Mountain Creek Stream Bank Restoration
A Collaborative Success Story

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A Collaborative Success Story
Mountain Creek Stream Bank Restoration
Project Location
Red Bank Elementary School, Chattanooga, TN
Project Location

303(d) listed:
- Habitat Alteration
- E. coli
• Nestled between Signal Mountain & US 27
• Drainage Area = 6.4 sq. miles or 46K acres
• FEMA mapped stream
• Very urbanized area - post development runoff/pollution
• Erosion of the Mountain Creek channel was estimated in 2002 to be between 66-81%
Severe bank erosion of Mountain Creek was jeopardizing the structural stability of Red Bank Elementary School’s access road, drainage system and outdoor classroom.
Construction (January 2018)
Mountain Creek Stream Bank Restoration
“Our mission is to empower students to lead their communities to protect and restore their local environment through collaborative watershed projects. Our goal is education leading to positive action for our water.”
Haley Brown, Principal
Comprised of 25 students – 5th graders
4th graders apply to become members for 5th grade year
Mountain Creek cleanup efforts rewarded with grant

Group of kids helping families enjoy strategies for conserving rivers

Red Bank Elementary “Stream Team” Gets To Work On Erosion

A partnership with TenneSEA (Tennessee Student Environmental Alliance) and the Tennessee Department of Environment and Conservation (TDEC), will give fifth graders at Red Bank Elementary a once-in-a-lifetime opportunity to learn about science.
The Stream Team
Field Work or Play?
The Stream Team
Field Work – Data Collection
TenneSEA and The Stream Team reach out to:

- Red Bank Elementary Alumni
  - Adam Pierce – Propex Operating Company
  - Matt Arp – Wright Brothers Construction Company
  - Shannon Kelly – Chattanooga Engineering Group
- Community Businesses
  - Engineering/Surveying
  - Manufacturing/Suppliers
  - Contractors
- Local and State Government Agencies
  - Tennessee Department of Environment & Conservation (TDEC)
  - City of Chattanooga
  - Hamilton County
Collaboration
The Community Responds

IMPROVING WATER QUALITY FOR THE MOUNTAIN CREEK WATERSHED

PROVIDED BY THESE COMMUNITY PARTNERS

TENNE-SEA

KIDS FOR CLEAN WATER

PROFILE®
Solutions for your Environment™
Goal - Reduce sediment loading and improve water quality:
- Testing
- Assessing the health of the water
- Successes (minnows, crayfish, dragon flies, etc.)

$78,500 Grant
Tennessee Healthy Water Initiative
The Stream Team
Engineering Design - Field
Traditional Solutions Considered
Rock, Sheet Piling, Retaining Walls, etc.
Traditional Solutions Considered
Gabions, Blocks, etc.
SCOURLOK™ Engineered Bank Stabilization for vegetated and unvegetated erosion protection of:

- **Banks**
  - Streams
  - Lakes
  - Ponds
- **Shorelines**
Eroded Bank
Vertical Drop

Scour Hole

Engineering Design
Topographic Survey – Existing Conditions
Proposed Stream Bank Stabilization with SCOURLOK™
Comprised of:

- Metal frame basket (coated/galvanized/S.S.) (3-FT x 3-FT x 4-FT)
- Internally lined w/ durable geotextile
- Externally lined with PYRAMAT® 75
- Pocket filled with mulch or other media for vegetation
Engineering Design
Installation – Compact and Easy

Step 1
Step 2
Step 3
Step 4
Step 5
Construction
Mountain Creek Diversion (December 4, 2017)

- Sand bags
- Super sacks filled with stone
- 12-inch flexible pipe
- Plastic sheeting
- 6-inch pump
- Splash pad
Construction
The Stream Team - Inspection & Approval
Construction Installation

- Foundation excavation and stabilization
- Geotextile for rock/soil interfaces
- Base stone for leveling
Engineered Earth Anchor (EEA) support system for increased stability
Bottom basket units filled and backfilled with stone for normal flow conditions and pore pressures behind the system.
Construction Installation

- Second row of units offset from bottom units by ½ basket depth (100-yr flood plain)
- Staggered horizontal installation due to site conditions and equipment access
Top basket units:

- Filled with in-situ soils to within 4 to 6-inches of top
- Backfilled and compacted
Construction
Installation

Basket face pockets and tops filled with organic media for vegetative growth
SCOURLOK system installation complete and immediately tested

Looking downstream

Looking up stream
Construction Installation (January 5, 2018)

- Back slope constructed (3:1)
- Soil surface prepped with Profile Products ProGanics™ and seed
- AMORMAX® installation
AMORMAX with integral connection to SCOURLOK complete
Profile Flexterra® with seed applied to ARMORMAX® and SCOURLOK™
Construction
Vegetative Stabilization – Native Species

- Southern riparian native seed mix
- Native wildflower seed mix
Native seed mixes applied with Profile ProGanics
Construction
Vegetative Stabilization – Native Trees/Shrubs

1. TREE PLANTING ON SLOPE
   C602
   NOT TO SCALE

2. TYPICAL SHRUB PLANTING; INDIVIDUAL PLANTING HOLE
   C602
   NOT TO SCALE
• Obtained from Reflection Riding Arboretum & Nature Center in Chattanooga, TN
• Planted by The Stream Team (March 22, 2018)
Post Construction
Vegetative Establishment (February 2018)
Closing Questions – Comments?

Scourlok®

Armormax®

Pyramat®