Water Quality Model Comparison

SNAP (Stormwater Nitrogen and Phosphorus) Tool

The SNAP tool is an excel based, project-scale tool. SNAP can be used to model nitrogen and phosphorus in stormwater runoff from development sites and/or reductions provided by stormwater treatment. SNAP was developed by NC Division of Water Resources (DWR) and replaces the Jordan/Falls Lake Stormwater Nutrient Loading Accounting Tool. The tool is not suitable for any project area larger than 1 mi^2. This tool estimates nutrient loading from storm flow only not including loading from baseflow. It is more suitable for urban project areas.

https://deq.nc.gov/about/divisions/water-resources/planning/nonpoint-source-management/nutrient-offset-information#stormwater

STEPL (Spreadsheet Tool for Estimating Pollutant Load)

STEPL is a spreadsheet model that employs simple method/algorithms to calculate nutrient and sediment loads from various land uses and the load reductions that would result from the implementation of best management practices (BMPs). The annual nutrient loading is calculated based on the runoff volume and pollutant concentrations in the runoff water as influenced by factors such as the land use distribution and management practices. The tool also offers a groundwater component to estimate nutrient loading at the baseflow level. The annual sediment load is calculated based on the Universal Soil Loss Equation (USLE) and the sediment delivery ratio. The sediment and pollutant load reductions that result from the implementation of BMPs are computed using the known BMP efficiencies. Additionally, this tool can estimate nutrient and sediment loading from multiple watersheds. It is more suitable for rural nature watershed areas, and the tool is not suitable for any project area larger than 1 mi^2.

http://it.tetratech-ffx.com/steplweb/default.htm

Quantifying Benefits to Water Quality from Livestock Exclusion and Repair Buffer Establishment from Stream Restoration (NC Division of Mitigation Services)

There are two empirical equations that estimate annual nutrient (total nitrogen and total phosphorus) removal from buffer establishment from stream restoration projects in agriculture (row crop) areas or pasture areas. The annual rate of nutrient removal is based on the documentation of "NC Division of Water Quality – Methodology and Calculation (1998) for determining nutrient reductions associated with Riparian Buffer Establishment.". Fecal coliform reduction due to livestock exclusion can be estimated by two other empirical formulas in the document.

Estimating Nutrient and FC Reductions: How-To Guide
FC Attenuation by Riparian Buffers

Storm-EZ

Storm-EZ is a spreadsheet-based tool designed for stormwater permitting and approved by NCDEQ DEMLR. Storm-EZ is based on the NRCS Discrete Curve Number Method and current research on Stormwater Control Measures (SCMs). The tool can be used to estimate stormwater runoff reduction by implementing certain SCM. However, the list of SCMs are mainly for urban stormwater control. So, usefulness of this tool on mitigation projects may be limited.

https://deq.nc.gov/about/divisions/energy-mineral-land-resources/energy-mineral-land-permit-guidance/stormwater-lid-storm-ez