



pennsylvania
DEPARTMENT OF ENVIRONMENTAL
PROTECTION



Bureau of Clean Water

**Soil Erosion and Sediment Control Manual for
Agricultural Operations
(383-4200-002)
Technical Guidance Document
Ag Advisory Board Meeting
June 20, 2019**

Tom Wolf, Governor

Patrick McDonnell, Secretary

Ag E&S Technical Guidance Document

Timeline

- Mid-2017: Initial planning with State Conservation Commission (SCC), NRCS, and Penn State Extension representatives
- Late 2017 – Early 2018: Early drafts shared with small internal workgroup of conservation district, DEP, and SCC statewide staff
- Early to Mid-2018: Met with Ag Advisory Board and Ag Advisory Board Subcommittee to further develop the draft document
- Late 2018: Last meeting with internal workgroup to review changes and made final edits
- January 5, 2019: Posted for public comment in PA Bulletin

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March 6, 2019 – End of public comment period

- 38 total comments received
- 5 commenters
 - 2 individual citizens
 - Chesapeake Bay Commission, Chesapeake Bay Foundation, and PA Farm Bureau

Also provided conservation districts, SCC, and NRCS opportunity for informal comment

- Approximately 200 comments received

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Contents of Manual

- Part 1: Operators/Landowners
- Part 2: Planners/Plan Developers
- Part 3: Instructions/Sample Plan/Template
 - These were divided into 5 distinct sections:
 - General Information
 - Soil Loss
 - Cropland/Hayland/Pasture BMPs
 - Near-Stream Fields
 - AHUAs
- Appendices: Other resources and tools

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Formatting Updates

- Parts 1 and 2 – Changed to mirror the Plan Template/Part 3
 - 5 distinct sections of the plan
 - General Information
 - Soil Loss
 - Cropland, Hayland, and Pasture BMPs
 - Fields Along Streams and Rivers
 - AHUAs

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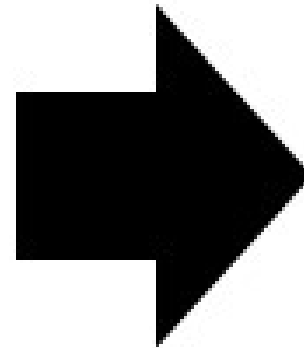
Formatting Updates

- The last three bullets are combined in Parts 1 and 2, as they are all discussing required BMPs for various areas of the operation

Section 3: Cropland, Hayland, and Pasture BMPs

Section 4: Fields Along Streams and Rivers

Section 5: Animal Heavy Use Areas



These three sections contain BMPs that will be used or are being used to minimize/reduce accelerated erosion and sedimentation.

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Content Updates

- Foreword – Clarified what each part contains/the audience
 - Part 1: Operators/Landowners
 - Part 2: Ag E&S Plan Developers
 - Operators/landowners should continue to this part if they read Part 1 and are comfortable writing their own plan
 - Part 3: Ag E&S Plan
 - Ag E&S Plan Administrative Completeness Review Guide
 - Instructions
 - Example Ag E&S Plan
 - Ag E&S Plan Template

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Content Updates

- Part 1

- Page 6: Added “Why Are All Agricultural Operations Required to Have BMPs?”
 - Highlights how BMPs can help their operation in ways they may not have considered

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WHY ARE ALL AGRICULTURAL OPERATIONS REQUIRED TO HAVE BMPs?

As stated on the previous page, BMPs are needed to prevent accelerated erosion and sedimentation on all agricultural operations, regardless of the size, to comply with regulations.

BMPs also provide great benefits to your operation, including:

- **Fields retain valuable topsoil**
- **Reduced costs associated with: fertilizer, fuel, equipment (including maintenance costs), and labor**
- **Improved safety and health of livestock by reducing risk of injuries and diseases, providing cleaner drinking water, and providing a higher quality and quantity of forage**
- **Increased soil fertility, crop growth, and productivity**

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Content Updates

- Part 1
 - Page 9: Self-evaluation instructs reader to physically walk the operation
 - Pages 14 – 16: BMP charts have added “benefits” column
 - Page 18: Instructs reader to continue reading Part 2 if comfortable writing the Ag E&S Plan

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Content Updates

- Part 1
 - Pages 17 – 18: “Other Important Information” additions
 - Hayland/permanent pastures
 - Overgrazing
 - Horse riding arenas/rings
 - Instructions to view operation’s watershed using eMapPA and Integrated Report Viewer

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Content Updates

- Part 2
 - Page 20: Discussion on hayland/pastures
 - Page 21: Identifying locations of concern – Instructs reader to physically walk the operation
 - Page 24: Pastures and AHUAs
 - Signs of overgrazing
 - Horse riding arenas/rings

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Content Updates

- Part 3
 - Page 25: Administrative completeness guide
 - Information for operator, landowner, plan preparer
 - Date plan was developed
 - Operation information (acreage, description, crop rotations, tillage/planting methods, soil information)

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| | | | |
|----|--|--|---|
| 1. | Contact information for operator, landowner, and plan preparer (as applicable) | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 2. | Date of plan development or update | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 3. | Operation information, including: | • Acreage (for both owned and rented lands) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • Description | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • Crop rotations | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| | | • Tillage and planting methods | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| | | • Soil information | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 4. | Map(s) for both owned and rented lands, including: | • Surface waters of this Commonwealth | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| | | • Drainage patterns (topography) | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • Field and property boundaries | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • Field identifiers and acreages | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • Buildings and farm structures | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • AHUAs | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| | | • Roads and crossroads | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • Structural Best Management Practices (BMPs), existing and proposed | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| | | • Soil types and boundaries | <input type="checkbox"/> Yes <input type="checkbox"/> No |

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| | | | |
|----|---|---|---|
| 5. | Plowing and tilling activities (cropland, hayland, and pastures): | <ul style="list-style-type: none"> Documentation that the soil loss will be limited to the soil loss tolerance (T) over the planned crop rotations | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| | | <ul style="list-style-type: none"> BMPs with descriptions, acceptable implementation schedules, and Operation & Maintenance (O&M) criteria | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 6. | Plowing and tilling activities on fields < 25% plant or crop residue cover & within 100' of a river or stream (perennial or intermittent): | <ul style="list-style-type: none"> Additional BMPs, including descriptions, acceptable implementation schedules, and O&M criteria | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 7. | AHUAs: | <ul style="list-style-type: none"> Descriptions of the AHUAs (type, size, location, etc.) | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| | | <ul style="list-style-type: none"> BMPs with descriptions, acceptable implementation schedules, and O&M criteria | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 8. | Plan is consistent with the operation's current Nutrient Management Plan (NMP) or Manure Management Plan (MMP). See Note below. | | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A |
| 9. | Plan is consistent with both existing and proposed conditions and activities on the operation, including surface waters, drainage patterns, and field boundaries. | | <input type="checkbox"/> Yes <input type="checkbox"/> No |

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Content Updates

- Part 3
 - Page 26: Noted that land clearing projects for new cropland and/or pastures should be addressed
 - Page 29: Section 3 – Discussion on hayland/pastures
 - Page 31: Section 4 – Statement on perimeter control BMPs

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The following BMPs are acceptable alternatives to meet near-stream requirements when cover is <25%.

1. **Modify the crop rotation** to exclude the low cover situation in the field near the stream. The near-stream field may be planted to permanent sod-forming crops such as grass hay, or when silage is in the rotation, substitute corn grain (fodder left on the ground) for silage in the near-stream field.
2. **A 35-foot permanent vegetative buffer** may be used alone or as part of a system in these field locations.
3. **Incorporate no-till into rotation and tillage practices;** must be practiced continuously for 7 or more years.
4. **Harvest corn silage** to leave 20 or more inches of standing stalk, then flatten remaining stalks by rolling the field stubble.
5. **Establish cover crop;** should be planted as soon as practically possible, within 10 days after prior crop harvest. To reduce erosion, best results are achieved when the combined canopy and surface residue cover attains 90 percent or greater during the period of potentially erosive wind or rainfall.

Additionally, perimeter control BMPs used for construction-related earth disturbance activities may be options, so long as those practices are maintained. More information on these practices can be found in the Department's ["Erosion and Sediment Pollution Control Program Manual"](#).

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Content Updates

- Part 3
 - Example Plan
 - New example information throughout
 - Page 34: “Operation Information” page – Combined “Crop Rotation” and “Tillage Methods” into one chart
 - Pages 35, 36, and 38: New maps
 - Pages 37 and 39: New Soil information

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| c) Crop Rotation(s) Used on the Operation | Tillage and Planting Method(s) for Crop Rotation(s) |
|--|--|
| <i>1-year corn grain, 1-year soybeans</i> | <i>Corn: No-till, Soybeans: Chisel</i> |
| <i>1-year corn grain, 1-year oats/wheat cover crop, 4-year hay</i> | <i>Oats/Wheat: Chisel Corn/Hay: No-till</i> |
| <i>1-year corn grain/rye cover crop, 1-year corn grain, 2-year alfalfa</i> | <i>All no-till</i> |
| <i>Continuous mixed hay</i> | <i>No-till</i> |
| | |
| | |

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Major/Dominant Soil Type and Information for Each Field on Operation

| <i>Field Name</i> | <i>Soil</i> | <i>Slope T Value</i> | <i>Slope Length, ft</i> | <i>Slope Steepness, %</i> |
|-------------------|--|----------------------|-------------------------|---------------------------|
| <i>Field 1</i> | <i>MoB, Monongahela silt loam, 3 to 8 percent slopes</i> | <i>4.0</i> | <i>150</i> | <i>6.0</i> |
| <i>Field 2</i> | <i>WeB, Weikert channery silt loam, 3 to 8 percent slopes</i> | <i>2.0</i> | <i>150</i> | <i>6.0</i> |
| <i>Field 3</i> | <i>BkC, Berks channery silt loam, 8 to 15 percent slopes</i> | <i>2.0</i> | <i>89</i> | <i>13.0</i> |
| <i>Field 4</i> | <i>WeC, Weikert channery silt loam, 8 to 15 percent slopes</i> | <i>1.0</i> | <i>110</i> | <i>11.0</i> |
| <i>Pasture 1</i> | <i>BrA, Brinkerton silt loam, 0 to 3 percent slopes</i> | <i>3.0</i> | <i>110</i> | <i>3.0</i> |

Note: This information may be provided on a map or in a tabular form as shown on this page.

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| SOIL LOSS CALCULATIONS | | | | |
|--|------------------|---|------------------------------------|-------------------|
| <i>Predicted Average Annual Soil Loss Based on Planned Crop Rotation and Management:</i> | | | | |
| Field | Rotation Year(s) | Management(s) – Crop Rotations and Tilling/Planting Methods | Predicted Average Annual Soil Loss | Soil Type T Value |
| 1 | 1 | <i>Corn grain, no-till</i> | 3.24 | 4 |
| 1 | 2 | <i>Soybeans, chisel</i> | 3.24 | 4 |
| 2 | 1 | <i>Corn grain, no-till</i> | 1.85 | 2 |
| 2 | 2 | <i>Oats, chisel</i> | 1.85 | 2 |
| 2 | 2 | <i>Wheat cover crop, chisel</i> | 1.85 | 2 |
| 2 | 3 – 6 | <i>Mixed hay, no-till</i> | 1.85 | 2 |
| 3 | 1 | <i>Corn grain, no-till</i> | 0.90 | 2 |
| 3 | 1 | <i>Rye cover crop, no-till</i> | 0.90 | 2 |
| 3 | 2 | <i>Corn grain, no-till</i> | 0.90 | 2 |
| 3 | 3 & 4 | <i>Alfalfa, no-till</i> | 0.90 | 2 |
| 4 | All | <i>Mixed hay, no-till</i> | 0.34 | 1 |
| | | | | |
| | | | | |
| | | | | |

Method Used to Determine Predicted Soil Loss: PAOneStop

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Content Updates

- Appendices
 - Page 55: Added 102.4(a) regulations
 - Page 62: Appendix C – Corrected the statement regarding land clearing projects for new cropland and/or pastures

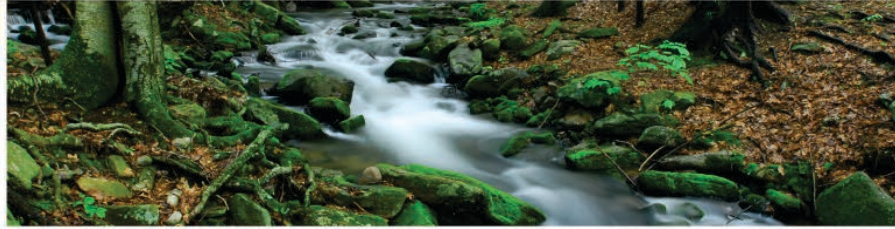
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Summary

- Development of the Ag E&S Manual involved many different parties, including CCDs, SCC, Penn State Extension, NRCS, and Ag Advisory Board members
- Received constructive feedback that was incorporated into the manual following publication in the PA Bulletin
- Next steps
 - Publication
 - Develop accompanying materials (FAQ/Fact Sheets) and training (web-based and in-person)



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