Conserving Wooded Areas in Developing Communities

Best Management Practices in Minnesota
Conserving Wooded Areas in Developing Communities
Best Management Practices in Minnesota

2000 Revised

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Reproduction of this guidebook is encouraged.

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STATEMENT OF PURPOSE

This best management practices (BMPs) guidebook for conserving wooded areas in developing communities of Minnesota was developed by an advisory committee composed of a wide representation of stakeholders from public, private, and nonprofit organizations. The goals of these BMPs are:

• to provide communities with a better understanding and appreciation of economic, social, and environmental benefits of wooded areas and individual trees,

• to provide decision makers, city planners, landowners, developers, and citizens with land-use approaches to conserve the ecological integrity and functions of wooded areas, including wildlife habitat and corridors throughout the landscape,

• to help builders, utility companies, contractors, machine operators, and crews minimize impacts of construction on wooded areas and trees, and

• to provide citizens with a better place to live and work.
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<td>2</td>
<td>Complete loss and fragmentation of woodlands are demonstrated by comparing the area they once occupied, as shown in the presettlement vegetation map (a), to the areas they occupied in the vegetation map of 1977 (b). Note that the 1977 vegetation map is more than 20 years old and more forest land has since been converted to development.</td>
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<td>Successful conservation of wooded areas and individual trees requires active participation of all people involved in the land development.</td>
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<td>Properties surrounded with trees have higher market value than treeless properties because trees are part of the property infrastructure. In addition, trees provide a healthier and a more pleasant living environment.</td>
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8 Infrared aerial photography is used by natural resource professionals to see patterns of water bodies, vegetation cover, and existing infrastructure.

9 A resource map such as this example of the city of Cottage Grove shows the location of important features of the landscape including tree stands, water bodies, historical sites, and existing land use.

10 People involved in subdivision development may have different priorities.

11 A comprehensive resource map of a subdivision such as this example from North Oaks shows location of wooded areas, individual trees, water bodies, proposed developable sites, and indicates conservancy areas.

12 Drawing different alternative development plans for the subdivision provides the opportunity to look at all possible options and optimize the land use and conservation effort.

13 Determining the construction danger zone between the protective fence and the building site assists with final site and building design and selection of equipment to be used. Note that the tree protective fence is placed in front to prevent access and disturbance to the protected root zone.

14 Highly visible ribbon identifies protected wooded areas and trees.

15 A combination of visual fences and silt fences prevent access to the protected root zone and construction damage to trees as well as runoff.

16 Using equipment near protected trees can cause severe mechanical injury to trees and compact soil in the protected root zone.
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A resource map at individual lot level shows the location of the wooded area and individual trees, the species composition, and diameter of trees at breast height.

On a wooded lot (a), selecting the center of the lot as the building site (b) conserves less trees than selecting the corner of the lot as the building site (c), which saves more trees.

The protected root zone of a mature tree may be determined by projecting the dripline.

A highly visible fence and “off limits” signs should be placed around the protected root zone of each conserved tree to prevent any site disturbance and mechanical injury.

Parking equipment (a) or storing soil (b) within the protected root zone cause soil compaction and affect tree growth and survival.

A temporary crossing bridge can be used near the protected root zone to minimize soil compaction and mechanical injury to the tree.

When roots are cut or severed during trenching or excavation, immediately protect roots with a bag (a) or tarp (b) to prevent drying.

After cutting a grade near trees (a or b), build a retaining wall to prevent soil erosion.

A roadway clear zone in a wooded area specifies standards for conserving trees and providing safe road.

Construction standards for natural preservation routes are used to preserve wooded areas and trees during road construction.
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INTRODUCTION

About the urban ecosystem

Urban populations will continue to grow and new residential subdivisions and commercial, industrial, and institutional centers will continue to develop. However, decision makers, natural resource managers, landowners, and citizens are increasingly concerned that the urban biosphere is at risk under current land development practices (urban sprawl). Destruction and fragmentation of wooded areas and farmlands, loss of individual trees, and loss of wildlife habitat threaten the ecological integrity and functions of natural systems and the quality of life in urbanizing areas (Figure 1, page 2).

This BMP guidebook provides communities, urban planners, developers, and builders with ideas for meeting development needs and conserving wooded areas. The guidebook is comprised of five sections. The first describes the economic, social, and environmental benefits of wooded areas and trees in urban areas. The second provides land-use approaches to promote conservation of ecosystem integrity and functions of wooded areas throughout the landscape. The third and fourth provide step-by-step, site-specific land development approaches and site options to minimize site disturbance and construction damage to trees during development at subdivision and lot levels. The fifth presents an overview and new, context-sensitive design for transportation systems and utility infrastructure that should be considered at all levels.
2 Introduction

Figure 1. A balanced development approach includes the conservation of wooded areas and other natural resources as shown on the aerial view to the left but not their complete destruction as shown on the aerial view to the right.
of development. The BMPs presented in the five sections are equally important for the conservation and protection of wooded areas and individual trees.

**Current status of wooded areas in developing communities**

Wooded areas are complex ecosystems in which trees are the dominant life form interacting with animals and other plants in a delicate balance. In Minnesota, wooded areas are comprised of native deciduous forests, coniferous forests, shrublands forests, and mixed hardwood-coniferous forests.

Although urban areas are covered with shade trees, existing wooded areas are being fragmented and lost at rapid rates. This is the result of inefficient land-use practices for urban development and a lack of holistic approaches to incorporate forested communities into land-use planning, as well as the lack of implementation of reasonable reforestation efforts.

The extent of this destruction and fragmentation can be seen by comparing the presettlement vegetation map with the 1977 recent vegetation map (Figure 2). The comparison shows a significant reduction of the woodlands within the corridor encompassing Rochester, the Twin Cities area, and St. Cloud.

Local and regional units of government should work cooperatively and proactively with landowners, developers, builders, nonprofit organizations, and citizens to conserve
Figure 2. Complete loss and fragmentation of woodlands are demonstrated by comparing the area they once occupied, as shown in the pre-settlement vegetation map, to the areas they occupied in the vegetation map of 1977 (a, b). Note that the 1977 vegetation map is more than 20 years old and more forest land has since been converted to development.
remaining wooded areas. Cooperation can be demonstrated when counties, cities, or townships develop their comprehensive plans and zoning ordinances and also during construction.

**About the BMP guidelines**

The BMPs provided in this guidebook are voluntary guidelines; they do not supersede existing local, state, and federal laws. They are designed to provide city planners, developers, builders, utilities, and contractors with a framework of action to be taken before, during, and after development to increase the protection and conservation of wooded areas.

The BMPs can be effective if they are accompanied by:

- the goodwill and right attitude of all participants involved in land development (Figure 3),
- proactive planning and use of appropriate land protection options, and
- participation of natural resource professionals (e.g., foresters, arborists).