

BARRY ARM LANDSLIDE INTERAGENCY INFORMATION STATEMENT

U.S. Geological Survey, Alaska Division of Geological & Geophysical Surveys, National Tsunami Warning Center, Alaska Earthquake Center

Friday, 5 August 2022, 11 AM AKDT (19:00 UTC)

61°09'10" N 148°09'15" W

Executive Summary

- Previous analysis from late June 2022 revealed up to 11 cm (4.3 in) of movement on a one-half square mile area of the Barry Arm landslide immediately above the terminus of Barry Glacier.
- A recent analysis of satellite imagery from July shows that the rate of movement has slowed or ceased.
- It is unknown if this motion will be renewed in the coming weeks or months.
- The interagency team will continue to monitor the landslide area and the water beneath it with existing instrumentation and satellite data. Tsunami warning capability is being tested, but not yet available.

Current observations

On June 29, 2002, we reported that analysis of Interferometric Synthetic Aperture Radar (InSAR) data obtained by the RADARSAT-2 satellite revealed local ground movement of a portion of the Barry Arm landslide adjacent to the Barry Glacier terminus. The movement was identified in satellite scenes from May 16 through June 16, 2022. New analysis indicates that the rate of movement slowed between June 9 and July 3, 2022. Movement rates further decelerated between July 3 and July 27, 2022.

Retrospective analysis of InSAR data for the Barry Arm landslide reveals that this pattern of localized acceleration and slowing may be common. Other published studies at Barry Arm have identified ground movement at similar or much greater rates since 2008. Analysis of other data, including high-resolution imagery and seismic signals, reveals no visual changes or increases in seismic activity.

Prognosis

Localized ground movement is not necessarily a precursor to partial or complete failure of the Barry Arm landslide. If the ground movement pattern changes, it would also be seen by other monitoring instrumentation and in satellite imagery. The combined use of these monitoring efforts may allow for the detection of early movement of catastrophic landslide failure and permit advance notice of increasing instability.

Current monitoring

There is a local monitoring network in Barry Arm that includes two seismometers, an infrasound array, a ground-based radar, several weather stations, and four cameras. In addition, there is an infrasound array located in the town of Whittier, Alaska, approximately 50 km (31 miles) from the Barry Arm landslide. The National Tsunami Warning Center (NTWC) also operates three water level sensors in Barry Arm.

Systematic monitoring of optical imagery and remote sensing data, including InSAR, is conducted throughout the year. New satellite observations are available bi-monthly with favorable atmospheric conditions.

There is currently no operational real-time warning system for the Barry Arm landslide and potential tsunami. Updates on the status of the landslide as determined by current monitoring capabilities will be provided through the Alaska Division of Geological & Geophysical Surveys Barry Arm landslide webpage and email list (linked below).

Background

The Barry Arm landslide is a large (~500 M m³ or 650 M yd³) landslide located in the northwestern corner of Prince William Sound, Alaska. Rapid, catastrophic failure of the landslide could generate a tsunami that would be life-threatening for anyone in Barry Arm, Harriman Fiord, and parts of Port Wells. A significant risk might also exist in other, more distal locations of western Prince William Sound, including the town of Whittier, Alaska.

The existence of the landslide is evident in imagery dating back to the 1920s. Slow ground motion has been documented going back several decades. Increased movement was documented during the rapid recession of the Barry Glacier from 2010 – 2016, with observed rates up to 26 ± 3 m/yr observed from May 2010 to September 2013. Deformation rates returned to a background level of approximately 1.3 ± 0.7 m/yr in March of 2017 as the retreat of the Barry Glacier ceased.

Additional Information

Visit the following agencies for information on the Barry Arm landslide and how you can prepare for a tsunami and other emergencies.

Alaska Division of Geological & Geophysical Surveys: The most up-to-date source of information on the Barry Arm landslide, including links to partner agencies, available at <https://dggs.alaska.gov/hazards/barry-arm-landslide.html>.

National Tsunami Warning Center: Information on tsunami preparedness, available at <https://tsunami.gov/>.

U.S. Geological Survey: Information on the Barry Arm landslide and tsunami monitoring, with links to related science and publications. <https://www.usgs.gov/programs/landslide-hazards/science/barry-arm-alaska-landslide-and-tsunami-monitoring>

Alaska Earthquake Center: Information on earthquake preparedness, available at <https://earthquake.alaska.edu>.

National Weather Service: Current tsunami alerts, available at <https://www.weather.gov/safety/tsunami-alerts>.

SUBSCRIBE TO BARRY ARM UPDATE MESSAGES by email: <https://list.state.ak.us/mailman/listinfo/barryarm>

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