

What does the ECA model not do?

This is a list of the limitations of the ECA model and where it should not be used.

- The ECA model will not work on small watersheds. The model is too gross for use in small areas. It depends upon the use of a variety of elevations and aspects. The actual increases in flow are beyond what the model can show on a small first- or second-order watershed as it takes the impacts to the mouth of the stream area.
- The ECA model will not work on a steep elongated watershed; the model depends upon a normal distribution of first-, second- and a third-order streams to even out the assumptions in the model.
- The ECA model only looks at increased water yield from timber removal on a specific site.
- The ECA model does not look at the effect of roads on the runoff, intercepted water, or sedimentation.
- The ECA model does not look at the increased risk of mass failures on unstable terrain; the model assumes that the terrain is stable everywhere.
- The ECA model does not analyze increased in-channel erosion and sediment or bedload movement. This could be added on individual sites with some additional hydrology work.
- The ECA model does not predict runoff from rain on snow events that trigger mass failures and flooding in this area.
- The ECA model does not predict or set any type of threshold for mass failure prevention or the level that impact will occur. These are site-specific determinations and beyond the capability of this model.
- The ECA model does not have the sensitivity or reliability to be used for determining the thresholds for a risk assessment downstream.

The limitations of the ECA model listed above show many of the reasons why we quit using this model in the middle 1980s. It was replaced with a sediment model with a water yield component.

ECA is one of the key things used to determine the level of activity in each unit in the Perry Ridge Risk Assessment. As indicated by the list above, it is unsuitable for this purpose. There are no good models for determining the chance of mass failures. This takes field analysis of the sites to be impacted. The method used in the WRENNS report of 1980 utilized the observation of like terrain that has been developed. The field measurements of the mass failures in the developed areas are then used to predict the number and size of potential mass failures in the areas planned for development. In the Slocan Valley, there are many recent slides in developed areas such as Memphis Creek, Lemon Creek, Airy Creek, etc. that could serve this purpose. Using these watersheds as examples, and acknowledging that the east side of Perry Ridge is less stable than the areas already developed, it does not take much common sense to determine that it is foolish to think this area can be developed without damage to downstream values.