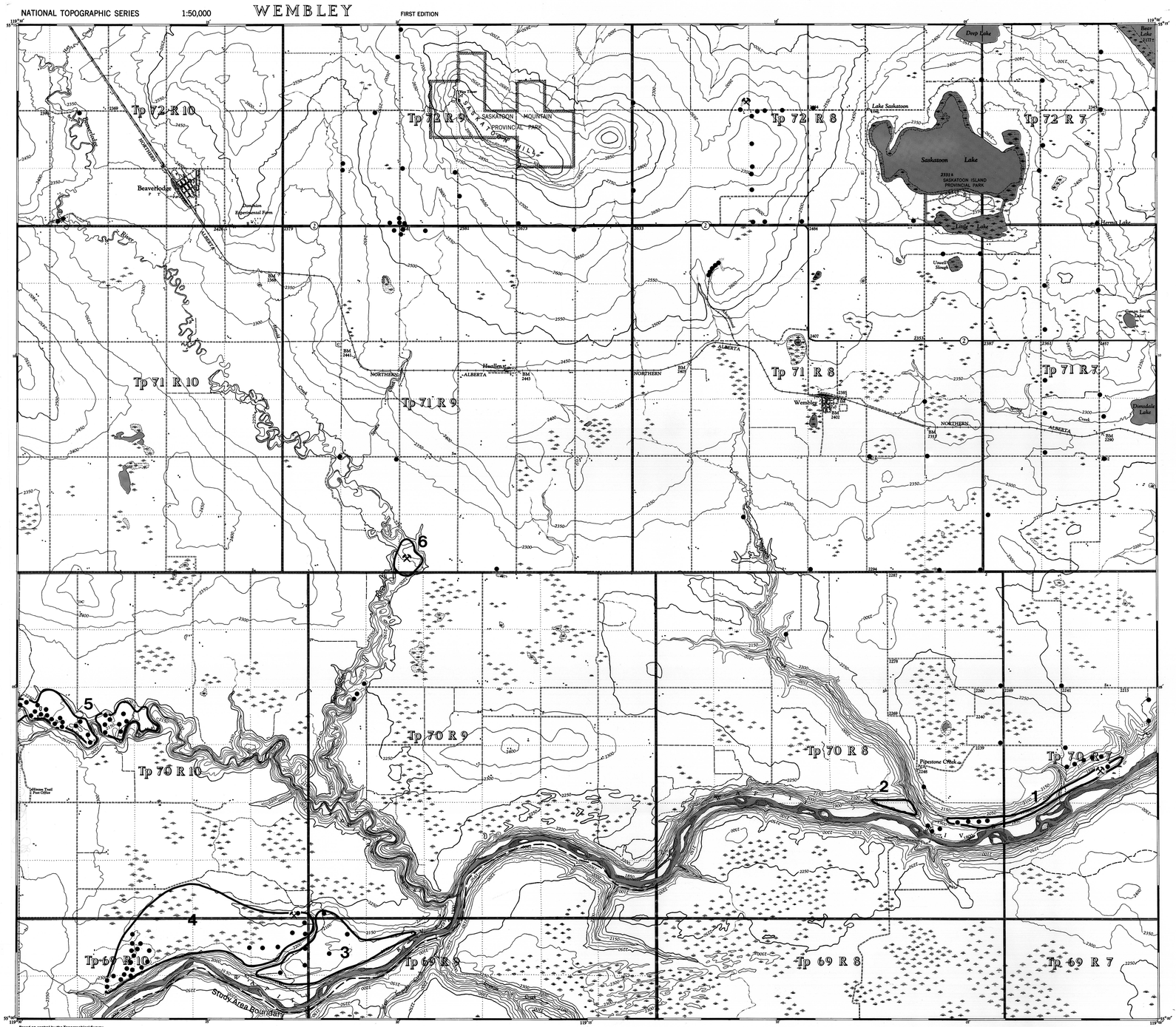
WEMBLEY 83 m/3



GENERAL COMMENTS

DEPOSIT CHARACTERISTICS

Deposit Number	Material Description	Reserves (1000 m³) Gravel	Reserves (1000 m³) Sand	Additional Comments	Texture (%) Gravel	Texture (%) Sand	Texture (%) Fines	(%) Wear	Overburden Thickness (m)	Deposit Thickness (m)	Deposit Area (ha)	Deposit Genesis	Additional Comments
1	Clean gravel	300	to 600	Coarse grained gravel with medium to fine grained sand. Thickest areas at the east end.	75	23	2	–	–	0-3.5	80	Alluvial terrace	Lies directly on bedrock. Gravel composed predominantly of subrounded quartzite clasts.
2	Clean gravel	up to	1,000	Coarse grained gravel with medium to fine grained sand. Undeveloped area; well drained, may be a good source for future extraction.	–	–	–	–	very little	3(?)	30	Alluvial terrace	
3	Clean gravel with sand beds.	15,000	15,000	Gravel beds are coarse grained with medium to fine sand. Surface drainage good, water table generally more than 9 m below surface. Good source for future extraction.	70	27	3	–	0	>9	350	Alluvial terrace	Gravel is predominantly hard quartzite with minor carbonate and sandstone. Medium to fine sand beds up to 3 m thick. Sand beds account for 25-35% of reserves.
4	Clean sandy gravel and sand	7,000	12,000	Clean, coarse sandy gravel interfingered with clean fine to medium grained sand beds. Sand beds make up over 50% of total material. Potential for large scale development and extraction limited by high water table and abundance of sand.	Gravel beds: 72	26	3	–	very little	5-6	864	Alluvial high terrace	Gravel composed predominantly of subrounded quartzite clasts. Overlies clay or till.
5	Dirty gravelly sand	–	–	Deposits are small and quality of material does not warrant development except for small scale, local use.	–	–	–	–	0	~2	~230	Alluvial low terrace	About 220 ha more of deposit lies on 83M/4. Deposit overlies till or bedrock. Grades laterally into silt accumulations.
6	Clean gravel	minimal		Coarse gravel with medium to fine sand. Area has been worked extensively over the years and remaining reserves are minimal.	–	–	–	–	0	?	54	Preglacial modified by fluvial	Material was formed into wide flood plain deposit as river washed back and forth over the preglacial period.

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.

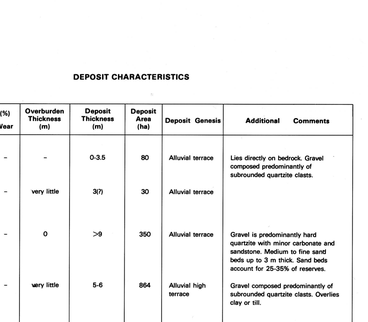
Texture — The texture of the sediment refers to the percentage of particles of various sizes. For mineral aggregate, the most important fractions are the gravel and sand. The actual dimensions of the clasts and particles in these fractions are given in the figure. The values given for a particular deposit 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.

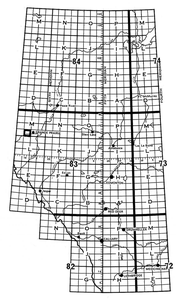
Deposit Area — Deposits in this study were delineated by interpretation of aerial photographs and the contacts should be considered approximate. Information is precise only where test holes, or geological sections, are indicated.

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
- Sand or gravel exposure
- Buried sand or Gravel deposit



Alberta RESEARCH COUNCIL
Natural Resources Division

Alberta Geological Survey

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 general land-use planning, land management or aggregate exploration. Please note that the delineation of deposits and calculation of reserves are approximations only. Alberta Energy and Natural Resources provides financial support for the Aggregate Inventory.

REFERENCES

Geology by B.N. Peterson. 1977 and 1978. Compilation by W.A.D. Edwards and M. Price, 1982. Additional information from J.F. Jones, 1961 and 1966 and M.E. Hoter, 1972.

AGGREGATE RESOURCES

WEMBLEY 83M/3

83m/3