MONTANA BUREAU OF MINES AND GEOLOGY: GEOLOGIC MAPPING IN MONTANA

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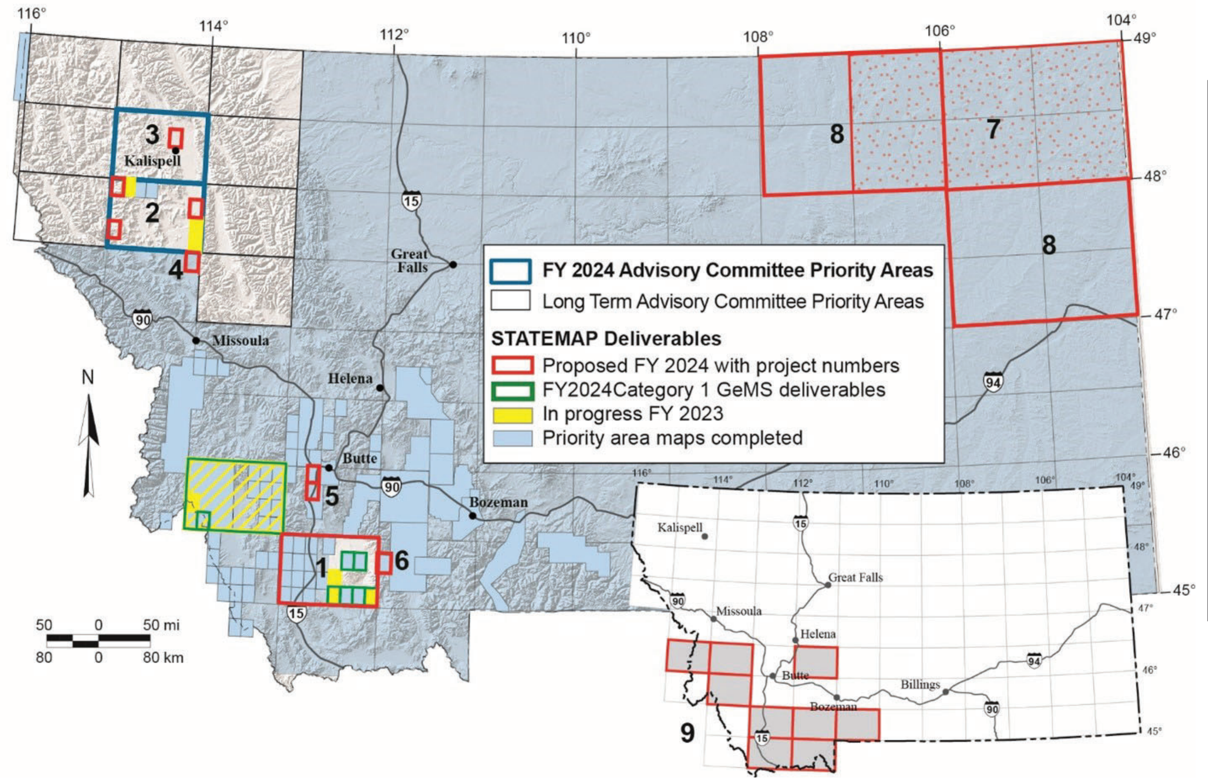
This poster highlights current geologic mapping projects at the Montana Bureau of Mines and Geology (MBMG). Our mapping program is primarily funded by state and federal taxpayer dollars as part of the STATEMAP component of the USGS National Cooperative Geologic Mapping Program. MBMG's mapping team comprises 12 permanent, emeritus, and contract field geologists, GIS specialists, cartographers, and laboratory assistants. The primary goal of MBMG's mapping program is to complete geologic mapping of all 30' x 60' quadrangles in the state and achieve seamless geologic coverage at 1:100,000- scale. The 2023 field season focused on new mapping of seven 7.5' quadrangles (1:24,000-scale). These maps contribute towards completing the Dillon and Wisdom 30' x 60' quadrangles, the final 1:100,000-scale STATEMAP projects in southwestern Montana. Mapping in the Polson 30' x 60' quadrangle resumed in 2023, with the support of the Confederated Salish and Kootenai Tribes. This project has important implications for seismic hazards associated with the active Mission Fault. In addition to these projects, the Economic Geology program recently began mapping four 7.5' quadrangles in the Radersburg and Mineral Point mining districts, as part of the USGS Earth Mapping Resources Initiative.

This past year, five new 1:24,000-scale geologic maps were published by MBMG; two of which were EDMAP products authored by Montana State University students. We also published a 1:55,000-scale geologic map related to a seismic hazards study of the Bitterroot Fault. Seven datasets of geochemical, geochronological, and assay data from across the state were published as part of our new Analytical Dataset publication series. This new publication series will facilitate access to growing analytical datasets generated by MBMG annually. The first-ever Montana Geologic Map puzzle was also released this year.

In the upcoming field season, MBMG geologists will wrap up mapping in the Dillon 30' x 60' quadrangle, and continue our shift to mapping the ten remaining 30' x 60' quadrangles in the northwestern part of the state.

Learn more at https://www.mbmg.mtech.edu and view our 1:100,000-scale seamless database at https://gis-data-hub-mbmg.hub.arcgis.com/apps/53bf38cf17fd45dbbcf93b6cafaa3365/explore

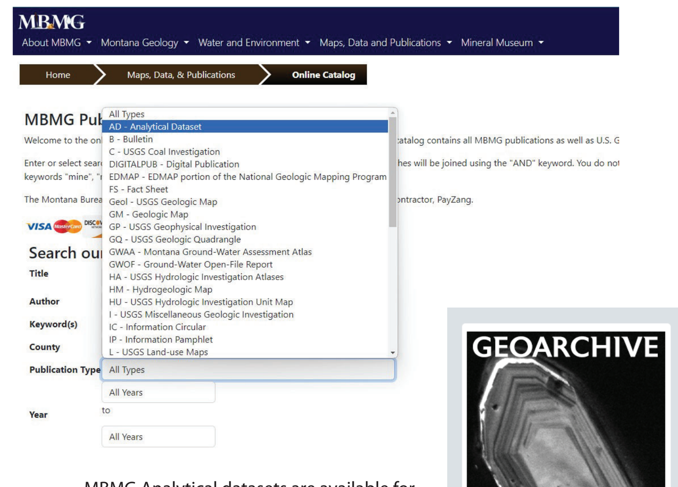
2024 MBMG Mapping Projects



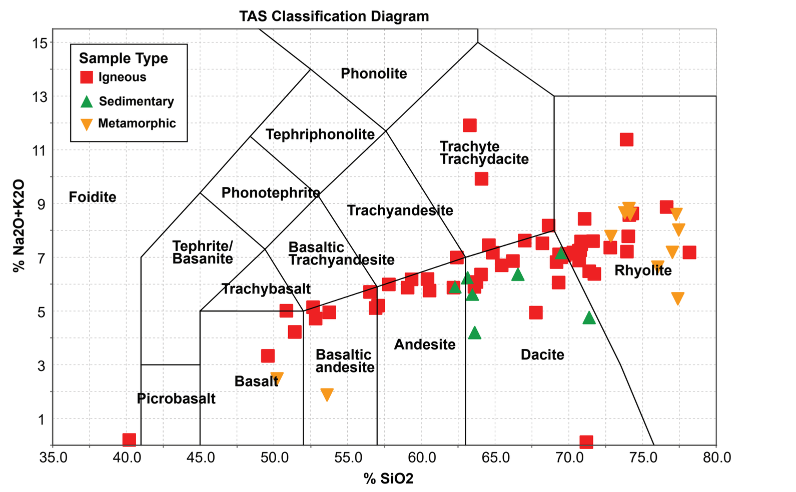
#	Description
1	Compilation of the Dillon 30' x 60' quadrangle, scale 1:100,000
2	Detailed geologic mapping in the Polson 30' x 60' quadrangle, scale 1:24,000
3	Detailed geologic mapping in the Kalispell 30' x 60' quadrangle, scale 1:24,000
4	Detailed geologic mapping of the Fort Connah 7.5' quadrangle and the southern Mission fault, scale 1:24,000
5	Compilation of the Buxton and Tucker Creek 7.5' quadrangles combined, scale 1:24,000
6	Landslide mapping of the historic Virginia City area, southwest Montana
7	Surficial deposit compilation for the 1:100,000-scale seamless geologic map of Montana
8	Subsurface mapping of the Glendive and Glasgow 1° x 2° quad¬rangles, scale 1:250,000
9	Addition of MBMG geochronology data to the USGS National Geochron Database

Analytical Datasets - A new MBMG publication series!

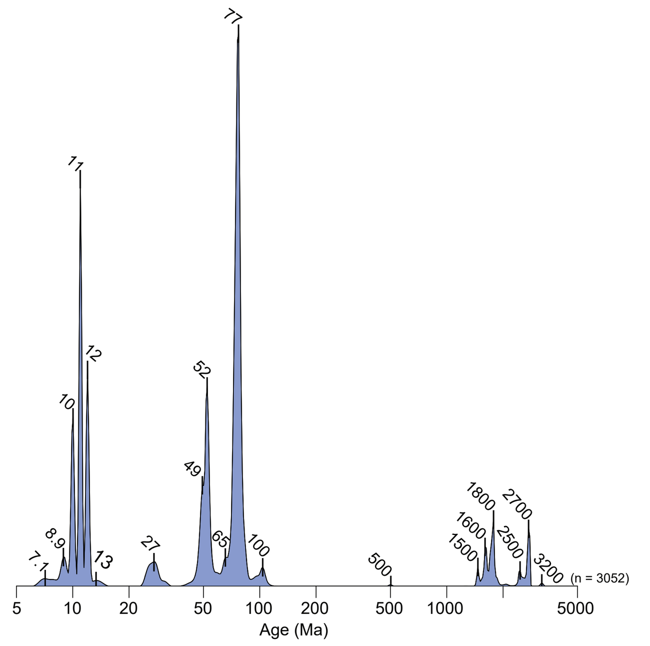
Geochronology and Geochemistry datasets from MBMG research in Montana are now available for download



MBMG Analytical datasets are available for download in our publication catalog... www.mbmg.mtech.edu/mbmgcat.



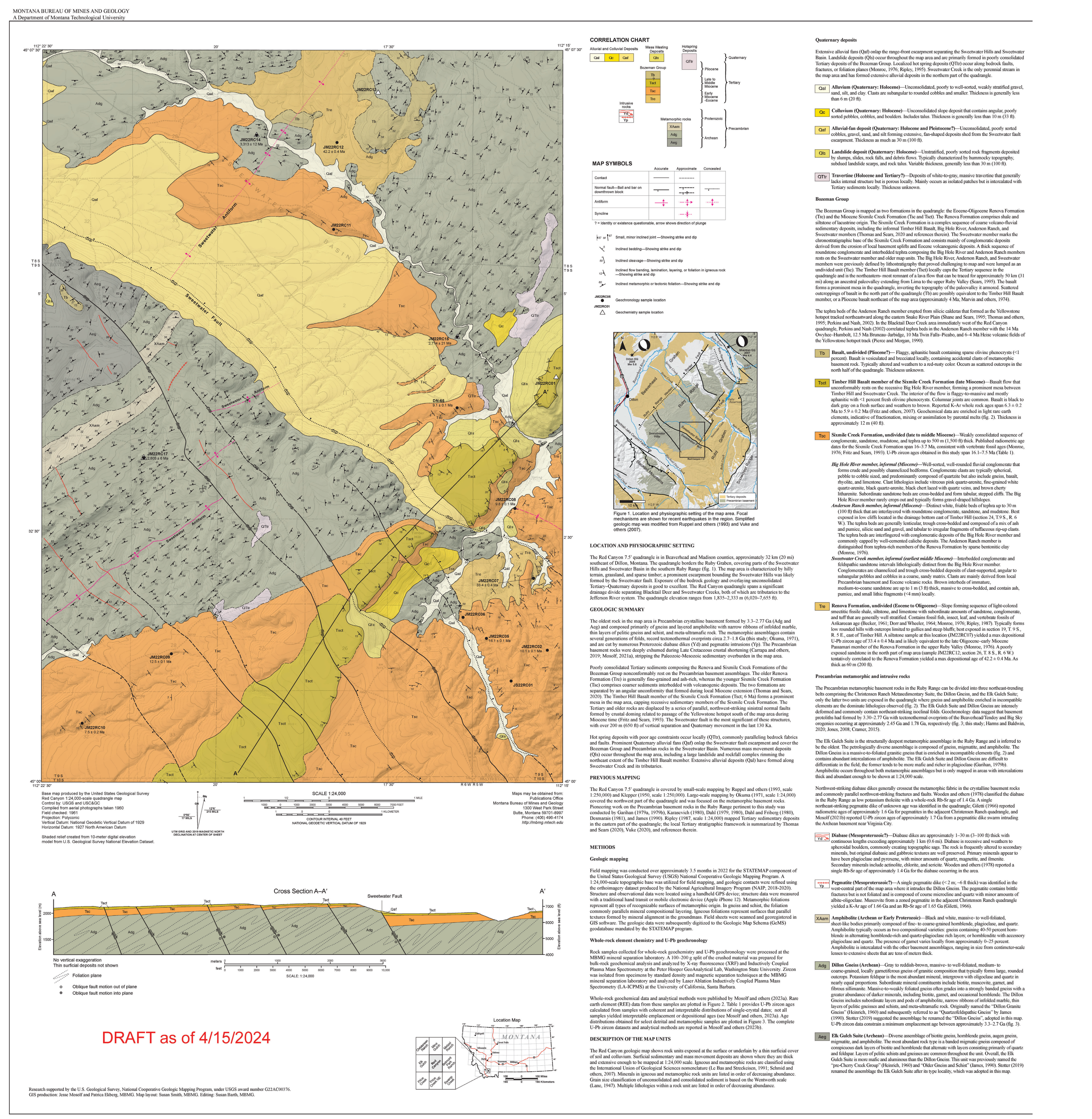
All 2019-2022 MBMG whole rock geochem analyses plotted in a total alkali-silica (TAS) diagram. Although igneous fields are labelled, sedimentary and metamorphic samples are also shown.



All 2023-2024 MBMG zircon U-Pb analyses. Filtered to show only <10% discordant analyses in a logarithmic Kernal Density Estimate (KDE) plot.

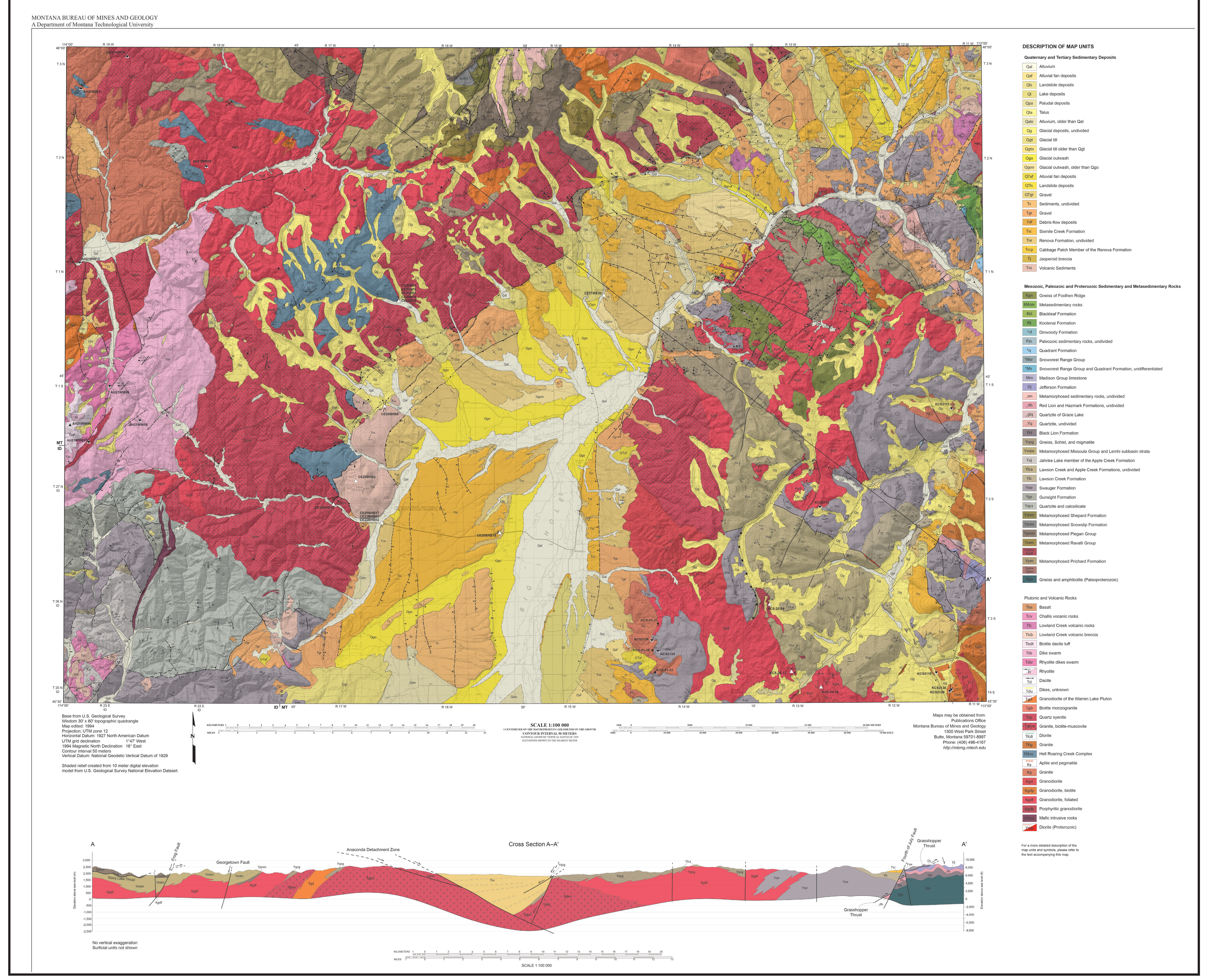
Geologic Map of the Red Canyon 7.5' Quadrangle, Beaverhead and Madison Counties, Montana

Jesse G. Mosolf and James Sears; 2024



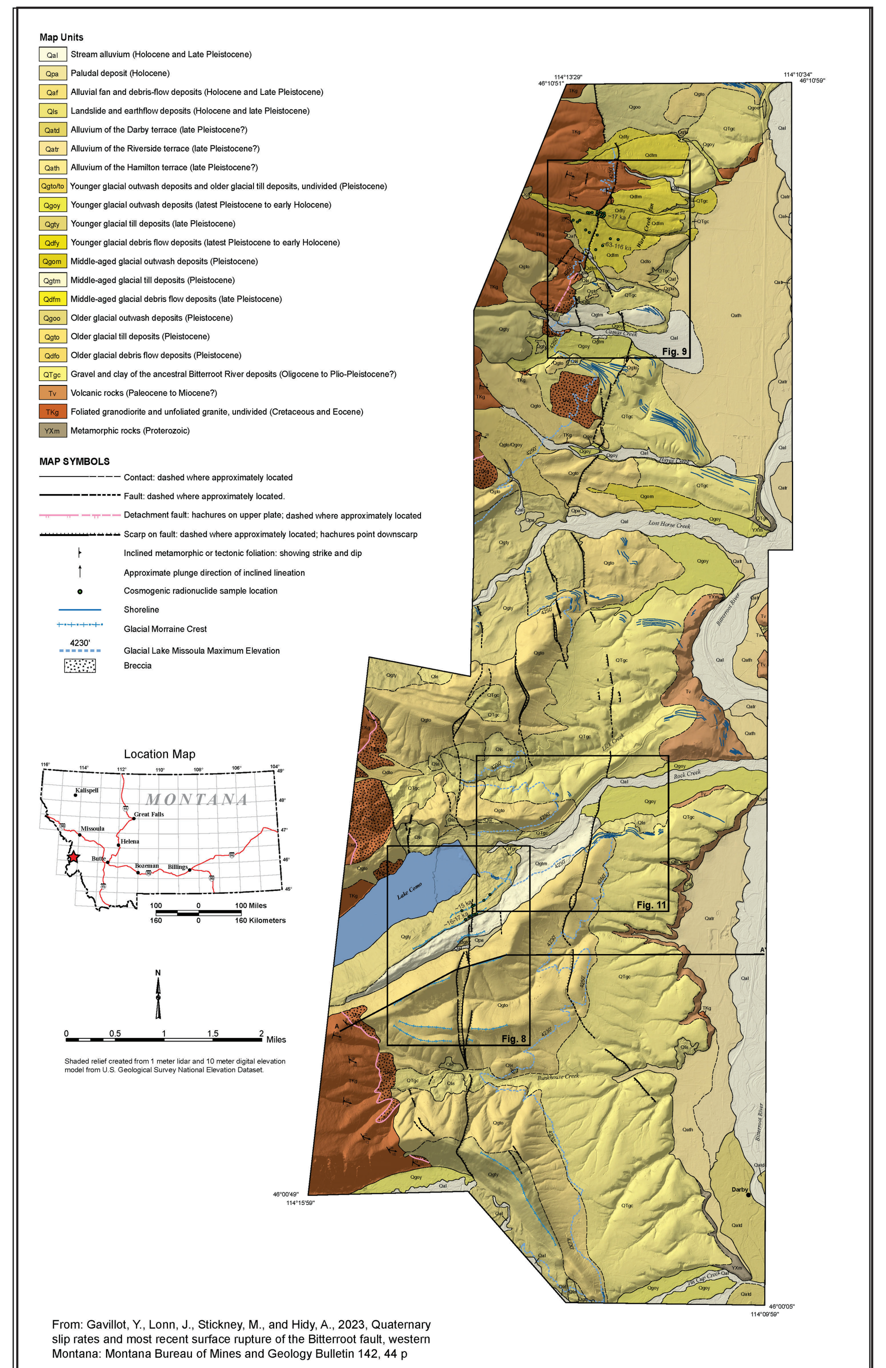
Geologic Map of the Wisdom 30' x 60' Quadrangle, Southwest Montana

Colleen G. Elliott and Jeffrey D. Lonn; 2024



Quaternary slip rates and most recent surface rupture on the Bitterroot fault, western Montana

Yann Gavillot, Jeffrey Lonn, Mike Stickney and Alan Hidy 2023



Geologic Map of the Laurin Canyon 7.5' Quadrangle, Madison County, Montana

Stuart D. Parker and Yann G. Gavillot; 2023