BSC GROUP

803 SUMMER STREET, BOSTON, MA 02127 - www.bscgroup.com

TEL 617-896-4300 - 800-288-8123

Nature-Based Solutions Implementation Resource Guide

Nature-based Solution (NbS): Upstream BMP's, Raingardens, Bioswales

Project Number per matrix: **13**

PREREQUISITES

- Obtain Town or City Conservation Commission, DPW, and/or landowner approval.
- Obtain appropriate permits if infiltration structures are included.
- Coordinate restoration with funder (e.g., MA MVP), if applicable.

RECOMMENDED IMPLEMENTATION STEPS

- **Project Planning and Administration**
  - Test soil for infiltration, contamination, and roadside hazards/impacts.
  - Set new construction standards requiring BMP redevelopment.
  - Assess potential erosion contamination impacts.
  - Establish standard procedures and requirements for all infrastructure and new development projects to include storm resiliency measures and NbS features.
  - Plan for the construction period and post-construction period environmental monitoring.
- **NbS Installation**
  - This category covers several project options. Included here are basic descriptions for common elements followed by details affecting each project.
    - Infiltration street tree planting: tree plantings with expanded sub-sidewalk soil space, and curb cuts allowing stormwater infiltration, with connections to overflow drainage often coordinated with pervious pavement.
    - Bioswales: roadside swales with heavy sediment trap inlets, sub-drain storage chambers, and or filter media, paired with flood/drought-adapted vegetation.
    - Rain gardens: infiltration basins with flood/drought-adapted vegetation.
    - Shade tree and habitat planting instead of turf margins/shoulders.
    - Catch-basin infiltration trench modification: adding subgrade infiltration pockets to existing basins.
  - Evaluate water table and soil profile for effective establishment, drainage connection(s).
  - Conduct site preparation to include erosion control and stockpile/mobilize staging area.
  - Prepare for significant traffic and soil disruption.
  - Connect to existing or new drainage systems.
  - Replace/amend soil.
  - Install drainage connections.
  - Install stone entry weirs and pipes for overflow and infiltration control.
  - Plant selected stormwater infiltration species, along with mulching, watering, and weeding during the maintenance period.
- **Maintenance**
  - Support two year establishment period to include bi-annual removal of invasive plants and weeds, annual replacement of failed plantings, and watering, as needed, to naturalize plantings.
  - Annual maintenance is comparable to, but different than, standard roadside drainage and planting features.

NATURE-BASED SOLUTION SPECS

- Typical project size: Varies within ROW.

BUDGET ESTIMATE

- Typical project budget (order of magnitude): N/A
- Use the BSC Group Nature-based Solutions budget tool to develop more detailed concept budgets

SCHEDULE ESTIMATE

- 2- 4 days of construction per unit.
- 2-year establishment period.