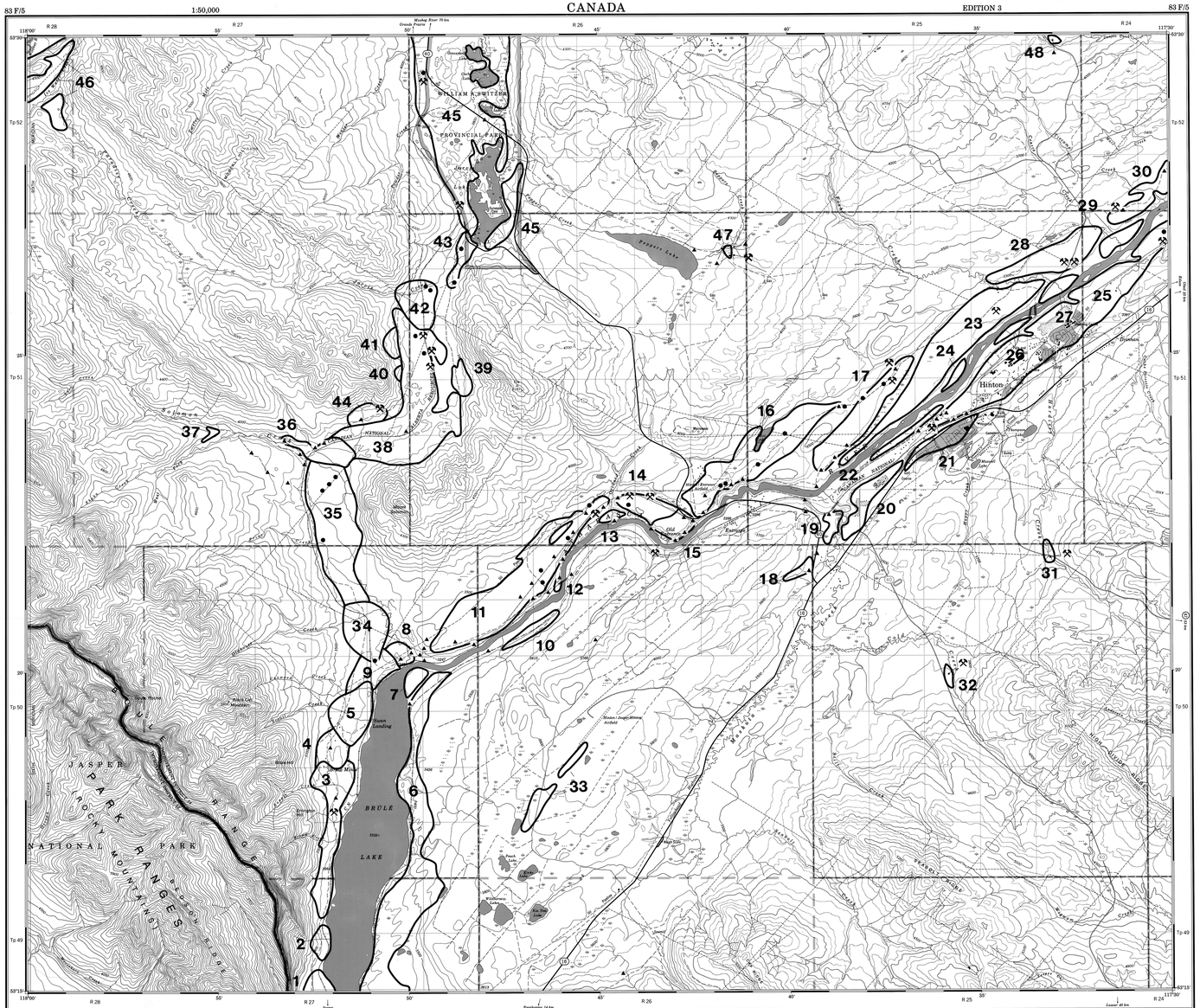
83F/5 Entrance

83 F/5 1:50,000 CANADA EDITION 3 83 F/5



GENERAL COMMENTS

DEPOSIT CHARACTERISTICS

Deposit Number	Material Description	Reserves (1000 m^3) Gravel	Reserves (1000 m^3) Sand	Additional Comments	Texture (%) Gravel	Texture (%) Sand	Texture (%) Fines	(%) Wear	Overburden Thickness (m)	Deposit Thickness (m)	Deposit Area (ha)	Deposit Genesis	Additional Comments
1,2, 5, 34	dirty sandy gravel to gravel (?)			similar to 3(?)							427	alluvial fan	individual deposit areas: 1-38 (ha); 2-48; 5-158; 34-183
3	dirty sandy gravel to gravel	~4800	~1600							0-5	320	coalesced alluvial fans	angular, local material, max. 25 cm; sandstone, some siltstone and carbonate.
4	sand	83	747		<10	>90	1			<20	83	glacio-fluvial (?)	
6	sand		26,480	eolian sand overlies sand and gravel						<20	662	eolian-dunes	max. dune height 20 m.
7				may be outwash similar to 11							35	outwash (?)	
8	sand		1,025							<5	41	eolian and fluvial	
9	sand		2,325	upper sand and gravel layer (1 m) overlies 10 m of fine sand and silt						2.5	93	glacio-fluvial	
10				similar to 12 (?)							47	alluvial terrace	
11	sandy gravel	~3765	~1883	variable; clean fine sand to dirty coarse gravel; upper gravel to sandy gravel (1.5 m) overlies sand; sand (surface) may grade downward into sandy gravel.	50-75	25-50	1-5		up to 1	1-6	502	outwash	clast max. 40 cm; mainly quartzite, carbonate and sandstone.
12	sandy gravel	120	70		60-65	35-40	~1			2	10	alluvial terrace	clast max. 6 cm.
13	dirty sand and gravel	~190	~190						1	<5	19	alluvial fan	clast max. 20 cm.
14	dirty sandy gravel	~1275	~1275		~70	~20	>5			2.5	102	outwash	clast max 30 cm; mainly quartzite and carbonate.
15	sand			sandy gravel at base or margins of deposit (?)						up to 1.0	83	outwash	
16	sandy gravel	8,967	3,714		70	29	1			3	427	outwash	clast max. 40 cm; mainly quartzite, carbonate and sandstone.
17	sandy gravel	2,844	1,713		60	36	4			2	237	outwash	
18	sandy gravel				50-60	40-50	~1				24		
19	dirty gravelly sand	264	363		40	55	5			2	33		
20	gravel	3,729	666		84	15	1			4	111	terrace	
21	gravel			similar to deposit 20; area fully developed							106	terrace	
22											45	terrace-fan	low terrace and alluvial fan (northeast)
23	sandy gravel	3,072	1,680		64	35	1			1	480	outwash	
24											19	fluvial	point bar or low Recent terrace
25	gravel	10,752	3,072	built over or depleted; reserves for estimated original volume	70-80	20-30	1		0.5	2	768	terrace	
26											24	alluvial fan	
27											42	alluvial fan	
28	gravel	11,869	2,288		83	16	1			10	143	outwash	
29											54	alluvial fan	
30	gravelly sand	1,048	1,048		49	49	1			2	107	outwash	
31	sandy gravel	~170	~170	disused pit						2	17	glacio-fluvial	clast max. 0.5 m; sandstone, quartzite and carbonate.
32	sandy gravel	~140	~140	disused pit						2	14	glacio-fluvial (?)	quartzite and local, soft sandstone clasts, some carbonates clast max 0.5 m.
33	sand		315	fine sand		100				1.5	84	eolian dunes	two small dune fields, dune density ~25%.
35	dirty sandy gravel	~13,140	~8,760	silt and sand overburden	~60	~40	~5		1.5	2-19	438	fluvially reworked alluvial fan and outwash	clast max. 40 cm; quartzite (well sorted), hard sandstone and carbonate (angular), quartzite or glaciofluvial origin, carbonate from alluvial fans.
36	dirty sandy gravel	14,250	13,395		50	47	>3			~3	95	same as 35	very poorly sorted; clast max. 40 cm; sandstone, carbonate and quartzite, some ironstone.
37											14	terrace (?)	
38	coarse sandy gravel	17,792	14,557		~55	~45	~1			4-10	647	pitted outwash	eolian sand may overly outwash; clast max. 20 cm., quartzite, sandstone, some conglomerate, shale and ironstone.
39,40, 41				similar to 44							90	alluvial fan	individual deposit areas: 39-48 (ha); 40-10; 41-32
42	gravel to sandy gravel	3,172	1,057	gravel overlies silty sand; may be deeper gravel						3	141	alluvial fan (reworked?)	quartzite, sandstone and carbonate.
43	boulders, sandy gravel	~315	~315	very coarse						1+	63	alluvial fans	clasts over 1 m.
44	sandy gravel	900	525	some dirty silty sand	60-65	35-40	~1			2.5	60	alluvial fans	clast max. 10 cm; quartzite, carbonate and shale.
45	sandy gravel	~20,960	~20,960	max. thickness 15 m; water table at base						4+	1048	pitted outwash; channel fill	
46	sand and gravel (?)										154	glaciofluvial	
47	dirty sandy gravel	~40	~40	beneath silt (?)						1	8	glaciofluvial (?)	contains coal fragments.
48	coarse sandy gravel	~60	~60							1.5	8	fluvial	mainly quartzite; clast max. 30 cm.

Deposit Number — Granular deposits shown on this map may have commercial possibilities. That assumption followed from two criteria used in the mapping process: study of the area considered only granular deposits greater than one metre thick, and covering an area more than one hectare; and it only considered deposits where the mineral-aggregate thickness was greater than the overburden thickness. Although the scale of mapping did not permit investigation of all small deposits, many small deposits containing existing pits are indicated.

Material Description — Sand and gravel has a variety of applications, such as concrete for construction, asphalt concrete, subbase and base course aggregate for roads, gravel and sand for road surfaces, and pit run for fill. Gradation, rock hardness, and binding characteristics, are some of the specific qualities that are considered in aggregate towards determining its end use. This map indicates these, and other, geological qualities of the sand and gravel within each deposit, but does not indicate their potential uses. The terms used in the table are defined in the figure below.

Reserves — The method of calculating in cubic metres the aggregate reserves of deposits took four basic steps. First, the area, in hectares, of each deposit was determined using aerial photographs. Second, geological interpretation, sometimes supported by subsurface information, was assumed in determining the geometry of each deposit, to estimate an overall, average deposit thickness in metres. Third, geological study and limited sample analyses determined the texture (gradation) of sediments in the deposit, and an overall average percentage of gravel and sand. Finally, the volume was calculated as follows: reserve gravel (m^3) = area (ha) × thickness (m) × 10,000 × % gravel; the same formula was used for sand.

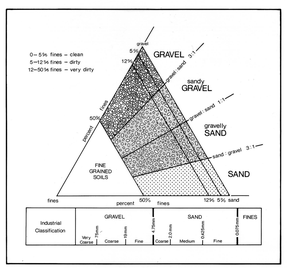
Texture — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular deposit were determined from a field estimate, or from laboratory analysis, of one or more samples from that deposit. Where more than one sample is taken the tabulated number is the mean value.

Wear — The resistance of gravel-size clasts to wear or abrasion can be measured in a laboratory test (ASTM-C131, Los Angeles Abrasion Testing). The amount of material that breaks down into smaller sizes is measured and related to the original sample weight in terms of percent wear. The higher the percentage wear the more susceptible the gravel is to breakdown under stress. Gravel with a percentage wear of less than 40 is considered very resistant.

Overburden Thickness — The thickness of non-economic material, or overburden, covering a deposit, sometimes is a limiting factor in the exploitation of an aggregate deposit. The tabulated values given are approximate overburden thicknesses as determined from geological investigations and subsurface testing.

Deposit Area — Deposits in this study were delineated by interpretation of aerial photographs and the contacts should be considered approximate. Information is precise only where test holes, or geological sections, are indicated.

Deposit Genesis — The genesis, or formation, of deposits is vital to the understanding of the gradational nature, extent and geometry of the deposit. This understanding forms the basis for extrapolation from a limited number of known points (test holes, pits, sections) and permits an overall assessment of the deposit.



Map Legend

- 3 Deposit number
- Assumed boundary
- Active or inactive pit
- Alberta Geological Survey test hole
- Site visited

Aggregate Resources

83F/5 Entrance

Geology by J.C. Fox

Published 1989
Compilation and review by W.A.D. Edwards 1987-88

This is a sand and gravel resource map prepared by the Alberta Geological Survey as part of a series at a scale of 1:50,000. The series represents an ongoing aggregate inventory of Alberta which provides data for land-use planning and resource development decisions. Information on deposits, reserves, and delineation of deposits and calculation of reserves are approximations only. Alberta Energy and Natural Resources provides financial support for the Aggregate Inventory.

Cartography by Alberta Research Council, Graphic Services, J.K. Matthie.

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