Phase II WIPs' Relative Percent Reductions of Delivered Total Nitrogen to the Chesapeake Bay

Chesapeake Bay Watershed	
BMP	**Relative Reduction**
Land Retirement	12.2%
Forest Buffers	10.4%
Conservation Tillage	7.1%
Early Cover Crops	7.0%
Animal Waste Management System	6.8%
Grass Buffers	6.0%
Enhanced Nutrient Management	3.4%
Alternative Crops	2.8%
Soil Conservation and Water Quality Plans	2.8%
Commodity Cover Crops	1.7%
Wetland Restoration	1.4%
Decision Agriculture	1.4%
Stream Access Control with Fencing	1.3%
Streamside Grass Buffers	1.0%
Other Agriculture	8.2%
Urban Infiltration Practices	5.5%
Urban Filtering Practices	5.0%
Urban Nutrient Management	1.4%
Other Urban	4.9%
Forest Practices	0.0%
Wastewater + CSO	7.0%
Septic	2.5%

Delaware	
BMP	**Relative Reduction**
Early Cover Crops	19.6%
Conservation Tillage	11.2%
Grass Buffers	10.3%
Animal Waste Management System	10.2%
Forest Buffers	10.0%
Manure Transport	9.0%
Decision Agriculture	5.0%
Soil Conservation & Water Quality Plans	3.9%
Cropland Irrigation Management	3.3%
Wetland Restoration	3.1%
Commodity Cover Crops	2.5%
Water Control Structures	1.8%
Barnyard Runoff Control	1.4%
Land Retirement	1.0%
Other Agriculture	2.1%
Urban Nutrient Management	1.7%
Other Urban	1.2%
Forest Practices	0.0%
Wastewater + CSO	0.0%
Septic	2.6%

District of Columbia	
BMP	**Relative Reduction**
Impervious Urban Surface Reduction	69.0%
Urban Tree Planting; Urban Tree Canopy	12.2%
Urban Filtering Practices	8.3%
Erosion and Sediment Control	3.3%
Urban Stream Restoration	2.5%
Urban Infiltration Practices	2.4%
Dry Detention Ponds	1.0%
Other Urban	1.2%
Forest Practices	0.0%
Wastewater + CSO	0.0%

Maryland	
BMP	**Relative Reduction**
Early Cover Crops	10.7%
Conservation Tillage	8.8%
Grass Buffers	7.8%
Animal Waste Management System	6.2%
Decision Agriculture	4.9%
Forest Buffers	4.9%
Poultry Litter Injection	3.4%
Land Retirement	3.3%
Soil Conservation and Water Quality Plans	3.1%
Irrigation Water Capture Reuse	1.5%
Other Agriculture	5.3%
Urban Filtering Practices	4.3%
Bioretention/raingardens	2.5%
Urban Nutrient Management	2.0%
Stormwater Management (2002 to 2010), MD	1.8%
Forest Conservation	1.6%
MS4 Permit-Required Stormwater Retrofit	1.2%
Stormwater Management (1985 to 2002), MD	1.1%
Other Urban	4.7%
Forest Practices	0.0%
Wastewater + CSO	13.5%
Septic	7.2%

New York	
BMP	Relative Reduction
Animal Waste Management System	14.3%
Grass Buffers	12.7%
Streamside Grass Buffers	11.6%
Enhanced Nutrient Management	7.0%
Dairy Manure Injection	5.8%
Early Cover Crops	5.6%
Forest Buffers	5.3%
Poultry Litter Injection	5.0%
Soil Conservation & Water Quality Plans	4.1%
Conservation Tillage	3.9%
Dairy Precision Feeding	2.9%
Non Urban Stream Restoration	2.9%
Wetland Restoration	2.6%
Land Retirement	1.9%
Decision Agriculture	1.6%
Mortality Composters	1.5%
Prescribed Grazing	1.4%
Barnyard Runoff Control	1.3%
Loafing Lot Management	1.2%
Other Agriculture	1.5%
Urban Forest Buffers	4.1%
Other Urban	0.9%
Forest Practices	0.8%
Wastewater + CSO	0.0%
Septic	0.0%

Pennsylvania	
BMP	Relative Reduction
Land Retirement	18.2%
Forest Buffers	12.9%
Conservation Tillage	6.9%
Animal Waste Management System	5.8%
Enhanced Nutrient Management	5.6%
Early Cover Crops	5.1%
Alternative Crops	4.9%
Grass Buffers	3.6%
Commodity Cover Crops	2.5%
Soil Conservation and Water Quality Plans	2.4%
Wetland Restoration	1.8%
Stream Access Control with Fencing	1.2%
Dairy Precision Feeding	1.2%
Other Agriculture	4.4%
Urban Infiltration Practices	8.5%
Urban Filtering Practices	6.7%
Other Urban	2.5%
Forest Practices	0.0%
Wastewater + CSO	4.9%
Septic	0.8%

Virginia	
BMP	Relative Reduction
Grass Buffers	10.3%
Forest Buffers	9.1%
Animal Waste Management System	8.1%
Early Cover Crops	7.1%
Land Retirement	5.6%
Conservation Tillage	5.1%
Streamside Grass Buffers	4.4%
Soil Conservation and Water Quality Plans	2.9%
Stream Access Control with Fencing	2.6%
Tree Planting	2.5%
Irrigation Water Capture Reuse	2.0%
Virginia Decision Agriculture	1.5%
No Till (stackable)	1.2%
Prescribed Grazing	1.1%
Commodity Cover Crops	1.0%
Other Agriculture	5.3%
Urban Nutrient Management	2.9%
Urban Infiltration Practices	2.8%
Urban Filtering Practices	1.4%
Dry Extended Detention Ponds	1.4%
Wet Ponds and Wetlands	1.4%
Abandoned Mine Reclamation	1.2%
Other Urban	2.7%
Forest Practices	0.9%
Wastewater + CSO	12.6%
Septic	2.8%

West Virginia	
BMP	Relative Reduction
Stream Access Control with Fencing	16.3%
Animal Waste Management System	14.0%
Conservation Tillage	6.6%
Forest Buffers	4.8%
Soil Conservation and Water Quality Plans	4.8%
Nutrient Management	4.1%
Early Cover Crops	3.2%
Land Retirement	3.1%
Prescribed Grazing	2.8%
Grass Buffers	2.0%
Mortality Composters	1.0%
Other Agriculture	2.7%
Interim Erosion and Sediment Control	19.8%
Abandoned Mine Reclamation	5.5%
Forest Harvesting Practices	3.8%
Wastewater + CSO	5.4%
Septic	0.0%

Phase II WIPs' Relative Percent Reductions of Delivered Total Phosphorous to the Chesapeake Bay

Chesapeake Bay Watershed	
BMP	**Relative Reduction**
Animal Waste Management System	15.5%
Poultry Phytase	13.9%
Soil Conservation and Water Quality Plans	5.2%
Stream Access Control with Fencing	4.5%
Streamside Grass Buffers	4.4%
Conservation Tillage	4.2%
Irrigation Water Capture Reuse	4.1%
Forest Buffers	3.9%
Grass Buffers	3.4%
Land Retirement	2.1%
Dairy Precision Feeding	1.9%
Decision Agriculture	1.8%
Prescribed Grazing	1.7%
Barnyard Runoff Control	1.3%
Manure Transport	1.1%
Other Agriculture	9.5%
Urban Filtering Practices	3.9%
Urban Infiltration Practices	3.0%
Abandoned Mine Reclamation	1.3%
Erosion and Sediment Control	1.1%
Wet Ponds and Wetlands	1.1%
Other Urban	6.8%
Forest Practices	0.2%
Wastewater + CSO	4.2%

Delaware	
BMP	**Relative Reduction**
Poultry Phytase	28.1%
Animal Waste Management System	23.7%
Manure Transport	8.0%
Conservation Tillage	7.3%
Decision Agriculture	6.8%
Grass Buffers	6.7%
Forest Buffers	5.1%
Soil Conservation & Water Quality Plans	4.0%
Wetland Restoration	2.7%
Barnyard Runoff Control	2.2%
Mortality Composters	1.7%
Other Agriculture	2.1%
Other Urban	1.7%
Forest Practices	0.0%
Wastewater + CSO	0.0%

District of Columbia	
BMP	**Relative Reduction**
Impervious Urban Surface Reduction	78.6%
Urban Filtering Practices	6.3%
Erosion and Sediment Control	5.3%
Urban Tree Planting; Urban Tree Canopy	4.2%
Urban Stream Restoration	2.2%
Urban Infiltration Practices	1.3%
Dry Detention Ponds	1.0%
Other Urban	1.1%
Forest Practices	0.0%
Wastewater + CSO	0.0%

Maryland	
BMP	**Relative Reduction**
Poultry Phytase	17.3%
Animal Waste Management System	15.0%
Decision Agriculture	8.1%
Irrigation Water Capture Reuse	6.6%
Soil Conservation and Water Quality Plans	6.4%
Conservation Tillage	5.1%
Grass Buffers	3.5%
Forest Buffers	2.0%
Land Retirement	1.2%
Other Agriculture	4.9%
Urban Filtering Practices	5.9%
Bioretention/raingardens	3.0%
Erosion and Sediment Control	2.8%
Urban Stream Restoration	2.7%
Stormwater Management (1985 to 2002), MD	2.0%
Stormwater Management (2002 to 2010), MD	1.9%
MS4 Permit-Required Stormwater Retrofit	1.7%
Urban Nutrient Management	1.5%
Impervious Urban Surface Reduction	1.3%
Forest Conservation	1.3%
Urban Infiltration Practices	1.1%
Other Urban	3.1%
Forest Practices	0.0%
Wastewater + CSO	1.6%

New York	
BMP	**Relative Reduction**
Streamside Grass Buffers	13.8%
Animal Waste Management System	9.0%
Dairy Precision Feeding	8.5%
Non Urban Stream Restoration	7.2%
Soil Conservation & Water Quality Plans	5.9%
Grass Buffers	3.8%
Enhanced Nutrient Management	3.1%
Conservation Tillage	3.0%
Prescribed Grazing	2.9%
Decision Agriculture	2.3%
Forest Buffers	1.8%
Loafing Lot Management	1.6%
Barnyard Runoff Control	1.5%
Wetland Restoration	1.4%
Mortality Composters	1.1%
Other Agriculture	1.7%
Urban Forest Buffers	7.1%
Other Urban	1.1%
Forest Practices	0.3%
Wastewater + CSO	22.8%

Pennsylvania	
BMP	**Relative Reduction**
Animal Waste Management System	15.7%
Poultry Phytase	9.1%
Land Retirement	5.8%
Forest Buffers	5.7%
Soil Conservation and Water Quality Plans	4.1%
Stream Access Control with Fencing	3.8%
Nutrient Management	2.6%
Continuous No Till	2.5%
Conservation Tillage	2.4%
Precision Intensive Rotational Grazing	2.0%
Dairy Precision Feeding	1.8%
Swine Phytase	1.8%
Grass Buffers	1.7%
Alternative Crops	1.5%
Horse Pasture Management	1.3%
Barnyard Runoff Control	1.3%
Irrigation Water Capture Reuse	1.1%
Other Agriculture	4.7%
Urban Filtering Practices	7.2%
Urban Infiltration Practices	6.5%
Erosion and Sediment Control on Extractive	2.7%
Other Urban	2.8%
Forest Practices	0.0%
Wastewater + CSO	11.9%

Virginia	
BMP	**Relative Reduction**
Poultry Phytase	15.5%
Animal Waste Management System	14.0%
Streamside Grass Buffers	9.2%
Irrigation Water Capture Reuse	6.5%
Soil Conservation and Water Quality Plans	5.6%
Stream Access Control with Fencing	5.6%
Conservation Tillage	5.1%
Grass Buffers	4.5%
Forest Buffers	3.6%
Prescribed Grazing	2.8%
Dairy Precision Feeding	2.3%
No Till (stackable)	1.8%
Virginia Decision Agriculture	1.8%
Barnyard Runoff Control	1.6%
Tree Planting	1.1%
Mortality Composters	1.1%
Manure Transport	1.0%
Other Agriculture	3.7%
Abandoned Mine Reclamation	2.3%
Urban Infiltration Practices	1.8%
Wet Ponds and Wetlands	1.8%
Erosion and Sediment Control	1.3%
Urban Nutrient Management	1.3%
Urban Filtering Practices	1.3%
Other Urban	2.9%
Forest Practices	0.4%
Wastewater + CSO	0.0%

West Virginia	
BMP	**Relative Reduction**
Animal Waste Management System	22.3%
Stream Access Control with Fencing	19.5%
Poultry Phytase	14.1%
Prescribed Grazing	3.6%
Soil Conservation and Water Quality Plans	3.4%
Mortality Composters	1.8%
Conservation Tillage	1.1%
Other Agriculture	3.2%
Interim Erosion and Sediment Control	13.0%
Abandoned Mine Reclamation	4.2%
Forest Harvesting Practices	1.1%
Wastewater + CSO	12.7%

Phase II WIPs' Relative Percent Reductions of Delivered Total Sediment to the Chesapeake Bay

Chesapeake Bay Watershed	
BMP	**Relative Reduction**
Conservation Tillage	24.6%
Soil Conservation and Water Quality Plans	7.8%
Stream Access Control with Fencing	6.8%
Streamside Grass Buffers	6.6%
Land Retirement	6.5%
Forest Buffers	5.9%
Grass Buffers	3.5%
Prescribed Grazing	3.2%
Tree Planting	2.3%
Non Urban Stream Restoration	1.4%
Alternative Crops	1.3%
Wetland Restoration	1.1%
Other Agriculture	4.2%
Urban Filtering Practices	5.2%
Urban Infiltration Practices	3.3%
Erosion and Sediment Control	2.1%
Abandoned Mine Reclamation	2.1%
Urban Stream Restoration	1.8%
Wet Ponds and Wetlands	1.5%
Erosion and Sediment Control on Extractive	1.3%
Interim Erosion and Sediment Control	1.0%
Other Urban	5.6%
Forest Practices	0.8%
Wastewater + CSO	0.0%

Delaware	
BMP	**Relative Reduction**
Conservation Tillage	55.5%
Decision Agriculture	7.6%
Soil Conservation & Water Quality Plans	6.8%
Forest Buffers	6.6%
Grass Buffers	6.5%
Wetland Restoration	2.9%
Other Agriculture	3.1%
Erosion and Sediment Control	3.7%
Wet Ponds and Wetlands	3.0%
Dry Extended Detention Ponds	1.6%
Other Urban	2.2%
Forest Practices	0.5%
Wastewater + CSO	0.0%

District of Columbia	
BMP	**Relative Reduction**
Impervious Urban Surface Reduction	67.7%
Erosion and Sediment Control	16.0%
Urban Filtering Practices	7.3%
Urban Tree Planting; Urban Tree Canopy	2.8%
Urban Stream Restoration	1.9%
Street Sweeping	1.4%
Urban Infiltration Practices	1.3%
Other Urban	1.5%
Forest Practices	0.0%
Wastewater + CSO	0.0%

Maryland	
BMP	**Relative Reduction**
Conservation Tillage	36.9%
Soil Conservation and Water Quality Plans	9.0%
Land Retirement	2.8%
Forest Buffers	2.3%
Grass Buffers	2.1%
Tree Planting	1.3%
Early Cover Crops	1.1%
Other Agriculture	1.3%
Urban Filtering Practices	7.9%
Urban Stream Restoration	6.5%
Erosion and Sediment Control	5.6%
MS4 Permit-Required Stormwater Retrofit	4.8%
Stormwater Management (2002 to 2010), MD	3.6%
Bioretention/raingardens	3.2%
Stormwater Management (1985 to 2002), MD	2.2%
Impervious Urban Surface Reduction	2.1%
Wet Ponds and Wetlands	1.4%
Urban Infiltration Practices	1.0%
Other Urban	4.7%
Forest Practices	0.0%
Wastewater + CSO	0.0%

New York	
BMP	**Relative Reduction**
Non Urban Stream Restoration	35.7%
Streamside Grass Buffers	10.4%
Conservation Tillage	7.8%
Soil Conservation & Water Quality Plans	7.4%
Grass Buffers	4.8%
Prescribed Grazing	2.7%
Forest Buffers	2.2%
Wetland Restoration	1.6%
Other Agriculture	2.4%
Urban Forest Buffers	4.9%
Urban Infiltration Practices	1.4%
Other Urban	1.3%
Forest Practices	17.4%
Wastewater + CSO	0.0%

Pennsylvania	
BMP	**Relative Reduction**
Conservation Tillage	33.6%
Land Retirement	13.8%
Forest Buffers	8.8%
Soil Conservation and Water Quality Plans	6.7%
Alternative Crops	3.8%
Grass Buffers	2.5%
Wetland Restoration	1.9%
Continuous No Till	1.3%
Stream Access Control with Fencing	1.2%
Horse Pasture Management	1.1%
Tree Planting	1.0%
Other Agriculture	2.3%
Urban Filtering Practices	8.8%
Urban Infiltration Practices	6.7%
Erosion and Sediment Control on Extractive	3.3%
Wet Ponds and Wetlands	1.1%
Other Urban	2.0%
Forest Practices	0.0%
Wastewater + CSO	0.0%

Virginia	
BMP	**Relative Reduction**
Streamside Grass Buffers	15.2%
Conservation Tillage	14.8%
Stream Access Control with Fencing	10.6%
Soil Conservation and Water Quality Plans	8.5%
Prescribed Grazing	6.3%
Forest Buffers	5.7%
Grass Buffers	5.1%
Tree Planting	4.2%
Land Retirement	3.5%
No Till (stackable)	2.1%
Non Urban Stream Restoration	1.2%
Other Agriculture	4.4%
Abandoned Mine Reclamation	3.9%
Erosion and Sediment Control	2.3%
Wet Ponds and Wetlands	2.1%
Dry Extended Detention Ponds	2.0%
Urban Infiltration Practices	1.9%
Urban Stream Restoration	1.6%
Urban Filtering Practices	1.6%
Other Urban	2.2%
Forest Practices	0.8%
Wastewater + CSO	0.0%

West Virginia	
BMP	**Relative Reduction**
Stream Access Control with Fencing	41.1%
Prescribed Grazing	7.8%
Soil Conservation and Water Quality Plans	5.5%
Conservation Tillage	2.7%
Forest Buffers	1.5%
Other Agriculture	2.3%
Interim Erosion and Sediment Control	28.9%
Abandoned Mine Reclamation	7.7%
Forest Harvesting Practices	2.5%
Wastewater + CSO	0.0%