# Forest Practice Guide

Non-Regulatory

# Erosion and Sediment Control Measures 2.6 Sediment Traps and Soak Holes

*Sediment* traps and soak holes are small excavated structures that capture *sediment*-laden water, allow *sediment* to settle and then allow the water to either discharge or drain.

*Sediment* traps allow for the temporary storage of *sediment* laden water. They allow some of the larger *sediment* particle sizes to settle before the water is discharged.

Soak holes are constructed in porous soils (such as sand and pumice), allowing *sediment* laden water to soak into the soil. *Sediment* traps and soak holes are part of the family of water control techniques that can increase the life of the road, reduce maintenance costs, and mitigate potential *sedimentation* issues.



Please refer to the 'how to use' section of the introduction at http://docs.nzfoa.org.nz/forest-practice-guides/ for advice on how to use this guide.

Version 2.0, January 2020

# Erosion and Sediment Control Measures
# 2.6 Sediment Traps and Soak Holes

## A Where and when to use

1. Use *sediment* traps and soak holes:
   a. To help capture mobile *sediment*.
   b. To limit the risk of *sediment* entering sensitive sites such as *water bodies* or significant natural areas.
   c. In conjunction with other water control measures, where necessary, such as at the inlet or outlet of road drainage *culverts*, *cut-outs* or *flumes*.

## B Where not to use

1. Where the site doesn't allow for suitable construction. For example, in a fill *batter* or where they increase the risk of bank collapse.
2. Where the site is located within land area occupied by flood flows of *rivers*.

   **Note:** On steep terrain adequately sized *cut-outs* are difficult to construct near *culvert* mouths as they may encroach into the roadway.

## C Design

1. Sediment traps and soak holes are located to suit the terrain.

## D Construction

1. Construct *sediment* traps near *culvert* inlets and outlets and immediately after the water is directed a road, track, or *landing*, as necessary.
2. Excavate the trap to well below the *culvert* inlet level, to ensure maximum stormwater *sediment* retention capacity for the trap.
3. Do not construct in *fill* or disturbed soil. If the inflow or outflow must pass through *fill*, then *flume* the water into or out of the *sediment* trap.
4. Excavate a hole of sufficient size to allow for an excavator bucket to remove the retained *sediment*.
5. Keep the slope of the inlet into the soak hole reasonably flat, to avoid erosion.
6. Ensure the outflow is on erosion resistant soil. *Slash* or long grass can assist with *sediment* retention from the outflow.
7. Construct soak holes in free draining soils (e.g. pumice, sand or non-cohesive ash) and immediately after the water is directed off a road or *landing*.

## E Maintenance

1. Prepare a routine maintenance plan including heavy rainfall response measures.
2. Check *sediment* traps for functionality after a heavy rain event. They require regular maintenance, especially on new construction.
3. Check that spacing of *sediment* traps and soak holes is sufficient to manage the stormwater *run-off*.
4. When emptying a *sediment* trap, take care not to damage the *culvert* (where present).
5. When cleaning out a *sediment* trap or soak hole, place the *sediment* where it cannot wash back into the structure, be subjected to erosion or enter a sensitive area.

## F Other methods

1. Sediment pond.
2. Slash can also be used downslope of sediment trap outlets.

# Erosion and Sediment Control Measures
# 2.6 Sediment Traps and Soak Holes

## G Technical specification guidelines

**Soak hole spacing guide**

| Site slope | Soak hole spacing |
|---|---|
| Less than 12% | 40 m |
| More than 12% | 30 m down to 10 m |

1. Effective sediment trap size: 1 m deep x 1.5 m long and to at least the bucket width. A good length to width ratio is 3:1, but this is not always practical at *culvert* inlets due to topographical constraints and safety concerns. Multiple small traps may be an alternative option.

**National Environmental Standards for Plantation Forestry**

Relevant regulations for *sedimentation* are 26, 27, 31, 33, 56.

# Erosion and Sediment Control Measures
# 2.6 Sediment Traps and Soak Holes

## Examples

*Sediment* retained in a *sediment* trap.

*Sediment* traps on either side of a *culvert*.

# Erosion and Sediment Control Measures
# 2.6 Sediment Traps and Soak Holes

A good example of a *sediment* trap with minimal ground disturbance and provision of an outlet.

Soak hole.

# Erosion and Sediment Control Measures
# 2.6 Sediment Traps and Soak Holes

## Contact

Forest Owners Association
Level 9, 93 The Terrace
Wellington 6143

www.nzfoa.org.nz

## Other Practice Guides in this series

Visit: **https://docs.nzfoa.org.nz/forest-practice-guides/** to view all guides



supported by forestgrowers commodity levy