

SURFICIAL AND GLACIAL MAPPING

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INTRODUCTION

Mapping was begun in 1974 and to date eight areas of insular Newfoundland (approximately 26, 1:50,000 map sheets) and two areas of Labrador, approximately 8, 1:50,000 map sheets) have been covered. Open file releases cover 4 areas of insular Newfoundland (approximately 20, 1:50,000 map sheets) and work is progressing on the releases for the remaining areas.

The purpose of this continuing mapping project is: 1) to describe the surficial deposits, particularly those deposits of aggregate potential; 2) to determine the glacial flow features and define the direction of glacial transport; and 3) to gather information concerning the geotechnical and lithological properties of the various surficial deposits throughout the province. The geotechnical and lithological data are being compiled as part of the Gravel Resource Inventory of Newfoundland project (Vanderveer and Kirby, this volume) begun in 1977.

Airphoto studies were conducted in each area prior to field work in order to classify the various surficial landforms, to map the major glacial flow features and to outline areas of aggregate potential.

FIELD PROGRAM

In general, the field programs consist of (1) vehicular traverses along all roads and trails; (2) foot traverses along inland trails and along coastal areas; and (3) boat, canoe or helicopter traverses along coastal sections and rivers. The density of observation averages one station (site) per 400 m of traverse.

Observations include exposure thickness and types of overburden, types of landforms, bedrock types, types

of glacial erratics, and the direction of transport as discerned from glacial scouring of bedrock surfaces or the orientation of streamlined glacial till deposits. A preliminary assessment of the surficial airphoto interpretation was conducted during the course of the field work.

Sieve analyses and moisture tests (Vanderveer and Kirby, this volume) were conducted on deposits of gravel and glacial till. Representative samples of sand, silt and/or clay deposits and of the various bedrock types were also collected for each study area.

POSTFIELD OFFICE PROGRAM

The surficial and glacial airphoto interpretations were checked against the field observations and corrected where necessary. The corrected data were placed on 1:50,000 scale *croniflexes* using the N.T.S. topographic maps as bases. The locations of all samples, glacial striae and other data were also plotted on this base. In addition to the 1:50,000 scale mapping, the glacial flow features, sample sites and areas of gravel potential were plotted onto 1:250,000 *croniflex* base maps. All sieve data, sample sites, *etc.*, are compiled as part of the Gravel Resource Inventory project (Vanderveer and Kirby, this volume).

MAP AREAS (See Figures 1 and 2)

A. Southwestern Newfoundland area.

Open file 959 (Vanderveer, 1977) consisted of a ten page report and ten maps, including Stephenville-Port Aux Basques (12B-110), Main Gut (12B/8), Flat Bay (12B/7), Little Friars Cove (12B/3), St. Fintans (12B/2), Codroy (110/14), Port Aux Basques (110/11) and Rose Blanche (110/10) map sheets.

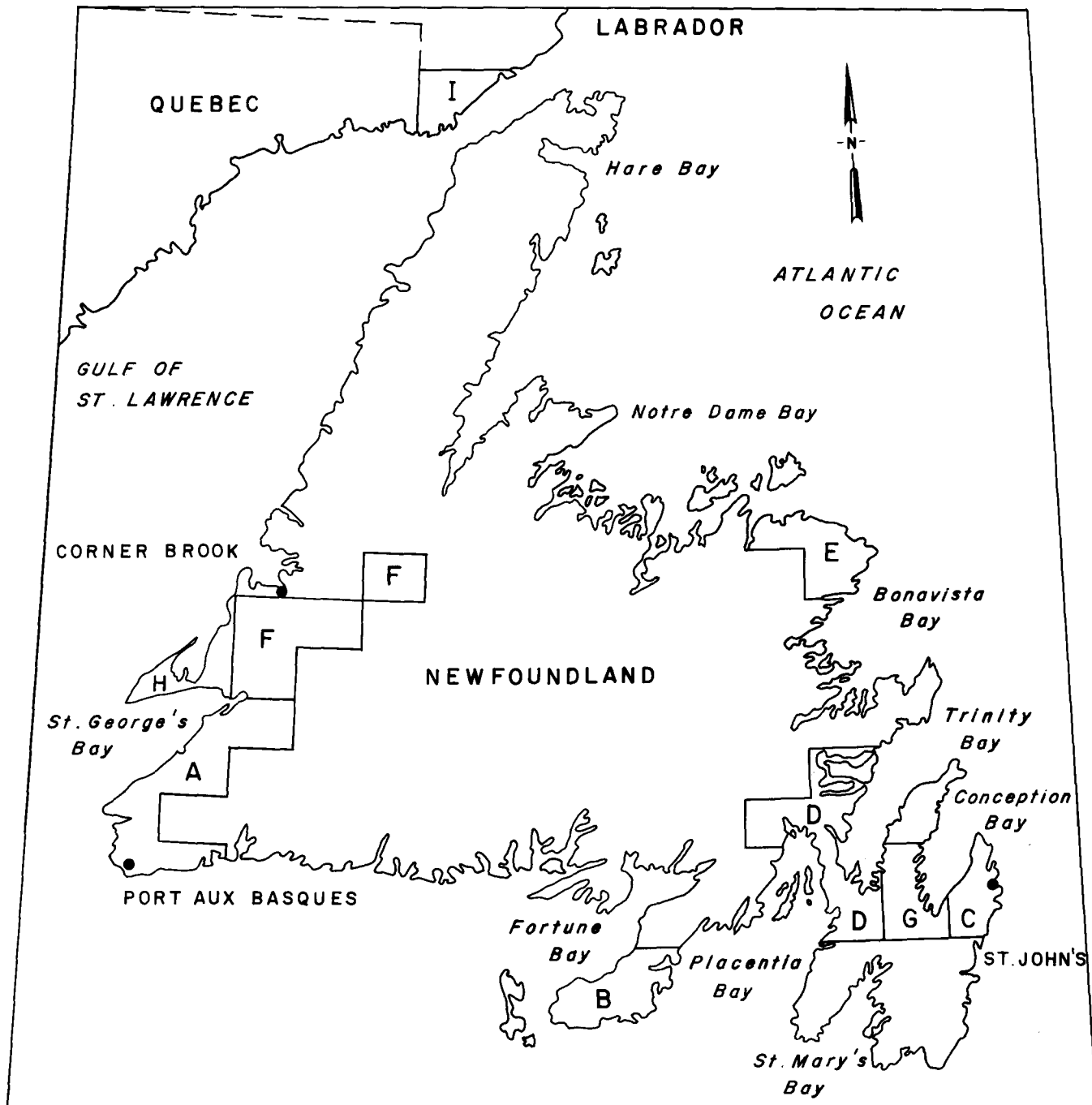


FIGURE 1

Surficial and Glacial Mapping

- A. Southwest Newfoundland (O.F. Nfld. 959)
- B. Burin Peninsula (O.F. Nfld. 958)
- C. St. John's**
- D. Avalon Isthmus (O.F. Nfld. 960)
- E. Wesleyville-Carmanville*

- F. Deer Lake-Harry's River*
- G. Holyrood-Harbour Grace***
- H. Stephenville-Port au Port***
- I. Southern Labrador***

* Field work conducted in 1975.

** Field work conducted in 1976.

*** Field work conducted in 1977.

B. Burin Peninsula area.

Open file 958 (Vanderveer, 1977) consisted of a nine page report and six maps, including Grand Bank (1M/4), Marystown (1M/3), St. Lawrence (1L/14), Lamaline (1L/13) and St. Lawrence-Belleoram (1L-1M) map sheets.

C. Avalon Isthmus area.

Open file 960 (Vanderveer and Cornish, 1977) consisted of a twelve page report and eight maps, including Belleoram-St.John's-Bonavista (1M-1N-2C), Random Island (2C/4), Sunnyside (1N/13), Dildo (1N/12), Argentia (1N/5), and Sound Island (1M/16) map sheets. This release also includes graphs of 55 sample sieve analyses data (4 for 1M/16, 18 for 2C/4, 7 for 1N/13, 12 for 1N/12, 14 for 1N/5).

The above open files outline the surficial and glacial geology and areas of aggregate potential. Sieve analyses were conducted during 1977 in the Burin Peninsula and southwestern Newfoundland areas. Results of this survey will be released in 1978 as part of the Gravel Resource Inventory project.

D. St. John's Area.

The surficial and glacial maps, scale 1:50,000 (including Bay Bulls (1N/7), St. John's (1N/10) and Pouch Cove (1N/15) previously released (Vanderveer, 1975) are being updated as the result of field work in 1976 (Vanderveer, 1977). Sieve analyses are completed and will be released as part of the "Gravel Resource Inventory of Newfoundland" program during 1978.

E. Wesleyville-Carmanville area.

The 1:250,000 sieve site and glacial flow feature maps and the sieve analyses have been completed (Vanderveer, 1976). Surficial and glacial geology maps (scale 1:50,000) and a 1:250,000 map of areas of aggregate potential are in preparation. The area includes the Wesleyville (2F/4), Musgrave Harbour (2F/5, 2F/6) and Carmanville (2E/8) map sheets.

F. Deer Lake - Harry's River.

The 1:250,000 sieve site map and 87 sieve analyses have been completed (Vanderveer, 1976). The 1:250,000 glacial geology and aggregate resource maps are complete, and work on the 1:50,000 surficial and glacial geology maps is also nearing completion. The area includes the Deer Lake (12H/3), Corner Brook (12A/13), Serpentine (12B/16) and Harry's River (12B/9) map areas.

G. Goose Bay - Gull Island Area.

This area was also the subject of previous surficial mapping (Fulton and Hodgson, 1970). A total of 250 clay, silt and/or sand, gravel and glacial till samples have

been field sieved and collected (Vanderveer, 1977). The laboratory sieve analyses were completed in 1977. Maps on a 1:250,000 scale of the glacial flow features and of the sieve sites are in preparation. A 1:250,000 map outlining areas of aggregate potential is planned. Further airphoto analyses of the surficial and glacial geology are also planned.

H. Holyrood-Harbour Grace Area.

Field work was conducted during 1977 to map the surficial and glacial geology and to outline areas of aggregate potential of the Holyrood (1N/16) and Harbour Grace (1N/11) map sheets. Sieve analyses and sampling were also conducted. Further laboratory studies (sieve and pebble lithology) are under way and will be reported under the Gravel Resource Inventory Project.

I. Stephenville - Port au Port Area.

During 1977, field work was conducted on the Stephenville (12B/10), Mainland (12B/11) and Cape St. George (12B/6) map sheets to map the surficial and glacial geology and outline areas of aggregate potential. Sampling and sieve analyses were conducted and laboratory sieve and pebble lithology analyses will be completed in early 1978.

J. Southern Labrador Area.

A brief surficial survey was conducted in the Strait of Belle Isle area of southern Labrador covering parts of the following maps sheets: (a) Blanc Sablon (12P/6), Flowers Cove (12P/7), Big Brook (12P/9), Pinware (12P/10) and Collines de Brador (12P/11). Field work was confined to the areas accessible by road or conducted inland and along the coast by helicopter traverse. The area had been previously mapped by Fulton and Hodgson (1970) and limited airphoto analysis is planned.

REFERENCES

- Fulton, R.J. and Hodgson, D.
1970: Surficial geology, Labrador; Geological Survey of Canada, Open File 29. Campbell Reproductions, Ottawa.
- Vanderveer, D.G.
1975: Surficial geology of the St. John's area, Newfoundland with special emphasis on the gravel resources; Department of Mines and Energy, Mineral Development Division, B.A. Greene (editor), Report 76-1, pages 105-107.
- 1976:** Surficial and glacial mapping - granular resource inventory; *in* Report of Activities, 1975,

Department of Mines and Energy, Mineral Development Division, B.A. Greene (editor), Report 76-1, pages 105-107.

1977a: Surficial and glacial mapping - gravel resource inventory; *in* Report of Activities, 1976, Department of Mines and Energy, Mineral Development Division, R.V. Gibbons (editor), Report 77-1, pages 90-95.

1977b: Surficial and glacial geology, and gravel resource inventory, Burin Peninsula, Newfoundland; Department of Mines and Energy, Mineral Development Division, Open File Nfld 958.

1977c: Surficial and glacial geology and gravel

resource inventory of southwestern Newfoundland; Department of Mines and Energy, Mineral Development Division, Open File Nfld 959,

Vanderveer, D.G. and Cornish, J.

1977: Surficial and glacial geology and gravel resource inventory of the Avalon Isthmus area, Newfoundland; Department of Mines and Energy, Mineral Development Division, Open File Nfld 960.

Vanderveer, D.G. and Kirby, F.

this volume: Gravel Resource Inventory of Newfoundland; *in* Report of Activities 1977, Department of Mines and Energy, Mineral Development Division, R.V. Gibbons (editor), Report 78-1.