# MS4 STREAM RESTORATION & BANK STABILIZATION

Stream Restoration and Bank Stabilization projects reduce erosion, improve water quality, and restore ecological function within riparian corridors. For this activity, all phases from planning, design, engineering, permitting, materials, and full implementation are eligible expenses. Communities must demonstrate that proposed methods are environmentally appropriate, technically justified, and prepared by qualified professionals.

**Program Requirements**

- **Site Assessment & Professional Analysis:** A professional review should document the stream's current condition and the factors causing erosion. The review must outline the location, the problem, and the justification for the proposed restoration or stabilization work.

- **Natural/Bioengineered Solutions:** Project should prioritize natural channel design, bioengineering, and vegetative stabilization techniques. These approaches best support long term water quality improvement, habitat function, and ecological resilience. Examples of natural/bioengineered solutions are provided on the second page.

- **Hardscape solutions:** The use of rock armoring, gabions, revetments may be appropriate only when site conditions clearly justify them, such as:
  - Highly urbanized corridors: Riparian areas constrained or compromised by existing structures
  - Locations where softer methods cannot provide adequate protection.
    Note: Even when hardscape is necessary, projects must demonstrate water quality benefits, such as reducing sediment loading from ongoing erosion.

- **Design Drawings & Technical Plans:** Drawings, plans, and supporting documentation must prepared by a qualified professional. Plans must show:
  - Existing and proposed conditions
  - Stabilization or restoration methods and materials
  - Limits of disturbance
  - Expected water quality improvements
  - Construction sequencing and access

- **Water Quality Benefit Demonstration:** Projects must document measurable improvements such as:
  - Reduced sedimentation
  - Stabilized banks
  - Improved habitat structure
  - Reduced pollutant loading

- **Activity Documentation & Reporting:** Communities must maintain records of planning, design, and implementation activities. These records support reporting to the Storm Water Management District (SWMD) for inclusion in its annual EPA report.

**EXAMPLES OF NATURAL/BIOENGINEERED SOLUTIONS**

Live staking: Installing cuttings from native woody plants (e.g., willow, dogwood) that root and reinforce the bank naturally.

Coir logs/fiber rolls: Biodegradable coconut-fiber rolls placed along the toe of the bank to provide immediate stability while vegetation establishes.

Brush layering: Alternating layers of soil and live branch cuttings to rebuild and reinforce eroded banks.

Live fascines: Bundles of live branches installed in trenches along the contour of the bank to slow erosion and promote root growth.

Vegetated geogrids: Stacked soil lifts wrapped in biodegradable fabric and planted with native vegetation to rebuild banks with structural and ecological benefits.

Native riparian plantings: Deep-rooted shrubs, trees, and herbaceous plants that stabilize soil, filter runoff, and improve habitat.

Floodplain reconnection: Regrading or removing constraints so high flows can spread out, reducing erosive force on banks.

In-stream habitat structures: Strategically placed large wood or rootwads that redirect flow, reduce bank stress, and improve habitat.

Natural channel design: Re-shaping the stream to restore stable meanders, riffles, pools, and floodplain access using natural materials and processes.