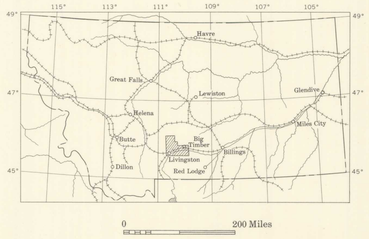



## EXPLANATION

Qal — Alluvium
*Includes low terrace gravels along most streams and glacial deposits in mountain areas*

TKth — Tullock member of the Fort Union formation and Hell Creek formation, undifferentiated
*(Includes Foz Hill sandstone in many places)*

TKc — Claggett shale

Ke — Eagle sandstone
*(Virgelle sandstone member at base)*

Kc — Colorado shale

TKl — Livingston formation
*(Includes some pyroclastic rocks)*

Kl — Cretaceous rocks, undifferentiated

KJe — Kootenai formation through Ellis group, undifferentiated

PCu — Permian and Carboniferous rocks, undifferentiated

QUATERNARY
TERTIARY
CRETACEOUS
JURASSIC
CARBONIFEROUS AND PERMIAN

### IGNEOUS ROCKS

TKd — Dikes and sills

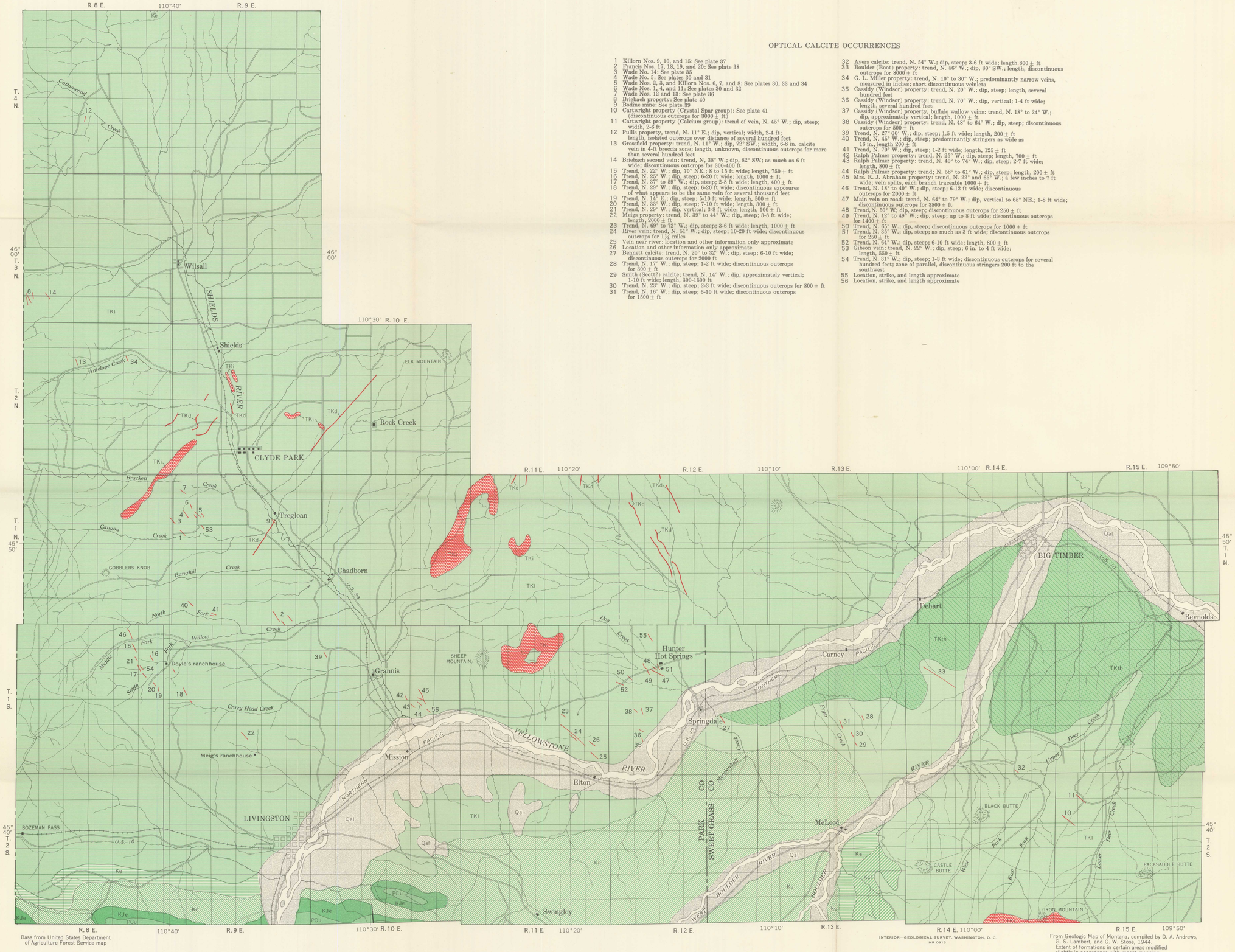
TKi — Intrusive rocks

Contact
*Dashed where approximately located*

Fault

8 — Calcite occurrence, with reference number

Trail




Base from United States Department of Agriculture Forest Service map

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.
MR 0915

From Geologic Map of Montana, compiled by D. A. Andrews, G. S. Lambert, and G. W. Stose, 1944. Extent of formations in certain areas modified slightly in accordance with recent mapping

## OPTICAL CALCITE OCCURRENCES

1 Killorn Nos. 9, 10, and 15: See plate 37
2 Francis Nos. 17, 18, 19, and 20: See plate 38
3 Wade No. 14: See plate 35
4 Wade No. 5: See plates 30 and 31
5 Wade Nos. 2, 3, and Killorn Nos. 6, 7, and 8: See plates 30, 33 and 34
6 Wade Nos. 1, 4, and 11: See plates 30 and 32
7 Wade Nos. 12 and 13: See plate 36
8 Briebach property: See plate 40
9 Bodine mine: See plate 39
10 Cartwright property (Crystal Spar group): See plate 41 (discontinuous outcrops for 3000 ± ft)
11 Cartwright property (Calcium group): trend of vein, N. 45° W.; dip, steep; width, 2-6 ft
12 Pullis property, trend, N. 11° E.; dip, vertical; width, 2-4 ft; length, isolated outcrops over distance of several hundred feet
13 Grossfield property: trend, N. 11° W.; dip, 72° SW.; width, 6-8 in. calcite vein in 4-ft breccia zone; length, unknown, discontinuous outcrops for more than several hundred feet
14 Briebach second vein: trend, N, 38° W.; dip, 82° SW; as much as 6 ft wide; discontinuous outcrops for 300-400 ft
15 Trend, N. 22° W.; dip, 70° NE.; 8 to 15 ft wide; length, 750+ ft
16 Trend, N. 25° W.; dip, steep; 6-20 ft wide; length, 1000 ± ft
17 Trend, N. 37° to 59° W.; dip, steep; 2-8 ft wide; length, 400 ± ft
18 Trend, N. 29° W.; dip, steep; 6-20 ft wide; discontinuous exposures of what appears to be the same vein for several thousand feet
19 Trend, N. 14° E.; dip, steep; 5-10 ft wide; length, 500 ± ft
20 Trend, N. 33° W.; dip, steep; 7-10 ft wide; length, 300 ± ft
21 Trend, N. 29° W.; dip, vertical; 3-8 ft wide; length, 100 ± ft
22 Meigs property: trend, N. 39° to 44° W.; dip, steep; 3-8 ft wide; length, 2000 ± ft
23 Trend, N. 69° to 72° W.; dip, steep; 3-6 ft wide; length, 1000 ± ft
24 River vein: trend, N. 51° W.; dip, steep; 10-20 ft wide; discontinuous outcrops for 1½ miles
25 Vein near river: location and other information only approximate
26 Location and other information only approximate
27 Bennett calcite: trend, N. 20° to 32° W.; dip, steep; 6-10 ft wide; discontinuous outcrops for 2000 ft
28 Trend, N. 17° W.; dip, steep; 1-2 ft wide; discontinuous outcrops for 300 ± ft
29 Smith (Scott?) calcite; trend, N. 14° W.; dip, approximately vertical; 1-10 ft wide; length, 300-1500 ft
30 Trend, N. 23° W.; dip, steep; 2-3 ft wide; discontinuous outcrops for 800 ± ft
31 Trend, N. 16° W.; dip, steep; 6-10 ft wide; discontinuous outcrops for 1500 ± ft
32 Ayers calcite: trend, N. 54° W.; dip, steep; 3-6 ft wide; length 800 ± ft
33 Boulder (Boot) property: trend, N. 56° W.; dip, 80° SW.; length, discontinuous outcrops for 8000 ± ft
34 G. L. Miller property: trend, N. 10° to 30° W.; predominantly narrow veins, measured in inches; short discontinuous veinlets
35 Cassidy (Windsor) property: trend, N. 20° W.; dip, steep; length, several hundred feet
36 Cassidy (Windsor) property: trend, N. 70° W.; dip, vertical; 1-4 ft wide; length, several hundred feet
37 Cassidy (Windsor) property, buffalo wallow veins: trend, N. 18° to 24° W.; dip, approximately vertical; length, 1000 ± ft
38 Cassidy (Windsor) property: trend, N. 48° to 64° W.; dip, steep; discontinuous outcrops for 500 ± ft
39 Trend, N. 27° 00′ W.; dip, steep; 1.5 ft wide; length, 200 ± ft
40 Trend, N. 45° W.; dip, steep; predominantly stringers as wide as 16 in., length 200 ± ft
41 Trend, N. 70° W.; dip, steep; 1-2 ft wide; length, 125 ± ft
42 Ralph Palmer property: trend, N. 25° W.; dip, steep; length, 700 ± ft
43 Ralph Palmer property: trend, N. 40° to 74° W.; dip, steep; 2-7 ft wide; length, 800 ± ft
44 Ralph Palmer property: trend; N. 58° to 61° W.; dip, steep; length, 200 ± ft
45 Mrs. R. J. Abraham property: trend, N. 22° and 65° W.; a few inches to 7 ft wide; vein splits, each branch traceable 1000 + ft
46 Trend, N. 18° to 40° W.; dip, steep; 6-12 ft wide; discontinuous outcrops for 2000 ± ft
47 Main vein on road: trend, N. 64° to 79° W.; dip, vertical to 65° NE.; 1-8 ft wide; discontinuous outcrops for 3800 ± ft
48 Trend, N. 50° W; dip, steep; discontinuous outcrops for 250 ± ft
49 Trend, N. 12° to 49° W.; dip, steep; up to 8 ft wide; discontinuous outcrops for 1400 ± ft
50 Trend, N. 65° W.; dip, steep; discontinuous outcrops for 1000 ± ft
51 Trend, N. 35° W.; dip, steep; as much as 3 ft wide; discontinuous outcrops for 250 ± ft
52 Trend, N. 64° W.; dip, steep; 6-10 ft wide; length, 800 ± ft
53 Gibson vein: trend, N. 22° W.; dip, steep; 6 in. to 4 ft wide; length, 550 ± ft
54 Trend, N. 31° W.; dip, steep; 1-3 ft wide; discontinuous outcrops for several hundred feet; zone of parallel, discontinuous stringers 200 ft to the southwest
55 Location, strike, and length approximate
56 Location, strike, and length approximate

# GENERALIZED GEOLOGIC MAP OF PARTS OF PARK AND SWEET GRASS COUNTIES, MONTANA, SHOWING SOURCES OF OPTICAL CALCITE

2 0 12 Miles