

# CONSTRUCTION STORMWATER BMPs

## What are construction stormwater BMPs?

Clearing, grading, and other construction activities remove vegetation and compact the soil increasing both runoff and erosion. Excessive runoff erodes deep gullies, attacks channels, and has the potential to cause off-site erosion, sedimentation, and flooding problems. Construction stormwater best management practices (BMPs) are actions taken before, during and shortly after construction that control erosion and sedimentation and protect water quality. Effective erosion and sedimentation control can be achieved by careful attention to the following principles:

1. Protect the land surface from erosion.
2. Manage runoff and keep velocities low.
3. Capture sediment near the source.
4. Integrate sediment control with the construction schedule.
5. Inspect and maintain the erosion and sediment control system.



*Sedimentation from land disturbing activities where appropriate BMPs have not been employed is the largest threat to water quality in the Hiwassee.*

## Why is it important to install construction stormwater BMPs?

The primary benefits associated with installing construction stormwater BMPs are protection of water quality and compliance with the law. The North Carolina Sedimentation Pollution Control Act requires that soil disturbed during construction remain on the construction site. It is illegal for soil to wash onto neighboring properties, into public roads, or into waterways, regardless of how big your construction site is. Availability of a wide variety of BMPs to treat diverse development scenarios has made implementation more cost effective for developers and many types of BMPs can continue to function as post-construction stormwater BMPs or simply attractive landscape features.

## What are examples of some construction stormwater BMPs?

The most important construction stormwater BMPs are *planning actions*, rather than techniques or structures that are installed. These are the most important initial considerations when contemplating construction:

- Schedule construction activities to minimize the duration of exposure.
- Limit the area disturbed. Grade no larger an area than necessary at any one time and leave an undisturbed buffer.
- Divert runoff away from exposed slopes.
- Stabilize and maintain construction roads, parking areas, and the construction entrance. Use the designated routes to limit the development of ruts and erosion.
- Stabilize channels immediately.
- Protect graded surfaces with temporary vegetation and mulch whenever work is interrupted for an extended period.

A variety of methods exist to construct temporary or permanent structures that will control erosion and sedimentation during construction activities. These include building barriers such as check dams and silt fences that will capture soil on sloped areas and prevent sedimentation into streams below. Diversion structures can also be used to direct runoff and soil away from the watershed. These often involve directing soil and water toward an area that can absorb it, such as a dry vegetated area or a holding pond. The types of structures that

are used to effectively control erosion vary widely depending on the site and the resources available. Careful research and consultation is highly recommended before employing any of these techniques.

Basic structural construction stormwater BMPs include:

- Construction entrance/exit stabilization
- Temporary sediment traps/filters
- Riparian buffers and filter strips
- Storm drain inlet and outlet protection
- Temporary sediment basins (must have baffles and skimmer to comply)
- Sediment barriers (typically silt fence)

Sediment is controlled most easily and effectively near the source. Several sediment traps or barriers located at the edge of a graded area are more effective and less hazardous than a single large sediment basin near the site boundary. Sediment traps, basins, and barriers, such as sediment fences, operate by reducing runoff velocity to allow deposition--not by filtering. Filtering runoff with fabric or gravel is not effective because filters clog too rapidly to remove much sediment. Therefore, the practices should be designed to reduce flow velocity and form shallow pools for settling. The contractor can make sediment control more effective by providing access to traps and barriers for maintenance. Anticipate where sediment will accumulate behind sediment fences, and plan to provide access for cleanout and maintenance. Traps and barriers must be inspected and cleaned frequently.

Although structural BMPs are useful and often necessary for controlling erosion during construction, vegetative cover is the principal method for stabilizing disturbed sites. It is relatively inexpensive, tends to be self-healing, and is often the only practical, long-term solution to site stabilization and erosion control. A variety of vegetative practices can be used to control potential erosion problems. Dry straw, hay or wood waste (chips or sawdust) can be broadly applied to the disturbed area to reduce erosion and runoff velocities. For enhanced results, these can be anchored in some way with materials such as erosion control matting. A more permanent solution to controlling erosion in disturbed areas is to sow temporary and/or permanent seed, the roots of which will hold soil in place, thereby minimizing erosion and soil loss. Transplanting existing vegetation that is being disturbed, when possible, can enhance these benefits.



*Check dams made from mulch socks (top) and temporary sediment traps (bottom) are two structural barriers to sediment movement.*

## **How does one install construction stormwater BMPs?**

Implementation of BMPs to mitigate for construction activities typically involves the following steps:

1. Determine the relevant local and state requirements and regulations for land development; contact the city, county, or state governing agencies if necessary
2. Assess the site prior to construction to investigate site history and existing conditions, the scale of proposed activities and disturbance limits, and erosion potential. Visit the site in the rain and make note of natural drainage patterns!
3. Identify features and natural resources of interest to be protected or mitigated during construction.
4. Identify and select appropriate BMPs that accomplish the stormwater management objectives. [Get technical assistance from the contacts below if you are unsure.]

5. Submit erosion control plans and documentation as necessary to obtain permits.
6. Administer training for site inspection, monitoring, maintenance, and documentation of BMPs upon implementation.

**For technical assistance associated with construction stormwater BMPs or report a possible water quality violation, contact the following:**

Cherokee & Clay Counties, North Carolina

NCDENR, Division of Land Resources  
2090 U.S. Highway 70  
Swannanoa, NC 28778  
(828) 296-4500

Union County, Georgia

Environmental Enforcement  
55 Hughes Street  
Blairsville, GA 30512  
706-439-6057  
[ucbi@uniongov.com](mailto:ucbi@uniongov.com)

Towns County, Georgia

GADNR, Environmental Protection Division  
16 Center Road  
Cartersville, GA 30121  
[PO Box 3250, Cartersville, GA 30120]  
(770) 387-4929

**Resources for more information about construction stormwater BMPs:**

North Carolina Division of Land Quality  
*Erosion & Sedimentation Program*

[http://www.dlr.enr.state.nc.us/pages/sedimentation\\_new.html](http://www.dlr.enr.state.nc.us/pages/sedimentation_new.html)

North Carolina Sedimentation Pollution Control Act of 1973

[http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/ByArticle/Chapter\\_113A/Article\\_4.html](http://www.ncga.state.nc.us/EnactedLegislation/Statutes/HTML/ByArticle/Chapter_113A/Article_4.html)

North Carolina Division of Water Quality  
*Stormwater Permitting*

<http://h2o.enr.state.nc.us/su/index.htm>

North Carolina Division of Water Quality  
*Best Management Practices Manual*

[http://h2o.enr.state.nc.us/su/bmp\\_forms.htm](http://h2o.enr.state.nc.us/su/bmp_forms.htm)

North Carolina Department of Transportation

*Best Management Practices Manual for Road Construction & Maintenance Activities*

[http://www.ncdot.org/doh/operations/BMP\\_manual/](http://www.ncdot.org/doh/operations/BMP_manual/)

Georgia Department of Transportation

*Construction Manual*

<http://tomcat2.dot.state.ga.us/thesource/construction/index.html>

California Stormwater BMP Handbook for Construction

[http://www.cabmphandbooks.com/Documents/Construction/Section\\_2.pdf](http://www.cabmphandbooks.com/Documents/Construction/Section_2.pdf)

[http://www.cabmphandbooks.com/Documents/Construction/Section\\_3.pdf](http://www.cabmphandbooks.com/Documents/Construction/Section_3.pdf)

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