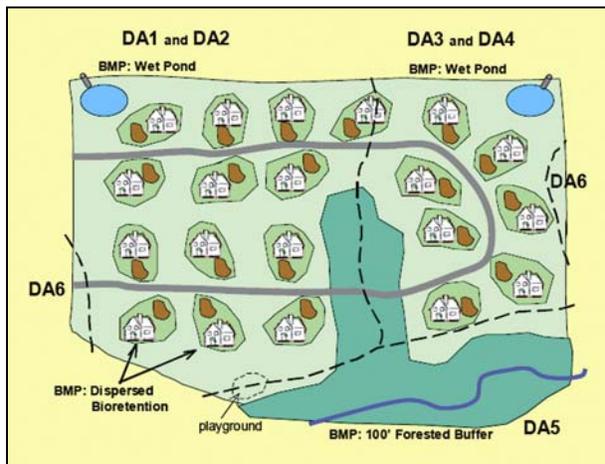


Technical Memo: UPPER NEUSE SITE EVALUATION TOOL PROJECT

Introduction

The Upper Neuse River Basin Association and the North Carolina Division of Water Quality have begun developing the Upper Neuse Site Evaluation Tool (SET). The SET is a simple predictive stormwater management tool for local governments, site developers, or anyone wanting to use more innovative stormwater management. The SET will be available by fall 2004.

What is the Upper Neuse Site Evaluation Tool?



Conceptual depiction of bioretention ("rain gardens") for stormwater treatment (from Tetra Tech, Inc.)

The SET is a simple Microsoft Excel program that allows anyone developing or redeveloping a site to predict the development's stormwater quality and quantity effects. The SET predicts pre- and post-development:

- Total stormwater volume
- Total suspended solids (sediment)
- Total nitrogen
- Total phosphorous
- Fecal coliform

The SET requires only basic site information and can be used early in the planning stage to help make wise choices or avoid environmental mistakes. This way, changes can be made before the developer has invested in a particular site design.

Who will use the Upper Neuse Site Evaluation Tool?

The SET is useful for anyone who wants to protect water resources on a site to be developed, including local government site review planners, professional developers, stormwater engineers, or even local watershed protection groups looking for stormwater restoration opportunities. The SET will be publicly available for anyone with a little stormwater knowledge and training.

Project Partners

Upper Neuse River Basin Association
NC Division of Water Quality
NCSU Cooperative Extension
Triangle J Council of Governments
City of Durham Stormwater Services
Wake County Environmental Services
City of Raleigh Stormwater Services
Orange County Sediment and Erosion Control
Town of Cary Stormwater
Raleigh/Wake Co. Homebuilders Association
Tetra Tech, Inc. (technical consultants)

The need for a Site Evaluation Tool

Local governments throughout North Carolina are increasing standards for stormwater management as a response to various stormwater regulations, including the federal NPDES Phase I and Phase II requirements, the Neuse River nitrogen reduction rules, and the Tar-Pamlico nutrient reduction requirements. Some larger communities are grappling with the daunting task of restoring watershed functions or meeting Total Maximum Daily Load (TMDL) requirements through retrofitting sites. A few local governments are even considering innovative,

performance-based stormwater management beyond state and federal requirements. In the Upper Neuse Basin, local governments have completed a Watershed Management Plan¹ that recommends adopting environmental performance standards for nitrogen and phosphorous, educating ourselves about stormwater Low-impact Development (LID), and fixing existing stormwater problems. The SET is potentially useful for implementing such approaches.

Environmental performance standards are limits set on the amount of a particular agent (pollutant, increased flow, etc.) an ecosystem can tolerate. Performance standards for aquatic systems are based on our best scientific knowledge about the level of pollution tolerable to the system. Implementing such performance standards is not a simple matter. In order to meet the standards, we can use predictive tools like the SET, which allow the user to:

- Evaluate new development proposals for compliance with the performance standard;
- Screen for opportunities to improve existing stormwater problems (e.g., "retrofits" required under federal stormwater regulations);
- Estimate the effectiveness of proposed stormwater best management practices (BMPs) early in the site planning stage;
- Estimate the costs of various stormwater BMP configurations; and
- Educate the development community about innovative techniques such as stormwater LID.

How the SET works: the Upper Neuse Basin example

Step 1: Community adopts nitrogen or phosphorous performance standard recommended in the Upper Neuse Watershed Management Plan. Along with the new ordinance, the community will need an approved design manual (for example, the State Stormwater Manual).

Step 2: Community reviews all new site development proposals using the Upper Neuse SET.

Like the current spreadsheet used for nitrogen control in the Neuse Basin, the Upper Neuse SET is used during the site review process and requires only basic site information. The tool provides information about total pre- and post-development runoff volume, total suspended solids, nitrogen, phosphorous, fecal coliform, and cost estimates for proposed stormwater BMPs.

Step 3: If the proposed development does not meet the N or P performance standard, the developer must redesign the project in a manner that will comply. The Upper Neuse SET allows the site reviewer and developer to analyze various best management practice configurations, their benefits, and their costs.

Step 4: If the proposed site meets the N & P standards, the site approval process continues.

In addition, the Upper Neuse SET is useful to stormwater managers attempting to comply with federal (NPDES) stormwater retrofit requirements. A potential retrofit site can be "redesigned" and evaluated in the same way as a new site.

For questions or information regarding the Site Evaluation Tool, please contact:

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¹ The Upper Neuse Watershed Management Plan can be viewed and downloaded from www.unrba.org