orthoimagery. We also mapped alluvial fans within and downstream of the burn area using lidar data and terrain models generated from digital aerial photogrammetry.

This report is primarily a qualitative assessment of post-wildfire landslide hazards based on our professional judgment and experience. The assessment was performed as part of emergency response with the intent to produce a rapid report for decision-makers, land managers, landowners, and other interested parties.

## WILDFIRE OVERVIEW

The Easy Fire started on July 17, 2024. The fire burned 2,130 acres along the northeast side of State Route (SR) 20 between milepost markers 149 and 154, about 17 air miles west of the town of Mazama (INCI Web, 2024). The entirety of the burn area is on United States Forest Service (USFS) land. The fire burned primarily in dense timber and sparse timber in high elevation rocky terrain.

## HISTORIC DEBRIS FLOW OVERVIEW

There have been several debris flow events in the past that affected the stretch of SR 20 adjacent to the Easy Fire perimeter. Washington Department of Transportation produced a Preliminary Geologic Assessment Memorandum describing some of these events (Allen and Smith, 2014). Documentation details that a debris flow occurred in this area in 2004 and two separate rain events caused debris flows on August 10, 2013 and September 5, 2013 (Allen and Smith, 2014). The August 2013 storm caused at least 10 debris flows in the vicinity of SR 20; the September 2013 storm caused six debris flows east of the August 2013 storm, and east of the Easy Fire burn perimeter. Most recently, at least three debris flows occurred in association with a rain event in August 11–12, 2024. These debris flow events may have occurred in response to post-fire conditions.

The debris flow events in August 2013 were centered in the same vicinity as the August 2024 debris flow events. Two channels that experienced debris flows in August 2013 also experienced debris flows in August 2024. Allen and Smith, 2014, noted that WSDOT Maintenance had not observed debris flows in the 151.7 Milepost (MP) channel prior to 2013, and usually, the creek was small and ran only 2–3 months out of a year. The 152.5 MP channel experienced a debris flow both in August and September 2013. Based on the description and photos in Allen and Smith (2014), the sizes of these two debris flows seem to be substantially smaller than the August 2024 debris flows.

The August 2024 debris flows initiated during an intense, localized storm that occurred while the Easy Fire was still burning. There were at least three separate debris flows that occurred within the burned perimeter (and none noted outside of the Easy Fire vicinity in this area). Aerial investigation of the debris flow events prior to deposit clean up indicated that two of the debris flows mobilized debris that reached SR 20, crossed SR 20 at numerous low points along the road, and traveled down the westbound roadside ditch. The third (southernmost) debris flow barely reached SR 20 and primarily arrested on the fan to the northeast of and upslope from SR 20.

## OBSERVATIONS AND INTERPRETATIONS

WALERT conducted a limited field assessment on August 14, 2024. We specifically focused on areas where wildfire effects on watershed hydrology could put life and property at risk. Our area of focus included slopes along the SR 20 corridor as well as slopes that may direct hazards toward SR 20 (Plate 1). WALERT conducted both remote and field evaluations of the area of focus. Alluvial fans were predominately mapped using lidar data. Where lidar data were absent, terrain models generated from digital aerial photogrammetry were used to map fans.

### Soil burn severity data

The Burned Area Reflectance Classification (BARC) data, a satellite-derived data layer of changes between pre- and post-fire vegetation conditions, were provided and field validated by the USFS to generate a Soil Burn Severity (SBS) map. If you need assistance accessing or analyzing these data, please contact us and we can provide some support.

SBS mapping shows that 383 acres, or 17 percent of the area affected by the Easy Fire, were either unburned or had very low soil burn severity. Approximately 994 acres (43%) experienced low soil burn severity, 754 acres (33%) were moderate in severity, and only 161 acres (7%) were shown to have experienced high burn severity.

### Post-wildfire debris flow hazard assessment

#### MODELING RESULTS

The USGS provided a debris flow modeling assessment for Easy Fire that incorporates the SBS data from the USFS. The debris flow modeling data are typically available on the USGS website within a couple weeks of being generated (https://usgs.maps.arcgis.com/apps/dashboards/c09fa874362e48a9afe79432f2efe6fe). There are various outputs and ways to view these data. If you need assistance accessing or analyzing the debris flow assessment data, please contact us and we can provide support.

Here we will discuss the relative debris flow hazard for hydrologic basins, which combines both probability and volume from the USGS model to provide three different hazard ratings: Low, Moderate, and High. The USGS also models the combined relative debris flow hazard for stream channel segments within basins using the same hazard ratings. We focus our assessment on locations where public safety and infrastructure could be impacted.

The USGS debris flow modeling is based on a modeled storm event with a peak rainfall intensity of 24 mm of rain in a 60-minute period (~1 inch/hr) or 6 mm/15 min (~0.25 inch/15 min). Of note, this model does not consider the effect of rain-on-snow or rapid snowmelt events. Debris flows and flash floods may occur during rain-on-snow or rapid snowmelt events that do not meet the predicted rainfall threshold used in the USGS model.

#### INTERPRETATIONS

The USGS modeling indicates that there are Low and Moderate debris flow hazards in basins throughout the burned area. Notably, most fire-impacted basins that are positioned directly above and drain toward SR 20 have been modeled as Moderate debris flow hazard. The steep mountainside within the fire perimeter is fronted with several alluvial fans. SR 20 is routed across some of these alluvial fans. Air photo review for this assessment and in Allen and Smith (2014) indicate that debris flows inundated many of the alluvial fans in the area before the Easy Fire occurred, indicating the presence of an inherent risk of debris flow activity in this area. The potential for increased runoff, debris flows, and flash floods due to wildfire activity is elevated and may remain elevated for several years after the fire. The steep cliffs will also pose a rock fall hazard in the coming years, especially as the roots of burned trees that anchor onto rocks decompose. Below we outline areas where debris flows and (or) flash flooding could impact the property and infrastructure that we reviewed during this assessment.

#### STATE ROUTE 20 CORRIDOR

Much of the terrain burned during the Easy Fire is located on steep mountain slopes to the northeast of and directly above a section of SR 20 between MP 149.7 and 153.8 (see Plate 1). The drainages on these southwest-facing slopes are typically long, steep, and straight. These drainages direct water and debris onto alluvial fans before feeding into Granite Creek on the west side of SR 20. Our remote and field observations revealed that some of these alluvial fans have experienced debris flows and flooding in the past, consistent with prior work in the same area (Allen and Smith, 2014). Source area proximities, mountain slope gradients, size of transported material (large boulders), and general channel characteristics (relatively straight and confined) suggest that debris flows have the potential to reach SR 20 quickly and with little warning. Where mature conifer forests remain unburned on alluvial fans, energy dispersion by trees can reduce the debris flow hazard to SR 20.

Debris-clearing maintenance operations along SR 20 imply that flooding and debris flows have been an ongoing hazard in the area prior to the fire. South- and southeast-facing slopes in the southern portion of the fire perimeter are positioned above

Swamp Creek, to the east of, and farther from SR 20. Debris flows or flooding events emanating from these slopes would need to travel down Swamp Creek to the Swamp Creek alluvial fan before reaching SR 20.

The points of interest discussed below focus on drainage basins that appear to exhibit the greatest potential for post-fire debris flow activity based on USGS modeling, potential source (initiation) areas, debris flow history, and presence of alluvial/debris fans deposits that coincide with SR 20. Debris flow or flooding activity may emanate from smaller channels/swales positioned between the channel-fan systems detailed below but, considering the abundance of these smaller channels, the debris flow hazards of these smaller channels/swales are not detailed herein. Alluvial fans in this report are named by the milepost value where the apparent active channel on each fan intersects SR 20.

**MP 149.9 (Point 1 on Plate 1) Alluvial Fan**

The contributing basin above the alluvial fan at MP 149.9 was modeled by the USGS as a Moderate debris flow hazard. Considering that this fan and its basin experienced debris flow events in 2004 and in 2013, and that a portion of this basin burned in the Easy Fire, we expect debris flow events to occur here in the future. SR 20 was constructed as a through cut into fan deposits such that much of the fan's surface upstream is located 60 to 70 ft above SR 20. The main (active) alluvial fan channel is oriented to the southwest near the apex of the fan, but a channel diversion was constructed to redirect the channel nearly 90 degrees to the southeast near the base of the fan close to where it crosses the east side of SR 20 (Allen and Smith, 2014, p. 3). Remote review indicates that the main channel is incised approximately 10 ft below the top of the channel berm. This channel was not field reviewed during our site visit in August 2024; however, such a shallow depth of incision would be prone to being overtopped by material entrained in a debris flow. If this were to occur, SR 20 could be impacted, putting public safety at risk. It is our understanding that the portion of the main channel near SR 20 has been engineered (post 2013 event) to convey flow to the southeast in attempts to reduce potential debris flow impact to SR 20.

**MP 150.2 (Point 2 on Plate 1) Alluvial Fan**

The contributing basin above the alluvial fan coincident with MP 150.2 was modeled by the USGS as a Moderate debris flow hazard. All the contributing basin and part of the alluvial fan were burned during the Easy Fire. Historic aerial photos display a swath of the fan's surface missing conifer tree cover. This swath extends from the fan's apex to near SR 20. The missing vegetation coincides with a distinct zone of hummocky terrain displayed in lidar and is likely associated with past debris flow activity. Remote review indicates that main channel confinement is mostly lost and potential for avulsion (i.e. reoccupation of abandoned channels or formation of new channels) is present between the fan's apex and SR 20. Future avulsion is not easy to predict, though typically occurs during flooding and (or) debris flow events when channel pathways get blocked by log jams or debris. If debris flow activity occurs because of post-fire conditions, entrained material egressing from the basin appears to have the greatest potential to mobilize down the northern portion of the alluvial fan and possibly reach SR 20. This potential may increase where tree cover is absent or reduced due to fire activity.

**MP 150.45 (Point 3 on Plate 1) Alluvial Fan**

WALERT mapped a relatively small alluvial fan between MP 150.4 and 150.5. This fan also has a small contributing basin. However, the contributing basin above the fan was modeled by the USGS as a Moderate debris flow hazard and contains a straight channel in relatively close proximity to SR 20. Historic evidence of debris flows was not identified at this location but the potential for a debris flow event to impact the mapped fan and possibly to impact SR 20 is present.

**MP 150.6 (Point 4 on Plate 1) Alluvial Fan**

The contributing basin above the alluvial fan coincident with MP 150.6 was modeled by the USGS as a Moderate debris flow hazard. All the contributing basin and most of the alluvial fan upslope of SR 20 were burned during the Easy Fire. Historic aerial photos display a swath of the fan's surface missing conifer tree cover. This swath extends from the fan's apex to within 500 ft of SR 20. The missing vegetation coincides with lobate terrain on the fan just downslope from a channel bend and may be associated with past debris flow activity overtopping the channel. If debris flow or flood activity occurs because of post-fire conditions, entrained material egressing from the basin appears to have potential to possibly reach SR 20. This potential may increase where tree cover is absent or lost or reduced due to fire activity.

**MP 151.1 (Point 5 on Plate 1) Alluvial Fan**

The contributing basin above the alluvial fan coincident with MP 151.1 was modeled by the USGS as a Moderate debris flow hazard. Almost all of the contributing basin and the majority of the alluvial fan upslope of SR 20 were burned during the Easy Fire. Aerial photo review indicates a swath of the fan's surface is missing conifer tree cover. This swath extends from the fan's apex to within 350 ft of SR 20. We interpret the missing tree cover to be associated with past debris flow activity. Considering that this fan and its basin experienced a debris flow event in 2013, that evidence of historic debris flow activity predates the 2013 event, and that a Moderate debris flow hazard is modeled, we anticipate post-fire debris flow activity to occur on this fan in the

future. Main channel orientation and confinement through the fan's apex suggests that future debris flow activity initially has higher potential to impact the southern, upper portion of the fan. Such activity may reach and pose a risk to public safety associated with SR 20.

**MP 151.3 (Point 6 on Plate 1) Alluvial Fan**

The basin above the alluvial fan coincident with MP 151.3 was modeled by the USGS as a Moderate debris flow hazard. Much of the contributing basin and the upper portion of the fan was burned during the Easy Fire. Aerial photo review shows that the fan's apex is mostly void of mature conifer tree cover. We interpret the missing tree cover to be associated with past debris flow activity. We understand this alluvial fan experienced a debris flow in 2013 that mostly arrested upslope of SR 20 due to various debris dams and channel shifts. However, material from the 2013 event did reach SR 20, filling portions of its ditch. WALERT anticipates that smaller debris flow events reaching the fan in the future may self-arrest before reaching SR 20 but that larger events may reach and impact the highway. A parking lot associated with the Easy Pass Trailhead and the Easy Pass trail are present on the west side of SR 20, farther from the fan's apex.

**MP 151.7 (Point 7 on Plate 1) Alluvial Fan**

The basin above the alluvial fan coincident with MP 151.7 was modeled by the USGS as a Moderate debris flow hazard. This alluvial fan experienced a debris flow both in 2013 and in 2024. The fire burned the majority of the contributing basin to the fan's apex but left vegetation on the fan unburnt. During our site visit, we observed that the August 2024 debris flow event deposited large boulders, sand and gravel, and abundant burned trees and snags. The deposit spread across the forest floor, reached SR 20, and traveled down ditch lines and across the road surface. At least 5 ft of debris were deposited on the SR 20 roadway, with fine sand and wood particles filling the ditch and overtopping into the forest on the downslope side of the highway. This event occurred while this section of SR 20 was closed. If a debris flow event of this magnitude occurs again while the road is open, the risk to public safety would be considerable.

**MP 152.5 (Point 8 on Plate 1) Alluvial Fan**

The USGS modeling indicates the drainage associated with the MP 152.5 alluvial fan has a Moderate debris flow hazard. The well-defined fan is located at the base of a steep, rocky drainage. A debris flow emanated from this drainage and buried a section of SR 20 in at least 10 ft of debris on August 11–12, 2024. Large granitic boulders, some more than 8 ft in diameter, were deposited by the debris flow. Two of these boulders were large enough that WSDOT was forced to blast them into smaller pieces to move them off the roadway and out of the immediate channel.

Approximately 1,000 ft uphill and north of SR 20, the basin channel transitions from a steep, constricted drainage to the lower gradient fan surface. The fan expresses numerous abandoned, secondary channels that indicate the stream has shifted location via avulsion many times in the past. We anticipate avulsion and channel shifting on this fan and, therefore, debris flows may occur in various locations on the fan. The active debris flow history and the USGS modeling implies this alluvial fan will likely continue to experience debris flows, some of which may reach SR 20.

**MP 153.26 (Point 9 on Plate 1) Alluvial Fan**

This alluvial fan was impacted by a debris flow event in August 2024, soon after some of its basin burned. The drainage basin that feeds this fan is modeled as a Moderate debris flow hazard. The Easy Fire burned the lower third of the drainage basin with patchy moderate to high soil burn severity. The main channel in the basin is steep and relatively straight. Where it emerges onto the fan, the primary channel flows along the fan's southern edge in a southerly direction. However, there are numerous abandoned channels that start at the fan's apex and are oriented in a SW-NE direction across the middle of the fan. The presence of these secondary channels as well as the observed roadside position of debris flow material from the August 2024 event indicate that flooding and (or) debris flows occasionally avulse in a southwest direction away from the primary channel. The general lack of primary channel confinement suggests much of the fan's surface is subject to channel shifting and inundation by water and debris. However, the active debris flow history and the USGS modeling implies this alluvial fan will likely continue to be impacted by debris flows, some of which may reach SR 20.

**MP 153.63 (Point 10 on Plate 1) Alluvial Fan**

The basins above this mapped fan are modeled to have Moderate debris flow hazards. The drainage areas above this fan are much smaller than the alluvial fans to the west, described above. The mapped alluvial fan is also smaller and appears less active, as well, based on the lack of hummocks or secondary channels. However, if a debris flow occurred along one of these channels, debris flow material could impact SR 20 where it intersects the alluvial fan.

**MP 153.75 (Point 11 on Plate 1) Swamp Creek Alluvial Fan**

The Easy Fire burned approximately two miles up the Swamp Creek drainage along southeast-facing slopes of Mt. Hardy. Collecting flow from numerous small, steep streams emanating out of the Easy Fire burn, Swamp Creek is the largest, near-fire tributary stream to Granite Creek. The small, steep channels that feed into Swamp Creek drain basins that are modeled as having Low or Moderate debris flow hazards. However, all those basins in closest proximity to SR 20 are Moderate hazards. As westward-draining Swamp Creek nears SR 20, its low gradient alluvial fan surface intersects the base of SR 20's road prism. Considering the distance from the steep slopes and the size of the Swamp Creek basin, the part of the Swamp Creek fan at SR 20 appears to be less likely to be impacted by debris flows than the previously described points above, though may be susceptible to flooding.

## RECOMMENDATIONS

Our assessment indicates that debris flow and flooding events have occurred in this area prior to the 2024 Easy Fire and will likely occur in the future within the burn area. In this report we identify locations where these hazards intersect or are near SR 20 and associated infrastructure and attempt to explain what issues might occur at the points of interest. Not all points of interest were visited by WALERT during this reconnaissance survey, and, where field work did not occur, we rely on remote GIS review and input from other agencies. The areas we discussed are at elevated risk for debris flows and (or) flash flooding from increased runoff during periods of intense precipitation (approximately 0.25 inches of rain in a 15-minute period or one inch of rain in a 60-minute period), rain-on-snow, or rapid snowmelt. These debris flow and flash flood hazards may remain elevated for several years after the fire.

We recommend that both westbound and eastbound lanes of SR 20 as well as the Easy Pass Trailhead and associated parking lot be signed to warn the public of flash flood and debris flows at appropriate, highly visible locations. We recommend that landowners and land managers evaluate the hazards detailed herein and determine forms of mitigation that will act to reduce the potential for debris flows and flooding to impact SR 20. Landowners and land managers may choose to take action to prevent excessive soil erosion and promote revegetation to help mitigate flooding and debris flow hazards and to meet their management and economic goals. The soil burn severity map created and field-validated by the USFS BAER team can be a useful tool to evaluate areas for re-planting. We are willing to help direct users to this map product or provide the data in various formats as needed.

Managers of transportation networks and private landowners should be reminded of the increased likelihood of sediment transport, sediment deposition, and (or) erosion impacts to roads following wildfires, as well as potential issues with blocked culverts. We recommend inspecting any culverts within channels draining areas impacted by the fire both before and after storm events, specifically along SR-20. Blocked culverts can cause additional flooding and exacerbate damages by increasing the amount of erosion during an event. The damage to roads and infrastructure can be minimized by proactively clearing these culverts prior to storms or seasonal snowmelt. We recommend additional and potentially ongoing site-specific evaluations of the alluvial fans along SR-20 to identify potential life safety threats and impacts to infrastructure.

## REFERENCES

Allen, T. M.; Smith, E. L., 2014, SR 20 MP 147–171 Debris Flows, DMB053: Washington State Department of Transportation unpublished memorandum, 48 p.

INCI Web, 2024, Easy Fire [webpage]. INCI Web. [accessed October 2, 2024 at https://inciweb.wildfire.gov/incident-information/waowf-easy-fire].

## LIMITATIONS

WALERT aims to quickly identify and assess geologic hazards associated with wildfires to inform decision making and help focus the efforts of local officials and residents who may be impacted by post-wildfire hazards. All observations and interpretations are based on empirical evidence and local knowledge. Not all areas or hazards were evaluated. We encourage landowners, land managers, and those potentially at risk from post-wildfire hazards to consult qualified professionals for site-specific analysis of geological hazards and flood risk and prepare accordingly.

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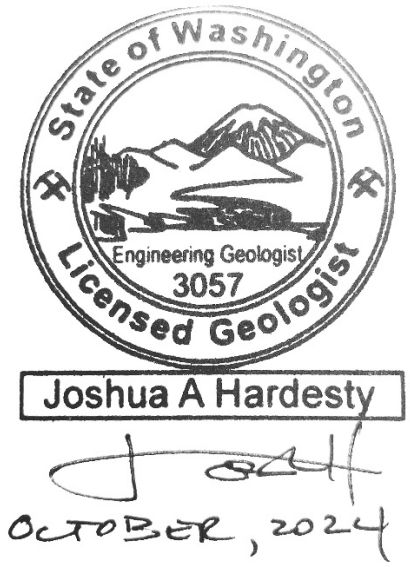
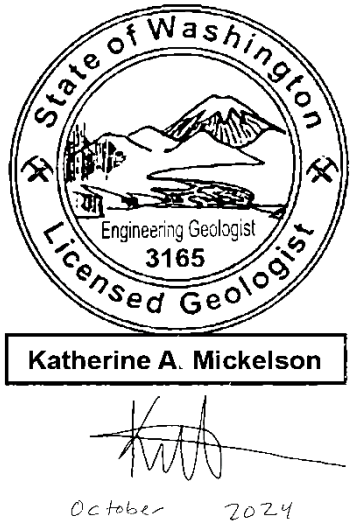


# APPENDIX A: GEOLOGICAL BACKGROUND

## Hillslope processes

A variety of factors contribute to the probability of debris flows occurring in burned areas. These include hillslope gradient, channel convergence, availability of fine sediments, severity of hydrophobic (water repellant) soil conditions, burn severity, and the removal of a protective canopy and diminished root strength caused by fire.

Hydrophobic soil conditions in burned areas can increase water runoff potential on hillslopes during a storm by preventing water from infiltrating into the subsurface. Overland flow can result in rills and gullies that further channel water downhill.

When effective ground cover has been denuded after intense fire, soils are also exposed to erosive forces such as raindrop impact and wind. The steepest slopes are most prone to erosion, particularly where soils are shallow or where there is a restrictive subsurface layer such as bedrock. Soils that have developed in volcanic ash and glacial till are easily detachable, having low cohesion and structure, and contain relatively low amounts of organics, resulting in moderately thin topsoil horizons.

## Flash floods and debris flows

Debris flows have a specific geologic definition that is often misused by the media, the public, and scientists. Most observed "debris flows" are actually sediment-laden flash floods known as hyperconcentrated flows (HCFs). In the following sections, we explain the differences between these two types of flows.

### FLASH FLOODS

Flash floods, especially those that originate from recently burned areas, are often described as "debris flows" due to the sediment-laden water transporting woody and vegetative debris, trash, gravel, cobbles, and occasionally boulders. Though "debris flow" may be an observer's description of the event, a true debris flow has specific properties, behaviors, and characteristics that differentiate it from a flash flood. An HCF is the transition between a flash flood and a debris flow. One way geologists differentiate the three is by the percent of sediment (by volume) carried by the flowing water. A flood contains less than 5 percent sediment by volume, an HCF carries around 5 to 60 percent sediment by volume, and a debris flow exceeds 50 percent sediment by volume.

### DEBRIS FLOWS

Debris flows are often described as having the appearance of flowing, wet concrete. These flows travel quickly in steep, convergent channels. A moving debris flow can be very loud because it can buoy cobbles, boulders, and debris to the front and sides of the flow. The sound is often compared to that of a freight train and may cause the ground to vibrate. In a post-fire situation, a debris flow may start as a flash flood surge that picks up sufficient sediment to transform into an HCF and, if soil and slope conditions are suitable, can transform into a debris flow.

Debris flow deposits tend to be distinct and include channel-adjacent levees of gravel, cobbles, and boulders. Channel-adjacent trees display upslope damage such as scarring on bark from rock or debris impact. Mud and gravel may be splashed onto trees and other channel-adjacent objects. Because of the ability of a debris flow to buoy these materials to the front of the moving mass, debris flows are extremely dangerous to public safety and infrastructure.

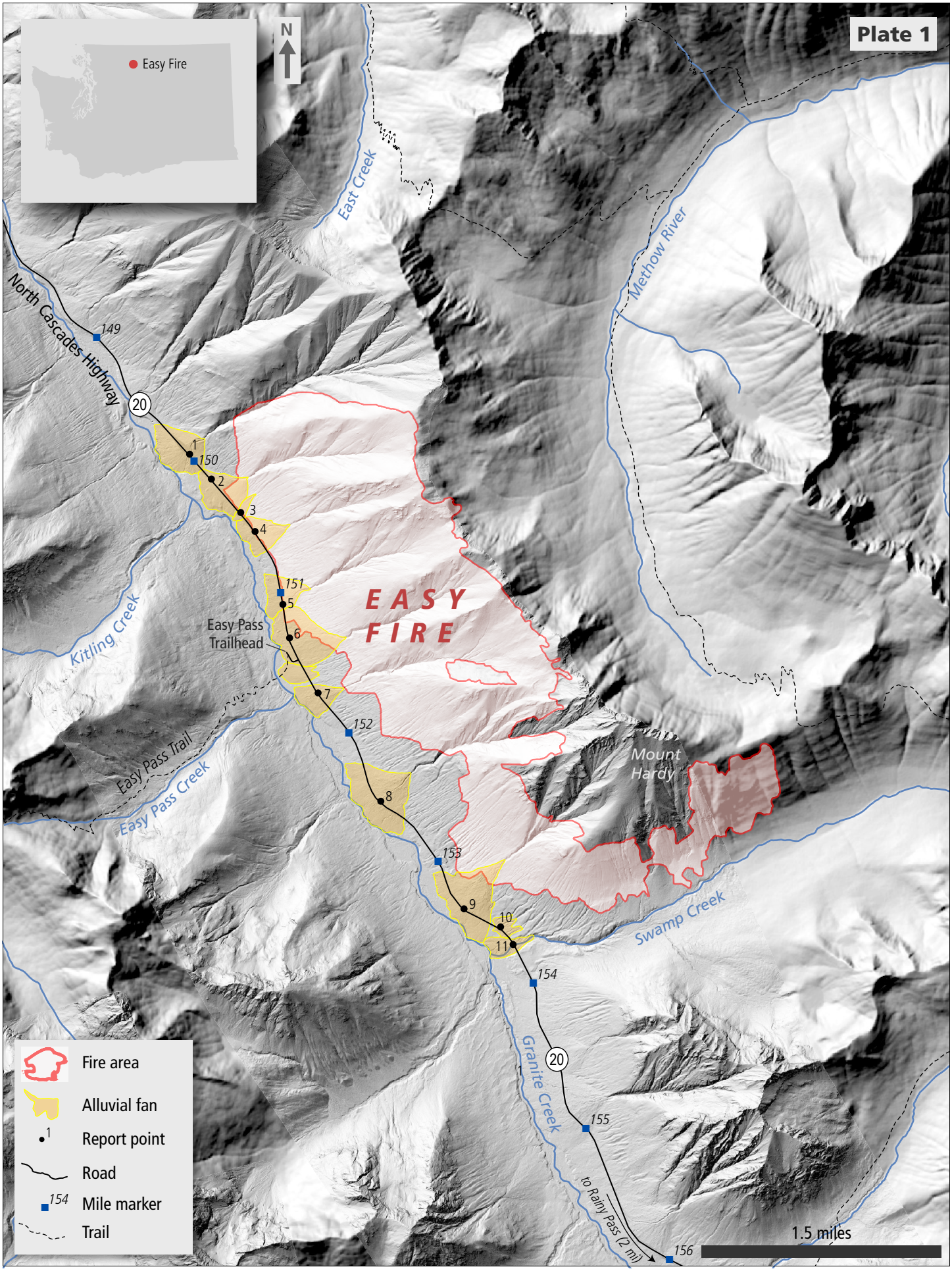
## Alluvial fans

Alluvial fans are low-gradient, cone-shaped deposits that consist of sediment and debris. These features often accumulate immediately below a significant change in channel gradient and (or) valley confinement. This might occur at the mouth of a canyon or steep channel that drains from mountainous terrain and emerges onto a low gradient area such as a flood plain. Sediment on the alluvial fan is deposited by streams, floods, HCFs, and (or) debris flows and is typically sourced from a single channel.

Alluvial fans are attractive locations to build cabins and homes due to the slight elevation above the flood plain. However, alluvial fans are active depositional areas that accumulate sediment over time. The sediment can be deposited both slowly, such as during a spring melt when high streamflow transports and deposits fine sediment on the fan, or quickly, when a flash flood, HCF, or debris flow transports sediment and debris to the fan.

**An information flyer about alluvial fan hazards is available on our website in both English and Spanish**

- https://www.dnr.wa.gov/publications/ger_fs_alluvial_fans.pdf
- https://www.dnr.wa.gov/publications/ger_fs_alluvial_fans_esp.pdf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Easy Fire
N
East Creek
Methow River
North Cascades Highway
149
20
1
150
2
3
4
151
5
6
7
152
8
153
9
10
11
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155
156
EASY FIRE
Easy Pass Trailhead
Kitling Creek
Easy Pass Trail
Easy Pass Creek
Mount Hardy
Swamp Creek
Granite Creek
to Rainy Pass (2 mi)
Fire area
Alluvial fan
Report point
Road
Mile marker
Trail
1.5 miles