

## DRIFT PROSPECTING IN THE VICTORIA AND TALLY POND AREAS, CENTRAL NEWFOUNDLAND

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### ABSTRACT

Detailed studies in the Victoria area, south of Red Indian Lake, and in the Tally Pond area were conducted for the purpose of drift prospecting. Glacial deposits are thin and discontinuous in the Victoria area. Three till facies were identified; a lodgement facies related to the southerly flow; a second lodgement facies related to the north-easterly flow, and a surficial melt-out facies related to glacial retreat. A raised shoreline and associated sand deposits approximately 60 meters higher than the present level of Red Indian Lake have been interpreted as representing a glacial lake, here informally named 'Glacial Lake Shanadithit'. Results of the sampling program have not been analyzed to date.

In the Tally Pond area, glacial deposits are extensive and generally thick, averaging 5 metres. Mineralized boulders along the northwest shoreline of Tally Pond do not appear to be related to the Boundary Deposit which is in an up-ice direction. Mineralized pebbles were also located between Gill Pond and Tally Pond. These and the mineralized boulders may be related with a yet undiscovered sulphide deposit southwestwards towards Lake Ambrose.

### INTRODUCTION

Two areas in the Central Volcanic Belt were selected for detailed study of the glacial geology, stratigraphy, sedimentology and geochemistry for the purpose of drift prospecting. The aim of this year's activities were to establish dispersal patterns of clasts and elements within a till sheet from known deposits, one in an area of relatively thin drift and the other in an area of thick drift cover.

The Victoria study area (12A/10) is located along the southern shore of Red Indian Lake, west of the Victoria River. The Victoria Prospect, a massive sulphide deposit, is located within the study area (Figure 1) at latitude 48°44'N and longitude 56°42'W.

The Tally Pond study area is located approximately 15 kilometres south of Millertown, at 48°35' to 48°40'N and 56°30' to 56°25'W on the 12A/10 and 12A/9 map sheets. The source of mineralized float found in the northeast corner of Tally Pond by Kean and Jayasinghe (1980) was investigated.

### General Geology

The area is primarily underlain by volcanic and sedimentary rocks of the Victoria Lake group which is Middle Ordovician and older in age (Kean and Jayasinghe, 1980). A conglomerate-sandstone unit, called the Rogerson Lake Conglomerate separates the Victoria Lake Group from the mafic volcanics of the Pine Falls Formation. The area is intruded by a variety of plutons ranging from gabbro through diorite and quartz monzonite to granite. The prime

mineral potential in the area appears to be related to the felsic to intermediate volcanic rocks of the Victoria Lake Group (Kean and Jayasinghe, 1980).

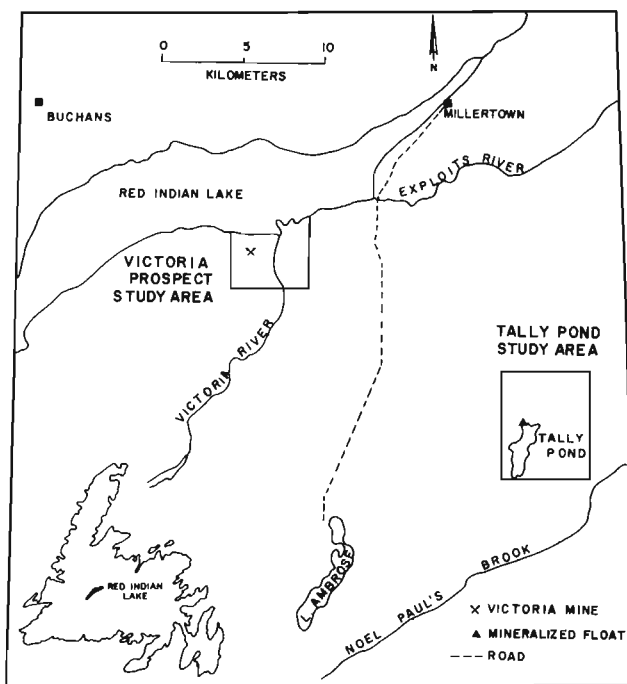


Figure 1: Location of the Victoria and Tally Pond study areas.

### Previous Work

Early regional work on the island by Coleman (1926) recognized one ice flow direction from the west in the Millertown

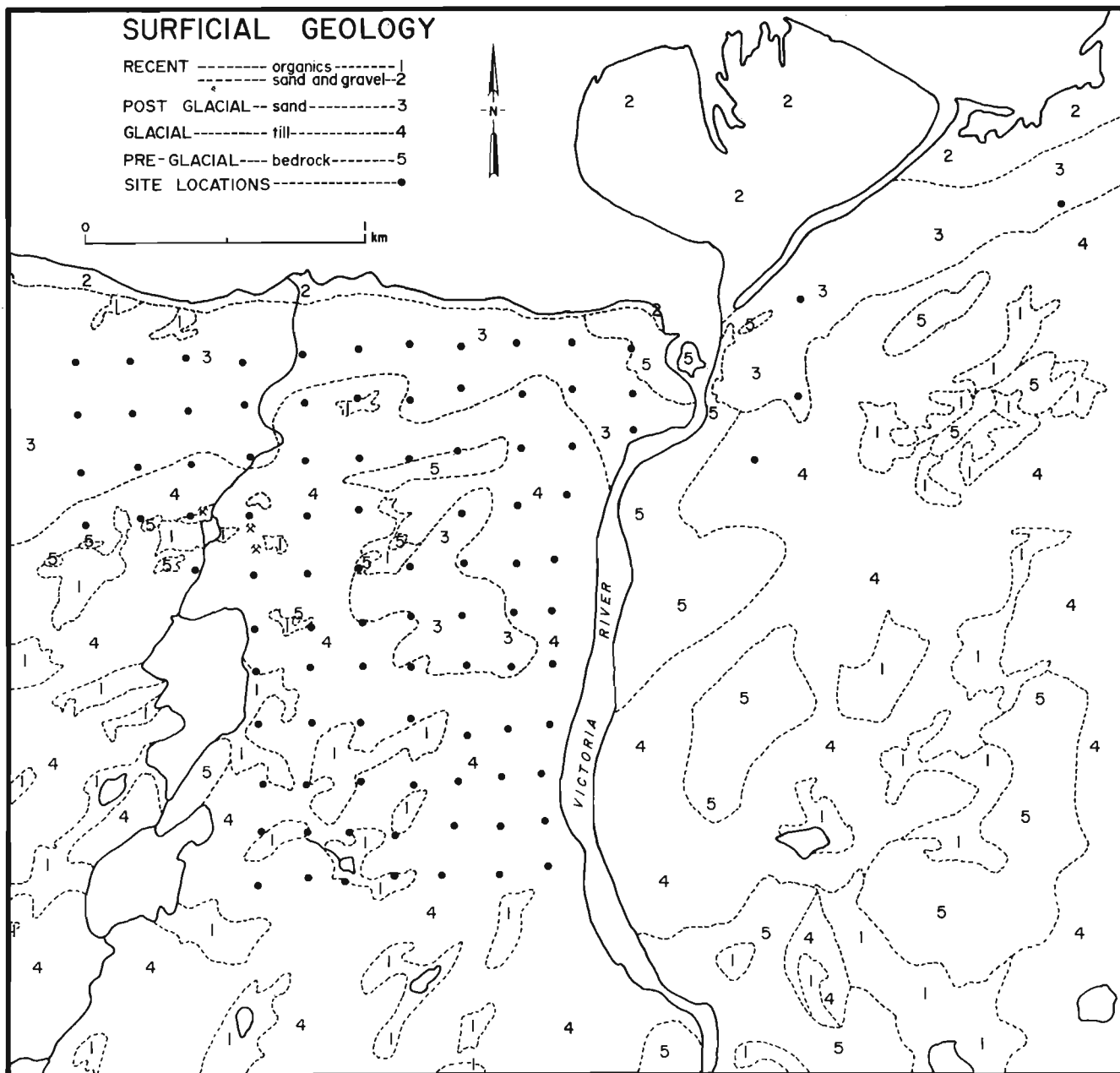


Figure 2: Surficial geology of the Victoria study area.

area. Murray (1955) identified three ice flows in the region, with ice flowing eastwards over the Victoria study area, north-eastwards in the Tally Pond area and westwards down the Lloyds Valley. The flows being related to a local ice cap over the Annieopsquotch Mountains. Murray related the southward striae in the Victoria area to local deflections, and the southward striae on the central granite area to an earlier glacial stage, where Labradorian

ice extended over the island. Grant (Grant, 1974, 1975, 1976) suggests a model of multiple ice caps for the area, with one being centered over Red Indian Lake. He suggests growth and shifting of these local ice caps would account for the complex striae associations in the area. Vanderveer and Sparkes (1979) have proposed that the area was undated by deflected southward flowing ice from Buchans and then by north-easterly flowing ice from an ice mass situ-

ated over the granite platform south of Noel Paul's Brook.

### Methods

Grid sampling of surficial sediments at 200 meter intervals as well as more regional sampling at 500 meter intervals were conducted for the Victoria and Tally Pond study areas. Till soil profile sampling of the B, B transition C and C horizons, was done to determine geochemical trends. Pebble collections, boulder counts and bedrock samples were taken where possible. A total of 286 sites were visited and 396 samples collected. A minimum of 100 pebble clasts (16 to 32 mm) were collected for each of the 190 till sites.

### Results

#### Victoria Area

Drift thickness varies from 0.0 to 7.0 meters. Bedrock is exposed in 10 to 15 percent of the study area (Figure 2). The primary volcanic lithologies include felsic to intermediate tuffs, lapille tuffs and localized exposures of agglomerate and mudstones. The Victoria deposit, discovered in the early 1900's and consisting of copper-zinc-lead-sulfide mineralization, is contained within north dipping and north facing felsic volcanic rocks (Thurlow, 1978; Kean and Thurlow, 1975). The grade of the ore is high but the low tonnages make the deposit presently uneconomic.

Three till units have tentatively been identified from field observations in the Victoria study area (Figure 3). The dominant surficial till facies is a grey-brown, silty-sandy unit which is moderately overconsolidated with well developed fissility. The till is generally moderately stoney; the clasts are subangular in shape and primarily volcanic. This unit has been

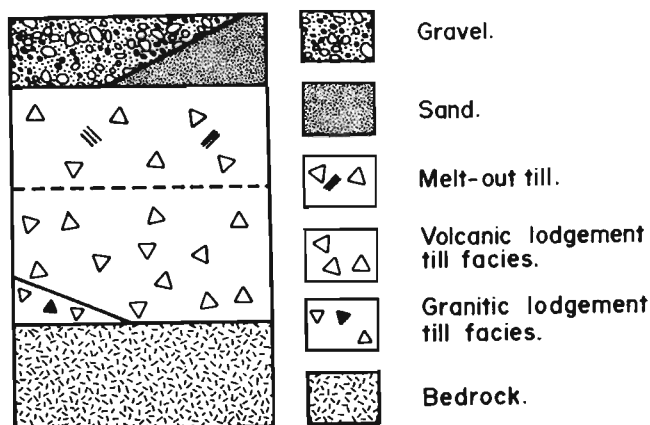


Figure 3: Idealized composite stratigraphy for the Victoria study area.

interpreted as a lodgement facies, probably related to the latest northeasterly flow.

At 1200 meters southwest of the Victoria River two lodgement till units were encountered. The lower till is light grey in colour with a silty matrix, contains subrounded to subangular clasts, is moderately overconsolidated, and exhibits well developed fissility. Lithologically this unit contains 48% tuff, 32% siltstone, 8% acid volcanic, 4% basic volcanics, 5% quartz pebble, 2% granite and 1% sandstone. The overlying clast-rich unit is brown-red in colour, with a sandy-silty matrix. Clasts are very angular in shape and consist of 96% tuff, 3% acid volcanics and 1% chert. This unit apparently has a very local source area, as evidenced by the lack of rounding and the pebble lithologies. The lower unit may represent the southerly earlier flow because of the presence of Topsail granites which is absent in the upper unit.

A tan-brown, sandy, stoney till unit with occasional sand lenses overlies lodgement till in several localities. It is generally underconsolidated with no apparent fissility. This unit is interpreted as a meltout till facies related to the final phases of the last ice-flow.

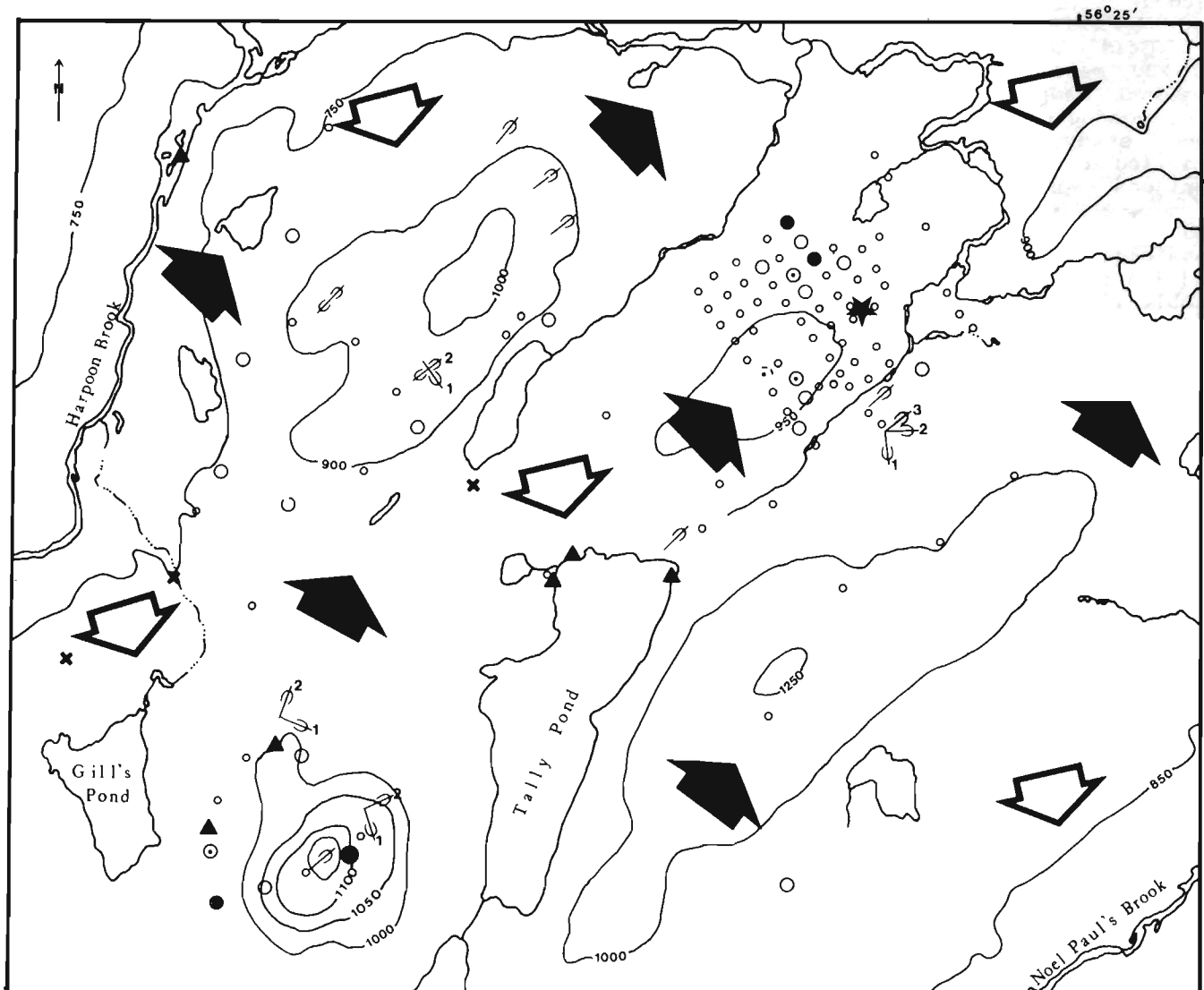
Medium to fine grained sand, with occasional pebbles, blanket the northern margin of the Victoria study area. These sediments were mapped to 212 meters above sea level, 60 meters above the present level of Red Indian Lake, where a well developed strandline has been identified. This evidence as well as lacustrine and deltaic sediments reported at 211 metres above sea level at the southwestern end of Red Indian Lake by Vanderveer and Sparkes (1982) are related to a proglacial lake, informally named 'Glacial Lake Shana-dithit'.

Modern beach and deltaic sediments are found along the shoreline of Red Indian Lake. The sediments are generally well-rounded to very well-rounded, coarse to fine, pebble to cobble gravel.

Poor drainage over the southern two-thirds of the study area has resulted in numerous bogs and wetlands. Organic sediments vary in thickness from 0.5 to over 1.0 meters.

#### Ice Movements

Ice flow directions were observed at 3 locations, 1 kilometer west of the study area. At two sites, two ice flow directions could be determined from striae and miniature crag and tail features, at 155 and 075/225. At one outcrop where cross-cutting striae were observed, the southeasterly



0 1 2 3  
KM

LEGEND

- Glacial striae (direction known)..... ↗
- Glacial striae (direction unknown)..... ↗
- Striae - 1 oldest..... ↗ 1
- Early glacial flow..... ⬠
- Latest glacial flow..... ⬤
- Mineralized bedrock..... ✕
- Boundary (massive sulphide) deposit..... ★

- Mineralized Float
- Cobble / boulder occurrence ..... ▲
- Mineralized clasts in the >16mm till fraction
- 0 - 3 percent ..... ○
- 3 - 6 ..... ○
- 6 - 9 ..... ⊙
- 9 - 12 ..... ●
- 12 - 15 ..... ●

Figure 4: Glacial ice flow features and mineralized float in the Tally Pond study area.

direction appeared to be older. However, at the second locality, the 150 set were found on the top of the outcrop and the 075/255 set were on the ice-side protected flanks, suggesting that the 150 set is younger. The contradiction of this evidence cannot be reconciled with the limited number of exposures and the small map area.

### Tally Pond Area

The Tally Pond area is in an area of moderately thick and extensive drift cover, averaging approximately 5 meters. Overburden shallows over the highlands southwest and east of Tally Pond.

Bedrock exposures are very limited, comprising less than 10.0% of the study area. The rocks in the area are part of the major band, known as the Tally Pond volcanic rocks (Jayasinghe, 1979). Major lithologies in the study area are rhyolites, brecciated rhyolites, felsic tuffs, quartz porphyry, breccias and siliceous volcanogenic sediments. From field observations in the Tally Pond area, only one till unit has been identified. The till is generally light brown, has a silty matrix, contains subrounded to subangular clasts, and is moderately to highly overconsolidated. This unit has tentatively been interpreted as a lodgement facies related to the last major ice flow to the northeast.

The dominant ice flow direction in the Tally Pond area is northeasterly at 055 (Figure 4). The crag and tail features and roche moutonnées observed indicate northeasterly flow. Only at 2 locations, a bedrock outcrop and a large boulder, which were in the same area, does striae record 3 ice flow directions. The relative ages and directions of transport were determined to be the earliest towards 180, a second to 085 and the most prominent and latest flow to 050. The significance of these 3 flows could not be determined from the very limited exposure. Glacial deposits related to the 2 earlier flows could not be found.

An area of mineralized float was located between Tally Pond and Gill's Pond (Figure 4). From the information of ice flow indicators and till stratigraphy, the mineralized float appears to have a source area to the southwest, (i.e., in an up-ice direction related to the late ice flow to the northeast). It would not appear that the area of this mineralized float is related to the Boundary Deposit which is northeast of the area.

### SUMMARY

Grain size analyses and geochemistry will be conducted for the study areas and will be compiled with mapped data and released in an open file during 1985.

### ACKNOWLEDGEMENTS

Jim Rogers is thanked for his assistance during the field season. Wayne Ryder and Sidney Parsons are kindly thanked for their logistical support. Consultations with Baxter Kean were informative and appreciated. Byron Sparkes is thanked for his assistance, and the author is grateful to the people of Millertown and Buchans Junction for their friendly hospitality during the field season. This manuscript was improved by critical review by Martin Batterson, Byron Sparkes and Doug Vanderveer.

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