GEOLOGICAL SURVEY OF CANADA
DEPARTMENT OF MINES AND TECHNICAL SURVEYS

PRELIMINARY SERIES

SHEET 92 I/SE

LEGEND

CENOZOIC

PLEISTOCENE AND RECENT

Alluvial (9,10)

10 Stream Channel and Flood-plain Deposits: gravel, sand, and mucky peat

9 Alluvial Fan Deposits: poorly sorted gravel, sand, silt, and clay

Lacustrine and Glacio-lacustrine

8 Lake Deposits: silt, clay, sand, and gravel; 8a, 'collapsed' lake deposits; 8b, thick silt, clay, and sand; 8c, thin veneer lake deposits, (silt and clay); 8d, complexes of deep-water silt and clay, and shoreline sand and gravel

Fluvial and Glacio-fluvial (6,7)

7 Stream Deposits: gravel, sandy gravel, and sand; 7a, terrace deposits; 7b, deltaic deposits

6 Kettled Stream Deposits: gravel, sandy gravel, sand, and silt, surface marked with kettle holes; 6a, terrace deposits; 6b, deltaic deposits

Glacial and Glacio-fluvial (4,5)

5 Rill Deposits: complexes of channel-bottom gravels, bouldery bars, and small patches of ponded silts and clays

4 Morainal Gravels: poorly sorted gravel and sand characterized by irregular hummocky and kettled topography; includes kames and eskers

Glacial

3 Till: 3a, drumlinized till; 3b, hummocky and ridged till

2 Drift, undifferentiated: mainly till showing no distinctive drift topography; generally covered by 1 foot to 5 feet of colluvium; may include areas of younger deposits. (Largely mapped from air photos in forested regions)

Glacial and Interglacial

1 Sub-till Stratified Deposits: includes ice-advance outwash and interglacial sand, silt, and gravel

TERTIARY AND EARLIER

R Rock; includes areas of outcrop or near surface rock

Geological boundary (defined, approximate, assumed)

Drumlinoid ridge, crag-and-tail hill (direction of ice-movement known, not known)

Esker (direction of stream flow known, unknown)

Till ridge

Gravel pit

Meltwater channel (small, large)

Geology by R. J. Fulton, 1960-61

Cartography by the Geological Survey of Canada, 1962

Main roads

Other roads

Trail

Township boundary (surveyed, unsurveyed)

Indian Reserve boundary

Surveyed line, lot number 1290

Railway

Telephone or telegraph line

Post Office Pa

Intermittent stream

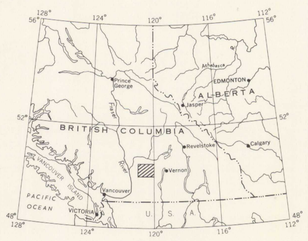
Marsh

Contours (interval 100 feet) 4500

Height in feet above mean sea-level 5613

Base-map by the Surveys and Mapping Branch, 1950

Approximate magnetic declination, 23°30' East, decreasing 3.1' annually.



INDEX MAP

PUBLISHED, 1962
COPIES OF THIS MAP MAY BE OBTAINED FROM THE DIRECTOR, GEOLOGICAL SURVEY OF CANADA, OTTAWA

PRINTED BY THE SURVEYS AND MAPPING BRANCH

MAP 8-1962
SURFICIAL GEOLOGY
MERRITT
BRITISH COLUMBIA

Scale: One Inch to Two Miles = 1/126,720

Miles 2 1 0 2 4 6

DESCRIPTIVE NOTES

Merritt map-area is a hilly upland divided into blocks by deep, and in some places broad valleys. Below an elevation of about 3,500 feet much of the country is accessible rangeland; above this elevation the upland is thickly forested and largely inaccessible.

The best rock exposures (R) are found along the main valleys. Outcrops in the upland area are generally small and widely scattered because of the thin but extensive drift cover. The bedrock has been studied by Cockfield[1].

The sub-till stratified deposits (1) southwest of Merritt consist of poorly sorted sandy gravel and poorly sorted sand and silt containing fresh-water molluscan shells, and are thought to be of interglacial origin. The stratified material near Trapp Lake consists of well-sorted gravel and sand, varved clay, and silt, and is believed to be ice-advance outwash. Exposures of similar material, too small to show on the map, are present at other places along the main valleys.

Large areas of undifferentiated drift (2) occur in forested parts of the map-area. Their boundaries have been drawn from air-photo analysis.

Extensive areas of drumlinized till (3a) contain drift forms ranging from drumlinoid ridges to crag-and-tail hills. The individual forms range from hundreds to thousands of feet in length and from tens to hundreds of feet in width.

Isolated patches of hummocky and ridged till (3b) occur on the lower parts of the north-facing slopes of the plateau blocks in several places. In most of the ridges the till is compact but in some it is loose and gravelly. The hummocks and short sinuous ridges were probably formed by ice-marginal shearing and pushing, but in places may have been formed by the squeezing of basal till into crevasses. The hummocky-till areas shown on the east side of Guichon Creek are characterized by large kettles and almost equidimensional hummocks and may have resulted from the irregular loading of plastic till by stagnant blocks of ice.

The large deposits of gravel on the west side of Guichon Creek vary from poorly sorted morainal gravels (4), generally occupying central parts of the valley, to well-sorted terrace and deltaic deposits (6), found mainly near the valley wall. These gravel deposits were probably laid down on top and along the sides of an ice tongue that occupied the centre of the valley after the ice had receded from the upland area.

Rill deposits (5) consist of channel-bottom gravels and sands with local pockets of clay and silt, and were derived from till by glacial meltwater. The deposits are invariably associated with abandoned ice-marginal channels that occur singly or in series and trend across the slope of the local hillsides. Most of the material was probably derived from the actual cutting of the meltwater channels, because most of the glacially derived sediment was trapped in local ice-marginal lakes upstream from these channels.

Three glacial-lake stages have been recognized in Nicola valley[2]. The lakes, as delineated by abandoned deltas and wave-cut benches, stood at elevations of approximately 3,450, 3,150, and 2,450 feet. The 'collapsed' silt deposits (8a) are thought to have been deposited on ice; the thick silts (8b) are considered to be near-source deposits, whereas the veneer lake deposits (8c) were probably laid down some distance from their source. Veneer deposits of silt and clay, the most extensive lake-sediments in the area, are up to 10 feet thick, and are found in pockets and patches near the centres of the drained lake basins. Their patchy distribution is controlled by topography as the silts occur only in depressions and on gentle slopes. Areas of complex lake-deposits (8d) are characterized by irregularly distributed patches of gravel, silt, sand, and alluvium. Deposits of this type in Highland Valley and Meadow Creek valley are thought to have resulted from deposition in short-lived glacial lakes in which the water level was never stable long enough to allow a normal pattern of lake features to develop.

In Stumplake Creek valley, Lower Nicola valley (west of Nicola Lake), and in Coldwater River valley, the glacial-lake deposits have been partly covered by Recent alluvium (9,10). The nature of the cover in each place was determined by the supply of material and the regimen of the stream occupying the valley. Stumplake Creek valley, which is drained by a small stream, contains a system of coalescing alluvial fans; Lower Nicola valley, which is occupied by a large stream, is characterized by a flood plain that occupies most of the debris-choked valley; Coldwater River valley, however, is drained by a medium-sized stream, and is characterized in part by coalescing fans and in part by a stream flood plain.

Thin (1 foot to 4 feet thick), mucky peat is present in most of the poorly drained depressions and abandoned or underfit stream-channels, but was not mapped separately from the stream-channel and flood-plain deposits (10).

[1] Cockfield, W. E.: Geology and Mineral Deposits of Nicola Map-area, British Columbia; Geol. Surv., Canada, Mem. 249 (1948).

[2] Mathews, W. H.: Glacial Lakes and Ice Retreat in South Central British Columbia; Trans. Roy. Soc. Can., sec. 4, vol. 38, pp. 39-57 (1944).

MAP 8-1962
MERRITT
BRITISH COLUMBIA
SHEET 92 I/SE