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

Plate 4
Utah Geological Survey Special Study 178
Bryce Canyon National Park Geologic-Hazard Study Area

SHALLOW GROUNDWATER SUSCEPTIBILITY BRYCE CANYON NATIONAL PARK AND VICINITY GARFIELD AND KANE COUNTIES, UTAH

by

Tyler R. Knudsen

2026

EXPLANATION

S1 **Shallow Groundwater Unit 1 –** Areas identified as potentially having shallow groundwater or developing shallow groundwater. Includes naturally wet soils mapped by the Natural Resources Conservation Service as having a groundwater depth less than or equal to 5 feet (≤ 1.5 m) and soils classified as poorly drained or frequently irrigated where water well or geotechnical data indicates a significant area of permanent shallow groundwater (less than or equal to 10 feet [≤ 3 m]). Also includes areas where field observations indicate shallow groundwater, for example wetlands, springs, vegetation. Construction in these areas will likely encounter shallow groundwater at depths less than or equal to 10 feet (≤ 3 m), and basements and other water-sensitive underground facilities are not recommended without adequate drainage or other protection. Urbanization, development, landscape irrigation, wastewater disposal, and other sources of urban runoff may cause groundwater levels to rise even higher in these areas.

S2 **Shallow Groundwater Unit 2 –** Poorly drained, generally fine-grained soils mapped by the Natural Resources Conservation Service that may develop shallow groundwater locally when rates of water application exceed the soil's drainage capacity or geotechnical data indicates groundwater at depths of 10 to 50 feet (3–15 m) below the surface. Subsurface drains are frequently required to prevent these soils from becoming saturated. Because these soils naturally drain slowly, they may remain wet for most of the year, even though water is applied only during the growing season. Permanent shallow groundwater is possible following urbanization or development.

S3 **Shallow Groundwater Unit 3 –** Moderately to freely draining soils mapped by the Natural Resources Conservation Service that are commonly irrigated for agricultural purposes or where geotechnical data indicates no shallow groundwater 50 feet (15 m) below the surface and where no geotechnical data are available. Where high rates of water application occur, these soils may develop seasonally shallow groundwater, but typically drain quickly once water application stops or is reduced below the soil's drainage capacity. Seasonal or transient shallow groundwater is possible especially following urbanization or development; landscape irrigation, wastewater disposal, and other sources of urban runoff may cause groundwater levels to rise even higher in these areas.

Bryce Canyon National Park boundary

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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

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