

**Management Practices to Protect Roads from Concentrated Flow of Runoff**

unlock the SECRETS IN THE SOIL



Road bed preparation



Road seeding

**Critical Area Planting & Mulching**



Mulching

**Access Roads protected during winter, when possible**

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**Critical Area Planting and Mulching**  
(in combination with Lined Channel)

## Erosion From Roadside Ditches



- Ditch runoff causing erosion below roadway
- Ditchbank erosion
- Inboard ditch channel downcutting
- Inboard ditch channel is obstructed
- Plugged culvert
- Rockfall or slumping of cutbank

S13: Do you notice that the inboard ditch channel is being downcut?



Bank erosion and channel downcutting in ditch



100+ cubic yards eroded per 1000 ft. of ditch



**S15: Is overflow from a plugged culvert diverting water down the road surface?**



Inadequately sized culverts, drainage ditch obstructed and crushed or plugged culverts.

**S16: Do you see rockfall or slumping due to instability of the cutbank or hillslope above the roadway?**




**Unstable road banks or slopes**

Slumping, rockfall, etc. onto road from unstable banks



### Management Practices to Prevent Water from Flowing Over Roadbeds

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Rock energy dissipaters

Drop culverts

**Structures for Water Control**

### Management Practices to Prevent Roadside Ditch Erosion

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Filter Strip

Grassed Waterway

**Grassed Waterways**



## Management Practices to Provide for Adequate Drainage

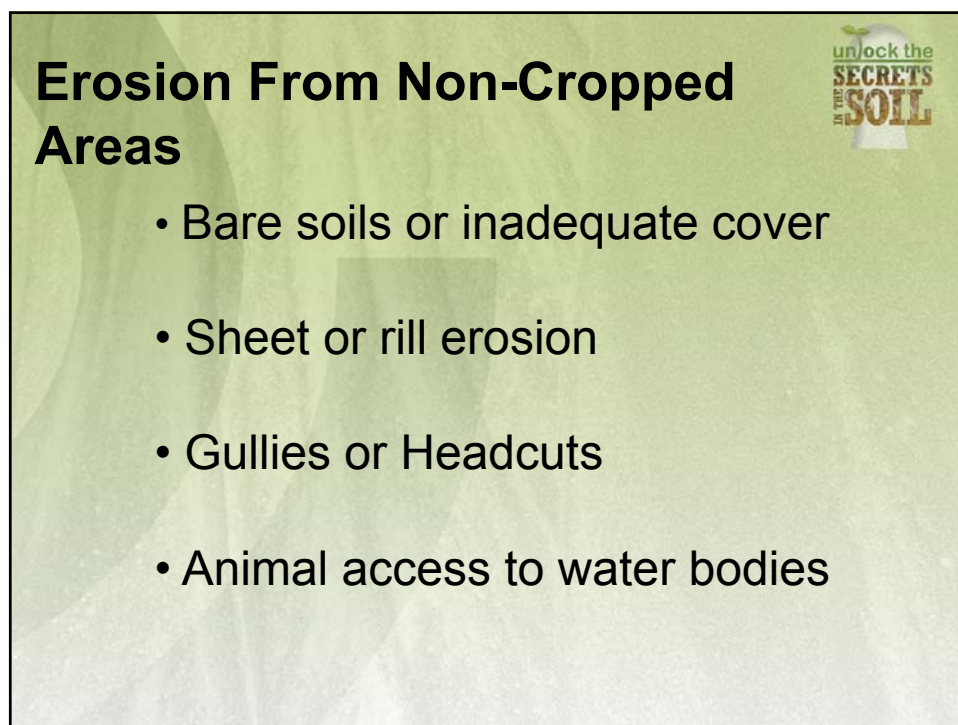
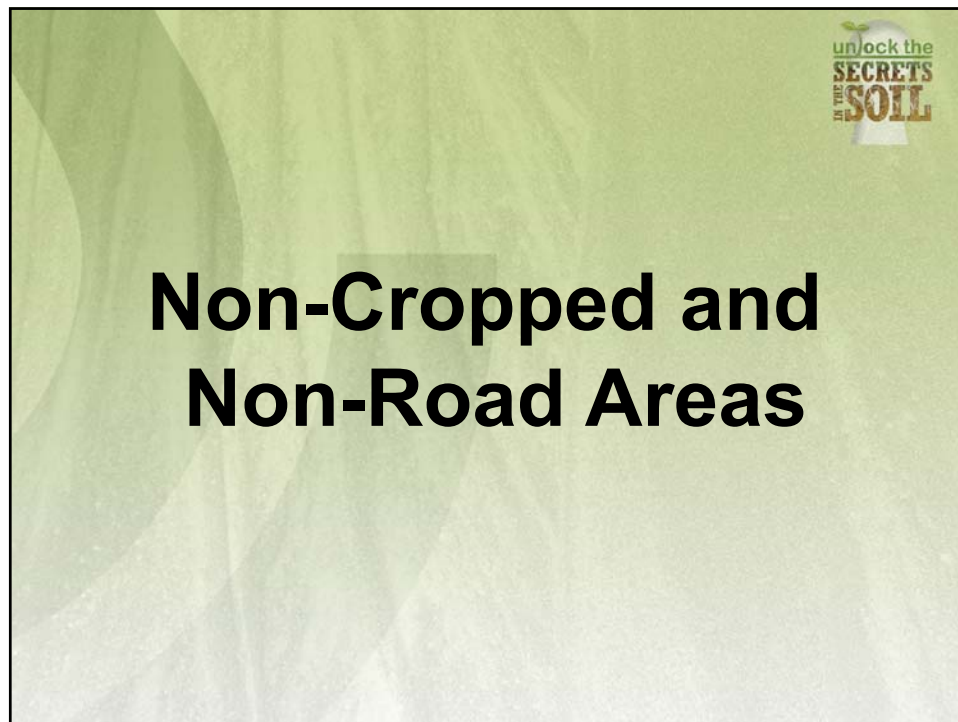


Structure for Water Control

## Management Practices for Stabilizing Slopes



Cut bank stabilization – Erosion control blanket





Do you notice erosion or sediment loss from areas of bare soil such as cut banks, field margins, between field blocks or greenhouses, on abandoned slopes, soil mixing/handling or compost areas, equipment yards, parking areas, and postharvest or cold storage facilities?



Soil erosion on unprotected ditchbank

## Bare Soil During Rainy Season



Sheet erosion – a dime thickness over a 1 acres = 15 tons/acre

Do you see signs of or the potential for sheet erosion, rill erosion, gullies, headcuts, mudslides, or landslides in steep non-cropped areas?



... due to past farm, ranch or forest practices

### Management Practices for Slope Stabilization



**Cut Bank Stabilization and Landslide Treatment**  
(in conjunction with Grassed Waterway, Critical Area Planting for the ephemeral gully repair)



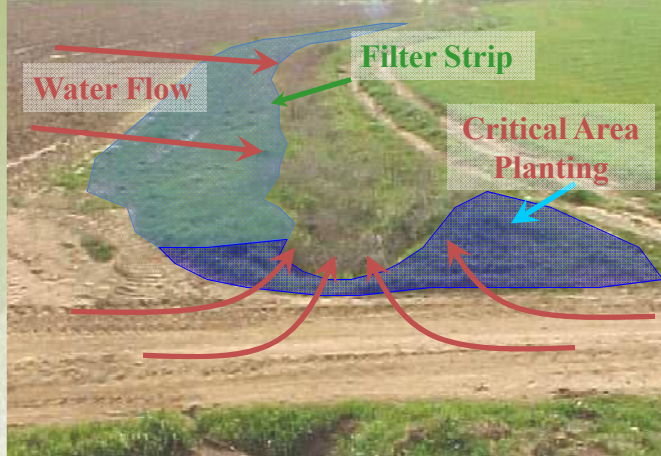
## Potential for Gullies and Headcuts



## Practices to Protect Otherwise Bare Soil



Filter Strip is a broad band of vegetation that protects an otherwise bare soil area from eroding that in this case has sheet flow across it.



**Critical Area Planting and Filter Strip**

### Management Practices to Protect Otherwise Bare Soil



**Critical Area Plantings and Insectary Hedgerow**

### Management Practices for Stabilizing Gullies



**Critical Area Planting and Grade Stabilization Structures - Rubber Strips**

**Concrete Grade Stabilization Structure w/ Rock Rip Rap**






**Management Practices to Divert Water to Stable Outlet** 



**Lined Waterway**

**Management Practices to Divert Water to Stable Outlet** 



**Underground Outlet**



# Sediment Leaving The Operation

- Sediment laden runoff
- Downstream sediment accumulation

**S20: Do you notice sediment accumulating in ditches, channels, ponds, or other waterways downstream of the farm?**





**Management Practices to Divert Water to Settling Areas**

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**Underground Outlets**



**Management Practices to Collect Sediment**

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**Tailwater Recovery**

Management Practices to Filter Sediment



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**Filter Strip**



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**Proper Installation & Maintenance is everything!**





## Summary of Sediment Management Strategies

1. Observe water flow across the land
2. Layout the farm to optimize runoff patterns
3. Manage the crop to reduce runoff
4. Reduce wind erosion
5. Protect uncropped areas
6. Protect roads and ditches from concentrated flow
7. Detain runoff and filter eroded sediment



## So what is a Soil Health Management System?

<b>Mandatory</b> <ul style="list-style-type: none"><li>• 328 Conservation Cropping Rotation</li><li>• 329 No-till or Strip-till</li><li>• 340 Cover Crops</li><li>• 590 Nutrient Management</li><li>• 595 Pest Management (Integrated)</li></ul>	<b>As Applicable (Con't.)</b> <ul style="list-style-type: none"><li>• 449 Irrigation Conservation</li><li>• 311 Alley Cropping</li><li>• 317 Composting Facility</li><li>• 610 Salinity Management</li><li>• Deep Tillage?</li></ul>
<b>As Applicable</b> <ul style="list-style-type: none"><li>• 512 Forage and Biomass Planting</li><li>• 345 Mulch</li><li>• 633 Manure Utilization and Management</li><li>• 393,332 Conservation Buffers, Filter Strip</li></ul>	<b>Recommended</b> <ul style="list-style-type: none"><li>• Precision Application of Nutrients</li><li>• Controlled Traffic no Tillage</li><li>• Flotation Tires no Tillage</li><li>• Strip Cropping</li></ul>

## Questions?

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