

**NATURAL RESOURCES CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**ROAD/TRAIL/LANDING CLOSURE AND TREATMENT**

(Ft.)

**CODE 654**

**DEFINITION**

The closure, decommissioning, or abandonment of roads, trails, and/or landings and associated treatment to achieve conservation objectives.

**PURPOSE**

To minimize various resource concerns associated with existing roads, trails, and/or landings by closing them and treating to a level where one or more the following objectives are achieved:

- Controlling erosion (road, sheet and rill, gully, wind), chemical residues and off-site movement, sediment deposition and damage, accentuated storm runoff, and particulate matter generation;
- Restoring land to a productive state by reestablishing adapted plants and habitat (wildlife food, cover, and shelter), reconnecting wildlife habitat and migration corridors including streams and riparian areas, and controlling noxious and invasive species;
- Reestablishing drainage patterns that existed prior to construction of the road, trail, or landing to restore the form and integrity of associated hill slopes, channels and floodplains and their related hydrologic and geomorphic processes;
- Minimizing human impacts to the closure area to meet safety, aesthetic, sensitive area protection, or wildlife habitat requirements.

**CONDITIONS WHERE PRACTICE APPLIES**

On roads, trails, and landings designated for closure including cut-and-fill slopes, sidecast areas and associated drainage structures.

**CRITERIA**

Roads, trails, and landings will be designated into one of three levels of treatment:

- 1) Closure and treatment to a level that facilitates future use for management activities.
- 2) Closure, treatment, and reconnection to applicable drainage networks (usually involves culvert removal which limits potential for future use).
- 3) Closure, removal and reshaping to natural contours, treatment and stabilization, and natural landscape and drainage restoration.

Determine the appropriate level of treatment based on the associated severity of environmental effects of existing roads, trails, and landings; future access requirements; and short-term disturbance effects during closure and treatment activities.

Treatment shall result in physical conditions and a configuration that achieve the stated purpose and objective(s). Approved technology tools will be used to support design and specifications development such as prediction models for erosion, hydrology and hydraulics, soil mechanics and slope stability, and wildlife/habitat interactions.

Closure and treatment activities and final conditions and configuration will minimize adverse onsite and off-site effects such as water and wind erosion including particulate matter/dust generation, concentrated flows to unprotected areas, destabilization of slopes and mass wasting, riparian area or wetland degradation, stream channel and

streambank damage, barriers to aquatic organism and wildlife movement or migration, hydrologic modification, or other water resource damage. Any seep or spring that is on or associated with the area to be treated shall not be buried under fill nor have its drainage concentrated through unarmored fill areas. Seeps and springs shall be reconnected to appropriate drainage networks.

Equipment types will be sufficient to implement treatments to the designated level. Treatment and construction techniques will be scheduled to minimize soil erosion, displacement, compaction, aesthetics degradation, safety concerns, barriers to wildlife movement, or unacceptable damage to adjacent areas.

All levels of treatment will utilize measures applicable to that level such as but not limited to:

- Permanent or temporary traffic barriers and caution signage.
- Excavation and reshaping of roads, trails, landings, and drainage ways to natural conditions including culvert removal and reconnection of the site areas to appropriate drainage networks.
- Ripping to improve infiltration and vegetation root growth.
- Topsoil stockpiling and respreading and, in some cases, importing.
- Rolling grades to disperse runoff of selected road and trail segments to be closed.
- Control of nuisance, noxious or invasive species.
- Reestablishing adapted vegetation including mulch and soil amendments as necessary to enhance establishment.

Treatments to restore natural topography and surface hydrology will result in stable slopes and be compatible with existing land uses in the vicinity.

Minimize indirect adverse impacts or effects of the practice on species with declining populations, particularly aquatic species in streams or wetlands downslope of project area.

Sites containing hazardous material shall be cleaned prior to the establishment of this practice following all local, state, and federal regulatory requirements. Appropriate actions to clean sites suspected of containing hazardous wastes shall be based on soil tests.

To control emissions of particulate matter to the air during closure and treatment operations, utilize a dust palliative or other method of dust control on bare and disturbed surfaces.

Design, construction criteria, and specifications of other practices used in combination with this practice shall be integrated and compatible to conduct closure and treatment activities and achieve specified final conditions and configuration. Criteria for design of components not addressed in NRCS practice standards shall be consistent with professional engineering practices.

## **CONSIDERATIONS**

For roads, trails, or landings deemed unsuitable as candidates for closure and treatment, consider upgrading specifications and operation-maintenance provisions of the existing practices Access Road-560 and/or Forest Trails and Landings-655 to achieve conservation objectives. In these cases, install complementary practices and measures concurrently while upgrading road, trails, and/or landings.

Compacted areas will need bulk density tests at various depths to assure treatment specifications are adequate to reestablish hydrologic function and vegetation.

Use native species when establishing vegetation, especially those having multiple values, e.g., biomass, nuts, fruit, browse, nesting, and aesthetics. Avoid use of introduced or exotic species that could become nuisances.

In areas where steepness of slope and severity of cut and fill operation preclude returning sidecast to create a rooting medium, assess the road base for ripping and usage as a rooting medium. If not suitable as a rooting medium, suitable haul-in topsoil/fill material may be needed. Assure that such material is free of weeds seeds and/or contaminants.

Road sites are typically nutrient poor. Consider soil amendments or organic matter, as appropriate, to accelerate the rate of revegetation.

### **PLANS AND SPECIFICATIONS**

Plans and specifications for this practice shall be prepared for the specific site conditions in accordance with this standard and shall describe the requirements for applying the practice to achieve its intended purpose. These items shall describe the location; the designated level of treatment; the kind, amount and quality of materials and acceptable equipment to be used; and the sequence, timing and details of closure-treatment activities.

### **OPERATION AND MAINTENANCE**

Operation and maintenance shall include periodic monitoring and weather event-based patrolling of completed sites to determine adverse environmental effects and the condition of vegetation established on disturbed areas. Dying or dead vegetation shall be replaced as necessary. Control of nuisance, noxious, or invasive species will be continued.

Initial monitoring and patrolling shall be conducted during water and/or wind erosive period(s) as needed until the site is determined to be stable. Stabilizing measures and additional treatment will be applied when and where necessary.

### **REFERENCES**

- Borlander, P. and A. Yamada. 1999. Dust palliative selection and application guide. Project Report 9977-1207-SDTDC San Dimas Technology Development Center, USDA, Forest Service, San Dimas, CA. Available at <http://www.wsdot.wa.gov/TA/T2Center/DustGuide.pdf>.
- Merrill, B.R. and E. Casaday. 2001. Field techniques for forest and range road removal. California State Parks, Sacramento, CA. Available at: <http://www.parks.ca.gov/pages/23071/files/field%20techniques%20for%20road%20removal%20part%202.pdf>.
- Moll, J. 1996. A guide for road closure and obliteration in the Forest Service. San Dimas Technology and Development Center, USDA Forest Service, San Dimas, CA.
- Switalski, T.A., et al. Benefits and impacts of road removal. The Ecological Society of America, Front. Ecol. Environ. 2004. 2(1): 21–28. Available at [http://www.fs.fed.us/rm/pubs\\_other/rmrs\\_2004\\_switalski\\_t001.pdf](http://www.fs.fed.us/rm/pubs_other/rmrs_2004_switalski_t001.pdf).