Probable Middle Carboniferous NW-SE faulting in the Musquodoboit Valley, Nova Scotia, Canada

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The search for potable groundwater has led to more information about post-Early Carboniferous NW-SE faulting in the Musquodoboit Valley. Scouts Canada's Camp Nedooae located several kilometres north of Elderbank, Nova Scotia, needed several wells for an additional water source. Previous geological maps of the area do not suggest NW-SE faulting. The Valley in this location has a relatively thick cover of till and very few outcrops so knowledge of the bedrock is based on extrapolation from limited outcrops and relatively uncomplicated structure. The camp location was thought to be near a Goldenville Group basement high just to the north. Gently south-dipping Windsor Group shale, evaporite and limestone lie unconformably on the older rocks. Instead of finding the base of the Windsor Group and the unconformity, the first well (east block), 0.5 km southeast of Brown Lake was collared in Goldenville Group. The second well, 0.6 km west, was collared in gypsum and bottomed in limestone/dolostone with interlayers of gypsum. No fossils fragments were found anywhere in the well cuttings. We now surmise that the east block moved up and the west block moved down. With this knowledge of the bedrock and some topographic trends, we now believe NW-SE faulting has played a greater role in rock distribution in the Valley. Geological evidence of NW-SE faulting is not readily apparent in this area. None of the Early Cretaceous deposits have mapped offsets in this orientation. In the Rawdon area to the west small NW-SE faults offset the Horton Group and a WSW-ENE bounding fault. The throw is east side up. NW- trending faults are known in the Cobequid Mountains and of course in southern Nova Scotia. The small amount of new evidence in the Musquodoboit Valley suggests there is an important addition to the geological history of this region.

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