

[Correspondence November 24, 2007 to Robert Bowen]

Hi Robert,

Here are my cursory and preliminary comments on the Golder Associates Environmental Assessment (EA) report dated December 21, 2006 (Revised November 9, 2007).

My comments are limited to karst except for the mention of the possible kettles at the end.

What leaps out at me straightaway is that there is no recognition of LLC or the karst unit as an inherently sensitive and valuable multi-media (i.e., terrestrial and aquatic) resource feature that could be affected by the project.

In my view, the karst unit should have been recognized as one of the "key sensitive areas" and as a "valuable ecosystem component". The current environmental conditions of the karst unit should have been characterized, after initial delineation of the unit, and the potential environmental effects from the project discussed.

No fieldwork was undertaken to formally inventory LCC – one of more dimensionally significant caves in the Greater Victoria area. The cave's existence was already well known to Langford, and of course to the PCC.

As an overview EA, the report could have, at a minimum, made recommendations for further work required, including field investigations.

The existence of one of the LLC entrances is merely noted on page 18 of the report (and as a consequence of a local resident pointing it out to Golder). The same page states: "The cave feature is further discussed in Section 4.2.4 Archaeological Resources". But there is no Section 4.2.4 in this version of the report.

Great emphasis is placed on legislated requirements and listed species. True, there is no current BC legislation that specifically protects caves (don't get me started here!). Nevertheless, there are specific cave policy statements, guidelines for urban and rural development, as well as accessible science. And, of course, there is supposed to be professional reliance and due diligence. It is well known within the planning and engineering community that karst resources are potentially and environmentally sensitive areas and have the potential to harbor unique or unusual faunal habitats. LLC, by itself, should be classified as a sensitive ecosystem.

As others who work on karst in BC have already noted elsewhere, the Conservation Data Centre does not deal suitably with rare and sensitive ecosystems as three-dimensional volumes of biomass, soil, and bedrock parent material. Thus, the absence of a red-list ecosystem or species on the surface of a karst site cannot be taken as the absence of a sensitive ecosystem hosted by karst.

True, the karst unit in the project area may not be especially well developed in comparison to karst in some other regions of BC, but it merits special consideration on physical, geological, and hydrological grounds alone. It is a unique landscape, with unusual and distinctive physical features and hydrology. The forest plus limestone bedrock and the associated soil is a rare combination in the Greater Victoria area. Many

of the other karst sites in the Greater Victoria area have been deforested, quarried or blasted away, paved or built over, or used for waste disposal.

Langford planners acknowledged to me in a February 1, 2007 email that their requirements for EA overviews and impact assessments did not extend to karst because it was not designated as a sensitive ecosystem in provincial databases. Langford also acknowledged that this was quite possibly an oversight and that they "may consider including karst topography as a designated sensitive ecosystem in the future".

I note that karst is recognized by international convention (Ramsar) as a wetland category— i.e., a subterranean wetland. How ironic it is that so much attention is being paid in the report to protection and setbacks for the surface aquatic resources of the project area, while there is no mention of the hydro-biological role and function of karst. For example, the report cites the ability of s.9 of the Water Act to regulate "changes in and about a stream", but there is no discussion of how the project might cause changes within the karst. And yet, the karst unit is part of the hydrologic regime of the project area and could be subject to changes in runoff/infiltration, timing, duration and surface and subsurface drainage disruption.

An assessment of karst resources in the project area, resembling the evaluations submitted to the BC Environmental Assessment Office for reviewable energy projects in BC, would have allowed for more timely optimizations in design. Even if the potential impacts to karst in the project area were to be outweighed by the social and economic supports of so-called sustainable development tripod, a detailed assessment of the karst resources of the project area would serve as an important record of what was lost to society. Karst caves, in particular, are non-renewable over many, many lifetimes and there is a small, finite set of them in the Greater Victoria area. A great number of the known caves in this set have already been destroyed or damaged by land use activities.

As an aside, I note that many of the ponds and wetlands of the study area are recognized mainly as aquatic resources in the report. There is no mention of them as probable kettles, and thus as important and possibly unique elements of the Greater Victoria area's geodiversity heritage...

Paul