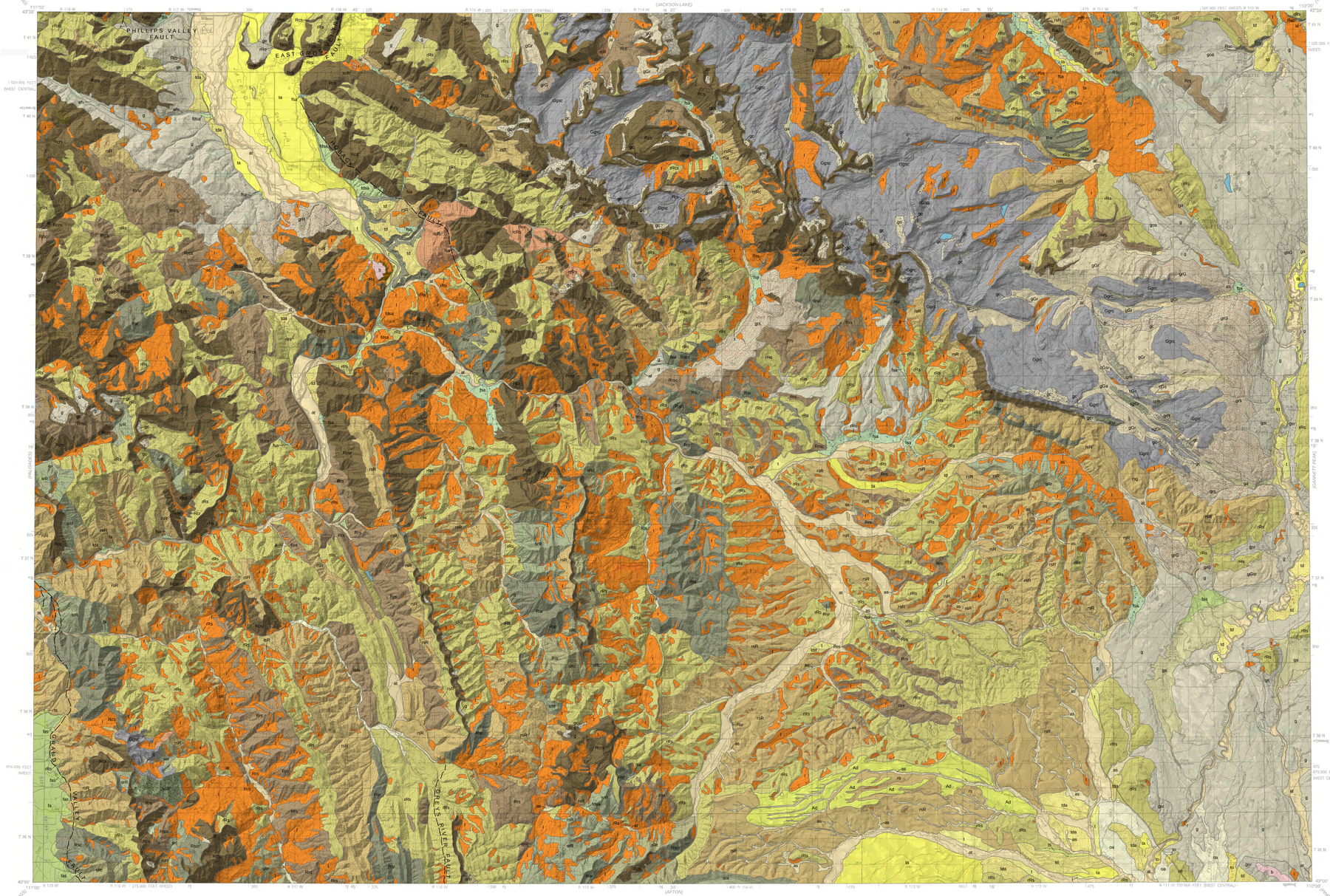
WYOMING STATE GEOLOGICAL SURVEY
Thomas A. Drean, Director and State Geologist
Laramie, Wyoming

Interpreting the past providing for the future

OPEN FILE REPORT 2016-6
Jackson 1:100,000-scale
Surficial Geologic Map



EXPLANATION

DESCRIPTION AND CLASSIFICATION OF MAP UNITS

Alluvium—Unconsolidated detrital material deposited during recent geologic time by a stream or other body of running water, as a sorted or semi-sorted sediment in the bed of a stream or on its floodplain or delta, or as a cone or fan at the base of a mountain slope; stream and river deposits. Does not include subaqueous deposits in seas, estuaries, lakes, or ponds

- Alluvium (**a**)
- Alluvium and alluvial fan deposits with minor components of slopewash (**afs**)
- Alluvium and slopewash (**as**)
- Alluvium and terrace deposits (**at**)

Old alluvial plain—A broad, relatively flat deposit formed by the regional erosion of coalescing alluvium and associated alluvial deposits

- Dissected old alluvial plain (**Ad**)

Terrace deposits—Relict alluvial deposits on relatively flat, horizontal, or gently inclined surfaces which are bounded by a steeper ascending slope on one side, and a steeper descending slope on the opposite side

- Terrace deposits (**t**)
- Terrace deposits and alluvium (**ta**)
- Terrace deposits and glacial outwash (**to**)
- Terrace deposits and slopewash (**ts**)
- Dissected terrace deposits (**td**) with minor components of alluvium (**tda**)

Alluvial fan deposits—Fan-shaped deposits made by streams or debris flows, where they have run out into a level (or nearly level) plain

- Alluvial fan deposits (**f**)
- Dissected alluvial fan deposits with minor components of alluvium (**fda**), slopewash, (**fds**), or slopewash and alluvium (**fdsa**)
- Alluvial fan deposits and alluvium (**fa**) with minor components of slopewash (**fas**)
- Alluvial fan and slopewash deposits (**fs**) with minor components of alluvium (**fsa**)

Bench deposit—A long, narrow, comparatively level area bounded by steeper slopes above and below

- Bench deposit (**b**)

Landslide deposits—Soil and rock material that has moved downslope, usually en masse, under gravitational influence; earth and rock which become loosened from a hillside, and slide, flow, or fall down the slope

- Landslide deposits (**l**)

Glacial deposits—Deposits that have been formed through glacial action, such as till and moraine; at higher elevations deposits may also include rock glaciers

- Glacial deposits (**g**)
- Glacial deposits and alluvium (**ga**)
- Glacial deposits and colluvium (**gc**), at higher elevations these deposits may include rock glaciers
- Glacial deposits and eolian deposits (**ge**)
- Glacial deposits and outwash deposits with minor components of alluvium (**goa**)
- Glacial deposits and glaciated bedrock outcrops (**gG**) with minor components of alluvium (**gGa**), residuum (**gGr**), or slopewash and residuum (**gGsr**)
- Glacial deposits and residuum with minor components of bedrock outcrops (**grR**), glaciated bedrock outcrops (**grG**), or slopewash (**grs**)
- Glacial deposits and slopewash (**gs**) with minor components of glaciated bedrock outcrops (**gsG**), or residuum (**gsr**)

Glaciated bedrock outcrops—Bedrock that has been scoured and carved out by glacial action, such as cirques and horns

- Glaciated bedrock outcrops and glacial deposits with minor components of residuum and colluvium (**Ggrc**), or slopewash and colluvium (**Ggsc**)

Glacial outwash—Stratified detritus deposited by streams in front of the end moraine or margin of a glacier

- Glacial outwash and alluvium (**oa**)

Periglacial deposits—Deposits related to conditions adjacent to glacial margins, such as ice wedges, solifluction, and patterned ground

- Periglacial deposits and residuum with minor components of bedrock outcrops (**qrR**)

Slopewash and colluvium—Slopewash is soil and rock material that has moved down a slope by gravity, assisted by running water. Colluvium is a loose, heterogeneous, and incoherent mass of soil material and/or rock fragments deposited by rainwash, sheetwash, or slow continuous downslope creep, usually at the foot of a cliff or on the surface of a slope, and deposited there chiefly by gravity

- Slopewash and alluvium (**sa**) with minor components of residuum (**sar**)
- Slopewash and bedrock outcrops with minor components of colluvium (**sRc**), or residuum (**sRr**)
- Slopewash and colluvium with minor components of bedrock outcrops (**scR**)
- Slopewash and glacial deposits with glaciated bedrock outcrops and residuum (**sgGr**)
- Slopewash and residuum with minor components of alluvium (**sra**), bedrock outcrops (**srR**), or colluvium (**src**)
- Colluvium and glaciated bedrock outcrops with slopewash (**cGs**), slopewash and residuum (**cGsr**), or slopewash and glacial deposits (**cGsg**)
- Colluvium and slopewash with minor components or residuum (**csr**)

Residuum—A residual deposit remaining in place after the decomposition of bedrock. Residuum is an accumulation of rock debris formed by weathering and remaining essentially in place after all but the least soluble constituents have been removed, usually forming a comparatively thin surface layer concealing the unweathered or partially altered bedrock below

- Residuum and bedrock outcrops (**rR**) with minor components of colluvium and slopewash (**rRcs**), colian deposits (**rRe**), slopewash (**rRs**), slopewash and colluvium (**rRsc**), or slopewash and eolian deposits (**rRse**)
- Residuum and colluvium with minor components of bedrock outcrops (**rcR**), or bedrock outcrops and slopewash (**rcRs**)
- Residuum and slopewash (**rs**) with minor components of alluvium (**rsa**), bedrock outcrops (**rsR**), bedrock outcrops and colluvium (**rsRc**), or glacial deposits (**rsg**)

Bedrock outcrops—Areas where the underlying bedrock is exposed and unaltered (usually lithified) at the surface

- Bedrock outcrops and colluvium with minor components of slopewash (**Rcs**), residuum (**Rcr**), slopewash and residuum (**Rcsr**), or residuum and slopewash (**Rcrs**)
- Bedrock outcrops and residuum with minor components of colluvium (**Rrc**), colluvium and slopewash (**Rrcs**), slopewash (**Rrs**), or slopewash and colluvium (**Rrsc**)
- Bedrock outcrops and slopewash with minor components of colluvium (**Rsc**), colluvium and residuum (**Rscr**), or residuum (**Rsr**)

Water—Areas covered by water in lakes, reservoirs, and perennial streams and rivers

- Water

Quaternary faults—Faults which show surface offset of Quaternary-aged units

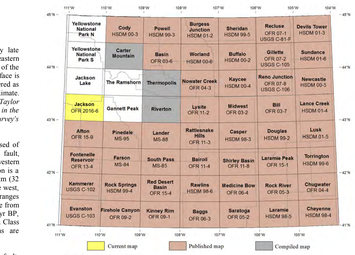
East Gros Ventre fault—The East Gros Ventre fault is primarily concealed by late Pliestocene–Holocene alluvium north and northeast of Jackson Hole along the southeastern base of East Gros Ventre Butte. The ~20 km (12 mi) scarp potentially offsets a portion of the Flat Creek alluvial fan in a normal sense, however it has also been argued that the surface is related to fluvial undercutting of Bull Lake aged outwash deposits. The fault is considered as a Class B fault due to the uncertain origin of the mapped scarp. Locations are approximate. (Machette and Pierce, 2001) *The mapped fault trace has been compiled from Love and Taylor (1962) and, due to its poor surface expression and uncertain origin, is included solely in the name of completeness as well as to be consistent with the U.S. Geological Survey's Quaternary Fault and Fold Database of the United States.*

Grand Valley fault (Star Valley section)—The Grand Valley fault system, comprised of four sections, is considered to be a Quaternary/late Cenozoic to Holocene normal fault, downthrown to the west, and extends 135 km (84 mi) from eastern Idaho into western Wyoming along the base of the Snake and Salt River Ranges. The Star Valley section is a Pleistocene-Holocene normal fault, downthrown to the west, that extends roughly 52 km (32 mi) and strikes north-south. Dip along the fault is considered to be 10–70 degrees to the west, but an exact angle is unknown. The scarps are extensive and displacement generally ranges from 5–15 m (16–49 ft) in alluvium. The recurrence interval is variable, and may range from 4–7 ka. The most recent surface-rupturing earthquake occurred at about 5,540±70 °C yr BP, based on paleoseismology investigations. The Star Valley section fault is considered a Class A fault by the USGS, denoting confirmed Quaternary displacement. Locations are approximate (McCalpin et al., 2001).

Greys River fault—The Greys River fault is a Pleistocene-Holocene normal fault, downthrown to the west and bounds the west side of the Wyoming Range. The fault extends approximately 50 km (31 mi) along a N 3° W strike. Dip along the fault is considered to be 10–70 degrees to the west, but an exact angle is unknown. Complex fault scarps within the densely forested terrain are present at the base of the steep range front and can be traced along much of the length of the fault. Fault scarp displacement generally ranges from 3–11 m (10–36 ft) in alluvium. The recurrence interval is variable, and may range from 2.0–5.2 ka. The most recent event occurred 1,910–2,100 yr BP, based on radiocarbon ages. Average slip rate is believed to range between 0.2 mm (0.008 in) and 1.0 mm (0.04 in)/yr, with considerably faster rates over short intervals. The Greys River fault is considered a Class A fault by the USGS, denoting confirmed Quaternary displacement. Locations are approximate (McCalpin, 1994).

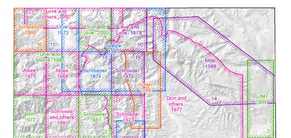
Hoback Fault—The largely concealed Hoback normal fault was primarily active during Miocene time, although evidence exists for potential early Quaternary offset in the northern section of the fault north of Game Creek; the offset may instead be related to localized landslides. The fault is ~18 km (11 mi) long and dips steeply to the west. The fault is considered Class B due to little evidence of Quaternary offset and the possibility of an aseismic source for Quaternary scarps. *The mapped fault trace has been compiled from Schroeder (1974) and Love and Albee (1977), and due to its poor surface expression and uncertain origin, is included solely in the name of completeness as well as to be consistent with the U.S. Geological Survey's Quaternary Fault and Fold Database of the United States.*

Phillips Valley fault (southern section)—The southern section of the Phillips Valley fault is primarily projected from known offsets in the middle section of the fault, which due to steep terrain scarps are difficult to identify. The section makes up ~3 km (2 mi) of the 8 km (5 mi) total length of the fault. *The mapped fault trace has been compiled from Oriel and Moore (1983) and, due to indefinite proof of Quaternary offset, is included solely in the name of completeness as well as to be consistent with the U.S. Geological Survey's Quaternary Fault and Fold Database of the United States.*



KEY TO ABBREVIATIONS
U.S. Geological Survey maps: Coal Investigation Series (USGS C), Mineral Investigations Series (USGS I)
Survey maps: Map Series (MS), Open File Report (OFR) and Hazards Section Digital Map (HSDM)

INDEX TO 1:100,000-SCALE SURFICIAL GEOLOGIC MAPS OF WYOMING



INDEX TO SOURCES OF GEOLOGIC MAPPING

(Numbers are noted in REFERENCES AND SOURCES OF MAP DATA)

Base map from U.S. Geological Survey 1:100,000-scale metric topographic map of the Jackson, Wyoming Quadrangle, 1981

Base hillshade derived from United States Elevation Data (NED), 30-meter Digital Elevation Model (DEM), 2004; azimuth 315°, sun angle 45°, vertical exaggeration 1.4

Projection: Universal Transverse Mercator (UTM), zone 12 North American Datum of 1927 (NAD 27)
10,000-meter grid ticks: UTM, zone 12
25,000-foot grid ticks: Wyoming State Plane Coordinate System, west and west-central zones

National Geodetic Vertical Datum of 1929

Wyoming State Geological Survey
P.O. Box 1347 - Laramie, WY 82073-1347
Phone: 307-766-2286 - Fax: 307-766-2605
Email: wsgs.sales@wyo.gov

MN
GN
0°21'
11°23'
UTM grid convergence (GN) and 2016 magnetic declination (MN) at center of map
Diagram is approximate

0 2 4 6 8 10 12 14 16 18 20 Kilometers
0 1 2 4 6 8 10 12 Miles

SCALE 1:100,000
Contour interval 50 meters

0 2,000 4,000 6,000 8,000 10,000 12,000 14,000 16,000 18,000 20,000 Meters
0 5,000 10,000 15,000 20,000 25,000 30,000 35,000 40,000 45,000 50,000 55,000 60,000 65,000 Feet

Digital cartography by Derek T. Lichtner and Jacob D. Carnes

Map edited by Suzanne C. Luhr

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PRELIMINARY SURFICIAL GEOLOGIC MAP OF THE JACKSON 30' x 60' QUADRANGLE, SUBLETTE, TETON, LINCOLN, AND FREMONT COUNTIES, WYOMING

mapped and compiled by

Seth J. Wittke, Jacob D. Carnes, and Derek T. Lichtner

2016

REFERENCES AND SOURCES OF MAP DATA

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