

## Site Amplification Factor in Fox Creek area

*Gennaro Esposito, Earl Galan, Daniel Ciulavu*  
*Shell Canada*

Seismic structural and ground surface response depends on the attenuation of seismic energy from the source and on the amplification of seismic waves in surficial sediments. In the last 3 decades, most of the research effort has focused on the uncertainty of the earthquake input motion, relatively less effort has been given to the uncertainty of the local soil amplification. In areas of large geological variability, the uncertainty of the local soil amplification can exceed the one of the record-to-record earthquake motion and the resulting structural response is difficult to estimate. This study focusses on the ground surface and structural seismic response in the Fox Creek area characterized by thin soil covers on bedrock, where both the characterization of the soil properties and the depth of bedrock are uncertain. To describe the ground surface and structural seismic response, a statistical analysis of conducted to determine the impact of uncertain soil properties on the ground-motion propagation transfer function (also called Amplification Factor). The results of this statistical analysis are then used to estimate the hazard at the ground surface which is defined herein in terms of a suite of oscillator-period-dependent hazard curves for the spectral acceleration. The amplification factors derived from the statistical analysis are then compared to those adopted in the current Canadian building code (NBCC 2015) and to those commonly used in Ground Motion Prediction Equations (GMPE) employed in seismic hazard studies.