

Appendix E. Process of Developing the Model Stormwater Program

The Neuse Stormwater Team has played a key role in developing the model program for controlling nitrogen from urban stormwater in the Neuse basin. Local governments have worked in cooperation with DWQ staff to create a model program that is technically sound and implementable. In summer 1999, this program, along with the Team's recommendation, will be submitted to the Environmental Management Commission for their approval. Once approved, the program will serve as a model for all municipalities and counties in the Neuse River basin that are required to develop a local stormwater program for nitrogen control.

The team met once a month, usually on the third Thursday, to develop the model program. Different local governments hosted each meeting in their jurisdiction's facilities.

The participants agreed to the following responsibilities as team members:

1. Follow-through on commitments to the Stormwater Team, including completing background reading, preparing information and reviewing team proposals.
2. Report back to the jurisdiction/group they are representing on the progress of the Stormwater Team and bring feedback back to the team.
3. Provide constructive input into the strategies that are developed by the Stormwater Team.
4. Work within their appropriate realm of influence to contribute to the successful implementation of the local stormwater program developed by the Stormwater Team.
5. Host at least one stakeholder meeting if possible.

The deliverable of the Neuse Stormwater Team is this model stormwater management program, which will consist of the following:

1. A model program for evaluating new developments to determine if they meet nitrogen control standards.
2. Model criteria for identifying appropriate retrofit sites.
3. Guidance for implementing an illegal discharges program.
4. A model educational program to reduce nitrogen in urban stormwater.

Team members divided themselves into three workgroups as follows:

- New Development Review/Approval
- Public Education
- Stormwater Retrofits/Illegal Discharges

The majority of the work involved in gathering information and formulating proposals occurred in the three workgroups. Each of the workgroups had a “facilitator” (either from the Division of Water Quality or the Cooperative Extension Service) who was be responsible for keeping discussions running smoothly. The workgroups will be largely responsible for setting their agendas and priorities. However, they also had input from the larger team.

All decisions about the model stormwater program were made in a forum that included the entire team. All decisions about the model program were made by consensus.

The Stormwater Team met at least once a month between March 1998 and June 1999. During that time, the team developed the model stormwater program. The model was presented to the Water Quality Committee (WQC) on July 7, 1999. The WQC, upon the recommendation of some of the stakeholders, requested that the team reconvene for an additional 60 days to resolve some outstanding issues. The Stormwater Team and the workgroups held several meetings in July and August. All outstanding issues were resolved to the satisfaction of the stakeholder representatives in attendance at the final meeting on August 27, 1999, including (a) staff members representing the affected local governments; (b) DWQ staff representatives; and (c) representatives of other stakeholders. The model will be presented to the WQC on September 8, 1999. Upon their approval, the plan will be presented to the Environmental Management Commission (EMC) for final approval on September 9, 1999.

The Stormwater Team will continue to meet at a minimum of once a year in August (before the annual reports are due). The team may meet more often if it so chooses.

Approach for Meeting the New Development Review/Approval Requirements

At an early meeting, the New Development Workgroup set up some goals they called “yardsticks” for their model program. These yardsticks, or RUMBA, are the criteria that the workgroup expects the model stormwater program to meet. These goals shaped the discussion and decisions of the New Development Workgroup on issues regarding regulation of new development. The yardsticks are listed in Table E1 below.

Table E1: Yardsticks for the New Development Workgroup

Reasonable	<ul style="list-style-type: none">• Acceptable to Community• Flexible• Cost-effective
-------------------	---

Understandable	• Can be translated into specific technical guidance
Measurable	• Meets the intent of the rule
Big Picture	• Provides incentives for planning • Consistent with existing regulations • Considers future regulations • Considers other issues like transportation, safety, air quality, etc.
Achievable	• Implementable • Enforceable • Can be maintained

One of the challenges that the New Development Workgroup faced was information management. The workgroup’s responsibility was to ensure that new development meets the rule requirements, including specific nitrogen export goals. There were two important tasks that the workgroup had to complete in order to meet the rule requirements:

1. Quantifying the nitrogen loading from different types of urban land uses.
2. Quantifying the nitrogen reductions that can be expected from various types of management practices.

The workgroup quickly found that it did not have ideal information to make these crucial decisions. Much of the data on the nitrogen loadings from urban areas covered fairly large and diverse watersheds and was not readily translated to individual developments. Additionally, some of the data was over 20 years old and some was collected from different regions of the country that the workgroup believed may not apply readily to the Neuse River basin. In addition, each study collected data on different forms of nitrogen and, in some cases, the workgroup believed that monitoring techniques were suspect.

The workgroup decided to utilize nitrogen loading data collected from the municipalities in this region of the state with populations exceeding 100,000. These municipalities are currently required to have a federal NPDES permit for their stormwater collection and discharge systems. One of the requirements of their permits is a stormwater monitoring program. The subject municipalities selected monitoring sites that represent specific types of urban development; for example, low and high density residential, commercial and industrial. Besides being applicable to this region and representing specific types of development, the large municipalities’ monitoring data was all less than five years old.

Determining the nitrogen removal expected from BMPs was also a challenge. As Chapter 2 describes, nitrogen is a difficult pollutant to remove once it has entered the environment. The only way to completely remove it from the system is through denitrification. Denitrification requires a chain of natural events that is dependent on the presence of denitrifying bacteria, organic material and appropriate levels of oxygen, water table and temperatures. It is difficult to ensure that stormwater BMPs installed in a natural system consistently achieve high nitrogen removals.

Based on their research, the workgroup concluded that one of the best ways to manage nitrogen is NOT to remove it after it is transported from a development, but to design the new development to reduce the transport of nitrogen away from the development. Based on the information presently available, the group concluded that the nitrogen load that development transports to surface waters can be reduced by permanently protecting open space in the development and reducing the amount of impervious surface in a development.

The workgroup collected data on different types of BMPs based on studies conducted in the Southeast (states of MD, VA, NC, SC and FL). The credit given for nitrogen removal is equivalent to the average of the removals found in various studies. As the charts in Section 5-E show, the removal rates found from similar BMPs vary widely in different studies.

The workgroup also discussed maintenance of BMPs. There was consensus that maintenance of BMPs is vital to their ongoing performance and that this will not be accomplished without appropriate policies in place.

Approach for Meeting the Illegal Discharge Requirements

In crafting the model program for Illegal Discharges, the Neuse Stormwater Team relied heavily on the experiences of the communities that have already been implementing Illegal Discharge programs under their Phase I NPDES Municipal Stormwater Permits (Raleigh and Durham). The main goal of the team was to find the most cost-effective and efficient means of preventing, identifying and removing Illegal Discharges.

The team's goal for a cost-effective and efficient program is reflected in the following aspects of the model Illegal Discharges program:

- Local governments are not being asked to create new maps of their jurisdictions showing locations of infrastructure, land uses, surface waters, etc. Instead, they are required to compile existing information so it can be consulted efficiently when needed.
- Each year, local governments are required to select a high priority area (consisting of at least ten percent of their jurisdictions) where they will focus their mapping and field screening efforts. The stormwater collection system mapping and field screening will be done only in the high priority areas, not across the entire jurisdiction. This approach also attempts to build in equitability in that the size of the high priority area will be proportional to the size of the overall jurisdiction.
- Local governments are required to establish an Illegal Discharges Hotline. This effort requires minimal resources but, based on the experiences of Raleigh and Durham, is effective at identifying illegal discharges. When the discharge is of an episodic nature, it may be the only way to identify an illegal discharge.