

## **Smart monitoring to address the risks of Unconventional Oil and Gas development**

*Jon Fennell*

*Integrated Sustainability Consultants Ltd.*

### **Introduction**

Given the current knowledge and innovative technologies related to unconventional oil and gas (UCOG) development, Canada is well placed to move this important and emerging sector forward. Given the trillions of cubic feet of coal bed methane, shale gas, tight gas, and associated liquids beneath our provinces, development of these hydrocarbon resources will generate significant economic benefit to the country and provide a clean energy source for the world. On the other hand, concern is mounting regarding the potential impacts of UCOG development on potable groundwater resources from well stimulation (i.e., hydraulic fracturing) and long-term production (e.g., gas migration) activities. The Government of Alberta has recognized this concern, and responded in kind by working to enhance the provincial groundwater observation well network (GOWN) in active and future UCOG development areas.

### **Theory and/or Method**

This presentation will showcase the multi-attribute approach designed to map subsurface risk and surface access opportunity with the goal of identifying optimal monitoring locations across broad development areas to define baseline groundwater conditions and detect any changes resulting from UCOG development activities.