Preliminary Geologic Map of the
Butte South 30' x 60' Quadrangle,
Southwestern Montana

Compiled and mapped Catherine McDonald, Colleen G. Elliott,
Susan M. Vuke, Jeffrey D. Lonn, and Richard B. Berg

2012

To view a full scale version of this map, click here.
For the text files with the map information, click here.

Digital data link

Note—This map was originally published at a scale of 1;100,000 but the page sizes
have been modified to fit average printer capabilities (8½ x 14; legal size paper). There
is an eighth inch overlap on these pages. A full sized colored print of this map can be
ordered from the MBMG Publication Sales Office, 1300 West Park Street, Butte, MT,
59701-8997.

Phone: 406-496-4167 Email: pubsales@mbmg.mtech.edu
Donald Pluton

Waterloo Fault

Mammoth Fault

Vendome Fault Zone

Pluton

Rader Creek

Butte Pluton

Map symbols

Contact: long dash where approximately located; short dash where inferred

Fault: unknown sense of movement; dashed where approximately located; dotted where concealed

Normal fault: dashed where approximately located; dotted where concealed; bar and ball on downthrown side

Strike-slip fault: dashed where approximately located; dotted where concealed; Arrows along fault trace indicate relative strike-slip displacement

Reverse or thrust fault: teeth on upthrown block; dashed where approximately located; dotted where concealed

Bedding sub-parallel fault: unknown sense of movement; dashed where approximately located; dotted where concealed

Reactivated fault: unknown sense of movement; dashed where approximately located; dotted where concealed

Monocline: showing axial plane trace of anticlinal flexure and direction of plunge; dashed where approximately located; dotted where concealed

Syncline: showing trace of axial plane and plunge direction where known; dashed where approximately located; dotted where concealed

Anticline: showing trace of axial plane and plunge direction where known; dashed where approximately located; dotted where concealed

Overturned syncline: showing trace of axial plane and bedding dip direction; dashed where approximately located; dotted where concealed

Overturned anticline: showing trace of axial plane and bedding dip direction; dashed where approximately located; dotted where concealed

Granitic dikes

Diabase dikes

Mafic dikes and sills in Archean gneisses

Granitic dikes and sills in Archean gneisses

Zone of tectonic brecciation, or brecciation and shearing

Shear zone

Strike and dip of inclined bedding

Strike and dip of overturned bedding

Horizontal bedding
Cross Section A-A'

Faults
Angular unconformity
Regional cleavage
Mylonitic fabric

Cross section units not used on map
QTs Quaternary & Tertiary deposits, undivided
Py Paleozoic rocks, undivided
AX Archean & Proterozoic rocks, undivided
A Archean rocks, undivided

No vertical exaggeration
Surficial units not shown

Base from U.S. Geological Survey
Butte South 30'x60' topographic quadrangle
Map date: 1975
Projection: UTM zone 12; 1927 NAD
UTM grid declination 1°04' West
1975 Magnetic North Declination 18° East

KILOMETERS 1 2 3 4 5 6 7 8 9 10 11 12 13 14
MILES 0 1 2 3 4 5 6 7 8 9 10 11 12 13

Scale 1:100 000
1 CENTIMETER ON THE MAP REPRESENTS 1 KILOMETER ON THE GROUND
CONTOUR INTERVAL 50 METERS
ELEVATIONS SHOWN TO THE NEAREST METER

100K Quadrangle Location Map
Maps may be obtained from
Publications Office
Montana Bureau of Mines and Geology
1300 West Park Street, Butte, Montana 59701-8997
Phone: (406) 496-4174  Fax: (406) 496-4451
http://www.mbmg.mtech.edu

Strike and dip of bedding where stratigraphic tops were confirmed using primary sedimentary structures; may be upright or overturned

Vertical bedding

Strike and dip of foliation: gneissic banding in Archean rocks, slaty or fracture cleavage in Phanerzoic rock

Strike and dip of foliation parallel to layering, usually bedding

Vertical foliation

Modified

Sand and gravel

Correlation of Map Units

Holocene
Pliocene
Pleistocene
Quaternary

Shear Zone

Western Bull Mountain Fault

Shear Zone

Bend in section

Boulder Batholith

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Figure 1. Geographic features in the Butte South 30' x 60' quadrangle. Light gray lines are U.S. Geological Survey 7.5' quadrangle boundaries.
Montana Bureau of Mines and Geology
Open-File 622

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Butte South 30' x 60' Quadrangle
Southwest Montana

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GIS production: Ken Sandau and Paul Thale, MBMG. Map layout: Susan Smith, MBMG.
### 30th x 60' Previous Mapping

<table>
<thead>
<tr>
<th>Butte South</th>
<th>Homestake Delmoe Dry Mountain Black Butte</th>
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<td>5, 11, 19, 46</td>
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<td>Mount Humbig</td>
<td>Pipestone Pass Grace Vendome Whitehall</td>
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<tr>
<td>Wapiti Creek</td>
<td>Table Mountain Silver Star Waterloo Manhead Mountain</td>
</tr>
<tr>
<td>Naz Pete Hollow</td>
<td>Twin Bridges SW Twin Bridges Old Baldy Mountain Noble Peak</td>
</tr>
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| 4, 6, 12, 31 | 30, 47, 51 |

1. Alexander (1955)  
3. Bartholomew and others (1990)  
6. Brumbaugh (1972)  
7. Chaddock (1975)  
8. Cox (unpublished mapping)  
11. Elliott and McDonald (2009)  
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19. Houston (2001)  
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27. Moore (1986)  
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Full citations in text pamphlet.