LANDSLIDE AREAS IN WARD COUNTY, NORTH DAKOTA

Christopher A. Maike, Fred J. Anderson, Levi D. Moxness, and Edward C. Murphy

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LANDSLIDES IN WARD COUNTY

Landslides are masses of rocks and soil that have tumbled or slid down a slope under their own weight. These geological features can destroy buildings, roads, railroads, bridges, canals, pipelines, transmission lines, and other types of infrastructure. Landslides are generally characterized in the field as deep, narrow, earth slides (the type that occur from a point along a bench (e.g., the eroded bank of a road or highway). The bed of the slide may be relatively intact, if it is a relatively common phenomenon. However, in many cases, new landslides are generally characterized by a fresh,❶ exposed rock surface and a smooth, steepened bed. These slides are typically caused by a variety of factors, including rainfall, snowmelt, and human activities such as mining, construction, or agricultural practices.

Landslides in Ward County were mapped from USGS data collected from October 2015 to November 2016 along with aerial imagery from June 2016 and a complete set of historical aerial photographs that were taken in May, 1949 at a scale of 1:24,000. A comparative map of these photographs was taken when known. Slide scars on the photos allowed for mapping of small landslides. Vegetation is used in the identification of slide scarps as trees and bushes are often aligned in a particular pattern. Location, presence, and accumulation of trees and vegetation can be used to identify slide scarps. This information was digitized and compared to historical aerial photographs and aerial imagery to identify additional landslide areas.

Figure 1. Distribution of landslides mapped in Ward County. Total mapping of slides (278) cover less than 100 acres. There are many slides (110) that are over 50 acres in size.

A total of 66 landslide areas were identified in Ward County, including 63 known landslides and three landslide areas. Of these landslides, 12 are considered small and 54 are considered medium to large. The largest landslide area, known as the Badlands Formation, is located in the Missouri River Valley. The Badlands Formation is known for its dramatic landscape features, including steep cliffs, deep canyons, and varied topography.

Explanatory Notes:
1. Landslide Deposits:
An area of material that has moved downslope. Includes rock, debris, and areas of erosion.

Abandoned Mine Lands:
Surface may be undisturbed by soils created by the underground mining of iron. Collapse at the mine site is often caused by surface subsidence or exposure of the subsurface.

Abandoned Mine Lands Location approximate current conditions:
- Abandoned Mine Lands (AMI) locations are determined by the North Dakota Public Service Commission’s Abandoned Mine Lands Program.

The study area includes the westernmost part of Ward County, which is characterized by a complex landscape, including rolling hills, flat plains, and steep cliffs. The study area is located within the Missouri River Valley, which is subject to frequent flooding and landslides. The study area is also subject to erosion, landslides, and other forms of erosion, which can affect the stability of the landscape.

Several landslides are located along the Missouri River, which flow through the study area. The Missouri River is subject to periodic flooding, which can cause landslides and other forms of erosion. The study area is also subject to periodic heavy rainfall, which can cause landslides and other forms of erosion.

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