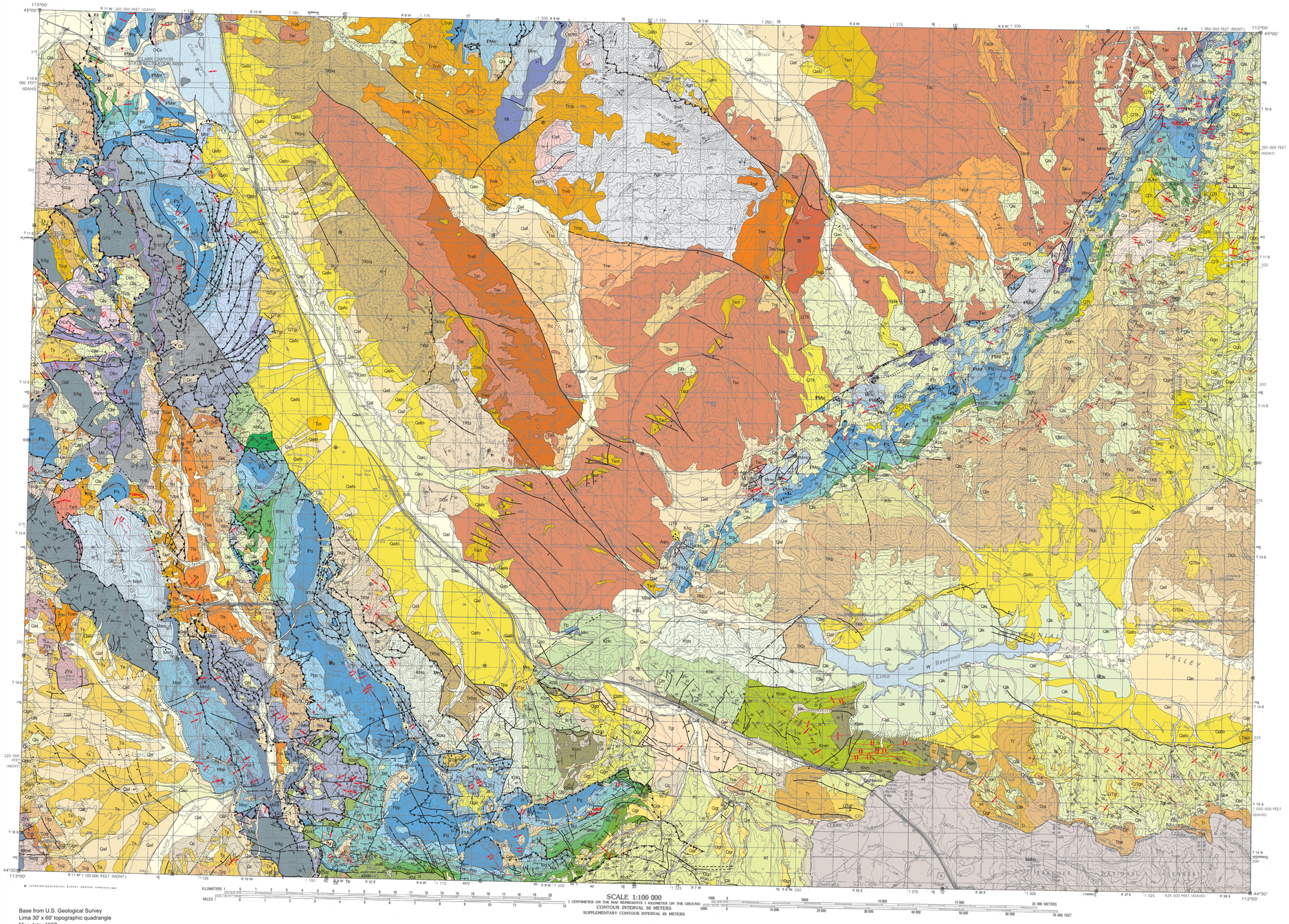


Base from U.S. Geological Survey
Lima 30' x 60' topographic quadrangle
Map date: 1987
Projection: UTM zone 12; 1927 NAD

MAP UNITS

- Qal — Alluvium of modern channels and flood plains
- Qaf — Alluvial fan deposit
- Qlk — Lake deposit
- Qls — Landslide deposit
- Qc — Colluvium
- Qgr — Gravel
- Qta — Talus deposit
- Qa — Avalanche deposit
- Qle — Lake deposit and overlying eolian deposit
- Qao — Alluvium, older, undivided
- Qafo — Alluvial fan deposit, older
- Qgl — Glacial lake deposit
- Qgm — Glacial moraine deposit
- Qgo — Glacial outwash deposit
- QTs — Sediment, undivided
- QTgr — Gravel
- QTl — Ledford Pass Soil
- QTba — Basaltic rocks, undivided
- QTlt — Limestone and calcareous tufa
- Tj — Jasperoid
- Ti — Intrusive rocks, undivided
- Tr — Rhyolite or rhyolitic sediment
- Ta — Andesite
- Tba — Basalt
- Ttr — Travertine; lake or hot-spring deposits
- Tgr — Gravel
- Tsc — Sixmile Creek Formation
- Tsca — Anderson Ranch member, informal, Sixmile Creek Formation
- Tsct — Timber Hill Basalt member, informal, Sixmile Creek Formation
- Tsm — Sedimentary rocks of Medicine Lodge beds, undivided
- Ts — Sediment or sedimentary rocks, undivided
- Tcg — Conglomerate
- Tcs — Conglomerate and sandstone
- Tce — Organic-rich shale
- Tfs — Tuffaceous shale
- Tcv — Challis Volcanics Group
- Tcts — Tuffs and sandstone of Challis Volcanics Group
- Tccs — Conglomerate and sandstone of Challis Volcanics Groups
- Tccg — Conglomerate and sandstone of the Challis volcanic group
- Tct — Tuffs
- Tctbs — Biotite-bearing sandstone of Challis Volcanics Group
- Tctbt — Biotite-bearing tuff of Challis Volcanics Group
- Tcr — Rhyolite of Challis Volcanics Group
- Tcan — Andesite of Challis Volcanics Group
- Tcb — Basalt of Challis Volcanics Group
- Tcab — Breccia (Landslide deposit)
- Tcqt — Quartzite-bearing tuff of Challis Volcanics Group
- Trw — Renova Formation
- Trbt — Blacktail member, informal, Renova Formation
- Trw — White Hills member, informal, Renova Formation
- Trc — Cook Ranch member, informal, Renova Formation
- Trvb — Basalt cap of Dillon volcanics member, informal, Renova Formation
- Tqtz — Quartz
- Trvp — Rhyolitic pyroclastic rocks of Dillon volcanics member, informal, Renova Formati
- Trvr — Rhyolitic lava flows of Dillon volcanics Member, informal, Renova Formation
- Trsd — Sage Creek and Dell members, informal, Renova Formation
- Trvh — Hall Spring Basalt of Dillon volcanics member, informal, Renova Formation
- TKgr — Gravel and conglomerate of uncertain affinities
- TKb — Beaverhead Group
- TKbr — Red Butte conglomerate, Beaverhead Group
- TKbl — Limestone conglomerate of the Beaverhead Group
- TKbq — Quartzite conglomerate, Beaverhead Group
- Kbtq — Little Sheep Quartzite of Beaverhead Group
- Kbtu — Upper limestone conglomerate of Beaverhead Group
- Kbto — Oncoid limestone of Beaverhead Group
- Kbtc — Lima Conglomerate of the Beaverhead Group
- Kbsn — Snowline Sandstone of Beaverhead Group
- Kbtl — Lower limestone conglomerate of Beaverhead Group
- Kbm — Morida Sandstone of Beaverhead Group
- Kbdc — Divide Creek Conglomerate of Beaverhead Group
- Kf — Frontier Formation
- Kfb — Frontier and Blackleaf Formations, undivided
- Kbl — Blackleaf Formation
- Kk — Kootenai Formation
- KJke — Kootenai Formation and Ellis Group, undivided
- Jmwt — Morrison Formation, Ellis Group, and Twin Creek Formation, undivided
- Js — Sedimentary rocks, undivided
- TRd — Thaynes, Woodside, and Dinwoody Formations, undivided
- Pp — Phosphoria Formation
- Ppp — Phosphoria and Park City Formations, undivided
- Pq — Quadrant Formation
- PMsr — Snowcrest Range Group or Formation
- Ms — Sedimentary rocks, undivided
- Msm — Scott Peak through McGowan Creek Formations, undivided
- Mlm — Lombard Formation, Kibbey Formation, and Madison Group
- Msp — Scott Peak Formation
- Mtd — Tendoy Group
- Mm — Madison Group, undivided
- Mmd — Middle Canyon Formation
- Mmc — Mission Canyon Limestone
- Mmg — McGowan Creek Formation
- Ml — Lodgepole Limestone
- MDmt — McGowan Creek and Three Forks Formations, undivided
- MDtj — Three Forks and Jefferson Formations, undivided
- Dtm — Three Forks, Jefferson, Maywood? Formations, undivided
- DCs — Sedimentary rocks, undivided
- Ckm — Kinnikinic and Summerhouse Formations, undivided
- Cb — Bighorn Dolomite
- OCs — Sedimentary rocks, undivided
- Cs — Sedimentary rocks, undivided
- Csr — Snowy Range Formation
- Cppm — Pilgrim, Park, and Meagher Formations, undivided
- Cpf — Park through Flathead Formations, undivided
- Cwf — Wolsey and Flathead Formations, undivided
- ZYs — Sedimentary rocks, undivided
- XAg — Granite gneiss
- Agn — Gneissic rocks
- Aqm — Quartzite and marble
- Aum — Ultramafic rock
- W — Water
- ID

For a more detailed description of the map units and symbols, please refer to the text accompanying this map.

Montana Bureau of Mines and Geology
Open File 408, Plate 1

Geologic Map of the Lima 30' x 60' Quadrangle Southwest Montana

Jeffrey D. Lonn, Betty Skipp, Edward T. Ruppel,
Susanne U. Janecke, William J. Perry Jr., James W. Sears,
Mervin J. Bartholomew, Michael C. Stickney,
William J. Fritz, Hugh A. Hurlow, and Robert C. Thomas

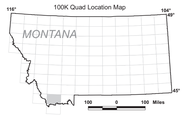
2000

Revised	Date
Map and text, added Plate 2	2/06

Partial support has been provided by the STATEMAP component of the National Cooperative Geologic Mapping Program of the U.S.Geological Survey under Contract Number 99-HQ-AG-0130.

GIS production: Ken Sandau and Paul Thale, MBMG.

100K Quad Location Map



Quad index

SALMON	DILLON	ENNIS
LEADORE	LIMA	HEBGEN LAKE
BORAH PEAK	DUBOIS	ASHTON

N

Maps may be obtained from
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Montana Bureau of Mines and Geology
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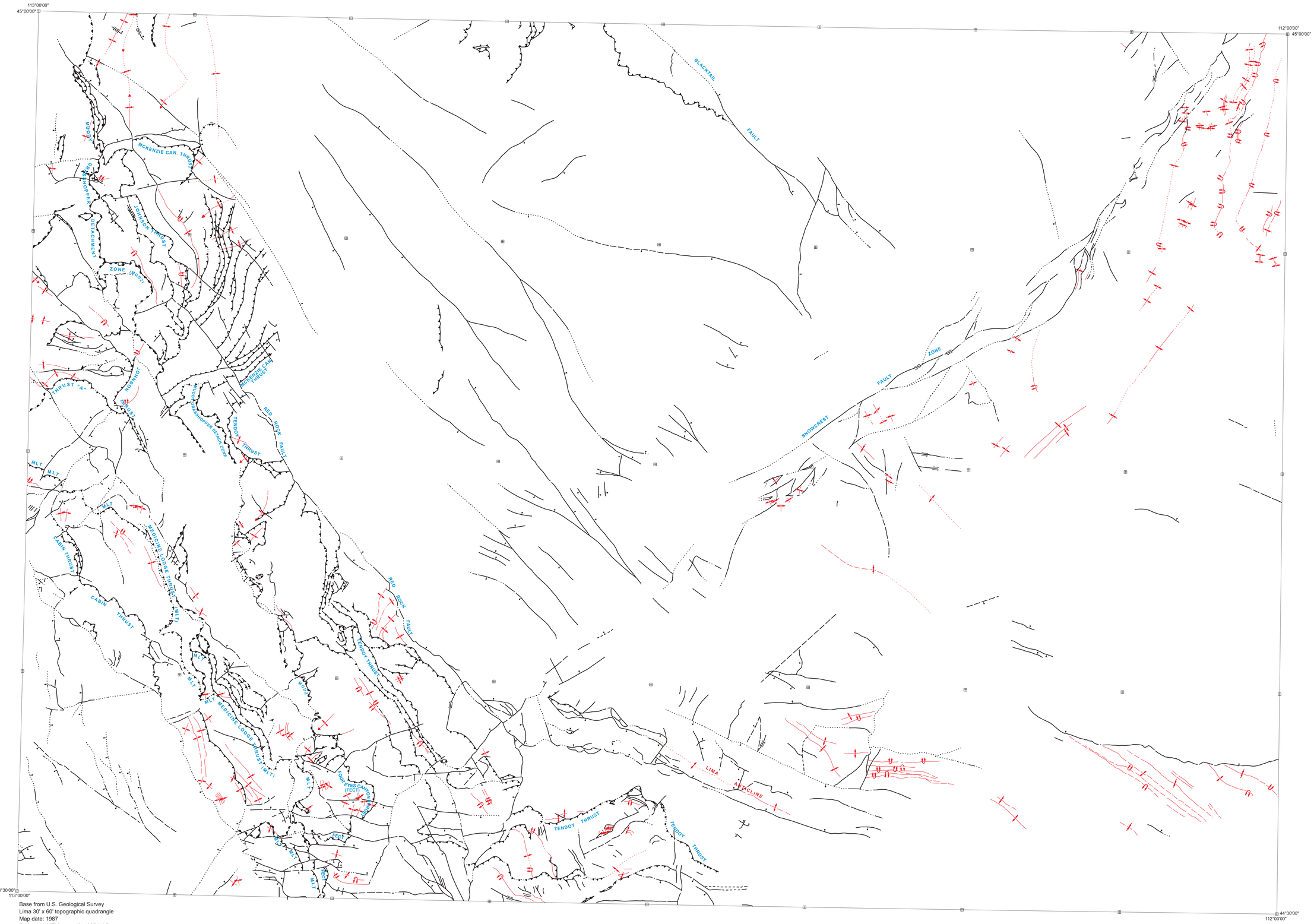

Base from U.S. Geological Survey
Lima 30' x 60' topographic quadrangle
Map date: 1987
Projection: UTM zone 12; 1927 NAD

KILOMETERS 1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
MILES 1 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 20 METERS

1000 0 5000 10 000 15 000 20 000 METERS
5000 0 10 000 20 000 30 000 40 000 50 000 60 000 70 000 FEET

Montana Bureau of Mines and Geology
Open File 408

Plate 2: Faults and Folds of the Lima 30' x 60' Quadrangle Southwest Montana

Jeffrey D. Lonn, Betty Skipp, Edward T. Ruppel,
Susanne U. Janecke, William J. Perry Jr., James W. Sears,
Mervin J. Bartholomew, Michael C. Stickney,
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Revised	Date
Map and text, Plate 2 added	2/06

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Quad index

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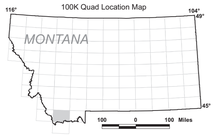
100K Quad Location Map



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