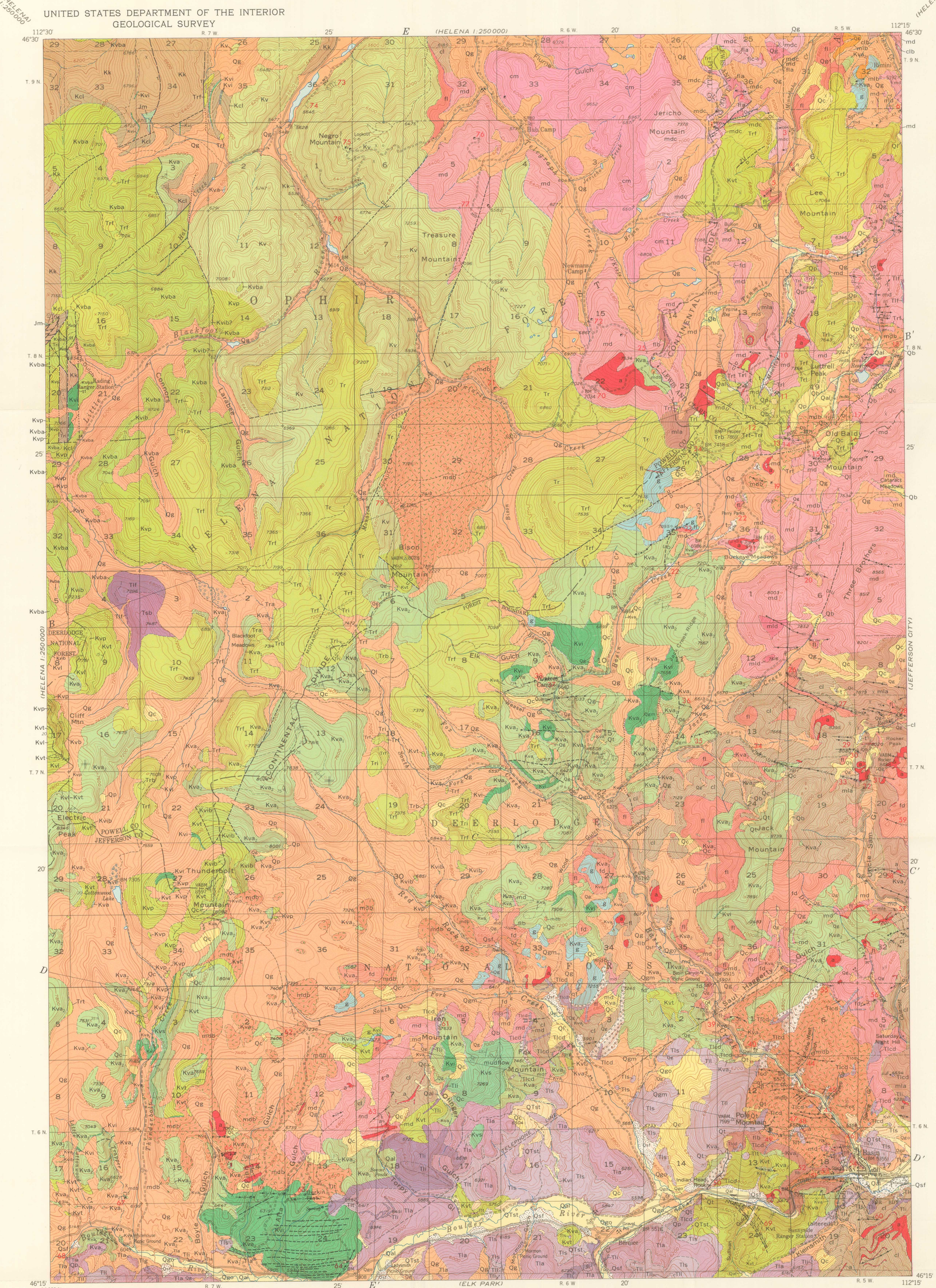
UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

BULLETIN 1151
PLATE 1

GEOLOGIC MAP AND SECTIONS OF THE BASIN QUADRANGLE, JEFFERSON, LEWIS AND CLARK, AND POWELL COUNTIES, MONTANA



EXPLANATION

Tailings and dumps

Alluvium — Qal

Fan gravel — Qsf

Deposits resulting from mass-wasting — Qc | Qp | Qb | Qt | Ql

Qc, *creep and solifluction deposits.*
Qp, *deposits in protalus ramparts and rock streams.*
Qb, *bog and swamp deposits.*
Qt, *deposits in talus.*
Ql, *deposits in landslides*

Glacial deposits — Qg | Qgm | Qgo

Qg, *undivided.*
Qgm, *deposits in moraines.*
Qgo, *outwash deposits*

Pleistocene and Recent

Pliocene and Pleistocene

Gravel veneering strath terraces — QTst

Upper Miocene(?) and lower Pliocene(?)

Rhyolite — Tr | Trf | Trb | Trt | Trl | Tri | Tra

Tr, *undivided.*
Trf, *lava flow.*
Trb, *flow breccia.*
Trt, *tuff.*
Trl, *lapilli tuff.*
Tri, *intrusive rocks.*
Tra, *welded tuff*

Breccia and coarse-grained sandstone, greenish gray, poorly sorted — Tsb

Oligocene

Lowland Creek volcanics — Tla | Tlt | Tll | Tlf | Tls | Tli | Tlcd | Tlg

Quartz latite;
Tla, *welded tuff.*
Tlt, *tuff.*
Tll, *lapilli tuff.*
Tlf, *lava flow.*
Tls, *quartz latitic sandstone.*
Tli, *intrusive rocks.*
Tlcd, *clastic dikes.*
Tlg, *glass*

QUATERNARY — TERTIARY

Aplite and alaskite — a

Butte quartz monzonite — cm | cl | clb | mla | mlb | mld | md | mdb | mdc | fl | fla | flb | flc | fd

Quartz monzonite and granodiorite;
cm, *undivided.*
cl, *coarse-grained, light-gray.*
clb, *coarse-grained, light-gray, with large alkalic feldspar phenocrysts.*
mla, *medium-grained, light-gray with pink tint.*
mlb, *medium-grained, light-gray, with conspicuous mafic clots.*
mld, *medium-grained, light-gray, with abundant small biotite crystals.*
md, *medium-grained, medium-gray.*
mdb, *medium-grained, medium-gray with pink tint.*
mdc, *medium-grained, medium-gray; plagioclase and alkalic feldspar phenocrysts common; mafic minerals abundant.*
fl, *fine-grained, light-gray.*
fla, *fine-grained, light-gray; plagioclase phenocrysts common; Aplitic texture.*
flb, *fine-grained, light-gray with pink tint; abundant chlorite and epidote.*
flc, *fine-grained, light-gray; conspicuous large alkalic feldspar phenocrysts.*
fd, *fine-grained, medium-gray*

Upper Cretaceous or Paleocene

Rocks of the Boulder batholith

Relative position does not imply age relation

Quartz monzonite — g

Fine- to medium-grained, dark-gray

Elkhorn Mountains volcanics — Kv | Kvba | Kvib | Kva | Kva2 / Kva1 | Kvb | Kvl | Kvp | Kvs | Kvt | Kvi

Quartz latite and andesite; basalt provisionally included in formation;
Kv, *undivided.*
Kvba, *basaltic lava flows and flow breccias.*
Kvib, *intrusive basalt.*
Kva, *welded tuff, unidivided.*
Kva2, *upper medium- and light-gray welded tuff.*
Kva1, *lower dark-gray and greenish-gray welded tuff.*
Kvb, *flow breccia.*
Kvl, *lapilli tuff.*
Kvp, *tuff-breccia.*
Kvs, *andesitic sandstone.*
Kvt, *crystal tuff.*
Kvi, *intrusive andesite*

Upper Cretaceous

Colorado formation — Kcl

Shale, dark-gray, and dark-gray fine-grained argillaceous sandstone

Lower Cretaceous

Kootenai formation — Kk

Sandstone and conglomerate, light-gray, with abundant black chert grains; light-olive-gray, grayish-red, and grayish-purple shale and mudstone; and dark-gray finely crystalline fossiliferous limestone

Upper Jurassic

Morrison formation — Jm

Mudstone, grayish-olive and olive-gray

CRETACEOUS — JURASSIC — CRETACEOUS OR TERTIARY

Contact, showing dip

Dashed where approximately located; short dashed where indefinite; dotted where concealed; dashed and dotted where between individual beds within a map unit

Gradational contact

Fault, showing dip

Dashed where approximately located; short dashed where indefinite; dotted where concealed. U, upthrown side; D, downthrown side

Thrust fault

Dashed where approximately located; dotted where concealed. T, upper plate

Sulfide-bearing quartz vein, showing dip, commonly in fault zones
Dotted where concealed

Massive barren quartz vein

Shear zone

Breccia

Strike and dip of beds

Strike and dip of overturned beds

Strike and dip of banding in welded tuff

Horizontal banding in welded tuff

Vertical shaft

Adit

Caved adit

Trench

Prospect pit

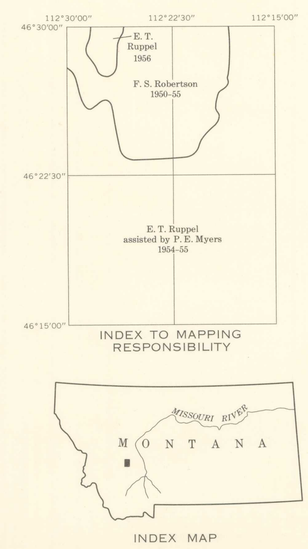
Open pit

Quarry or gravel pit

LIST OF MINES AND PROSPECTS IDENTIFIED BY NUMBER

(Asterisk (*) indicates property described in text)

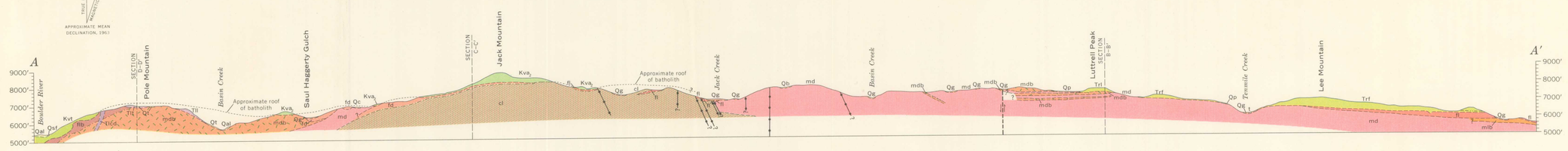
*1. Beatrice
2. Independence
*3. Armstrong
*4. Justice-Clementh
5. Lucky Joe
6. Lee Mountain extension
*7. Monte Cristo
8. Rainy Day
9. Tenmile Creek placer
10. Monitor Creek placer
*11. Porphyry Dike
*12. Paupers Dream
*13. Venus
*14. Lady Hennessey
15. Golden Glow
16. May Lillie
17. Woodrow Wilson
18. Banner Creek placer
19. Alma no. 2
*20. Lady Leith-Cady Leith
*21. Buckeye-Enterprise
22. Basin Creek placers
*23. Solar
*24. Josephine
25. Sure Thing (O'Keefe)
*26. Vindicator
*27. Morning
*28. Ada
29. First Shot-Last Shot
30. Mary Anne
*31. Sparkling Water
*32. Crystal
*33. St. Lawrence
*34. Bullion
35. Kellers hematite deposit
36. Dumortierite prospect
*37. Winters camp
*38. Morning Star
*39. Aurora
40. Daily West
41. Columbus
42. Belle of Basin
43. Doris
44. Hector
45. Adelaide
46. Buster
47. Jessie
48. Highland
*49. Boulder
50. Redrock
*51. Lotta
52. Bonanza Jack
53. Jib shaft
*54. Hope, Katie, Katie Extension
55. Marguerite
*56. Sylvan
*57. Uncle Sam
58. Evening Star
59. St. Nick
60. Helper
*61. Iron Mountain iron
62. Saratoga
63. Franklin
64. Gopher
65. North Boulder
66. Blackbird
67. Dead End
68. Shamrock
69. Blubell Health
70. Ontario
71. Hard Luck
72. Lily-Orphan Boy
73. Charter Oak
74. Negros
75. Golden Anchor
76. Viking
77. Julia
78. Kimball
79. Monarch

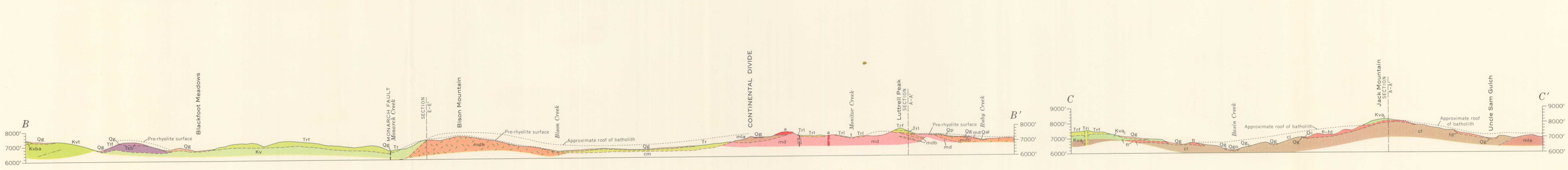


Base map by Topographic Division
U. S. Geological Survey, 1954

Geology by Edward T. Ruppel, 1953–56, assisted by Paul E. Myers, 1954–55. Geology in the Elliston Mining district by Forbes S. Robertson, 1950–55

APPROXIMATE MEAN DECLINATION, 1963





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SCALE 1:48000

1 0 1 2 3 MILES

1 .5 0 1 2 3 KILOMETERS

CONTOUR INTERVAL 40 FEET
DATUM IS MEAN SEA LEVEL