

## **Effectiveness of Erosion Control Measures Following Road Obliteration in the Central Rocky Mountains**

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**Abstract.** Road obliteration has been shown to reduce road-related erosion. Road obliteration involves regrading the sidecast and roadbed into the road cutslope to approximate the natural hillslope angle. This study examined the effectiveness of four soil erosion control treatments following the obliteration of a forest road in the Cabin Creek watershed of the Arapaho National Forest, Colorado. Treatments included the application of: 1) seed only, 2) seed and straw mulch, 3) seed and lodgepole pine leaf litter, and 4) seed and cross-linked polyacrylamide (PAM). Soil erosion rates from each treatment were compared to bare soil as a control. Silt fences were installed on these regraded materials. Hydrologic contributing areas were mapped using GPS technology. Treatments were replicated on five road segments. Erosion rates were normalized by area and comparative statistics calculated. Erosion totals were measured four years: 2001, 2002, 2003 and 2005.

Erosion rates varied by treatment during the monitoring period; although most treatments showed a decreasing trend. The second monitoring year, 2002, experienced maximum erosion totals ( $\text{kg m}^{-2}$ ) for all treatments: seed – 2.99, mulch – 0.99, leaf litter – 2.00, PAM – 6.41 and control – 15.37. The control had the highest values of erosion totals for all monitoring years. The last year of monitoring had the lowest erosion rates ( $\text{kg m}^{-2}$ ): seed – 0.98, mulch – 1.42, leaf litter – 1.30, PAM – 1.16 and control – 5.12. No erosion was measured from the undisturbed forest during any year.

Results of the study show road obliteration is successful at reducing overall erosion totals. Seed treatment produced the lowest reduction in the five year span, and is recommended for road obliteration projects.

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