Swift Creek landslide components

General landslide overview

The landslide on Sumas Mountain where the sediment in Swift Creek originates is massive. The active part of the slide is approximately one mile long by one-quarter mile wide and encompasses approximately 225 acres, with an estimated volume of 68 million cubic yards. This landslide is slowly moving down Sumas Mountain within a layer of slippery serpentinite bedrock. Precipitation that falls within the watershed encompassing this landslide gravitates to the toe of the slide, where the south fork of Swift Creek emerges.

As the water flows along the surface of the landslide and emerges from the toe of the landslide, it picks up large amounts of sediment and debris (e.g. boulders, trees) and carries it downstream. Then as Swift Creek flows down slope onto its alluvial fan, the terrain and stream gradient flattens out, and the water velocity slows, resulting in the Creek dropping much of the sediment and debris it is carrying. Suspended fine particles of sediment then continue downstream to the Sumas River and can eventually be carried by natural forces to the Canadian Border, some 10 river miles to the north.

Labeled landslide cross-section diagram components

The diagram components are generally listed from upslope to downslope and nearer to the surface to further below the surface.

Head Scarp

Steep area of exposed bedrock at the top (head) of the landslide.

Serpentine Landslide Mass

The 225 acre landslide is made of serpentine rock and sits on top of slippery serpentine bedrock. The landslide is slowly moving downhill in segments.

Serpentine Bedrock

Sumas Mountain is made from an amalgamation of serpentine bedrock which is beneath the slowly moving landslide mass.

Glacial Sediments

Glacial sediments remain on top of the landslide mass segments.

Rafted Sedimentary Bedrock Blocks

At the lower segments of the landslide mass, sedimentary bedrock has been lifted and is sitting on top of the glacial sediments and landslide mass.

Landslide Toe

This is the downslope end of the landslide and is the more easily identified portion of the landslide on Sumas Mountain.

Sedimentary Bedrock (Sandstone/Conglomerates)

Downslope, below the landslide toe is a layer of sedimentary bedrock that sits on top of the serpentine bedrock.

Fan Apex

The alluvial fan begins at the Fan Apex (or the downslope base of Sumas Mountain) and extends westward from the Sedimentary Bedrock.

Alluvium & glacial sediments

The alluvial fan extending from the Fan Apex westward is composed of Swift Creek deposits and glacial sediments.