KOOTENAY LAKE MAP

(NM-11)

Explanation of Map Units

HOLOCENE

m

MADE-LAND: Diamicton and bouldery diamicton. Mounds, benches and valley fills of mine waste material with texture ranging from silt to boulder. Composition variable but dominantly sandstone, siltstone, shale, limestone and coal.

I

ALPINE GLACIERS AND ICE CAPS: Ice, semi-permanent snow and minor glacial debris. Unit contains cirque glaciers, mountain ice caps, valley glaciers and associated areas of fern and semi-permanent snow banks. Locally it includes loose, bouldery glacial deposits and nunataks which consist largely of steep rock slopes and rock covered by a veneer of rubbly colluvium. Ice thickness unknown but probably is in the order of 10's of metres.

S

LANDSLIDE: Grey to brown diamicton and rubble including blocks up to several metres in size. Massive to crudely stratified with material overwhelmingly of local origin. Occurs as lobate ridged and hummocky valley fills up to 100 m thick.

HOLOCENE AND LATE WISCONSINAN

Fc, Fo, Ff, Fx

ALLUVIUM: Grey to light brown sand, gravel, silt and diamicton. Generally well sorted and stratified with horizontal bedding, cut and fill structures, cross bedding and ripple laminations. Clast lithologies mixed and variable and generally reflect local bedrock and till. Occurs as floodplain, terrace and fan deposits. Locally includes unmapped glaciofluvial, glaciolacustrine and colluvial deposits. Thickness 2 to 10 m but where streams enter lakes may occur as a deltaic wedge up to 200 m thick.

Fc: Dominantly channel sands and gravels and associated sand and gravel terraces with minor finer grained overbank sediments.

Fo: Dominantly fine grained sand and silt overbank sediments, generally overlying coarser grained sediments and locally including channel sediments and minor organic deposits.

Ff: Dominantly diamicton, gravel and sand occurring as alluvial fans. Texture, structure and sorting extremely variable. Structure may be thick bedded and massive, parallel stratified or cut and fill cross bedded. Texture in many places grades from coarse and bouldery near fan apex to sandy silt and clay at the toe. Clasts are generally subangular to subrounded but may be well rounded where derived from pre-existing fluvial gravels.

Fx: A complex of coarse sediments (Fc), finer overbank materials (Fo) and poorly sorted alluvial fan (Ff) and colluvial deposits. Consists of floodplain sediments intertonguing with coarse, poorly sorted sediments deposited at the mouths of steep gradient tributaries and with rubble and diamicton deposited as colluvial aprons and cones.

E

EOLIAN DEPOSITS: Light brown to grey brown medium to fine grained sand and coarse silt. Sorting moderate to good; structure massive, horizontally stratified, ripple laminated or rarely festoon cross bedded. Occurs largely as a complex of blowouts and sand mounds developed on sandy lacustrine and fluvial deposits. Unmapped areas of eolian deposits and isolated dunes may locally overlie lacustrine and glaciofluvial sediments. Thickness up to 10 m.

LATE WISCONSINAN

Gt

GLACIOFLUVIAL SAND AND GRAVEL: Grey to light brown sand, pebbly sand and gravel. Generally well sorted and stratified with cross bedding and cut and fill structures common. Clasts subrounded to well rounded and lithologies reflecting local bedrock and till. Occurs in the form of terraces and deltas associated with meltwater and outlet channels. Thickness up to 15 m.

Gx

ICE CONTACT GLACIOFLUVIAL SAND AND GRAVEL: Grey to light brown sand, pebbly sand and gravel, locally containing poorly sorted bouldery beds, silt and clay interbeds and lenses of diamicton. Sorting and stratification generally good but in places poorly sorted and with primary horizontal structures and cross stratification faulted and contorted by melting of buried ice. Occurs in the form of ridges and hummocks (kame and esker complexes) and other features associated with deposition of sand and gravel in contact with ice. Thickness up to 50 m.

G^9

GLACIOFLUVIAL SAND AND GRAVEL: Grey to light brown sand, pebbly sand and gravel with minor silts and clay. Generally well stratified with ripple lamination, trough and foreset cross bedding. Pebble composition is mainly quartzite and dark carbonates with minor locally derived sandstone and shale. Occurs as terrace deposits on the bottom and sides of meltwater and outlet channels associated with Crossfield drift (M^9). Thickness 3-10 m.

Lt, Lx

GLACIOLACUSTRINE SILT, CLAY AND SAND: Light to dark grey, light brown variably calcareous, silt, clay and sand. Commonly laminated, with thickness of laminations decreasing upwards but locally massive. Grain size in many places decreasing upwards but in some areas the finer sediments are overlain by a layer of sand and silt. Locally the unit includes unmapped areas of till, glaciofluvial, alluvial and eolian sediments. Thickness generally 5-10 m but locally up to 100 m.

Lt: Silt and clay occurring as flat-surfaced deposits (in many areas extensively gullied) in bottoms and at the margin of valleys. Thickness up to 100 m.

Lx: Silt, clay and sand including interbeds of sand and gravel; gently rolling to moderately hummocky. Consists largely of glaciolacustrine deposits formed near the margin of a lake basin or in contact with ice. Locally includes unmapped hummocks of gravel and till.

L^9

GLACIOLACUSTRINE SAND AND SILT (Midnapore Silts): Light brown, grey to light grey, calcareous sand and silt. Generally ripple laminated or horizontally laminated. Texture becomes finer with depth. Deposit interpreted as nearshore and/or deltaic facies of a glacial lake deposit that was related to the ice advance that deposited Crossfield drift (M^9). Unit may locally contain unmapped areas of till, glaciofluvial, eolian and alluvial sediments. Unit is 2-3 m thick in its type section.

sMm, sMb, sMv

SANDY TILL: Olive grey, grey and pale grey, weakly calcareous to non-calcareous loamy sand, sandy loam and loam. Generally gravelly, cobbly or bouldery. Mainly massive but locally contains lenses of stratified sediments. Clast lithologies reflect local bedrock which is chiefly crystalline metamorphic and granitic in character. Locally includes unmapped areas of alluvial, glaciofluvial and glaciolacustrine deposits and areas of rock. Locally in valley bottoms till may be as thick as 30 m but generally it is no more than 5 m thick.

sMm: Occurs with a gently to moderately undulating surface with local relief due largely to variations in till thickness. Till up to 30 m thick.

sMb, sMv: Occurs as a blanket with surface relief due to the general shape of the underlying surface or deposit; sMb: thickness up to 5 m; sMv: thin and discontinuous with thickness up to 2 m.

dMm, dMb, dMv

SAND LOAMY AND LOAMY TILL: Olive grey, olive, olive brown, grey brown, grey and pale olive moderately calcareous, sandy loam, loam and silt loam. Generally moderately stoney, compact and massive but locally containing lenses of stratified sediments. Clast lithology reflects local bedrock which is chiefly medium to low grade metamorphic rocks (argillite, quartzite, phyllite, greywacke, greenstone, schist and marble). Locally includes areas of unmapped alluvial, glaciofluvial and glaciolacustrine deposits and areas of rock. In some valley bottoms the till may be as thick as 30 m but generally thicknesses are no greater than 5 m.

dMm: Occurs with a gently to moderately undulating surface with local relief due largely to variations in till thickness. Till thickness up to 30 m.

dMb, dMv: Occurs as a blanket with surface relief due to the general shape of the underlying surface or deposits; dMb: thickness up to 5 m; dMv: thin and discontinuous with thickness up to 2 m.

M^Tm, M^Tb, M^Tv

LOAMY AND SANDY LOAMY TILL: Light grey to grey moderately calcareous loam and clay loam. Generally moderately stoney, compact and massive with local lenses of sand, gravel and silt. In many areas texture becomes finer downwards due to the incorporation of underlying lacustrine sediments. Clasts consist of a mixture of lithologies from the Rocky Mountains (dominantly carbonates, phyllite, sandstone, quartzite, siltstone and shale) and the Purcell Mountains (dominantly argillite, quartzite, marble and acidic igneous) with proportions of each dependant upon location with respect to tributary glaciers from the two mountain ranges. Till thickness typically 10-30 m.

M^Tm: Occurs with a gently to moderately undulating surface with local relief due largely to variations in till thickness. Till thickness up to 30 m.

M^Tb, M^Tv: Occurs as a blanket with surface relief due to the general shape of the underlying surface or deposits; M^Tb: thickness up to 5 m; M^Tv: thin and discontinuous with thickness up to 2 m.

M^Rm, M^Rb, M^Rv

LOAMY AND SANDY LOAMY TILL: Light to dark grey to black, light brown, greyish brown calcareous loam, sandy loam, silt loam and clay loam. Compact to loose, generally massive and stoney with stone content in many areas increasing upslope. Clast lithologies include carbonates, phyllite, quartzite, argillite, sandstone, shale, chert and coal with proportions of each depending on local bedrock geology. Locally includes areas of unmapped alluvial, colluvial, glaciofluvial and glaciolacustrine deposits and of rock. May contain undifferentiated areas of streamlined features. Locally in valley bottoms till may be as thick as 30 m but generally it is less than 5 m thick.

M^Rm: Till with gently to moderately undulating surface, relief of surface due to variations in thickness of till. Till thickness up to 30 m.

M^Rb, M^Rv: Occurs as a blanket with surface relief due to general shape of underlying surface; M^Rb: thickness up to 5 m; M^Rv: thin and discontinuous with thickness up to 2 m.

M^9b, M^9a, M^9x

LOAMY TILL (CROSSFIELD DRIFT): Light brown, olive, calcareous loam and clay loam. Massive but containing silt lenses. Poorly consolidated near surface. Abundant crystalline metamorphic and granitic clasts along with quartzite, carbonates, sandstone, siltstone and chert. Thickness up to 20 m.

M^9b: Generally occurs as a blanket with a flat to undulating surface reflecting the surface of underlying bedrock or deposits; includes undifferentiated areas of streamlined features. Thickness up to 20 m.

M^9a, M^9x: Stagnation moraine: Surface relief reflecting variable thickness of till. May locally include undifferentiated hummocks of stratified sediment. Thickness up to 20 m. M^9a: local relief less than 3 m; M^9x: local relief 3-10 m.

M^8

LOAMY TILL (Canmore Till): Light brown to grey calcareous loam, silty loam and sandy loam. Compact; clast composition dominantly carbonates, sandstone, quartzite and chert. Normally occurs as a blanket of variable thickness overlying outwash or bedrock. In valleys till may be several metres thick but on slopes it is generally thin and patchy.

LATE AND/OR EARLY WISCONSINAN

G^6, G^6h

GLACIOFLUVIAL SAND AND GRAVEL: Grey to light brown sand, pebbly sand and gravel with minor silt and clay. Generally well stratified with ripple laminations, trough and foreset cross bedding. Pebble composition is mainly quartzite and dark carbonates with minor locally derived sandstone and shale. Consist of outwash deposits associated with the period of glacial activity during which the Erratics Train and associated tills (M^5, M^6, M^7) were deposited. Includes unmapped areas of alluvial and eolian deposits, till and rock. Thickness 3-10 m.

G^6: Occurs mainly as terraces in meltwater and outlet channels and in the apex areas of meltwater constructed deltas.

G^6h: Occurs as undulating to hummocky surfaced deposits laid down by ice-walled and supraglacial streams.

L^6t, L^6ta, L^6tb, L^6h

GLACIOLACUSTRINE SILT, CLAY AND SAND (Sheep River Silt and Clay): Grey to light brown calcareous clayey silt, silt and sand. Finely laminated (varved?); locally contain dropstones and interbeds of till and sand. Interpreted to have been deposited in glacial lakes which developed during the glacial interval in which the Erratics Train and correlated tills (M^5, M^6, M^7) were deposited. Maximum known thickness 27 m.

L^6t: Surface flat to gently rolling deposited in proglacial lakes; L^6ta: coarse; sand and silt; L^6tb: fine; silt and clay.

L^6h: Surface undulating to hummocky; deposited in ice walled and supraglacial lakes.

M^6b, M^6v, M^6a, M^6x, M^6c

LOAMY TILL (Erratics Train Till, Lochend drift and Balzac drift): Grey to light brownish grey calcareous loam, silt loam, clay loam and silty clay loam. Massive but locally containing sand lenses. Commonly stoney with clast composition dominantly carbonates, sandstone, quartzite and chert. Contains widely scattered granitic pebbles. Average thickness 5 m but locally to 20 m.

M^6b, M^6v: Occurs as a blanket with flat to gently undulating surface reflecting the surface of underlying bedrock or deposits. Includes areas of undifferentiated streamlined features. M^6b: thickness up to 5 m; M^6v: thin and discontinuous with thickness up to 2 m.

M^6a, M^6x, M^6c: Stagnation Moraine: Till of uneven thickness with surface relief reflecting variability in till thickness. May locally include undifferentiated hummocks of stratified sediment. Thickness up to 20 m. M^6a: Local relief up to 3 m; M^6x: Local relief 3-10 m; M^6c: Local relief 5-20 m.

M^5b, M^5v, M^5a, M^5x, M^5c

LOAMY TILL (Bow Valley Till, Spy Hill drift and Ernst Till): Light brown to grey calcareous loam, silty loam, sandy loam, clay loam and silty clay loam. Compact with local lenses of silt, sand and gravel. Clast content varies from 5-30%. Composition of clasts is dominantly carbonates, sandstone, quartzite, sandstone and chert. Purple quartzite is an indicator of provenance from the Main Ranges of the Rocky Mountains; altered basic igneous clasts are indicators of provenance from the upper Bow River Valley. In valleys till may be as thick as 30 m but outside valleys and on slopes it is generally less than 2 m thick.

M^5b, M^5v: Generally occurs as a blanket with flat to gently undulating surface reflecting the surface of the underlying bedrock or deposits. Includes areas of undifferentiated streamlined features. M^5b: thickness up to 5 m; M^5v: thin and discontinuous with thickness up to 2 m.

M^5a, M^5x, M^5c: Stagnation moraine: Till of uneven thickness with surface relief reflecting variability in till thickness. May locally include hummocks of stratified sediment. Thickness up to 20 m. M^5a: Local relief up to 3 m; M^5v: Local relief 3-10 m; M^5c: Local relief 5-20 m.

M^7b, M^7v, M^7a, M^7x, M^7c

LOAMY TILL (Erratics Train Till, Lochend drift, Balzac drift, Bow Valley Till and Spyhill drift undifferentiated): Characteristics similar to tills M^5 and M^6 but the two different types of till have not been subdivided. Contact may lie in the vicinity of the southwestern limit of NE-SW oriented ice flow features and NW-SE oriented till ridges.

M^7b, M^7v: Generally occurring as a blanket with flat to gently undulating surface reflecting the surface of the underlying bedrock or deposits. Includes undifferentiated areas of streamlined features. M^7b: Thickness up to 5 m. M^7v: Thin and discontinuous with thickness up to 2 m.

M^7a, M^7x, M^7c: Stagnation moraine: till of uneven thickness with surface relief reflecting variability in thickness of till. May locally include undifferentiated hummocks of stratified sediment. Thickness up to 30 m. M^7a: local relief up to 3 m; M^7x: local relief 3-10 m; M^7c: local relief 5-20 m.

HOLOCENE, WISCONSINAN AND ILLINOIAN

C^5

LOAMY COLLUVIUM: Grey, brown, light brown calcareous silt loam, loam and sandy loam. Largely angular clasts consist of siltstone, quartzite, carbonates, sandstone, chert, shale and coal. These are mainly of local derivation but include erratics from adjacent areas of the foothills and Rocky Mountains. Occurs on ridges and summit areas as a patchy veneer interspersed with rock outcrop, on lower slopes and low relief areas as a blanket and on steep valley walls as talus cones and aprons. Locally includes patches of weathered and unweathered till.

C^2

LOAMY COLLUVIUM: Pale brown, yellowish brown to brown sandy loam and silt loam. Generally calcareous. Clasts predominantly sandstone and siltstone of local derivation but crystalline metamorphic, granitic, quartzitie and carbonate clasts are also present. Locally includes isolated patches of weathered till (M^2). Colluvium is thin on upper slopes with resistant (sandstone) bedrock outcropping on ridge crests. Occurs as a blanket on lower slopes and on low relief areas with thickness up to several metres.

ILLINOIAN

G^4

GLACIOFLUVIAL SAND AND GRAVEL: Grey to light brown sand, pebbly sand and gravel. Rounded clasts consisting dominantly of sandstone and carbonates. Well stratified. Bedding largely horizontal with local cut and fill structures and foreset cross bedding. Occurs as deltas related to deposits of glacial lake Westrup and Oldman (L^4) and as valley trains and outwash associated with Maycroft and Maunsell tills (M^4 and M^3). Thickness up to 20 m.

L^4

GLACIOLACUSTRINE SILT, CLAY AND SAND (Chain Lakes Clays and Silt): Light grey and blueish grey calcareous silt, clay and sand. Finely laminated (varved?) and locally containing thin interbeds of till (Maycroft and Maunsell). Occurs mainly in areas around Chain Lakes but local glaciolacustrine deposits related to deposits of Maycroft and Maunsell Tills (M^3 and M^4) are also included in this unit. Maximum thickness 30 m.

M^4b, M^4v

LOAMY TILL (Maunsell Till): Light grey, dark brown, light brown calcareous clay loam and loam. Massive and compact with well developed columnar jointing. Moderately stoney with clasts 10-40% Precambrian Shield lithologies, 20-45% carbonates and quartzite (Rocky Mountain lithologies) and 40-50% local sandstone, siltstone and coal. Ranges in thickness from less than 1 m on upper slopes to 17 m in valley bottoms.

M^4b, M^4v: Generally occurs as a blanket with flat to gently undulating surface reflecting the surface of the underlying bedrock or deposits. Includes areas of undifferentiated streamlined features. M^4b: thickness up to 5 m; M^4v: thin and discontinuous with thickness up to 2 m.

M^3b, M^3v

LOAMY TILL (Maycroft Till): Light grey, dark brown, light brown calcareous loam, silty loam and clayey loam. Massive, compact and stoney. Clasts dominantly sandstone, shale and siltstone of local derivation and carbonates, quartzite, chert and volcanics from the Rocky Mountains; locally contains clasts of eastern provenance derived from underlying till.

M^3b, M^3v: Occurs as a blanket with flat to gently undulating surface reflecting the surface of the underlying bedrock or deposits. Includes areas of undifferentiated streamlined features. M^3b: thickness up to 5 m; M^3v: thin and discontinuous with thickness up to 2 m.

ILLINOIAN AND/OR PRE-ILLINOIAN

M^2

LOAMY TILL (Labuma Till): Light grey, dark grey, black, dark greyish brown, dark brown (light brown where oxidized) loam to sandy loam. Massive, compact, breaks into angular pieces 2-6 cm long, sticky and rubbery when wet. Moderately stoney with 15-30% of clasts Laurentide source and quartzite and the rest local sandstone, siltstone and shale. Till at the surface highly weathered with clasts in advanced stage of decay. Occurs as a thin discontinuous veneer with extensive areas of loamy colluvium (containing scattered carbonates, Precambrian Shield and quartzite erratics and scattered bedrock outcrops. Thickness of till is generally less than 2 m.

M^1

LOAMY TILL (Albertan Till?): Grey to light brown calcareous loam to sandy loam. Clasts all of western provenance (carbonates, sandstone, siltstone etc.). Occurs as thin patches of highly weathered drift in areas of colluvium (C^5) and rock outcrops.

QUATERNARY

C^4

LOAMY COLLUVIUM: Grey to light brown silt loam and loam. Calcareous to highly calcareous. Clast lithologies carbonates, siltstone, shale, chert, sandstone and coal all of local derivation. Occurs on ridges and on summit areas as patchy veneer interspersed with rock outcrops and on lower slopes and in low relief areas as a blanket up to 3 m thick.

C^3

LOAMY COLLUVIUM: Grey to red to green sandy loam and silt loam. Generally caclareous. Clast lithologies predominantly carbonates, quartzite, red and green argillite and dark green to purple basalt (local Purcell Group lithologies). Occurs on ridges and in summit areas as a patchy veneer interspersed with rock outcrops and on lower slopes and in low relief areas as a blanket up to 3 m thick.

C^1

LOAMY COLLUVIUM: Pale brown, yellowish brown to brown sandy loam and silt loam. Generally calcareous. Clasts predominantly sandstone and siltstone of local derivation. Thin on upper slopes with resistant sandstone, bedrock outcropping on ridge crests. Occurs as a blanket on lower slopes and in low relief areas with thicknesses up to several metres.

PRE-QUATERNARY

Rs, Ra

ROCK: Crystalline metamorphic, acidic igneous, quartzite, argillite, marble, greenstone, phyllite, greywacke, limestone, dolomite and sandstone. Areas mapped as rock consist dominantly of rock at the surface but include minor areas of rock covered by a veneer of colluvium and till.

Rs: Rock characterized by steep slopes or exposed by modern stream.

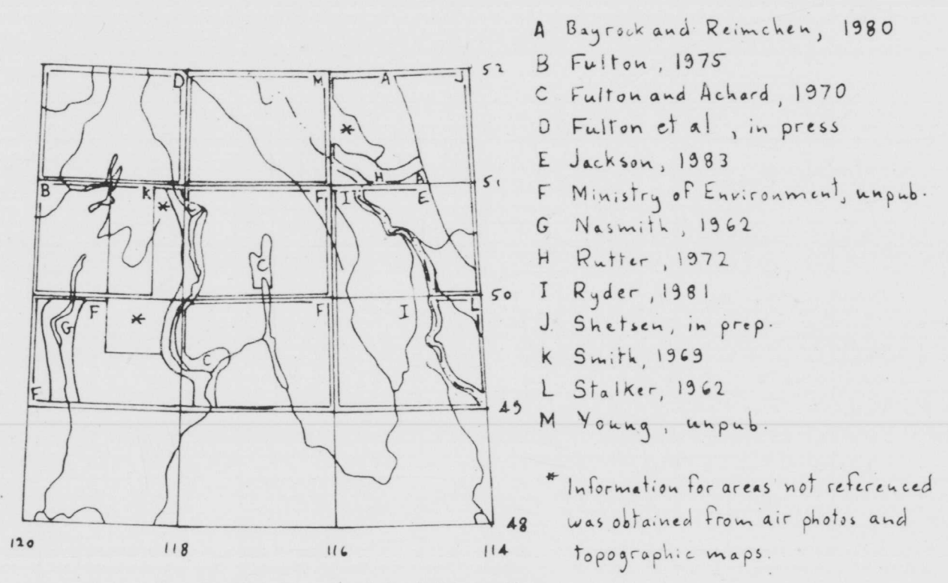
Ra: A complex of rock and rock blanketed by colluvium and till in an alpine mountain area characterized by cirques and arêtes, locally includes talus cones and rubble aprons, small glaciers and ridges or a mantle of rubbly till.

SYMBOLS

c	Cirque or group of cirques (not shown in areas of Ra)
→	Striations
→	Drumlins
—	Flutes, grooves, drumlinoid ridges (sense of movement not obvious)
~	Small till ridges
⇝	Meltwater channel (large, small)
▨	Surfaces modified by lake or stream erosion or deposition
Ⓐ	Important stratigraphic section (brief description in Table 1)
1	Important radiometric date (date and references in Table 1)

Legend and final compilation, R.J. Fulton. Regional compilers R.J. Fulton[1], N.W. Rutter[2] and I. Shetsen[3].

[1] Geological Survey of Canada, Ottawa, Ontario
[2] Department of Geology, University of Alberta, Edmonton, Alberta
[3] Alberta Geological Survey, Edmonton, Alberta



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B Fulton, 1975
C Fulton and Achard, 1970
D Fulton et al, in press
E Jackson, 1983
F Ministry of Environment, unpub.
G Nasmith, 1962
H Rutter, 1972
I Ryder, 1981
J Shetsen, in prep.
K Smith, 1969
L Stalker, 1962
M Young, unpub.

* Information for areas not referenced was obtained from air photos and topographic maps.

Sources of surficial materials information

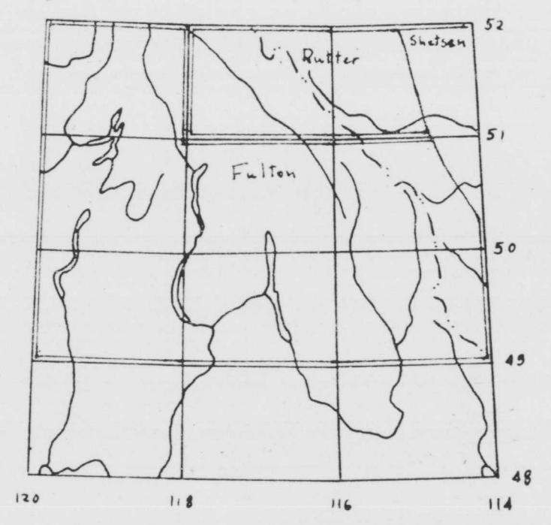

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Table 1

Important Sections – Kootenay Lake Map Area

A. Westwold: This is the type section of the Westwold Sediments (Sangamonian?). From the bottom upward the section contains: 16.5 m of sand and gravel and 1.8 m of sand, silt and clay containing plant and vertebrate remains (Westwold Sediments); 10.5 m of laminated silt and clay, 3 m sandy till and 6 m bouldery gravel (Okanagan Centre Drift) (Fulton and Smith, 1978).

B. Okanagan Centre: This is the type section of Okanagan Centre Drift (Early Wisconsinan?). From the bottom upwards the section consists of: 15 m of coarse gravel (Westwold Sediments); 46 m of coarse bouldery gravel, 7 m of sandy till and 7 m of laminated silt (Okanagan Centre Drift); 4 m oxidized sand containing a tephra layer (Bessette Sediments); 8 m of gravel and sand, 8 m sandy till (Kamloops Lake Drift); 2 m silty sand (Postglacial) (Fulton and Smith, 1978).

C. Riggins Road: This is the type section of Bessette Sediments (Middle Wisconsinan). From the base upwards the section includes: 22 m organic rich silt, sand and gravel (Bessette Sediments); 11 m laminated silt, 20 m cross bedded sand and cobbly gravel, 1.5 m massive gravel and 2.5 m varved silt (Kamloops Lake Drift) (Fulton and Smith, 1978).

D. Meadow Creek: This section contains a fully developed paleosol of Middle Wisconsinan age. From the bottom upwards it includes: 9 m of sandy till with a paleosol developed in its upper part (Okanagan Centre Drift?); sand, gravel and silt containing volcanic ash, peat and wood (Bessette Sediments): 18 m of sandy till (Kamloops Lake Drift) (Fulton, 1968).

E. Sand Creek: This section contains deposits related to Olympia nonglacial interval (Middle Wisconsinan) and Fraser Glaciation (Late Wisconsinan). From the bottom upwards the section includes: 7 m of silt, sand, clay and gravel containing wood (Bessette Sediments); 40 m of till (deposited during Late Wisconsinan) (Clague, 1975a).

F. Lower Elk River: This section exposes till and interbedded outwash which have been used as evidence that the Late Wisconsinan of the Rocky Mountain Trench was marked by at least one interstade. From the bottom upwards the section consists of 10 m of till; 16 m of silt, sand and clay; 5 m of till and 12 m of gravel (all Late Wisconsinan in age) (Clague, 1975a).

G. Castle River: This section contains 4 pre-Wisconsinan tills, 2 of western provenance and 2 of eastern provenance. From the base upwards it consists of: 4 m till of western provenance (Albertan Till); 2 m of gravel; 5 m till of eastern provenance (Labuma Till); 1.5 m varved silt and clay; 3 m of western provenance till (Maycroft Till); 1 m of varved sediments; 4 m of eastern provenance till (Maunsell Till); 2 m of clay and silts; 4 m eastern provenance till (Buffalo Lake Till of Wisconsinan age); 4 m of varved clays and 4 m of silts (Alley, 1973).

Table 2

Significant Radiocarbon Dates: Kootenay Lake Map Area

No. on Map	Lab. No.	Date	Material	Significance	Reference
1.	GSC-194	20 230 ± 270	Wood	Minimum Olympia nonglacial	Fulton, 1975
2.	GSC-913	19 100 ± 240	Bryophytes	Minimum Olympia nonglacial	Fulton and Smith, 1978
3.	GSC-1753	10 000 ± 140	Wood	Maximum Postglacial	Lowdon and Blake, 1979
4.	GSC-909	11 000 ± 180	Marl	Maximum Postglacial	Lowdon and Blake, 1970
5.	I-10022	17 240 ± 330	Wood	Maximum Fraser Glaciation	Clague et al., 1980
6.	GSC-719	10 270 ± 190	Peat	Maximum Postglacial	Fulton, 1968
7.	GSC-740	43 800 ± 800	Wood	Maximum Olympia nonglacial	Fulton, 1968
8.	GX-2032	26 800 $\pm^{1200}_{1000}$	Wood	Olympia nonglacial	Clague, 1975
9.	GSC-1457	10 000 ± 140	Peat	Maximum Postglacial	Lowdon and Blake, 1976
10.	GSC-2275	12 200 ± 160	Organic debris	Maximum Postglacial	Harrison, 1976
11.	GSC-2668	18 400 ± 380	Peat	Maximum Postglacial	Jackson, 1979

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