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TOPIC: EARTHQUAKE DAMAGE COST ANALYSIS OF BUILDING INVENTORY IN KAMLOOPS, BRITISH COLUMBIA

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ABSTRACT

Kamloops, like most cities in British Columbia is described as an earthquake active region. Sources of potential earthquake events include: 1) oceanic plate movements (large distant earthquakes) with 10% in 50 years probability, and 2) active fault lines within the crust (crustal earthquakes) with 2% in 50 years probability which have more severe consequences. Besides earthquake magnitude, soil type and distance are important factors that influence ground motion intensity. This research will estimate potential damage costs to buildings using engineering modelling and theory to provide quantified reasons for mitigation planning / management. This loss estimation will be done using the HAZUS MH software. The HAZUS MH 2.1 software was developed by US FEMA and has been modified for use in Canada. HAZUS MH 2.1 runs on the Arc GIS 10.0 framework. For this study, the first step is to predict ground motion using the Probabilistic and Deterministic Approach. The intensity of ground motion is calculated in terms of peak ground velocity or acceleration and is affected by soil condition and distance from the seismic source. Then building inventory data for this analysis (material of construction, occupancy and location) and damage response curves of the buildings are also required. The expected results of this study are: estimation of potential damage costs to buildings and

highlighting of the areas likely to suffer more from predicted earthquake events. This study will provide the information that governments and policy makers need to make mitigation decisions.