



North Carolina
Forest Service

FORESTRY Leaflets

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De-Coding the Language of Water Quality

As with many sciences, there are a lot of alphabetic abbreviations in the world of forestry and water quality. This Forestry Leaflet de-codes the alphabetic mix and helps you understand the impact of various water quality programs on forest management. Instead of starting alphabetically, we're going to start de-coding the language of water quality in a pyramid-like fashion, by starting with those programs that serve as the base foundation and working our way to those programs that have a narrower point of focus and application.

CWA = Clean Water Act

The Federal Water Pollution Control Act Amendments of 1972 and subsequent amendments have since been referred to as the Clean Water Act. The CWA establishes the basic structure for regulating discharges of pollutants into waters of the United States, and it gives the U.S. Environmental Protection Agency the authority to implement and/or delegate pollution control programs. The CWA also recognizes the need for addressing Non-Point Source pollution. More information is on the Web at www.epa.gov.

What's It Mean for Forestry?

Most of the water quality rules that govern forestry operations are based upon the principles of the CWA. The CWA delegates some of its requirements to each state which develops regulations or programs to address the needs defined within the CWA. In addition, specific sections of the CWA may impact forestry, particularly when related to activities in wetland areas. Keep reading to learn more.

NPS = Non-Point Source pollution

This is essentially a fancy term used to describe pollution that results from runoff that flows across the ground surface. Some sources of NPS pollution include stormwater runoff, agricultural production and forestry activities. The CWA describes programs and protocols for preventing and/or managing NPS pollution, including the use of best management practices. More information is on the Web at: www.epa.gov/owow/nps

What's It Mean for Forestry?

Forestry activities fall under the designation as a NPS pollution origin. This means that forestry activities can implement site-specific practices that, when taken as a whole, protect water quality.

Being considered as a NPS pollution origin, instead of a "point source," is valuable for forestry. Being a NPS contributor precludes requirements to obtain most federal or state permits for making discharges or potential discharges into wetlands, creeks or lakes (even though there are a few specific circumstances when permits may be required). Discharge permits can be extremely expensive and time consuming to prepare and obtain; such costs would significantly harm the ability of forest owners to continue producing the wood and paper products we all need, similar to a farmer's ability to produce our food and fiber.

NPDES = National Pollutant Discharge Elimination System

The CWA prohibits anybody from discharging pollutants by means of a point-source into a water of the United States unless they have a NPDES permit. The permit sets limits on what you can discharge, prescribes monitoring and reporting requirements, and outlines other provisions to ensure that the discharge does not hurt water quality or public health. In essence, the permit translates the general requirements of the CWA into detailed provisions that are tailored to the specific operation that is discharging pollutants.

More information is on the Web at: <http://cfpub.epa.gov/npdes/index.cfm>

What's It Mean for Forestry?

While most forestry activities are not considered point-source origins of pollutants, and therefore do not require NPDES permits, the aerial application of pesticides may require NPDES permitting if certain thresholds will be met. If you intend to aerially apply pesticides, please refer to the N.C. Division of Water Quality's website to find out if you meet the requirement to obtain a NPDES permit (look under the topic "Pesticide General Permit"): <http://portal.ncdenr.org/web/wq/swp/ps/npdes>

FPG = Forest Practices Guidelines Related to Water Quality

In North Carolina, the FPGs are performance standard regulations, authorized within the N.C. Sedimentation Pollution Control Act (SPCA), that describe what forestry operations must do in order to remain in compliance with the state's laws regarding erosion and sediment control. The FPGs are described in N.C. Administrative Code 15A NCAC 01I .0100 - .0209. The water quality topics addressed by the FPGs include:

- Streamside Management Zones
- Debris entering streams
- Access road and skid trail stream crossings
- Access road entrances
- Waste entering streams, waterbodies and groundwater
- Pesticide application
- Fertilizer application
- Maintaining stream temperature
- Site rehabilitation

What's It Mean for Forestry?

For forestry activities in North Carolina, the FPGs are the required minimum performance standards that must be achieved in order to remain exempt from the full permit and monitoring requirements defined in the SPCA. Think of the FPGs as what you *have to do*.Website:

www.ncforestservice.gov/water_quality/regulations.htm

BMP = Best Management Practices

BMPs are those practices that have shown to be effective and efficient in protecting water quality on a site-specific basis. BMPs are recognized by federal and state regulations as the primary method to address NPS pollution from forestry and agriculture activities. Think of BMPs as 'what you should do' when it comes to conducting forestry operations. BMPs can also be thought of as the tools in the toolbox, in which you pick and choose the BMPs that best fit your situation. Doing so will allow your forestry activity to protect water quality from sedimentation, temperature fluctuation, nutrient inputs and other potential NPS pollution.

What's It Mean for Forestry?

In North Carolina, forestry BMPs are not explicitly required by law, but are defined within the FPGs:

"Best Management Practice (BMP) means a practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals."

The North Carolina forestry BMP manual is a collection and explanation of BMPs that you may find useful to implement on your forestry site. This manual, along with additional BMP information, is available at your local office of the N.C. Forest Service and in the "Water Quality" section of the website

www.ncforestservice.gov

SMZ = Streamside Management Zone

A SMZ is a corridor or zone alongside a body of water that helps to protect water quality from potential NPS pollutants. The SMZ helps to filter out pollutants, provide shade over the water and protect streambank integrity, among other functions. Recommendations for SMZs are described in detail within the *North Carolina Forestry Best Management Practices Manual to Protect Water Quality*, available at www.ncforestservice.gov.

What's It Mean for Forestry?

As prescribed within the North Carolina FPGs, forestry operations are required to establish a SMZ along certain designated waterbodies. The term “SMZ,” where it applies, and how it must be established, is defined within the FPGs. The definition of a SMZ in North Carolina is cited below for your reference:
“Streamside Management Zone (SMZ) means an area along both sides of intermittent and perennial streams and perennial waterbodies where extra precaution is used in carrying out forest practices in order to protect water quality.” Cited from 15A NCAC 01I .0102 (18).

404(f) = Exempt silvicultural activities in wetlands

Section 404(f) of the CWA describes those circumstances in which a federal permit is not required for the discharge of “dredged or fill material” into waters of the U.S., which may include wetland areas.

More information is on the Web at: www.epa.gov/OWOW/wetlands/regs/sec404.html

What's It Mean for Forestry?

This Section is often referred to as the ‘404 silviculture exemption.’ The language of the regulations includes an exemption from permitting on the following practices as cited from the above Web site:

“...normal farming, silviculture, and ranching activities such as plowing, seeding, cultivating, minor drainage, harvesting for the production of food, fiber, and forest products, or upland soil and water conservation practices.”

303(d) List = List of Impaired Waters

Section 303(d) of the CWA requires states to develop a list of waters that are not meeting water quality standards or have impaired uses. Once a waterbody is assigned to the list, the list must be prioritized and a management strategy, called a Total Maximum Daily Load plan, must be developed for each of the listed waters. More information about 303(d)-listed waters in North Carolina is available from the “Modeling and TMDL Unit” of the North Carolina Division of Water Quality website: www.ncwaterquality.org

What's It Mean for Forestry?

Forestry operations should prevent, control and contain NPS pollutants from negatively impacting water quality. The cumulative effect of pollutants from all land-use activities, along with those from permitted point-source discharges, can quickly add up to a condition that impairs a waterbody. Once the waterbody is assigned to the 303(d) list, there may be additional regulations that restrict your ability to conduct forestry activities in the area that drains to the designated impaired waterbody.

TMDL = Total Maximum Daily Load

A TMDL specifies the maximum amount of a specific pollutant that a waterbody can receive and still meet clean-water standards. A TMDL allocates pollutant loadings among point-sources and non-point sources. Water quality standards identify the acceptable uses for each waterbody. For example, a waterbody may be designated for drinking water supply; for recreational use and/or for aquatic life. The TMDL calculation must include a margin of error to ensure that the waterbody can be used for its designated purposes and must also account for normal, seasonal variation in water quality. Section 303 of the CWA establishes the water quality standards and TMDL programs. More information is on the Web at: www.epa.gov/owow/tmdl.

What's It Mean for Forestry?

In North Carolina, several TMDL strategies have been implemented that require the protection of a multi-zoned, fixed-distance forested riparian buffer alongside designated streams and waterbodies. At the time of printing for this *Forestry Leaflet*, there are five areas of the state in which these TMDL-mandated buffers exist. They include:

- Catawba River and mainstem lakes
- Randleman Lake/Reservoir watershed
- Jordan Lake/Upper Cape Fear watershed
- Tar-Pamlico River basin
- Neuse River basin

There are additional *Forestry Leaflets* for each of these areas that explain the restrictions and requirements that forestry operations must comply with for their respective TMDL buffer rules.

Take note that in North Carolina, the requirements imposed by TMDL plans are in addition to the performance standards required by the FPGs.

NTU = Nephelometric Turbidity Unit

The NTU is a measurement of the amount of light that can penetrate through a column of water. Essentially, the NTU measures how 'cloudy' the water is. North Carolina sets turbidity standards for those waterbodies that are classified with a designated use. Fifty (50) NTU is the standard for "Class C" waters, which are the most common waters found in the state. The NTU standards for trout waters and lakes are more stringent (a smaller NTU number). More information including examples of different NTU levels is on the Web at:

www.water.ncsu.edu/watershedss/info/turbid.html

What's It Mean for Forestry?

Typically, as long as forestry operations are in compliance with the FPGs, the NTU standards should also remain in compliance. However, a violation of the state's NTU turbidity standards may still occur even if all FPGs are in compliance. The NTU standard is another reason to make sure NPS pollution, especially sediment, is prevented or controlled during forestry activities from reaching a body of water.

TSS = Total Ssuspended Solids

TSS is the leading cause of 'cloudy' water that results from very fine sediment particles getting into the water. The sediment is so fine that it does not immediately settle out, but instead remains suspended within the body of water. The measurement of TSS is simply a value that describes how much of this fine sediment is within a volume of water. The larger the TSS value, the less clear the water becomes, which increases the NTU value.

What's It Mean for Forestry?

By keeping sediment and runoff out of streams, lakes and other waterbodies during forestry activities, you can minimize the chances of increasing the TSS load in that body of water.



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