

Water Quality and Wetlands

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The Value of Water Quality, the Threat of Nonpoint Source Pollution

An Abundance of Clean Water

An abundance of clean water is one of Minnesota's greatest resources. Much of this water originates in forested watersheds. In addition to water, these forested areas provide many other valuable resources and support a variety of human activities.

Landowners, resource managers, loggers and contractors attempt to balance a variety of objectives when planning and conducting forest management activities. These activities include the production of timber, the support of recreational uses, the enhancement of scenic beauty, the improvement of wildlife habitat, and the protection of forest ecosystems. When carrying out any forest management activity, care is needed to prevent or minimize nonpoint source pollution impacts on water quality and wetlands, as well as impacts on normal water flow in wetlands.

Potential Impacts of Nonpoint Source Pollution

Nonpoint source (NPS) pollution is diffuse pollution that originates from over the landscape. While the amount from any one particular location may seem insignificant, the combined effects of NPS pollution from throughout a watershed can impact water quality and wetlands.

NPS pollution reaches streams, lakes, wetlands and ground water through leaching, surface runoff and erosion. While some NPS pollution does occur naturally, such as when soil is carried in runoff to surface water, human activity can dramatically increase the potential for NPS pollution. Many forest activities have the potential to contribute NPS pollution to streams, lakes, wetlands and ground water.

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Types of water pollutants that can be generated from forest activities include:

- Sediment
- Nutrients
- Pesticides
- Fuels and lubricants
- Organic matter
- Thermal impacts

NPS pollution from forest activities is not severe in most areas of Minnesota, due to the state's topography, soils and forest locations. Forest management activities with the greatest potential for creating NPS pollution include:

- Forest road development
- Timber harvesting activities
- Mechanical site preparation
- Pesticide application
- Prescribed burning and fireline clearing

Of these activities, the building and maintenance of forest roads is generally considered to have the greatest potential to impact water quality and wetlands. This impact is due to the concentration of activity, the extent of area affected, the amount of disturbed and exposed soil, and the relative permanence of a forest road. These effects are of particular concern when activities are close to water.

Benefits of Guidelines

Guidelines for water quality and wetlands provide a number of important benefits. These guidelines:

- Prevent or minimize nonpoint source pollution from forest management activities.
- Prevent or minimize erosion and subsequent sedimentation of water bodies.

- Prevent or minimize the movement of pesticides, fuel, lubricants and other chemicals to surface water, wetlands and ground water.
- Maintain water temperatures within their normal range.
- Maintain normal hydrologic flows in wetlands.

How Guidelines Can Protect Water Quality and Wetlands

NPS pollution cannot be eliminated entirely, but guidelines for water quality and wetlands can prevent or minimize the impact of forest management activities on streams, lakes, wetlands and ground water. Recommended guidelines (implemented individually or in combination) provide landowners, resource managers, loggers and contractors with the tools to either prevent NPS pollution or ensure that the amount of NPS pollution is kept to a level compatible with state water quality and wetland protection goals.

In addition to protecting water quality, guidelines for wetlands provide the tools to maintain the functions and values of wetlands by protecting normal water flow in wetlands.



Guidelines for water quality and wetlands can prevent or minimize the impact of forest management activities on streams, lakes, wetlands and ground water.
Photo courtesy of Minnesota DNR

Water Quality and Wetland Protection in Minnesota

A Regulatory Umbrella

Statutes and regulations currently exist for federal, state and local agencies to control water pollution and protect wetlands on both public and private forest lands:

- ❑ At the local level, this “regulatory umbrella” includes comprehensive local water plans, local zoning ordinances and shoreland management regulations.
- ❑ At the state level, regulatory involvement includes the Minnesota Groundwater Protection Act, the Minnesota Wetland Conservation Act, the Minnesota Pollution Control Agency Water Quality Standard Rules (Minn. Rule 7050), and the Minnesota Department of Natural Resources Protected Waters Permit Program.
- ❑ At the federal level, regulations include the National Environmental Policy Act, the National Forest Management Act, the Federal Clean Water Act, the Coastal Zone Management Act, and the Food, Agriculture, Conservation and Trade Act.



Providing Exemptions and Flexibility

Wetlands are highly productive sites for a variety of ecologic functions, as well as for the enhancement of water quality. All management operations in or adjacent to wetlands should be planned and conducted in a manner that protects these functions.

State and federal wetland regulations provide an exemption for silvicultural activities in wetlands. To qualify for an exemption for silvicultural activities in a wetland under the Minnesota Wetland Conservation Act, an individual or organization:

- Must use appropriate erosion control measures to prevent sedimentation of water.
- Must not block fish activity in a watercourse.
- Must comply with all other applicable federal, state and local requirements, including Best Management Practices and water resource protection requirements.

The wetland guidelines were developed to meet the intent of federal regulations (33 Code of Federal Regulations [CFR], Section 323.4, and 7 CFR, Part 12). These sections were 1) modified to allow flexibility of implementation where appropriate, and 2) broadened to cover the activities listed in the Wetland Conservation Act. The federal criteria that served as the standard for much of the original BMP development are listed in *Appendix G: Baseline Standards for Development of Best Management Practices To Provide Wetland Protection*.

Because one single set of practices cannot effectively address the concerns of all situations and all areas, guidelines need to be flexible enough to address site-specific conditions.

This flexibility also allows individual guidelines to be modified to balance water quality and wetland protection with other forest values and management considerations, such as promoting biodiversity and enhancing wildlife and aquatic habitat. Modified approaches may be used as long as the alternate practices achieve the same level of protection for water quality and wetlands.

A Cooperative Response to Water Quality Concerns

Effective protection of water quality and wetlands depends in great part on the attitude toward—and acceptance of—water quality and wetland protection measures by individual landowners, resource managers, loggers and contractors.

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Broad-based recognition of the need for guidelines to protect water quality and wetlands led to a gathering of a diverse working group of individuals representing many public and private organizations.

This group developed a guidebook titled *Protecting Water Quality and Wetlands in Forest Management: Best Management Practices in Minnesota*. Published in 1989 and updated in 1995, this stand-alone publication serves as the source document when Best Management Practices for water quality protection (BMPs) are referenced in statute.

The goal of these guidelines (termed BMPs in the guidebook) was to accomplish the following:

- Heighten awareness of nonpoint source pollution.
- Provide tools to landowners, resource managers, loggers and contractors for protecting water quality and wetlands in forested watersheds in a manner consistent with the intent of federal and state water quality and wetland protection mandates.
- Provide sufficient information and guidance to assist these individuals in making informed and appropriate management decisions on a site-by-site basis.

Protecting Water Quality and Wetlands in Forest Management provided the source of the guidelines for water quality and wetlands that have been integrated into this larger guidebook. Copies of *Protecting Water Quality and Wetlands in Forest Management* are available from local DNR Division of Forestry offices, or call (651) 297-7298.