822655

REPORT

ON

MATHEW CREEK GROUP

FORT STEELE

MINING DIVISION

ALEXANDER SMITH

MINING ~~ENGINEER~~ Geologist

REPORT ON MAGNETOMETER SURVEY

JANUARY 5th - FEBRUARY 5th, 1948

MATHEW 1 - 4 GROUPS

MATHEW CREEK, FORT STEELE M. D., B. C.

I N D E X

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SUMMARY:

A preliminary geologic and magnetometer study of the group indicates that the area is structurally favorable for the occurrence of lead-zinc deposits of the Sullivan or Moyie types. Magnetic anomalies of the strength of 80 gammas have been found. Some of these merit further testing as they could possibly be due to ore bodies. Detailed geological mapping and magnetometer work is now warranted because of the results obtained to date.

LOCATION; ACCESS; ETC:

The claims lie in Mathew Creek Valley about five miles above the confluence of that stream and the St. Mary's River. They are 4-1/2 miles west of the Sullivan Mine.

As shown on the Cranbrook sheet and the East Half Nelson Sheet, Mathew Creek occupies a narrow steep valley. On the group the elevation ranges from 4100 feet at the creek to over 6500 feet.

The country is well timbered. Mathew Creek would supply all domestic and milling requirements.

At present the group is reached by six miles of

fair trail from St. Mary's Lake road. The trail could readily be cleaned out so that pack horses could be used. The first two miles follow an old logging road.

For exploration of the higher areas northeast of Mathew Creek a better route could probably be found via Kimberley and the Pass (5000' elev.) at the north end of the North Star Hill.

GEOLOGIC SETTING:

A preliminary geologic reconnaissance of the area indicated that the Kimberley fault does not die out at Mathew Creek as shown on Rice's Cranbrook Sheet, but branches 1-1/2 miles northeast of that stream. The South branch is as shown on the "Cranbrook Sheet". The north branch may continue westward to join the Alki Creek fault. It is a zone 1500 feet wide wherein the Aldridge quartzites are sheared parallel to the bedding, altered, disturbed, and veined with quartz stringers.

In the wedge between the two branches of the fault the Aldridge quartzites are folded into an anticline plunging north. On the east limb of the anticline the sediments have an attitude similar to that at the Sullivan Mine. There are second order folds and crumples, high angle N20°E fault, and fracture cleavage such as are found at Kimberley. Quartz diorite intrusives (Purcell) occur as sills and irregular bodies. The main mass appears to conform to the anticlinal structure.

METHOD:

The magnetometer used is a Watt's vertical variometer of the Schmidt type. The sensitivity of the instrument is 2 - 5 gammas. All stations occupied were surveyed in by Brunton, tape and barometer. As the stream valley is difficult to traverse except in mid-winter, a careful traverse was made up the valley. This will serve as a control traverse for additional work planned. Many side hill areas were too steep for travel under the snow conditions prevailing.

RESULTS:

The magnetic readings are plotted on the accompanying 1"= 200' map and profiles. The readings are in gammas above the zero scale reading on the instrument. Zero scale reading is for the instrument ~~0.57 c.g.s. units~~ 2.5 = 57,000 gammas so that a reading of 370 on the map indicates a total strength of 57,370 gammas for the vertical component of the earth's magnetic field at that point.

As shown in the profiles no anomaly of great magnetic intensity was found. However, there are a half dozen anomalies that show a range of 50 to 100 gammas. The significance of most of the anomalies is not known. One is known to occur at a contact of intrusive with the quartzites (Sta. 194 Profile M-C-OT.) Others may indicate the positions of the two branches of the Kimberley fault (Sta. 87 and 39 Profile A-B-C-D-E.) The anomalies at Stations 211, 216 and 255, occurring in areas probably underlain by quartzites,

might indicate mineralization or ore horizons. (Profiles C-O-P-Q-R-S and M-C-O-T and composite profile Q). The anomaly U-V might indicate mineralization near the intersection of the bedding fault and the anticlinal axis.

Detailed geologic mapping will aid in interpreting these anomalies.

CONCLUSIONS:

A preliminary study of the geology indicates the Mathew Creek claims are favorable structurally for the occurrence of lead-zinc deposits of the Sullivan or the Moyie types. The significance of the anomalies encountered in the magnetometer traverses is not known but some might be due to such ore deposits.

A detailed geologic mapping of the claims accompanied by further magnetometer work now appears to be warranted. In such an area ore deposits, if found, would likely be of major importance, i.e., the stakes in the gamble are big.

STATEMENT OF COSTS

MAGNETOMETER SURVEY

MATHEW 1 - 4 GROUPS

MATHEW CREEK, FORT STEELE M.D., B. C.

Alexander Smith and James A. Robertson

January 5 - February 5, 1948	Field Work 30 days	$2,200.00
February 5 - February 29, 1948	Office work 20 days	$1,000.00
	Draughting	100.00
	Total Man days - 108	$3,300.00

CERTIFIED CORRECT

March 1st, 1948

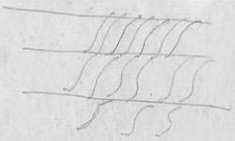
May 11. E slope Mathew Cr. n of Kim fault Cr.
8 AM El camp (5240)
4000' (4000) @ el. 5300 n25E from confluence. rusty ald gtzites
n 22 W dip 50° E
600' ± due E @ 5420 ald qtzites thin bedded E-W
(5340) dip 22° n

1' barren qtz vein 2-5 vert.

on ridge @ el. 5900 bar. (5800) thick bedded qtzites n 50 W dip 25° n E.

on n side of draw @ Pt x Bar 5600 5700 d grey any qtzite.
maybe bedding E-W dip 15° n
also clear? n 40 E 70° n W

looking n 40 E
bedding



200' to n @ 5650 5775 bedding n 60 E 60° n W
Thin bedding as coarse lenticular ahead like beds

Bar El 5800 5650 Pt x to ridge S 60 W 2000' ± following thin bedded rusty alt sed Str n 60 E dip 50° W. band at least 600' thick seds look bleached. barren qtz lenses ∥ bedding. looks like pos. shearing ∥ bedding

going down ridge Bar elev 5625 5450. pinnic shear?
n 40 E 45° n W

Bar elev 5425 5250 "
n 40 E, 600 n W

Bar elev 5290 5050 thin bedded qtzites showing fine bedding cut fault massive n 20 W 28° n E pinnic bedding given by Rice

clear. n 30 E
752 W sense @
Bar 5700 above

4650 4875 all qtzites with some streaks n 20 E & top ∥ Purdell sill

4240 4490 bottom of/c of sill

4000 4225 Cr & camp.

May 12 Bar 4400' on Ridge N. sheared sill shearing N60E 70° N W

4450 100' U. stream shear zone N 25E 80° N W heading N 20 W for 500' ± across shear to Bar 4600 Retr. av. N 40E dip 50° N W

Bar 4625 in small draw heading for the forks of Mathews Creek highly silic white gneiss bedding ? N 20E 7° N W ? platy struct ∥ shearing shear zone extends N nearly to this pt.

500' U.S Bar 4710 same shear with shearing ∥ to bedding N 40E 32° N W

on C.N.S. N 10E line @ 4950 Ald. gneiss not much shearing bedding more prominent N 70E 32° N W trending more E-W flattening

no post seen in going N 10E for 2000' Returned found old post NE 49 + 3 bearing trees below forks of Mathews Cr. about 300' from grid line cut S 10 W across creek no lines at rt. L.S from the post

on Mathews Creek 300 d stream from survey line of rusty shear N 40E 45° N W Bar at Cr. 4225 @ 2.45

PROPERTY					DATE
FROM	TO	BEARING	DIST.	VERT. L.	ELEVATION

Bar camp mathew C. 8AM 4650   Bar 3:30 PM 4650

Bar 4975 2000 u.s from camp on E side of valley sill below then qtzites thick bedded banded N35W 25NE

Continuing North in sill to Bar 5130 N80W to cabin & north fk off cabin

up the hill to 5450 to N.W of sill. sill contact seems to swing rapidly westward as 100-200' N qtzite @ 5350. banded lensy delta like N40W 20NE (due E of cabin & draw Trd to north

In C draw Bar 5200 Draw – N20E 80NW jt pl a fault. Top of sill @ 5250. qtzites to draw N20W 30NE banded sandy

500' N of Draw all banded qtzites N50W 10NE
Bar 5300 sill just below appar not offset by draw

+500' north another N-S draw

Bar 5370 S35W to cabin C. qtzites just above sill banded N55W 10°NE

500' N qtzites E-W-10°N

Bar 5400 S20W to cabin C qtzites delta like N75W 10NE pac N20E vert some rolls in qtzite

Within 500' north qtzites swing thru E-W to N70E to N40E 15 NW

Bar 5250 S20E to cabin C.
qtzites sheared bedding & contorted N40E 60 NW. 300' downhill to sill acid var.

Ditto sheared & v. thin bedded chloritic N30E 55 NW mapped as fault a last trip

PROPERTY Mathew C. **DATE** Sept 13 '1946

FROM	TO	BEARING	DIST.	VERT. L.	ELEVATION

Bar camp 8AM 4370 7 PM 4440

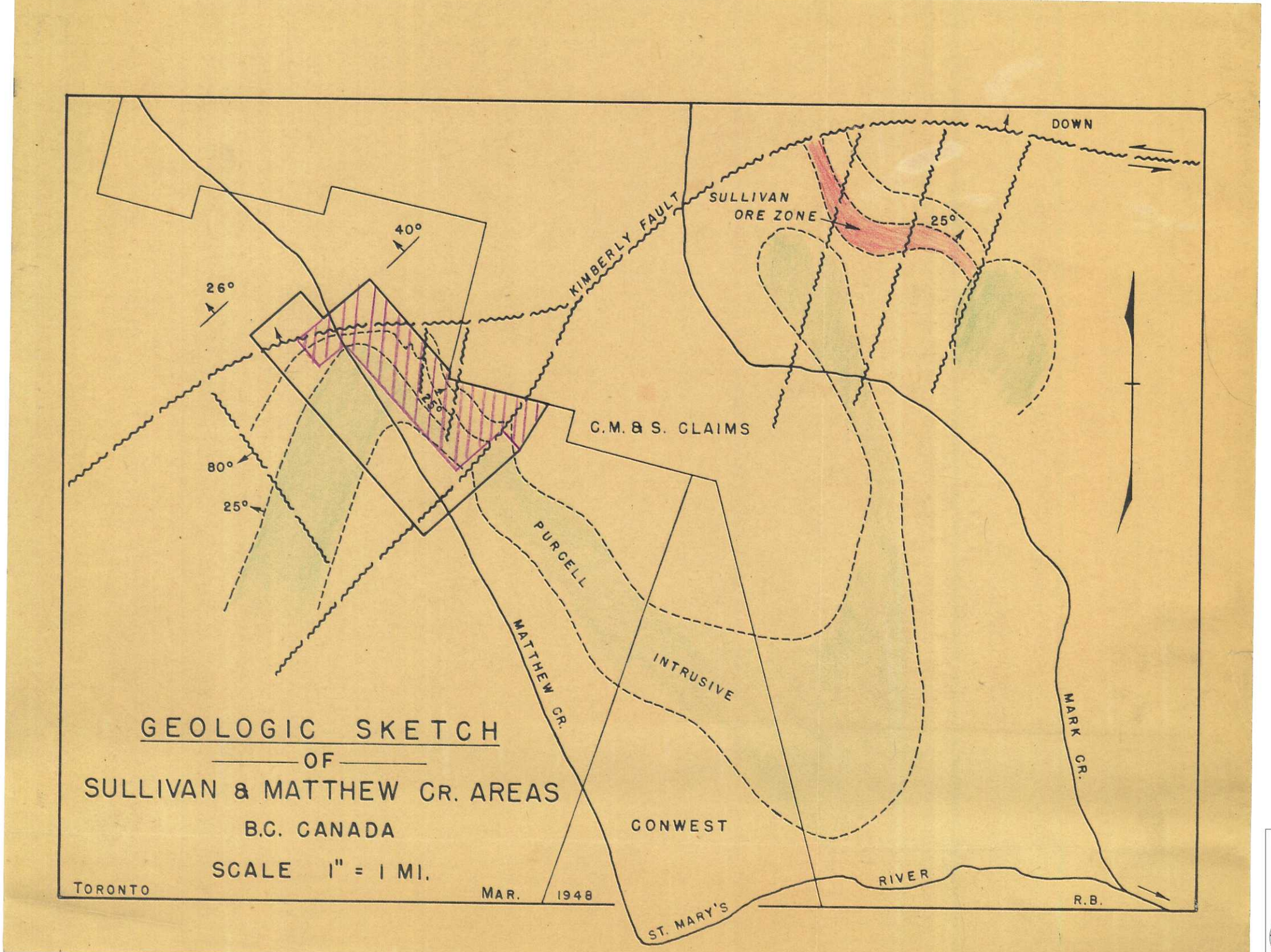
@ C. jntn ? 1 mi above Forks of Mathew C.
qtzites 6"–1' N40E 27 NW.
North of C. talus slopes. seems as if
Sullivan fault lies about 500 N of C.
as qtzites alt. rusty min. qtz sli in talus
& bluffs 1000' N of creek fresh qtzites

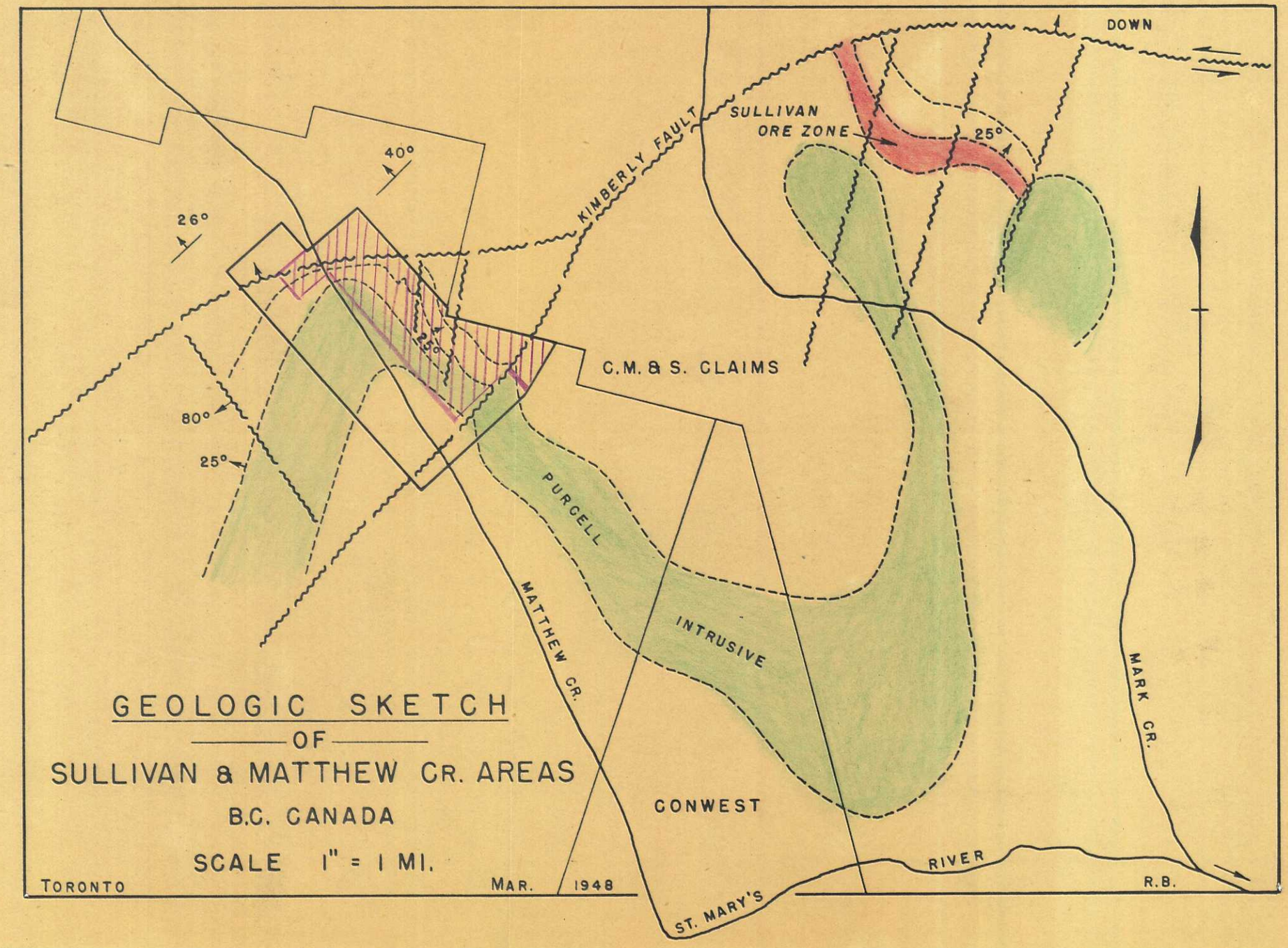
elev. 5600 3 30 PM alt silic zone. 'mini
folding simi Sullivan
prob. at red dot on Nelson sheet.
S85W from draw between N. star Hill
a C. draw 500 to S
going E bar 5500 N-S Sew line
same as at jnt of C.
5200 – 4650 sill
4650 qtzites below sill banded
~~Bar~~

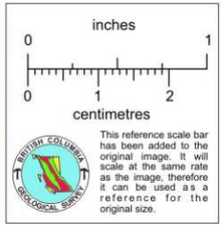
C. above sill bluffs Bar 5350 sill silic sheared
sch contact N 35 W
400 horiz & 500' vert above C.

Bar 6100 500' N W of C. qtzites N35E 20 NW
rusty alt. below this in C. sill
5580 500' N of C. shear zone simi 100' wide
N20–30W 80° SW seems to cut
sill just E of the N-S Sew. line

Bar camp 4580 →




DOWN
SULLIVAN
ORE ZONE
25°
KIMBERLY FAULT
40°
26°
25°
80°
25°
C.M. & S. CLAIMS
PURCELL
INTRUSIVE
MATTHEW CR.
MARK CR.
CONWEST
RIVER
ST. MARY'S
R.B.
GEOLOGIC SKETCH
OF
SULLIVAN & MATTHEW CR. AREAS
B.C. CANADA
SCALE 1" = 1 MI.
TORONTO
MAR. 1948


inches
0
1
0
1
2
centimetres
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L. 13764
L. 13735
L. 13734
L. 13783
L. 13705
L. 13704
L. 13675
L13674
L. 13645
L. 13643
L 136 14
13613 DATA
L 13941 RADIO
L13893 ZULU
L13894 YULE
L13906 ZOON
L13907 ZONE
L13922 ZODIAC
L13923 ZIRCON
L.13940 ZERO
L 13939 YAWL
L 13938 WORT
L13937 VOLE
L13936 UPROOT
L13942 MAGMA
L13943 NASH
L 13944 CHILE
L.13945 KRAFT
L.13946 FLUSH
L 5631 FULL HOUSE
L 5629 BRANDON

NORTH
N 76° W
N 14° E
E.
MATHEW CR. G.S.C. 1"=1 MI. PLOTTING
C.R. JNTN PROV. GOV'T 1"=1 MI. PLOTTING
MARK CR.
N 42° W ±
S 42° E
N 48° E
LOCATION LINE
MC 15
MC 14
MC 13
MC 12
MC 11
MC 1
MC 2
MC 3
MC 4
MC 5
MC 6
MC 7
MC 8
MC 9
MC 10
Camp 2
750
J.R.
SN
ZOOTA
STAR HILL
MATHEW CR.

Scale 1" = 1500'

inches
0 1
0 1 2
centimetres
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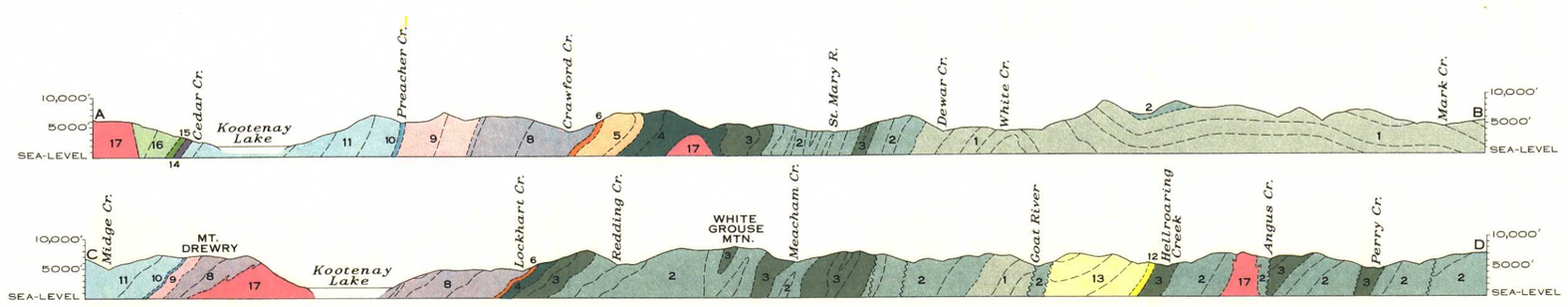
CANADA

DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY



Structure sections along lines A-B and C-D

LEGEND

MESOZOIC AND (?) CENOZOIC

POST-TRIASSIC

18 — *Syenitic intrusives; agglomerate*

17 — *Chiefly granite, granodiorite and quartz diorite*

MESOZOIC

TRIASSIC

SLOCAN SERIES

16 — *Slate, argillite, quartzite, limestone; schists*

KASLO SERIES

15 — *Lavas, tuffs, breccias; allied intrusives; schists*

PALAEOZOIC AND MESOZOIC

UPPER CARBONIFEROUS AND TRIASSIC (MILFORD GROUP)

14 — *Slate, argillite, chert, limestone; schists; some greenstone*

PALAEOZOIC

CAMBRIAN

LOWER CAMBRIAN

13 — *EAGER FORMATION: olive-green, purple and grey shale*

12 — *CRANBROOK FORMATION: silicious, white, rose, purple and grey quartzite and conglomerate*

PROTEROZOIC (LATE PRECAMBRIAN)

WINDERMERE

LARDEAU SERIES

11 — *Micaceous and chloritic schists; quartzite and limestone; paragneiss*

10 — *BADSHOT FORMATION: magnesian limestone*

HAMILL SERIES

9 — *Grey, green and white, silicious quartzite*

HORSETHIEF CREEK SERIES

8 — *Green, argillaceous quartzite; blue-grey limestone, arkose, pebble conglomerate*

7 — *IRENE VOLCANIC FORMATION: sheared, andesitic volcanic rocks*

6 — *TOBY FORMATION: conglomerate*

PURCELL

UPPER PURCELL

5 — *MOUNT NELSON FORMATION: laminated argillite, magnesian limestone, quartzite*

4 — *DUTCH CREEK FORMATION: laminated argillite, magnesian limestone, quartzite*

LOWER PURCELL

3 — *KITCHENER–SIYEH FORMATION: chiefly variegated magnesian limestone and argillite; calcareous quartzite*

2 — *CRESTON FORMATION: green, purple and grey, argillaceous quartzite; some argillite*

1 — *ALDRIDGE FORMATION: grey, rusty-weathering, argillaceous quartzite and argillite*

Areas of intense metamorphism with many granitic sills and dykes

Heavily drift-covered area

Fossil locality (F)

Bedding (vertical, inclined, horizontal, overturned)

Fault

Glacial striæ

Road and buildings

Road not well travelled

Trail

Church

School

Post Office

Mine tunnel

Lighthouse L.H.

Triangulation Station

International boundary

Indian Reserve boundary

Stream (position approximate)

Intermittent lake and stream

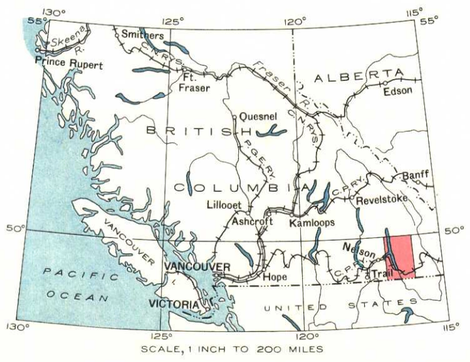
Contours (interval 500 feet)

Contours (position approximate)

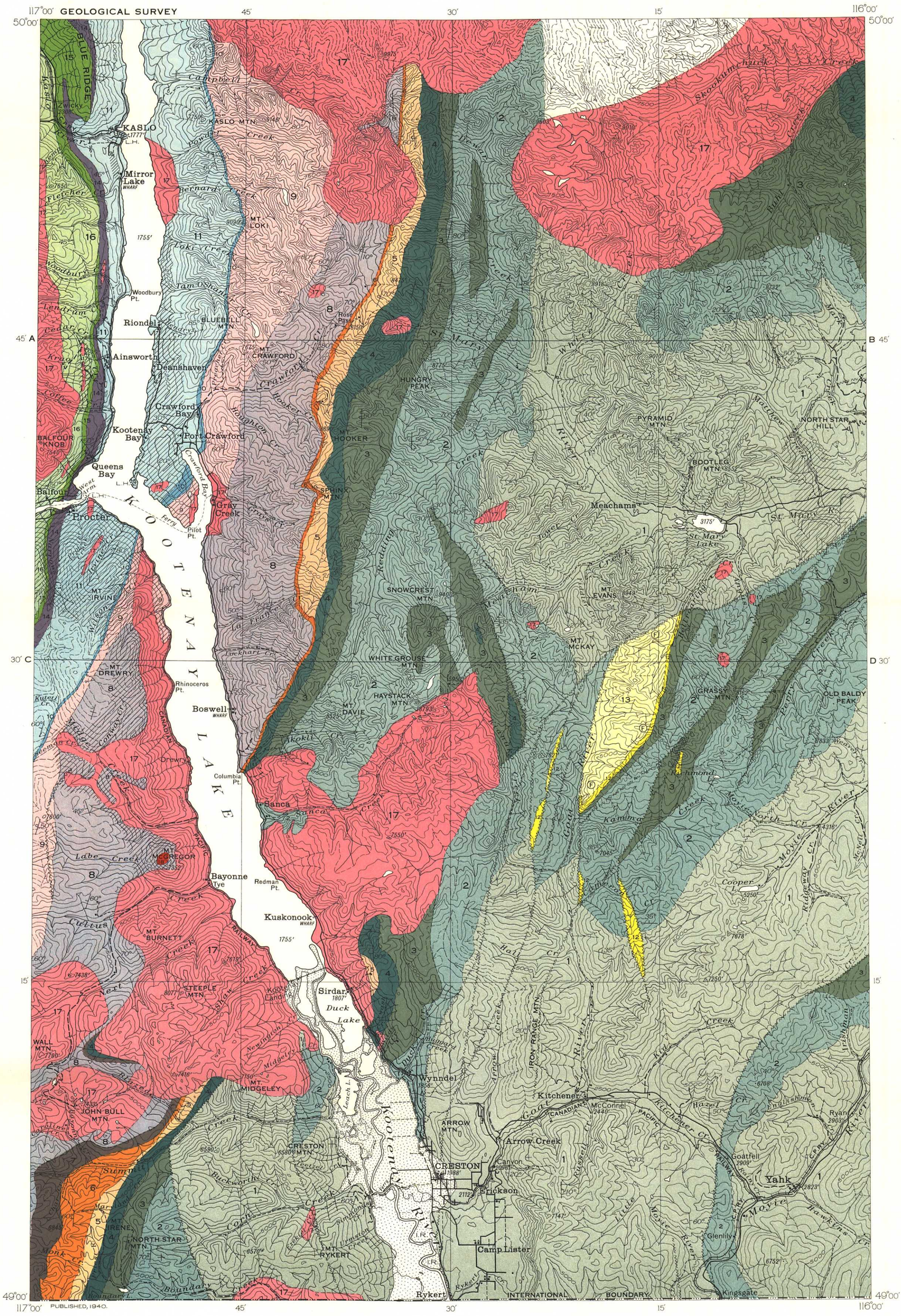
Height in feet above Mean sea-level 1755'

Geology by H.M.A. Rice, 1936, 1937, and 1938.

Surveys and topography by the Topographical Survey, 1936. Cartography by the Drafting and Reproducing Division, 1940.



GEOLOGICAL SURVEY



PUBLISHED, 1940.

MAP 603A

NELSON

(EAST HALF)

KOOTENAY DISTRICT

BRITISH COLUMBIA

Scale, 1/253440 or 1 Inch to 4 Miles

4 0 4 8 12 Miles

Approximate magnetic declination, 24° East.

inches 0 1 2

centimetres 0 1 2 3 4 5