

Land Imprinting (seeding, TMDL reduction & erosion control) Specification:

Dimensions: Imprints are 4-7" deep with dimensions of between minimum 6" x 6" to maximum 10" x 10" square spaced at no more than 2" apart on all sides. Imprints that do not meet these dimensions and spacing will fail and erode.

Cut-slope, hillside seeding must be performed with a specially constructed Land Imprinter designed for slopes which exceed 3:1. Land Imprinter must be fitted with an attachment to a dozer blade or other hydraulic powered heavy equipment to provide adequate down pressure for proper imprints. Slope seeding imprint depth **must reach maximum (6-7") depth on upper two thirds of slope**. Otherwise, Imprints must meet dimensions as described above, see "Dimensions".

Non-slope deployment, sites with less than 3:1 slope **must meet requirements** as described above, see "Dimensions".

These specifications provide 80% reduction in erosion and TMDL's over non treated areas.

Seed Mix: *Cover crop:* annual cool season species, such as: rye, barley, oats, plantago or Sterile triticales: seed at rate of 20-60% per acre depending on existing cover.

Target Species: Mix of local adapted, native, cool season and warm season perennial grasses: seed rate at a minimum of 15-20 lbs Pure Live Seed (PLS) per acre for reclamation.

Optional: Forbs & shrubs: seed rate 5lbs PLS per acre.

Scheduling: For spring emergence seeding may be performed between August 15th and February 28th, west of the Mississippi.

Other practices:

1. **Ripping:** of soils to a depth of *25-60 cm at intervals **12-35cm apart perpendicular to surface flow may be used to decrease soil loss (*12%) and increase deep storm water infiltration and retention (*19% decrease in runoff). Ripping must be performed prior to or in conjunction with Imprinting. Rippers may be affixed to tractor, crawler, dozer or Imprinter frame and engaged with hydraulic down pressure. Ripping does not encourage weed growth**.
2. **Rolling culturs:** may also be used to de-compact soils and facilitate proper Imprint depth.
3. **Mulch:** Rice straw or other certified weed-free straw may be applied to site prior to Land Imprinter deployment. Land Imprinting performed after February 28th and before August 15th may have straw, compost, wood chips or other weed-free mulch applied to site prior to deployment of Land Imprinter, to inhibit weed growth and fix nitrogen. Mulch application increases TMDL reduction value 10% to 90%*. *Mulch rate 10-45 tons per acre depending on moisture content of selected mulch.*

Note: Land Imprinting for Dust Control, increased infiltration/erosion control and weed control may be performed after February 28th and before August 15th .*

* Forrest, Carol L, Harding, P.E. Micheal V. CPESC et al *CALTRANS Erosion Control Pilot Study* , 2001.

** Montalvo, Arlee M., McMillan, Paul A., Allen, Edith B.. *The Relative Importance of Seeding Method, Soil Ripping and Soil Variables on Seeding Success*. Restoration Ecology . March 2002. Vol 10, No. 1.