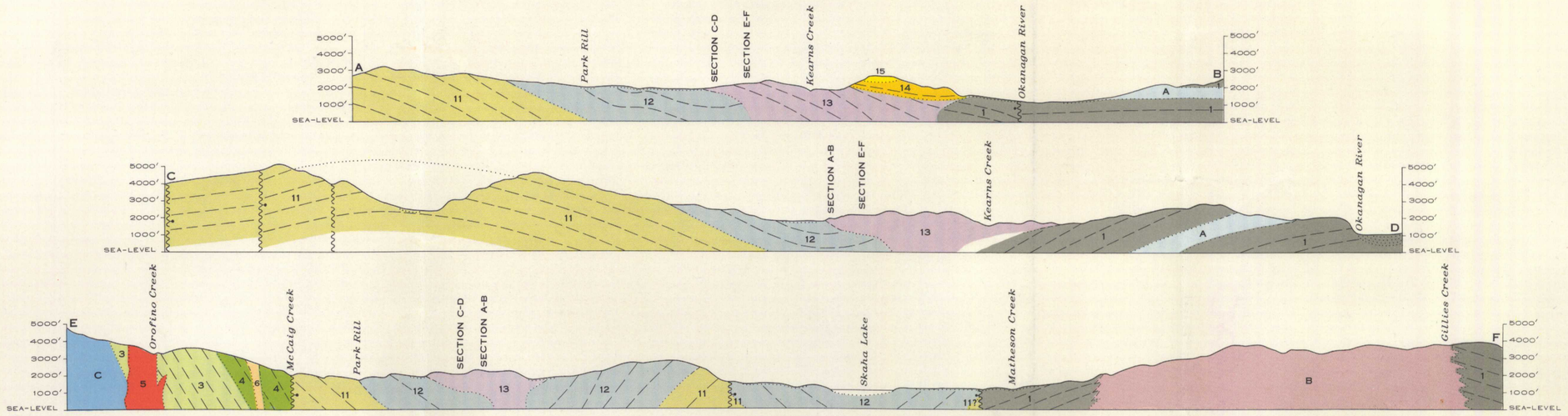
CANADA

DEPARTMENT OF MINES AND RESOURCES

MINES AND GEOLOGY BRANCH

BUREAU OF GEOLOGY AND TOPOGRAPHY



Structure sections along lines A-B, C-D, and E-F

LEGEND

CENOZOIC

TERTIARY

- 15 — *Conglomerate*
- 14 — *Agglomerate, conglomerate*
- 13 — *Andesite; breccia, tuff and agglomerate*
- 12 — *WHITE LAKE FORMATION: conglomerate, sandstone and shale; tuff, agglomerate and breccia; coal*
- 11 — *MARRON FORMATION: mainly basalt and andesite; more feldspathic lavas in northern part of map-area; related breccia, agglomerate and tuff; conglomerate*
- 10 — *Coarse granite porphyry, coarse feldspar porphyry*
- 9 — *SPRINGBROOK FORMATION: mainly conglomerate; sandstone, shale, tuff, talus deposits*

POST-TRIASSIC

- 8 — *Granite porphyry, granophyre, felsite*

MESOZOIC

- 7 — *Granite;* **7a**, *Oliver granite*
- 6 — *Granodiorite*
- 5 — *Mainly diorite; gabbro, quartz diorite*

TRIASSIC OR OLDER

- 4 — *OLD TOM FORMATION: basalt and andesite (greenstone); minor, related diorite*
- 3 — *SHOEMAKER FORMATION: mainly chert; tuff, greenstone, limestone*

CARBONIFEROUS (?)

PALAEOZOIC

- 2 — *Thin bedded quartzite, schist* — KOBAU GROUP
- 1 — *VASEAUX FORMATION: paragneiss, schist, quartzite, limestone*

- A — *Pegmatite. Age unknown*
- B — *Granodiorite. Age unknown*
- C — *Altered, dioritic rocks. Origin uncertain*

Drift-covered area

Limestone beds. Not all of the same age Li

Bedding (inclined, horizontal)

Fault (solid circle indicates downthrow side)

Glacial striæ

Fossil locality ..... (F)

Road well travelled

Road not well travelled

Trail

Power transmission line

Post Office

Land District boundary

Indian Reserve boundary

Ditch

Stream (position approximate)

Intermittent lake and stream

Marsh

Contours (interval 100 feet)

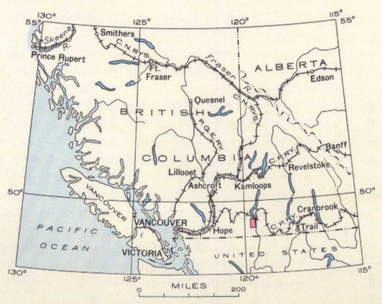
Contours (position approximate)

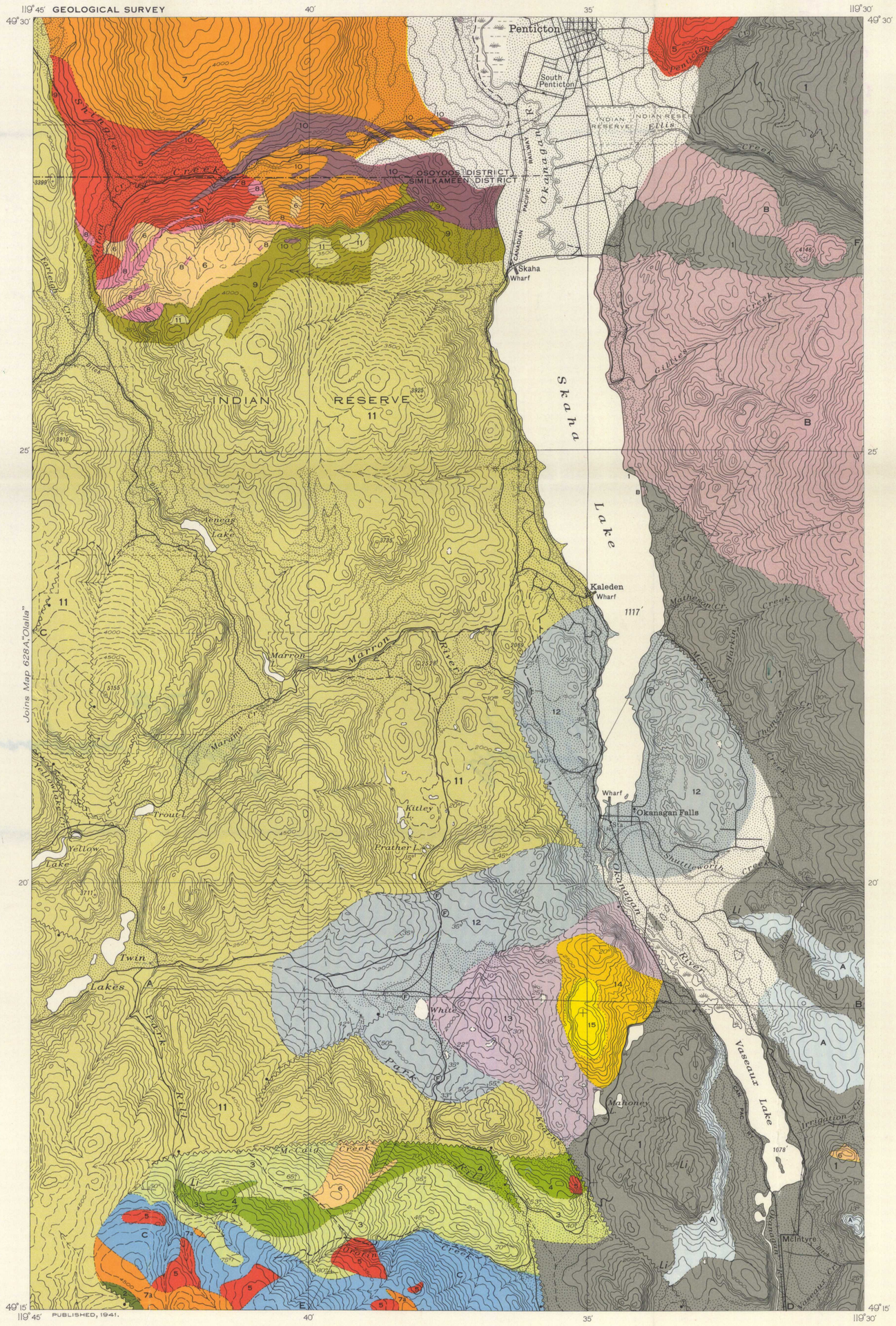
Depression contour

Height in feet above Mean sea-level ..... 1078′

Geology by H.S.Bostock, 1928.

Base-map prepared by the Topographical Survey, 1937, from maps supplied by the British Columbia Department of Lands. Cartography by the Drafting and Reproducing Division, 1940.





MAP 627A

OKANAGAN FALLS

SIMILKAMEEN AND OSOYOOS DISTRICTS

BRITISH COLUMBIA

Scale, 1/63,360 or 1 Inch to 1 Mile

Miles 0 1 2 3

Approximate magnetic declination, 24° East.

DESCRIPTIVE NOTES

The area has been prospected since the early nineties and some gold, silver and coal has been produced. Fissure veins carrying values in gold and silver have been found in the Mesozoic and older formations close to the Oliver granite (7a). Seams of bituminous coal have been mined in the White Lake formation (12) at White Lake. These seams occur in an eastward plunging syncline and include a number of workable thickness.

An area of Mesozoic and earlier stratified rocks extends from east of Okanagan valley to Princeton. It is cut by intrusives and partly covered by Tertiary rocks but as a whole forms a nearly continuous belt. It is divisible into four irregular segments, each composed of a group of rocks that on the whole is younger than the group forming the adjoining segment to the east of it. The Vaseaux formation (1) and other crystalline rocks of mainly Palaeozoic age lie along Okanagan valley and form the easternmost segment. To the west of this, between Okanagan and Similkameen valleys, is a segment occupied by the late Palaeozoic, Kobau group (2) which has its greatest development in the Keremeos map-area. West of this is a third segment extending northwesterly along Similkameen valley to Winters Creek in Olalla and Hedley map-areas. This segment is composed of a group of several, closely-folded formations, including the Shoemaker (3) and Old Tom (4), from which Permian fossils and others of probable early Mesozoic age have been found. These formations strike northeast and east and are cut off to the north by granitic intrusions. To the east most of the segment is overlain by Tertiary rocks but its formations outcrop in small areas close to the south border of the map-area and blocks from them have been incorporated in overlying Tertiary volcanic rocks (13). In this map-area the third segment thus spreads east across the north end of the second segment to meet the first and forms a steep and broad northwest-plunging anticline the northern part of which is concealed by Tertiary rocks. The west front of the first segment is bounded by northwesterly faults arranged "en échelon." Between them the dips of the Vaseaux formation and its truncated surface slope northwards under Tertiary strata. The actual contact is, however, obscured by later Tertiary beds (14 and 15) and by drift and may be a faulted one.

The Tertiary rocks in the central part of the map-area occupy a large, irregular, down-faulted basin-like structure. They were laid down in a depression that commenced to form in early Tertiary time. Subsidence at first involved the entire area of the basin but later was localized to the southeast where the White Lake formation (12) was deposited. A final volcanic outburst in the southeast part of the basin was followed by local subsidence of the accumulated beds (13 and 14), tilting them to the east and south. Horizontal conglomerate strata (15) record a final return to stable conditions.

The Vaseaux formation is composed of conspicuously stratified paragneisses. Its lower members are mainly coarse gneisses of hornblende and feldspar or of feldspar, mica and quartz, and there is some coarse augen gneiss. These gneisses are much altered along a zone extending from two miles north of the mouth of McLean Creek southeastward to near Shuttleworth Creek. The upper members are best exposed southeast of Mahoney Lake. They are mainly thinly stratified, fine grained gneiss and mylonite but include some schist, quartzite and thin beds of limestone. The formation is intruded by a great many sills of pegmatite and gneissic granite some of which are aphophyses from larger, separately mapped bodies (A). Within the map-area the formation has a thickness of 5000 feet or more. Dips are commonly less than 30 degrees, particularly at the lower horizons, but there are sharp local flexures. The formation is intruded by gneissic granodiorite (B), by pegmatite (A), and by diorite (5) and granodiorite (6).

The altered, dioritic rocks (C) are banded in places and vary widely in mineral composition and texture. They include patches of quartzite, massive hornblende-rich diorite, amphibolite schist and coarsely recrystallized rocks spotted with metamorphic minerals. In places they appear to underlie the Shoemaker formation and they may include altered parts of this and older formations.

The post-Triassic batholithic rocks of the map-area indicate a sequence from diorite (5) to granite (7). The diorite bodies include a variety of intermediate to moderately basic types, most of them rich in hornblende. Most of the Oliver granite (7a) and the granite along Shingle Creek valley (7), is coarse grained, light coloured and porphyritic and both are parts of larger bodies lying beyond the map-area. The principal body of Oliver granite in this map-area is fairly typical of the greater part of the main body but the smaller exposures vary to finer-grained, darker and more basic types. The granodiorite bodies (6) near Shingle Creek are the eastward extensions of a larger body that has been intruded by granite (7). The small granodiorite bodies farther south are of similar rock and other like nearby bodies in the Keremeos map-area are intruded by the Oliver granite.

The Springbrook formation (9) rests on a pre-Tertiary rock surface of steep relief. It is composed of soils, alluvium, talus, stream and lake deposits and tuffaceous materials that accumulated in the valleys before and during the earlier extrusions of the Marron volcanic rocks (11). Where the Springbrook formation is thick, the basal beds are of conglomerate containing large angular boulders. These beds grade upward into conglomerates composed of smaller, more rounded and better sorted materials. Uppermost strata include beds of polished pebbles, tuffaceous sandstones and silts. In the adjoining Olalla map-area to the west these beds contain plants of early Tertiary, perhaps Paleocene age.

Pink granite porphyry (10), containing large well-formed pink crystals of orthoclase feldspar in a fine grained porphyritic groundmass, forms a number of dykes along Shingle Creek valley. To the southeast are outcrops of white or greenish rocks containing similar, large orthoclase crystals but showing in places structures typical of flow rocks. A body of such rock is exposed in cliffs lying between conglomerate beds of the Springbrook formation. A few miles farther west white tuffaceous material of similar appearance to the flows and containing large fragments of feldspar is stratified with this formation. Fine white tuff that occurs in places in the upper part of the Springbrook formation is thought also to have its source in a volcanic centre located near the east end of the granite porphyry area.

The volcanic rocks of the Marron formation (11) were extruded over hills of pre-Tertiary rocks and into valleys partly filled by the Springbrook formation. They filled these valleys and accumulated to a thickness of over 4000 feet and are believed to have covered all parts of the map-area. The formation consists mainly of lava flows 10 to 200 feet thick, but in places there are large masses of agglomerate. In the northeastern part of the map-area the lower flows are highly feldspathic. To the northwest some fine grained acid types were observed. In places, notably northwest of White Lake, there are thin interbeds of conglomerate, sandstone and soil.

The White Lake formation consists of lake and stream deposits intermixed with contemporaneous volcanic ejectamenta. The beds were deposited on a down-warping, down-faulted surface of the Marron formation from which most of their materials were derived. With the localization of subsidence to the southeastern parts of the Tertiary area, two synclines of these sediments formed one near White Lake and the other at Okanagan Falls.

In the Okanagan Falls syncline dips are up to 45 degrees and in the north limb of the White Lake syncline they are as steep as 65 degrees. At White Lake the strata of the north limb of the syncline are 4000 feet or more thick. The central and western parts contain much shale and sandstone with coal but, to the east, overlooking Okanagan River, the sediments become coarser, include much conglomerate, and no coal has been observed. A few sheets of lava also occur in the lower beds on the north limb of the syncline and the upper beds contain blocks of Shoemaker chert. The Okanagan Falls syncline contains less shale and no workable coal seams have been found in it. Plant remains from both synclines indicate a probable late Eocene age but those from the Okanagan Falls syncline are regarded as possibly somewhat younger.

Volcanic rocks (13), consisting mainly of breccia and agglomerate, lie unconformably over the southeastern part of the White Lake syncline. They are roughly stratified and dip easterly or southerly. In places a large proportion of the fragments are from the Old Tom, Shoemaker and Vaseaux formations and from the granitic intrusives of the map-area. The fragments are up to 20 feet long. North of Mahoney Lake is a group of strata (14) in which there is more evidence of sorting and stratification and in which volcanic materials are less abundant. Overlying them are beds of nearly flat-lying conglomerate (15).

Glacial striae and glacial deposits were observed up to the highest summits in the map-area. The steep relief of ridges transverse to the movement of the ice protected many parts from scouring. Deeply weathered rocks underlie the north sides of some of the valleys, notably that of Penticton Creek. Okanagan valley formed a main artery of ice flow which spread southwest into Keremeos Creek due to the shelter afforded this locality by the high ground to the west. Well bedded white, sandy silts, deposited in lake basins during the melting of the ice, are present in parts of Okanagan and other valleys.

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