

## **Ground penetrating radar and seismic methods applied to detection of 'windows' in the clay aquitard overlying the Fredericton Aquifer**

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Geophysical exploration is a non-invasive discipline that can be used to determine the subsurface features at a site. These methods utilize changes in material properties (e.g. density, velocity, dielectric constant) to enable imaging or inferences regarding the underlying geology.

The City of Fredericton's major source of potable water is a glaciofluvial sand and gravel aquifer that is overlain by a lacustrine clay/silt unit of variable thickness and a fluvial sand

and gravel deposit. The sites chosen for this investigation are located near the Fredericton well field in the Wilmot Park area of the City's downtown. Through previous borehole data available for these locations, the confining clay/silt layer at 5-7 m depth is known to exhibit breaks or 'windows', where the underlying aquifer is vulnerable to contamination from above. Thus, it is important to locate these windows to guard against possible migration of hazardous material into the water supply

and to aid in city planning.

A project has been undertaken to determine the suitability of using geophysical methods to map the boundaries of the

clay/silt windows. We present promising results from the ongoing interpretation of ground penetrating radar and seismic surveys selected for initial field trials.