# Debut of SNAP 4.2.25 (version for public comment)

## SNAP Overview – for those not so familiar with SNAP, focused on uses for New Development Stormwater (there are other users…)

Review of NC nutrient calculators & methods

* Rules using nutrient calculators - development stormwater, also agriculture
* Tool purposes and approaches:
  + estimate project-scale average annual export of nitrogen (and phosphorus) via stormwater runoff from developed sites
  + Rules are “tuned” to singular greenfield development – processes will be clunky with redevelopment/expansion
  + accounting of some sort specified in NMS Stormwater Rules, some Rules more specific than others
  + New Dev Rules use a “pounds accounting approach” to nutrient management and rule compliance which encourages ever-more-refined calculation methods
  + In contrast to other performance targets (e.g. runoff volume) or minimum measures approach
  + Pounds accounting allows greater flexibility for local design decisions (“site specific”) and nutrient trading
  + site-specific / design flexibility tradeoff is that compliance is not simple to achieve
* Neuse methods – uses simple curve of % density vs nitrogen export, uses % reduction approach for SCM performance
* Tar-Pam tool – first to use Scheuler’s load estimation based on the Simple Method, also uses % reduction approach for SCM performance
* Jordan-Falls Tool (JFLSNLAT) – similar load estimation, but uses 2-part SCM performance estimation via hydrologic performance (volume reduction w/nutrient reduction) and “measure of central tendency” – observed behavior in treated effluent concentrations of different types of SCMs (very similar to Int’l SW BMP DB), new landcover nutrient export and new SCM performance based on scientific research
* SNAP 4.1 – incorporates ability to under/oversize SCMs, new landcover nutrient export and new SCM performance based on scientific research
* Each change in calculation method means changes in results, but becoming better supported by science over time, attempt to coordinate Tool revisions with Rule changes to minimize calculation conflicts with earlier development

Basic SNAP 4.2 Walkthrough

* Calculation Process:
  + Pre-treatment load estimation:
    - Annual runoff volume \* landcover-specific nutrient concentrations ​
    - Aggregated into annual load N and P (lb/ac/yr)
  + Post-treatment load estimation:
    - Inflow partitioned through SCM to hydrologic fates ​
    - Effluent - fixed concentrations, SCM-specific
* Additional data collected for reviewing agency to determine Rule applicability and targets
* Review of each sheet (review purpose, do quick data entry example)
  + How-To SNAP
  + Project Info sheet
  + BUA Tracker
  + Land Cover Characteristics
  + SCM Characteristics
  + Nutrient Export Summary
  + Nutrient Offset
  + CSV

Release and training schedule

* Comment period and how to participate – URL, email, listserve
  + Needed feedback – expected/desired functions, ease of use, does it address issues with v4.1?, BUA tracker
* Planned release to coincide with SCM Credit Doc
* 3 to 4 hour local government virtual training (recorded)
* Possible 2 hour consultant training in cooperation with NCSU BAE

## SNAP 4.2 Deep Dive – for those who want to know what’s different and why

Review of significant changes from Version 4.1 (current version)

* A flow-chart to explain data entry for different kinds of users
  + explain why, request feedback
* Updated for revised Neuse and Tar-Pamlico Stormwater Rules
  + Adds several data entry fields
  + Tried to simplify from SNAP v4.1 to reduce “shock” from moving from Tar-Pam tool to SNAP
* Reorganized data collection to enable easier review of data entry and detection of errors
  + Collects all essential data onto 2 sheets (must enter to get any results, even non-regulatory)
  + Collects data related to NMS onto another sheet, all in one place for LG review
  + Extensive data entry error checking all summarized on Nutrient Summary sheet
* Ability to track nutrient contribution from offsite run-on and existing BUA
  + eliminates need to run Tool multiple times to handle runoff from “unregulated landcovers”
  + may still require detailed instructions on interpretation of results, need LG feedback
* A Built-Upon Area “tracker” to help determine Net Change in BUA after repeated development
  + requested by LGs but we need a lot of input on usability
* Incorporates draft updated SCM nutrient removal EMCs from the 2022 draft DEMLR/DWR SCM Credit Document
* Removal of Excel macros to reduce security risk and eliminate known bugs from previous version. What does this mean?
  + Most crashes and buggy behaviors the result of macros
  + No longer poses a security risk, does not require trust of DEQ as author
  + All buttons had to be removed (moving to other sheets, clearing sheets, printing sheets)
  + No more import/export function, but retained CSV sheet with a data dictionary for easier linking to other data management (DBs, spreadsheets)
  + No more determination of Rule applicability, nutrient targets, buydown thresholds, nutrient treatment balance – buggy, often conflicts with local requirements, hard to implement without macros
* Additional changes:
  + Modified to be B&W for color-blind users
  + More flyover popups to explain data entry
  + Data dictionary and named fields for CSV sheet to enable long-term connectivity

New SNAP features and behaviors – sheet by sheet

* How-To SNAP
* Project Info sheet
* BUA Tracker
* Land Cover Characteristics
* SCM Characteristics
* Nutrient Export Summary
* Nutrient Offset
* CSV

Things we’re not doing for this version:

* Runoff volume match / curve number method (integration with StormEZ)
* Incorporating different “local nutrient rulesets” – i.e. ability to blend in local nutrient requirements that are different from the State’s. At this time, local governments with this situation will need to guide users through use of SNAP for meeting these different local requirements.
* Projects that already have an existing SCM. A calculation method should be discussed for these situations.
* Projects with common plan of development that have repeated, separate episodes of development (such as large institutions) that span across several decades are still very difficult to model with SNAP, and generally are not well accommodated by 02H or 02B stormwater regulations. Problems are often encountered when going between old calculation methods and new calculation methods. One method is to use an “area of concern” that is only a portion of the parcel, this calculates a new total impervious area that is a proportionate approach.
* Lot size - avg land cover converter
* Dwelling unit/ac - avg land cover converter
* Ability to determine SCM retrofit uplift from running tool once rather than running tool twice (i.e. if you are modifying an existing SCM) – cannot be modeled directly.
* Online tool – will need to explore what types of online options technically, types of online options practically (IT support, funding), process for LGs (can it be generalized enough) – definitely need a user workgroup to define objectives if there is sufficient interest