

Development and Evaluation of Movement Corridors used by Rocky Mountain Elk
within the Vicinity of Los Alamos National Laboratory,
Los Alamos, New Mexico

Abstract

This research was undertaken to develop, through a spatial modeling process, major seasonal Rocky Mountain elk movement paths to determine how elk move on and off Los Alamos National Laboratory (LANL) lands. These paths were developed for three time periods, late 1990s, the early 2000s and 5-10 years in the future (using two different future scenarios). The development of these paths was conducted to address two specific questions; 1) Have predicted seasonal movement paths changed between time periods? 2) What are the likely factors contributing to the detected change? The methodology used in this research integrated a habitat suitability model, developed through logistic regression with a least-cost path modeling process to predict seasonal elk movements. Movement source locations were located on LANL lands and movement destinations areas were located on lands adjacent to LANL. Results of this study indicated that movement paths did change between time periods. Generally, the 1990s showed a lower travel cost for most paths predicted. However, there were some general trends in movement paths across all the time periods. The analysis of change indicated that the

majority of the differences in paths seen were directly related to the habitat suitability model. However, barrier features such as buildings, structures, and security fencing also had an impact on how paths were generated. The development of new high impedance barrier features has the potential to obstruct movements on and off laboratory lands if unmanaged.