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Abstract

Erosion and sedimentation data from research watersheds in the Silver Creek Study Area in central Idaho were used to test the prediction of logging road erosion using the R1-R4 sediment yield model, and sediment delivery using the “BOISED” sediment yield prediction model. Three small watersheds were instrumented and monitored such that erosion from newly constructed roads and sediment delivery to the mouths of the watersheds could be measured for four years following road construction. The errors for annual surface erosion predictions for the two standard road tests ranged from +31.2 t/ha/yr (+15 percent) to -30.3 t/ha/yr (-63 percent) with an average of zero t/ha/yr and a standard deviation of the differences of 18.7 t/ha/yr. The annual prediction errors for the three watershed scale tests had a greater range from -40.8 t/ha/yr (-70 percent) to +65.3 t/ha/yr (+38 percent) with a mean of -1.9 t/ha/yr and a standard deviation of the differences of 25.2 t/ha/yr. Sediment yields predicted by BOISED (watershed scale tests) were consistently greater (average of 2.5 times) than measured sediment yields. Hillslope sediment delivery coefficients in BOISED appear to be overly conservative to account for average site conditions and road locations, and thus over-predict sediment delivery. Mass erosion predictions from BOISED appear to predict volume well (465 tonnes actual versus 710 tonnes predicted, or a 35 percent difference) over 15 to 20 years, however mass wasting is more episodic than the model predicts.