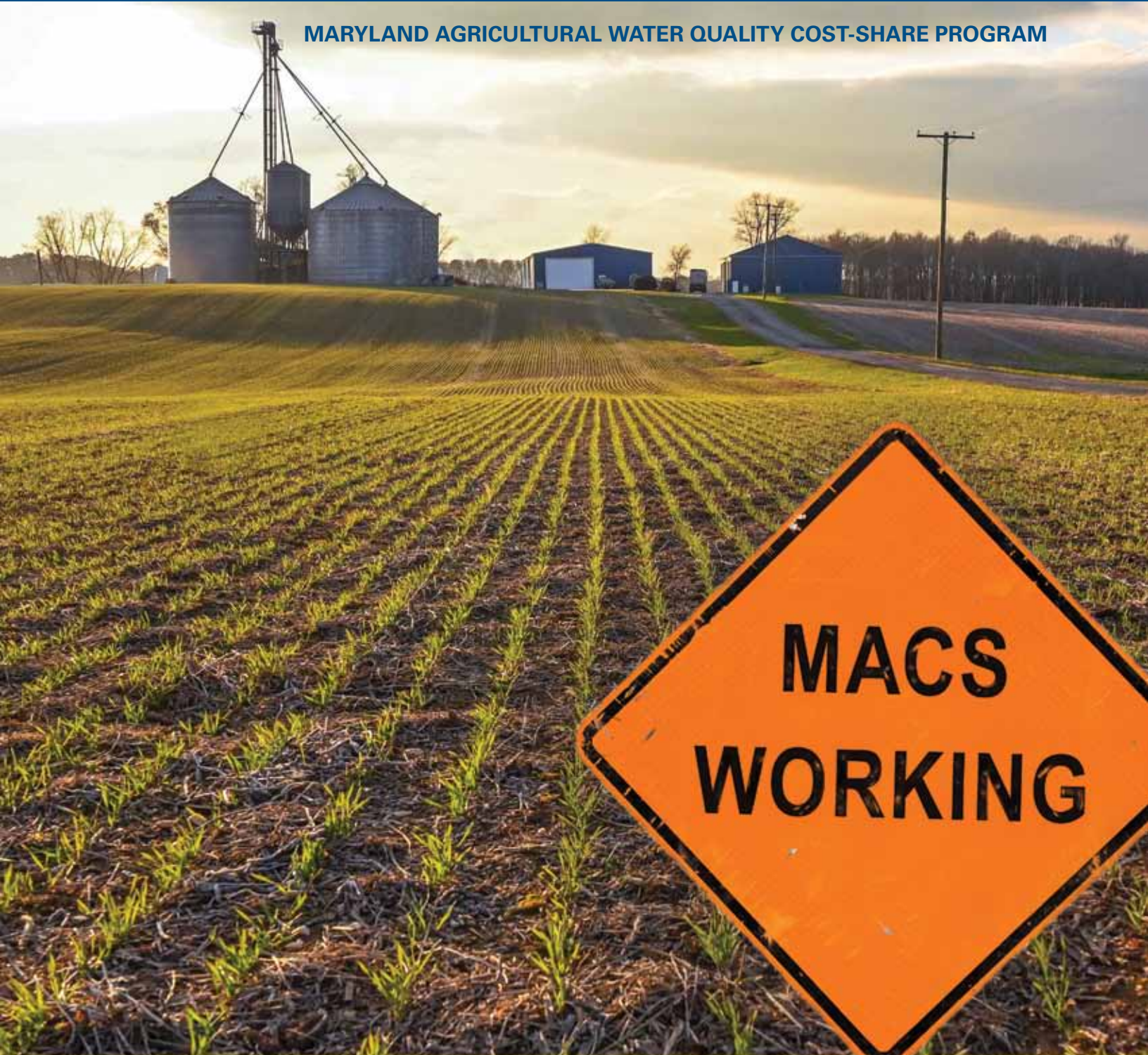




MACS AT WORK

FOR A HEALTHIER CHESAPEAKE BAY

MARYLAND AGRICULTURAL WATER QUALITY COST-SHARE PROGRAM



2018 ANNUAL REPORT



Message from the Secretary

A longtime high school football coach once told me, “if you play the game long enough, you’ll finish in first place and you’ll finish in last place, but most of the time, you’ll finish somewhere in the middle.” The same holds true for any long-lived program. This year—on the eve of our 30th anniversary of helping farmers finance conservation practices on their farms—the MACS Program came up against an opponent we simply could not overcome—the weather.

Persistent rainfall throughout the fiscal year delayed construction of structural best management practices, wreaked havoc with the cover crop planting, and waterlogged fields that were slated to be planted in conservation cover.

Nevertheless, the program made significant strides in helping farmers protect natural resources on their farms. Our Manure Transport Program moved a record-setting 249,421 tons of manure away from areas with high soil phosphorus levels. This is the sixth consecutive year of growth for the transport program and we expect that growth to continue as the phased-in transition to the Phosphorus Management Tool moves forward.

Installation of animal mortality facilities, manure storage structures, heavy use areas, and roof runoff structures remained strong as poultry and livestock farmers improved their management of manure resources. Stream protection projects involving the installation of alternative water sources, livestock crossings, and livestock exclusion fencing moved forward during the year, while grade stabilization structures and grassed waterways remained popular with farmers seeking to keep valuable topsoil from washing away.

Fields planted to cover crops to reduce erosion and take up residual nitrogen were down in Fiscal Year 2018. A late spring planting delayed the harvest of cash crops, giving farmers too little time to get their fields planted before the cold weather set in. Nevertheless, farmers planted almost 400,000 acres of traditional cover crops statewide during the 2017-2018 planting season. An additional 161,332 acres of cover crops were planted by farmers for harvest during the year without the benefit of state cost-share funds.

The following report more fully describes how MACS works hand in hand with Maryland farmers to place best management practices on the land to protect our streams, rivers, and the Chesapeake Bay.

Joe Bartenfelder, *Maryland Agriculture Secretary*

MACS AT WORK FOR THE BAY

For nearly three decades, the Maryland Agricultural Water Quality Cost-Share (MACS) Program has been helping farmers install water quality improvement projects on their farms, invest in sustainable agricultural practices, and comply with federal, state, and local environmental requirements.

MACS provides farmers with conservation grants that cover up to 87.5 percent of the cost to install a wide range of best management practices on their farms to control

erosion, manage nutrients, and protect water quality. Cover crops planted after the harvest to recycle unused fertilizers, grassed waterways installed to protect fields from soil and gully erosion, streamside buffers planted to filter nutrients before they reach waterways, and animal waste storage facilities constructed to help farmers manage manure resources were among 30 best management practices eligible for MACS funding in Fiscal Year 2018.

MACS is a key feature in Mary-

land's ongoing efforts to restore clean water in the Chesapeake Bay and its tributaries by 2025. Delivered by the state's 24 soil conservation districts with technical guidance from USDA's Natural Resources Conservation Service, MACS grants allow farmers to install highly valued best management practices on their farms that help Maryland meet nutrient and sediment reduction goals outlined in its federally approved Watershed Implementation Plan to restore the Bay.

Chesapeake Bay Cleanup—Midpoint Assessment

Fiscal Year 2018 represented the start of the final phase of the multi-state Bay cleanup effort that began in 2010 and is being led by the U.S. Environmental Protection Agency. The midpoint assessment of the program's progress through 2017 determined that Bay jurisdictions have made considerable progress in reducing pollution.

In 2018, modeling tools used to gauge the cleanup's progress were updated with the latest science. The updated model shows that while Maryland is on track to meet its phosphorus and sediment reduction goals, additional focus is needed to reduce nitrogen levels in the Bay. Maryland is developing its third and final Watershed Implementation

Plan to address remaining nutrient reductions.

The plan will build on previous statewide and local efforts and will be completed and submitted for public comment in April 2019. Progress in meeting the new Phase III strategies will be reported once the final Watershed Implementation Plan is approved.

Midpoint Assessment Results: The Bay is Getting Healthier



For the first time in decades...

- Underwater grasses have exceeded 100,000 acres
- Blue crab and oyster populations are increasing
- Water quality trends show consistent improvement in many watersheds



LIVESTOCK WATERING FACILITIES PROVIDE ANIMALS WITH A RELIABLE SOURCE OF WATER AWAY FROM STREAMS, PONDS OR WELLS.



2018 Funding Summary

In Fiscal Year 2018, the Maryland Agricultural Water Quality Cost-Share (MACS) Program provided Maryland farmers with \$25.2 million in cost-share grants to install 2,008 conservation projects on their farms to protect water quality. Grants cover up to 87.5 percent of the cost to install eligible best management practices. Farmers receiving these grants invested about \$730,000 of their own money into projects that will prevent an estimated 2.5 million pounds of nitrogen, 100,107 pounds of phosphorus, and 5,225 tons of soil from entering Maryland waterways.

Low Interest Loans for Agricultural Conservation (LILAC) provide farmers with upfront funds to get a project started. Guaranteed by the Maryland Water Quality Revolving Loan Fund, LILAC loans are typically offered at below market rates and are available at participating lending institutions statewide. In Fiscal Year 2018, MACS provided \$296,060 in LILAC loans to help farmers pay for manure handling and conservation equipment, no-till equipment, waste storage structures, and heavy use areas.

PROGRAM SUMMARY FISCAL YEAR 2018

Capital Projects	Number of Projects	Funds
Total Approved from State Funds	259	\$6,846,961
Capital Projects Completed		
CREP Projects with State Funds	54	\$200,195
All Other Projects with State Funds	139	\$4,750,250
With Federal Funds	22	\$149,916
Total Capital Projects Completed	215	\$5,100,361
Special Projects Completed		
Cover Crops	1,443	\$18,826,112
Manure Transport ¹	307	\$1,020,910
Manure Injection	43	\$311,460
Total Special Projects Completed	1,793	\$20,158,482
Total Capital & Special Projects Completed	2,008	\$25,258,843²
Environmental Benefits		
Estimated Pounds of Nutrients Removed by Capital Projects	103,900	20,934
Estimated Pounds of Nutrients Removed by Cover Crops	2,375,172	79,173
Tons of Soil		
Tons of Soil Saved Per Year ³	5,225	495
Manure Managed Daily with Animal Waste Storage Structures		
Poultry Manure Managed Daily	680	50,328
Dairy Manure Managed Daily	223	4,961
Beef Manure Managed Daily	58	1,667
Other Animal Manure Managed Daily	4	213
Total Animal Manure Managed Daily	965	57,169

¹Does not include poultry company matching funds (\$453,876)

²Includes approximately \$14 million in special funds from the Chesapeake and Atlantic Coastal Bays 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

The majority of the conservation projects funded by the Maryland Agricultural Water Quality Cost-Share Program are financed through the capital program by the sale of general obligation bonds. In Fiscal Year 2018, MACS provided farmers with \$5.1 million to install 215 conservation projects on their farms containing 329 best management practices. Record rainfall in 2018 slowed construction projects and schedules, especially those involving grading and concrete work. However, construction of manure storage facilities, heavy use areas, and roof runoff structures remained strong as poultry and livestock farmers worked to improve the way they manage manure resources. In addition, 21 livestock watering facilities, 13 stream crossings and 23 livestock exclusion fencing projects were installed during the year by farmers working to protect local streams from animal impacts. *(Please see center spread for a complete listing of best management practices installed with capital funds during Fiscal Year 2018.)*

SOIL CONSERVATION DISTRICT SUMMARY FOR CAPITAL PROJECTS FISCAL YEAR 2018

District	Completed Projects	MACS Payment
Allegany	2	\$9,872
Anne Arundel	1	\$5,118
Baltimore County	6	\$84,758
Calvert	3	\$31,868
Caroline	16	\$954,470
Carroll	36	\$437,673
Catoctin	10	\$267,546
Cecil	3	\$87,844
Dorchester	4	\$15,553
Frederick	18	\$452,361
Garrett	1	\$8,983
Harford	9	\$295,460
Howard	1	\$3,516
Kent	10	\$59,625
Montgomery	2	\$17,046
Prince George's	4	\$18,466
Queen Anne's	29	\$683,156
Somerset	3	\$271,127
St. Mary's	11	\$83,687
Talbot	6	\$62,327
Washington County	20	\$324,429
Wicomico	10	\$515,192
Worcester	10	\$410,284
Total	215	\$5,100,361

STORAGE SHEDS HELP PROTECT POULTRY LITTER FROM THE ELEMENTS. THEY ALLOW FARMERS TO SAFELY TRANSPORT OR SPREAD MANURE ON FIELDS FOLLOWING THEIR NUTRIENT MANAGEMENT PLANS.



COMPLETED MACS COST-SHARED PRACTICES BY DISTRICT FOR FISCAL YEAR 2018

PRACTICES	Allegany	Anne Arundel	Baltimore County	Calvert	Caroline	Carroll	Catoctin	Cecil	Charles	Dorchester	Frederick
Animal Mortality Facility					6			1			1
Conservation Cover						1					1
Contour Farming											
Contour Orchard											
Critical Area Planting				2							
Diversion			1								
Fencing	1		1	1		5					1
Field Border											
Filter Strip											
Forage & Biomass Planting											
Grade Stabilization Structure											
Grassed Waterway			1			9	2				3
Heavy Use Area Protection				2	8	3	2	1		3	6
Lined Waterway or Outlet											
Livestock Pipeline											
Riparian Forest Buffer	1		2			4				1	3
Riparian Herbaceous Cover						1					
Roof Runoff Structure					1	1	2				3
Roofs and Covers						2	2				3
Sediment Basin											
Sediment Control Pond											
Spring Development			1			2	3				
Stream Crossing	1		1			6					
Strip Cropping, Contour											
Strip Cropping, Field											
Terrace System											
Vegetated Treatment Area											
Waste Storage Structure			1		9	4	3	1			6
Waste Treatment Lagoon											
Wastewater Treatment Strip											
Water Control Structure											
Water Well				1							
Watering Facility		1	1	2		2	2			1	1
Wetland Restoration											
Total	3	1	9	8	24	40	16	3	0	5	28

Garrett	Harford	Howard	Kent	Montgomery	Prince George's	Queen Anne's	St. Mary's	Somerset	Talbot	Washington County	Wicomico	Worcester	Total FY2018	Cumulative FY1988-2018
					5			3			6	4	26	1069
													2	701
													0	47
													0	2
	1						5						8	899
							1		1	1			4	539
1				1	1	1	1			9			23	1392
													0	12
													0	18
					1		1						2	9
	2		5			4			2		1		14	1941
	2		9	1		6	3		1	1	1		39	5139
	1				1	7	2	3		2	2	6	49	1188
	2					5	5		1	2			15	472
													0	2
		1				1				2			15	1564
						1				1			3	220
	1				1	2	1			1			13	820
							2						9	41
													0	51
							1						1	1114
													6	1202
1	1									3			13	552
													0	61
													0	72
													0	90
													0	1692
	2					9	1	3		1	7	4	51	2408
													0	15
													0	45
	1								1	1			3	48
							1			4			6	206
	1				1		2			7			21	2161
						4			2				6	46
2	14	1	14	2	5	45	26	9	8	35	17	14	329	25,838

SPECIAL PROJECT GRANTS

MACS receives special funding from the Chesapeake Bay Restoration Fund and the Chesapeake and Atlantic Coastal Bays 2010 Trust Fund to finance highly valued best management practices included in Maryland's cleanup plan for the Bay. These include the state's popular Cover Crop Program and the contract signing incentive payment for the Conservation Reserve Enhancement Program (CREP), along with portions of the Manure Transport Program, and grants to hire personnel and equipment to inject manure below the soil surface to reduce odors and nutrient losses.



THE COVER CROP PROGRAM IS THE DEPARTMENT'S LARGEST AND MOST POPULAR COST-SHARE PROGRAM. A LATE HARVEST COMBINED WITH HEAVY RAINS AND POOR FIELD CONDITIONS REDUCED THIS YEAR'S ANNUAL PLANTING.

Cover Crop Program

The Cover Crop Program is the largest and most popular cost-share program offered by MACS. Each fall, farmers plant thousands of acres of cereal grains, legumes, and other types of cover crops on their fields to scavenge leftover nutrients from the previous crop, protect against wind and water erosion, and improve the health of the soil for the next year's crop. MACS provides grants to help farmers offset seed, labor, and equipment costs associated with planting cover crops. In Fiscal Year 2018, a late harvest combined with heavy rains and poor field conditions played a significant role in reducing the annual cover crop planting. During the 2017-2018 planting season, farmers planted 395,862 acres of traditional cover crops statewide using \$18.8 million in MACS cost-share grants. This figure does not include approximately 161,332 acres of cover crops planted for harvest, which were not eligible for MACS cost-share this year.

COVER CROP PROGRAM 2017-2018			
District	Contracts	Fall Certified Acres	MACS Payment
Allegany	9	392	\$23,701
Anne Arundel	27	3,518	\$206,283
Baltimore County	35	7,728	\$403,766
Calvert	16	2,281	\$94,237
Caroline	127	33,759	\$1,595,981
Carroll	112	19,967	\$950,550
Cecil	66	14,280	\$727,940
Charles	34	4,678	\$229,542
Dorchester	95	33,595	\$1,624,965
Frederick & Catoclin	159	29,092	\$1,361,586
Garrett	18	916	\$55,226
Harford	72	13,264	\$652,940
Howard	15	1,951	\$102,391
Kent	111	49,916	\$2,526,209
Montgomery	36	15,958	\$572,897
Prince George's	14	1,627	\$84,393
Queen Anne's	126	49,975	\$2,348,953
St Mary's	56	5,995	\$261,619
Somerset	34	9,475	\$419,951
Talbot	77	40,803	\$1,876,074
Washington County	65	6,490	\$319,378
Wicomico	77	22,278	\$1,138,260
Worcester	62	27,924	\$1,249,270
Total	1,443	395,862	\$18,826,112

Manure Transport Program

Protecting the Bay from excess phosphorus is vital to restoring its health. While poultry litter and livestock manure make a great natural fertilizer and soil conditioner, they often contain more phosphorus than crops require. This can result in an over-application of phosphorus when farmers use manure to meet the nitrogen needs of their crops. Typically, farm fields where manure or poultry litter has been used as a fertilizer over an extended period of time are at an increased risk for phosphorus over-enrichment.

For nearly two decades, the Manure Transport Program has been providing grants to help 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 has experienced extraordinary growth in recent years as farmers began transitioning to the Maryland Phosphorus Management Tool to help them protect waterways from phosphorus runoff.

In Fiscal Year 2018, the transport program provided Maryland farmers with \$1.02 million in grants to transport 249,421 tons of manure to approved farms and businesses as a valuable crop fertilizer and soil conditioner. Delmarva poultry companies provided \$453,876 in matching funds to transport poultry litter, bringing the total amount of financial support provided through the transport program to \$1,474,786. Approximately 21 percent of the manure was poultry

MANURE TRANSPORT PROGRAM PAYMENT SUMMARY

Fiscal Year	Actual Tons Transported	MACS Payment	Poultry Companies Cost-Share Payment*	Total Funds Issued
1999	1,896	\$17,992	\$17,992	\$35,984
2000	13,366	111,464	111,464	\$222,928
2001	20,477	195,559	195,559	\$391,118
2002	47,481	434,610	420,395	\$855,005
2003	28,556	233,444	229,645	\$463,089
2004	40,755	295,356	285,806	\$581,162
2005	36,329	239,196	200,113	\$439,309
2006	69,009	380,694	293,728	\$674,422
2007	99,297	490,011	356,955	\$846,966
2008	99,817	520,357	370,985	\$891,342
2009	119,892	663,177	504,024	\$1,167,201
2010	80,899	469,398	402,846	\$872,244
2011	61,150	354,011	294,383	\$648,394
2012	35,554	297,587	283,951	\$581,538
2013	52,481	377,007	339,252	\$716,259
2014	118,995	608,259	419,929	\$1,028,188
2015	167,237	851,304	409,548	\$1,260,852
2016	213,151	954,300	447,882	\$1,402,182
2017	241,941	1,174,690	453,038	\$1,627,728
2018	249,421	1,020,910	453,876	\$1,474,786
Total	1,797,704	\$9,689,326	\$6,491,371	\$16,180,697

*Dairy, beef and other non-poultry livestock producers do not receive matching funds from poultry companies.

litter that was shipped to alternative use facilities and not land applied. The remaining manure was applied to crop fields in accordance with Maryland's nutrient management regulations.

During the year—following up on

the success of its new 48-Hour Fast Track grant approval program to move poultry litter out of nutrient-sensitive areas quickly and efficiently—the program simplified its application process to haul non-poultry manure.

THE POULTRY LITTER TRANSPORT PROGRAM HAD ITS BIGGEST YEAR EVER AS FARMERS CONTINUE TO TRANSITION TO THE PHOSPHORUS MANAGEMENT TOOL.



Conservation Reserve Enhancement Program

Protecting the health of the streams and rivers that feed the Chesapeake Bay is critical to protecting the Bay itself. Maryland's Conservation Reserve Enhancement Program is a federal-state partnership program that pays annual rental payments to landowners who agree to take environmentally-sensitive cropland near streams out of production and instead create streamside buffers, wetlands, or wildlife habitat. Participation in CREP is voluntary and the contract period is typically 10 to 15 years. MACS provides participating landowners with cost-share grants to install stream fencing, livestock crossings, watering troughs, and other best management practices on enrolled lands. In Fiscal Year 2018, MACS provided landowners with \$200,195 in grants to install 54 stream protection projects. In addition, special funds were used to award a \$100/acre signing bonus to landowners who enroll or re-enroll land in the program. In Fiscal Year 2018, landowners received \$709,208 in signing bonuses.



STREAMSIDE BUFFERS HELP PREVENT POLLUTION FROM ENTERING WATERWAYS, STABILIZE STREAMBANKS, PROVIDE FOOD AND COVER FOR WILDLIFE, AND KEEP STREAMS COOL IN SUMMER.

CREP PROJECTS COMPLETED BY DISTRICT FISCAL YEAR 2018

District	Completed Projects	MACS Payment
Allegany	1	\$3,024
Baltimore County	1	\$1,232
Carroll	16	\$60,176
Dorchester	1	\$509
Frederick	6	\$16,817
Howard	1	\$3,516
Kent	7	\$15,784
Queen Anne's	7	\$4,182
Talbot	1	\$16,042
Washington County	13	\$78,913
Total	54	\$200,195

Manure Injection Grants

This grant program helps farmers comply with Maryland's nutrient management regulations while making the most of manure resources. Research has shown that injecting manure into the soil—as opposed to spreading it on top—helps prevent nutrient and phosphorus runoff, reduces odors, and preserves beneficial surface residue.

Cost-share assistance is available to hire custom operators, rent or lease equipment, or offset operating costs associated with injecting manure into the soil. In Fiscal Year 2018, MACS provided 43 farmers with \$311,460 in manure injection grants.



INJECTING MANURE INTO THE SOIL INSTEAD OF SPREADING IT ON TOP CUTS DOWN ON ODORS, KEEPS VALUABLE NUTRIENTS IN THE FIELD, AND IS COMPATIBLE WITH NO-TILL SYSTEMS.



MARYLAND'S SOIL CONSERVATION DISTRICTS

Allegany	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	301-501-5856, 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

BRINGING MACS TO FARMERS

Maryland's 24 soil conservation districts—with technical guidance from USDA's Natural Resources Conservation Service—help farmers choose the right best management practices for their operations, supervise their installation or construction, and develop maintenance plans to keep them in good working order. District staff help farmers calculate costs to install practices and apply for other 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. They are included in Maryland's Watershed Implementation Plan for restoring the Bay and its tributaries by 2025.



**Maryland
Department of Agriculture**

Office of Resource Conservation

Conservation Grants Program

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