

# Low cost erosion control techniques

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7-11-2005

# The Role of Animals and Technology





# Maximising Solar Capture by Controlling Time in Planned Grazing





3-1-2008





Over the Fence – 23mm Storm

13-2-2008



**Relationship between levels of soil organic carbon (OC) in the 0-30 cm soil profile and additional soil water holding capacity. (Average soil bulk density 1.4 g/cm<sup>3</sup>)**

<b>Change in OC concentration</b>	<b>Change in OC stock (kg/m<sup>2</sup>)</b>	<b>Extra water (litres/m<sup>2</sup>)</b>	<b>Extra water (litres/ha)</b>	<b>CO<sub>2</sub> sequestered (t/ha)</b>
1%	4.2	16.8	168,000	154
2%	8.4	33.6	336,000	308
3%	12.6	50.4	504,000	462
4%	16.8	67.2	672,000	616





Constantly stocked phalaris  
Plant August 2007

7t roots/ha (wet)

Phalaris plant 70 days after grazing

93t roots /hectare (wet)







# Energy Flow and the Importance of Time

Sept 2005

80 Days After Grazing

Less Growth With Constant Stocking









# Extending the Growing Season is Possible with Planned Grazing





# Applied Watershed Restoration Structure Diagrams

Craig Sponholtz, Dryland Solutions, Inc.

For more information and photo examples, please visit:  
[www.DrylandSolutions.com](http://www.DrylandSolutions.com)



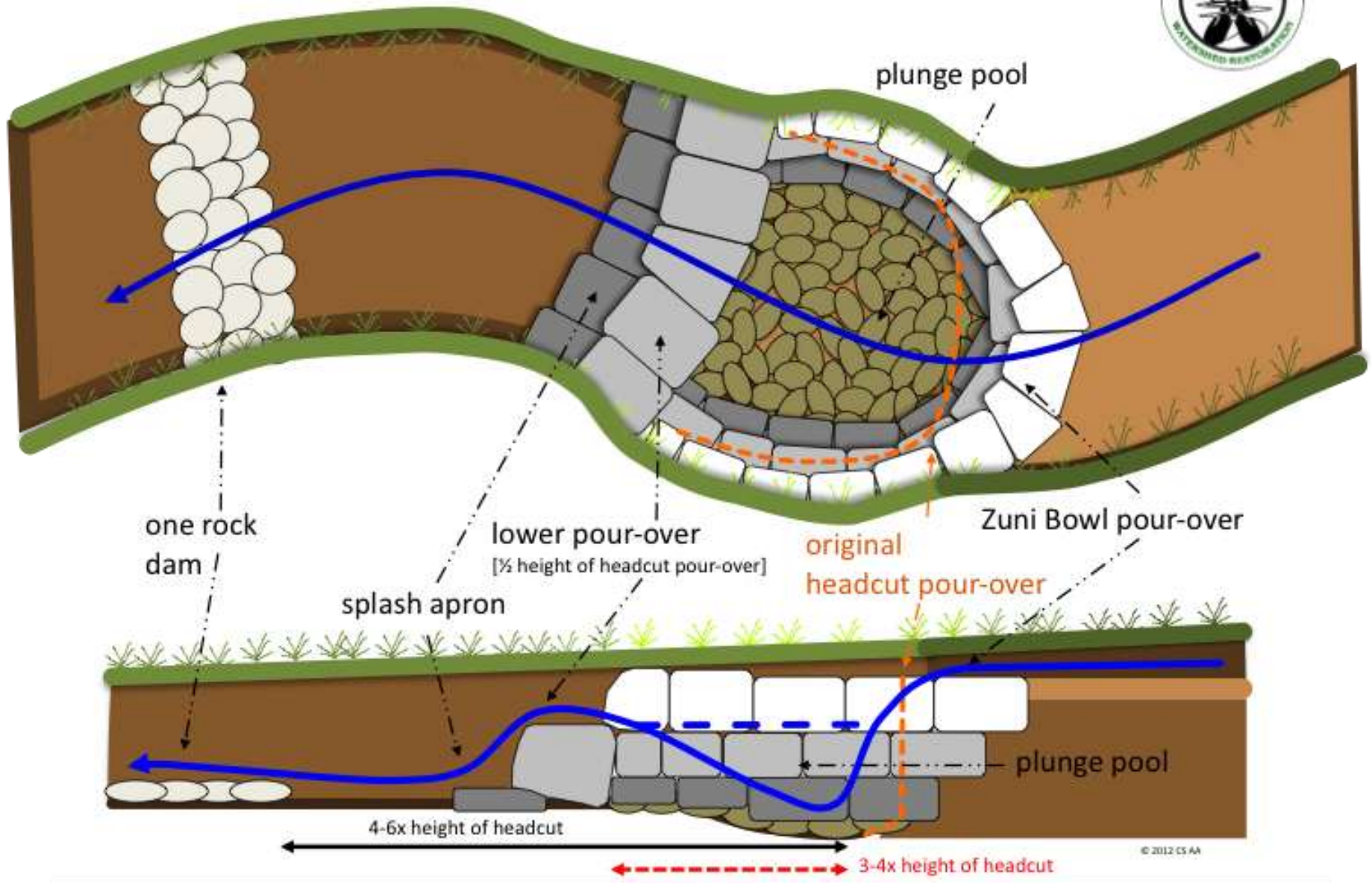


# **In-Channel Headcut Treatments**



# In-Channel Headcut Treatments

## ZUNI BOWL

















3: Rear wall flush with the back edge of the cut, with sod used to fill any gaps

1: Splash apron about 50mm above the gully floor

2: Splash pool wall built to half the height of the original headwall cut

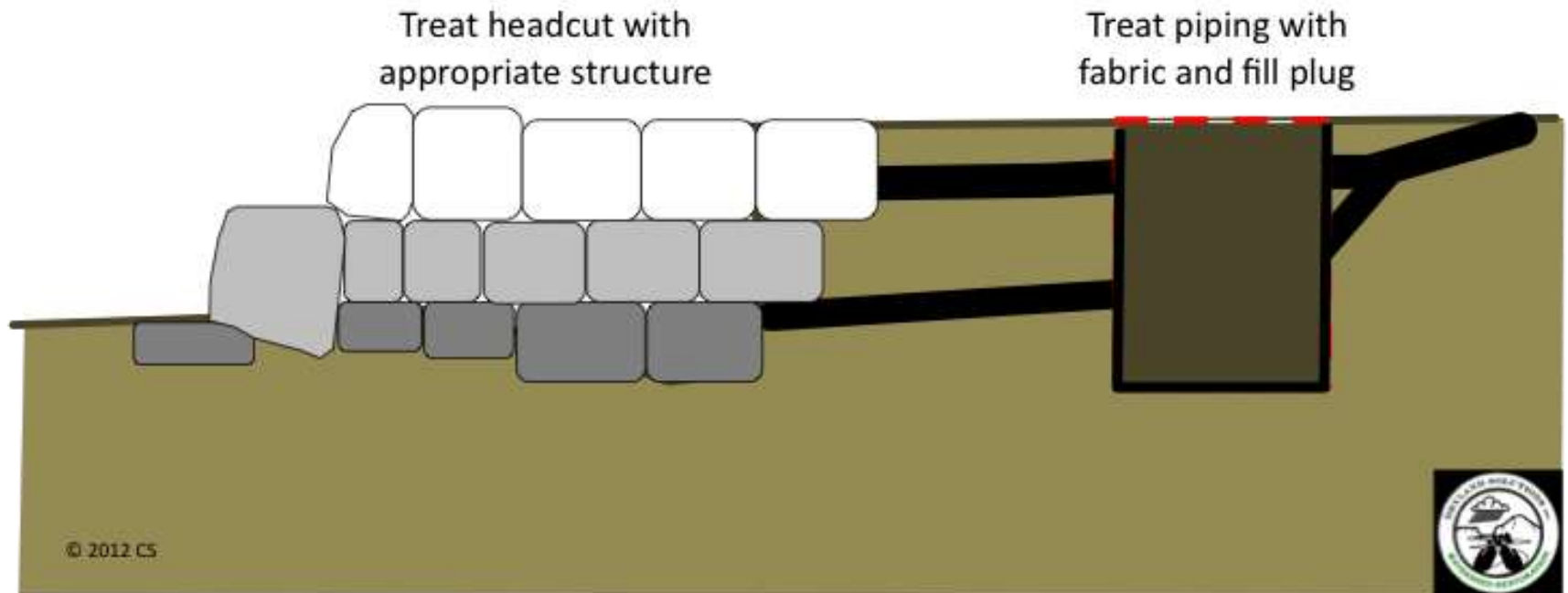








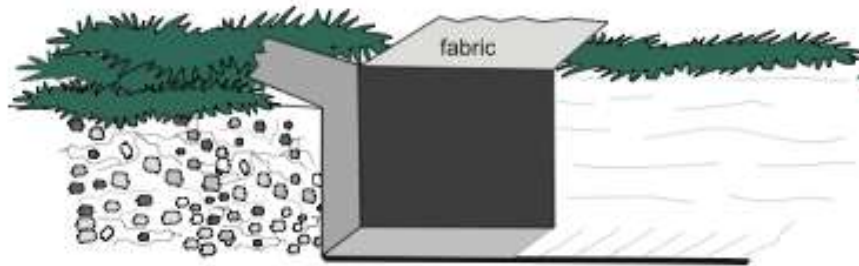
## **Fabric and Fill Plug for Piping**



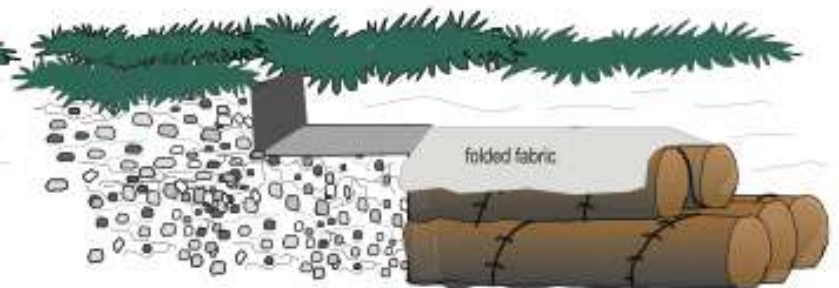


# In-Channel Headcut Treatments

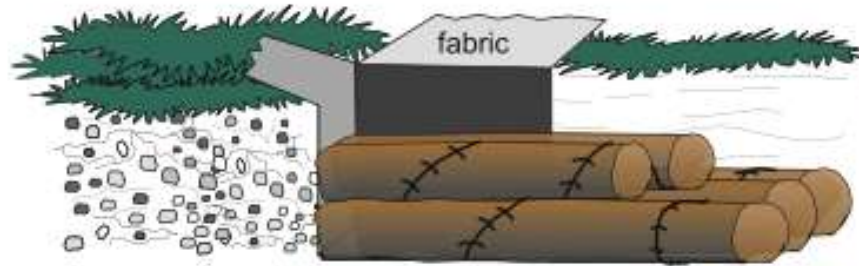
## Log and Fabric Step-Down Construction



Square off headwall, sidewalls and bottom of channel and drape geotextile fabric across headwall and side walls.



Prepare platform for final tier. Fold fabric over next to last tier.



Install logs in tiers.

wire wrapped in a figure eight around logs



Add final tier of logs slightly lower than top edge and wire down. Tuck in fabric on lower tier and install sod clumps along leading edge and sides.



























# **Grade Control**





Photo Roger Charlton.





















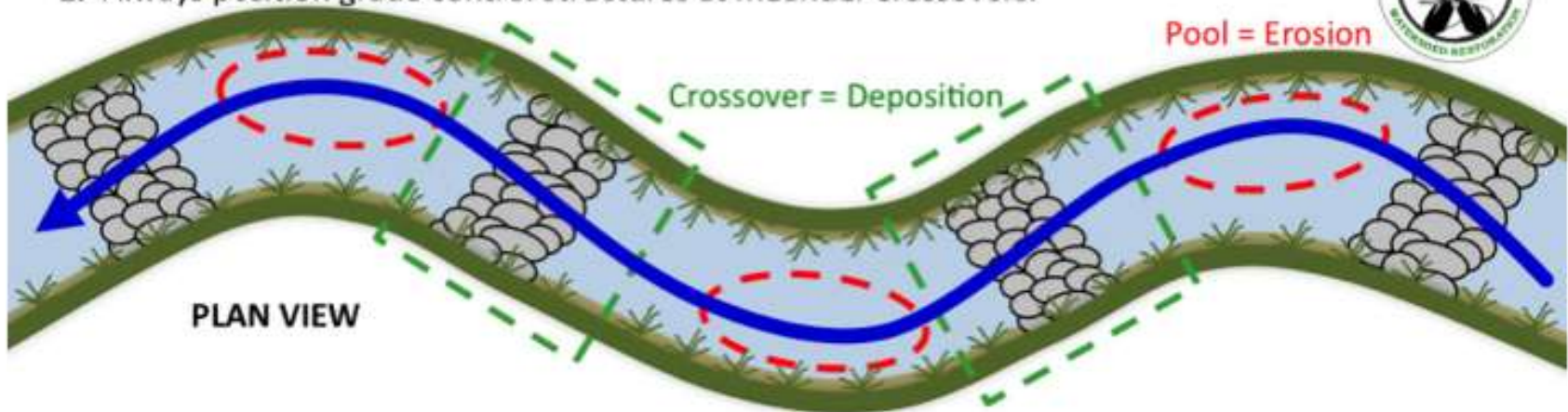


# Grade Control

## ONE ROCK DAM

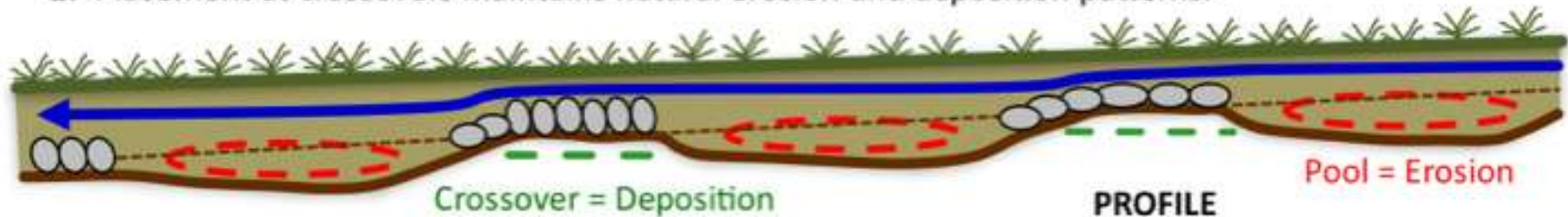


1. Always position grade control structures at meander crossovers.



PLAN VIEW

2. Placement at crossovers maintains natural erosion and deposition patterns.



PROFILE

3. Always maintain channel cross section to protect banks.

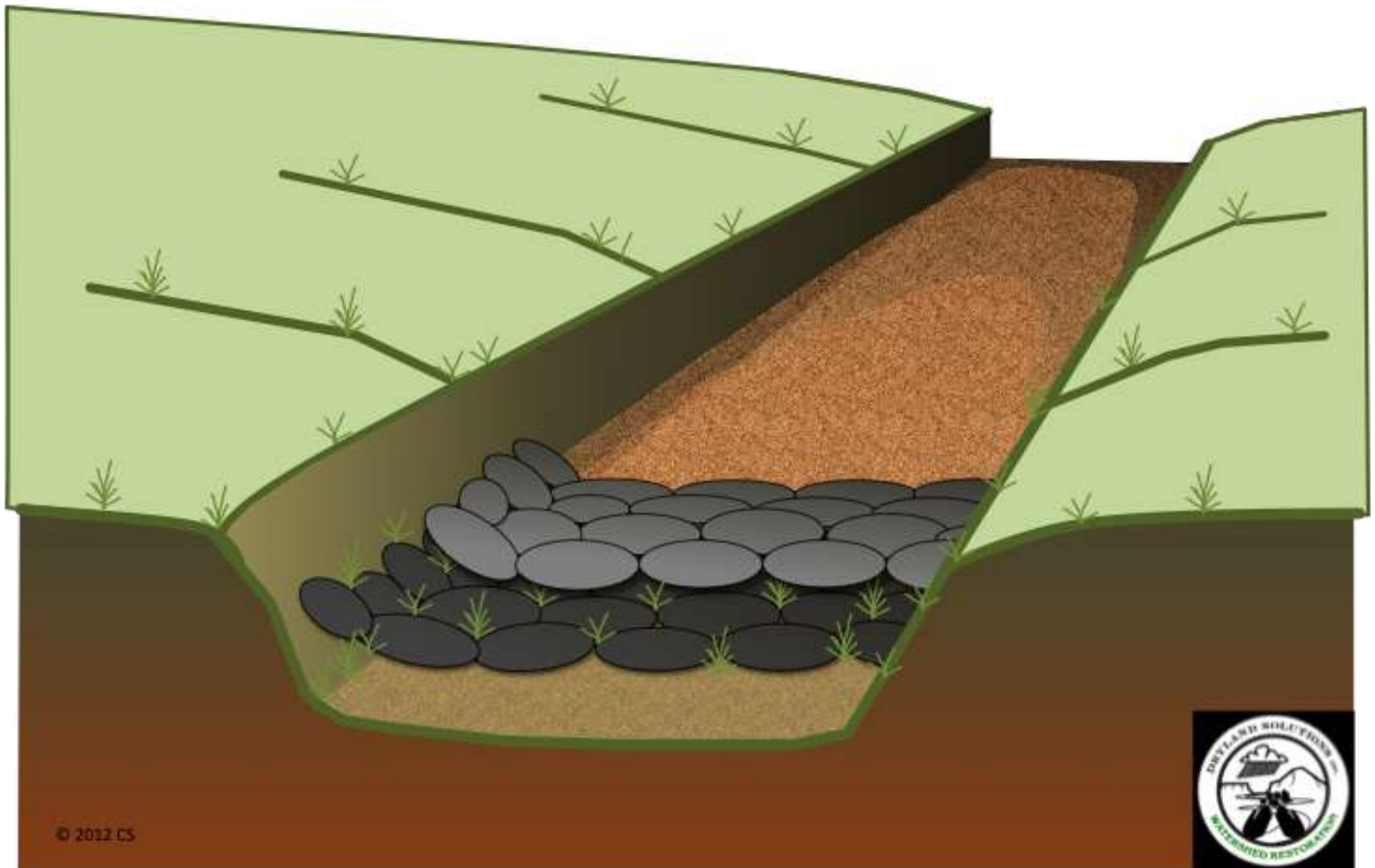


CROSS SECTION



# Grade Control

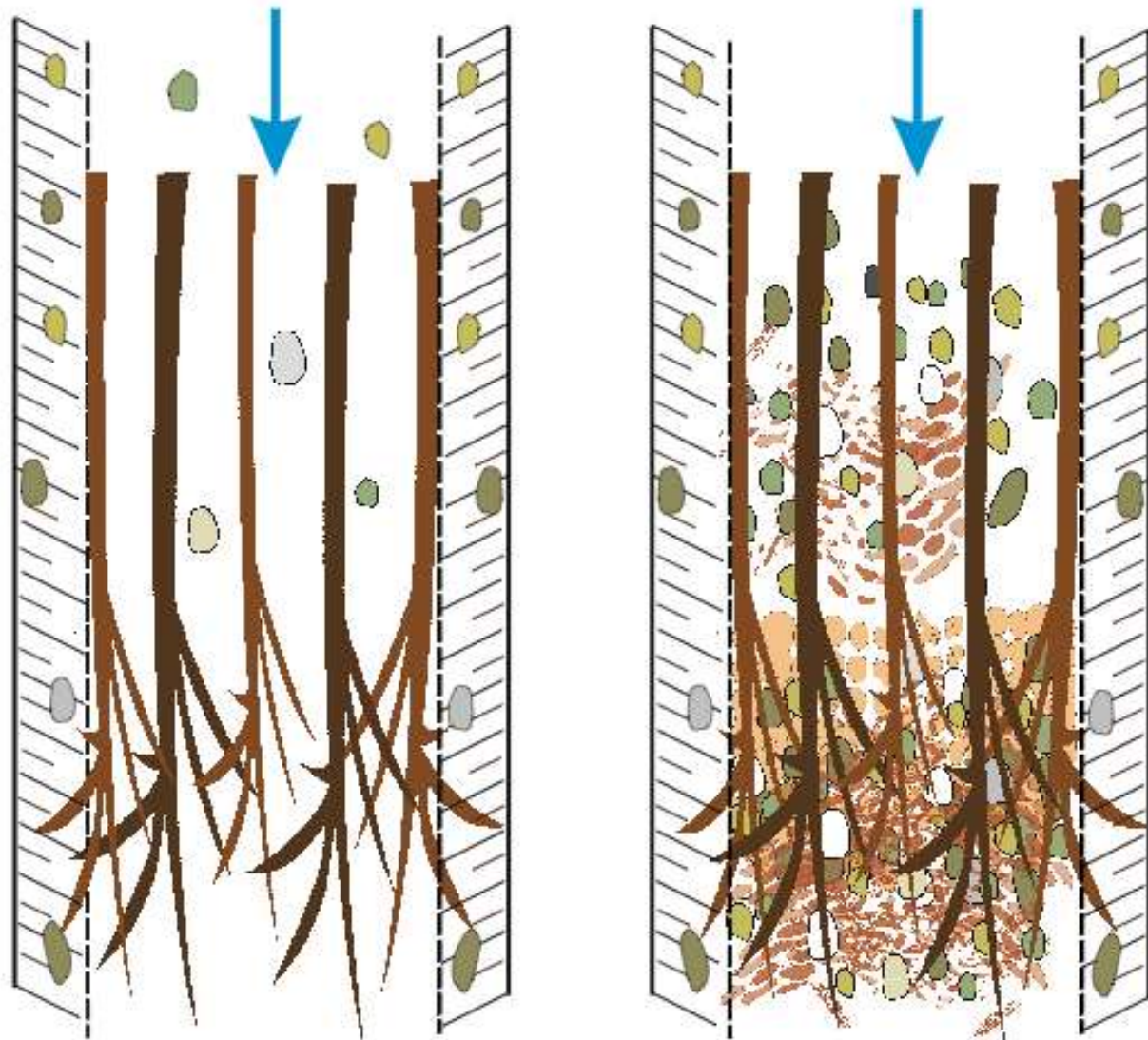
One Rock Dams can be lifted gradual stages





# Grade Control

## Longitudinal Log Riffle

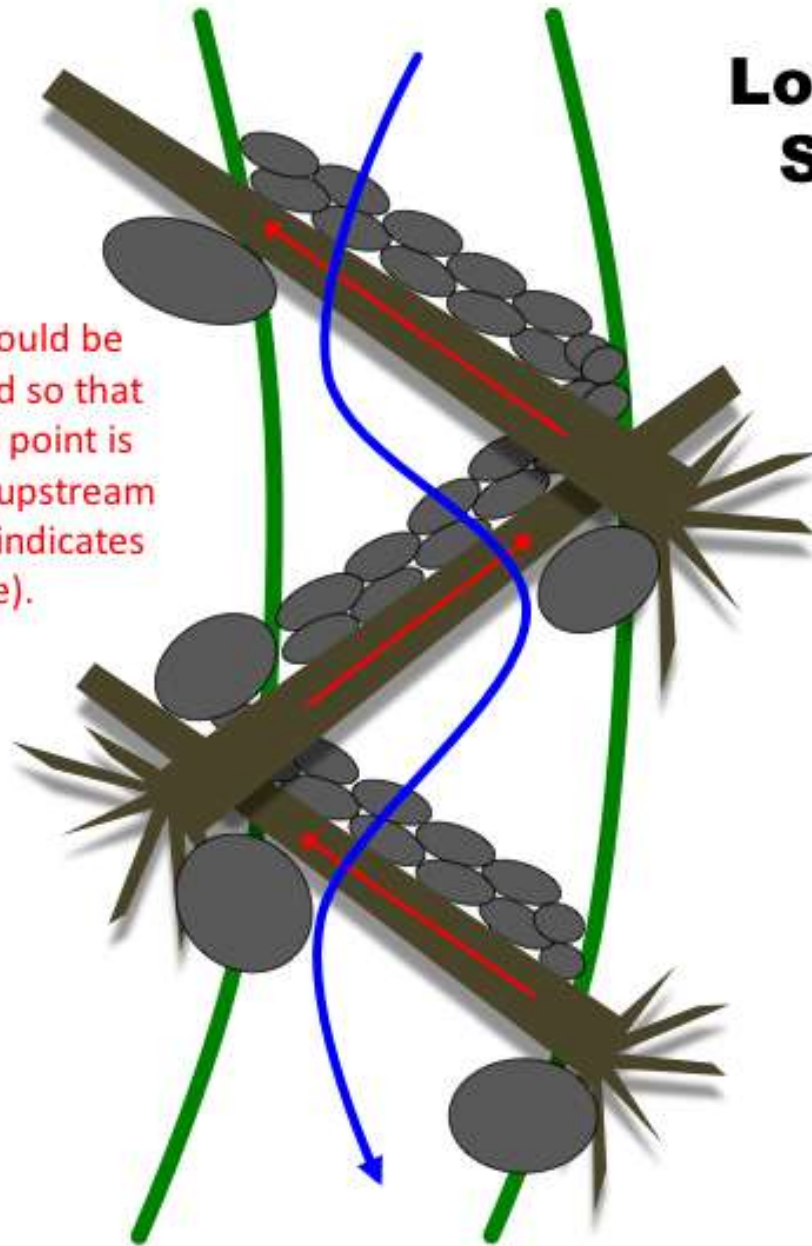




# Grade Control

## Log and Rock Step-Down

Logs should be oriented so that the low point is always upstream (arrow indicates low side).





# Vegetated earth & fabric banks



Earth bank, newly constructed





Earth bank, 6 years later





Earth bank, 6 years later





Earth bank, 6 years later





Earth bank, Easter 2012



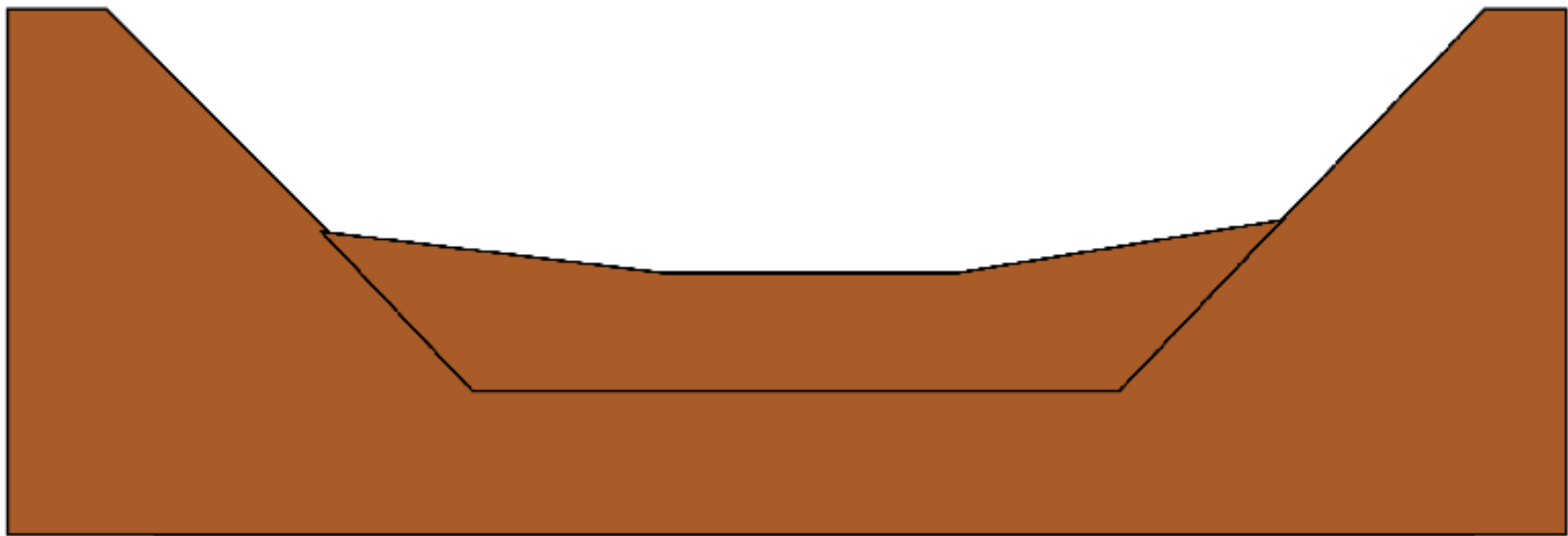




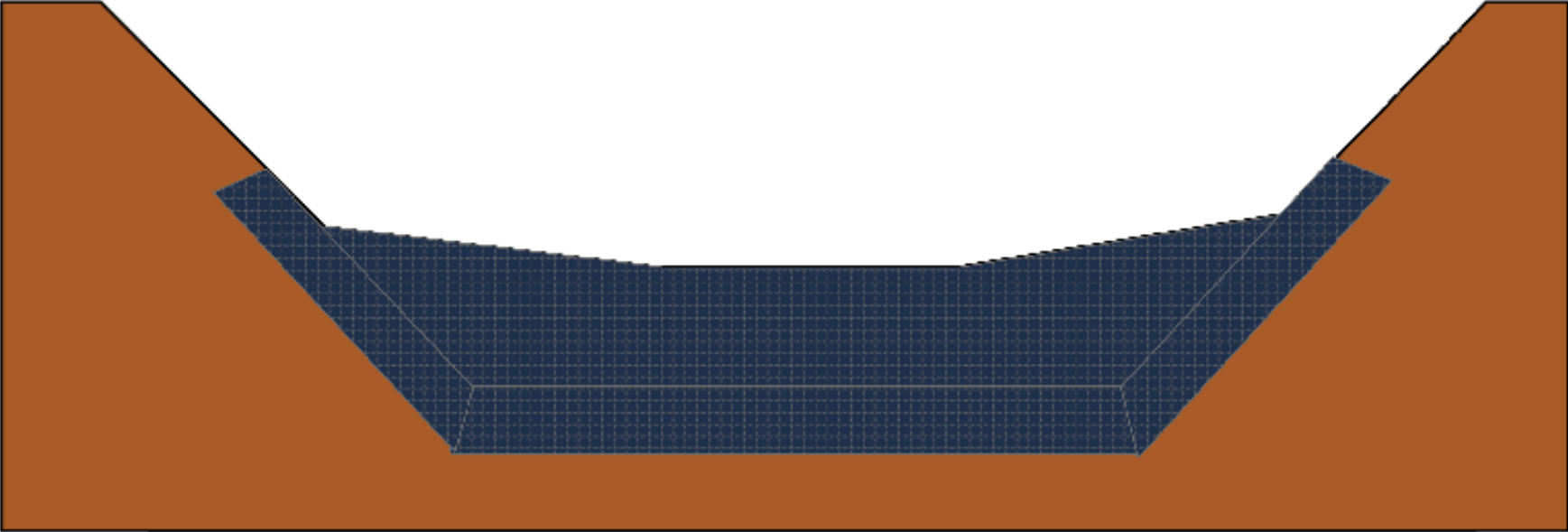




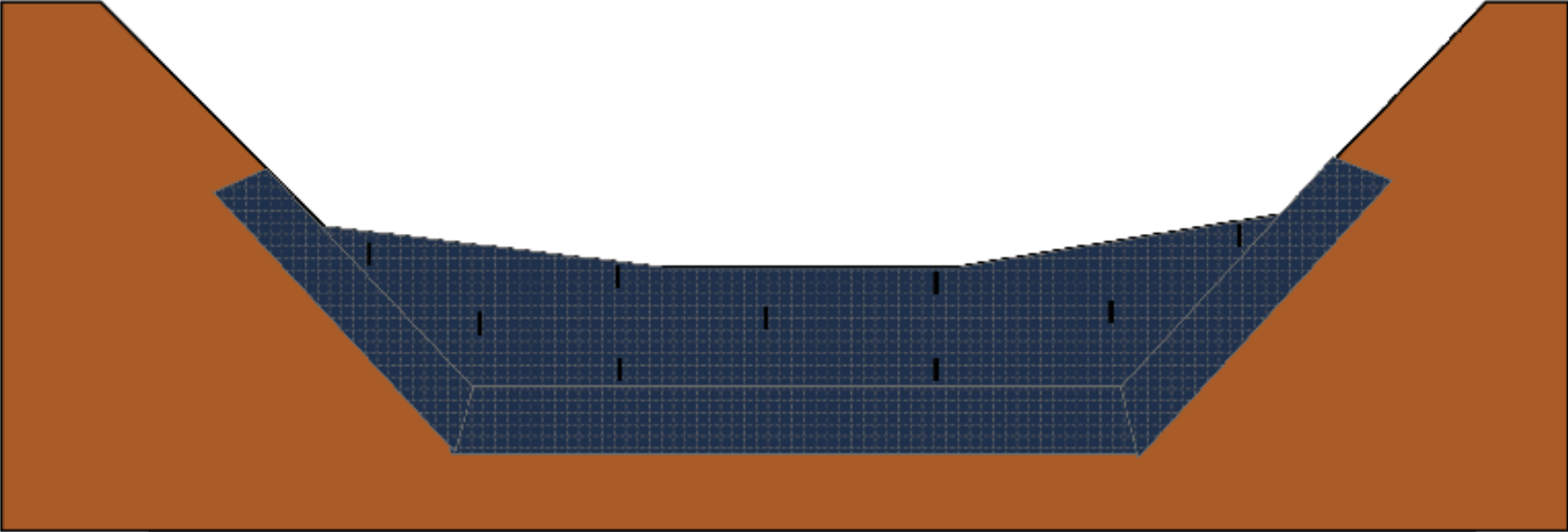




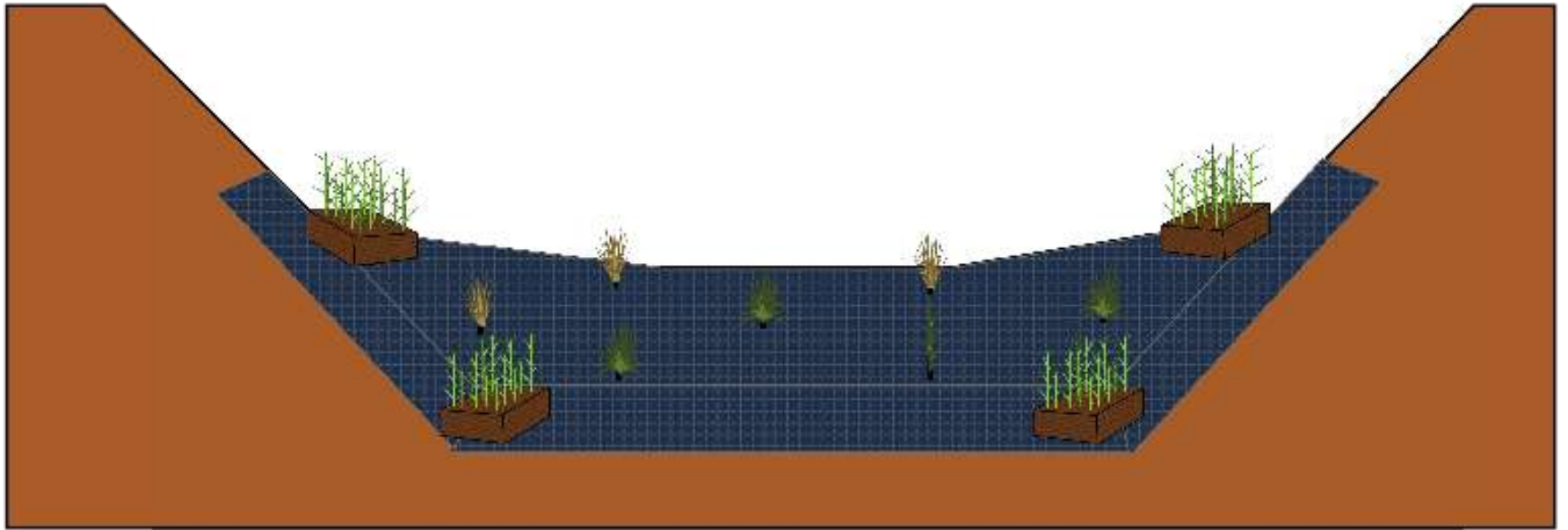




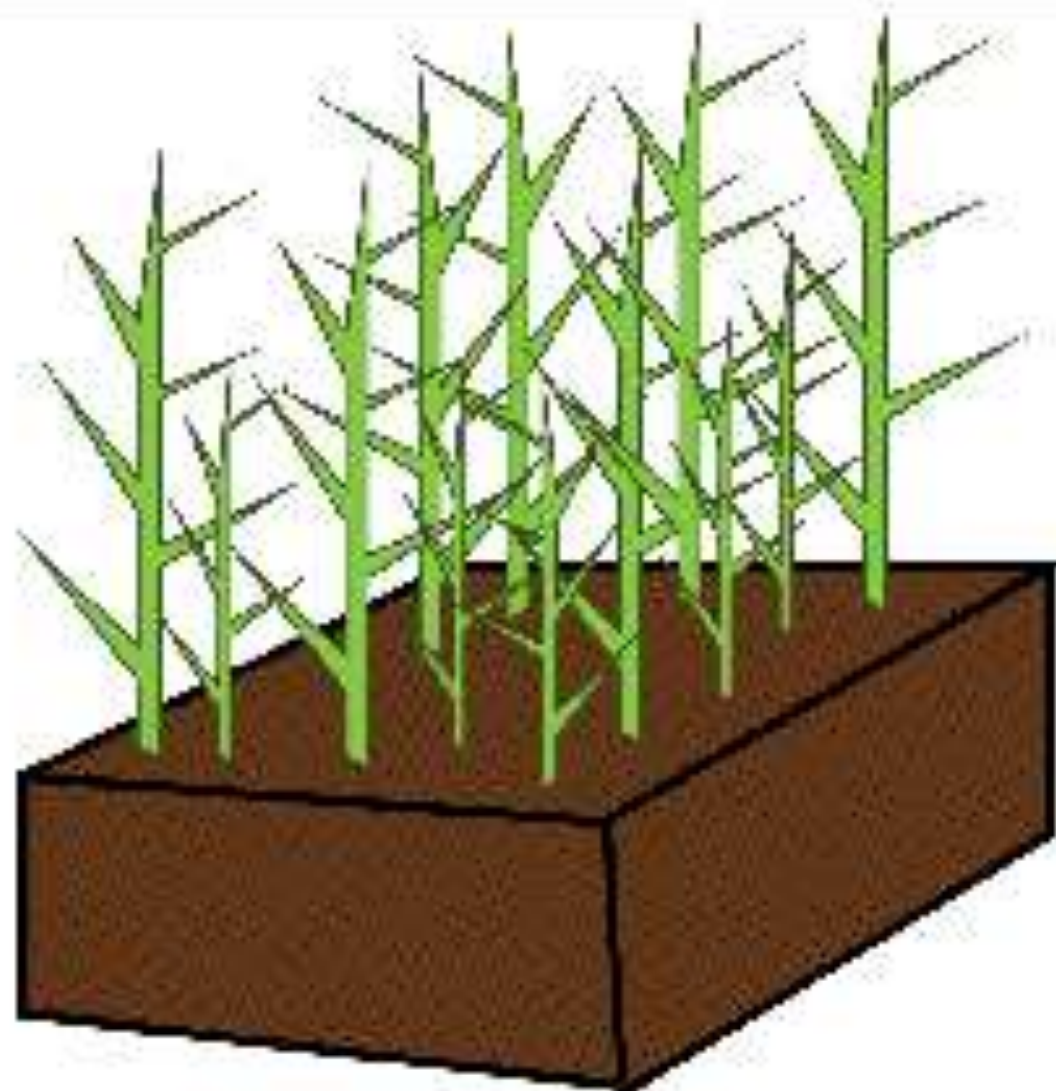




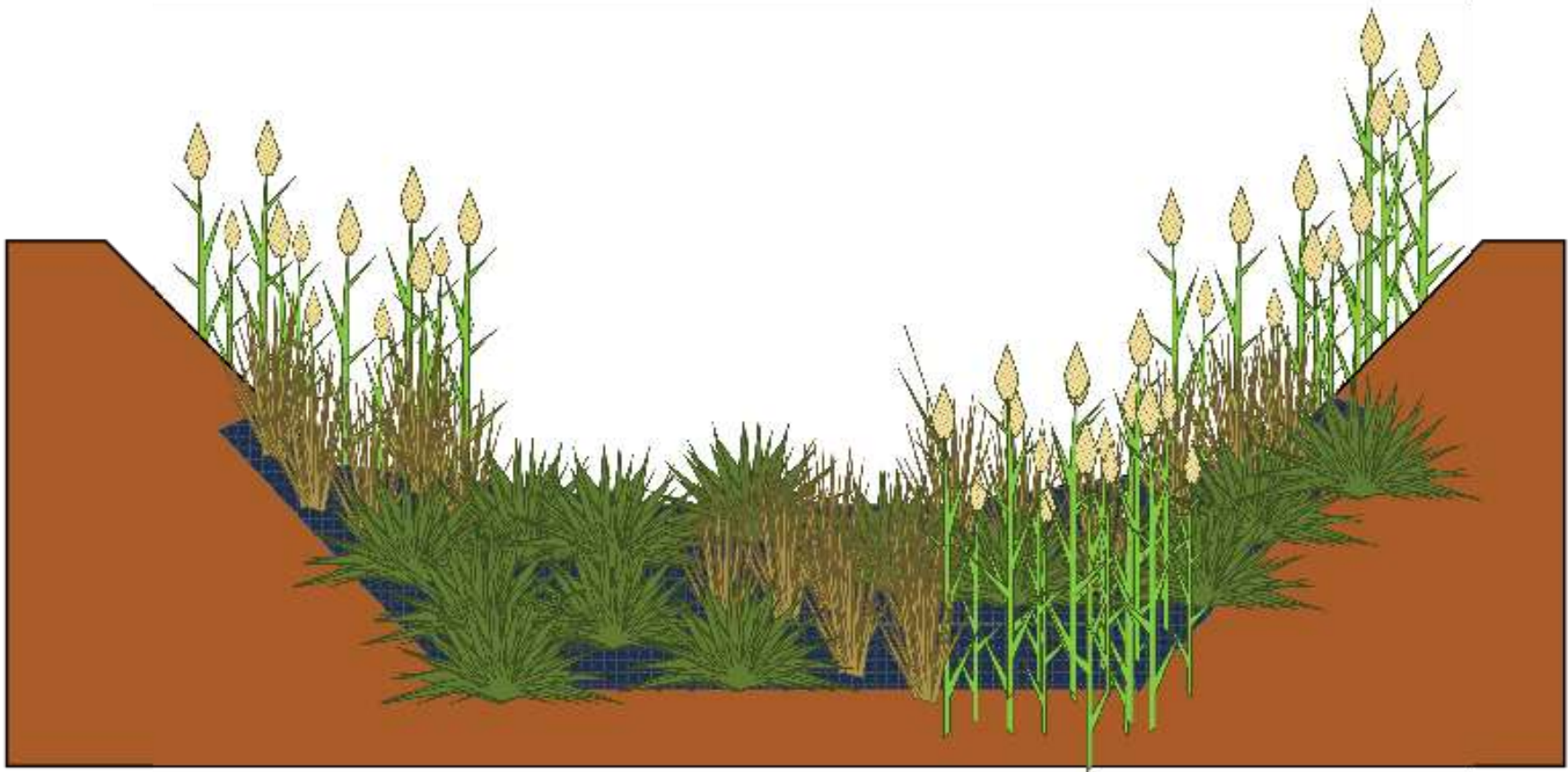














# Fascines



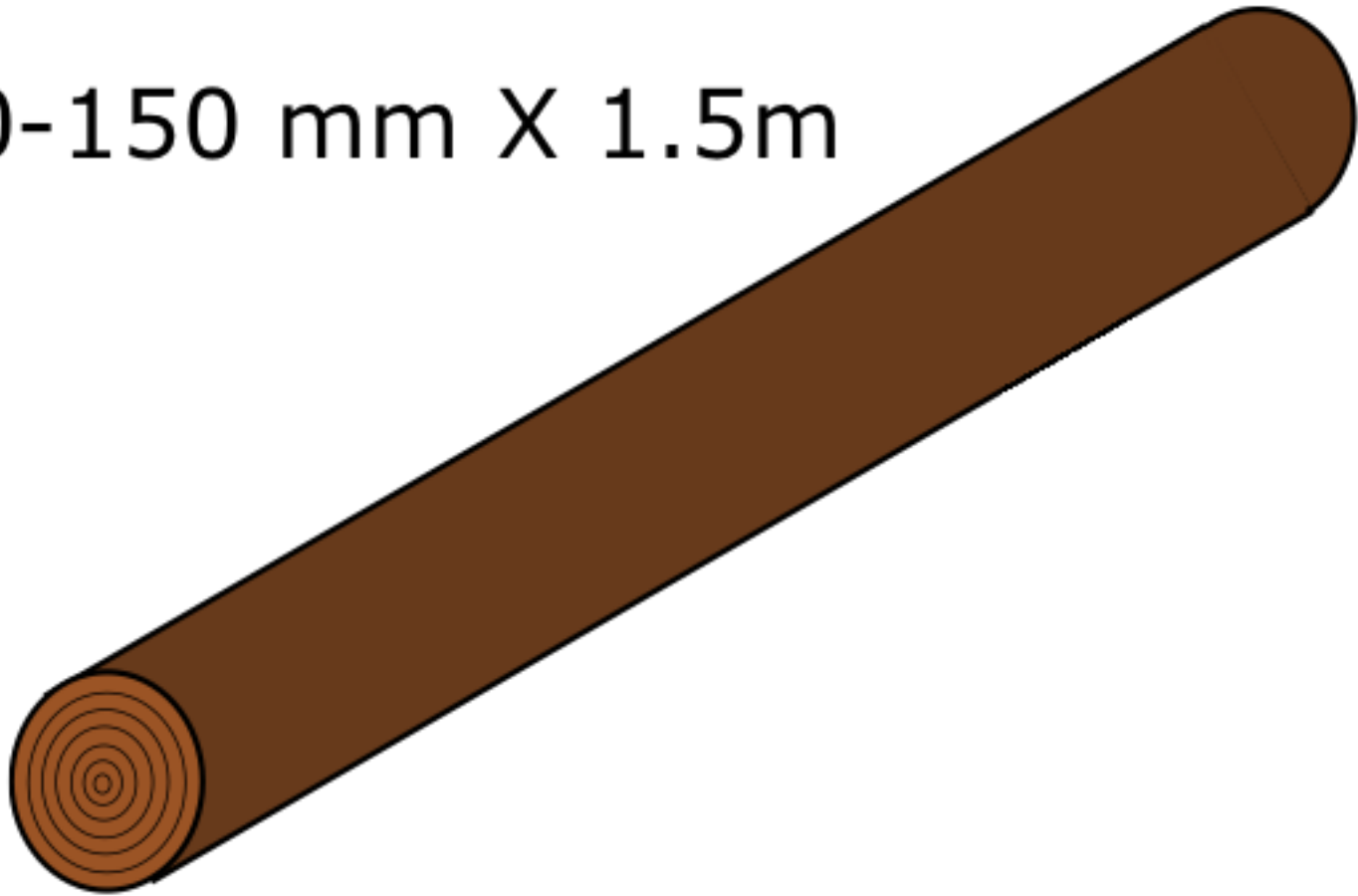




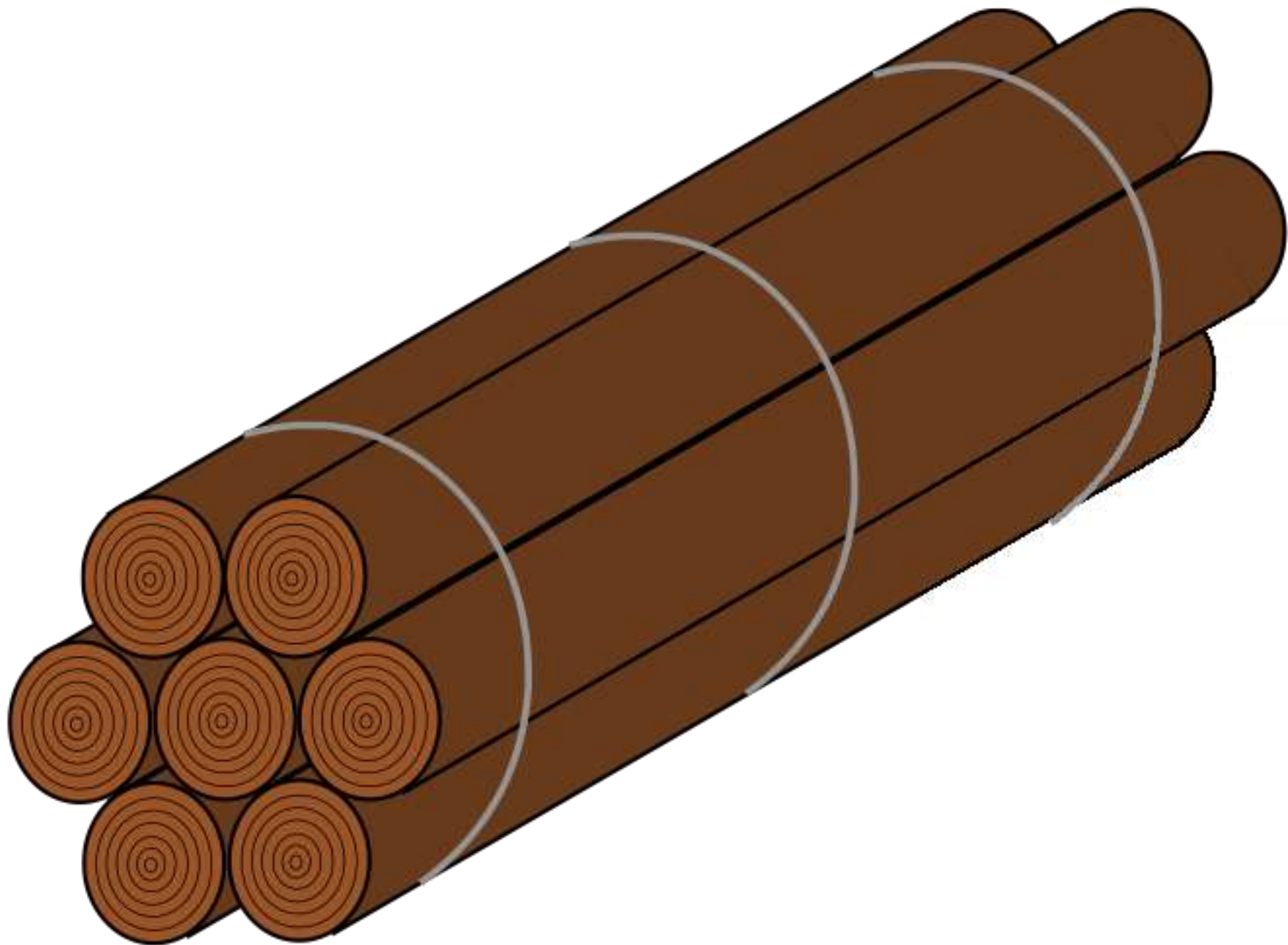




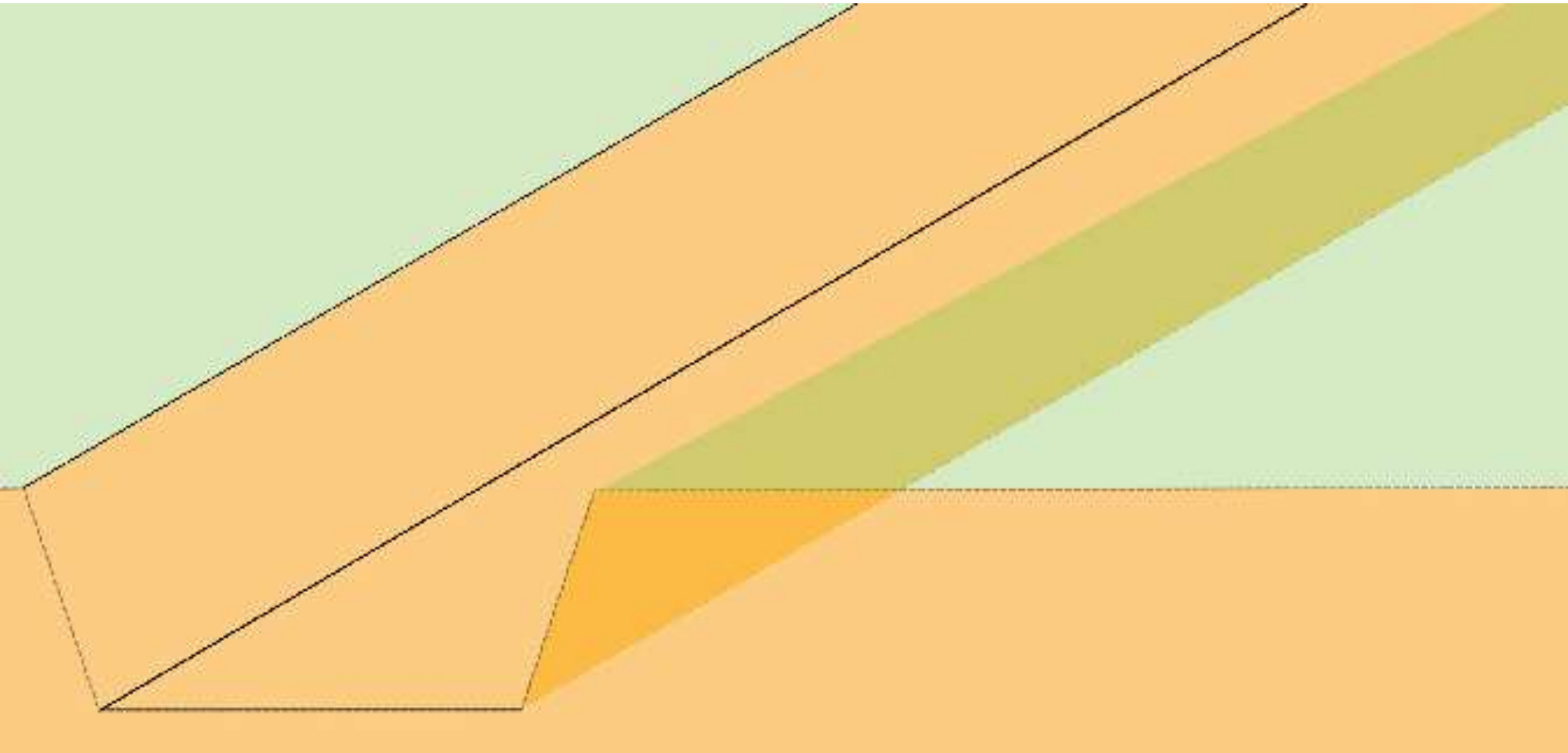
100-150 mm X 1.5m



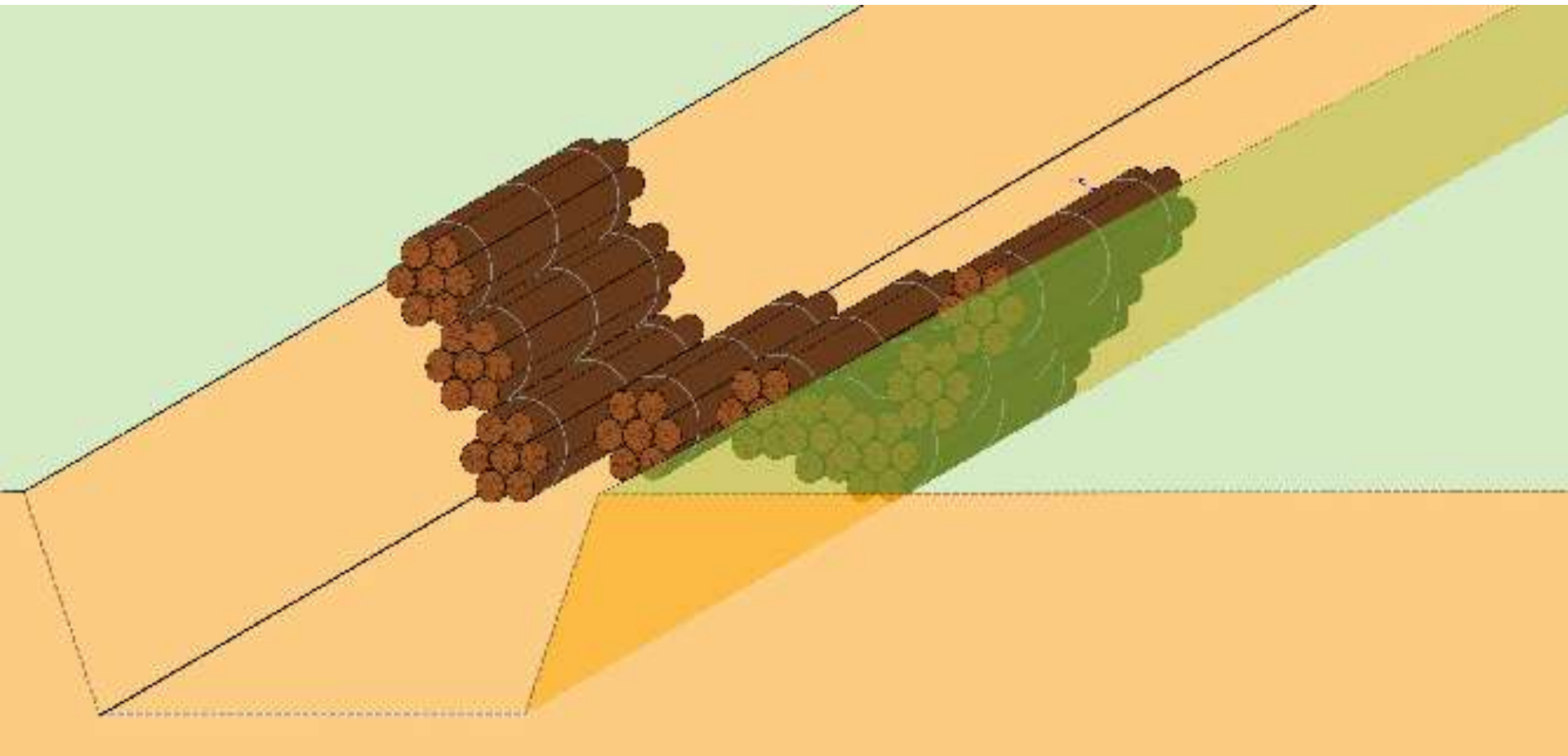




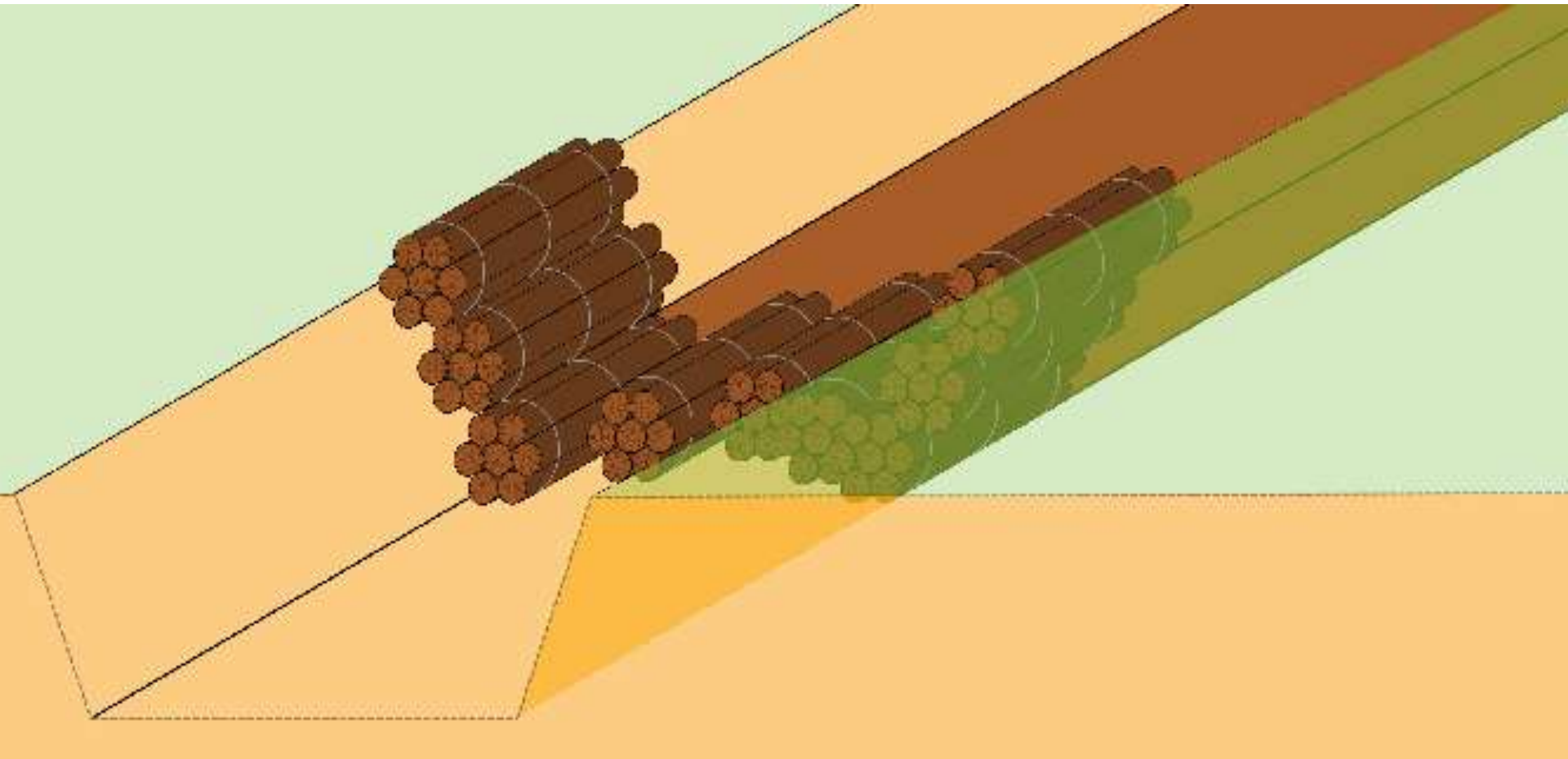




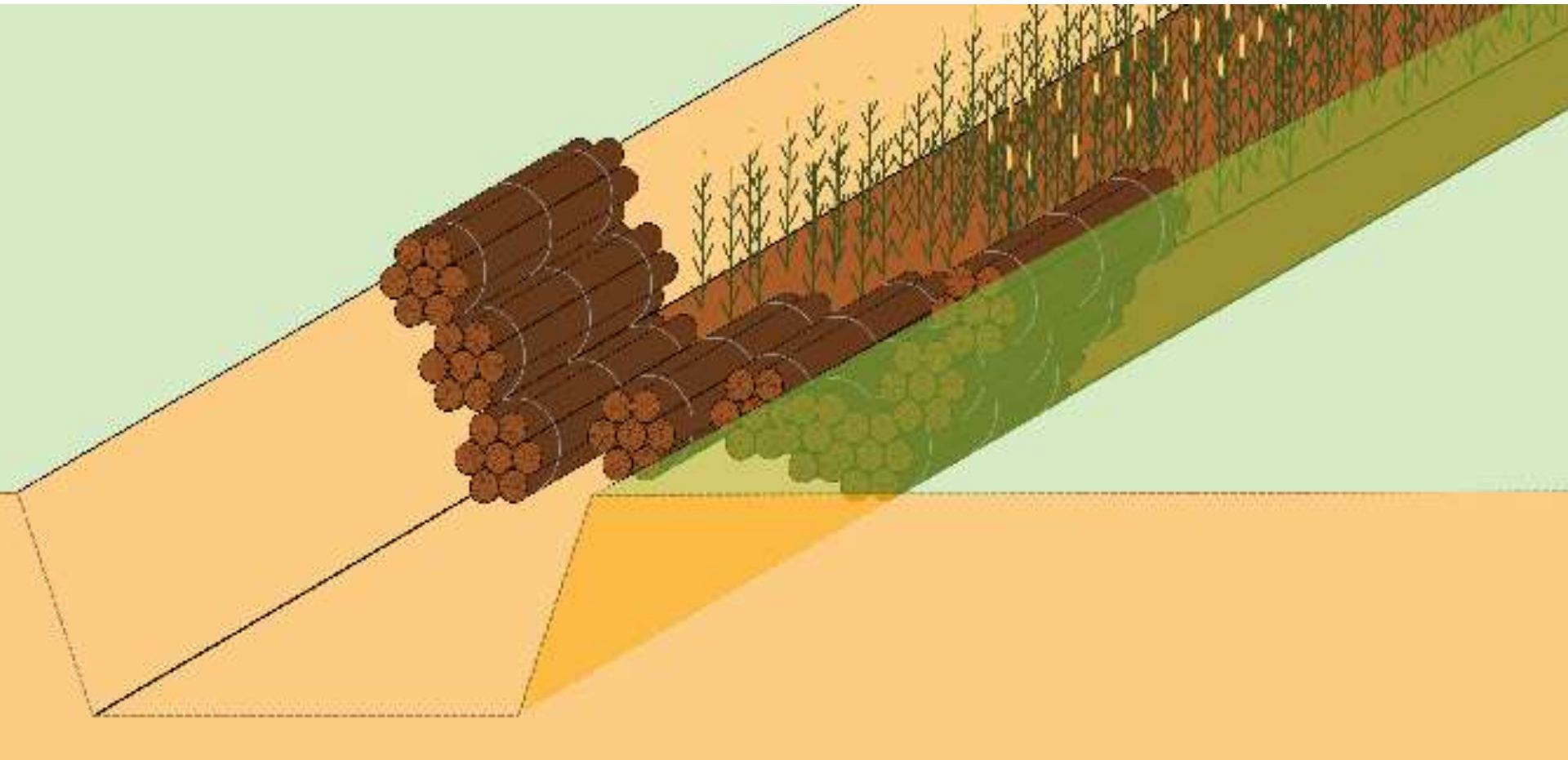


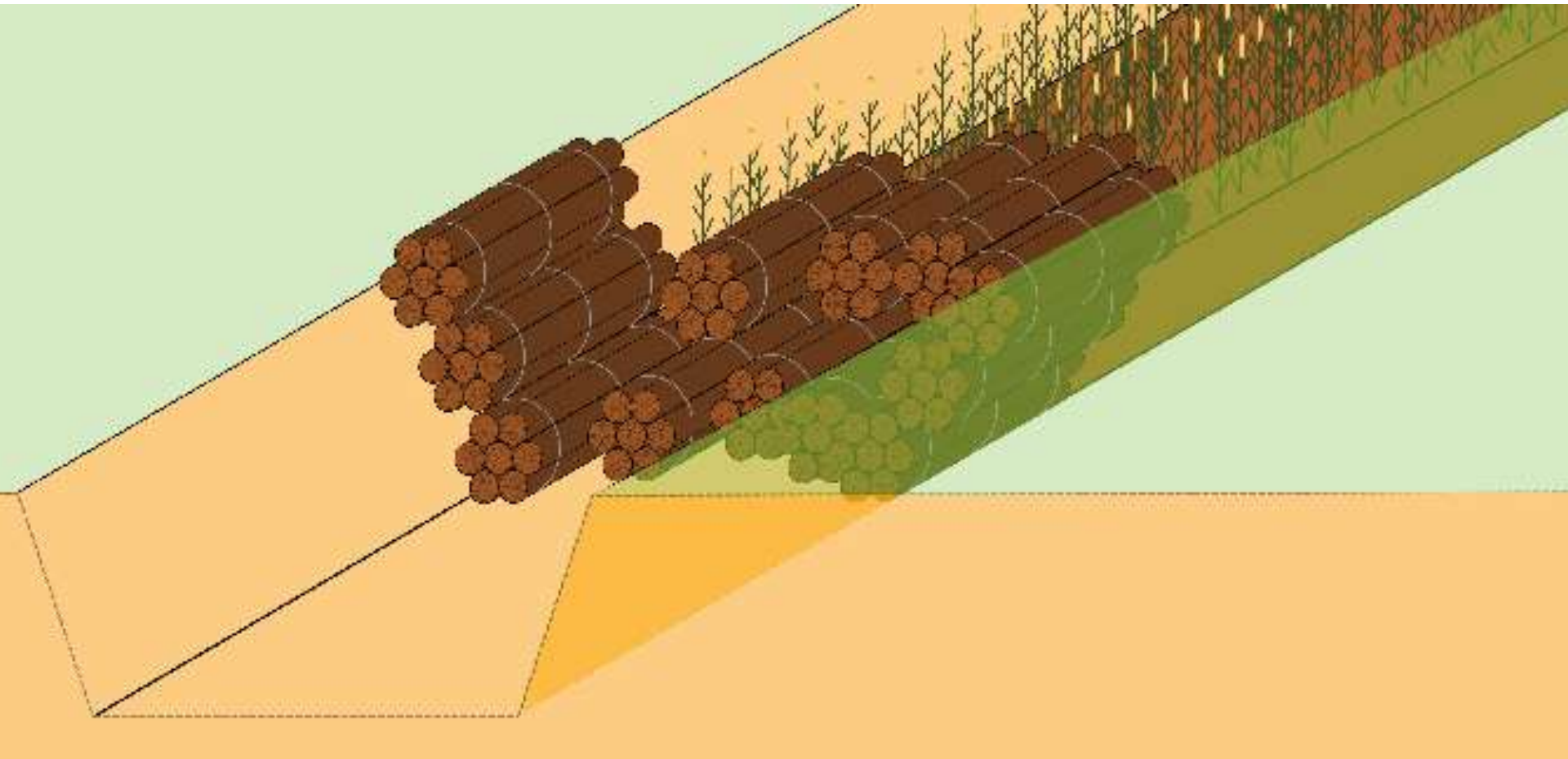
















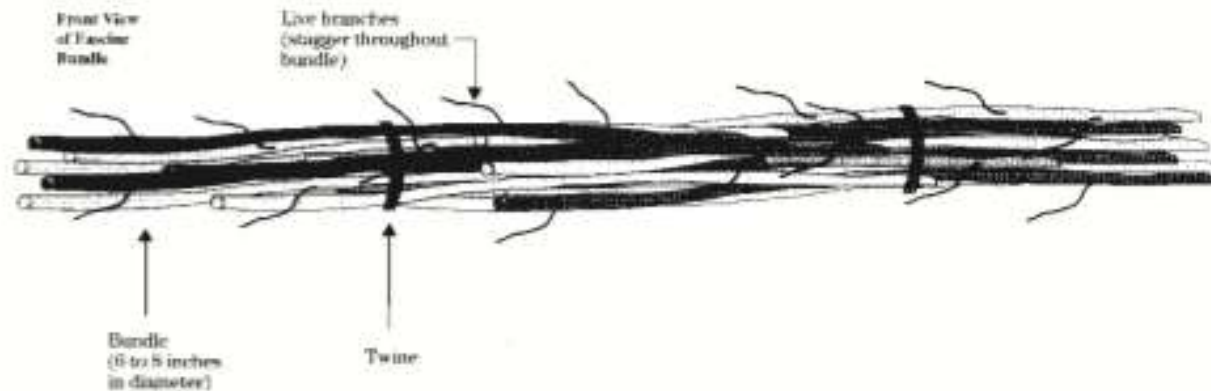
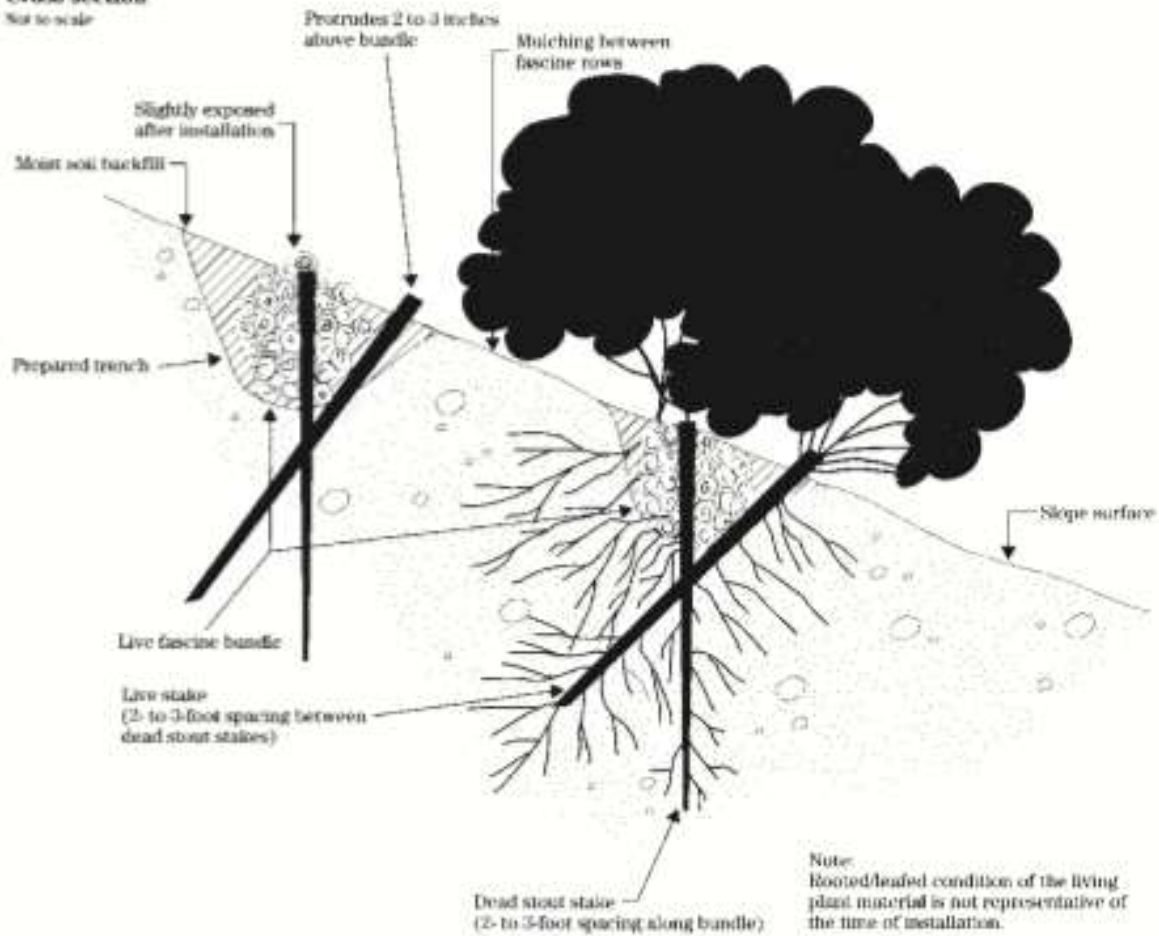






### Cross section

Not to scale



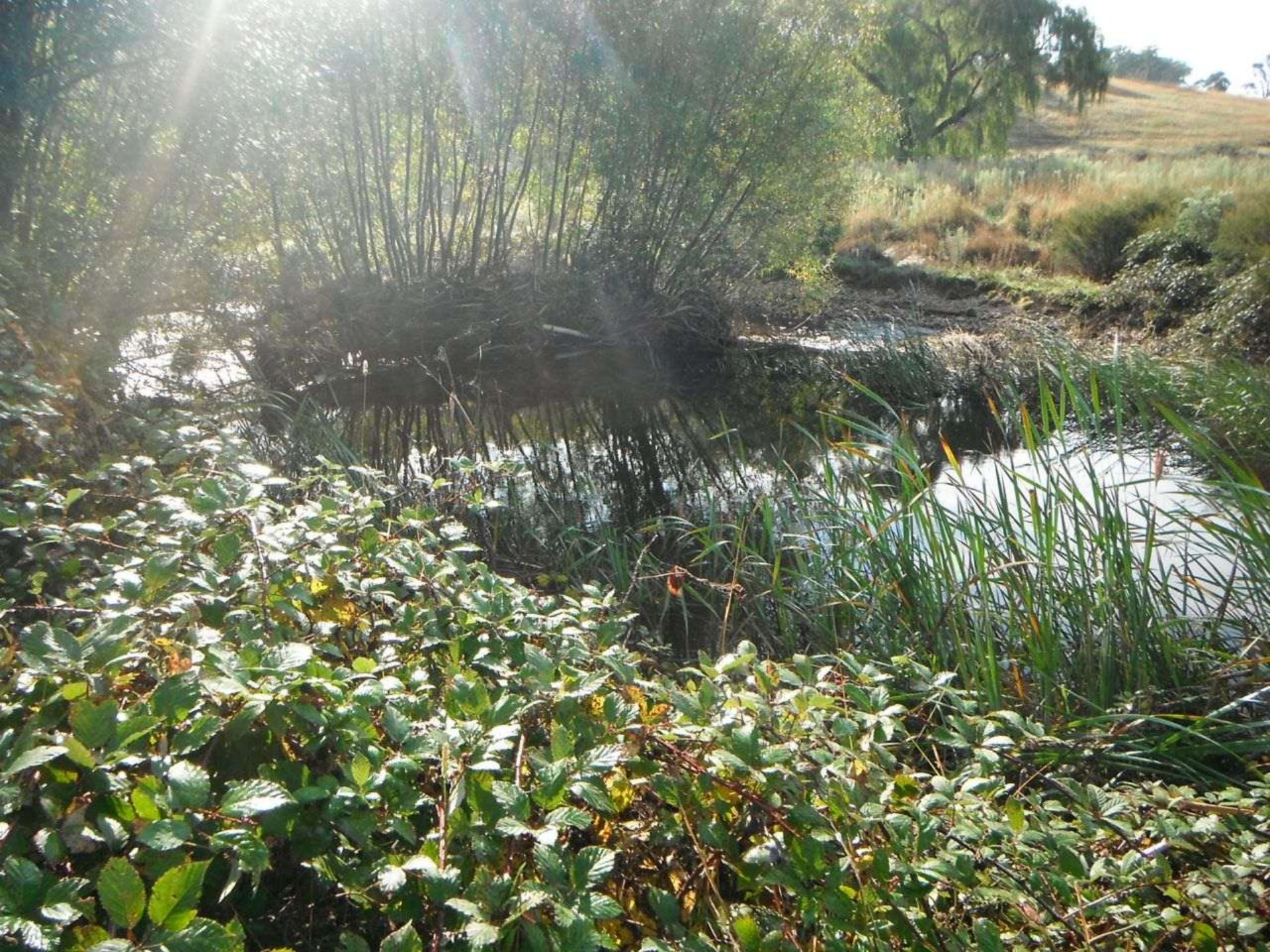


























# **Bank Erosion Treatments**



## Bank Erosion Treatments

### Post Vane cross section

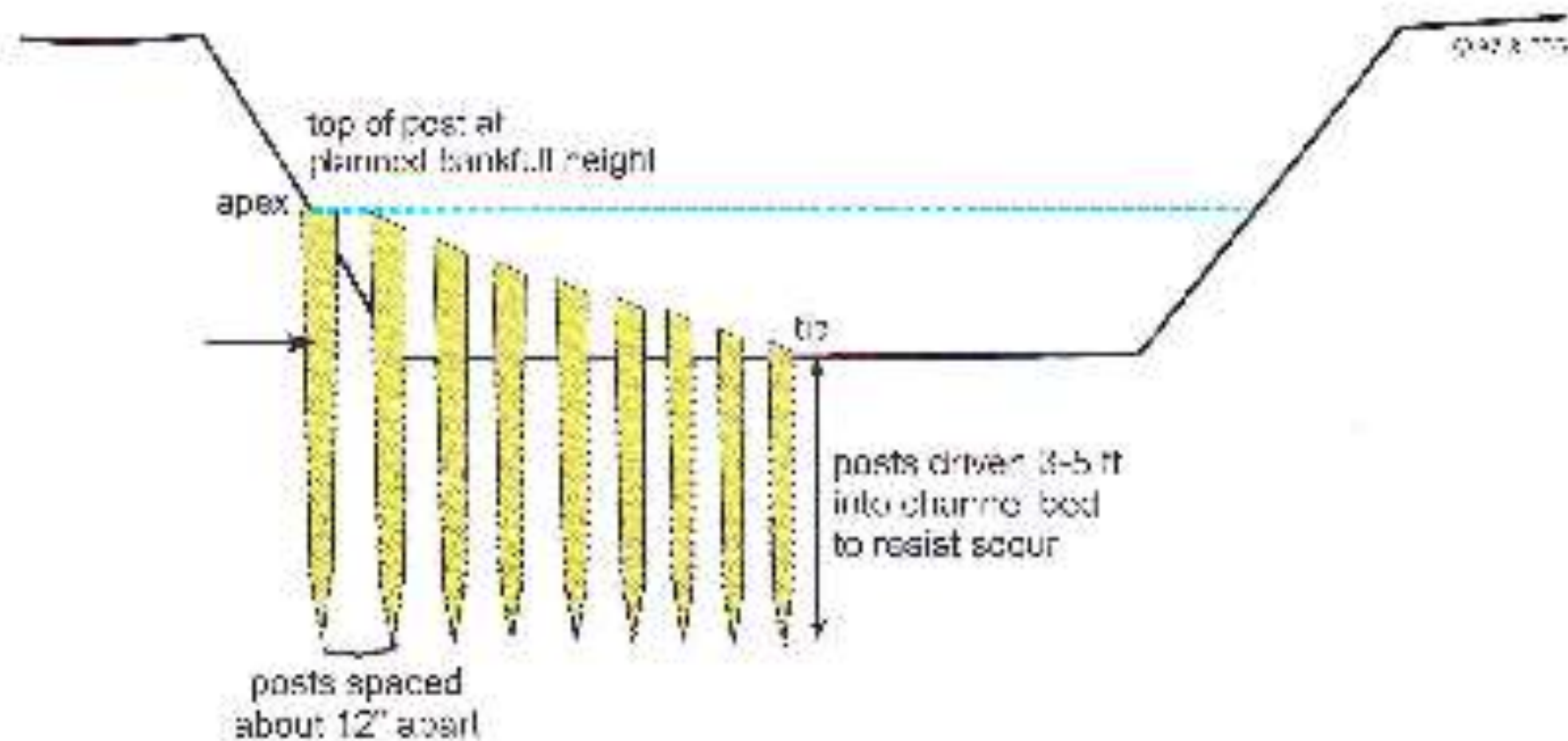


Figure 2-9. Post vane cross section schematic (Adopted from Zeedyk 2003).



# Bank Erosion Treatments

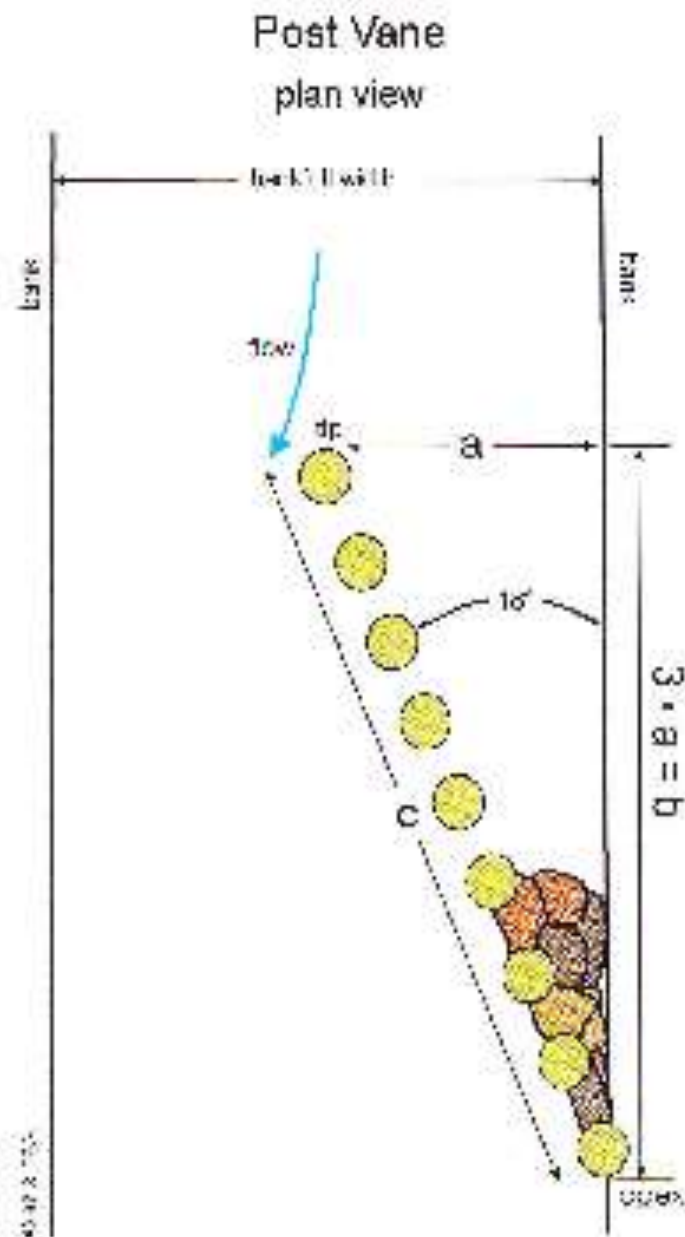


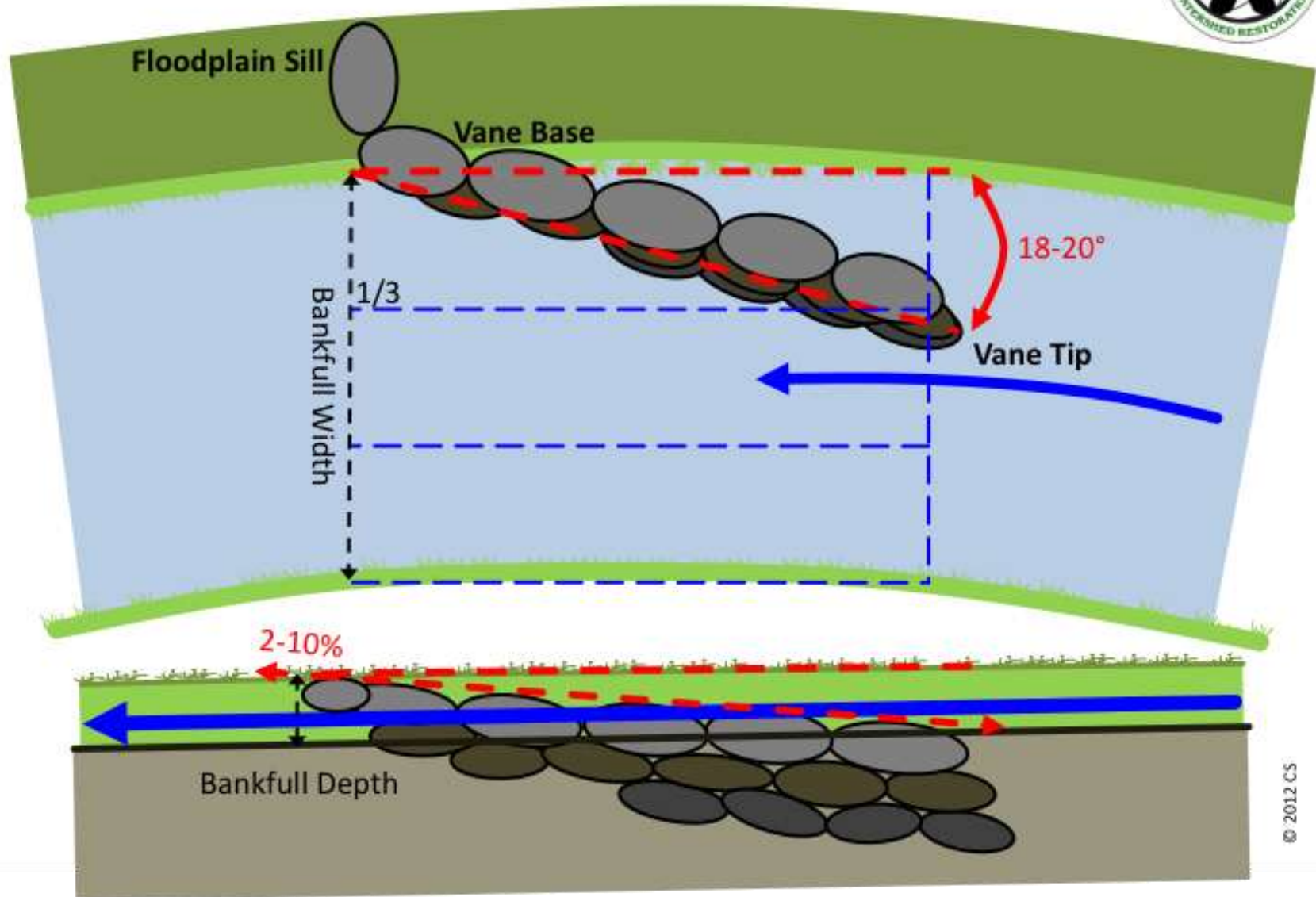
Figure 5-10. Post vane plan view schematic. Optional: fill vertex with 1.5 ft diameter rock (Adapted from Zeedyk 2003).



# Bank Erosion Treatments



## Boulder Vane

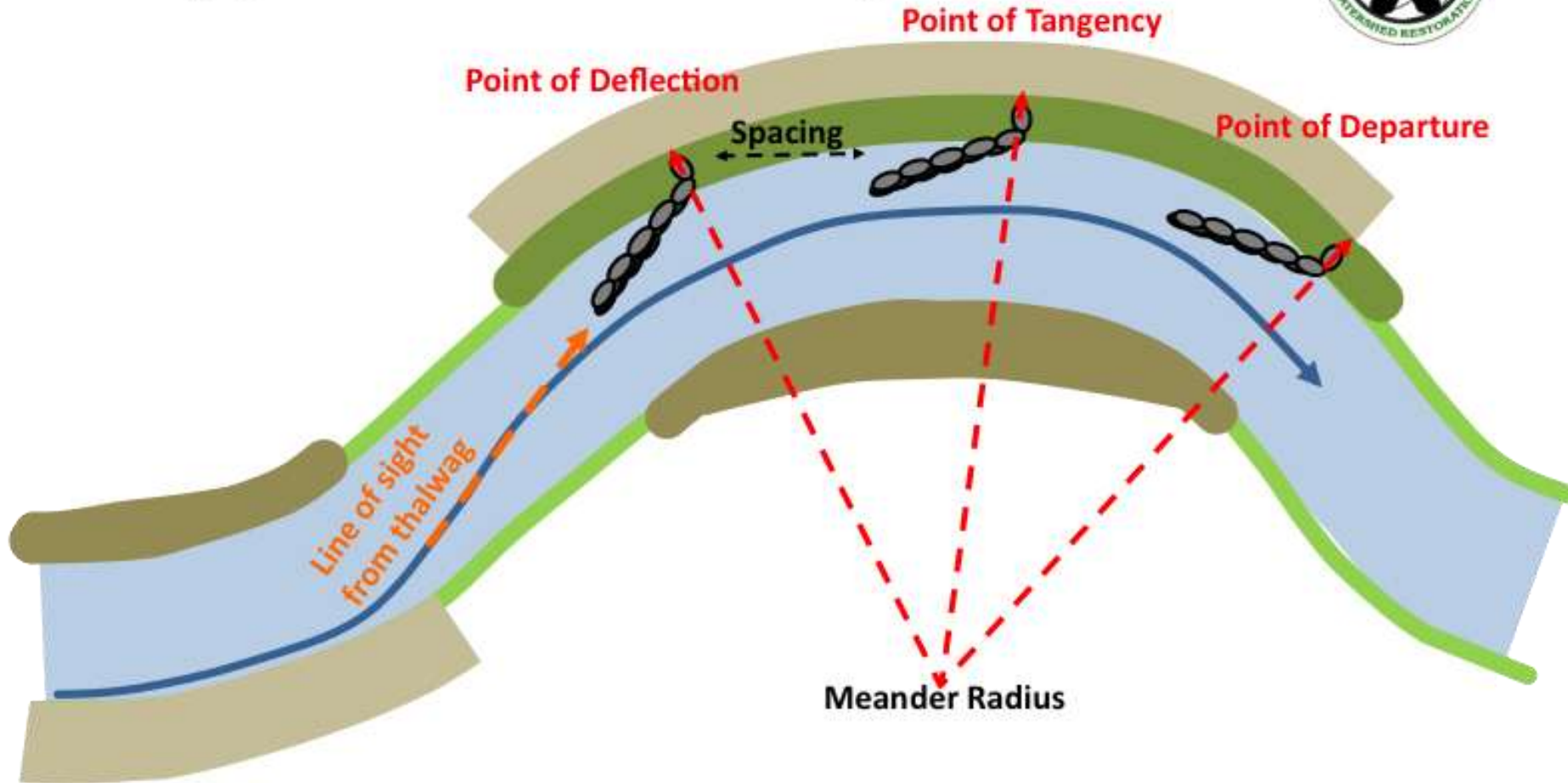




# Bank Erosion Treatments



## Typical Vane Layout



**Vane Spacing-** Depends on cohesiveness of bank materials and the amount and size of sediment transported. Cohesive banks or course sediment = wide spacing. Loose banks or fine sediment = tight spacing.



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