Introduction*

This publication – ***NEMO Guide to Natural Resource-Based Planning*** – is intended to provide an overview of principles and practices to guide local planning commissions and councils as they weigh the decisions of what to preserve and where to develop.

During the last decade, Delaware experienced high rates of growth in all three counties, with major growth occurring in coastal Sussex County, southern New Castle County, and the Dover area. According to the Delaware Population Consortium, the state as a whole grew 18 percent, while Sussex County grew 38 percent. Current trends, including an increasing U.S. population, strong consumer demand for coastal properties, low taxes, and a steady economy, indicate that the population and the number of homes and businesses in Delaware will likely continue to expand, with another 16 percent growth expected between 2005 and 2020. How this growth will occur – and how to minimize undesirable consequences on our natural resources and community character – is the subject of this manual.

In the countryside, residential developments are springing up adjacent to wetlands, at the headwaters of streams, and along coastal bays. In beach communities, "mega-houses" with footprints that approach their lot dimensions are replacing modest cottages. Wide roads are replacing country lanes to accommodate the increase in vehicles. From a natural resource perspective, this type of development can destroy natural habitat, contribute to surface and groundwater pollution, and increase impervious surface areas, which leads to increased stormwater runoff. The cumulative impact of this growth contributes to the disruption of our landscape, the degradation of the state's water quality, and a reduction in biodiversity, as well as a loss of local community character.

While federal and state natural resource statutes and regulations provide some measure of protection, it has been much more difficult to regulate the diffuse nature of nonpoint pollution, or polluted runoff, than it is to regulate what comes out the end of a pipe. In fact, the most pressing water quality problems facing our streams, bays, and coastal ocean are largely nonpoint pollutants – including nutrients, bacteria, and suspended solids – that run off rooftops, roads, lawns, and farms. Municipalities and towns have the ability to improve water quality and natural resources through land-use ordinances and decisions.

As a local elected official or planner, you are in a position to help direct growth where and how it is most appropriate. The NEMO message is that natural resources and community character can be protected while accommodating compatible growth.

NEMO, the acronym for Nonpoint Education for Municipal Officials, derives its name from its emphasis on educating local decision makers – those community members who serve on county or municipal boards, commissions, and councils – about nonpoint source pollution and how the land-use decisions you make affect water quality and other natural resources. NEMO is first and foremost an educational program. It is targeted specifically at local land-use decision makers. Its goal is to give you the knowledge and

*The introduction is based on "NEMO Strategies" in *NEMO Project Fact Sheet 4: Strategies for Coping With Polluted Runoff,* by Chester Arnold, 2002.

understanding that will allow you to make better decisions about development, while minimizing the impact on water and other natural resources. Its message is, "Good planning is the key to charting a community's future course."

The guiding principles of natural resource protection can be organized in a four-tiered approach, which can be summarized as plan, minimize, mitigate, and maintain. The purpose of this manual is to offer tools and approaches to help you plan your community with an eye on protecting those natural resources – particularly water resources – that your community cherishes. The approach is simple and straightforward:

1. Plan Development Based on Your Community's Natural Resources

While the acronym "BMPs" generally refers to "best management practices," a compelling alternative definition is "better and more planning." *Pollution prevention through good planning is usually the least expensive and most effective way to protect natural resources.* Knowing where your special places and natural resources are will help you determine how to guide development to the most suitable places. Conducting a natural resource inventory, if one has not already been done, is a critical first step. Chapter 1 – Natural Resource-Based Planning and Appendix A will guide you through this process and provide you with links to much of the data that is currently available.

Conducting a resource inventory is also a great way to learn more about your community's resources. Identifying important natural resources and setting protection priorities provides a framework within which the impacts of a proposed or existing development can be evaluated. Formal inclusion of these priorities in municipal or county plans or procedures is important. Developing broad resource protection strategies, to be applied at either the municipal or watershed level, can be an effective approach to protecting areas adjacent to water resources. An example of such a strategy is the creation of a riparian buffer zone (see Chapter 3).

An example of a planning tool that has become widely used as an indicator of water quality degradation is *impervious land cover analysis.* Impervious cover refers to surfaces that do not absorb water, such as paved roads, parking lots, driveways, sidewalks, and rooftops. Studies have shown a direct relationship between the percent of impervious cover and the degree of water quality damage in the watershed. This tool is useful to consider at the site level; the more impervious cover, the greater the need to minimize and mitigate the potential impact of increased stormwater flow off the site (see Chapter 2).

2. Minimize Impacts Through Site Design

The site design stage offers the best chance for local officials, architects, and builders to work together to reduce polluted runoff from a site. Evaluate site plans with an eye toward minimizing both impervious areas and disruption of natural drainage and vegetation. Cluster development and conservation design – which reduce the total areas of paved surfaces and increase open space – should be considered. Designs which reduce grading and filling and retain natural features and hydrology should be encouraged. In addition to protecting water resources, these designs can be aesthetically pleasing and less costly.

In Delaware, larger development projects are also required to submit a proposed plan to the Office of State Planning Coordination through the PLUS process (Preliminary Land Use Service). The PLUS process involves reviews by all applicable state agencies at the

start of the land development process, adding value and knowledge to the process local governments use to make land-use decisions. The purpose of PLUS is threefold:

- ∑ To identify and mitigate potential impacts of development which may affect areas beyond local boundaries;
- ∑ To fully integrate state and local land-use plans; and
- ∑ To bring state agency staff together with developers and local officials early in the process.

See Chapter 7 for a more detailed explanation of PLUS.

3. Mitigate Unavoidable Impacts by Using Best Management Practices

Best management practices (BMPs) include a whole range of methods designed to prevent, reduce, or treat stormwater runoff and to mitigate other impacts of development. BMPs can be very effective at reducing development impacts. Choosing the correct BMP is often highly specific to the site. Things to be considered in selecting what mitigation method is most appropriate include the natural features of the site and the management structure of the property. For example, a flat, dry field would require different stormwater management than a site with a steep slope bordering a stream. The management structure of the property can play into the decision of what mitigation method is most appropriate; a BMP that requires regular and potentially expensive maintenance may not be the best alternative over the long run if the property is to be managed by a homeowners' association or small municipality.

Enforcement (ensuring that BMPs are built as designed) and *education* (raising community awareness about why and how BMPs work) are the key pieces that will ensure that the BMPS perform their mitigation functions as intended well into the future.

4. Maintain Existing Best Management Practices

The last step in the process is one that is often overlooked. Without a commitment to maintenance, even the best BMPs will lose their effectiveness over time. Whether it's a riparian buffer, open space, a stormwater management pond, or the latest in green technology, there should be an up-front plan on how it will be maintained, who will maintain it, and how it will be paid for. The review and approval of a maintenance plan should be part of a local land-use approval process.

Using This Guide

The chapters in this manual present the issue being addressed, provide a short explanation of why it is important to address it, present the relevant BMPs, and discuss some of the tradeoffs involved. An important part of each chapter is a list of questions for you to ask either yourselves or the developer as you devise land-use ordinances or review proposed projects. The chapters also provide a list of resources, which can provide additional information or assistance. The chapters are structured as follows:

- ∑ Chapter 1 – Natural Resource-Based Planning
- ∑ Chapter 2 – Impervious Cover
- ∑ Chapter 3 – Maintaining Riparian Areas and Wetlands
- ∑ Chapter 4 – Planning for and Managing Open Space and Natural Areas

- ∑ Chapter 5 – Managing Stormwater
- ∑ Chapter 6 – Source Water Protection
- ∑ Chapter 7 – The State's Role in Sustainable Development
- ∑ Chapter 8 – Resources for Writing Ordinances that Protect Natural Resources

This manual is not intended to make you an expert, but by being able to ask the right questions at the appropriate stage of the planning process, you have the greatest potential to influence the developer, minimize the environmental impact of the proposed development, and maintain the quality of life within your community.