
**The Chaswood Formation at the Atlantic Silica pit,
Vinegar Hill, Poodiac, NB and its relevance to the regional
depositional pattern of the Chaswood Formation**

DAVID J.W. PIPER¹, GEORGIA PE-PIPER²,

D.V. VENUGOPAL³, AND THIAN HUNDERT²

1. *Geological Survey of Canada (Atlantic), Bedford Institute of
Oceanography, P.O. Box 1006, Dartmouth, NS, B2Y 4A2.*

<dpiper@nrcan.gc.ca> ¶ 2. Department of Geology,

Saint Mary's University, Halifax, NS, B3H 3C3 ¶

3. 11 Baxter Court, Fredericton, NB, E3B 6M2.

The only known Chaswood Formation in New Brunswick is at Poodiac, south of Sussex. The Lower Cretaceous age of the deposit was recently confirmed by Falcon-Lang et al. (*Atlantic Geology*, v. 39, p. 39–46). Mapping shows a gently dipping succession of braided-river gravels that overlie mudstones with lesser poorly sorted sandstones. Locally, the contact with this lower mudstone unit appears unconformable, where the mudstone dips at 60°. Flat-lying gravels, poorly preserved, unconformably overlie the dipping succession of gravels. The maximum known thickness of sand and gravel is 60 m at borehole 81-1. Only three paleocurrent indicators have been found: trough cross-bedding to 260° and bar-margin planar cross bedding to 190° and 230°. Collectively, these indicate mean paleocurrents to the southwest, parallel to the fault margin of Vinegar Hill.

Three new boreholes were drilled in the Chaswood Formation. VH03-3 proved a thickness of 12 m for the lower mudstone unit, which overlies Carboniferous basement. VH03-2 (27 m TD) and VH03-4 (22 m TD), to the south and west of the pit, respectively, penetrated unconsolidated sands and gravels with minor interbedded mudstone.

Gravel clasts at Vinegar Hill consist overwhelmingly of vein quartz, principally grey in colour. Other rare lithologies include grey rhyolite, similar to Precambrian rhyolite of the Coldbrook Group; quartz arenite that resembles Ordovician rocks of the Miramichi terrane; staurolite-bearing metasedimentary rocks, perhaps from Mount Pleasant or the southern Miramichi terrane; purplish rhyolite; and dark hornfels similar to Silurian metasedimentary rocks intruded by Devonian granite in central New Brunswick. The heavy mineral fraction of the sands consists predominantly of ilmenite and its alteration products (40–70%) and staurolite (20–40%), with monazite, zircon and andalusite more abundant than at other Chaswood Formation localities. The overall heavy-mineral assemblage is similar to all other Chaswood Formation outliers. Monazite dates (Pe-Piper and MacKay, in prep.) show that the assemblage is principally derived from the Taconic orogen, presumably in northern New Brunswick and southern Quebec. Whether one or more rivers transported this detritus southward is unknown, although the wide geographic distribution along strike means several rivers are more probable. Regional variation in heavy mineral assemblages suggests that at any one locality, some 50% of the heavy mineral fraction is derived from local horsts and 50% from more distant sources.