Standard Operating Procedures for Managing Nonpoint Source BMP Data

West Virginia
Revised January 30, 2012

Approved by Alana Hartman, Potomac Basin Coordinator
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Quality Assurance Officer, Richard Batiuk,   **Date**
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Project Management

Project Staff and Organization:
1. Alana Hartman, West Virginia Department of Environmental Protection (WVDEP) Potomac Basin Coordinator, is the lead person for this project, and collects septic, mining reclamation, and many urban/stormwater BMP data.   In addition, Hartman participates in the search of the Natural Resources Conservation Service's PRS (Performance and Results Measurement System) database to query for the needed agricultural BMP practice acreages and numbers.

2. Carla Hardy, West Virginia Conservation Agency (WVCA) Environmental Specialist, collects litter transport, other grant-funded agricultural BMPs, and non-agricultural nutrient management BMP data. In addition, WVCA provides Erosion and Sediment Control data for projects less than 1 acre.

3. Matt Monroe, West Virginia Department of Agriculture (WVDA), Assistant Director, Environmental Programs, is overseeing the development of new protocols for reporting Nutrient Management Plans in which WVDA staff are involved, and also for collecting and reporting data about previously un-reported agricultural BMPs.

4. Herb Peddicord, West Virginia Division of Forestry (WVDOF), Chesapeake Riparian Forester, collects and reports forest buffer plantings, tree planting, forest harvesting BMPs, and forest conservation data.

5. In past years, Rick Heaslip, Natural Resources Conservation Service (NRCS), provided advice about the search of PRS database to query for the needed agricultural BMP practice acreages and numbers. He has since left the position and Pat Bowen, the NRCS Resource Conservationist, has been consulted. Most recently, Herb Andrick, NRCS Assistant State Conservationist – Field Operations – East, performed the PRS queries and has provided this data to Ms. Hartman in an Excel workbook.

6. Nick Schell, WVDEP Stormwater Compliance Assistance, will begin in 2011 to ground-truth and generally assess the presence and condition of a subset of the post-construction stormwater BMPs we have reported.

7. In past years, Michael Schwartz, Freshwater Institute, assisted in identifying sources of data and data analysis.

County Health Departments providing information:
Berkeley County: Martinsburg, WV (Susan Talley)
Grant County: Petersburg, WV (Frances, secretary)
Hampshire County: Augusta, WV (Juanita)
Hardy County: Moorefield, WV (Bill Ours, sanitarian)
Jefferson County: Charles Town, WV (Bill Zaleski, sanitarian)
Mineral County: Keyser, WV (Andrew Root, sanitarian)
Morgan County: Berkeley Springs, WV (Lee Fowler, administrator)
Pendleton County: Franklin, WV (Kami Kiser, sanitarian)

County governments potentially providing information:
Berkeley County: Martinsburg, WV (Kim Shrader, County Engineer)
Grant County: Petersburg, WV (Commission President)

Hampshire County: Romney, WV (Charles Baker, County Commission staff)
Hardy County: Moorefield, WV (Commission President)
Jefferson County: Charles Town, WV (Roger Goodwin, Chief County Engineer)
Mineral County: Keyser, WV (Commission President)
Morgan County: Berkeley Springs, WV (Alma Gorse, Planning Commission staff)
Pendleton County: Franklin, WV (Commission President)

Municipalities potentially providing information:
Hedgesville, WV (Mayor)
Martinsburg, WV (Steve Knipe, Water & Sewer Dept.)
Bayard, WV (Mayor Durst)
Petersburg, WV (Richard Harper)
Romney, WV (Eileen Johnson, City Administrator)
Capon Bridge, WV (Mayor)
Moorefield, WV (Rick Freeman, City staff)
Wardensville, WV (Amanda Barney)
Bolivar, WV (Mayor)
Charles Town, WV (Katie See, city staff)
Hapers Ferry, WV (Mayor)
Ranson, WV (Sarah Kleckner, Planning Director)
Shepherdstown, WV (Frank Welch, Public Works)
Carpendale, WV (Butch Armentrout, city staff)
Elk Garden, WV (Mayor)
Keyser, WV (Mayor William "Sonny" Rhodes)
Piedmont, WV (Mayor)
Ridgeley, WV (Mayor)
Bath (Berkeley Springs), WV (Mayor)
Paw Paw, WV (Jack Delawder)
Franklin, WV (Mayor)

Data are also collected from:
- groundskeepers/superintendents of golf courses
- US Fish & Wildlife- John Schmidt
- Trout Unlimited- Gary Berti and Josh Nease
- Local watershed associations
- Land Trusts
- Conservation Districts

Project Objectives/Background:
The objective is to supply annual, nonpoint source BMP implementation data for inclusion into the Chesapeake Bay Watershed Model annual progress evaluations. We aim to count as accurately as possible the number and kinds of BMPs being implemented in the eight-county Potomac Basin of West Virginia. One reason is to obtain credit for and document in one place the worthy water quality improvement work carried out by multiple public and private entities in West Virginia. Another reason is so that the Watershed Model will reflect reality as closely as possible, and any assessments made by using the model will be as true as possible. Data collection occurs approximately July through December each year (it has been due on December 31), gathering data about implementation that occurred the previous (July through June) year. Since West Virginia began participating in the

Chesapeake Bay Program (CBP), we have continually expanded and refined the methods we use for collecting these data. We have done so while communicating with the CBP's Watershed Modeling team and with representatives of other jurisdictions who participate in the workgroups. Meanwhile, as the Watershed Model has become more sophisticated, we have attempted to provide more sophisticated inputs. We have always used the best, most accurate, most detailed data accessible, and we are beginning to more formally document our project's Quality Assurance and Quality Control requirements. Therefore we would welcome suggestions for improvement.

Project Description and Schedule:
The purpose of the project is to produce, as accurately as possible, a count of BMPs installed each year. This involves several individual phone calls and e-mails made by the personnel listed above, plus WVDEP staff mails an urban/suburban BMP worksheet to each of 8 counties and 21 incorporated municipalities, and provides a deadline of several weeks. Other efforts include searching the NRCS database (PRS) for tracking enrollment in programs to record the BMPs reported there. The PRS database is not set up to match the BMPs we report to the Chesapeake Bay Program. Therefore, we must make judgment calls when assigning acres (or other units) under contracts to specific Chesapeake Bay Program-recognized BMPs.

WVDA has launched an effort to record and track non-cost-shared, previously un-reported, BMPs implemented by farmers. In 2006, WVCA conducted a pilot survey in the Lost River watershed to assess BMPs previously missed because they were not part of any agency-tracked program. For details, see "Lost River BMP Assessment", by Carla Hardy, Laurie Olah, and Laurel Kessel, by West Virginia Conservation Agency in cooperation with West Virginia Department of Agriculture and the Chesapeake Bay Program.

The people we contact might be conducting other data compilation and/or analysis efforts that are not documented herein.

This project is considered ongoing because reporting to the CBP is required annually.

Geographic reporting units are by county. Unless otherwise noted in the Data Acquisition section, the data come to us already corresponding to a county.

The worksheet used to elicit urban/suburban BMP data from counties and municipalities is attached (Appendix A: 2010 BMP Reporting Worksheet ACH.xls)

Data Acquisition and Management

The rationale for collecting data on each of these BMPs is because they are credited in the Watershed Model, unless otherwise noted below.

BMPs for Agricultural Land Uses

Procedure for using PRS database
link to PRS database: http://ias.sc.egov.usda.gov/PRSHOME/
- Click on Reports
- Choose appropriate year for data. For example, data for practices applied during the calendar year 2006 will be found in Quarters 2,3, and 4 of FY 2006, plus Quarter 1 of FY 2007.
- Choose the report needed for each desired NRCS practice code. See Table 1.
- Choose the following information for the fields at the top of the screen:
    - Location: West Virginia
    - Program: None selected
    - FY 2006, Quarter 2 (for example)
    - CNMP: All Plans
    - Practice Type: Applied
    - Land Use: **All land uses** [Beginning December 2010, NRCS staff advised it was best to stop searching under specific land uses.]
    - Resource Concern: All Resource Concerns
    - Agency: None selected
    - Map to: leave as-is
    - "REFRESH" to retrieve the report as specified
- In most cases, results are displayed with practice names, codes, and units across columns. Rows include all West Virginia Counties. Record results for each of the following counties: Berkeley, Grant, Hampshire, Hardy, Jefferson, Mineral, Morgan, and Pendleton.

Table 1. Reports Used to Find NRCS Practices Applied

PRS Report	Report Name	NRCS Practice Code(s)
1.2	Conservation Systems Acres	[Conservation Plans]
2.2	Channel and Streambank Stabilization	580, 584
2.4	Forestry/Agroforestry	472, 612/666
2.5	Grazing/Forages	512, 528
2.8	Land Treatment - Buffer	386, 393, 391
2.9	Land Treatment – Surface Water Management	412
2.10	Land Treatment – Tillage and Cropping	329, 340, 344, 345
2.11	Land Treatment – Vegetative Stabilization	390
2.12	Manure/Wastewater – Handling & Storage	313, 558, 561
2.13	Nutrient Management	590
2.15	Roads, Trails & Construction	575
2.18	Water Supply	614
2.20	Wetlands	657
2.21	Wildlife	395, 646

1. <u>BMP name:</u> **(Ag) Conservation Tillage**
<u>Definition we use:</u> Any tillage and planting system in which at least thirty percent of the soil surface is covered by plant residue to reduce soil erosion and improve the quality of surface water.
<u>NRCS practice(s) counted:</u> 329 (Residue and Tillage Management, No-Till/Strip Till/Direct Seed); 344 (Residue Management, Seasonal); 345 (Residue and Tillage Management, Mulch Till)
<u>Source of data:</u> PRS database
<u>Procedure used to compile data:</u> staff enters acreages into a table by county
<u>Data analysis:</u> Sum the three NRCS practices by county. Since this is a practice that keeps happening for a number of years after it is first counted as new acreage, from 2005 t0 2007 we managed the numbers in the following way: multiply cumulative total acreage from past years by 75%, then add most recent year's new acreage. In 2007 the reporting period changed and this method no longer made sense, so we started only reporting the numbers as recorded from PRS.
<u>Checks for accuracy:</u>
<u>Units:</u> acres

2. <u>BMP name:</u> **(Ag) Riparian Forest Buffers**
<u>Definition we use:</u> Tree plantings along rivers and streams. min width = 35', recommended 100'.
<u>NRCS practice(s) counted:</u> 391 (Riparian Forest Buffer)
<u>Source of data:</u> PRS database. WVCA and WVDOF may also have acreages from its own projects to add. If so, specific location and other information may be available for separate entry.
<u>Procedure used to compile data:</u> staff enters acreages into a table by county or enters data separately if appropriate.
<u>Data analysis:</u> Acreages are summed by county.
<u>Checks for accuracy:</u>
<u>Units:</u> acres

3. <u>BMP name:</u> **(Ag) Wetland Restoration**
<u>Definition we use</u>: Practices to return site to approximately its condition before alteration, including its predisturbance function and related physical, chemical and biological characteristics.
<u>NRCS practice(s) counted:</u> 646 (Shallow Water Development & Management), 657 (Wetland Restoration)
<u>Source of data:</u> PRS database. USFWS's Partners for Fish and Wildlife Program might also have some of these to report.
<u>Procedure used to compile data:</u> staff enters acreages into a table by county
<u>Data analysis:</u> Sum the two NRCS practices by county.
<u>Checks for accuracy:</u>
<u>Units</u>: acres

4. <u>BMP name:</u> **(Ag) Land Retirement (Crop or Pasture to a non-agriculture land use)**
<u>Definition we use:</u> Voluntary contracts between a landowner and a gov. agency to take land out of production to protect certain natural resource characteristics for a specified number of years with monetary compensation. Land retired and planted to trees is reported under Tree Planting.
<u>NRCS practice(s) counted:</u> 386 (Field border)
<u>Source of data</u>: PRS database
<u>Procedure used to compile data:</u> staff enters feet into a table by county
<u>Data analysis</u>:
<u>Checks for accuracy:</u>
<u>Units</u>: acres

5. BMP name: **(Ag) Land Retirement (Conventional Till to Pasture)**
Definition we use: Voluntary contracts between a landowner and a gov. agency to take land out of production to protect certain natural resource characteristics for a specified number of years with monetary compensation. Land retired and planted to trees is reported under Tree Planting.
NRCS practice(s) counted: 512 (Pasture and Hay Planting)
Source of data: PRS database
Procedure used to compile data: staff enters acreages into a table by county
Data analysis: Only 40% of the numbers in PRS will be reported, because it is estimated that 60% of the acres in this practice are planted with something that will be harvested, thus the land is still in production.
Checks for accuracy:
Units: acres

6. BMP name: **(Ag) Grass Buffers**
Definition we use: Grass plantings between fields and rivers and streams. Linear strips of vegetation along rivers and streams, helping to filter nutrients, sediment, and other pollutants carried in runoff. Min width = 35', recommended 100'.
NRCS practice(s) counted: 390 (Riparian Herbaceous Cover), 393 (Filter Strip), 412 (Grassed Waterway)
Source of data: PRS database. WVCA may also have acreages from its own projects to add.
Procedure used to compile data staff enters acreages into a table by county
Data analysis: Acreages are summed by county.
Checks for accuracy:
Units: acres

7. BMP name: **(Ag) Tree planting**
Definition we use: (Row Crop): Any tree plantings on any site except those along rivers and streams. Tree plantings do not include reforestation. Targets land that is highly erodible or identified as critical resource area. Density should be sufficient to produce forest-like cover over time. CRP planting given as an example.
NRCS practice(s) counted: 612 (Tree/Shrub Establishment)/666 (Forestland Re-established or Improved)
Source of data: PRS database. WVDOF might have projects to add.
Procedure used to compile data: staff enters acreages into a table by county
Data analysis: Acreages are summed by county.
Checks for accuracy:
Units: acres

8. BMP name: **(Ag) Nutrient Management Plan Implementation**
Definition we use: Application of nutrients to croplands. Details type, rate, timing, and placement of nutrients for each crop. Soil, plant tissue, manure and/or sludge tests used to assure optimal application. Revised every 2-3 years.
NRCS practice(s) counted: 590 (Nutrient management)
Source of data: PRS database, plus WVDA staff records
Procedure used to compile data: staff enters acreages into a table by county
Data analysis: Acreages are summed by county.
Checks for accuracy:
Units: acres

9. BMP name: **(Ag) Conservation Plans / SCWQP**
Definition we use: Cropland management practices. Agronomic, management and engineered practices that protect soil productivity and water quality, and prevent deterioration of natural resources. CDs, NRCS, or consultant can prepare plan, but must meet technical standards.
NRCS practice(s) counted: none
Source of data: PRS database, use Report 1.2, Conservation Plan Acres, and use "planned" numbers. NRCS staff explained December 2010 why Planned was the better number to report.
Procedure used to compile data: staff enters acreages into a table by county
Data analysis: Acreages are summed by county.
Checks for accuracy:
Units: acres

10. BMP name: **(Ag) Cover Crops**
Definition we use: (Non-harvested) cover crops specifically designed for nutrient removal. Seeded into crop residue with little or no disturbance of soil.
NRCS practice(s) counted: 340 (Cover crops)
Source of data: PRS database
Procedure used to compile data: staff enters acreages into a table by county.
Data analysis:
Checks for accuracy:
Units: acres

11. BMP name: **(Ag) Stream Protection W/ Fencing**
Definition we use: Acreage values where streambank fencing is implemented.
NRCS practice(s) counted: 472 (Use exclusion), 580 (Streambank and shoreline protection), 584 (Channel Stabilization)
Source of data: PRS database. Also, USFWS's Partners for Fish and Wildlife Program reports feet of stream fencing for each county. Also, we must check with FSA regarding CREP fencing projects, because in 2007-08 reporting year we realized there was one in Jefferson Co. that did not appear in PRS.
Procedure used to compile data: staff enters lengths in feet into a table by county, or acres of #472
Data analysis: Feet are summed by county. Or acres are reported…***then multiply the 472's by 40%*** because this BMP as reported by NRCS does not necessarily always occur along a stream.
Checks for accuracy:
Units: linear feet or acres

12. BMP name: **(Ag) Stream Protection Without Fencing**
Definition we use: Planned system for protecting streams and streambanks which eliminates the need for livestock to be in or near the streams by providing an alternative watering source and possibly shade for livestock.
NRCS practice(s) counted: 614 (Watering facility)
Source of data: PRS database
Procedure used to compile data: staff enters numbers into a table by county
Data analysis: *Require CBP advice about conversion to feet*
Checks for accuracy:
Units: number

13. BMP name: **(Ag) Off-Stream Watering w/ Fencing & Rotational Grazing**

Definition we use: This BMP combines stream fencing and alternative watering with cross fencing systems to create paddocks to enable rapid grazing of small areas in sequence.
NRCS practice(s) counted: 528 (prescribed grazing) & 528A
Source of data: PRS database
Procedure used to compile data: staff enters acreages into a table by county
Data analysis: Acreages are summed by county.
Checks for accuracy:
Units: acres

14. BMP name: **(Ag) Animal Waste Management Systems- Livestock**
Definition we use: Storage/handling of manure during times when manure is susceptible to runoff. Includes controlling the runoff from roofs, feedlots, and loafing areas.
NRCS practice(s) counted: 313 (Waste storage facility), [359 (Waste treatment lagoon) – usually not done in WV but should check just to be sure]
Source of data: PRS database
Procedure used to compile data: staff enters systems into a table by county.
Data analysis: The two practices are summed by county.
Checks for accuracy: Check and see if they have any 561's, because they should have a 313 if they have a 561 (note that 561 is reported in acres). Sometimes confirmed with local NRCS staff – it might be the case that an existing waste storage facility is retrofitted for manure; therefore not reported as a 313 in database and not counted for this purpose, either. Remaining 313s could be for poultry, but check with field office to be sure.
Units: systems

15. BMP name: **(Ag) Animal Waste Management Systems-Poultry (Litter sheds)-**
Definition we use: see #14
NRCS practice(s) counted: see data analysis
Source of data: PRS database.
Procedure used to compile data: Separately, staff records number of 561's for each county, and converts them to number of systems
Data analysis: Subtract number of 561's installed in each county from its number of 313's. The remaining 313's are presumed to be poultry and counted here. Logic: it is assumed that any 313 installed for beef must have a corresponding 561.
Checks for accuracy:
Units: number of systems

16. BMP name: **(Ag) Barnyard Runoff Control- designate types of runoff control w/ AU asoc. & animal type**
Definition we use: include diversions, rainwater guttering, and similar practices.
NRCS practice(s) counted: 558 (Roof runoff management), 575 (Animal trails and walkways)
Source of data: PRS database
Procedure used to compile data: *require CBP or state agency partner advice about conversion to number of systems*
Data analysis: The two practices would have to be reported separately, because # 575 is in feet.
Checks for accuracy:
Units: # of systems; # 575 is in feet.

17. BMP name: **(Ag) Non-urban Stream Restoration**
Definition we use:

NRCS practice(s) counted: 395 (stream habitat improvement and management)
Source of data: PRS database and WVCA knowledge of other projects
Procedure used to compile data: staff enters feet into a table by county
Data analysis: Number of acres of practice #395 reported separately from the number of feet treated by other projects
Checks for accuracy:
Units: acres of #395; other known projects reported in feet.

18. BMP name: **(Ag) Alternative use- litter transfer**
Definition we use: participation in a litter transfer program, also voluntary broker participation
Source of data: NRCS field offices in West Virginia (n= ~30) except those over 200 miles from the Potomac Basin, also voluntary broker participation
Procedure used to compile data: WVCA staff contacts each field office and asks for the tonnage, type, sending county (often this is simply the field office contacted) and receiving county. WVCA staff enters tonnages into a table by county
Data analysis: All data are reported to Chesapeake Bay Program, even when receiving county is still within the Potomac Basin. Tons are summed by county.
Checks for accuracy:
Units: tons

Resource BMPs

19. BMP name: **Forest Harvesting Practices**
Definition we use: land harvested under Division of Forestry's (WVDOF's) permitting process, using Logging Sediment Control Act's required BMPs
Source of data: WVDOF reports acres from timber registration forms to WVCA staff
Procedure used to compile data: WVCA staff enters acreages into a table by county
Data analysis: none needed; data already in acres per county
Checks for accuracy: none at this time; should check WVDOF's new BMP manual and document how well it matches Chesapeake Bay Program definition of this BMP (Forest harvesting practices are a suite of BMPs that minimize the environmental impacts of road building, log removal, site preparation and forest management. These practices help reduce suspended sediments and associated nutrients that can result from forest operations. E.g. Innovative road design, bridged stream crossings, preservation of stream and wetland buffers, soil stabilization, water bars, logging mats, road surfacing, broad-based dips and avoiding operations when very wet.)
Units: acres

BMPs for Urban and Suburban Land Uses
Note, the Phase 5 Chesapeake Bay Watershed Model has landuses such as "High-Intensity Impervious Urban (IU), High-Intensity Pervious Urban (PU), Low-Intensity Impervious Urban (IU), and Low-Intensity Pervious Urban (PU). In general, "Urban" is used below to denote High-Intensity (PU and IU), and "Suburban" is considered Low-Intensity (PU and IU)

20. BMP name: **Forest Conservation**
Definition we use: Forest land use protected under conservation easement. *We realize the BMP guidance from Chesapeake Bay Program says only Maryland is eligible for this BMP at this time*, but we still feel this BMP (with above definition) is worth tracking.

Source of data: WVDOF staff contact region's land trusts to determine acreages to report in this category. We attempt to track location of acres reported, or a property name, so they will not be double counted in the future.
Procedure used to compile data: Contact land trusts and ask whether they oversaw any contracts to this effect and how many acres these contracts represent within each county; add acres within each county
Data analysis: presumably none needed
Checks for accuracy: Our region is small enough that if we saw an unreasonably large number in any of these categories reported on by counties and municipalities, we could question the location.
Units: acres

21. BMP name: **Forest Buffers (Urban and suburban)**
Definition we use: Linear wooded areas planted along rivers and streams that help filter nutrients, sediment and other pollutants. Recommended width for urban = 50', with a 35' width as minimum. Recommended width for suburban landuse = 100', with a 35' width as minimum.
Source of data: WVDOF and other agency partners' knowledge of projects
Procedure used to compile data:
Data analysis:
Checks for accuracy:
Units: feet

22. BMP name: **Tree Planting (suburban)**
Definition we use: any tree plantings on any site except those along rivers and streams, which are considered forested buffers and are treated differently.
Source of data: a. County and town self-reporting,
        b. "seedlings planted" data from Division of Forestry report, using categories: erosion control, seedling, and timber production.
        c. Conservation Districts' tree sales numbers
Procedure used to compile data: a. already in acres per county
        b. add number of seedling for all 3 categories, divided by 681 seedlings/acre assuming 8'x8' spacing, to yield acres. Multiply by 90%.
        c. number of seedlings sold by Eastern Panhandle CD and Potomac Valley CD are added, then divided by 681 seedlings/acre, assuming 8'x8' spacing, to yield total acres planted in the Potomac Basin. This number is divided by 8 (counties) to give an (assumed) equal number planted per county. Multiply by 90%.
Data analysis: Sum the totals a-c.
Checks for accuracy:
Units: acres

23. BMP name: **Tree Planting (urban)**
Definition we use: If in an urban area, density has to be sufficient to produce a forest-like canopy over time. Intent has to be to convert that spot to forest.
Source of data: See #22
Procedure used to compile data: See #22 but in "b" and "c," multiply by 10% instead of 90%.
Data analysis: See data analysis for #22.
Checks for accuracy:
Units: acres

24. BMP name: **Abandoned Mine Reclamation**

Definition we use: mine reclamation stabilizes the soil on lands mined for coal or affected by mining, such as wastebanks, coal processing, or other coal mining processes.
Source of data: WVDEP Mining Inspectors within the Potomac Basin
Procedure used to compile data: WVDEP Mining Inspectors who cover mines in the Potomac Basin (currently this means 3 inspectors) are asked how many acres were reclaimed in the past calendar year.
Data analysis: acres are added up by county
Checks for accuracy: the inspector is sometimes asked what happened to the land for it to be considered reclaimed, to ensure that it meets our definition. (examples = Land grading, re-vegetation, tree planting, wetland development and the installation of surface water control measures such as diversions, waterways, and retention ponds)
Units: acres

25. BMP name: **Wet Ponds and Wetlands**
Definition we use: Wet ponds and constructed wetlands that have a permanent pool (always contain water), extend detention, and treat water quality
Source of data: Beginning fall 2005, applicants for construction stormwater permits are asked to indicate which permanent stormwater management practices they will use, and the number of acres draining to each. WVDEP staff enters these applications into a database (ERIS) within a few days of receipt, and the Potomac Basin Coordinator will query and print this information to date after June 30. Also add numbers from Industrial Stormwater management.
Procedure used to compile data: ERIS reports are run for the construction stormwater general permit (sites >3 acres) and Notice of Intent sites (1-3 acres).
Data analysis: Acreages (or other appropriate units) are normally summed by county, but we might begin reporting them separately using location information in the permit or confirmed by Mr. Schell.
Checks for accuracy: The Potomac Basin Coordinator sends a letter with a blank table to the appropriate person in county government and incorporated municipalities, asking him/her to fill out the table with appropriate units of each urban/suburban BMP installed in the county in the past calendar year. This is to reveal projects we might have missed with the ERIS method.
Units: acres drained

26. BMP name: **Dry Extended Detention Ponds**
Definition we use: Dry extended detention ponds or basins that provide for a gradual release of storm water in order to increase settling of pollutants and to reduce stormwater volumes downstream at a given time; and that are usually dry between rainfall events.
Source of data: see source of data for #25.
Procedure used to compile data: See procedure used for #25.
Data analysis: See data analysis for #25
Checks for accuracy: See #25
Units: acres drained

27. BMP name: **Infiltration Practices**
Definition we use: Practices such as a trench, basin or porous pavement that capture and temporarily store storm water before allowing it to infiltrate into the soil. Promote groundwater recharge.
Source of data: See source of data for #25
Procedure used to compile data: See procedure used for #25
Data analysis: See data analysis for #25
Checks for accuracy: See checks for accuracy for #25
Units: acres drained

28. BMP name: **Filtering Practices**
Definition we use: Practices that capture and temporarily store storm water then pass it through a filter bed such as sand, organic matter, soil or other media. These can include rain gardens, swales, sand or peat filters, etc. Maintenance plan is usually key.
Source of data: See source of data for #25
Procedure used to compile data: See procedure used for #25
Data analysis: See data analysis for #25
Checks for accuracy: See checks for accuracy for #25
Units: acres drained

29. BMP name: **Impervious Surface Reduction**
Definition we use: This practice includes natural area conservation, rain barrels, green roofs, directing sheet flow from impervious surfaces such as sidewalks or driveways to pervious surfaces instead of using storm drains, and disconnecting roof top drainage pipes to allow infiltration.
Source of data: The Potomac Basin Coordinator sends a letter with a blank table to the appropriate person in county government and incorporated municipalities, asking him/her to fill out the table with appropriate units of each urban/suburban BMP installed in the county in the past calendar year.
Procedure used to compile data:
Data analysis:
Checks for accuracy:
Units: acres

30. BMP name: **Street Sweeping**
Definition we use: Includes oil and grit separators.
Source of data: See source of data for #29
Procedure used to compile data:
Data analysis:
Checks for accuracy:.
Units: tons

31. BMP name: **Erosion/Sediment Control**
Definition we use: practices that protect water resources from sediment pollution and increases in runoff associated with land development activities. By retaining soil on-site, sediment and attached nutrients are prevented from leaving disturbed areas and polluting streams. *Examples:* Silt fence, slope drain, permanent vegetation
Source of data: Applicants for coverage under WV DEP NPDES Stormwater Construction Permit; WVCA projects less than one acre.
Procedure used to compile data: WV DEP enters data into a database (ERIS), then searches the database for acreage permitted in the period of interest, under the Notice of Intent (NOI) and General Permit (GP).   These data are summed by county. This number for each county is added to any acres reported by WVCA for projects less than one acre.
Data analysis: Acreages are summed by county.
Checks for accuracy: WV DEP Environmental Enforcement Inspector enforces compliance for sites 3 acres or greater.
Units: acres drained

32. BMP name: **Suburban, or non-agricultural, Nutrient Management**

Definition we use: Reduction of fertilizer applications to lawns, golf courses, parks and other pervious surfaces. This practice involves taking a soil sample to determine the appropriate amount of nutrients needed.
Source of data: See source of data for #29. In addition, WVCA staff calls every golf course in the Basin and asks how many acres are under nutrient management.
Procedure used to compile data: See procedure used for #29. Golf course data for each county are added into each county's number.
Data analysis:
Checks for accuracy:
Units: acres

33. BMP name: **Riparian Grass Buffers**
Definition we use: Linear strips of planted grass or other non-woody vegetation between the edge of urban/suburban land use and streams or rivers.
Source of data: See source of data for #25
Procedure used to compile data: See procedure used for #25
Data analysis: See data analysis for #25
Checks for accuracy: See checks for accuracy for #25.
Units: acres

34. BMP name: **Wetland Restoration**
Definition we use: The reestablishment of wetlands on sites where they used to exist.
Source of data: See source of data for #25
Procedure used to compile data: See procedure used for #25
Data analysis: See data analysis for #25
Checks for accuracy: See checks for accuracy for #25.
Units: acres

35. BMP name: **Urban Stream Restoration**
Definition we use: Restoring the natural ecosystem by restoring the stream hydrology and natural landscape.
Source of data: See source of data for #29
Procedure used to compile data:
Data analysis:
Checks for accuracy:
Units: linear feet

36. BMP name: **Septic Connection**
Definition we use: Septic connections/hookups represent the replacement of traditional septic systems with connection to and treatment at wastewater treatment plants (WWTPs).
Source of data: Public Service Districts (PSDs)
Procedure used to compile data: WVDEP staff calls PSDs and asks them how many septic systems were connected to sewer lines in the past calendar year.
Data analysis: numbers are summed by county if applicable.
Checks for accuracy: Our region is small enough that if we saw an unreasonably large number, we could question it. We do not routinely question say, a certain subset, however.
Units: number of systems

37. BMP name: **Septic Pumping**

Definition we use: When septic tanks are pumped and sewage removed, the septic system's capacity to remove settable and floatable solids from wastewater is increased. On average, septic tanks need to be pumped once every three to five years to maintain effectiveness.
Source of data: Septic pumping companies that have DEP permits to dispose of septage at POTWs or by land application.
Procedure used to compile data: WVDEP calls septic pumping companies in the region and asks how many tanks they pumped per county in the past calendar year.
Data analysis: some companies do not track number of septic tanks pumped, and we must take the number of gallons reported to WVDEP under their permit and estimate number of tanks by dividing by 1000. Also, some companies do not track the county in which the pumping was done, so we ask them to estimate the percent of their total pumping business conducted in each county. Then we multiply the total tanks they reported by the appropriate county percentage.
Checks for accuracy:
Units: number of systems

38. BMP name: **Number of septic inspections or permits (as an estimate of number of new septic tanks)**
Definition we use:
Source of data: 8 county health departments
Procedure used to compile data: WVDEP staff calls each health department, and appropriate personnel (sanitarian or other staff member) reports the number of inspections they conducted in previous calendar year. If they do not have this number and are unwilling to tally it, we ask for the number of permits issued.
Data analysis: number is summed by county.
Checks for accuracy:
Units: number of systems

Further procedures:

Data review and verification process:

Regarding NRCS cost-shared practices, see attachments:
1. "wv_4_spotChecking.pdf" which is Title 450 General Manual part 407: Documentation, Certification, and Spot Checking
2. "05_quaAssRev.pdf" which is a form used when spot checking
3. "05_engSpotCheckReport.pdf" which is a form used when spot checking

Also see "Checks for Accuracy" in some of the entries above.

Assembling data:
Alana Hartman uses Microsoft Excel to pre-assemble and store the BMP data. Files are stored on a network drive within WVDEP's system, and are backed up nightly by the Information Technology Office. The file structure is easy to understand: Alana's "Z:" drive/Chesapeake Bay Documents/bmp spreadsheets/…then filed under the year of the data.

Reporting data to EPA:
Format used: Alana Hartman and possibly other staff enter into the "NPS BMP" database (http://wwwtest.dep.wv.gov/npsbmp/) either county summary data or individual record data for each BMP. This database was created in Fall 2010 and is currently undergoing revisions to suit the NEIEN effort and Scenario Builder. For each annual data submission, IT staff at WVDEP convert the information in the database to an "xml" file and submit it through a "node" to the NEIEN network.

Cumulative versus annual:
The following section is adapted from the first paragraph of the document "NPS_BMP_Supplement_011206.pdf" which was available at www.chespeakebay.net/tribtools.htm

Until 2007, we reported these BMPs to the CBP as cumulative (the total acres, linear feet, or systems installed or implemented during an entire period) with the exception of the following BMPs, which were reported as annual (the amount of a BMP installed or implemented for that year only):
- Cover crops
- Litter transport
- Phytase
- Erosion and Sediment control
- Non-agricultural nutrient management
- Forest harvesting practices
- Septic pumping

Reasonableness of each BMP's implementation level:
A final report is circulated to lead staff in various sectors so they can review the final totals for reasonableness.

Final QAPP Checklist for 2009-10 Nonpoint Source BMP Data submitted in December 2011:

1. Were the data collected according to an EPA-approved Quality Assurance Plan? *Yes, if this QAPP is approved.*

2. Are the descriptions of the survey design clear, complete and sufficient to enable the survey to be reproduced? *Yes.*

3. Were the compilation and analysis methods performed consistently throughout the data record? *Yes.*

4. If datasets from two or more agencies are merged, are their survey designs and methods comparable? *Yes.*

5. Are uncertainty measurements or estimates available for the data sets? *No.*

6. Do the uncertainty and variability impact the conclusions that can be inferred from the data and the utility of the ultimate use of the data – nutrient and sediment load changes as assessed by CBP watershed models? *Yes.*

7. Are there noteworthy limitations or gaps in the data records? *WVDA and NRCS were recently made aware that the details of their records of Nutrient Management Planning must be well documented in the future to avoid double-counting. Similarly, we believe we might have under-counted riparian forest buffers because many acres that were collected by WVDOF staff were not able to be used since WVDOF staff does not have access to NRCS' Toolkit program to check whether they are, or are not, the same acres that are reported through the PRS database.*

Appendix A: 2010 BMP Reporting Worksheet ACH.xls

County or Municipality: _____	Person completing form: _____		Date _____

BMP = Best Management Practice

Please note the specific location of each BMP in as many cases as possible! Use another page if necessary.

Urban and Suburban BMPs	*Landuse Applied To or Landuse Conversion*	*Reporting Units*	**BMPs installed January 1-June 30, 2010**	**BMPs installed July 1-December 31, 2010**
Wet Ponds and Wetlands	Pervious and Impervious Urban	acres treated		
Dry Extended Detention Ponds (typical stormwater management dry pond)	Pervious and Impervious Urban	acres treated		
Infiltration Practices	Pervious and Impervious Urban	acres treated		
Filtering Practices	Pervious and Impervious Urban	acres treated		
Impervious Surface Reduction/Non Structural Practices	Impervious Urban to Pervious Urban	acres		
Street Sweeping and Catch Basin Inserts	N/A	lbs collected		
Tree Planting (Urban/suburban)	Pervious Urban to Forest	acres		
Riparian Grass Buffers (Urban/suburban)	Pervious Urban to Hay without nutrients(?)	acres		
Nutrient Management (Urban/suburban)	Pervious Urban	acres		
Stream Restoration (Urban/suburban)	Reduction of Nutrient and Sediment Load	linear feet		
Riparian Forest Buffers (Urban)	Pervious Urban to Forest	acres		
Wetland Restoration		acres		

Please look over the above chart and the definition list and place appropriate 2010 BMP numbers and locations into the chart.

Thank you!

Attachments:
1. "wv_4_spotChecking.pdf" which is Title 450 General Manual part 407: Documentation, Certification, and Spot Checking
2. "05_quaAssRev.pdf" which is a form used when spot checking
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Part 407 – Documentation, Certification and Spot Checking

Subpart A- Policy

WV407.1   Policy

c.1. Form WV-180-3-Quality Assurance Review Form will be used to record findings, recommendations and actions taken when conducting spot check for vegetative management practices of conservation planning procedure.

c.2. Form WV-180-5-Engineering Spot Check Report will be used to record findings and recommendations when conducting spot check of engineering practices.

Part 407 – Documentation, Certification and Spot Checking

Subpart B- Documentation and Certification

WV407.10   Supporting Data

    d.   Supporting information pertains to those features of a conservation practice that can be measured, surveyed, observed or verified by current records. Evaluation of this data will determine if the practice has been installed in accordance with the construction drawings and/or practice specification and proper operation and maintenance is being followed.

         Practices for which Natural Resources Conservation Service (NRCS) provides technical assistance will be shown on clients' planning map and prepared designs. The practice location will be identified by standard map symbols for structural practices and by delineating the area for vegetative or management practices. The practice will be recorded as part of the record of cooperators' decision in their conservation plan.

         Minimum supporting data for structural practices (engineering) is defined in the Engineering Field Handbook, Chapter 5, Exhibit WV5-23(1), Design and Construction Support Data for Conservation Practices. Construction checks will be recorded on job plans and/or field notes and represent the as-built plans for the practice.

         Minimum supporting data for vegetative or management practices will include the field number, field location, acres or number, date practice applied and supporting record keeping. The reporting of each practice will be certificated that it is applied according to the specification developed by the planner. Specifications will be based upon the appropriate conservation practice standard in the Field Office Technical Guide-Section IV. Species, seeding rates, soil amendments, application dates, application rates of nutrients, residue cover, grazing height, number of livestock, spacing, operation and maintenance requirement and other necessary information required by the standard will be included in the planning documentation and can serve as a guide for spot checking.

WV407.12   Certifying Performance for Cost Sharing

    d.   Practices requiring certification for payment purposes will only be certified when the practice is completed and meets all required technical specifications. In certifying performance of practices that are cost shared on a proportional basis, NRCS will report compliance or noncompliance with approved technical specification and the amount of the practice performed in applicable cost-share units. It is the client's responsibility to present to the cost-sharing agency documentary evidence of the amount of machine time, labor, and materials used as a basis for cost share.

         Certification will be based on final design quantities unless a significant change is made in the design during construction, or unless the practice or components of the practice have to be in place prior to determining final quantities for payment.

Part 407 – Documentation, Certification and Spot Checking

Subpart C- Spot Checking

WV407.20 Procedure

b.3. Checking will be done throughout the year and within a reasonable time after completion of the practices, determinations and plans. All reviews will be completed by November 30 for plans and applied conservation systems done the previous fiscal year.

c.3. Five percent of the total of all cost-shared practices installed in each field office each year will be spot checked. A minimum of one of each type practice will be spot checked every three years, and each field office member's work should be spot checked within this period.

A minimum of three practices will be spot checked in each field office each year unless more are required to meet the above-mentioned requirement. The Assistant State Conservationist – Field Operations (ASTC-FO), in concert with the State Conservation Engineer, will determine the actual number of spot checks to be performed on engineering conservation practices in each field office within the above-mentioned requirements.

All conservation plans and applied conservation systems on farms NRCS employee owned, operated, or has an interest in are to be reviewed during the year of occurrence.

e.3. The ASTC-FO will assign personnel to perform reviews of practices installed, determinations made, and plans in his/her area. The designated person or persons shall meet the following requirements:

i. Should be a grade equal to or higher than those who planned, designed, and installed the practice and have job approval authority or certification for the practice.

ii. Be an employee other than the one who determined need, designed, supervised construction, made the construction check, or certified performance.

iii. Should be an engineer or civil engineering technician for those involving complex engineering. For planning review, vegetative or management practices the ASTC-FO will select employees familiar with the practice and is certified in conservation planning.

iv. Have no vested interest in the practice or land on which installed.

f.3. Sufficient notes will be made to show that installed practices are field checked. For engineering practices supporting data such as survey notes, critical elevation, distances, and slopes will be checked. Form SCS-ENG-28 and Form SCS-ENG-29 may be used for this purpose.

h.1.i. When the check reveals deficiencies that cannot be corrected at the time check is made, the following action will be taken by the ASTC-FO:

Inform the District Conservationist (DC) in writing of the deficiency. The DC shall prepare a report and receive a follow up report on required corrective action within 60 days. A copy of the above report and action taken will be sent to the State Conservationist for information.

h.2.i. If significant errors in quantities already certified for cost share payments, program determinations, plans or contracts are found, the DC shall immediately inform the local USDA Agency making cost share payments and the land user. These errors will be corrected according to program procedure.

h.4.   Check notes, inspection forms (WV-180-3 and WV-180-5) and follow up reports will be filed in a folder labeled "Quality Assurance Review FY____" in field and area offices. The folder will be placed in Section 180-12. One copy of these forms will be maintained at the field office and a second copy will be maintained at the area office for a period of 5 years.

h.5.   The ASTC-FO will notify the State Conservationist by letter when reviews have been completed in their respective areas for the current fiscal year.

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

ENGINEERING SPOT CHECK
REPORT

WV-180-5
3/05

General Manual - Title 450, Part 407 - Documentation, Certification, and Spot Checking

General Information		

Field Office: | **County:**

Client's Name: | **Phone Number:** | **Location of Practice:**

NRCS Employee: ☐ **Yes** ☐ **No**

Practice Information		

Practice Name: | **Code Number:** | **Practice Unit:**

Practice Cost Shared:

☐ **Yes** ☐ **No**

If Cost Shared:
Program: _____

Identify Number or Name _____

Number Units Certified: | **Date Certified:** | **Certified By:**

Spot Check Findings		

Spot Check Date: | **Practice Needed:** ☐ Yes ☐ No

Practice meets all standards, specifications, and program criteria: ☐ Yes ☐ No
(If **yes**, provide any comments below. If **no**, explain, including what is needed to correct deficiencies.)

Supporting Data Adequate: (Refer to WV 5-23) ☐ Yes ☐ No
(If **yes**, provide any comments below. If **no**, explain, including what is needed to correct deficiencies.)

Recommendations of Spot Checker

Follow-Up Action, Training, and Other:

Signature of Spot Checker:

The practice checked met specifications and the amount certified is correct.

Print Name: | **Signature:** | **Date:**

Action by Assistant State Conservationist-Field Operations

Describe Action Taken:

Signature: | **Date:**

(SPOT CHECK, CONSERVATION PLANNING)

Date of review	**Fiscal year**
Office Name	**County**
Participants Name	**Phone Number**
Address:	**Participant an NRCS Employee?** ☐ Yes ☐ No
Conservation Planners Name:	☐ NRCS? or ☐ TSP?
USDA Program:	**Farm & Tract#:**

Practice Name & Number	Fields	Amount	Date Certified	Cost Shared

Resource Problem Identification	
Planning Level	☐ RMS ☐ Progressive
Are resource problems identified? (FOTG Section III) choices: soil erosion, soil condition, water quality, water quantity, air quality, plant suitability, plant condition, animal habitat, animal water.	☐ Yes ☐ No ☐ N/A
Benchmark system recorded? (on NRCS-CPA-6, in prescribed grazing narrative, or farm organization summary)	☐ Yes ☐ No ☐ N/A
Were proper assessment tools used to identify the resource problem? examples: soil loss calculations, prescribed grazing worksheets, habitat evaluation procedure, soil tests, talking to landowner, ranking criteria.	☐ Yes ☐ No ☐ N/A
Have cost share payments been received for the same practice on the same land?	☐ Yes ☐ No ☐ N/A
Is installed practice recorded in NRCS reporting system?	☐ Yes ☐ No ☐ N/A
Does landowner have HEL plan?	☐ Yes ☐ No ☐ N/A

Does specification narrative, job sheet or design meet requirements of standard?	☐ Yes	☐ No	☐ N/A
Have operation and maintenance requirements been discussed with the landowner and documented on the NRCS-CPA-6 or in the narrative?	☐ Yes	☐ No	☐ N/A
Do installed practices have a positive effect on the resource problem? (FOTG-Sec V, Conservation Practice Physical Effects)	☐ Yes	☐ No	☐ N/A

If practice is part of a Comprehensive Nutrient Management Plan (CNMP), are supporting practices planned/installed?

Manure and Wastewater Handling/Storage	☐ Yes	☐ No	☐ N/A
Land Treatment Practices	☐ Yes	☐ No	☐ N/A
Nutrient Management	☐ Yes	☐ No	☐ N/A
Record Keeping	☐ Yes	☐ No	☐ N/A
Risk assessment for potential nitrogen or phosphorous transport from field completed?	☐ Yes	☐ No	☐ N/A

Supporting Planning Data in Case File:

Soil loss calculations	☐ Yes	☐ No	☐ N/A
Environment effects for conservation plan, Form WV-CPA-052	☐ Yes	☐ No	☐ N/A
Contract reviews completed	☐ Yes	☐ No	☐ N/A
Request for Cultural Resources Review WV-180-4	☐ Yes	☐ No	☐ N/A
Conservation assistance notes NRCS-CPA-6	☐ Yes	☐ No	☐ N/A
Soils map	☐ Yes	☐ No	☐ N/A
Non-tech soil descriptions	☐ Yes	☐ No	☐ N/A
Highly erodible lands and wetlands determination NRCS-CPA-026E	☐ Yes	☐ No	☐ N/A
Copy of required permits	☐ Yes	☐ No	☐ N/A
Current soil tests	☐ Yes	☐ No	☐ N/A
Manure litter analysis	☐ Yes	☐ No	☐ N/A
Practice narratives	☐ Yes	☐ No	☐ N/A
Does supporting data reflect field conditions	☐ Yes	☐ No	☐ N/A

Conservation Plan Map

Title block	☐ Yes	☐ No	☐ N/A
Boundaries	☐ Yes	☐ No	☐ N/A
Field acreage	☐ Yes	☐ No	☐ N/A
Field numbers	☐ Yes	☐ No	☐ N/A
Easement boundaries (i.e. WRP, GRP, FRPP)	☐ Yes	☐ No	☐ N/A
Land use identified	☐ Yes	☐ No	☐ N/A
Conservation practice locations	☐ Yes	☐ No	☐ N/A
Map scale, North arrow	☐ Yes	☐ No	☐ N/A
Date prepared	☐ Yes	☐ No	☐ N/A
Important features:			
access points	☐ Yes	☐ No	☐ N/A
utility locations	☐ Yes	☐ No	☐ N/A

Check in the Field				
Does practice installed meet specifications?	☐ Yes	☐ No	☐ N/A	
Does installed practice meet contract requirements?	☐ Yes	☐ No	☐ N/A	
Does documentation show that practice installation meets standards and specifications, i.e:				
Acres treated?	☐ Yes	☐ No	☐ N/A	
Application rate of soil amendments or manure/litter?	☐ Yes	☐ No	☐ N/A	
Date of application?	☐ Yes	☐ No	☐ N/A	
Livestock grazing?	☐ Yes	☐ No	☐ N/A	
Grass height?	☐ Yes	☐ No	☐ N/A	
Percent of residue cover?	☐ Yes	☐ No	☐ N/A	
Type of fence?	☐ Yes	☐ No	☐ N/A	
Specie/mixture planted?	☐ Yes	☐ No	☐ N/A	

Comments/Recommendation for Action:

_____   _____   _____

Reviewers Name (Print or Type)   **Signature**   **Date**

Signature of Spot Checker		
Print Name:	**Signature:**	**Date:**
Action by Assistant State Conservationist-Field Operations		
Describe Action Taken:		
Signature:		**Date:**

For Engineering Practice Review:

WV-180-5-ENGINEERING SPOT CHECK REPORT- Shall be completed for each engineering practice spot checked.