



Maryland

Department of the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

May 11, 2018

Mr. Christopher J. Phipps, P.E., Director
Anne Arundel County Department of Public Works
2662 Riva Road
Annapolis, MD 21401

Dear Mr. Phipps:

The Maryland Department of the Environment (the Department) has reviewed Anne Arundel County's 2017 Annual Report submitted on February 12, 2018 for its National Pollutant Discharge Elimination System (NPDES) municipal stormwater permit 11-DP-3316 (MD0068306). This review is provided as Attachment 1. In addition, this letter serves as the approval of the County's stormwater total maximum daily load (TMDL) implementation plans that were submitted as part of the County's 2014 NPDES Annual Report, and revised in subsequent annual reports to address comments received from the Department. The TMDL approval is included as Attachment 2.

While most of the County's stormwater programs are progressing well, there is one major exception. The County reports that it has completed restoration of 1,680 impervious acres during the current permit term. This is about 29% of its impervious area surface restoration requirement of 5,862 acres. The current permit term ends on February 11, 2019, and the County is at risk of not meeting its impervious surface restoration requirement under Part IV.E.2.a of the permit. Failure to meet the impervious surface restoration requirement is considered to be a significant violation of the permit, and may subject the County to enforcement action by the Department.

The Department would like to discuss with Anne Arundel County as soon as possible a strategy for accelerating Chesapeake Bay restoration and ensuring compliance with its NPDES permit. This may include a permit modification to allow for nutrient trading as was requested by the County on April 16, 2018 or a Consent Decree establishing an enforceable restoration schedule. Please contact me at 410-537-3567 or Jennifer M. Smith, Program Manager, Sediment, Stormwater and Dam Safety Program at 410-537-3561, or jenniferm.smith@maryland.gov.

Sincerely,

A handwritten signature in cursive script, appearing to read "D. Lee Currey".

D. Lee Currey, Director
Water and Science Administration

Enclosures

Attachment 1
Maryland Department of the Environment's (MDE) Review of Anne Arundel County's
2017 National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4) Annual Report

MS4 Permit Conditions	MDE Assessment and Recommendations
PART V.A Annual Reporting	<ul style="list-style-type: none"> • Anne Arundel County's Annual Report, which covers fiscal year (FY) 2017 (i.e., July 1, 2016 to June 30, 2017), is the fourth report for the current, 4th generation permit. • The report was received on February 12, 2018.
PART IV.A Permit Administration	<ul style="list-style-type: none"> • Anne Arundel County submitted an updated organizational chart outlining the various County departments and their individual permit responsibilities (e.g., source identification, public education). The Department of Public Works (DPW) is responsible for coordinating permit related activities and for implementing the majority of permit conditions. The Department of Inspections and Permits (I&P), the Office of Planning and Zoning (OPZ), and the Department of Health (DoH) also contribute to meeting various permit conditions like construction and maintenance inspection, and stormwater management plan review.
PART IV.B Legal Authority	<ul style="list-style-type: none"> • Anne Arundel County maintained adequate legal authority for compliance with all permit conditions.
PART IV.C Source Identification	<ul style="list-style-type: none"> • The County has submitted information in MDE's geodatabase format. Mandatory fields for all tables have been completed with a few exceptions. The County used error codes (e.g., 66666, 1/1/1899), where data were not available. In these cases, the County is working to obtain the correct data and provide MDE with a completed geodatabase in future annual reports. • The County continued to update its storm drain inventory. During FY2017, the County added 90 new major outfalls to the <i>Outfall</i> feature class. The drainage areas for the new outfalls have been added to the <i>OutfallDrainageArea</i> feature class. • The County has added one major outfall to the list of industrial and commercial sources for a total of 1,004 outfalls. These are a subset of the outfalls described above. • In FY2016, the County initiated efforts to update the urban best management practice (BMP) database. The results from Phase I of the "Historic BMP Record Review and Update" project are included in the FY2017 Annual Report. This includes those BMPs constructed after 2002 (i.e., 2002 to June 30, 2017) and also some pre-2002 BMPs that were within the same geographic areas. The current urban BMP database includes information on 23,763 BMPs confirmed as either under construction or completed. The County acknowledges that the dataset is incomplete, has used null values (e.g., 77777) to signify where information was absent, and will be providing a complete database with the FY2018 report. • Of the 23,763 BMPs listed, five represent multiple or "clustered" practices that were identified by a single entry. The County has adopted a "lowest

Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report

MS4 Permit Conditions	MDE Assessment and Recommendations
PART IV.C Source Identification (cont.)	<p>level" process that identifies small-scale practices (e.g., drywells, rooftop disconnections) as single practices.</p> <ul style="list-style-type: none"> • The County updated its impervious area database in FY2015, and those values were used for calculations found in this report. The County currently reports 42,312 acres of imperviousness. Of these, 8,376 acres (approximately 20%) are State or federal properties, or within the City of Annapolis. The County has initiated a project to update impervious surface coverage using newer imagery. This project should be completed in the Summer of 2018. • Information for the County's three monitoring sites (i.e., Parole Plaza, Church Creek, and Picture Spring Branch) was included in the <i>MonitoringSite</i> feature class. Monitoring results were provided in the <i>ChemicalMonitoring</i> and <i>BiologicalMonitoring</i> tables. • The County has met the requirements of PART IV.C.1, 2, 4, 5, and 6. The County is taking the necessary steps to address PART IV.C.3.
PART IV.D.1 Stormwater Management (SWM)	<ul style="list-style-type: none"> • The County provided information on its stormwater management program in the FY2017 Annual Report and in the <i>SWM</i> and <i>BMPInspections</i> tables in the geodatabase. • With the exception of County capital improvement projects (CIP), I&P is responsible for SWM plan review. An existing memorandum of understanding (MOU) allows DPW to affirm to OPZ that CIP projects meet State and local stormwater management requirements. Because of the transfer of plan review responsibility, the County will be revisiting this MOU in FY2018. • For FY2017, the County reported the following: <ul style="list-style-type: none"> ○ 101 concept plans, 183 site development plans, and 89 final plans were received; ○ 35 final redevelopment plans were received; and ○ No exemptions were issued, nor were any waiver requests received. • I&P conducts construction inspections for stormwater management as part of normal erosion and sediment control inspections. In FY2017, 851 stormwater management construction inspections were conducted, and 66 correction notices issued. No stormwater management related violations were issued as a result of these inspections. • During the entire reporting period, the County reported the following maintenance inspections: <ul style="list-style-type: none"> ○ 6,206 triennial maintenance inspections on 5,878 stormwater facilities; ○ 504 correction notices as a result of those inspections; and ○ 27 Violation Notices. • The County also completed the <i>AltBMPPointInspections</i>, <i>AltBMPPolyInspections</i>, <i>AltBMPLineInspections</i>, and <i>RestBMPInspections</i> tables. During FY2017, the County reported the following:

Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report

MS4 Permit Conditions	MDE Assessment and Recommendations
PART IV.D.1 Stormwater Management (cont.)	<ul style="list-style-type: none"> ○ 118 inspections related to septic system upgrades, connections to wastewater treatment plants (WWTPs), and septic system pumpouts; ○ 793 inspections related to alternative BMPs like street sweeping, inlet and catch basin cleaning, and tree planting; ○ 4 records for the proposed inspection of stream restoration projects in FY2018; and ○ 12 inspections of restoration BMPs. ● BMP maintenance is crucial for the proper functioning and pollutant removal capabilities of these facilities. The County has increased the number of construction and maintenance inspections conducted since FY2016. The County is commended for its effort in this area.
PART IV.D.2 Erosion and Sediment Control	<ul style="list-style-type: none"> ● In FY2017, the County conducted 9,565 inspections. As a result of these inspections, the County issued 1,229 violations and 152 stop work orders, and collected 7 fines for a total of \$3,000. ● In FY2017, there were 101 grading permits issued for projects that exceeded one acre of disturbance. The total disturbed area for these active grading permits was 562.4 acres. ● MDE's last evaluation of the County's erosion and sediment control (ESC) program was in November 2016. In that review, MDE found problems on several sites. These included the lack of adequate stabilization and inconsistent completion of routine documentation and inspection reports. However, the County's ESC program enforcement was judged overall to be effective and authority granted for an additional two years. This program will be reevaluated in 2018. ● The County has met the requirements of PART IV.D.2.
PART IV.D.3 Illicit Discharge Detection and Elimination (IDDE)	<ul style="list-style-type: none"> ● As reported in the <i>Anne Arundel County Illicit Discharge Detection and Elimination 2017 Annual Report</i> (see Appendix F of the County's Annual Report), the County field-screened 150 unique outfalls within commercial, industrial, and residential land uses and observed dry weather flows at 53 outfalls. All discharges were chemically tested for pollutants in accordance with permit requirements. ● The County rescreened 12 outfalls where concentrations of tested contaminants were above action-criteria limits. Of these, 10 continued to show results above the action-criteria limits. Five outfalls exceeded the threshold for pH only, and were determined to result from natural conditions. The County conducted further investigations and found three discharges resolved and two remained open. ● Appendix F contained the results of the field screening and follow-up inspections. While this information is helpful, there is no direct correlation between the outfall identification (e.g., M06C4O008) and the County's investigative activities and follow-up actions. As discussed above, the County's Codes Compliance Database does not allow for filtering of data.

**Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report**

MS4 Permit Conditions	MDE Assessment and Recommendations
PART IV.D.3 IDDE (cont.)	<p>In addition, the outfall numbers used in the complaint database are different than those used in the MS4 geodatabase, resulting in a disconnect between narrative and data reporting. MDE understands that this problem will be corrected and requests a progress update in the next annual report.</p> <ul style="list-style-type: none"> • The County conducted visual surveys in accordance with commercial and industrial area survey requirements. The County provided field reports for 19 discovered violations. However, because the County's investigations related to visual surveys, complaints, and outfalls screenings are combined, the investigations and resolutions of surveys are not clearly reported. In the next annual report, MDE requests summary information on the total numbers of surveys conducted to fulfill this requirement, violations discovered, and issues resolved. • The County maintains a program to address and respond to illicit discharges, illegal dumping, and spills. The County offered a form on its website and a hotline number for reporting illicit discharges. The County also maintained a publicly available database that tracks complaints and resolutions. • The County implemented appropriate enforcement procedures for investigating and eliminating illicit discharges, illegal dumping, and spills. The County has two agencies that respond to reports of illegal dumping and spills. I&P is responsible for addressing reports of spills and illegal dumping into public and private storm drain systems. I&P opened 42 investigations related to illicit discharges in FY2017. Violations included leaking vehicles, illegal car washing activities, and dumped trash. Of these, 35 were resolved; 7 were unresolved by the end of the reporting period. Also, one case that was opened in FY2016 remained unresolved by the end of FY2017. One case resulted in the issuance of an NPDES 12-SW industrial stormwater permit. The County also handled 53 environmental section complaints and two zoning section complaints. • The DoH addresses reports related to food service facilities (e.g., overflowing dumpsters). In FY2017, the DoH addressed 16 issues involving dumpsters and/or waste grease bins at food service establishments. • The County has met the IDDE annual reporting requirements in accordance with PARTs IV.D.3 and V of the permit. MDE provides the following guidance on populating the MS4 geodatabase: <ul style="list-style-type: none"> ○ Of 66 flows recorded, one CFS_FLOW data entry was listed as missing a value (error code "88888"). Likewise, there were 18 screenings where the value was smaller or larger (error code "66666") than what is allowed. The County attributed these values to a buried structure and measured flows less than 0.005 cfs. If the flow rate is below what is accepted in the database, the County may enter "0" to avoid errors in the database submission. Additional details can be provided in general comments.

**Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report**

MS4 Permit Conditions	MDE Assessment and Recommendations
PART IV.D.3 IDDE (cont.)	<ul style="list-style-type: none"> ○ In the County's dataset, all discharge sources are coded as "Unknown." However, the majority of sources were presumed to be groundwater. If the chemical tests are below action-criteria limits and field conditions support a reasonable determination of groundwater, the dSource domain should be "Non-Illicit" (i.e., N). The County would continue to note groundwater in general comments. ○ ILLICIT_ELIM is a mandatory field if "ILLICIT_Q" (i.e., was the discharge illicit?) is Y.
PART IV.D.4 Litter and Floatables	<ul style="list-style-type: none"> ● Anne Arundel County is required to evaluate current litter control problems as needed on a watershed-by-watershed basis. The County is conducting this evaluation concurrently with the watershed assessments (see PART IV.E.1). In FY2017, assessments for the Herring Bay and Middle Patuxent River watersheds were completed that included addressing litter and floatables. Data, including litter source identification and opportunities for control programs, are still being collected as part of these assessments. MDE's comments on watershed assessments are provided below. With respect to this permit requirement, the County has yet to provide information on litter control problems. ● The County's Waste Management Services (WMS) conducted public education and outreach on litter reduction and recycling. WMS staff participated in 26 fairs or festivals and provided recycling assistance to 16 of those events. Staff also provided information to 47 different schools (K-12) and 13 tours of the County's Millersville landfill. Additionally, WMS provided roll-off dumpsters to aid in 170 community and watershed clean-up events. ● WMS also promoted recycling County-wide. The County-wide recycling rate was 44% in FY2017. ● The County also offered a recycling program with weekly service to small businesses. In FY2017, 201 businesses participated in the program and more than 1,300 tons of single stream recycling were collected. ● The County's Office Recycling Program (CORP) has at least 142 sites that collected approximately 1,200 tons of single stream recycling in FY2017. ● The County hosted six household hazardous waste events that collected 106 tons of hazardous waste for proper disposal. ● The County's Bureau of Highways (BoH), which is responsible for maintaining County roads, routinely collected litter during the work week and on weekends in partnership with the Department of Detention Facilities. BoH collected 9,751 thirty-gallon bags of litter in FY2017; 2,996 of these were collected by the weekend litter control program. This is a decrease from the FY2016 total of 12,549 bags that is attributed to the availability of inmate support for the program. ● BoH also supported several stream clean-up initiatives in FY2017. These

**Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report**

MS4 Permit Conditions	MDE Assessment and Recommendations
PART IV.D.4 Litter and Floatables (cont.)	efforts resulted in the removal of more than 26,880 pounds of material including trash, tires, chemicals, metals, and glass from stream systems County-wide.
PART IV.D.5 Property Management and Maintenance	<ul style="list-style-type: none"> • The County contracted twice-monthly street sweeping of main thoroughfares, business parks and industrial areas, and facility parking lots. As a result, there was a significant increase in total curb miles (7,128 curb miles) swept in FY2017. This is a 45% increase from FY2016. • The County cleaned and removed debris from 6,879 structures (e.g., inlets, catch basins), vacuumed 2,447 structures, and cleaned 49,710 feet of storm drain pipes in FY2017. While there was a 44% decrease in street sweeping, there were increases in inlets (148%) and pipes (167%) cleaned from the values reported in FY2016. This reflects an increased focus on structures that require vacuuming or the use of a power rod for cleaning. • The County also cleaned and removed debris from 172,460 feet of roadside curbs and ditches, which is a 22% decrease from FY2016 (141,265 feet). The County attributed fluctuations in the amount of ditch and curb line cleaning to an annual variability of 30%. The County is encouraged to consider this variation when planning future inlet inspection and cleaning efforts to satisfy permit restoration requirements. • Information on the use of pesticides, fertilizers, herbicides, and deicing materials were reported in the <i>ChemicalApplication</i> table of the MS4 geodatabase. • The County continued its efforts to reduce deicing chemicals. As a result, the County used 5,556 tons of salt and 1,046 gallons of liquid calcium chloride in FY2017. This is less than what was used in FY2016 (11,390 tons and 6,578 gallons). • An integrated pest management (IPM) strategy is used at facilities and rights-of-way to minimize chemical and fertilizer use. The County also ensured that a certified Pest Control Applicator is contracted for highways. As a result, glyphosate application by the BoH decreased by 66% in FY2017. However, the County also reported pesticide and fertilizer use by other County agencies (e.g., Department of Central Services Facilities Management Division). As a result, the County reported a total of 721.5 gallons of glyphosate as well as other herbicides and pesticides (e.g., Sevin). • Training sessions were held by the Bureau of Utilities (6 classes) and the BoH (25 classes). Training dates, topics, and number of staff attended (approximately 350 total) were reported for training held at all facilities covered under the 12-SW industrial general permit. • At all 12-SW facilities, periodic inspections were conducted and stormwater pollution prevention plans (SWPPPs) were updated as required. Capital improvements were made at select facilities to enhance stormwater management.

**Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report**

MS4 Permit Conditions	MDE Assessment and Recommendations
<p>PART IV.D.6 Public Education</p>	<ul style="list-style-type: none"> • The County's I&P maintains several options for reporting complaints including spills and illegal dumping. These include a 24-hour environmental hotline, an on-line request for investigative service on its webpage, options for reporting through mobile apps, and by dialing 311. • In FY2017, I&P investigated 675 environmentally-related complaints. Of these, 540 were related to erosion and sediment control. The remaining 135 complaints were related to potential Critical Area violations, unapproved tree removal, or illegal grading activities. Because the County's system does not generate summaries of complaints, the individual results of these investigations were not included in the Annual Report. In previous reviews, MDE had requested that a summary of these activities be provided in future reports. To address this issue, the County is developing a new system that should be operable by the end of 2019. In the interim, the County must provide more details on the disposition of these complaints. • The County has several outreach programs that are designed to provide residents with information on water quality issues and environmental stewardship. The Annual Report included a summary of all outreach activities that were conducted, attended, and/or supported by County agencies in FY2017. For example, DPW's Watershed Protection and Restoration Program (WPRP) provides information on numerous topics including rainwater reuse, rain gardens, permeable pavers, car maintenance, household hazardous waste, pet waste, and septic system maintenance. • Likewise, DPW's Bureau of Utilities attended 16 community outreach events and conducted six tours of the water reclamation and treatment facilities. • DPW's BoH published web-based information on rain gardens for County residents. • The County's Watershed Stewards Academy (WSA) trained 24 new watershed stewards, and as a group, continued to implement projects and provide outreach and stormwater education to County residents. • The requirements of PART IV.D.6 have been met, and MDE commends the County for its effort in public outreach and education.
<p>PART IV.E Restoration Plans and TMDLs</p>	<ul style="list-style-type: none"> • Anne Arundel County has completed assessments for ten of the twelve watersheds (i.e., Severn, South, Magothy, Little Patuxent, Upper Patuxent West, Rhode Rivers, Patapsco River Tidal and Non-Tidal, Bodkin Creek) within its jurisdiction. According to the schedule (see Table 12, p. IV-70) provided in the Annual Report, assessments for the Middle Patuxent River and Herring Bay watersheds will be completed in calendar year 2018. MDE understands that work is ongoing; however, the County is required to complete detailed assessments for the remaining two watersheds by the end of the current permit term (i.e., February 11, 2019). • The County's completed watershed assessments and associated materials are

**Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report**

MS4 Permit Conditions	MDE Assessment and Recommendations
<p>PART IV.E Restoration Plans and TMDLs (cont.)</p>	<p>available on DPW's website.</p> <ul style="list-style-type: none"> • MDE approved the County's impervious area assessment and the 20% restoration requirement (i.e., 5,862 acres) on July 7, 2015. • Anne Arundel County's Impervious Area Restoration Schedule was submitted as an addendum to the FY2014 Annual Report. By FY2016, the County had restored 912 acres of impervious area using a combination of water quality projects (263 acres), alternative measures like septic system upgrades or disconnections (212 acres), and street sweeping (123 acres). In FY2017, the County's tally of restored impervious area includes: <ul style="list-style-type: none"> ○ 498 acres restored by water quality projects; ○ 146.1 acres restored by stream restoration, step pool conveyance system, and shoreline stabilization projects; ○ 2.5 acres restored by outfall stabilization; ○ 224.1 acres restored by septic connections to wastewater treatment plants, upgrading septic systems with enhanced nitrogen removal (ENR) systems, and septic system pumping projects; ○ 96.5 acres restored through inlet cleaning; and ○ 239.8 acres restored by street sweeping activities. <p>The County has completed restoration efforts equivalent to providing treatment for 1,680 acres during the current permit term.</p> • The County's reported restoration effort for FY2017 (i.e., 1,680 acres) is less than that required by the end of the permit term (FY2018). Although the County is commended for its effort to date, the County needs to increase restoration project implementation so that permit requirements can be met. • The County continued to work with the Integrated Water Planning Program to refine the modeling of local TMDLs. The County provided updated information on its effort to comply with local nutrient (total nitrogen or "TN", and total phosphorus or "TP") and sediment (total suspended solids or "TSS") TMDLs in Appendix J of its Annual Report. This included assessment reports for the following TMDLs: <ul style="list-style-type: none"> ○ Baltimore Harbor Nutrient TMDL; ○ Baltimore Harbor and Curtis Creek PCB TMDL; ○ Upper Patuxent River, Little Patuxent River, Patapsco River Lower North Branch, and South River Sediment TMDLs; and ○ Bacteria TMDLs associated with 19 County watersheds (one plan). • With the exception of Baltimore Harbor, the County's nutrient impairments are solely addressed via the Chesapeake Bay TMDL for Nitrogen, Phosphorus and Sediment (12/29/2010). The County's Phase II Watershed Implementation Plan (WIP) acts as the restoration plan for these impairments. • Anne Arundel County reported progress for the Chesapeake Bay nutrient and sediment TMDLs in the <i>Countywide Stormwater Watershed Assessment</i>

**Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report**

MS4 Permit Conditions	MDE Assessment and Recommendations																																		
PART IV.E Restoration Plans and TMDLs (cont.)	table from the MS4 geodatabase. For the Chesapeake Bay nutrient and sediment TMDLs, the County reported the following progress:																																		
	<table border="1"> <thead> <tr> <th>Pollutant</th> <th>2009 Baseline</th> <th>2025 Target</th> <th>Required Reduction</th> <th>Current Reduction</th> <th>% Reduction</th> </tr> </thead> <tbody> <tr> <td>TN (lbs/yr)</td> <td>657,383</td> <td>449,641</td> <td>207,742</td> <td>16,561</td> <td>8%</td> </tr> <tr> <td>TP (lbs/yr)</td> <td>56,531</td> <td>30,147</td> <td>26,384</td> <td>4,858</td> <td>18.4%</td> </tr> <tr> <td>TSS (lbs/yr)</td> <td>14,218,000</td> <td>4,646,000</td> <td>9,572,000</td> <td>3,157,256</td> <td>33%</td> </tr> </tbody> </table>						Pollutant	2009 Baseline	2025 Target	Required Reduction	Current Reduction	% Reduction	TN (lbs/yr)	657,383	449,641	207,742	16,561	8%	TP (lbs/yr)	56,531	30,147	26,384	4,858	18.4%	TSS (lbs/yr)	14,218,000	4,646,000	9,572,000	3,157,256	33%					
	Pollutant	2009 Baseline	2025 Target	Required Reduction	Current Reduction	% Reduction																													
	TN (lbs/yr)	657,383	449,641	207,742	16,561	8%																													
	TP (lbs/yr)	56,531	30,147	26,384	4,858	18.4%																													
	TSS (lbs/yr)	14,218,000	4,646,000	9,572,000	3,157,256	33%																													
	<ul style="list-style-type: none"> The County also used the <i>LocalStormwaterWatershedAssessment</i> table from the geodatabase for reporting progress on the local sediment, nutrient, and PCB TMDLs. For these TMDLs, the County reported the following progress: <ul style="list-style-type: none"> For the sediment TMDLs, the County reported the following: <table border="1"> <thead> <tr> <th rowspan="2">Watershed</th> <th colspan="3">SW-WLA (lbs/year)</th> <th colspan="2">Percent Reduction</th> </tr> <tr> <th>Baseline (2005)</th> <th>Target</th> <th>Current</th> <th>Required</th> <th>Current</th> </tr> </thead> <tbody> <tr> <td>Patapsco River – LNB</td> <td>1,422,388</td> <td>1,106,618</td> <td>1,224,777</td> <td>22.2%</td> <td>13.8%</td> </tr> <tr> <td>Upper Patuxent River</td> <td>485,565</td> <td>430,211</td> <td>447,918</td> <td>11.4%</td> <td>7.8%</td> </tr> <tr> <td>Little Patuxent River</td> <td>1,207,534</td> <td>959,989</td> <td>973,103</td> <td>20.5%</td> <td>19.4%</td> </tr> </tbody> </table> 						Watershed	SW-WLA (lbs/year)			Percent Reduction		Baseline (2005)	Target	Current	Required	Current	Patapsco River – LNB	1,422,388	1,106,618	1,224,777	22.2%	13.8%	Upper Patuxent River	485,565	430,211	447,918	11.4%	7.8%	Little Patuxent River	1,207,534	959,989	973,103	20.5%	19.4%
	Watershed	SW-WLA (lbs/year)			Percent Reduction																														
		Baseline (2005)	Target	Current	Required	Current																													
	Patapsco River – LNB	1,422,388	1,106,618	1,224,777	22.2%	13.8%																													
Upper Patuxent River	485,565	430,211	447,918	11.4%	7.8%																														
Little Patuxent River	1,207,534	959,989	973,103	20.5%	19.4%																														
<p>The South River sediment TMDL was approved by EPA on September 28, 2017 (FY2018). The County will be including results from modeling of the South River watershed in the FY2018 Annual Report.</p>																																			
<ul style="list-style-type: none"> For the Baltimore Harbor nutrient TMDLs, the County reported the following: <table border="1"> <thead> <tr> <th rowspan="2">Watershed</th> <th colspan="3">SW-WLA (lbs/year)</th> <th colspan="2">Percent Reduction</th> </tr> <tr> <th>Baseline (1995)</th> <th>Target</th> <th>Current</th> <th>Required</th> <th>Current</th> </tr> </thead> <tbody> <tr> <td>Baltimore Harbor TN</td> <td>161,514</td> <td>137,287</td> <td>158,705</td> <td>15%</td> <td>1.7%</td> </tr> <tr> <td>Baltimore Harbor TP</td> <td>13,941</td> <td>11,850</td> <td>13,136</td> <td>15%</td> <td>5.8%</td> </tr> </tbody> </table> 						Watershed	SW-WLA (lbs/year)			Percent Reduction		Baseline (1995)	Target	Current	Required	Current	Baltimore Harbor TN	161,514	137,287	158,705	15%	1.7%	Baltimore Harbor TP	13,941	11,850	13,136	15%	5.8%							
Watershed	SW-WLA (lbs/year)			Percent Reduction																															
	Baseline (1995)	Target	Current	Required	Current																														
Baltimore Harbor TN	161,514	137,287	158,705	15%	1.7%																														
Baltimore Harbor TP	13,941	11,850	13,136	15%	5.8%																														
<ul style="list-style-type: none"> For the PCB TMDLs, the County reported the following: <table border="1"> <thead> <tr> <th rowspan="2">Watershed</th> <th colspan="3">SW-WLA (g/year)</th> <th colspan="2">Percent Reduction</th> </tr> <tr> <th>Baseline (2011)</th> <th>Target</th> <th>Current</th> <th>Required</th> <th>Current</th> </tr> </thead> <tbody> <tr> <td>Baltimore Harbor</td> <td>454.55</td> <td>40.45</td> <td>451.08</td> <td>91.1%</td> <td>0.76%</td> </tr> <tr> <td>Curtis Creek</td> <td>262.89</td> <td>17.09</td> <td>259.68</td> <td>93.5%</td> <td>1.22%</td> </tr> </tbody> </table> 						Watershed	SW-WLA (g/year)			Percent Reduction		Baseline (2011)	Target	Current	Required	Current	Baltimore Harbor	454.55	40.45	451.08	91.1%	0.76%	Curtis Creek	262.89	17.09	259.68	93.5%	1.22%							
Watershed	SW-WLA (g/year)			Percent Reduction																															
	Baseline (2011)	Target	Current	Required	Current																														
Baltimore Harbor	454.55	40.45	451.08	91.1%	0.76%																														
Curtis Creek	262.89	17.09	259.68	93.5%	1.22%																														
<p>In FY2017, the County's retrofit effort resulted in an additional 19 and 17 BMPs in the Curtis Creek and Baltimore Harbor subwatersheds, respectively. These BMPs controlled small areas of imperviousness (81.3 and 26.7 acres, respectively) and the resulting PCB load reductions were limited. Street sweeping and inlet cleaning covered an additional 162 and 23 acres in the Curtis Creek and Baltimore Harbor</p>																																			

**Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report**

MS4 Permit Conditions	MDE Assessment and Recommendations
<p>PART IV.E Restoration Plans and TMDLs (cont.)</p>	<p>subwatersheds, respectively. The County recognized that restoration efforts will need to specifically target PCB sources and control larger areas of impervious cover in order to achieve these PCB TMDLs.</p> <ul style="list-style-type: none"> ○ For the 19 bacteria TMDLs, the County provided updates on milestones, restoration plans, and implementation schedules. The programmatic milestones and progress for FY2017 include: <ul style="list-style-type: none"> ▪ Completing 25% of all planned new and retrofit SWM BMPs. The County continues to make progress on implementing BMPs as described above. ▪ Continue triennial maintenance inspections on existing BMPs. The status of the County's SWM BMP inspection program is also described above. ▪ Complete 25% of the planned septic system to sewer connections. The County secured funding, and developed conceptual layouts and cost estimates for 140 separate projects. ▪ Start implementing pet waste education program, including media campaigns and community outreach. The results from the expanded outreach and findings of the Anne Arundel County Stormwater Survey will be used to develop a more structured program for FY2018; and ▪ Implement livestock fencing in the Upper Patuxent and West River watersheds. The County completed two livestock fencing projects in the West River watershed in FY2017. <p>The County is making progress toward meeting the bacteria goals through a combination of BMP retrofits, IDDE, sanitary sewer overflow abatement, and public outreach. This outreach includes multi-media pet waste programs and marina pump-out services.</p> <ul style="list-style-type: none"> ● In summary, MDE is concerned that many of the design milestones for the Chesapeake Bay and local TMDLs are not being met and that the County's implementation effort is lagging. Moving forward, the County needs to reevaluate the implementation of restoration projects so that future project milestones can be met. ● Chesapeake Bay TMDLs and Phase III WIP - By August 2018, MDE is responsible for submitting a draft Phase III Chesapeake Bay WIP to the U.S. Environmental Protection Agency (EPA). MDE will coordinate the development of Maryland's Phase III WIP with Anne Arundel County and other MS4 jurisdictions based on several key principles: <ul style="list-style-type: none"> ○ Phase III WIP Development: Current MS4 permit conditions and restoration work are consistent with the Bay's TMDLs and shall be used to help inform the development of the Phase III WIP. For example, information documented in MS4 restoration plans and financial assurance plans will be the basis for WIP III development and future

Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report

MS4 Permit Conditions	MDE Assessment and Recommendations
PART IV.E Restoration Plans and TMDLs (cont.)	<p>permit conditions. Multiple permit cycles will be needed to achieve the nutrient reduction targets, which, for Anne Arundel County, is expected to extend beyond 2025.</p> <ul style="list-style-type: none"> ○ WIP III Coordination: The timeline below provides Anne Arundel County and the Phase I MS4 permit community with two opportunities for providing input, in addition to the public review process. <ul style="list-style-type: none"> ▪ April 2018 - Final implementation information from local partners ▪ August 2018 - Draft Phase III WIP due to EPA - <i>March 2019</i>
PART IV.F Assessment of Controls	<ul style="list-style-type: none"> • Anne Arundel County continued the long-term monitoring of the Parole Plaza outfall and Church Creek instream stations, sampling three storms each quarter for a total of twelve storms at each station. • The County submitted its chemical and biological monitoring data as part of the MS4 geodatabase. • The <i>ChemicalMonitoring</i> geodatabase table was complete. However, there was one storm event where event mean concentrations (<i>EMCs</i>) could not be calculated because the flow logger was obstructed. There also were two storm events (11/09/2016 and 4/25/2017) where errors in sampling or laboratory procedures precluded the analysis of specific elements (i.e., lead and <i>E. coli</i>) and one storm event (01/23/2017) where the temperature readings for the instream station were erroneous. • The <i>MonitoringSite</i>, <i>MonitoringDrainageArea</i>, and <i>BiologicalMonitoring</i> tables were also complete. In the <i>BiologicalMonitoring</i> table, the County did not enter data for FIBI. While reporting FIBI data is not required under the permit, MDE has asked that jurisdictions use "999" as a "no-data" placeholder for consistency. • The County conducted its physical monitoring in the Church Creek watershed. Because of conditions within the watershed, the County reported difficulty in consistently locating bankfull indicators. As a result, specific measurements were not always available. However, the County observed increased entrenchment ratio and channel degradation in at least two of the cross-sections. • The County continued its Stormwater Management Assessment at five cross-sections at Picture Spring Branch. The County reported that there was an increase in biological diversity and an improvement in BIBI scores at the three sampling sites. The County also provided the results of hydrologic and hydraulic modeling (see Appendix E) of the Northern Tributary of Picture Spring Branch.
PART IV.G Program Funding	<ul style="list-style-type: none"> • Detailed information on the expenditures and budget related to the implementation of the permit were included in the <i>FiscalAnalyses</i> table of the County's geodatabase. The total annual cost for implementing the County's NPDES MS4 program was \$33.25 million (M), and the operating and capital costs were \$16.24M and \$19.38M, respectively. These costs

Attachment 1
MDE's Review of Anne Arundel County's
2017 MS4 Annual Report

MS4 Permit Conditions	MDE Assessment and Recommendations
PART IV.G Program Funding (cont.)	<p>included \$22.03M collected through the County's WPRP.</p> <ul style="list-style-type: none"> • The County indicated that the projected capital improvement program (CIP) budget for FY2017 through FY2022 is less than those from previous years. The reason given for this decrease is that funds allocated to restoration projects were phased in over the permit term, with more funding allocated in the first years of the permit. While the County states that sufficient funding will be available to meet the permit's 20% restoration requirement, MDE cautions that lack of funding does not justify noncompliance with permit terms. In accordance with Maryland State law, the County submitted a Financial Assurance Plan (FAP) on June 28, 2016, demonstrating that the resources necessary to comply with 75% of the MS4 permit's restoration requirements were available. MDE approved the County's FAP on October 17, 2016, and provided recommendations in the FY2016 Annual Report review. • The County provided a WPRP Annual Report for FY2017 as required. Using the same template, the WPRP Annual Report should be submitted as a narrative file in the geodatabase by February 12, 2019. • As per the letter dated October 17, 2016, MDE requested additional clarification on the County's FAP. This clarification and the County's next FAP should be submitted as narrative files in the geodatabase by February 12, 2019. A guidance document and updated template were provided on March 8, 2018.

Attachment 2
**Maryland Department of the Environment's (MDE) Approval of Anne Arundel County's
Stormwater Wasteload Allocation Implementation Plans
for Meeting Municipal Separate Storm Sewer System (MS4) Permit Requirements**

Anne Arundel County's stormwater waste load allocation (SW-WLA) implementation plans that were submitted as part of the County's 2014 MS4 annual report, and revised in subsequent annual reports to address comments received from Maryland Department of the Environment (MDE), Water and Science Administration (WSA), are hereby approved.

MDE's Integrated Water Planning Program (IWPP) reviewed these plans for both their technical merits and watershed planning components. In comments submitted back to the County, IWPP required revisions to the technical details of modeling that affected potential implementation strategies and the tracking of pollutant load reductions in comparison to target reductions. The County has addressed these comments and made technical fixes to the plans as requested. Specifically, the following administrative and scientific documentation provides the reasoning behind the approval of these plans:

- Scientifically defensible modeling tools were used for estimating watershed baseline loads;
- The modeled baseline years are consistent with baseline conditions in applicable TMDLs;
- SW-WLA reduction percentages were used in implementation modeling instead of absolute loading targets from the TMDLs to set loading targets in terms of the County's own modeling system;
- The County listed specific control measures (BMPs) and the amounts of these control measures planned for implementation to meet the required loading reductions;
- Scientifically defensible BMP reduction efficiencies were used in modeling expected pollutant load reductions;
- A timeframe for achievement of the required pollutant load reductions was provided;
- Mechanisms employed for tracking progress towards the required load reductions were discussed;
- The County's implementation plans incorporate elements of adaptive management, indicating water quality monitoring data will be used to assess the effectiveness of implemented practices and adjust implementation strategies if data do not indicate positive trends; and
- For non-traditional pollutants such as bacteria and PCBs, the County employs implementation and tracking/reporting strategies as recommended by the MDE. For example, the County is focusing on finding and eliminating human sources of bacteria and using monitoring data to compliment modeling data to track the progress of implementation of the bacteria TMDL plan. For PCBs, the County includes source tracking monitoring efforts to identify individual PCB sources within the applicable watersheds. These approaches are consistent with MDE guidance for these pollutants.

In conclusion, MDE's WSA has determined that Anne Arundel County's SW-WLA implementation plans, responsive to local water quality impairments and EPA approved TMDLs, have met permit condition Part 1.IV.E.2.b. Therefore, MDE has made the decision to approve these plans. They are now enforceable under current and future County MS4 permits.