

Permanent Stabilization

Turf Reinforcement Mats (TRMs)



STABILIZE CHANNELS & OUTLETS



- Prevent erosion from concentrated flows
- Stabilization methods
 - Vegetation
 - Matting
 - Armoring
 - Velocity reduction
- Install according to the details on approved plan



Place velocity dissipation devices where discharges from the conveyance channel or structure join a water course to prevent erosion and to protect the channel embankment, outlet, adjacent stream bank slopes, and downstream waters.



Picture Courtesy DNREC

**What is on the plans?
Are there details for this?**



Outlet Protection

- Prevents scour at conveyance outlets
- Minimizes the potential for downstream erosion

BMP
WA C-209
OR RC-2
AK - 5



Outlet Protection

- Shear Stress / Velocity
- Break up



Energy Dissipation



Thermal pollution
Riprap maintenance
Channel section
Unreliable channel design



Susceptible to
- Internal Erosion
- Persistent Flow

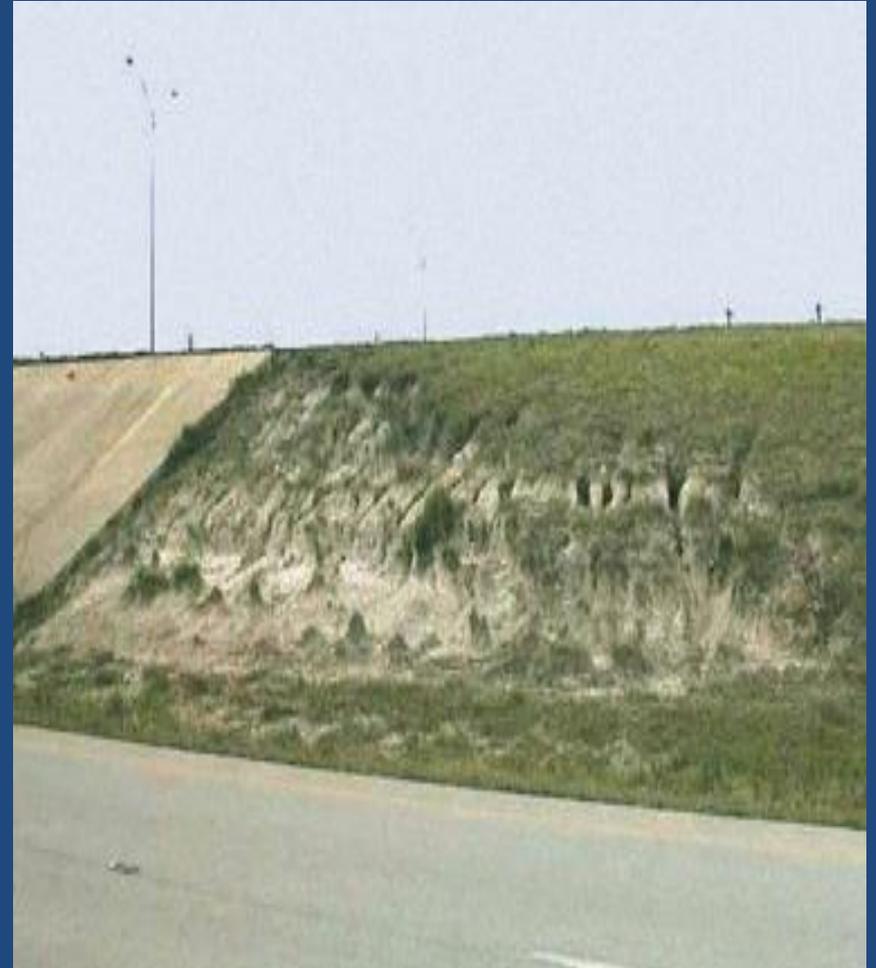
Stabilization Sequencing



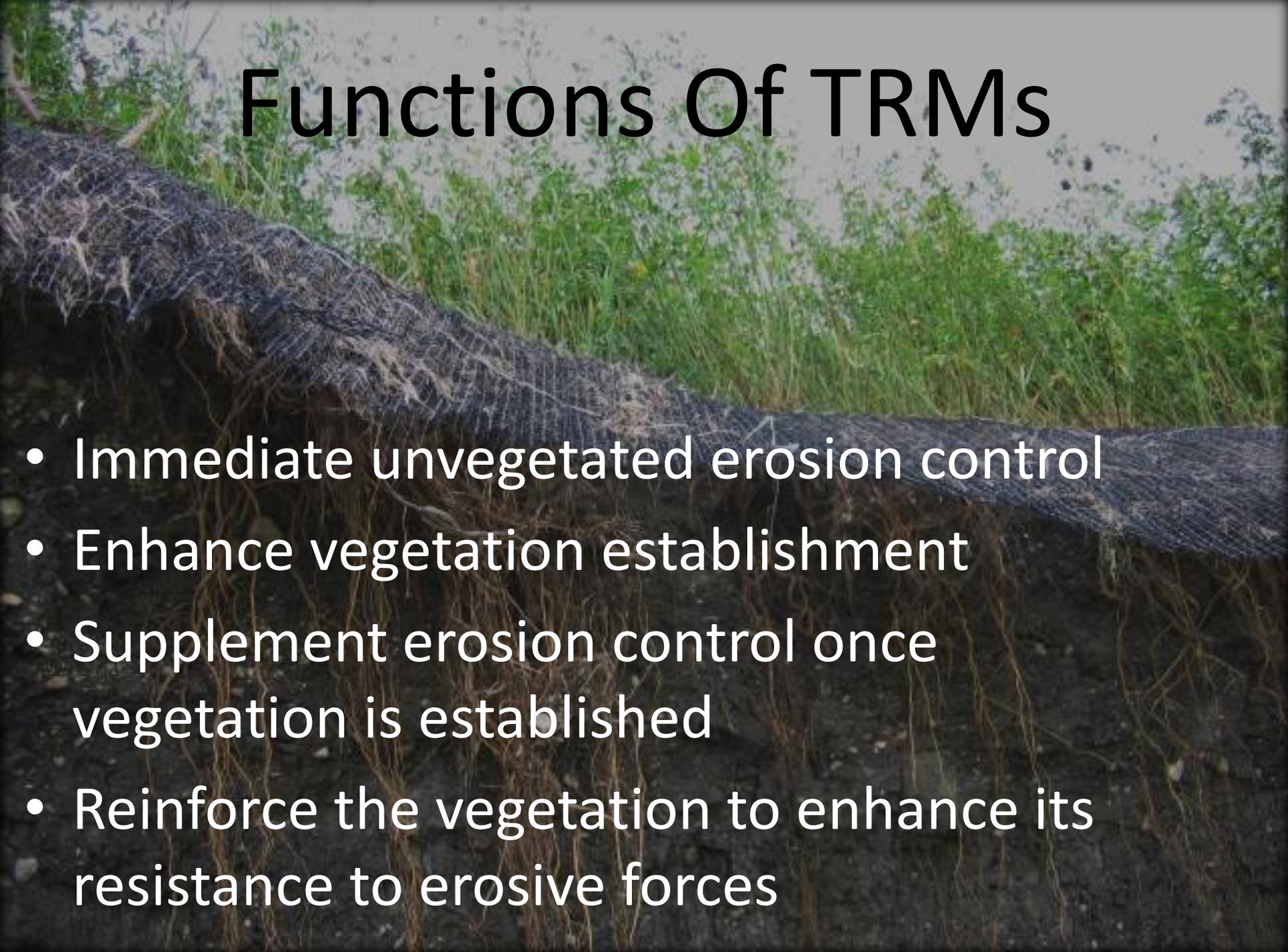


RECP = Rolled Erosion Control Product

- Reduces Rainfall Impact
- Helps Establish Vegetation
- Protects Planted Soils From Erosion
- Enhances Filtration
- Traps Sediments
- Retain Soils for Root Growth



Functions Of TRMs



- Immediate unvegetated erosion control
- Enhance vegetation establishment
- Supplement erosion control once vegetation is established
- Reinforce the vegetation to enhance its resistance to erosive forces

Pollution mitigation / sediment retention

Permanent

Channel section

Reliable channel design



Setting The Stage

- Know the application
 - Hydraulics
 - Agronomics
- Know the products
- Gather data on the products
- Select and specify the appropriate cost-effective product







06/13/2011



Erosion Control Technology In Action Shopping Cart Check Dams “URBAN GABIONS”





Glenn HWY



RECP

Stabilized Conveyance

Stabilized Outlet

Track Walked Topsoil with Organics









RECPs in Channels

- **Grade, Smooth and Compact Channel**
- **Seed & Amend Soils Properly**
- **Rollout RECP by Hand in Direction of Flow**
- **Dig 6x6" Trench at Very Beginning of Flow**



RECPs in Arid Climate Channels



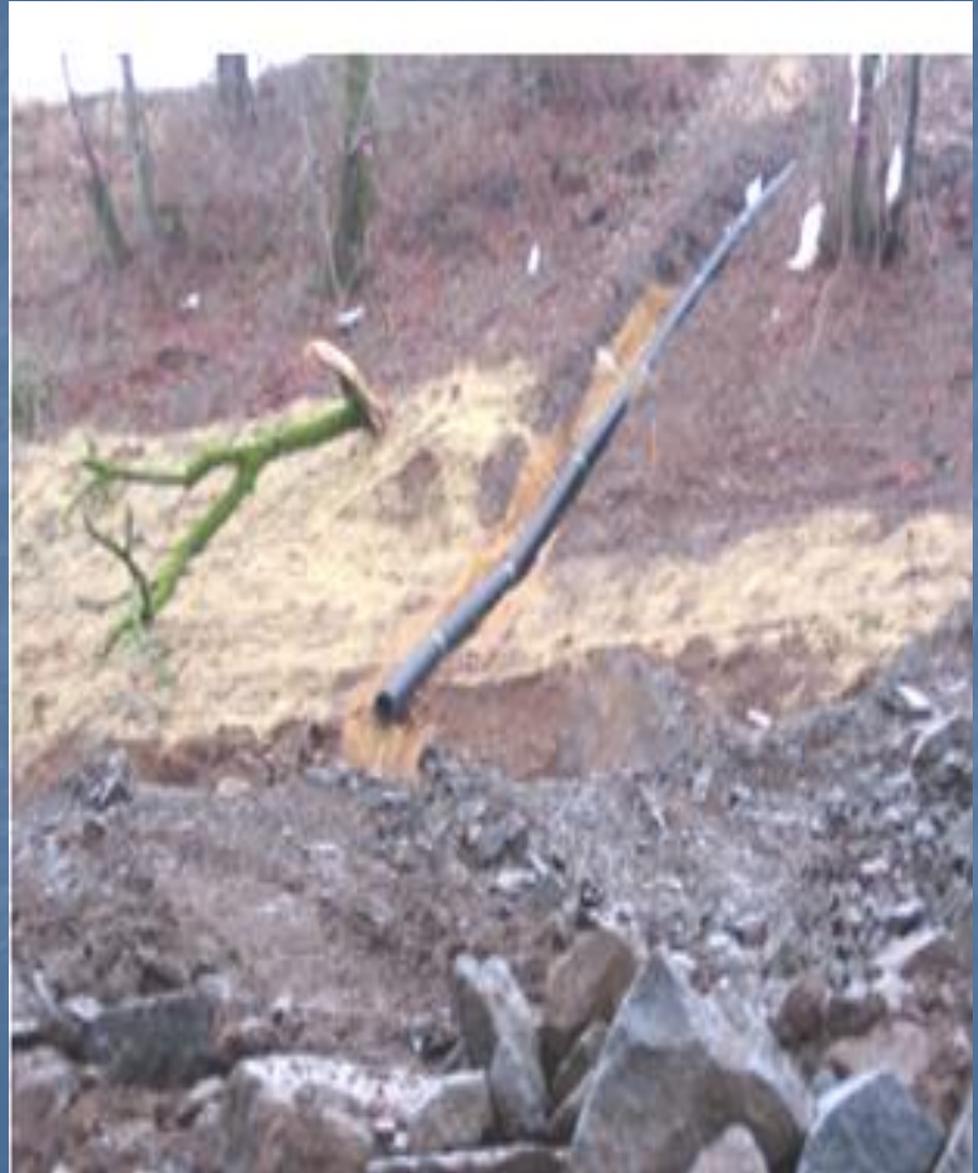
- **Synthetic RECPs may Work Better in Dry Areas**
- **Vegetation is Sparse & Grows Slow**
- **They Last Longer**

Runoff Conveyance and Treatment BMPs

Pipe Slope Drains

- Convey stormwater away from or over bare soil
- Need Energy Dissipation

BMP C204



Pipe Slope Drains Need Channel Protection Pipe End



What do we do next?



Permanent

Turf Reinforcement Mats (TRMs)





Alex Zimmerman CPESC, CISEC, CESSWI
AK-BC-WA-CESCL
360-910-4800
azim07@comcast.net

The Benefits

Features of the PS42 & PC42 TRMs	Why it's important!
<p>¼ lb/yd² of natural fiber matrix</p>	<p>Cost-effective immediate erosion control. Excellent water absorption – reduced runoff and enhanced seed germination. Choice of functional life depending on time required for vegetation establishment Straw – up to 12 months Coconut – up to 36 months Poly – greater than 36 months</p>
<p>½ lb/yd² of synthetic fibers</p>	<p>Provide permanent structure for turf reinforcement. Permanent fibers for greater than 36 months of immediate erosion control and mulching. Fibers remain after organics degrade to enhance permanent cover for erosion control.</p>
<p>UV stabilized synthetic netting</p>	<p>High tensile strength nettings allow for extremely durable products for use on applications exposed to highly erosive conditions like high flow channels, shorelines, and steep slopes.</p>
<p>UV stabilized polyp stitching on 1.5 inch centers</p>	<p>Mechanical retention of fibers improves product durability and performance. Permanent mechanical bonding of turf reinforcement structure.</p>

Product Benefits

- Cost Effective
- Faster Installations
 - Width variety in materials
 - No soil infilling required varieties
 - Random fibers provide mulching benefits to improve vegetation establishment
 - All permanent materials are UV stabilized

Look At Application Requirements

- What are the hydraulics
 - Application type
 - Erosion potential
- Agronomic
 - Vegetation type
 - Expected density
 - Hydraulic parameters afforded by the vegetation

Vegetated Hydraulic Benefits

- Shear stress up to 14 lbs/ft² (672 Pa)
- Permissible velocities up to 20 ft/s (6.1 m/s)
- Permanent synthetic fibers
 - Permanent structure (> 0.25 inches thick)
 - Vegetation reinforcement
 - Ground cover to assist vegetation with cover between plants
 - Consistent mechanically stabilized fibers. Hence no need for thatch layer to form for final erosion control







PG42

TRM

Composition of
67% Polypropylene
& 33% Coconut Fiber

3/4 lbs per sq. yard (400g/sq. m.)

Top & Bottom UV Stabilized
Polypropylene Netting

Permanent TRM

Extremely Durable

Can be applied up to 0.5:1 Slope

*Find Out
More!*



www.ErosionControlBlanket.com

Back

Culvert Outlet Habitat Pool

