UTAH GEOLOGICAL SURVEY
a division of
Utah Department of Natural Resources
in cooperation with
Bryce Canyon Association
and **National Park Service**

Plate 7
Utah Geological Survey Special Study 178
Bryce Canyon National Park Geologic-Hazard Study Area

COLLAPSIBLE SOIL SUSCEPTIBILITY
BRYCE CANYON NATIONAL PARK AND VICINITY
GARFIELD AND KANE COUNTIES, UTAH

by

Tyler R. Knudsen

2026

EXPLANATION

H — **Highly Collapsible Soil –** Rapidly deposited, Holocene-age alluvial units (typically geologic-map unit Qaf_1) with reported low densities (< 85 lbs/ft^3), abundant fine-grained material in the clay to fine-sand range as reported by the NRCS, and/or soils with reported collapse values greater than or equal to 5 percent.

SU1 — **Collapsible Soil 1 –** Late Pleistocene to Holocene alluvial-fan units (Qafy and some Qafc) with a genesis and texture permissive of collapse or reported collapse data indicate values greater than or equal to 3 percent. Collapsible soils are unlikely in areas continually subjected to saturation or flooding.

SU2 — **Collapsible Soil 2 –** Unconsolidated geologic units that either (1) lack collapse data but have other geotechnical information (chiefly low unit weight and moisture content) indicative of collapse-susceptible material, or (2) collapse data indicate values less than 3 percent. Collapsible soils are unlikely in areas continually subjected to saturation or flooding.

SU3 — **Collapsible Soil 3 –** Unconsolidated deposits where no or limited geotechnical data are available, but have a genesis or texture susceptible to collapse (chiefly geologically young alluvial, colluvial, and eolian deposits). Collapsible soils are unlikely in areas continually subjected to saturation or flooding.

SU4 — **Collapsible Soil 4 –** Unconsolidated, geologically older deposits where no or limited geotechnical data are available, but have a genesis or texture susceptible to collapse. Because of their age, these deposits have experienced greater exposure to natural wetting and may have already experienced collapse, or the deposits may have become cemented by secondary calcium carbonate or other soluble minerals, making them less susceptible to collapse.

Bryce Canyon National Park boundary

The Utah Department of Natural Resources, Utah Geological Survey, makes no warranty, expressed or implied, regarding the suitability of this product for a particular use, and does not guarantee accuracy or completeness of the data. The Utah Department of Natural Resources, Utah Geological Survey, shall not be liable under any circumstances for any direct, indirect, special, incidental, or consequential damages with respect to claims by users of this product. For use at 1:24,000 scale.

This mapping was funded by the Utah Geological Survey and the Bryce Canyon Association, and facilitated by the National Park Service, U.S. Department of the Interior. The views and conclusions contained in this document are those of the author and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the Bryce Canyon Association or the U.S. Government. These maps and explanatory information are submitted for publication with the understanding that the Bryce Canyon Association and the U.S. Government are authorized to reproduce and distribute reprints for their use.

SCALE 1:24,000

1 0.5 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

APPROXIMATE MEAN DECLINATION, 2026

7.5' Quadrangle Index

Wilson Peak | Bryce Canyon | Tropic Canyon
Tropic Reservoir | Bryce Point | Cannonville
Podunk Creek | Rainbow Point | Bull Valley Gorge

Map Location

Base from USGS US Topo Bryce Canyon, Tropic Canyon, Tropic Reservoir, Bryce Point, Cannonville, Podunk Creek, and Rainbow Point 7.5' Quadrangles (2020)
Projection: UTM Zone 12
Datum: NAD 1983

Project Manager: Steve Bowman
GIS and Cartography: Tyler Knudsen, Gordon Douglass, and Kristi Rasmussen

Utah Geological Survey
1594 West North Temple, Suite 3110
Salt Lake City, UT 84116
(801) 537-3300
geology.utah.gov

This map was created from geographic information system (GIS) data.

https://doi.org/10.34191/SS-178