

## Attachment C: Technical Requirements for Entering the Continuous, High Residue, Minimum Soil Disturbance (HR) Practice into Scenario Builder and the Phase 5.3.2 Watershed Model

Background: In June 2013 the Water Quality Goal Implementation Team (WQGIT) agreed that each BMP expert panel would work with CBPO staff and the Watershed Technical Workgroup (WTWG) to develop a technical appendix for each expert report. The purpose of the technical appendix is to describe how the expert panel's recommendations will be integrated into the modeling tools including NEIEN, Scenario Builder and the Watershed Model.

### ***Q1: What efficiency reductions can a jurisdiction claim by implementing and reporting the HR practice?***

A1: A jurisdiction will receive a 64% reduction to the edge-of-stream sediment losses from agricultural acres already under a low-till condition for every acre reported under HR. The panel also recommended phosphorus and nitrogen reductions on land that does not receive manure. The reductions are summarized in Table 1 by geographic region. In order to adjust for counties where some of the acres receive manure and others do not, the panel recommended that the phosphorus and nitrogen reductions be adjusted based on the fraction of manured acres in each county as reported in the most recent (2012) USDA Census of Agriculture. For example, if 20% of the acres in a coastal plain county are reported as receiving manure, the resulting countywide reductions would be  $0.0225 \times (1 - 0.2) = 0.018$  TN, and  $.05 \times (1 - 0.2) = 0.04$  TP. Table 2 summarizes the TN and TP reductions a jurisdiction will receive for acres reported under HR by county.

The impact of these reductions in the Watershed Model will vary across the watershed as a result of hydrologic conditions, application rates to low-till land uses and sediment export from those low-till land uses.

**Table 1. Proposed relative reduction efficiency estimates**

| Panel Proposed HR BMP  |  |
|--|--|
| <p>Total N<br/>Uplands- unmanured<br/>Continuous High-Residue Minimum Soil-Disturbance<br/>lbs/acre</p> <p>Low-Till → Continuous HR (Stackable)<br/>Load Reduction</p> <p>-5.25%</p> | <p>Total N<br/>Coastal Plain- unmanured<br/>Continuous High-Residue Minimum Soil-Disturbance<br/>lbs/acre</p> <p>Low-Till → Continuous HR (Stackable)<br/>Load Reduction</p> <p>-2.25%</p> |
| <p>Total P<br/>Uplands- unmanured<br/>Continuous High-Residue Minimum Soil-Disturbance<br/>lbs/acre</p> <p>Low-Till → Continuous HR (Stackable)<br/>Load Reduction</p> <p>-10%</p>   | <p>Total P<br/>Coastal Plain- unmanured<br/>Continuous High-Residue Minimum Soil-Disturbance<br/>lbs/acre</p> <p>Low-Till → Continuous HR (Stackable)<br/>Load Reduction</p> <p>-5%</p>    |
|  |  |

|  |  |
|--|--|
| <p>Total Suspended Solids<br/>Uplands</p> <p>Continuous High-Residue Minimum Soil-Disturbance<br/>tons/acre</p> <p>Low-Till → Continuous HR (Stackable)<br/>Load Reduction</p> <p>-64.0%</p> | <p>Total Suspended Solids<br/>Coastal Plain</p> <p>Continuous High-Residue Minimum Soil-Disturbance<br/>tons/acre</p> <p>Low-Till → Continuous HR (Stackable)<br/>Load Reduction</p> <p>-64.0%</p> |
|--|--|

Table 2. HR TN and TP final reductions by county

| CountyName     | State | HGMR                         | Percent<br>Manure | Panel TN<br>Rate | Panel<br>TP Rate | SB TN<br>Rate | SB TP<br>Rate |
|----------------|-------|------------------------------|-------------------|------------------|------------------|---------------|---------------|
| Kent           | DE    | Coastal Plain/Piedmont/Karst | 9.76%             | 2.25%            | 5.00%            | 2.03%         | 4.51%         |
| New Castle     | DE    | Coastal Plain/Piedmont/Karst | 3.65%             | 2.25%            | 5.00%            | 2.17%         | 4.82%         |
| Sussex         | DE    | Coastal Plain/Piedmont/Karst | 20.67%            | 2.25%            | 5.00%            | 1.78%         | 3.97%         |
| Washington     | DC    | Coastal Plain/Piedmont/Karst | NA                | 2.25%            | 5.00%            | 2.25%         | 5.00%         |
| Allegany       | MD    | Uplands                      | 6.69%             | 5.25%            | 10.00%           | 4.90%         | 9.33%         |
| Allegany       | MD    | Coastal Plain/Piedmont/Karst | 6.69%             | 2.25%            | 5.00%            | 2.10%         | 4.67%         |
| Anne Arundel   | MD    | Coastal Plain/Piedmont/Karst | 4.22%             | 2.25%            | 5.00%            | 2.16%         | 4.79%         |
| Baltimore      | MD    | Coastal Plain/Piedmont/Karst | 5.65%             | 2.25%            | 5.00%            | 2.12%         | 4.72%         |
| Calvert        | MD    | Coastal Plain/Piedmont/Karst | 2.52%             | 2.25%            | 5.00%            | 2.19%         | 4.87%         |
| Caroline       | MD    | Coastal Plain/Piedmont/Karst | 17.18%            | 2.25%            | 5.00%            | 1.86%         | 4.14%         |
| Carroll        | MD    | Uplands                      | 14.82%            | 5.25%            | 10.00%           | 4.47%         | 8.52%         |
| Carroll        | MD    | Coastal Plain/Piedmont/Karst | 14.82%            | 2.25%            | 5.00%            | 1.92%         | 4.26%         |
| Cecil          | MD    | Coastal Plain/Piedmont/Karst | 10.81%            | 2.25%            | 5.00%            | 2.01%         | 4.46%         |
| Charles        | MD    | Coastal Plain/Piedmont/Karst | 4.19%             | 2.25%            | 5.00%            | 2.16%         | 4.79%         |
| Dorchester     | MD    | Coastal Plain/Piedmont/Karst | 11.98%            | 2.25%            | 5.00%            | 1.98%         | 4.40%         |
| Frederick      | MD    | Uplands                      | 20.64%            | 5.25%            | 10.00%           | 4.17%         | 7.94%         |
| Frederick      | MD    | Coastal Plain/Piedmont/Karst | 20.64%            | 2.25%            | 5.00%            | 1.79%         | 3.97%         |
| Garrett        | MD    | Uplands                      | 21.33%            | 5.25%            | 10.00%           | 4.13%         | 7.87%         |
| Harford        | MD    | Coastal Plain/Piedmont/Karst | 6.13%             | 2.25%            | 5.00%            | 2.11%         | 4.69%         |
| Howard         | MD    | Coastal Plain/Piedmont/Karst | 4.50%             | 2.25%            | 5.00%            | 2.15%         | 4.77%         |
| Kent           | MD    | Coastal Plain/Piedmont/Karst | 12.47%            | 2.25%            | 5.00%            | 1.97%         | 4.38%         |
| Montgomery     | MD    | Uplands                      | 3.87%             | 5.25%            | 10.00%           | 5.05%         | 9.61%         |
| Montgomery     | MD    | Coastal Plain/Piedmont/Karst | 3.87%             | 2.25%            | 5.00%            | 2.16%         | 4.81%         |
| Prince Georges | MD    | Coastal Plain/Piedmont/Karst | 5.27%             | 2.25%            | 5.00%            | 2.13%         | 4.74%         |
| Queen Annes    | MD    | Coastal Plain/Piedmont/Karst | 6.91%             | 2.25%            | 5.00%            | 2.09%         | 4.65%         |
| St. Marys      | MD    | Coastal Plain/Piedmont/Karst | 6.20%             | 2.25%            | 5.00%            | 2.11%         | 4.69%         |
| Somerset       | MD    | Coastal Plain/Piedmont/Karst | 21.83%            | 2.25%            | 5.00%            | 1.76%         | 3.91%         |
| Talbot         | MD    | Coastal Plain/Piedmont/Karst | 8.49%             | 2.25%            | 5.00%            | 2.06%         | 4.58%         |
| Washington     | MD    | Uplands                      | 23.26%            | 5.25%            | 10.00%           | 4.03%         | 7.67%         |
| Washington     | MD    | Coastal Plain/Piedmont/Karst | 23.26%            | 2.25%            | 5.00%            | 1.73%         | 3.84%         |
| Wicomico       | MD    | Coastal Plain/Piedmont/Karst | 16.57%            | 2.25%            | 5.00%            | 1.88%         | 4.17%         |
| Worcester      | MD    | Coastal Plain/Piedmont/Karst | 16.72%            | 2.25%            | 5.00%            | 1.87%         | 4.16%         |
| Baltimore City | MD    | Coastal Plain/Piedmont/Karst | NA                | 2.25%            | 5.00%            | 2.25%         | 5.00%         |
| Allegany       | NY    | Uplands                      | 15.90%            | 5.25%            | 10.00%           | 4.42%         | 8.41%         |

|            |    |                              |        |       |        |       |       |
|------------|----|------------------------------|--------|-------|--------|-------|-------|
| Broome     | NY | Coastal Plain/Piedmont/Karst | 20.63% | 2.25% | 5.00%  | 1.79% | 3.97% |
| Broome     | NY | Uplands                      | 20.63% | 5.25% | 10.00% | 4.17% | 7.94% |
| Chemung    | NY | Uplands                      | 11.99% | 5.25% | 10.00% | 4.62% | 8.80% |
| Chenango   | NY | Coastal Plain/Piedmont/Karst | 22.58% | 2.25% | 5.00%  | 1.74% | 3.87% |
| Chenango   | NY | Uplands                      | 22.58% | 5.25% | 10.00% | 4.06% | 7.74% |
| Cortland   | NY | Coastal Plain/Piedmont/Karst | 22.11% | 2.25% | 5.00%  | 1.75% | 3.89% |
| Cortland   | NY | Uplands                      | 22.11% | 5.25% | 10.00% | 4.09% | 7.79% |
| Delaware   | NY | Uplands                      | 22.01% | 5.25% | 10.00% | 4.09% | 7.80% |
| Herkimer   | NY | Coastal Plain/Piedmont/Karst | 17.57% | 2.25% | 5.00%  | 1.85% | 4.12% |
| Herkimer   | NY | Uplands                      | 17.57% | 5.25% | 10.00% | 4.33% | 8.24% |
| Livingston | NY | Uplands                      | 14.46% | 5.25% | 10.00% | 4.49% | 8.55% |
| Madison    | NY | Uplands                      | 18.59% | 5.25% | 10.00% | 4.27% | 8.14% |
| Oneida     | NY | Uplands                      | 20.03% | 5.25% | 10.00% | 4.20% | 8.00% |
| Onondaga   | NY | Uplands                      | 15.34% | 5.25% | 10.00% | 4.44% | 8.47% |
| Ontario    | NY | Uplands                      | 17.74% | 5.25% | 10.00% | 4.32% | 8.23% |
| Otsego     | NY | Coastal Plain/Piedmont/Karst | 19.76% | 2.25% | 5.00%  | 1.81% | 4.01% |
| Otsego     | NY | Uplands                      | 19.76% | 5.25% | 10.00% | 4.21% | 8.02% |
| Schoharie  | NY | Uplands                      | 12.39% | 5.25% | 10.00% | 4.60% | 8.76% |
| Schuyler   | NY | Uplands                      | 9.57%  | 5.25% | 10.00% | 4.75% | 9.04% |
| Steuben    | NY | Uplands                      | 14.53% | 5.25% | 10.00% | 4.49% | 8.55% |
| Tioga      | NY | Coastal Plain/Piedmont/Karst | 18.42% | 2.25% | 5.00%  | 1.84% | 4.08% |
| Tioga      | NY | Uplands                      | 18.42% | 5.25% | 10.00% | 4.28% | 8.16% |
| Tompkins   | NY | Uplands                      | 19.98% | 5.25% | 10.00% | 4.20% | 8.00% |
| Yates      | NY | Uplands                      | 26.68% | 5.25% | 10.00% | 3.85% | 7.33% |
| Adams      | PA | Uplands                      | 20.69% | 5.25% | 10.00% | 4.16% | 7.93% |
| Bedford    | PA | Coastal Plain/Piedmont/Karst | 22.59% | 2.25% | 5.00%  | 1.74% | 3.87% |
| Bedford    | PA | Uplands                      | 22.59% | 5.25% | 10.00% | 4.06% | 7.74% |
| Berks      | PA | Uplands                      | 30.89% | 5.25% | 10.00% | 3.63% | 6.91% |
| Blair      | PA | Uplands                      | 32.46% | 5.25% | 10.00% | 3.55% | 6.75% |
| Blair      | PA | Coastal Plain/Piedmont/Karst | 32.46% | 2.25% | 5.00%  | 1.52% | 3.38% |
| Bradford   | PA | Uplands                      | 21.65% | 5.25% | 10.00% | 4.11% | 7.84% |
| Cambria    | PA | Uplands                      | 13.10% | 5.25% | 10.00% | 4.56% | 8.69% |
| Cameron    | PA | Uplands                      | 17.90% | 5.25% | 10.00% | 4.31% | 8.21% |
| Carbon     | PA | Uplands                      | 5.09%  | 5.25% | 10.00% | 4.98% | 9.49% |
| Centre     | PA | Coastal Plain/Piedmont/Karst | 20.78% | 2.25% | 5.00%  | 1.78% | 3.96% |
| Centre     | PA | Uplands                      | 20.78% | 5.25% | 10.00% | 4.16% | 7.92% |
| Chester    | PA | Coastal Plain/Piedmont/Karst | 19.30% | 2.25% | 5.00%  | 1.82% | 4.04% |
| Clearfield | PA | Uplands                      | 13.75% | 5.25% | 10.00% | 4.53% | 8.62% |
| Clinton    | PA | Uplands                      | 26.99% | 5.25% | 10.00% | 3.83% | 7.30% |
| Columbia   | PA | Uplands                      | 10.54% | 5.25% | 10.00% | 4.70% | 8.95% |
| Cumberland | PA | Uplands                      | 32.74% | 5.25% | 10.00% | 3.53% | 6.73% |
| Cumberland | PA | Coastal Plain/Piedmont/Karst | 32.74% | 2.25% | 5.00%  | 1.51% | 3.36% |
| Dauphin    | PA | Uplands                      | 22.40% | 5.25% | 10.00% | 4.07% | 7.76% |
| Elk        | PA | Uplands                      | 11.30% | 5.25% | 10.00% | 4.66% | 8.87% |
| Franklin   | PA | Uplands                      | 45.36% | 5.25% | 10.00% | 2.87% | 5.46% |
| Franklin   | PA | Coastal Plain/Piedmont/Karst | 45.36% | 2.25% | 5.00%  | 1.23% | 2.73% |

|                |    |                              |        |       |        |       |       |
|----------------|----|------------------------------|--------|-------|--------|-------|-------|
| Fulton         | PA | Uplands                      | 21.34% | 5.25% | 10.00% | 4.13% | 7.87% |
| Huntingdon     | PA | Coastal Plain/Piedmont/Karst | 29.40% | 2.25% | 5.00%  | 1.59% | 3.53% |
| Huntingdon     | PA | Uplands                      | 29.40% | 5.25% | 10.00% | 3.71% | 7.06% |
| Indiana        | PA | Uplands                      | 13.50% | 5.25% | 10.00% | 4.54% | 8.65% |
| Jefferson      | PA | Uplands                      | 12.47% | 5.25% | 10.00% | 4.60% | 8.75% |
| Juniata        | PA | Coastal Plain/Piedmont/Karst | 36.90% | 2.25% | 5.00%  | 1.42% | 3.16% |
| Juniata        | PA | Uplands                      | 36.90% | 5.25% | 10.00% | 3.31% | 6.31% |
| Lackawanna     | PA | Uplands                      | 15.24% | 5.25% | 10.00% | 4.45% | 8.48% |
| Lancaster      | PA | Uplands                      | 42.65% | 5.25% | 10.00% | 3.01% | 5.73% |
| Lancaster      | PA | Coastal Plain/Piedmont/Karst | 42.65% | 2.25% | 5.00%  | 1.29% | 2.87% |
| Lancaster      | PA | Coastal Plain/Piedmont/Karst | 42.65% | 2.25% | 5.00%  | 1.29% | 2.87% |
| Lebanon        | PA | Coastal Plain/Piedmont/Karst | 43.78% | 2.25% | 5.00%  | 1.27% | 2.81% |
| Lebanon        | PA | Uplands                      | 43.78% | 5.25% | 10.00% | 2.95% | 5.62% |
| Luzerne        | PA | Uplands                      | 7.11%  | 5.25% | 10.00% | 4.88% | 9.29% |
| Lycoming       | PA | Uplands                      | 14.74% | 5.25% | 10.00% | 4.48% | 8.53% |
| Mckean         | PA | Uplands                      | 17.77% | 5.25% | 10.00% | 4.32% | 8.22% |
| Mifflin        | PA | Uplands                      | 31.01% | 5.25% | 10.00% | 3.62% | 6.90% |
| Montour        | PA | Coastal Plain/Piedmont/Karst | 21.23% | 2.25% | 5.00%  | 1.77% | 3.94% |
| Montour        | PA | Uplands                      | 21.23% | 5.25% | 10.00% | 4.14% | 7.88% |
| Northumberland | PA | Coastal Plain/Piedmont/Karst | 20.99% | 2.25% | 5.00%  | 1.78% | 3.95% |
| Northumberland | PA | Uplands                      | 20.99% | 5.25% | 10.00% | 4.15% | 7.90% |
| Perry          | PA | Uplands                      | 38.69% | 5.25% | 10.00% | 3.22% | 6.13% |
| Potter         | PA | Uplands                      | 22.29% | 5.25% | 10.00% | 4.08% | 7.77% |
| Schuylkill     | PA | Uplands                      | 24.63% | 5.25% | 10.00% | 3.96% | 7.54% |
| Snyder         | PA | Coastal Plain/Piedmont/Karst | 35.15% | 2.25% | 5.00%  | 1.46% | 3.24% |
| Snyder         | PA | Uplands                      | 35.15% | 5.25% | 10.00% | 3.40% | 6.49% |
| Somerset       | PA | Uplands                      | 25.61% | 5.25% | 10.00% | 3.91% | 7.44% |
| Sullivan       | PA | Uplands                      | 18.73% | 5.25% | 10.00% | 4.27% | 8.13% |
| Susquehanna    | PA | Uplands                      | 18.06% | 5.25% | 10.00% | 4.30% | 8.19% |
| Tioga          | PA | Uplands                      | 20.48% | 5.25% | 10.00% | 4.17% | 7.95% |
| Union          | PA | Coastal Plain/Piedmont/Karst | 36.08% | 2.25% | 5.00%  | 1.44% | 3.20% |
| Union          | PA | Uplands                      | 36.08% | 5.25% | 10.00% | 3.36% | 6.39% |
| Wayne          | PA | Uplands                      | 18.55% | 5.25% | 10.00% | 4.28% | 8.14% |
| Wyoming        | PA | Uplands                      | 15.09% | 5.25% | 10.00% | 4.46% | 8.49% |
| York           | PA | Uplands                      | 17.09% | 5.25% | 10.00% | 4.35% | 8.29% |
| York           | PA | Coastal Plain/Piedmont/Karst | 17.09% | 2.25% | 5.00%  | 1.87% | 4.15% |
| York           | PA | Coastal Plain/Piedmont/Karst | 17.09% | 2.25% | 5.00%  | 1.87% | 4.15% |
| Accomack       | VA | Coastal Plain/Piedmont/Karst | 12.71% | 2.25% | 5.00%  | 1.96% | 4.36% |
| Albemarle      | VA | Uplands                      | 5.80%  | 5.25% | 10.00% | 4.95% | 9.42% |
| Albemarle      | VA | Coastal Plain/Piedmont/Karst | 5.80%  | 2.25% | 5.00%  | 2.12% | 4.71% |
| Alleghany      | VA | Coastal Plain/Piedmont/Karst | 3.44%  | 2.25% | 5.00%  | 2.17% | 4.83% |
| Alleghany      | VA | Uplands                      | 3.44%  | 5.25% | 10.00% | 5.07% | 9.66% |
| Amelia         | VA | Coastal Plain/Piedmont/Karst | 12.97% | 2.25% | 5.00%  | 1.96% | 4.35% |
| Amherst        | VA | Uplands                      | 2.47%  | 5.25% | 10.00% | 5.12% | 9.75% |
| Amherst        | VA | Coastal Plain/Piedmont/Karst | 2.47%  | 2.25% | 5.00%  | 2.19% | 4.88% |
| Appomattox     | VA | Coastal Plain/Piedmont/Karst | 7.41%  | 2.25% | 5.00%  | 2.08% | 4.63% |

|                |    |                              |        |       |        |       |       |
|----------------|----|------------------------------|--------|-------|--------|-------|-------|
| Arlington      | VA | Coastal Plain/Piedmont/Karst | 12.74% | 2.25% | 5.00%  | 1.96% | 4.36% |
| Augusta        | VA | Uplands                      | 15.68% | 5.25% | 10.00% | 4.43% | 8.43% |
| Augusta        | VA | Coastal Plain/Piedmont/Karst | 15.68% | 2.25% | 5.00%  | 1.90% | 4.22% |
| Bath           | VA | Coastal Plain/Piedmont/Karst | 4.12%  | 2.25% | 5.00%  | 2.16% | 4.79% |
| Bath           | VA | Uplands                      | 4.12%  | 5.25% | 10.00% | 5.03% | 9.59% |
| Bedford        | VA | Uplands                      | 3.13%  | 5.25% | 10.00% | 5.09% | 9.69% |
| Bedford        | VA | Coastal Plain/Piedmont/Karst | 3.13%  | 2.25% | 5.00%  | 2.18% | 4.84% |
| Botetourt      | VA | Uplands                      | 6.48%  | 5.25% | 10.00% | 4.91% | 9.35% |
| Botetourt      | VA | Coastal Plain/Piedmont/Karst | 6.48%  | 2.25% | 5.00%  | 2.10% | 4.68% |
| Botetourt      | VA | Uplands                      | 6.48%  | 5.25% | 10.00% | 4.91% | 9.35% |
| Buckingham     | VA | Coastal Plain/Piedmont/Karst | 7.59%  | 2.25% | 5.00%  | 2.08% | 4.62% |
| Campbell       | VA | Coastal Plain/Piedmont/Karst | 9.74%  | 2.25% | 5.00%  | 2.03% | 4.51% |
| Caroline       | VA | Coastal Plain/Piedmont/Karst | 0.49%  | 2.25% | 5.00%  | 2.24% | 4.98% |
| Charles City   | VA | Coastal Plain/Piedmont/Karst | 0.14%  | 2.25% | 5.00%  | 2.25% | 4.99% |
| Chesterfield   | VA | Coastal Plain/Piedmont/Karst | 5.48%  | 2.25% | 5.00%  | 2.13% | 4.73% |
| Chesterfield   | VA | Uplands                      | 5.48%  | 5.25% | 10.00% | 4.96% | 9.45% |
| Clarke         | VA | Coastal Plain/Piedmont/Karst | 5.70%  | 2.25% | 5.00%  | 2.12% | 4.71% |
| Clarke         | VA | Uplands                      | 5.70%  | 5.25% | 10.00% | 4.95% | 9.43% |
| Craig          | VA | Uplands                      | 2.54%  | 5.25% | 10.00% | 5.12% | 9.75% |
| Culpeper       | VA | Uplands                      | 7.65%  | 5.25% | 10.00% | 4.85% | 9.24% |
| Culpeper       | VA | Coastal Plain/Piedmont/Karst | 7.65%  | 2.25% | 5.00%  | 2.08% | 4.62% |
| Cumberland     | VA | Uplands                      | 7.57%  | 5.25% | 10.00% | 4.85% | 9.24% |
| Cumberland     | VA | Coastal Plain/Piedmont/Karst | 7.57%  | 2.25% | 5.00%  | 2.08% | 4.62% |
| Dinwiddie      | VA | Coastal Plain/Piedmont/Karst | 1.38%  | 2.25% | 5.00%  | 2.22% | 4.93% |
| Dinwiddie      | VA | Uplands                      | 1.38%  | 5.25% | 10.00% | 5.18% | 9.86% |
| Essex          | VA | Coastal Plain/Piedmont/Karst | 12.74% | 2.25% | 5.00%  | 1.96% | 4.36% |
| Fairfax        | VA | Coastal Plain/Piedmont/Karst | 3.27%  | 2.25% | 5.00%  | 2.18% | 4.84% |
| Fairfax        | VA | Uplands                      | 3.27%  | 5.25% | 10.00% | 5.08% | 9.67% |
| Fauquier       | VA | Uplands                      | 5.66%  | 5.25% | 10.00% | 4.95% | 9.43% |
| Fauquier       | VA | Coastal Plain/Piedmont/Karst | 5.66%  | 2.25% | 5.00%  | 2.12% | 4.72% |
| Fluvanna       | VA | Coastal Plain/Piedmont/Karst | 3.59%  | 2.25% | 5.00%  | 2.17% | 4.82% |
| Frederick      | VA | Coastal Plain/Piedmont/Karst | 7.60%  | 2.25% | 5.00%  | 2.08% | 4.62% |
| Frederick      | VA | Uplands                      | 7.60%  | 5.25% | 10.00% | 4.85% | 9.24% |
| Giles          | VA | Coastal Plain/Piedmont/Karst | 2.48%  | 2.25% | 5.00%  | 2.19% | 4.88% |
| Giles          | VA | Uplands                      | 2.48%  | 5.25% | 10.00% | 5.12% | 9.75% |
| Gloucester     | VA | Coastal Plain/Piedmont/Karst | 2.53%  | 2.25% | 5.00%  | 2.19% | 4.87% |
| Goochland      | VA | Coastal Plain/Piedmont/Karst | 9.43%  | 2.25% | 5.00%  | 2.04% | 4.53% |
| Greene         | VA | Uplands                      | 13.96% | 5.25% | 10.00% | 4.52% | 8.60% |
| Greene         | VA | Coastal Plain/Piedmont/Karst | 13.96% | 2.25% | 5.00%  | 1.94% | 4.30% |
| Hanover        | VA | Coastal Plain/Piedmont/Karst | 2.88%  | 2.25% | 5.00%  | 2.19% | 4.86% |
| Henrico        | VA | Coastal Plain/Piedmont/Karst | 1.64%  | 2.25% | 5.00%  | 2.21% | 4.92% |
| Highland       | VA | Coastal Plain/Piedmont/Karst | 3.83%  | 2.25% | 5.00%  | 2.16% | 4.81% |
| Highland       | VA | Uplands                      | 3.83%  | 5.25% | 10.00% | 5.05% | 9.62% |
| Isle Of Wight  | VA | Coastal Plain/Piedmont/Karst | 0.87%  | 2.25% | 5.00%  | 2.23% | 4.96% |
| James City     | VA | Coastal Plain/Piedmont/Karst | 5.56%  | 2.25% | 5.00%  | 2.12% | 4.72% |
| King And Queen | VA | Coastal Plain/Piedmont/Karst | 0.74%  | 2.25% | 5.00%  | 2.23% | 4.96% |

|                |    |                              |        |       |        |       |       |
|----------------|----|------------------------------|--------|-------|--------|-------|-------|
| King George    | VA | Coastal Plain/Piedmont/Karst | 2.07%  | 2.25% | 5.00%  | 2.20% | 4.90% |
| King William   | VA | Coastal Plain/Piedmont/Karst | 3.87%  | 2.25% | 5.00%  | 2.16% | 4.81% |
| Lancaster      | VA | Coastal Plain/Piedmont/Karst | 12.74% | 2.25% | 5.00%  | 1.96% | 4.36% |
| Loudoun        | VA | Uplands                      | 4.48%  | 5.25% | 10.00% | 5.01% | 9.55% |
| Loudoun        | VA | Coastal Plain/Piedmont/Karst | 4.48%  | 2.25% | 5.00%  | 2.15% | 4.78% |
| Louisa         | VA | Coastal Plain/Piedmont/Karst | 7.12%  | 2.25% | 5.00%  | 2.09% | 4.64% |
| Madison        | VA | Uplands                      | 6.64%  | 5.25% | 10.00% | 4.90% | 9.34% |
| Madison        | VA | Coastal Plain/Piedmont/Karst | 6.64%  | 2.25% | 5.00%  | 2.10% | 4.67% |
| Mathews        | VA | Coastal Plain/Piedmont/Karst | 0.83%  | 2.25% | 5.00%  | 2.23% | 4.96% |
| Middlesex      | VA | Coastal Plain/Piedmont/Karst | 4.54%  | 2.25% | 5.00%  | 2.15% | 4.77% |
| Montgomery     | VA | Coastal Plain/Piedmont/Karst | 4.06%  | 2.25% | 5.00%  | 2.16% | 4.80% |
| Montgomery     | VA | Uplands                      | 4.06%  | 5.25% | 10.00% | 5.04% | 9.59% |
| Nelson         | VA | Uplands                      | 4.46%  | 5.25% | 10.00% | 5.02% | 9.55% |
| Nelson         | VA | Coastal Plain/Piedmont/Karst | 4.46%  | 2.25% | 5.00%  | 2.15% | 4.78% |
| New Kent       | VA | Coastal Plain/Piedmont/Karst | 0.98%  | 2.25% | 5.00%  | 2.23% | 4.95% |
| Northampton    | VA | Coastal Plain/Piedmont/Karst | 2.10%  | 2.25% | 5.00%  | 2.20% | 4.89% |
| Northumberland | VA | Coastal Plain/Piedmont/Karst | 12.74% | 2.25% | 5.00%  | 1.96% | 4.36% |
| Nottoway       | VA | Coastal Plain/Piedmont/Karst | 11.56% | 2.25% | 5.00%  | 1.99% | 4.42% |
| Orange         | VA | Uplands                      | 8.55%  | 5.25% | 10.00% | 4.80% | 9.14% |
| Orange         | VA | Coastal Plain/Piedmont/Karst | 8.55%  | 2.25% | 5.00%  | 2.06% | 4.57% |
| Page           | VA | Uplands                      | 21.54% | 5.25% | 10.00% | 4.12% | 7.85% |
| Page           | VA | Coastal Plain/Piedmont/Karst | 21.54% | 2.25% | 5.00%  | 1.77% | 3.92% |
| Powhatan       | VA | Uplands                      | 9.98%  | 5.25% | 10.00% | 4.73% | 9.00% |
| Powhatan       | VA | Coastal Plain/Piedmont/Karst | 9.98%  | 2.25% | 5.00%  | 2.03% | 4.50% |
| Prince Edward  | VA | Coastal Plain/Piedmont/Karst | 6.64%  | 2.25% | 5.00%  | 2.10% | 4.67% |
| Prince George  | VA | Coastal Plain/Piedmont/Karst | 0.10%  | 2.25% | 5.00%  | 2.25% | 4.99% |
| Prince William | VA | Coastal Plain/Piedmont/Karst | 7.80%  | 2.25% | 5.00%  | 2.07% | 4.61% |
| Prince William | VA | Uplands                      | 7.80%  | 5.25% | 10.00% | 4.84% | 9.22% |
| Rappahannock   | VA | Uplands                      | 2.52%  | 5.25% | 10.00% | 5.12% | 9.75% |
| Rappahannock   | VA | Coastal Plain/Piedmont/Karst | 2.52%  | 2.25% | 5.00%  | 2.19% | 4.87% |
| Richmond       | VA | Coastal Plain/Piedmont/Karst | 1.30%  | 2.25% | 5.00%  | 2.22% | 4.94% |
| Roanoke        | VA | Coastal Plain/Piedmont/Karst | 1.26%  | 2.25% | 5.00%  | 2.22% | 4.94% |
| Roanoke        | VA | Uplands                      | 1.26%  | 5.25% | 10.00% | 5.18% | 9.87% |
| Rockbridge     | VA | Coastal Plain/Piedmont/Karst | 7.00%  | 2.25% | 5.00%  | 2.09% | 4.65% |
| Rockbridge     | VA | Uplands                      | 7.00%  | 5.25% | 10.00% | 4.88% | 9.30% |
| Rockingham     | VA | Coastal Plain/Piedmont/Karst | 33.00% | 2.25% | 5.00%  | 1.51% | 3.35% |
| Rockingham     | VA | Uplands                      | 33.00% | 5.25% | 10.00% | 3.52% | 6.70% |
| Shenandoah     | VA | Coastal Plain/Piedmont/Karst | 14.85% | 2.25% | 5.00%  | 1.92% | 4.26% |
| Shenandoah     | VA | Uplands                      | 14.85% | 5.25% | 10.00% | 4.47% | 8.52% |
| Spotsylvania   | VA | Coastal Plain/Piedmont/Karst | 13.93% | 2.25% | 5.00%  | 1.94% | 4.30% |
| Stafford       | VA | Coastal Plain/Piedmont/Karst | 4.98%  | 2.25% | 5.00%  | 2.14% | 4.75% |
| Surry          | VA | Coastal Plain/Piedmont/Karst | 1.05%  | 2.25% | 5.00%  | 2.23% | 4.95% |
| Warren         | VA | Coastal Plain/Piedmont/Karst | 7.17%  | 2.25% | 5.00%  | 2.09% | 4.64% |
| Warren         | VA | Uplands                      | 7.17%  | 5.25% | 10.00% | 4.87% | 9.28% |
| Westmoreland   | VA | Coastal Plain/Piedmont/Karst | 1.14%  | 2.25% | 5.00%  | 2.22% | 4.94% |
| York           | VA | Coastal Plain/Piedmont/Karst | 12.74% | 2.25% | 5.00%  | 1.96% | 4.36% |

|                   |    |                              |        |       |        |       |        |
|-------------------|----|------------------------------|--------|-------|--------|-------|--------|
| City Of           |    |                              |        |       |        |       |        |
| Alexandria        | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Buena Vista       | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Charlottesville   |    |                              |        |       |        |       |        |
| City              | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Chesapeake City   | VA | Coastal Plain/Piedmont/Karst | 1.49%  | 2.25% | 5.00%  | 2.22% | 4.93%  |
| Colonial Heights  |    |                              |        |       |        |       |        |
| City              | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Covington City    | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Fairfax City      | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Falls Church City | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Fredericksburg    |    |                              |        |       |        |       |        |
| City              | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Hampton City      | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Harrisonburg City | VA | Uplands                      | NA     | 5.25% | 10.00% | 5.25% | 10.00% |
| Hopewell City     | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Lexington City    | VA | Uplands                      | NA     | 5.25% | 10.00% | 5.25% | 10.00% |
| Lynchburg City    | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Manassas City     | VA | Uplands                      | NA     | 5.25% | 10.00% | 5.25% | 10.00% |
| Manassas Park     |    |                              |        |       |        |       |        |
| City              | VA | Uplands                      | NA     | 5.25% | 10.00% | 5.25% | 10.00% |
| Newport News      |    |                              |        |       |        |       |        |
| City              | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Norfolk City      | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Petersburg City   | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Poquoson City     | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Portsmouth City   | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Richmond City     | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Staunton City     | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Suffolk City      | VA | Coastal Plain/Piedmont/Karst | 1.57%  | 2.25% | 5.00%  | 2.21% | 4.92%  |
| Virginia Beach    |    |                              |        |       |        |       |        |
| City              | VA | Coastal Plain/Piedmont/Karst | 4.41%  | 2.25% | 5.00%  | 2.15% | 4.78%  |
| Waynesboro City   | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Waynesboro City   | VA | Uplands                      | NA     | 5.25% | 10.00% | 5.25% | 10.00% |
| Williamsburg City | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Winchester City   | VA | Coastal Plain/Piedmont/Karst | NA     | 2.25% | 5.00%  | 2.25% | 5.00%  |
| Berkeley          | WV | Coastal Plain/Piedmont/Karst | 7.08%  | 2.25% | 5.00%  | 2.09% | 4.65%  |
| Berkeley          | WV | Uplands                      | 7.08%  | 5.25% | 10.00% | 4.88% | 9.29%  |
| Grant             | WV | Coastal Plain/Piedmont/Karst | 8.76%  | 2.25% | 5.00%  | 2.05% | 4.56%  |
| Grant             | WV | Uplands                      | 8.76%  | 5.25% | 10.00% | 4.79% | 9.12%  |
| Hampshire         | WV | Uplands                      | 11.19% | 5.25% | 10.00% | 4.66% | 8.88%  |
| Hardy             | WV | Uplands                      | 16.61% | 5.25% | 10.00% | 4.38% | 8.34%  |
| Jefferson         | WV | Coastal Plain/Piedmont/Karst | 16.55% | 2.25% | 5.00%  | 1.88% | 4.17%  |
| Mineral           | WV | Coastal Plain/Piedmont/Karst | 6.97%  | 2.25% | 5.00%  | 2.09% | 4.65%  |
| Mineral           | WV | Uplands                      | 6.97%  | 5.25% | 10.00% | 4.88% | 9.30%  |
| Monroe            | WV | Uplands                      | 2.85%  | 5.25% | 10.00% | 5.10% | 9.71%  |
| Morgan            | WV | Uplands                      | 6.25%  | 5.25% | 10.00% | 4.92% | 9.37%  |

|           |    |         |       |       |        |       |       |
|-----------|----|---------|-------|-------|--------|-------|-------|
| Pendleton | WV | Uplands | 9.99% | 5.25% | 10.00% | 4.73% | 9.00% |
| Preston   | WV | Uplands | 7.71% | 5.25% | 10.00% | 4.85% | 9.23% |
| Tucker    | WV | Uplands | 5.34% | 5.25% | 10.00% | 4.97% | 9.47% |

***Q2: What land uses are eligible to receive the HR practice?***

A2: HR will only be placed on acres of agricultural land already reported under conservation tillage (LWM land use). This practice is not eligible on HOM (high-till without manure), which includes only specialty crops (vegetables, cotton, tobacco, etc). When an acre of row crops is reported under the conservation tillage BMP, that row crop acre is converted from a conventional tillage routine to a low-tillage routine in the Watershed Model. This conversion results in a reduction of sediment loads from that acre of row crop. HR is intended to be a reduction beyond this initial conversion from conventional to low-till. For this reason, an acre submitted as HR should also be submitted under the conservation tillage BMP

***Q3: Can other BMPs be placed on the same acre as HR?***

A3: Yes. All efficiency reduction BMPs that are currently eligible for LWM credit can be submitted along with this practice.

***Q4: Can states still report Continuous No-Till (CNT)?***

A4: No. The panel recommended in 2014 that the HR BMP will replace Continuous No-Till.

***Q5: What does a jurisdiction need to report in order to receive credit for HR in Progress?***

A5: Jurisdictions should report the following information:

- BMP Name: High Residue Tillage Management
- Acres: Number of acres under HR meeting the definition of 60% residue cover
- Location: Approved NEIEN geographies: County; County (CBWS Only); Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4); State; State (CBWS Only)
- Date of Implementation: Year of HR implementation or continued management of an HR system

***Q6: What should a jurisdiction report in order to receive credit for HR in a planning scenario?***

A6: Jurisdictions should report the following information:

- BMP Short Name: HRTill
- Acres: Number of acres under HR meeting the definition of 60% residue cover
- Location: Approved geographies: County; County (CBWS Only); Hydrologic Unit Code (HUC12, HUC10, HUC8, HUC6, HUC4); State; State (CBWS Only)
- Low-till with Manure land use (LWM)
- Date of Implementation: Year of HR implementation or continued management of an HR system

***Q7: Do states need to track and report HR annually?***

A7: Yes. Beginning in 2013, states were asked to report the total number of acres concurrently under HR for a given year.

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