

Geology and Water on the Carp Ridge

Here is some information from an avid naturalist and a geoscientist who between them have spent many years studying the National Capital area, the Grenville Province in general and the rocks and structural features of the Carp Ridge area. They have led many field trips in the Ottawa area including recent tours to examine the rocks, plants and animal signs around the Thomas Dolan Parkway and a proposed development site in particular recent tour for us.

Many presume that the whole of the Carp Ridge is composed of granite. Not so. Exposed rocks are weathered and look very much alike, but a simple hardness scratch test using a steel pen knife dug into a soft white powder on some rock outcrops both around the site of the proposed development and in the water recharge area on the heights. A check of the bedrock geology map confirmed the rock was marble with many accessory minerals including biotite (mica), iron sulphide (pyrite) and several other minerals produced by the reaction between the marble and inclusions within it. As such, the marble appears to be the same as the rocks historically exploited at the nearby Kingdon mine. Lead was mined at Kingdon mine so it is also in the area. It is possible that lead is in the groundwater of areas covered by mine tailings or connected to them.

The geologist noted that the granite of the Carp Ridge is part of the regionally layered gneiss structure, typical of the Grenville geological province. Since this part of the Carp Ridge contains no large porous reservoirs of sand as in the Constance Bay area and the Carp ridge is not downhill from adjoining areas that might act as water sources, the source of water for wells on the flanks of the ridge is not obvious. It would appear that, unlike loose sand, the igneous and metamorphic rocks of the Carp ridge contain little or no free water except for that within the network of fractures in the rock. In contrast, many wells in the Bay area have been established with sand points simply hammered into the sand. Most wells on the Carp Ridge have often exceeded 300 feet and ended essentially dry.

The environmental significance of the Carp Ridge has been addressed in numerous reports and publications. Without going too far back, one might find the reports entitled “An Introduction to the “Conservation Lands in Ottawa-Carleton” Report” subtitled “PRESERVING OUR NATURE LANDS - YOU ARE RESPONSIBLE” produced by the Planning Department, Regional Municipality of Ottawa Carleton, February 1978 and the associated “Appendix One” produced by the “informal advisory Group 1 for Carp Ridge, March Highlands, Constance creek-Shirley’s Bay, West Carleton Forest and Bradley’s Falls. In 1971, at least, the city appeared to consider the Carp Ridge sufficiently environmentally significant to be worthy of preserving. The Carp Ridge appears on the planners map as a “proposed conservation area” similar in size and significance to Mer Bleue on the east.

Later, in 1988, Dan Brunton described the Carp Hills on pages 147-149 in his book “Nature and Natural Areas in Canada’s Capital” published by the Ottawa Citizen. From Dan’s book -

“Like a piece of Gatineau Park dropped into Ottawa-Carleton, the Carp Hills provide an area of Canadian Shield complete with a myriad of beaver ponds, wet meadows, rock-knoll oak stands and young poplar-birch forests. A rich plant and animal life thrives on the Hills including many species seldom seen in the capital south of the Ottawa River. The beaver ponds offer nesting habitat for many ducks and other waterfowl (including a few Great Blue Herons) and are frequented by a small population of White-tailed Deer. A spectacular spring flora is exhibited in the South March highlands (the southern extension of the Carp Hills), and includes a number of very unusual species. Similarly, breeding habitat for a number of rare birds, like the Blue-gray Gnatcatcher and Golden-winged Warbler, exists here. The northern section and the fringes of the southern section have proven to be important wintering habitat for raptors (including the spectacular Great Gray Owl) over a number of years.”

Sadly, much of the natural habitat of the March Highlands has fallen to the bulldozer. One result has been a significant increase in habitat pressure as the animals have been displaced to the remaining area of the Carp Ridge.

A casual inspection will show that many of the natural features noted by Dan Brunton - the “ beaver ponds, wet meadows, rock-knoll oak stands and young poplar-birch forests” take the form of micro sites with areas commonly of a few acres in size. It is interesting that the developers favorite lot size of a few acres corresponds very closely.

It would appear that continued exploitation of the March Highlands and adjacent Carp Ridge has made the remaining undeveloped area of the Carp Ridge even more environmentally significant than the municipal assessments of the 1970's. Are we to witness the demise of one of the largest environmentally significant features of the National Capital area?

A number of key questions about groundwater and wells are evident in this essay.

- Should the health implications of dissolved metals in the groundwater beneath the proposed development be investigated and if so by which agency?.
- Does the fractured bedrock act as the host aquifer for wells along the ridge?
- Does the collective volume of all the small basins and beaver ponds on the ridge constitute the recharge reservoir for the water that eventually finds its way to landowner wells?
- What is the nature of the connection between the aquifer supplying the wells and the reservoir represented by the sum of all the surface ponds?
- Is there a limit to the number of wells the Carp ridge aquifer can safely support?
- What sort of time might be required to recharge the aquifer once contaminated?
- How fragile is the Carp Ridge aquifer?
- What happens to all these connected ponds if the developer drains the site and removes or traps the beavers in one or more of them?
- How might the main drainage from the rest of the Ridge be affected?