

Fact Sheet

Pollutant Loading Modeling Environment— **AGNPS**

United States
Department of
Agriculture

Natural Resources
Conservation
Service

Agricultural
Research Service

Agricultural Non-Point Source Pollution Modeling System – Continuous Version

May 2004

Developers

U. S. Department of Agriculture, Natural Resource Conservation Service and Agricultural Research Service.

National Model Leaders

Fred Theurer, NRCS Lead Scientist, National Water & Climate Center, 7413 Cinnabar Terrace, Gaithersburg, Maryland 20879-4575, and **Ron Bingner**, Agricultural Engineer, USDA-ARS-National Sedimentation Laboratory, 598 McElroy Dr., POB 1157, Oxford, Mississippi 38655. Information requests, copies of the model, and model documentation can be directed to the **AGNPS** WEB site at: <http://www.sedlab.olemiss.edu/AGNPS.html> or call Fred at 301-869-7195 (email: Fred.Theurer@verizon.net) or Ron at 662-232-2966 (email: RBingner@msa-oxford.ars.usda.gov)

Description

The **AGNPS** PL modeling environment is comprised of several modules enabling users to develop appropriate input parameters for evaluations of best management practices using simulations for their watershed system. **AnnAGNPS** is the pollutant loading modeling module designed for risk and cost/benefit analyses. **AnnAGNPS** is the next generation **AGNPS 5.0** model developed by USDA. **AnnAGNPS** is a batch-process, continuous-simulation, surface-runoff, pollutant loading (PL) computer model written in standard ANSI Fortran 95. The model was developed to simulate long-term sediment and nutrient transport from agricultural watersheds. The basic modeling components are hydrology, sediment, nutrient, and pesticide transport. Land area (cell) geometric representations of a watershed are used to provide landscape spatial variability. Each cell homogeneously represents the landscape within the respective cell boundary. The physical or chemical constituents are routed from their origin within a cell and are either deposited within the stream channel system or transported out of the watershed. Pollutants can then be identified at their source and tracked as they move through the watershed system.

Uses

AGNPS can be used to evaluate the long term impact of non-point source pollution from agricultural watersheds. Effects of implementing various conservation management alternatives within the watershed can be evaluated. The loadings predicted are: (1) water; (2) sediment by particle size class & source of erosion; and (3) chemicals—nitrogen, phosphorus, organic carbon, & pesticides. PL's are generated from cells and routed through stream systems on a daily basis. Special land use components such as feedlots (nutrients), gullies (sediment and chemicals), and point sources (water and nutrients) are included.

Features

- Loading, transport, and tracking of pollutants from their source to the outlet of a watershed system.
- Nutrient concentrations from feedlots and other point sources can be simulated.
- Individual feedlot potential ratings can be derived.
- A graphical program allowing the automatic determination of cell boundaries, flow routing, and channel properties. This program utilizes topographic analysis tools using readily available DEM's.
- A graphical input data preparation editor facilitates data input and revisions.
- An **AGNPS 5.0** to **AGNPS** input data converter, allowing backward compatibility with previously developed databases for **AGNPS 5.0** or with the **USDA–NRCS HU/WQ** interface.

System Requirements

AGNPS is expected to run on any PC (386 or higher) under Windows 98, NT, 2000, or XP. Actual memory requirements are dependent upon number of cells selected. A practical minimum memory limit would be 2MB for user data entry and 3 MB for **AnnAGNPS**.

Planned Developments

The following components are planned as enhancements to **AGNPS**:

- Advanced channel evolution and stream corridor restoration capabilities provided through the integration with **CONCEPTS**
- Riparian, wetland and lake water quality components.
- Integration of NEXRAD technology.
- Land–atmosphere exchanges needed for global climate change evaluations.
- Completion of the Arcview GIS watershed modeling environment.

The United States Department of Agriculture (USDA) prohibits discrimination in its programs on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, and marital or familial status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact the USDA Office of Communications at (202) 720-5881 (voice) or (202) 720-7808 (TDD).

To file a complaint, write the Secretary of Agriculture, U.S. Department of Agriculture, Washington, DC 20250, or call (202) 720-7327 (voice) or (202) 720-1127 (TDD). USDA is an equal employment opportunity employer.