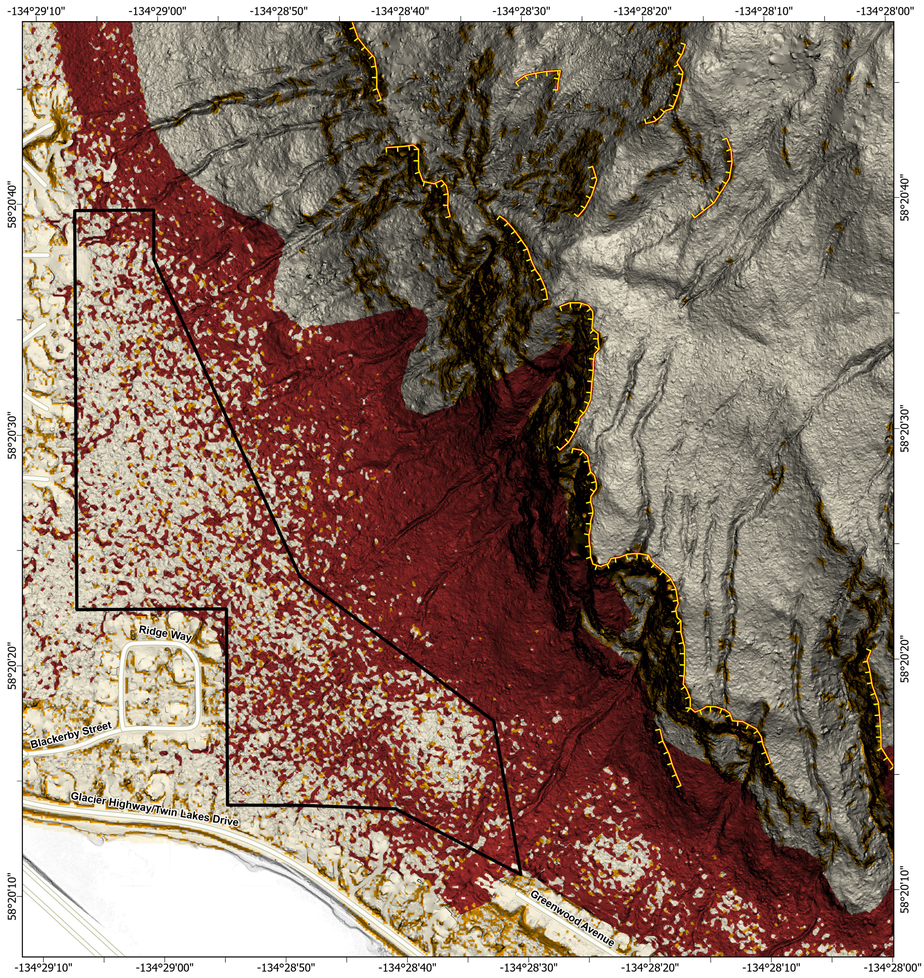
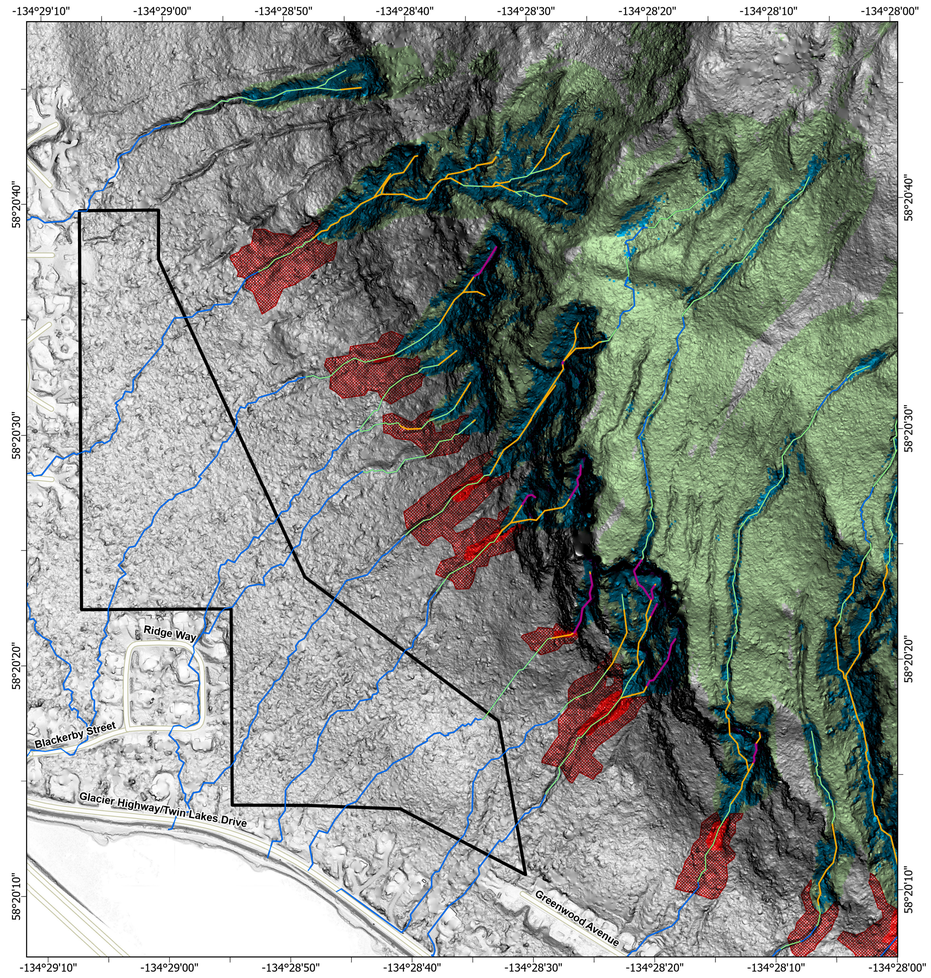
ALASKA DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

Preliminary Interpretive Report 2024-7
Nicolazzo and Larsen, 2025
SHEET 1 OF 1
Explanatory report accompanies map
http://doi.org/10.14509/31275





EXPLANATION

The Shallow Landslide Susceptibility map represents movement of a thin layer of slope materials (soils and bedrock mapped by Ford and Brew, 1973) that have a shallow failure plane. Movement types may include slumps, translational slides, earth flows, and complex combinations of these types. This map was prepared following protocols created by Burns and others (2012) and is based on the calculated factor of safety (FOS) for each soil type and slope angle. FOS calculations use assumed input values based on our best judgment and with a conservative approach.

The Channelized Debris Flow Susceptibility map depicts analyzed debris flow initiation catchments, transportation potential by streams, and the modeled extents of deposits. These zones were simulated following protocols created by Burns and others (2022) and are based on slope characteristics and the proximity to streams. Stabilization from vegetation is not included in the analyses. Because there are no mapped debris flows in the area, the map is based on an assumed "typical" event. The "extreme" event is scaled up from the assumed typical event.

The susceptibility maps are intended to provide users with relative hazard information regarding possible slope movement in the area, to guide regional and site-specific investigations for future development, and to assist in regional planning. They are not intended to replace site-specific engineering analyses.

The susceptibility maps are not regulatory. Revisions can happen when new data or other information regarding factors that affect landslide and debris flow susceptibility are acquired or when future (new) events occur. It is possible that areas susceptible to landslides or debris flows were not identified on these maps.

SHALLOW LANDSLIDE SUSCEPTIBILITY MAP

SUSCEPTIBILITY

- ROAD CENTERLINES
- PARCEL
- SCARP hachures point downslope
- HIGH: FOS less than 1.25
- MODERATE: FOS 1.25 to < 1.5
- LOW TO NONE: 1.5 and greater

CHANNELIZED DEBRIS FLOW SUSCEPTIBILITY MAP

INITIATION POTENTIAL
- HIGH
- MODERATE
- LOW

TRANSPORT POTENTIAL
- HIGH
- MODERATE
- LOW
- VERY LOW TO NONE

INUNDATION
- EXTREME EVENT
- TYPICAL EVENT

LIMITATIONS

The Shallow Landslide Susceptibility and Channelized Debris Flow Susceptibility maps presented here were developed using input from many sources. Several limitations are worth noting and underscore that these hazard maps are designed for regional application and should not be used as an alternative to site-specific studies.

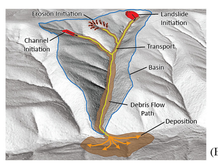
- The susceptibility maps presented here are heavily based on lidar data. Lidar-based mapping is a "snapshot" view of the landscape at the time the lidar dataset was collected and does not represent changes that may have occurred after it was collected. Limitations in lidar collection and processing also apply to these maps.
- Due to the obscuring vegetation cover in available aerial imagery, limited field verification, and reliance on lidar-based mapping, some landslides and debris flow deposits may have been misidentified or not mapped. Mapping may change as new information becomes available and as new landslides and debris flows occur.
- The Shallow Landslide Susceptibility Map was based on calculated factor of safety, which incorporates previously mapped soil types and limited field data. Depth to failure, depth to groundwater, and soil engineering properties were assumed based on our best judgment and with a conservative approach; however, local conditions may vary significantly from the values used to make this map.
- Because there are no mapped debris flows in the area, the Channelized Debris Flow Susceptibility map is based on an assumed "typical" event size that does not represent an actual, historical event that occurred in the area. The "extreme" event is scaled up from the assumed typical event.

Shallow Landslide Susceptibility

ROTATIONAL LANDSLIDE | TRANSLATIONAL LANDSLIDE | ROCKFALL | ROCK TOPPLE | EARTH FLOW

Thumbnail examples by Highland, 2004

Channelized Debris Flow Susceptibility



(Burns and others, 2022)

Mass Movement Potential at Blackerby Land Parcel, Juneau, Alaska

by

J.A. Nicolazzo[1] and M.C. Larsen[1]

2025

Location of Map Area

SCALE 1:4,000

0 40 80 160 240 320 400 Meters

0 200 400 800 1,200 1,600 2,000 Feet

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Basemap hillshade raster derived from:
Zechmann, J.M. and others (2024)
Projection:
Universal Transverse Mercator Zone 8N
Datum:
North American Datum of 1983

Field investigation by:
M.C. Larsen, J.A. Nicolazzo (2023)
GIS raster layers created by:
J.A. Nicolazzo, M.C. Larsen (2023)
Cartography by:
J.A. Nicolazzo (2024)
Cartographic review by:
A.E. Macpherson (2024)

REFERENCES CITED

Burns, W.J., Franczyk, J.J., Calhoun, N.C., 2022, Protocol for debris flow susceptibility mapping: Oregon Department of Geology and Mineral Industries Special Paper 53, 89 p. https://pubs.oregon.gov/dogami/sp/SP-53/p-SP-53.htm

Burns, W.J., Madin, I.P., and Mickelson, K.A., 2012, Protocol for shallow landslide susceptibility mapping: Oregon Department of Geology and Mineral Industries Special Paper 45, 32 p. https://pubs.oregon.gov/dogami/sp/p-SP-45.htm

Ford, A.B., and Brew, D.A., 1973, Preliminary geologic and metamorphic-isograd map of the Juneau B-2 Quadrangle, Alaska: U.S. Geological Survey Miscellaneous Field Studies Map 527, 1 sheet, scale 1:31,680. https://dggs.alaska.gov/pubs/id/13250

Highland, Lynn, compiler, 2004, Landslide types and processes, U.S. Geological Fact Sheet 2004-3072 (ver. 1.1), 4 p. https://pubs.usgs.gov/fs/2004/3072/pdf/fs2004-3072.pdf

Zechmann, J.M, Larsen, M.C., and Wikstrom Jones, K.M., 2024, Lidar-derived elevation data for Blackerby parcel, Juneau, Southeast, Alaska, collected July 12, 2023: Alaska Division of Geological & Geophysical Surveys Raw Data File 2024-8, 8 p. https://doi.org/10.14509/31161

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