

URANIUM IN STREAM SEDIMENTS, BATHURST-JACQUET RIVER DISTRICT,  
NEW BRUNSWICK

Project 670029

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Stream sediment samples collected in Bathurst-Jacquet River district, New Brunswick in 1965 by Boyle *et al.* (1966) have been stored by the Geological Survey since that time. In 1972 samples from areas that are underlain by Pennsylvanian red beds were selected for analysis for uranium. Where marked anomalies in uranium content occurred, resampling was attempted by the writer, but, as it was a time of high water, and beaver had moved into the country, flooding many streams with their dams, resampling was not possible in several localities. The uranium content of most of the new samples is about half that of the old ones, possibly due to the conditions of high water at the time the resampling was done.

R. W. Boyle (oral comm.) is of the opinion that the flushing action of the high water dissolves some of the uranium, and some is probably carried away in humic material. Govett (1973) has referred to some work done on this problem by Villard (1972), but this reference is not available to the author at the time of writing.

In the area near Bathurst underlain by Bathurst Formation (Fig. 1), the arithmetic mean of the uranium content of the 331 stream sediment samples is only 0.5 ppm, which may be taken as the background. Within the area of Figure 1, only a few samples exceeded the background by more than a factor of four. Two samples were relatively high in uranium, being 13 and 20 times background. At the locality of the first, 3½ miles east southeast of East Bathurst, two new samples were taken but neither contained uranium. The other locality, 5 miles south of South Bathurst, was inaccessible due to a large beaver pond.

Within the area shown in Figure 1 the best anomalies occur in and near Pabineau Indian Reserve, and near East Bathurst.

From areas underlain by the Pennsylvanian Bonaventure Formation northwest of Bathurst, along Chaleur Bay (see Boyle *et al.*, 1966), twenty-eight stream sediment samples were analyzed for uranium. The background of 0.66 ppm U is only slightly higher than for the Bathurst Formation near Bathurst. Of these, only a few are of interest. A value of three times background was obtained from a sample collected one-quarter mile south of Jacquet River post office, and values, from south to north respectively, of 1.1,

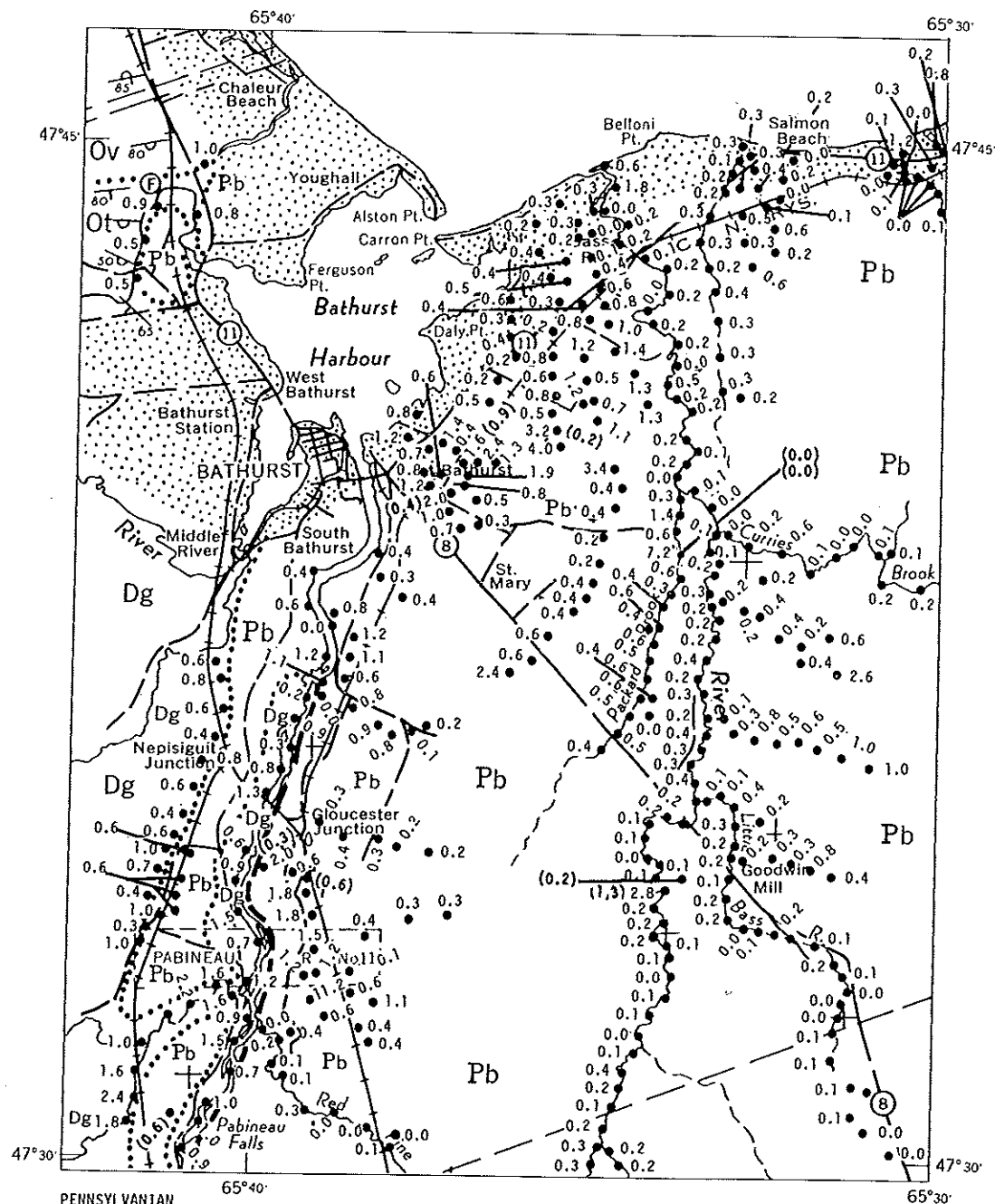
1.2, and 4.4 ppm. U were obtained from the three samples collected on Heron Island.

Near Tetagouche Lakes, however (Fig. 2), samples of stream sediments underlain by Bathurst Formation yielded much more encouraging results; background is 4 times that near Bathurst. When it was realized that uranium is fairly abundant beyond the boundaries of the Pennsylvanian rocks, additional samples from near Tetagouche Lakes were analyzed. These showed that background for the surrounding older rocks is about half that for the Bathurst Formation, and double that near Bathurst. Because higher values occur in the Bathurst Formation, these rocks may be the source of the uranium. On the other hand the same formation near Bathurst has a low uranium content. The uranium near Tetagouche Lakes may therefore be genetically related to the major faults. Further sampling of the stream sediments is recommended.

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Selected Bibliography

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1966: Geochemistry of Pb, Zn, Cu, As, Sb, Mo, Sn, W, Ag, Ni, Co, Cr, Ba, and Mn in the waters and stream sediments of the Bathurst-Jacquet River district, New Brunswick; Geol. Surv. Can., Paper 65-42.
- Govett, G. J. S.  
1973: Exploration Geochemistry, in *Geology of New Brunswick*, Dept. Geol., Univ. New Brunswick; NEIGG Guidebook, N. Rast, Ed.
- Villard, D. J.  
1972: Factors affecting the distribution of uranium in stream sediments, Newcastle area, New Brunswick; unpubl. M.Sc. thesis, Univ. New Brunswick.



PENNSYLVANIAN  
**Pb** BATHURST FORMATION: red conglomerate and grit, at base; red sandstone, siltstone, shale

DEVONIAN (?)  
**Dg** Pink, coarse- to medium-grained biotite granite, granodiorite, granite porphyry

ORDOVICIAN

MIDDLE ORDOVICIAN

TETAGOUCHE GROUP (Ot, Ov)  
**Ot** Grey, black, green, and red slate, greywacke, conglomerate; graphitic schist; minor limestone, basic volcanic rocks

**Ov** Basic volcanic rocks; interbedded slate, graphitic schist; iron formation

Sample location with uranium content in ppm.....0.1 ●

Figures in brackets show uranium content of new samples from the same localities.....(0.6)

Geological contact.....

Geology from GSC Prelim. Map 57-1  
 (Smith et al., 1957)

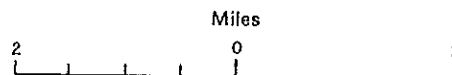
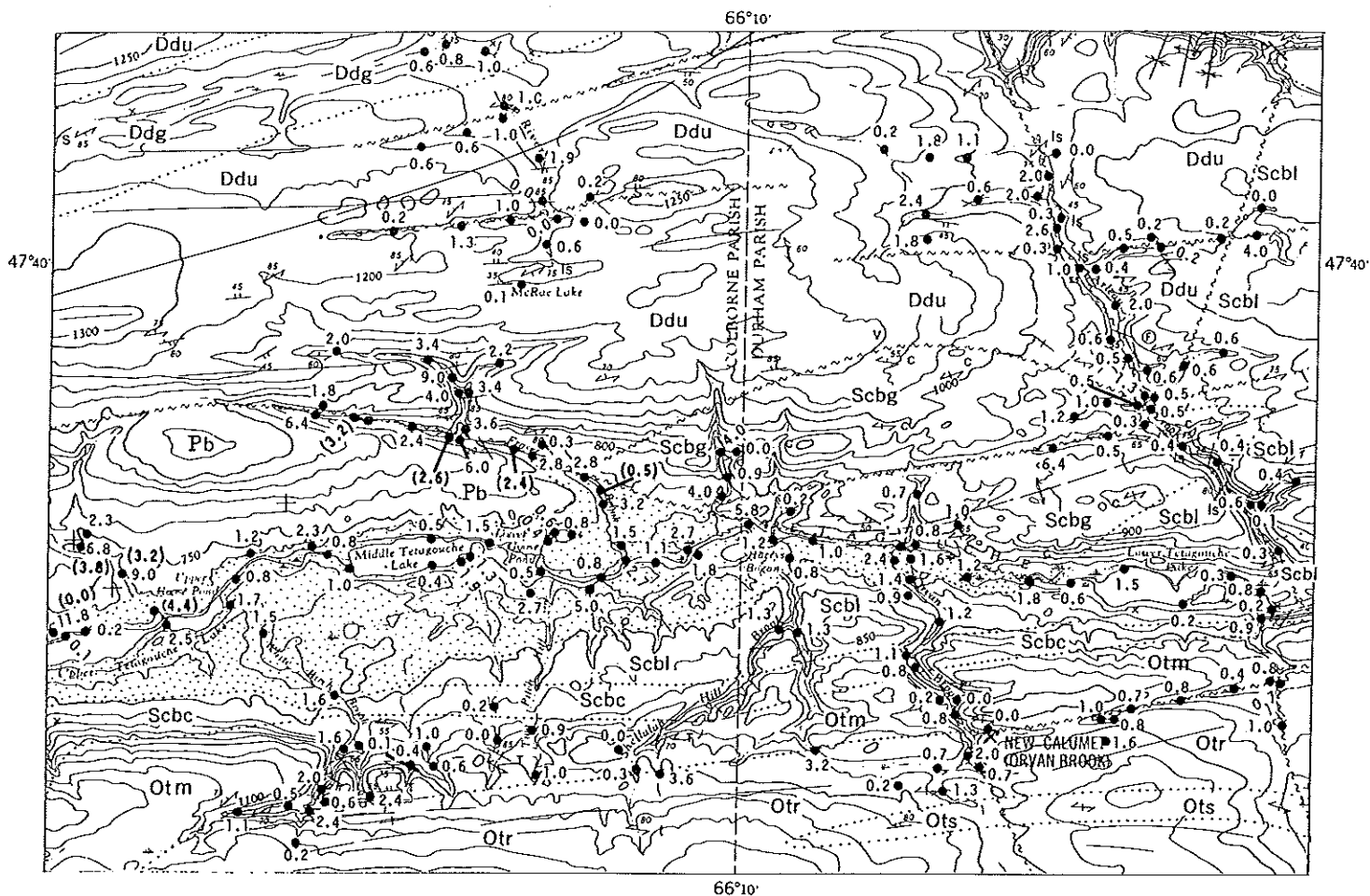


Figure 1. Uranium in stream sediments near Bathurst, New Brunswick.



#### PENNSYLVANIAN

**Pb** BATHURST FORMATION: red sandstone, shale, grit, quartz-pebble conglomerate

#### DEVONIAN

MIDDLE DEVONIAN OR OLDER  
**Ddg** Diabase, diorite, gabbro

#### LOWER DEVONIAN

DALHOUSIE GROUP  
**Ddu** Upper Unit: greenish grey limy quartz greywacke, siltstone, shale, limestone; minor basalt, andesite

#### SILURIAN

MIDDLE AND UPPER SILURIAN  
**Scbl** CHALEURS BAY GROUP  
Limy sedimentary Unit: greenish grey and red limy slate, shale, shaly limestone

**Scbc** Conglomerate Unit: green, grey and red volcanic conglomerate

**Scbg** Greywacke Unit: green and red conglomerate, greywacke, slate, limestone; basalt

#### ORDOVICIAN

MIDDLE ORDOVICIAN  
TETAGOUCHE GROUP  
**Otr** Rhyolitic Unit: grey rhyolite crystal tuff, rhyolite tuff, quartz-sericite schist; phyllite, rhyolite, greenstone

**Otm** Metabasalt Unit: greyish green, schistose, and grey laminated greenstone, dark slate, iron-formation; rhyolite tuff

**Ots** Sedimentary Unit: grey slate and siltstone

Sample location with uranium content in ppm...0.2

Uranium content of new samples collected....(0.2)

Geological contact.....

Fault, assumed.....

Mine (zinc-lead-silver-copper).....

Geology from GSC Map 1330A (Skinner *et al.*, 1972)

Miles

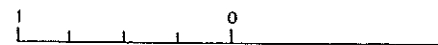


Figure 2. Uranium in stream sediments near Tetagouche Lakes, New Brunswick.