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SURFICIAL GEOLOGY OF THE WAPITI  
MAP AREA, NTS 83L

by: L.D. Andriashek

1983

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5th FLOOR, TERRACE PLAZA  
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1:250,000 Legend: Surficial Geology of Wapiti Map Sheet 83L (From Bayrock, 1972 and Twardy, 1980)

Unit Symbol	Unit Name	Description	General Morphology and Relief	General Thickness	Comments
<b>RECENT</b>					
1	Organic Deposits	Box fen; peats developed from sedges and mosses; wet, poorly drained; minor silty-clay and marl sediment.	Occupies depressions; concave topography; undulating morphology	≤ 1.5m	
2	Colluvial Deposits				
a		Rough, broken land; stream and gully valleys; mixed glacial and bedrock materials, slope stability variable.	Veneer on low to high relief slopes; Small flood plains.	Generally thin (≤ 1m.) but variable in slump areas	
b		Soil Creep; thin deposits derived from local bedrock; may resemble till in high plateaus and benchlands; very stony with sand loam to clay loam matrix	Occurs as stone stripes, circles, boulderfields at elevations > 6000; otherwise found as a thin veneer mantling high relief hills and plateaus.	Variable, generally ≤ 1m though may exceed 2m in solifluction lobes.	Has till like appearance in southwest part of map area.
3	Fluvial Deposits	Clay, silt, sand, gravel found along drainage channels of major rivers and creeks; variable texture both vertically and horizontally; poorly sorted.	Level to undulating topography; terraces.	Variable thickness; may exceed 2m.	Gravel found along large mountain streams; sand found along streams away from mountains
4	Aeolian Deposits	Fine grained sand in sheet or dune form; derived from fluvio-glacial and lacustrine deposits; stone free.	Local relief up to 5m; rolling to hummocky topography in form of U shaped and longitudinal dunes.	Thick in dunes (≥ 5m) but thin between dunes.	Found in extensive areas east of Smoky and Wapiti Rivers in northern part of map area.
<b>PLEISTOCENE</b>					
<b>Glaciolacustrine</b>					
5	Silt and Clay	Rhythmically bedded yellow-brown silt and dark grey brown clay layers with occasional to common ice rafted stones.	Broad, undulating topography; masks underlying morphology; maybe found on terraces along rivers.	Variable; < 1m-4m; Usually about 3m.	Found in northeastern portion of map area. Stoniness due to ice rafting or turbidite flows.
6	Silt, minor sand	Stratified silt; minor sand, clay; stone free. Surface may be partly reworked by wind.	Broad plains near meltwater channels; found as an undulating veneer.	Variable; generally > 1m.	Found in plains especially where Pinto Creek empties into the Wapiti River.

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7	Sand	Fine to medium grained sand deposited as inwash in proglacial lakes; odd quartzite pebbles; occasional beds of gravel, silt, clay.	Found as deltaic plain landforms; undulating to rolling topography.	Generally thick (>2m)	Found in northern part of map sheet.
	Glaciofluvial				
8	Sand	Outwash sand with minor gravel, silt, clay; odd pebble up to 2cm diameter;	Associated with meltwater channels; level to rolling topography.	1.5-6m thick.	
9	Gravel	Outwash gravel, coarse, minor sand; found as terrace deposits of major rivers. In part valley train derived from valley glaciers.	Undulating topography on terraces	Variable; 1-30m thick	Terrace gravel along Little Sprague R. composed mainly of rounded quartzitic cobbles.
10	Ice-Contact	Poorly sorted sand and gravel found in kames and eskers;	Ridged to rolling topography, moderate relief.	Variable; generally >2m, <10m.	
11	Undifferentiated Glaciofluvial and Aeolian Deposits				
	a	Stone free to slightly stony sand; may be glaciofluvial deposit modified by wind; overlies glaciolacustrine deposits	Reflects underlying landform; occurs as a veneer	Generally <1m.	Occurs in benchland plateaus and lower plains areas.
	b	As above but overlies morainal deposits.			
	Moraine				
12	Continental				
12	Ground Moraine	Clayey to sandy till, slightly to moderately stony, olive brown color; numerous erratics derived from the Canadian Shield. Found in plains and plateaus of north east half of map sheet.	Undulating to gently rolling topography;	Generally thin (4m) in uplands, to thick in lowlands (>5m)	Most of stones are derived from the mountains - limestones, metaquartzites, orthoquartzites, sandstones
13	Hummocky Moraine	Clayey to sandy till, numerous erratics derived from the Canadian Shield.	Moderate to high relief; hummocky topography formed in stagnant ice environment.	Variable; generally thick (>10m).	As above.
14	Ground Moraine (locally derived)	Yellow brown till, friable to firm; moderately to exceedingly stony, pebbles mostly well rounded metaquartzites; minor Shield erratics; derived	Occurs mostly in high plateaus and benchlands; topography determined by underlying bedrock	Thin on uplands and steep slopes (<2m). Thick in deeper valleys.	Found in central, southcentral and southwestern portions of map area.




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		almost entirely from local bedrock material.	morphology. Found as a veneer in most areas.		May be very stony where unit overlies Tertiary gravel.
15	Ground Moraine (overlying Tertiary gravel)	Till derived from Tertiary gravel; gravel has a high content of well rounded quartzites and sandstones; till usually very stony.	Till found as a discontinuous veneer over gravel caps on tablelands and plateaus. Topography is undulating to gently rolling	Till generally thin to discontinuous. Gravel thickness varies from 1 to 10 m.	Occurs in plateaus east of Simonette Tower in southeast part of map area. Shield erratics are very few to absent.
Cordilleran					
16	Ground Moraine				
	a	Stony calcareous till, friable, dark gray-brown color, loam matrix; contains rocks derived from the Rocky Mountains and local bedrock; stagnant ice topography uncommon.	Along foothills unit in forms of grooves, flutes and drumlin fields; found on high relief rolling bedrock.	Variable: .5-5 m. Generally < 2 m.	Unit occurs in north-western and west-central portions of map area.
	b	Coarse textured, friable yellowbrown to dark brown till; exceedingly stony; pebbles are well rounded quartzites and angular sandstones; unit contains abundant colluviated till and fan material	Occurs as a veneer of flutes, grooves, lateral and end moraines on steeply sloping ridges with high relief.	Variable to discontinuous generally < 2 m thick	Found in Rocky Mtn. foothills in southwestern portion of map area.
	c	Stony till with a silty-clay matrix; derived from massive, dense, glacially reworked shales, variable stone suite derived from mountains.	Morainal veneer on a moderately rolling topography		Found in Rocky Mountain foothills.
17	Cirque Valley Glacier Moraine	Very stony till, almost of gravel composition, made entirely of local bedrock.		Variable thickness	
18	Lateral Moraine	Dissected lateral moraine of large valley glaciers; till and glaciofluvial deposits in form of poorly defined benches; very stony and calcareous; may be capped by detrital gravel in places.	Terrace bench along Smoky River.	Variable; generally > 2m	
19	Moraine-Colluvium Undifferentiated	Weathered till, carbonates leached to 2.5m; very stony, resembles colluviated bedrock material in places;	Found on level, elevated benches and plateaus as a veneer	Generally thin (< 1.5 m)	Found in south west half of map area. Interpreted by L. Bayrock to be outside of Wisconsin glaciated area.

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	Mixed Continental-Cordilleran Moraine						
20	Ground Moraine	Till containing erratics from both the Canadian Shield and from the Rocky Mountains; stony to very stony; deposited by ice coalesced from the two source areas.	Level to undulating topography	Generally thin.	Found in north west corner of the map area.		
21	Hummcky Moraine	Same unit as above except till deposited from stagnant ice.	Hummcky topography.	Generally thick	Found in northwest corner of the map area.		
<b>BEDROCK</b>							
22	Shale, Siltstone, Coal	Outcrops found in south-central and central portions of map area; usually mantled by colluvium.	Undulating to moderately rolling upland plateaus	Weathered to a depth of .5-2 m.	Usually stratified; shales may resemble lacustrine deposits; weathered shale prone to slumping.		
23	Sandstone	Paskapoo Sandstone found in the upland plateaus; Blackstone, Cardium, Wapiabi, Brazeau Sandstones in the foothills. Usually mantled by colluvium	Steeply sloping scarps and ridges; moderate to high relief.	Weathered to a depth of .5-2 m.			
24	Conglomerate, sandstone	Located in the Rocky Mtn. foothills in the south-west corner of the map area; all exposures of bare rock with less than .1 m of mineral or organic cover.	Strongly rolling to very hilly.	Weathered < .1 m.	Occurs at tops of glacially abraded mountains, mountain slopes, canyons.		
		Geological boundary - definite					
		Geological boundary - approximate					
		Geological boundary - assumed					
	$\frac{a}{b}$	- Where a thin unit ( $\leq 2$ m) is known to overlie another unit, the following notation is used: eg. $\frac{12}{22}$ ground moraine bedrock shale					

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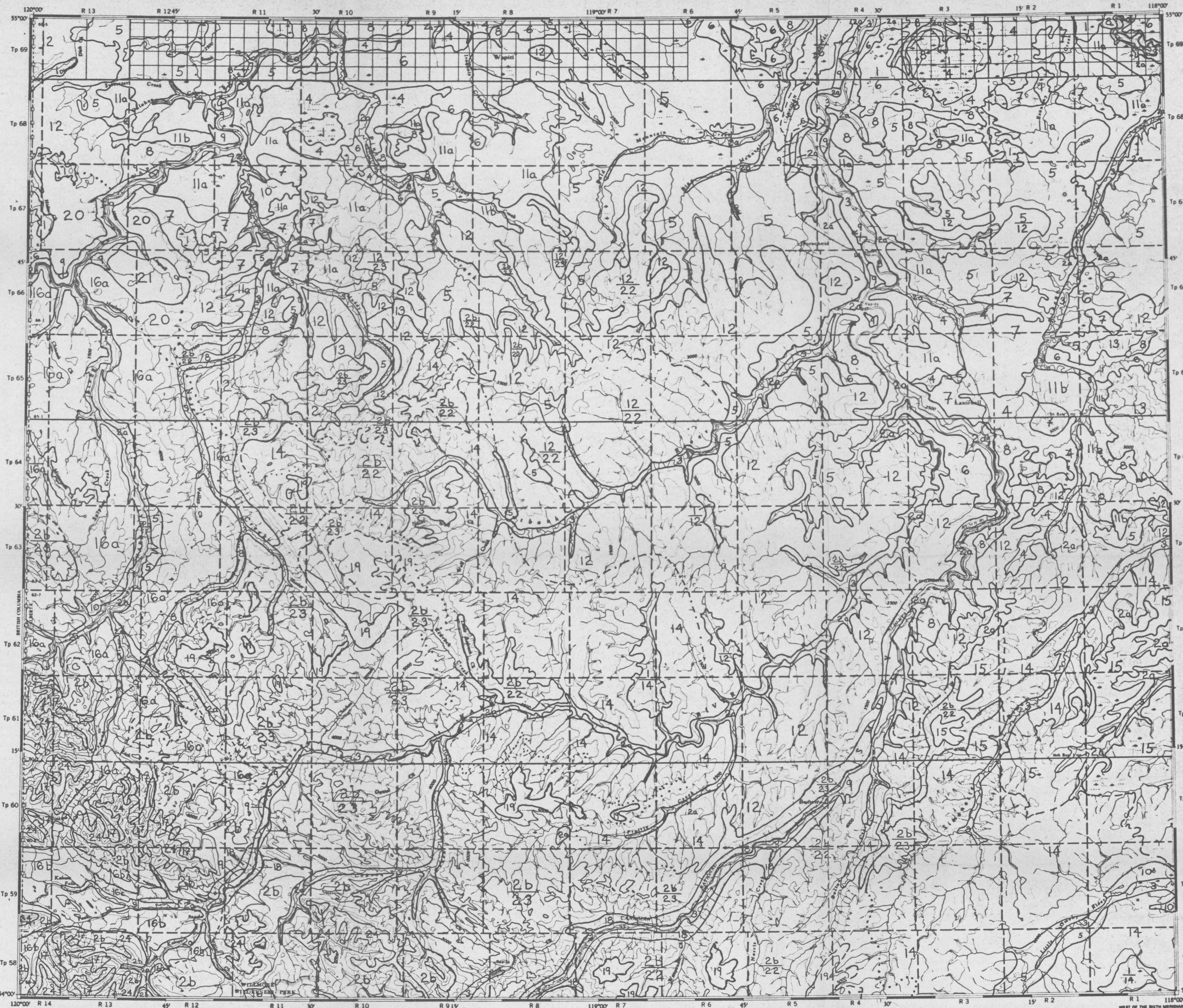
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WAPITI 83 L



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