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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 bse 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.