Rick L. Day
Bob Neiderer

Assoc. Prof. Soil Science and Environmental Information Systems
Department of Crop and Soil Sciences
Penn State University
Pa One Stop provides online tools to help farmers meet regulatory requirements for Conservation (Ag E&S) and Nutrient Management Planning.

- Farm Mapping Module – allows farmers to develop maps that are required for Nutrient Management Planning, Nutrient Balance Sheets, Manure Management Plans, AgE&S Plans

- Ag E&S Module – allows farmers to develop AgE&S Plans to reduce soil loss and protect water quality

- Manure Management Planning prototype module under development.
Pa One Stop is being developed by Penn State Cooperative Extension in collaboration with and support from:

- Pa State Conservation Commission
- Pa Dept of Environmental Protection
- Pa Dept of Agriculture
- Pa Dept of Environmental Protection
- USDA Natural Resources Conservation Services
- Chesapeake Bay Foundation
- National Consortium for Rural Geospatial Innovations in America
Pa regulations require completion of Nutrient Balance Sheets for manure transfers, Nutrient Management, Manure Management, and Ag E&S Plans for farms.

Methods to complete Nutrient Balance Sheets, MMPs, and NMPs are available to farmers but require maps as part of the process.

Maps are expected to contain field boundaries, acreages, stream and water features, wells, sinkholes, application setbacks and buffers, soils, aerial images and more.

Production of maps is difficult for most farmers and costly.
Welcome to the PAOneStop.org Website!

*Start Mapping Now*
(PAOneStop is optimized for Mozilla Firefox. This is a free download. Get firefox now.)

About PAOneStop
PAOneStop provides online tools to help farmers meet regulatory requirements for Conservation and Nutrient Management Planning. Development of PAOneStop is ongoing and will be released to the public incrementally.

The first module of PAOneStop is a Nutrient Management Mapping Module. This module provides a tool to extract data and generate high quality maps that are required for completion of Nutrient Balance Sheets and Nutrient Management Plans.

The second module within PAOneStop, and currently under development, will provide tools to assist farmers in developing Conservation Plans (erosion and sedimentation, E&S) to meet regulatory requirements, reduce soil loss, and protect the water quality.

Who is Supporting PAOneStop?
PAOneStop is being developed by Penn State Cooperative Extension Land Analysis Lab in collaboration with and support from:

- PA State Conservation Commission
Username

Password

Data secured and not shared

Data stored on server for future access and editing
User Accounts

- Locate farm using address and Google maps
- Map as many farms as you like
Mapping and Planning – 5 steps

1. Edit Farm Location
2. Draw / Edit Fields
3. Draw / Edit Features
4. Maps
5. AG E&S
Step 1: Locate Farm

- Address, GPS coordinate, or imagery location
Step 2: Draw and Label Fields

- Outline field boundaries
- Describe fields
- Acreages automatically calculated
- Fields can be added, edited, or deleted as needed.
- Air photo background automatically provided
Field boundaries can be edited and resaved

Errors can be deleted
Extract Soils for Fields

USDA-NRCS SSURGO soils data extracted via web for each field

- soil types
- soil properties
- acreages

updated after each field edit automatically
Step 3: Draw Farm Features

- Draw other farm features needed for map
  - water wells
  - sinkholes
  - streams
  - manure staging areas
  - non-farmed areas of fields

Generate Manure setbacks

Generate Buffers
Determine Unsuitable Acreages

Edit Fields for Lancaster

Click on the button below to trace a farm field on the map to the right. You will need to click this button each time you add a field to the map.

Field ID: 4
Map Label: a
Description:

- Field area: 15.91 Acres
- Area within setbacks and buffers: 1.47 Acres
- Area suitable for manure application: 14.44 Acres

Total Farmable Acres: 101.22
Total Suitable Acres: 93.94
Step 4: Create Maps

Select features to appear on map
Only impacted fields need to be mapped
Hide any field or feature not needed for map
Select background for map
- air photo
- topography
Generate Maps

- PaOneStop generates maps on air photo or topographic base maps
- Farmers can save maps for reference
- Farmers can save farm data for future mapping
- Only need to draw fields and farm features once
written E&S Plans for all “agricultural plowing and tilling activities” greater than 5,000 square feet that must:

- limit soil loss from accelerated erosion to the soil loss tolerance (T) over the planned crop rotation
- contain additional BMPs for fields within 100 feet of river or perennial or intermittent stream and less than 25% plant or residue cover
- contain plan maps that show the location of features including surface waters of this Commonwealth, and drainage patterns, field and property boundaries, buildings and farm structures, animal heavy use areas, roads and crossroads, and BMPs; soils maps; and a description of BMPs including animal heavy use area practices and procedures, tillage systems, schedules, and crop rotations
- contain an implementation schedule
- be available for review and inspection at the agricultural operation
Map fields using existing PaOneStop tools
Determine soil loss for each field using RUSLE2 model linked to PaOneStop
  - \( A = R \times K \times LS \times C \times P \)
  - Extract soil, topography, climatic conditions from online databases
  - Collect crop management information from user (crops, rotations, tillage, BMPs (contouring, terraces, strips, etc))
Compare soil loss to NRCS tolerable soil loss values (T)
Modify crop management and/or implement conservation practices necessary to achieve tolerable soil loss for each field.
Store farm information online for future modification or access
Print reports and maps summarizing the Conservation Plan
Submit Conservation Plan to regulatory agencies for review
Soil loss estimates consistent with USDA-NRCS. Multiple management scenarios. Conservation practices. Web operation possible.
Simplified RUSLE2 Options

- County –climate
- Field soil
- Rock content
- Slope/length
- Crop Management
  - crops
  - Tillage methods
  - Single crop and rotations
  - crop yield
  - manure applications
  - planting date
- BMPs:
  - Contouring
  - Buffers/ Strips/Barriers
  - Diversions/terraces/basins/ditches
AgE&S: Field Management Interface

Scenarios for field 2
Scenarios: current management  Implementation Date: 
Use Scenario For Plan  Save  Save As  Delete

Field Characteristics

Conservation Practices
Contouring:
Strip/Barrier:  Select
Diversion/Terrace:  Select

Your field is within 100 feet of a stream. Click here to see if additional BMPs are required.

Management Rotation
Rotation Year  Crop Planted Previous Year  First Crop  Second Crop  Third Crop

Soil loss - t value: 3
Calculate Soil Loss
Field Characteristics – defaults

- Representative soil
- Slope steepness
- Slope length
- Rock percentage
- T-value

**Table:**

<table>
<thead>
<tr>
<th>County</th>
<th>MuSym</th>
<th>Map Unit Name</th>
<th>Component</th>
<th>Comp %</th>
<th>T value</th>
<th>K factor</th>
<th>acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lancaster</td>
<td>Db8</td>
<td>Chester silt loam, 3 to 8 percent slopes</td>
<td>Chester</td>
<td>87</td>
<td>0.32</td>
<td>2.34</td>
<td></td>
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<tr>
<td>Lancaster</td>
<td>Gb8</td>
<td>Glenville silt loam, 3 to 8 percent slopes</td>
<td>Glenville</td>
<td>90</td>
<td>0.32</td>
<td>6.35</td>
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<tr>
<td>Lancaster</td>
<td>Hc</td>
<td>Hagerstown-Urban land complex</td>
<td>Hagerstown</td>
<td>50</td>
<td>0.32</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Lancaster</td>
<td>Hc</td>
<td>Hagerstown-Urban land complex</td>
<td>Urban land</td>
<td>30</td>
<td>0.32</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Lancaster</td>
<td>Db8</td>
<td>Duffield silt loam, 3 to 8 percent slopes</td>
<td>Duffield</td>
<td>90</td>
<td>0.37</td>
<td>7.44</td>
<td></td>
</tr>
<tr>
<td>Lancaster</td>
<td>Nc</td>
<td>Newark silt loam</td>
<td>Newark</td>
<td>85</td>
<td>0.43</td>
<td>1.33</td>
<td></td>
</tr>
</tbody>
</table>
Default slope based on statistical distribution of slope within field (75th percentile)

User may override default
Slope length is one of the least sensitive input parameters to RUSLE2 and one of the most difficult to determine… even in the field.

Initially slope length will be based on a simple relationship with slope that has been developed and used by USDA-NRCS:

<table>
<thead>
<tr>
<th>slope</th>
<th>length</th>
</tr>
</thead>
<tbody>
<tr>
<td>3%</td>
<td>200 ft.</td>
</tr>
<tr>
<td>8%</td>
<td>130 ft.</td>
</tr>
<tr>
<td>15%</td>
<td>70 ft.</td>
</tr>
</tbody>
</table>

Slope length most important to soil loss on steep slopes

Later versions will add optional methods to determine slope length:

- developed relationship from existing Conservation Plans
- GIS / terrain analysis methods

User may override default
Multi-year rotations
Copy rotations from one field to another
Edit as needed

### Management Rotation

<table>
<thead>
<tr>
<th>Rotation Year</th>
<th>Crop Planted Previous Year</th>
<th>First Crop</th>
<th>Second Crop</th>
<th>Third Crop</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>corn grain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>corn silage</td>
<td>winter wheat</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>winter wheat</td>
<td>corn silage dc</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>soybeans drilled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>alfalfa bromes year 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>alfalfa bromes year 2+ - full year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>alfalfa bromes year 2+ - full year</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Soil loss - t value: 3

- Calculated soil loss: 2.34 (t/ac/yr)
- Allowable soil loss: 3 (t/ac/yr)
Crop Rotation Builder

Yearly Options

- 2 main crops
- Cover crops
- Tillage method
- Planting date
- Yield
- Manure app.
BMPs – conservation practices

- Contouring
- Strip cropping
- Buffer Strips
- Filter Strips
- Diversions
- Terraces
Multiple Scenarios

Start with current management

Calculate soil loss

If acceptable
   Use for Ag E&S plan

If not acceptable
   create new scenario by modifying management practices until acceptable

Can save many scenarios but only have one for Ag E&S plan

Results
Sensitive Areas – 100 ft. to stream
AgE&S – Print Report

PaOneStop Farm Planning System

Calculate soil loss for: Lancaster

Click on the button below to select a farm field on the map to the right.

Select Field

Refresh Fields

Farm Fields

<table>
<thead>
<tr>
<th>ID</th>
<th>Field</th>
<th>Acres</th>
<th>Soil Loss</th>
<th>T Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>26.33</td>
<td>4.67</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>17.45</td>
<td>2.34</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>10.12</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>15.91</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>4</td>
<td>5</td>
<td>13.86</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>5</td>
<td>6</td>
<td>14.37</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>3.38</td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

Print Plan | Return to Farm Editing
Printed plan on demand, including:

- Plan Summary Checklist
- Field by field management information
- Soil loss calculations
- T–values
- Implementation schedule per field
- mapping

Data stored online for future retrieval
Real User Data - Example
User Trends

Sessions: 14,131
Users: 3,770
Pageviews: 173,501

Pages / Session: 12.28
Avg. Session Duration: 00:14:55
Bounce Rate: 15.03%

% New Sessions: 24.24%

Returning Visitor: 75.7%
New Visitor: 24.2%

users: 3,189
farms: 9,396
fields: 64,880
features: 37,767
PaOneStop Training

- AgE&S Statewide Deployment – April 2014

- Training – Completed (5.0 CECs) – “hands-on”
  - DEP SW Region – Pittsburgh, PA – Aug 20 (20 students)
  - DEP NE Region – Wilkes-Barre, PA – Aug 28 (16 students)
  - SCC NMEP – Stormwater/Soil Loss Workshop – Oct 8 (11 students)

- NMEP Training – Completed (5.0 CECs) – “hands-on”
  - Oct 30, 2014  Mercer
  - Nov 6, 2014  Gettysburg
  - Nov 14, 2014  Lewisburg
  - Dec 4, 2014  Lancaster

- Upcoming Training –
  - Dec 28  State College (5.0 CEC) –
  - 4–6 more regional “hands-on” trainings through 6/30/2014 (not scheduled)
PaOneStop “Hands-On” Training
PaOneStop Outreach

- **Crops Conferences – Penn State Extension**
  - Lancaster Crops Conference – 1/15/2015
  - SEPA Crops Conference – 1/21/2015
  - Central PA Crops Conference – 1/30/2015
  - NEPA Crops Conference – 2/10/2015

- **Crops Field Days – Penn State**
  - 16 events
  - Blair, Lebanon, Franklin, York, Perry, Potter, Clearfield, Somerset, Butler, Mercer, Tioga, Schylkill, Elk
  - Jan – March 2014

- **Miscellaneous Events – conferences, meetings, newsletters, press releases, fact sheets, ...**
Future Enhancements

- Advisory Team – state/federal agencies, industry, Extension
- System Functionality
  - Copy farm tool
  - Transfer farm to another user tool
  - Better Imagery – Google, Bing, NRCS
  - Better topography – USGS
  - Row grade calculator – LiDAR calculated
  - Variable buffer sizes on different sides of line
  - Document changes made to “default” field properties
  - Field divide tool
  - AHUA mapping enhancements
  - Pasture erosion
  - NWI wetlands, HQ/EV streams layers
  - Rotation Builder – more crops, managements, operations (ex. Vertical tillage)
- Software and database security enhancements
- Annual soil loss for nutrient management
- New RUSLE2 version
- Update NRCS SSURGO soil databases
- Assess impact of Chapter 102 on farming practices
- User Evaluations – surveys, data analysis, field data collection
- Manure Management Module – prototype developed but no funding to complete
Thank You

Rick Day

rday@psu.edu

www.paonestop.org