Stratigraphy and paleogeography of the Windsor Group in southern New Brunswick

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The Lower Visean Windsor Group in southern New Brunswick is divisible into six formations and three informal units that have insufficient areal extent to warrant formation status. The six are: Gays River, Macumber, Parleeville, Upperton, Cassidy Lake and Clover Hill Formations. Two informal units are named: Samp Hill and Demoiselle Creek beds.

The stratigraphic section in the Moncton sub-basin is as follows. The basal limestone consists of shallow-water, basement-fringing, algal buildups (Gays River), in places with intercalated siliciclastics (Parleeville), which are laterally equivalent to deeper-water, very thin to thinly bedded, euxinic, limestone (Macumber). The Macumber is overlain by stratiform, nodular to mosaic, anhydrite (Upperton) that is hosted by carbonate or calcareous siliciclastics. The sulphate also is equivalent, in part, to the algal buildups. Deep-water salts (Cassidy Lake and Clover Hill) overlie the "basal-anhydrite"; have a basin-centre distribution, and are capped by greenish grey mudstone ("transitional beds"). Thinly bedded, euxinic limestone with interbedded greenish-grey mudstone (Samp Hill) is found between Gays River and "transitional" rocks in the Havelock area, only. All these rocks belong to the A subzone of the Windsor Group.

The remaining units (unnamed and Demoiselle Creek) only occur in the Cumberland Subbasin. The uppermost one (Demoiselle Creek) consists of two carbonate subunits separated by red beds and the lower one (unnamed) is composed entirely of red beds. These rocks belong to the B subzone of the Windsor Group, not the C subzone—as previously believed.

The lithofacies distribution in the map area indicates (1) the Moncton Subbasin was open to the northeast but not the southwest, (2) the Marysville Subbasin, bordered on three sides by Lower Paleozoic Upland, undoubtedly contains Windsor rocks in the sub-surface probably as far north as the Fredericton Fault, and (3) the Gays River Formation contains most of the high calcium limestone and all the known base metal sulphide accumulations in the Windsor Group.