



PROTECTING CHESAPEAKE BAY

HOW DO WE
**STACK
UP?**

ANNUAL REPORT 2017 | MARYLAND AGRICULTURAL WATER QUALITY COST-SHARE PROGRAM



HOW DO WE STACK UP?

Over the past year, Maryland farmers made significant progress installing best management practices on their farms that support clean water, promote healthy soils, and enhance our state's valuable natural resources. But how do these accomplishments stack up against the broader Chesapeake Bay restoration goals outlined in Maryland's Watershed Implementation Plan to protect and restore the Bay by 2025?

In short, Maryland farmers lead the Bay states in conserving and protecting natural resources and installing practices that meet Chesapeake Bay milestone goals. But we have a secret weapon. For more than three decades, the Maryland Agricultural Water Quality Cost-Share Program (MACS) has been helping farmers install conservation projects on their farms that they otherwise could not afford.

During the year, I was pleased to see that more and more farmers are using MACS cost-share grants to install best management practices that help them comply with federal, state, and local environmental regulations, including our

nutrient management regulations and phosphorus management tool requirements. Livestock management practices including manure/poultry litter storage structures and roofs and covers, along with stream protection practices such as animal watering facilities, experienced an uptick.

In addition, farmers used our grants to move a record 241,941 tons of manure safely away from areas with high soil phosphorus levels, an increase of 13 percent over 2016 and 460 percent since 2013. During the year, we introduced "Fast Track" grants as a time-saving cost-share option to help poultry farmers receive approval in as little as 48 hours to transport litter away from nutrient-sensitive areas.

The bellwether of our conservation efforts is our Cover Crop Program, hands down the most effective water quality protection program of its kind in the nation. This year's cover crop planting reached historic levels as farmers planted more than 560,000 acres of small grains on their fields to recycle unused plant nutrients, control erosion, protect water quality, and provide a host of soil health benefits for future crops.

During the year, we retooled the Cover Crop Program to make it more efficient at protecting water quality and more beneficial to soil health. To give farmers impacted by unfavorable weather conditions more time to get their fields planted, we extended the aerial seeding deadline. Beginning next year, harvested cover crops will no longer be eligible for payment. Instead, a wider variety of cover crop mixes will qualify for early planting incentives. Such mixes are effective at recycling nutrients and improving soil structure. They will go a long way toward achieving water quality goals and improving soil health on Maryland farms as outlined in Governor Larry Hogan's "Healthy Soils" initiative.

Please read on to learn the full measure of our success in helping farmers install on-the-ground conservation projects that stack up the benefits for clean water and healthy soils.

Joe Bartenfelder
Maryland Agriculture Secretary

STACKING UP THE BEST MANAGEMENT PRACTICES

The Maryland Agricultural Water Quality Cost-Share Program (MACS) provides conservation grants to help farmers pay to install best management practices on their farms to protect natural resources, comply with federal, state, and local environmental requirements, and meet Chesapeake Bay milestone goals.

Since 1984, MACS has provided thousands of farmers with cost-share grants that cover up to

87.5 percent of the cost to install 30 eligible best management practices on farms to prevent soil erosion, manage crop nutrients, and protect water quality downstream. A low-interest loan program provides up-front funds to help farmers jump start major improvement projects or purchase needed conservation equipment.

MACS is a key feature in Maryland's Watershed Implementation Plan to restore

clean water in the Chesapeake Bay and the state's creeks, streams, and rivers by 2025. Delivered by the state's 24 soil conservation districts with technical guidance from USDA's Natural Resources Conservation Service, MACS helps farmers install conservation practices on their farms that meet clean water "milestones" of the Chesapeake Bay Total Maximum Daily Load (TMDL).

CHESAPEAKE BAY CLEAN-UP PROGRESS THROUGH JUNE 2017*

ANNUAL MILESTONE	ANNUAL GOAL DUE JUNE 30, 2017	STATUS AS OF JUNE 30, 2017	PERCENT OF ANNUAL GOAL ACHIEVED
Cover Crops	Plant 417,014 acres of cover crops each year	561,344 acres planted during 2016-2017 planting season	134%
Manure Transport	Annually transport 51,000 tons of excess poultry litter or livestock manure to farms or alternative use facilities that can use the manure safely and in accordance with nutrient management plans	241,941 tons of manure transported in 2017	474%
Soil Conservation and Water Quality Plans	Develop plans for 1,026,413 acres	923,896 acres planned	90%
MIDPOINT MILESTONE	2017 MIDPOINT ASSESSMENT GOAL (DUE JUNE 30, 2017/COVERS PERIOD BETWEEN 2009 AND 2017)	STATUS AS OF JUNE 30, 2017	PERCENT OF MIDPOINT ASSESSMENT GOAL ACHIEVED
Off-Stream Watering Without Fencing	Construct 4,809 acres of off-stream watering sources for livestock by 2017	20,085 acres protected	418%
Retirement of Highly Erodible Land	Retire 2,554 acres of highly erodible land by 2017	9,606 acres retired and planted with protective vegetation	376%
Streamside Forest Buffers	Plant 927 acres of forest buffers next to streams by 2017	1,697 acres planted	183%
Streamside Grass Buffers	Plant 2,273 acres of grass buffers next to streams by 2017	5,139 acres planted	226%
Waste Storage Structures/ Livestock	Construct 144 livestock waste storage structures by 2017	402 structures installed	279%
Waste Storage Structures/ Poultry	Construct 31 poultry waste storage structures by 2017	149 structures installed	481%

*In some instances, progress includes practices installed with funds from both MACS and USDA's Natural Resources Conservation Service.

In Fiscal Year 2017, the Maryland Agricultural Water Quality Cost-Share Program provided Maryland farmers with \$33.9 million in grants to install 2,491 conservation projects on their farms to protect water quality in streams, rivers, and the Chesapeake Bay. The figure represents the program's seventh consecutive year of growth. Farmers who received these cost-share grants invested about \$1.5 million of their own money into projects that will prevent an estimated 3.5 million pounds of nitrogen and 142,438 pounds of phosphorus from entering Maryland waterways. More than 10,000 tons of soil will be prevented from impacting local streams.

Although MACS helps farmers install conservation practices that they otherwise could not afford, grants do not cover equipment purchases or startup costs for major projects. Low Interest Loans for Agricultural Conservation (LILAC) provide farmers with upfront funds needed to get a project up and running. Guaranteed by the Maryland Water Quality Revolving Loan Fund, LILAC loans are typically offered at below market rates. They are available at participating lending institutions statewide. In Fiscal Year 2017, farmers secured \$407,000 in LILAC loans to help pay for manure handling and conservation equipment, no-till equipment, waste storage structures, and heavy use areas.

PROGRAM SUMMARY | FISCAL YEAR 2017

CAPITAL PROJECTS	NUMBER OF PROJECTS	FUNDS
Total Approved from State Funds	342	\$11,020,705

Capital Projects Completed		
CREP Projects with State Funds	56	\$ 301,795
All Other Projects with State Funds	287	\$ 6,297,190
With Federal Funds	16	\$ 87,172
Total Capital Projects Completed	359	\$ 6,686,157

Special Projects Completed		
Cover Crops	1,688	\$25,612,831
Manure Transport ¹	353	\$ 1,174,690
Manure Injection	91	\$ 517,385
Total Special Projects Completed	2,132	\$27,304,906
Total Capital & Special Projects Completed	2,491	\$33,991,063²

ENVIRONMENTAL BENEFITS	NITROGEN	PHOSPHORUS
Estimated Pounds of Nutrients Removed by Capital Projects	152,099	30,643
Estimated Pounds of Nutrients Removed by Cover Crops	3,353,850	111,795
	Tons of Soil	Acres of Land
Tons of Soil Saved Per Year ³	10,854	1,490
	Tons of Manure	Animal Units⁴
Manure Managed Daily with Animal Waste Storage Structures		
Poultry Manure Managed Daily	827	56,494
Dairy Manure Managed Daily	231	5,185
Beef Manure Managed Daily	134	4,441
Other Animal Manure Managed Daily	17	979
Total Animal Manure Managed Daily	1,209	67,099

¹Does not include poultry company matching funds (\$453,038)

²Includes approximately \$14 million in special funds from the Chesapeake Bay 2010 Trust Fund

³Based on the Revised Universal Soil Loss Equation (RUSLE)

⁴One animal unit = 1,000 lbs. of live animal weight

Note: Nutrient reduction figures are based on the best information available and are consistent with the Chesapeake Bay Model.



CAPITAL PROJECTS

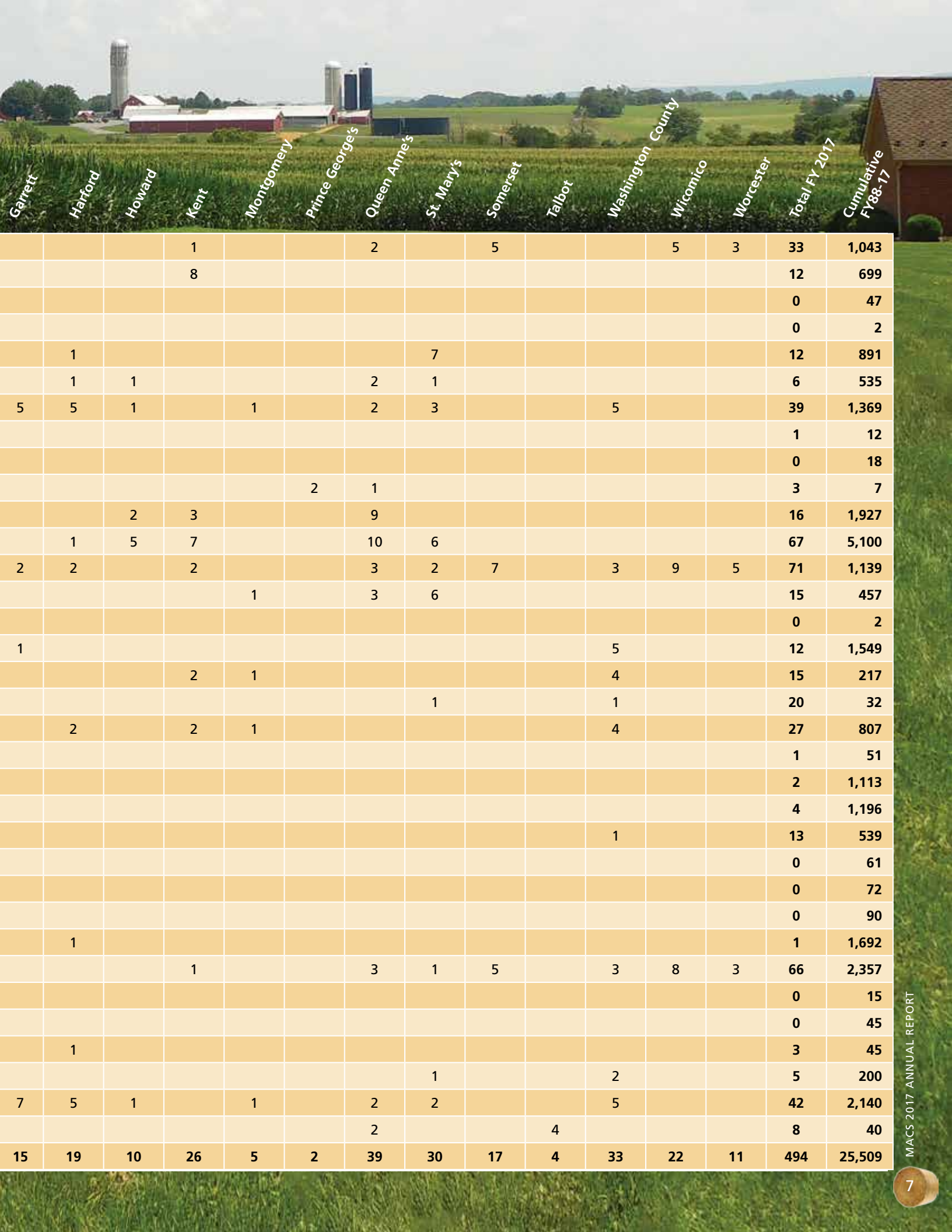
A portion of the best management practices included in the Program Summary are financed through the capital program by the sale of general obligation bonds. In Fiscal Year 2017, MACS provided farmers with \$6.6 million to install 359 conservation projects on their farms to control erosion, protect water quality in local streams, and improve their management of manure resources (see center spread). Helping farmers comply with Maryland's phased-in updates to its nutrient management regulations is central to the MACS mission. During the year, an increased number of farmers used MACS cost-share grants to erect streamside fencing, install watering facilities in pastures, and build manure storage structures needed to protect water quality and comply with the Nutrient Management Program.

SOIL CONSERVATION DISTRICT SUMMARY FOR CAPITAL PROJECTS | FISCAL YEAR 2017

DISTRICT	COMPLETED PROJECTS	MACS PAYMENT
Allegany	5	\$ 10,324
Baltimore County	8	\$ 165,995
Calvert	5	\$ 51,795
Caroline	20	\$ 817,194
Carroll	68	\$ 888,183
Catoctin	8	\$ 218,207
Cecil	7	\$ 132,100
Charles	1	\$ 2,749
Dorchester	20	\$ 663,679
Frederick	48	\$ 722,536
Garrett	12	\$ 86,674
Harford	16	\$ 84,309
Howard	7	\$ 94,862
Kent	23	\$ 202,003
Montgomery	4	\$ 50,791
Prince George's	2	\$ 19,120
Queen Anne's	29	\$ 496,844
St. Mary's	16	\$ 92,051
Somerset	7	\$ 560,997
Talbot	4	\$ 75,500
Washington County	24	\$ 350,022
Wicomico	17	\$ 556,682
Worcester	8	\$ 343,540
Total	359	\$6,686,157

COMPLETED MACS COST-SHARED PRACTICES BY DISTRICT | FISCAL YEAR 2017

Practice	Allegany	Anne Arundel	Baltimore County	Calvert	Caroline	Carroll	Catoctin	Cecil	Charles	Dorchester	Frederick
Animal Mortality Facility					9					8	
Conservation Cover						4					
Contour Farming											
Contour Orchard											
Critical Area Planting			2	1							1
Diversion			1								
Fencing	2					7					8
Field Border						1					
Filter Strip											
Forage and Biomass Planting											
Grade Stabilization Structure				1				1			
Grassed Waterway			3	1		20		1		1	12
Heavy Use Area Protection				1	4	12	4			9	6
Lined Waterway or Outlet				3				1	1		
Livestock Pipeline											
Riparian Forest Buffer	1					5					
Riparian Herbaceous Cover										2	6
Roofs and Covers						7	3				8
Roof Runoff Structure						2	3	3			10
Sediment Basin				1							
Sediment Control Pond				2							
Spring Development	2					1					1
Stream Crossing	1					6	2				3
Strip Cropping, Contour											
Strip Cropping, Field											
Terrace System											
Vegetated Treatment Area											
Waste Storage Structure			2		12	6	3	2		8	9
Waste Treatment Lagoon											
Wastewater Treatment Strip											
Water Control Structure					2						
Water Well				1		1					
Watering Facility	2		1	1		7	1	1			6
Wetland Restoration					2						
Total	8	0	9	12	29	79	16	9	1	28	70



Garrett
 Harford
 Howard
 Kent
 Montgomery
 Prince Georges
 Queen Anne's
 St. Mary's
 Somerset
 Talbot
 Washington County
 Wicomico
 Worcester
 Total FY 2017
 Cumulative FY88-17

			1			2		5			5	3	33	1,043
			8										12	699
													0	47
													0	2
	1						7						12	891
	1	1				2	1						6	535
5	5	1		1		2	3			5			39	1,369
													1	12
													0	18
					2	1							3	7
		2	3			9							16	1,927
	1	5	7			10	6						67	5,100
2	2		2			3	2	7		3	9	5	71	1,139
				1		3	6						15	457
													0	2
1										5			12	1,549
			2	1						4			15	217
							1			1			20	32
	2		2	1						4			27	807
													1	51
													2	1,113
													4	1,196
										1			13	539
													0	61
													0	72
													0	90
	1												1	1,692
			1			3	1	5		3	8	3	66	2,357
													0	15
													0	45
	1												3	45
							1			2			5	200
7	5	1		1		2	2			5			42	2,140
						2			4				8	40
15	19	10	26	5	2	39	30	17	4	33	22	11	494	25,509

SPECIAL PROJECT GRANTS

The Maryland Agricultural Water Quality Cost-Share Program receives special funding from the Chesapeake Bay Restoration Fund and Chesapeake Bay 2010 Trust Fund to finance highly valued best management practices included in Maryland's Chesapeake Bay milestone commitments. These include the Cover Crop Program and contract signing incentive payment for the Conservation Reserve Enhancement Program. Portions of the Manure Transport Program, certain best management practices, and Manure Injection Grants also receive additional funds from the Chesapeake Bay 2010 Trust Fund.

COVER CROP PROGRAM

Cover crops help stack the hay in favor of a cleaner, healthier Chesapeake Bay. During the 2016-2017 planting season, Maryland farmers planted a record 561,344 acres of cover crops on their fields to absorb nutrients leftover from previous fertilizer applications, control erosion over the winter, and promote healthy soils. It was the fifth consecutive year of growth for the program and the largest cover crop acreage of any state in the Bay watershed. Cover crop implementation levels allowed Maryland to continue to exceed its annual Chesapeake Bay milestone goal for this practice.

Maryland's Cover Crop Program provides grants to farmers who plant small grains such as wheat, rye, or barley and other eligible species on their fields following the fall harvest. As they grow, cover crops provide a living, protective cover against erosion and nutrient runoff while building the soil's organic matter for the next year's crop. Grants offset seed, labor, and

COVER CROP PROGRAM 2016-2017

DISTRICT	CONTRACTS	FALL CERTIFIED ACRES	MACS PAYMENT
Allegany	11	787	\$ 42,222
Anne Arundel	32	5,310	\$ 274,995
Baltimore County	38	11,864	\$ 550,729
Calvert	16	4,483	\$ 184,272
Caroline	150	46,714	\$ 1,952,300
Carroll	144	34,469	\$ 1,629,123
Cecil	80	21,671	\$ 1,000,808
Charles	34	9,373	\$ 390,949
Dorchester	110	45,876	\$ 2,093,041
Frederick & Catoclin	196	39,623	\$ 1,899,635
Garrett	24	1,639	\$ 93,393
Harford	85	19,756	\$ 987,804
Howard	16	2,244	\$ 101,489
Kent	119	63,662	\$ 2,962,195
Montgomery	38	20,854	\$ 908,589
Prince George's	17	2,891	\$ 129,650
Queen Anne's	147	67,017	\$ 3,041,917
St. Mary's	68	11,490	\$ 477,060
Somerset	49	19,366	\$ 801,333
Talbot	91	58,129	\$ 2,576,570
Washington County	72	12,820	\$ 575,304
Wicomico	87	27,524	\$ 1,331,441
Worcester	64	33,782	\$ 1,608,012
Total	1,688	561,344	\$25,612,831

equipment costs associated with planting cover crops. During the 2016-2017 planting season, farmers received \$25.6 million in cost-share grants to plant cover crops on their fields. Approximately 80 percent of the farmers planted traditional cover crops, which may not be harvested but can be grazed or chopped for on-farm livestock forage after becoming well established. Farmers who planted traditional cover crops received up to \$90/acre. Cover crops planted for harvest also provide water quality benefits but receive a lower reimbursement rate ranging from \$25-\$35/acre.

During the year, several program adjustments were approved for 2018. To make the program more efficient at protecting water quality and improving soil health, harvested cover crops will no longer be eligible for cost-share; however, small grain/legume mixes will qualify for early planting incentives. To give farmers more time to get their fields planted, the aerial seeding deadline has been extended, and in keeping with Governor Larry Hogan’s “Healthy Soils” initiative, a variety of small grain/legume mixes have been added to promote biodiversity and increase organic matter in the soil.



CONSERVATION RESERVE ENHANCEMENT PROGRAM

Healthy streams are important to the overall health of the Chesapeake Bay. Since 1997, Maryland’s Conservation Reserve Enhancement Program (CREP)—a federal-state partnership—has been helping farmers install stream protection practices that stack the odds in favor of cleaner, healthier waterways. CREP pays landowners annual rental payments to take environmentally sensitive cropland near streams out of production for 10 to 15 years and plant streamside buffers of grasses and trees, create wetlands, protect highly erodible land, and establish wildlife habitat for endangered species. Land rental contracts range from 10 to 15 years.

The Maryland Agricultural Water Quality Cost-Share Program provides landowners with grants to establish conservation practices on land that they have enrolled in CREP. Special funds are used to award a \$100/acre signing bonus to farmers who enroll in the program or re-enroll the land after their initial contracts expire. In Fiscal Year 2017, the program provided landowners with \$516,161 in signing bonuses and \$301,795 in cost-share grants to install 56 stream protection practices, including livestock exclusion fencing, watering troughs, and livestock crossings. Cost-share grants are financed through the capital program.

CREP PROJECTS COMPLETED BY DISTRICT | FISCAL YEAR 2017

DISTRICT	COMPLETED PROJECTS	MACS PAYMENT
Allegany	4	\$ 6,402
Carroll	10	\$ 64,472
Caroline	2	\$ 18,527
Dorchester	1	\$ 1,828
Frederick	8	\$ 42,912
Garrett	1	\$ 1,440
Kent	8	\$ 10,901
Montgomery	1	\$ 7,522
Queen Anne’s	5	\$ 15,228
Talbot	3	\$ 60,403
Washington County	13	\$ 72,160
Total	56	\$301,795

MANURE TRANSPORT

Maryland’s Manure Transport Program ensures that the chips are not stacked against animal producers who are working to protect water quality. The program helps poultry, dairy, beef, and other livestock producers transport manure away from farms with high soil phosphorus levels to other farms or alternative use facilities that can use the resource safely based on their nutrient management plans. The program experienced a tremendous increase in

participation in Fiscal Year 2017, as farmers began using Maryland’s new Phosphorus Management Tool (PMT) to identify areas where the soil is saturated with phosphorus and a high risk for runoff into waterways exists. Typically, farm fields where manure has been used as a fertilizer over an extended period of time are at greater risk for phosphorus over-enrichment.

In Fiscal Year 2017, the program provided \$1,174,690 in cost-share grants to help farmers transport 241,941 tons of manure to



MANURE TRANSPORT PROGRAM PAYMENT SUMMARY

FISCAL YEAR	ACTUAL TONS	MACS PAYMENT	POULTRY COMPANIES COST-SHARE PAYMENT	TOTAL FUNDS ISSUED
FY 1999	1,896	\$ 17,992	\$ 17,992	\$ 35,984
FY 2000	13,366	\$ 111,464	\$ 111,464	\$ 222,928
FY 2001	20,477	\$ 195,559	\$ 195,559	\$ 391,118
FY 2002	47,481	\$ 434,610	\$ 420,395	\$ 855,005
FY 2003	28,556	\$ 233,444	\$ 229,645	\$ 463,089
FY 2004	40,755	\$ 295,356	\$ 285,806	\$ 581,162
FY 2005	36,329	\$ 239,196	\$ 200,113	\$ 439,309
FY 2006	69,009	\$ 380,694	\$ 293,728	\$ 674,422
FY 2007	99,297	\$ 490,011	\$ 356,955	\$ 846,966
FY 2008	99,817	\$ 520,357	\$ 370,985	\$ 891,342
FY 2009	119,892	\$ 663,177	\$ 504,024	\$ 1,167,201
FY 2010	80,899	\$ 469,398	\$ 402,846	\$ 872,244
FY 2011	61,150	\$ 354,011	\$ 294,383	\$ 648,394
FY 2012	35,554	\$ 297,587	\$ 283,951	\$ 581,538
FY 2013	52,481	\$ 377,007	\$ 339,252	\$ 716,259
FY 2014	118,995	\$ 608,259	\$ 419,929	\$ 1,028,188
FY 2015	167,237	\$ 851,304	\$ 409,548	\$ 1,260,852
FY 2016	213,151	\$ 954,300	\$ 447,882	\$ 1,402,182
FY 2017	241,941	\$ 1,174,690	\$ 453,038	\$ 1,627,728
Total	1,548,283	\$8,668, 416	\$6,037,495	\$14, 705,911

approved farms and businesses, an increase of 13 percent over 2016. Delmarva poultry companies provided \$453,038 in matching funds to transport poultry litter, bringing the total amount of financial support provided through the transport program to \$1,627,728. Approximately 26 percent of the manure was poultry litter that was shipped to alternative use facilities and not land-applied. The remaining manure was applied to crop fields that could use the resource safely and in accordance with Maryland’s nutrient management regulations.

To help farmers move poultry litter quickly and with less red tape, the program introduced Fast Track grants in the spring. This time-saving cost-share option provides farmers with grant approval to transport poultry litter out of nutrient-sensitive areas in as little as 48 hours.



MANURE INJECTION GRANTS

Providing cost-share assistance to help farmers comply with Maryland's nutrient management regulations is a major priority for MACS. The Nutrient Management Program requires farmers using certain tillage methods to inject or incorporate manure into the soil within 48 hours of application. Manure injection and incorporation reduces odors,

preserves surface residue, and helps prevent nitrogen and phosphorus from impacting waterways.

Cost-share assistance is available to hire custom operators, rent or lease equipment, or offset operating costs associated with using secondary tillage equipment to inject or incorporate manure

into the soil. In Fiscal Year 2017, MACS provided \$517,385 in grants to 73 farmers to inject or incorporate manure and other organic products into the soil. During the latter part of the year, MACS eliminated grant eligibility for manure incorporation in order to focus resources on manure injection, which offers enhanced environmental benefits.



SOIL CONSERVATION DISTRICTS BRING MACS TO FARMERS

Maryland's 24 soil conservation districts—with technical guidance from USDA's Natural Resources Conservation Service—help farmers select the right best management practices for their farms, supervise their installation and construction, and develop maintenance plans to keep them in good working order. District staff help farmers calculate costs to install practices and apply for state and federal grant and loan programs. Best management practices are usually installed as part of a farm's overall Soil Conservation and Water Quality Plan. These plans are developed free of charge by district technical staff to help farmers identify, protect, and enhance natural resources on their farms.

MARYLAND'S SOIL CONSERVATION DISTRICTS

Allegheny	301-777-1747, ext. 3
Anne Arundel	410-571-6757
Baltimore County	410-527-5920, ext. 3
Calvert	410-535-1521, ext. 3
Caroline	410-479-1202, ext. 3
Carroll	410-848-8200, ext. 3
Catoctin	301-695-2803, ext. 3
Cecil	410-398-4411, ext. 3
Charles	301-638-3028
Dorchester	410-228-5640, ext. 3
Frederick	301-695-2803, ext. 3
Garrett	301-334-6950, ext. 3
Harford	410-638-4828
Howard	410-313-0680
Kent	410-778-5150, ext. 3
Montgomery	301-590-2855
Prince George's	301-574-5162, ext. 3
Queen Anne's	410-758-3136, ext. 3
St. Mary's	301-475-8402, ext. 3
Somerset	410-621-9310
Talbot	410-822-1577, ext. 5
Washington County	301-797-6821, ext. 3
Wicomico	410-546-4777, ext. 3
Worcester	410-632-5439, ext. 3



Maryland Department of Agriculture

Office of Resource Conservation

Conservation Grants Program
50 Harry S. Truman Parkway
Annapolis, MD 21401

410-841-5864 | mda.maryland.gov



Larry Hogan, *Governor*
Boyd K. Rutherford, *Lt. Governor*
Joseph Bartenfelder, *Secretary*
Julianne A. Oberg, *Deputy Secretary*

MDA 15.04.18 | Recycled paper