



Larry Hogan, Governor

Boyd Rutherford, Lt. Governor

Wendi W. Peters, Secretary

Ewing McDowell, Deputy Secretary

March 15, 2017

The Honorable Thomas V. "Mike" Miller, Jr.
President
Senate of Maryland
State House, H-107
Annapolis, Maryland 21401

The Honorable Michael E. Busch
Speaker
Maryland House of Delegates
State House, H-101
Annapolis, MD 21401

Re: Report required by State Finance and Procurement Article § 5-809 (MSAR#665)

Dear President Miller and Speaker Busch,

On behalf of the Maryland Department of Planning, I am pleased to submit the 2017 Patuxent River Commission Biennial Report. This report highlights the implementation of the Policy Plan and the status of the Patuxent River as well as the work of local governments and state agencies in support of the plan. Should you have any questions or concerns please feel free to contact me directly.

Sincerely,


Wendi W. Peters
Secretary

cc: Sarah Albert, Department of Legislative Services (5 copies)



2015-2016

Biennial Report:

Implementation of
the *Patuxent River*
Policy Plan



EXECUTIVE SUMMARY

The Patuxent River, one of eight major tributaries to the Chesapeake Bay, is the longest and deepest river running entirely through Maryland. It flows for 110 miles and stretches more than a mile across at its entrance to the bay, with a maximum depth of about 175 feet. Its watershed covers 937 square miles, or about one-tenth of Maryland’s land mass. The influence of the Patuxent extends into multiple jurisdictions within the state, including seven counties in the Baltimore-D.C. metropolitan area, two of Maryland’s largest cities (Laurel and Bowie), and one of its largest unincorporated areas (Columbia).

To protect the important ecological, recreational, historical and cultural resources of the Patuxent River and its tributaries, the Patuxent River Watershed Act, adopted in 1980, directed the establishment of the Patuxent River Policy Plan (Policy Plan) and the Patuxent River Commission (PRC). The Policy Plan serves as a guide for local jurisdictions and state agencies in carrying out their actions and regulatory programs in the Patuxent River watershed, while the PRC is charged with assisting in coordinating and facilitating the work of state and local governments in implementing the Policy Plan.

The original 1984 Policy Plan, signed by all seven counties within the Patuxent watershed and later approved by the City of Laurel, identified 20 goals and 10 recommendations to improve the Patuxent River. The 2015 Policy Plan, adopted in 2014 by all of the local governments represented on the PRC, and in 2016 by the Maryland General Assembly, replaces the original 1984 Policy Plan, last amended in 1997.



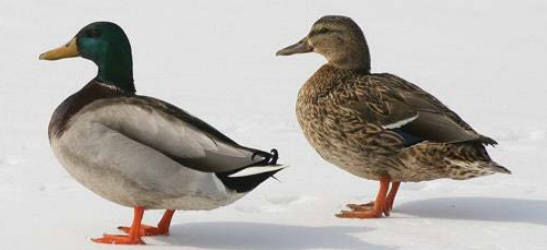
Kingfisher



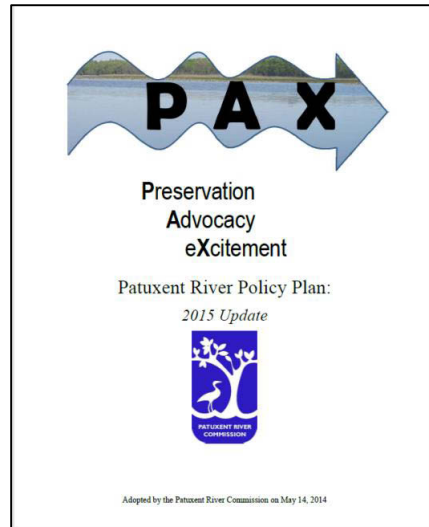
Largemouth bass



Mummichog



Mallards



The 2015 Policy Plan

The 2015 Policy Plan contains three general policies (Preservation, Advocacy and eXcitement, or PAX for the Patuxent River) to guide the work of the local jurisdictions and the state within the Patuxent River watershed:

Preservation. Local jurisdictions and the state will work toward the preservation of the Patuxent River and the land within its watersheds and the restoration of the ecological and economic functions of the river.

Advocacy. Local jurisdictions and the state will advocate for the Patuxent River by raising awareness among the general public and elected and appointed officials of the challenges the river faces and make recommendations for improvements.

eXcitement. Local jurisdictions and the state will create excitement about the Patuxent River and its value as a natural, scientific, economic, cultural and educational resource.

2015-2016 Biennial Report

The Maryland Department of Planning (Planning) biennially submits a report to the General Assembly on the implementation of the Policy Plan and the status of the Patuxent River and its watershed. This report describes the work of the local governments and state agencies of the PRC performed during 2015 and 2016 in support of the Policy Plan.

Local governments, state agencies and the PRC have completed many significant preservation, restoration, planning, advocacy, education and tourism-related activities over the last two years to support restoration and the economic vitality of the Patuxent River. The report describes these activities in detail, reporting first on preservation and restoration activities, next on advocacy work, and last on activities that generate excitement for the river.

In addition to coordinating the preparation of this document, Planning's primary role in support of the Policy Plan is to serve as lead staff to the PRC and to facilitate collaboration and coordination of the operations of the PRC members. Planning also provides administrative, communications, research, analysis, and planning support for the PRC and its workgroups.

Status of the Patuxent River

According to the Eco Health Report Card on the Chesapeake Bay, the tidal portion of the Patuxent River is in about the same condition today as it was in 1986, as measured by the Bay Health Index¹. In 1986, the Patuxent River had an overall health index of 28.02 on a scale of 0-100. By the mid-1990s, the health of the Patuxent River had dropped to a low of 15.69 and over the last twenty years has made some gradual improvements. By 2015, the river had improved to an overall health score of 32.1, but its habitat quality is far from what is needed to support the goals and objectives established in the Policy Plan.

¹ Eco Health Report Card. University of Maryland's Center for Environmental Science. <http://ecoreportcard.org/report-cards/chesapeake-bay/health/>. Accessed February 2017.

Sewage treatment along the Patuxent River.



Patuxent River in winter.





2015-2016 Biennial Report: Implementation of the Patuxent River Policy Plan

Background

Section 5-809 of the State Finance and Procurement Article requires the Maryland Department of Planning (Planning) to submit a report every other year to the General Assembly on the implementation of the Patuxent River Policy Plan (the Policy Plan) and the status of the Patuxent River and its watershed. This report describes the work completed in 2015 and 2016 by local governments and state agencies that are represented on the Patuxent River Commission (PRC) in support of the Policy Plan. These include (from north to south in the watershed) Montgomery County, Howard County, Prince George's County, Anne Arundel County, Charles County, Calvert County, and St. Mary's County, as well as the City of Laurel, the Maryland Department of Natural Resources (Natural Resources), the Maryland Department of Environment (Environment), the Maryland Department of Transportation (Transportation), the Maryland Department of Agriculture (Agriculture) and Planning.

Through the Patuxent River Watershed Act, adopted in 1980, the Maryland General Assembly created the PRC (consisting of local government, state agency and other representative stakeholders) to facilitate implementation of the Policy Plan. In addition to the efforts of local governments and state agencies, this report also describes the work the PRC accomplished in 2015 and 2016. The Policy Plan in effect during this reporting period is the 2015 Policy Plan, which was adopted in 2014 by all of the local governments represented on the PRC, and in 2016 by the Maryland General Assembly.

Planning serves as the lead staff to the PRC, providing administrative, communication, research, analysis, planning and coordination support for the Commission and its workgroups. Planning provided the PRC with a draft of this report on January 4, 2017 and requested comments through January 27, 2017. The report incorporates the comments received from the PRC.

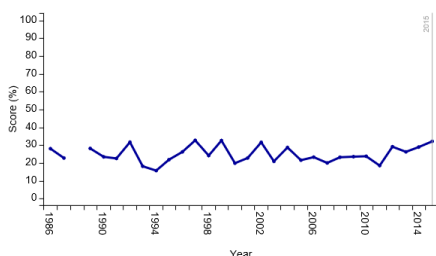
To narrow the focus and guide the work of the commission's stakeholders, the PRC approved Annual Action Plans in both 2015 and 2016. The Annual Action Plans identify specific tasks that would support implementation of particular Policy Plan strategies. To help guide these strategies forward, several workgroups (Sewage Spill Notification, Tourism, Preservation & Restoration, Scientific & Technical) convened periodically between regular PRC meetings.

As required by statute, this report includes recommendations from Planning concerning implementation of the Policy Plan. These recommendations are provided at the end of the report.

Status of the Patuxent River

The tidal portion of the Patuxent River is in roughly the same condition today as in 1986, as measured by the Bay Health Index (Figure 1), which consolidates several water quality and habitat measures, normalized as percentage scores.

Figure 1. Overall Health Index



As of 2015, the overall measure of health has slightly improved; although the scores for nitrogen and phosphorus have fluctuated over the past thirty years the trend is moving in a positive direction (Figures 2 and 3).²

Figure 2. Nitrogen

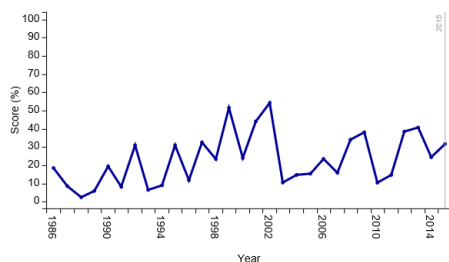
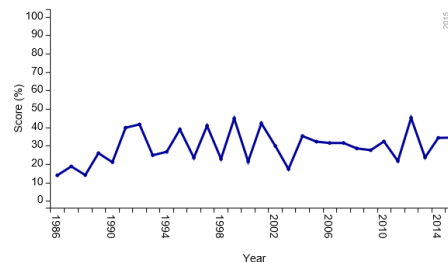


Figure 3. Phosphorus



In the nontidal portion of the Patuxent River, long-term (1985-2014) and short-term (2005-2014) nitrogen and phosphorus trends are also improving. Measures of suspended sediment in the nontidal portion of the Patuxent River are improved in 2014 compared to loads in 1985; however, over the last few years (2005-2014), sedimentation appears to be worsening.³

² Eco Health Report Card. University of Maryland's Center for Environmental Science. <http://ecoreportcard.org/report-cards/chesapeake-bay/health/>. Accessed February 2017.

³ Summary of Nitrogen, Phosphorus, and Suspended-Sediment Loads and Trends Measured at the Chesapeake Bay Nontidal Network Stations: Water Year 2014 Update. Prepared by Douglas L. Moyer and Joel D. Blomquist, U.S. Geological Survey, February 03, 2016

Overview of the 2015 Patuxent River Policy Plan

The 2015 Patuxent River Policy Plan guides the actions of the state, the seven Patuxent counties, and the City of Laurel in their efforts to restore the Patuxent River.

General Policies

The Policy Plan's general policies are divided into three focus areas: Preservation, Advocacy, and eXcitement (PAX for the Patuxent River).

Preservation

Local jurisdictions and the state will work toward the preservation of the Patuxent River and the land within its watersheds and the restoration of the ecological and economic functions of the river.

Advocacy

Local jurisdictions and the state will advocate for the Patuxent River by raising awareness among the general public and elected and appointed officials of the challenges the river faces and make recommendations for improvements.

eXcitement

Local jurisdictions and the state will create excitement about the Patuxent River and its value as a natural, scientific, economic, cultural and educational resource.



Strategies

The Policy Plan's implementing strategies for each of the general policies are as follows:

Preservation

- P1. Maintain and improve the health of the Patuxent River so it can support sustainable commercial and recreational fishing and seafood harvesting.
- P2. Identify preservation and conservation priorities for the critical natural resources within the Patuxent River Watershed in county and municipal land use documents.
- P3. Embrace smart growth and smart conservation practices in the counties and municipalities in the Patuxent River watershed to reduce sprawl and preserve irreplaceable resources.
- P4. Restore the health of the river by actions such as encouraging acquisition of properties or easements in sensitive resource areas, planting stream buffers, and controlling invasive plants, focusing on stream buffers.
- P5. Preserve the Patuxent River headwaters as a permanent and reliable source of drinking water, and improve and restore water quality in the tributaries feeding the reservoirs.
- P6. Support the work of local jurisdictions and the state in meeting their respective water quality goals as stated in approved plans and permits.
- P7. Preserve and restore the movement of water, fish and wildlife through identifying and removing barriers.

Advocacy

- A1. Keep abreast of issues facing the river in communities within the Patuxent River watershed and share experiences and challenges with the PRC.
- A2. Pursue resolution of pollution concerns for communities within the Patuxent River watershed.
- A3. Keep elected and appointed officials aware of the issues and opportunities facing the river and seek their support when appropriate.
- A4. Recommend changes to policies, programs, legislation and/or regulations to improve and restore water quality in the river and its watershed.

eXcitement

- X1. Maintain, create and encourage opportunities for river-related economic activities in appropriate locations.

- X2. Ensure and encourage public access to the river, its tributaries, and recreational opportunities within the watershed.
- X3. Support economic and scientific research projects on the river and seek or support funding where possible.
- X4. Create and support educational and stewardship opportunities for all communities within the watershed.
- X5. Protect valuable cultural resources and historical properties within the watershed.

Preservation Strategy Implementation: 2015-2016

Between 2015 and 2016, the local jurisdictions, state agencies and PRC completed several tasks that support the Policy Plan’s Preservation strategies:

PRC Preservation and Restoration Workgroup

In 2016, the PRC charged the Preservation and Restoration Workgroup with assisting local governments in their efforts to implement Patuxent River Total Maximum Daily Loads (TMDLs). The workgroup interviewed lead stormwater management staff in the Patuxent counties, the City of Laurel, and the Washington Suburban Sanitary Commission (WSSC), to learn about progress, obstacles to success, and possible measures to overcome those obstacles. The workgroup identified several common themes in its research: on the one hand, the strong commitment of local jurisdictions to support this effort, while on the other hand, the high cost, tight schedules, and significant time needed for the regulatory review and approval of mitigation projects. The Preservation and Restoration Workgroup also served as advisors to the U.S. Fish & Wildlife Service’s Patuxent Research Refuge (located near the City of Laurel) in a landscape/ conservation



Whooping cranes at Patuxent Research Refuge. Though whooping cranes are not native to Maryland, the captive breeding program at the Refuge has been instrumental in increasing the number of whooping cranes in the wild from 16 in the 1940’s to 434 in 2013.

design and potential refuge expansion effort known as the Patuxent Waters Conservation Area. The Patuxent Waters Conservation Area is conceived as a connected system of natural areas and working lands that sustain healthy and diverse populations of fish, wildlife, and plants that, in turn, provide clean water and air, flood protection, recreation, and quality of life. The final Patuxent Waters Conservation Area plan is expected to be completed in 2017.

A direct way for any citizen to help preserve the Patuxent River is by cleaning up litter in and along the river. The PRC helps to promote the annual Patuxent River Clean-Up Day. In 2015, the Commission sent a letter to the lead elected official of each local government in the Patuxent watershed, with copies to local communications and public works staff, to ask for help in promoting the event and to identify clean-up sites. After these events were held, the PRC developed and distributed a press release documenting the amount of trash collected throughout the Patuxent watershed. In 2016, the PRC increased awareness of local Patuxent cleanups efforts further by advertising many of the cleanups on the Project Clean Stream website, which consolidates information about 4,000 clean-up sites throughout the Chesapeake Bay watershed.



Volunteers removing trash and debris from the Patuxent River during the Annual Clean-Up Day.

Maryland Department of Planning

Planning provides administrative, policy and technical assistance to local governments and state agencies in two areas: (a) programs and projects that support development and reinvestment in our current growth areas, working to reduce development pressure on the Patuxent River watershed's forests

and farmland; and (b) programs and projects that support local and state resource conservation efforts.

Planning's work in support of development and reinvestment in our current growth areas includes: helping jurisdictions identify obstacles and solutions to reinvestment; assisting in the development of plans in support of local growth areas; and administering the Heritage Structure Rehabilitation Tax Credit Program to support redevelopment and reuse of historic Maryland properties for residential and commercial purposes.

Planning's work in support of local and state resource conservation efforts includes: finalizing the report of the Transfer of Development Rights (TDR) Committee, which Planning convened in 2015 to evaluate county TDR programs and to identify approaches to improve their effectiveness; administering the subcommittees of the Rural Economies Workgroup (Sustainable Forestry Subcommittee, Land Preservation Subcommittee, Food Policy Subcommittee) of the Maryland Sustainable Growth Commission to help protect the resources that support our rural economy; and providing analysis and policy support for Maryland's agricultural preservation programs.

Planning is a member of the Board of the Maryland Agricultural Land Preservation Foundation (MALPF) and partners with MALPF to certify county land preservation programs: certified counties in the Patuxent watershed include Anne Arundel, Calvert, Montgomery, Prince George's, and St. Mary's. Also, Planning is a member of the Rural Legacy Board, which makes final decisions on annual land preservation grants and on proposals for the creation and expansion of Rural Legacy areas. All of the Patuxent Counties are home to at least one Rural Legacy area.

In support of the PRC's Preservation and Restoration Workgroup, Planning staff arranges and conducts conference calls with county staff and drafts minutes and findings to support the workgroup's efforts. Planning staff also coordinates the drafting of letters and preparation of other communication materials for the PRC's use in promoting Patuxent River Clean-Up Day events.



Charles County

In 2016, Charles County adopted an updated comprehensive plan that includes future land use plans and water resources policies. One important public facility project supported by the plan is the Benedict wastewater treatment plant (WWTP), which is under design and expected to be operational in 2020. By improving the treatment of wastewater from homes currently served by septic systems, the WWTP will reduce nutrient loads to the Patuxent River.

In support of Maryland's Chesapeake Bay TMDL implementation effort, Charles County's Phase II Watershed Implementation Plan (WIP) Strategy included two-year milestones for load reduction strategies through June 2015. The milestones aim to accelerate best management practice (BMP) implementation and to connect related local programs: compliance with the county's National Pollution Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit⁴, water conservation efforts and public outreach. The Phase II WIP strategies for the next two-year milestone (July 2015 through June 2017) continue to support the restoration of the Patuxent River.

The county's Septic Pump-Out Program has had continued success, including in portions of the Lower Patuxent River Watershed. The program offers landowners incentives to regularly pump their septic tanks.

In June 2016, the county completed a Watershed Assessment for the portions of the Lower Patuxent River watershed within its boundaries. Several potential stream restoration projects and pollutant load reduction hot spots were identified in the assessment.

After completing analyses of impervious surface and stormwater infrastructure, the county created a Municipal Stormwater Restoration Plan for local TMDLs in 2016. The fecal coliform TMDL for the Patuxent River was addressed under the plan. Two of the plan's main strategies include the installation of Best Available Technology (BAT) septic systems and outreach efforts to encourage responsible disposal of pet waste.

The county has a shoreline erosion control project in Benedict currently under review; the project will be credited towards the county's MS4 permit.



Anne Arundel County

Anne Arundel County is operating under its fourth-generation NPDES MS4 Permit, which was issued to the county in early 2014. The county's MS4 implementation activities are described in its 2015 Annual Report (the county is currently developing its 2016 Annual Report).

In 2015, the County revised its Stormwater Management Practices and Procedures Manual and in response Environment reauthorized the county's Sediment and Erosion Control Program. A year later, the county also initiated a major effort to comprehensively review and update its Stormwater BMP database in response to guidance from Environment.

Anne Arundel County's NPDES MS4 Permit requires the county to assess and plan for all of its major watersheds. The resulting

⁴ Stormwater runoff often is transported through municipal separate storm sewer systems (MS4s) and discharged into local water bodies. An MS4 is usually made up of storm drains, pipes and ditches. To reduce stormwater pollution, many jurisdictions and some state agencies are required to obtain NPDES permits that cover their MS4s.

Watershed Management Studies and Plans provide a watershed perspective to land use planning and development review and serve as valuable tools for facilitating land use and infrastructure decisions that protect watershed resources. The studies and plans identify concerns as well as short- and long-term opportunities to improve water quality. In addition, these studies and plans enhance Anne Arundel County's ability to link existing watershed management business processes with watershed models, providing interactive information on how changes in land use, development regulations, BMPs, and other watershed conditions affect water quality and waterway habitat.

As one step in the development of these plans, the county completes a targeted Bioassessment and Habitat Assessment for each watershed. The results are modeled to determine priorities for restoration and preservation. The most recently completed assessment, for the Little Patuxent Watershed, was completed in June 2016 (see <http://www.aacounty.org/departments/public-works/wprp/watershed-assessment-and-planning/watershed-studies/>). An assessment of the Middle Patuxent (the last Anne Arundel County subwatershed within the Patuxent watershed to be assessed) is expected to be completed in 2018.

In 2015 and 2016, Anne Arundel County continued to implement its Phase II WIP. In support of this plan, the county submitted final 2014-2015 Programmatic and Implementation Milestone Progress Reports to Environment, along with new 2016-2017 Two-Year Milestones.

In addition to the Bay TMDL, individual bacteria and sediment TMDLs affect the Patuxent Watershed in Anne Arundel County. In response, Anne Arundel County submitted to Environment draft Sediment TMDL Restoration Plans for the Upper Patuxent and the Little Patuxent River and a Bacteria TMDL Restoration Plan for the Upper Patuxent.

In 2004 the county established a Countywide Biological Monitoring Program that follows Natural Resources' Maryland Biological Stream Survey (MBSS) protocols. The program enables the county to sample major watersheds in a 5-year period. Aquatic biological monitoring data collected through this program are shared among state and county entities to provide a snapshot of the ecosystem's health and demonstrate compliance with the county's NPDES MS4 Permit requirements. These data are used by the county's Watershed Protection and Restoration Program to assess stream health. Two targeted biological studies have been conducted within the Patuxent Watershed, including biological condition assessments in the Galloway Creek subwatershed in 2011 and in the Patuxent Research Refuge in 2009. Reports on these assessments are available at www.aacounty.org/departments/public-works/wprp/ecological-assessment-and-evaluation/biological-monitoring/

To enhance water quality and protect important habitat and working lands, Anne Arundel County, through its Department of Recreation and Parks, continued to preserve farmland and woodland in the Patuxent River watershed. The County's farmland preservation program has been certified by Planning and MALPF. One Rural Legacy easement totaling 59 acres was purchased in the Middle Patuxent in 2015. The County's FY17 budget includes \$1.5 million in funding for the MALPF program plus additional matching funds for its Rural Legacy program.

To guide land protection efforts, the county has developed three primary planning documents that contain goals and strategies for agricultural and woodland preservation: the General Development Plan, the South County Small Area Plan, and the Land Preservation, Parks, and Recreation Plan. These plans include policies, recommendations, and strategies to promote agriculture and forestry as important elements of the local economy; encourage the use of BMPs; discourage the loss of prime agricultural and forest land to development; and set forth a framework for state agencies and property owners to work collaboratively to increase the amount of land protected through easement acquisition.

In addition to these efforts, several development and resource protection plans were developed during 2015 and 2016, including:

- Odenton Town Center Master Plan – adopted April 2016
- Growth Tiers – will be adopted into the Comprehensive Plan in 2017
- Land Preservation, Parks and Recreation Plan – draft is almost complete
- Greenways Master Plan – currently being updated.



Howard County

Approximately three-fourths of Howard County lies within the Patuxent River watershed. About 62 percent of the county's portion of the watershed is the county's Rural West area, which is predominantly comprised of agriculture, forest, and low-density residential land uses. The remainder of the watershed lies within the County's Planned Service Area for public water and sewerage, where more intensive residential and commercial development exists and is planned, including Columbia New Town.

Howard County adopted its Water Resources Element (WRE) in April 2010 as an Amendment to the General Plan 2000, and subsequently incorporated the WRE by reference into PlanHoward 2030, the county's current general plan. The WRE recommends policies and actions to help the county manage water resources more sustainably as its population grows.

Howard County received its fourth NPDES MS4 Discharge Permit in 2014. This permit requires that the county provide water quality treatment for 20 percent of its untreated impervious area by the end of December 2019 and develop plans to reduce stormwater pollutant loads for each local TMDL by December 2015. In response, the county completed a Countywide Implementation Strategy (CIS).

In 2015, the county completed watershed assessments and restoration plans for the Middle Patuxent River and Little Patuxent River watersheds. The county is developing a watershed assessment and restoration plan for its portion of the Patuxent River mainstem watershed. Field assessments for this study were completed in April and May 2016.

The county’s watershed assessments and restoration plans measure environmental conditions and identify potential restoration projects to be included in the capital budget. These projects include stream restoration, reforestation, additional water quality treatment for existing stormwater management ponds, new stormwater management facilities, and stabilization of existing storm drain pipe outfalls to improve water quality in the Patuxent River and the Chesapeake Bay.

Several restoration projects are being completed based on earlier watershed assessments and restoration plans. Table 1 summarizes the projects completed in the Patuxent River watershed in 2015 and 2016. Not all of these projects are funded by the county; many are voluntary or paid for with grants; and this table includes only projects that were reported to the County. Organizations such as the Columbia Association and individual residents also have completed projects that are not included in this table.

Table 1. Howard County restoration projects within the Patuxent River watershed: 2015-2016

Project Type	Number of Projects Completed		
	2015	2016	Total
Outfall Stabilization	3	5	8
Stream Restoration	3	2	5
New or Retrofit Structural BMPs (mostly voluntary residential rain gardens)	119	84	203
Septic System Denitrification	90	27	117
Septic System Connections to WWTPs	0	6	6
Tree Planting	424	4	428

Howard County is a member of the Patuxent Reservoirs Watershed Protection Agreement, which was created to protect the biological, physical and chemical integrity of the Patuxent

Reservoirs Watershed. The Patuxent River reservoirs supply water to approximately 650,000 residents in Maryland. The county participates in the Patuxent Reservoirs Watershed Protection Group, which conducted an assessment of progress toward meeting sediment and phosphorus TMDLs for the reservoirs from 2015 to 2016.

In 2015, Howard County completed installation of emergency generators and switchgear at the Little Patuxent WWTP. Three 2,500-kilowatt emergency power generators and 15-kilovolt switchgear were installed to provide a third power source for the plant, in the event that the two independent Baltimore Gas and Electric power feeds are disrupted. The generators are part of the county's \$8.1 million electrical protection system upgrade completed to safeguard the WWTP from electrical outages that could lead to sewage overflows.



The Little Patuxent Water Reclamation Plant in Savage, Maryland (photo by Atkins Global)

The county's goals for land preservation are described in the 2012 Howard County Land Preservation, Recreation and Parks Plan. In 2015, the county purchased about 47 acres of predominantly wooded land in the Patuxent River watershed. This property expands Haviland Mill Park, located along the mainstem of the Patuxent River between the two Patuxent reservoirs. The county also acquired 34 acres of dedicated open space in the watershed through conditions for land development approval in 2015 and 2016.

During this same period, the Howard County Agricultural Land Preservation Program acquired permanent easements totaling about 169 acres on three farms in the Patuxent River watershed. To support river preservation, any farm easements acquired by the program in Howard County must have an up-to-date Soil Conservation and Water Quality Plan.

In 2012, Howard County completed a Green Infrastructure Network Plan. This plan defines a countywide system of hubs (large natural areas that provide important plant and wildlife habitat) and connecting corridors. The county is conducting assessments to evaluate current conditions within the network and to identify needed improvements. In 2016, the county completed a Corridor Break Assessment that evaluated the problem areas within some green infrastructure corridors and provided recommendations to improve their ability to provide safe passage for wildlife.



Montgomery County

The Patuxent Watershed in Montgomery County drains to the two-reservoir system maintained by Washington Suburban Sanitary System (WSSC): the Triadelphia and Rocky Gorge Reservoirs. Three subwatersheds—Upper Patuxent, Lower Patuxent, and Hawlings River—are made up of approximately 61 square miles, or seven percent of the total Patuxent River basin.



*Washington Suburban Sanitary Commission's Triadelphia Dam,
Prince George's and Howard Counties*

Montgomery County operates under its third-generation NPDES MS4 Permit, issued in early 2010. The permit expired on February 15, 2015 and was administratively continued by Environment. In 2015 and 2016, the County continued efforts to meet the requirements of the permit.

In 2015 and 2016, Montgomery County, WSSC, and Howard and Prince George's counties hired a consultant to measure their collective progress in meeting the Patuxent Reservoirs watershed TMDLs. The draft report is being evaluated by Environment.

Montgomery County's Department of Environmental Protection (DEP) Stormwater Management (SWM) Facility Maintenance and Inspection Program oversees triennial inspections, as well as structural and nonstructural maintenance of all stormwater management facilities under the county's jurisdiction. In 2015, the county inspected approximately 200 stormwater management facilities located in the Patuxent River Watershed and completed maintenance activities as needed to ensure these facilities were functioning properly.

The DEP's Stream Monitoring team monitors the biological community and stream habitat conditions in all county watersheds on a rotating basis over a five-year cycle. DEP uses a

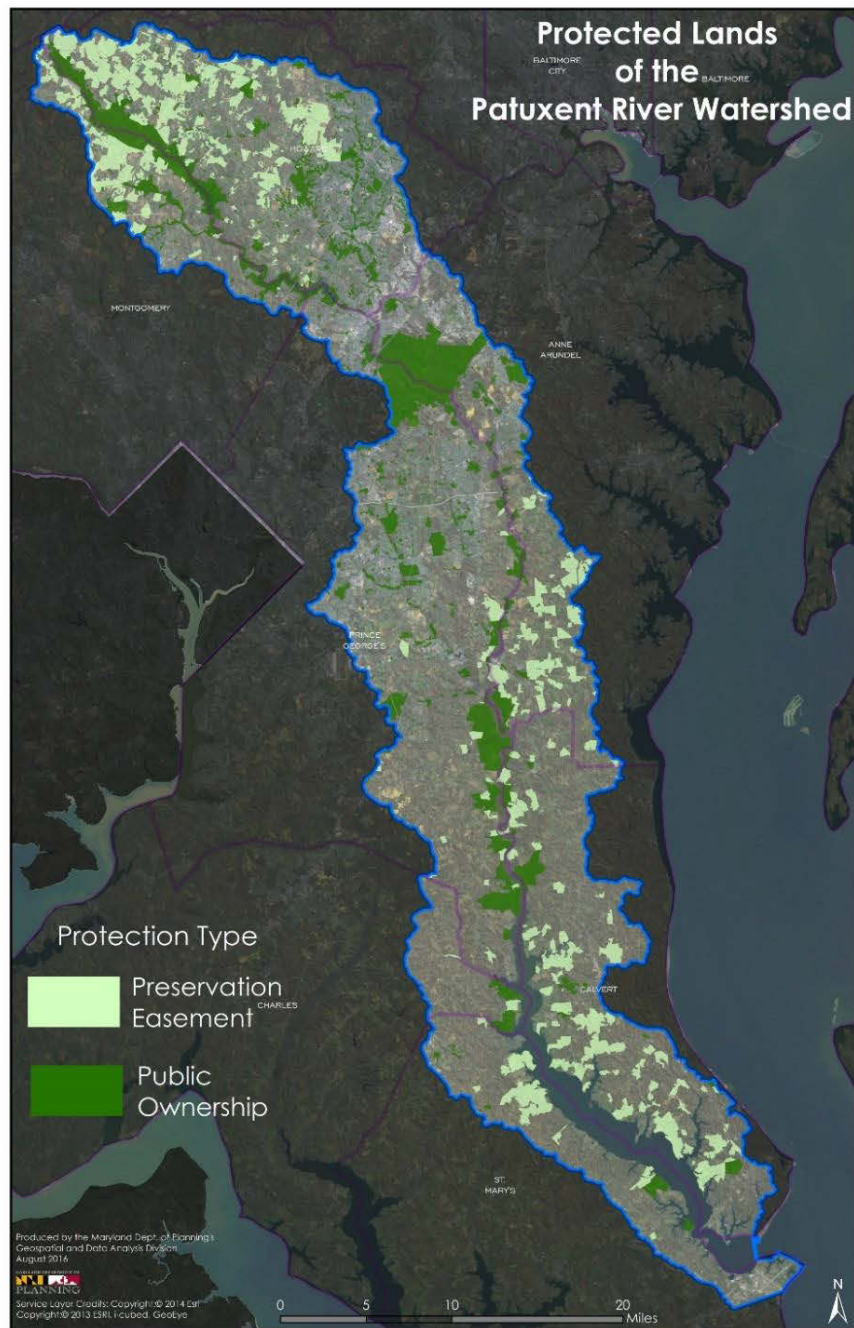
multi-metric Index of Biological Integrity (IBI) to develop narrative ratings of biological conditions in water bodies. In 2015, DEP sampled approximately 28 stream monitoring sites in the Hawlings and the Upper and Lower Patuxent watersheds for benthic macroinvertebrates and fish. The results of this sampling indicated that stream conditions in these watersheds for 2015 monitoring were good (64 percent to 87 percent). For more information about the County's monitoring program, to view results of the monitoring, and view an interactive map of the Stream Monitoring results, visit:

<http://www.montgomerycountymd.gov/dep/water/watershed-health.html>.

The Montgomery County Planning Department at the Maryland-National Capital Park and Planning Commission (M-NCPPC) completed planning, land acquisition and restoration activities in support of the Patuxent River. For example, in March 2015, the county approved and adopted the Sandy Spring Rural Village Plan for an unincorporated village within the Patuxent Reservoirs watershed. The Village Plan seeks to preserve the area's cultural history, identify connections and mobility gaps, and encourage the design of civic spaces and a village center. The Plan highlights the value of protecting the quality of the Patuxent River and its reservoirs. The county's Functional Master plan for the Patuxent River Watershed recommends containing development in commercial areas in a logical and well-planned manner. To accomplish this, the Sandy Spring Rural Village Plan seeks to:

- Protect and enhance the water quality of the Patuxent River Watershed with low-density development outside of the Village Core.
- Limit imperviousness as much as possible.
- Protect and expand forest edges.
- Plant trees along the perimeter and interior of parking lots to provide maximum shade and stormwater management enhancement.
- Enhance greenway connections.
- Designate the Plan area as part of the Shades of Green Program, which provides free trees for planting to qualifying property owners in designated areas.

Figure 2. Protected Lands of the Patuxent River Watershed



In the reporting period, land protection increased as well: a total of about 36.5 acres of parkland in the Patuxent River watershed were added to the M-NCPPC park system. The county also reforested almost an acre of stream valley within the Hawlings River Watershed.

Under the Montgomery County Department of Parks Weed Warrior Program, volunteers logged 339 hours removing invasive plants from natural areas within the Patuxent watershed. Some of these efforts were coordinated with events such as Earth Day to draw attention to the environmental needs of natural areas and the importance of stewardship.

To reduce the number of deer in M-NCPPC parkland, and therefore the adverse effects of deer overpopulation on forest and other ecosystems, the Montgomery County Department of Parks implements a Deer Management Program. The program focuses on large wooded areas and stream valleys. Within the Patuxent River Watershed, the program centers on Rachel Carson Conservation Park, where 68 deer were harvested in 2015-16. Annual deer harvests have resulted in a continuing decline in the deer population.

The Montgomery County Parks Department hosted three trash cleanups in parks within the Patuxent River Watershed. A total of 1,010 pounds of trash and 294 pounds of recyclables were removed during these events

Twenty-five acres of agricultural land in the Patuxent watershed were placed under permanent agricultural easements through the County's Building Lot Termination program in 2015-16. This program seeks to protect agricultural land by removing development potential from agricultural properties, thus supporting the goals of the county's transfer of development rights program.



Calvert County

In 2015-16, to implement its Phase II WIP, Calvert County applied for and received Bay Restoration Fund grants to upgrade about 90 septic systems per year to best available technology and received a Chesapeake Bay Trust grant to design three stormwater retrofit projects in the Hall Creek Watershed. The county also partnered with the state to purchase private property for a waterfront park on the Patuxent, resulting in the removal of 32 septic systems. The park is adjacent to Natural Resources' Hallowing Point/Southern Region Service Center, which is on the opposite side of the Patuxent River from the Village of Benedict in Charles County.

To improve habitat within the watershed and to increase resilience to storms, the county applied for and received a Federal Emergency Management Agency Hazard Mitigation grant to

purchase a property in Broomes Island located in the 100-year floodplain. The property will be managed to revert to its natural state of wetlands.

Since 2010, the Calvert County Department of Community Planning and Building, with support from the Cove Point Natural Heritage Trust, has partnered with citizen volunteers to collect water quality data from sixteen sampling stations in Patuxent River tributaries. Water samples are collected at each site quarterly.



Prince George's County

The Prince George's County Planning Department of M-NCPPC continued its efforts in 2015-16 to create a functional master plan to address natural resource, agricultural, and rural character preservation within the county. A significant percentage of the county's natural landscapes, referred to as Rural and Agricultural Areas in the county's current general plan (Plan 2035), are in the Patuxent watershed.

The countywide Resource Conservation Functional Master Plan ("the Resource Conservation Plan" or "RCP") combines green infrastructure planning and rural and agricultural conservation into one plan. The RCP will address four state-mandated planning elements: the Natural Resources Element (in the form of the updated Green Infrastructure Plan), the Priority Preservation Area (PPA) element (in the form of an Agricultural Plan that includes urban and rural agricultural policies and applies to all agricultural land, not just those areas within the PPA), a Forestry Element (in the form of strategies to address Maryland's No Net Loss of Forests policy in the Forest Preservation Act of 2013 and Plan 2035's recommendation for a strategic plan for forest and tree canopy), and technical corrections to the county's growth tier map.

In 2010, Prince George's County updated its environmental regulations to implement many of the strategies in the Green Infrastructure Functional Master Plan. This has resulted in a need to update the "Regulated Areas" portion of the 2005 GI Plan network map. To support the implementation of the Prince George's County WIP and associated policies and strategies in Plan 2035, the updated GI Plan will contain policies and strategies to address the full spectrum of green infrastructure issues, which includes forest and tree canopy coverage, climate change, sea-level rise, and other ecologically related topics that impact land use decision-making.

The RCP will expand on the county's PPA Plan of 2012 by providing a comprehensive agricultural policy plan to support the long-term sustainability of both rural and urban agriculture in the county. The RCP will also address the need to preserve rural

character conservation. On December 15, 2016, the Planning Board adopted the RCP.

In addition to the RCP, the county's Planning Department continues its Woodland Conservation Banking program, which preserves a significant acreage of woodlands each year. Most of these banks are located in the Patuxent watershed.

With regard to stormwater management, Prince George's County submitted its FY2016 Annual NPDES Report to Environment in early 2017 as per requirements in the county's current NPDES MS4 Permit issued in 2014. A copy of the county's 2015 Annual Report can be found at

<http://www.princegeorgescountymd.gov/293/NPDES-MS4-Permit>.

The county completed a major effort to update its database of stormwater BMPs to correct deficiencies and to meet current Environment standards in 2015-16. The county also expanded its restoration activities to meet conditions in its MS4 Permit, key among them the county's public-private partnership with Corvias Solutions to form a Clean Water Partnership. The Partnership is charged with restoring 2,000 impervious acres by FY2018, thus meeting almost a third of the county's restoration requirement under its MS4 Permit. The partnership will initially focus in the highly urban and degraded Anacostia watershed. Once progress is made in this area, the Partnership is expected to target all watersheds for restoration, including the Patuxent watershed. Restoration activities will include Environmental Site Design for stormwater BMPs, pond retrofits to enhance water quality benefits, stream restoration, outfall stabilization, and tree planting. Currently, efforts are underway to restore about five impervious acres in the Patuxent watershed. Additionally, projects restoring more than 1,000 additional acres of impervious area in the Patuxent watershed are being considered.

In 2015, the county developed comprehensive watershed restoration plans for all watersheds that had local TMDLs. Four local TMDLs were issued within the County's portion of the Patuxent River Watershed (Rocky Gorge Reservoir – Total Phosphorous, Patuxent River Upper – Bacteria & Sediment, and Western Branch – Biological Oxygen Demand).

The restoration plans seek to:

- Improve watershed health, including hydrology, water quality, and habitat, using a balanced approach that minimizes negative impacts;
- Support compliance with regional, state, and federal regulatory requirements; and
- Increase awareness and stewardship within the watershed, including encouraging decision makers to develop policies that support a healthy watershed.

Each plan presents a strategy to manage urban stormwater and limit the amount of pollutants reaching the county's water bodies. The plans include a methodology to estimate pollutant loads from different urban land types along with anticipated pollutant load reductions from a variety of restoration activities. Additionally, the plans provide a timeline to meet the local TMDL targets that accounts for the estimated costs of implementing and maintaining restoration activities and the county's anticipated funding sources. For more information on the watershed plans, visit <http://pgcdoe.net/pgcountyfactsheet/Factsheet/Default>.

The county is planning to develop a watershed restoration plan for the Western Branch starting in 2018 and has applied for a state grant to complete it.

Since January 2015, the Prince George's County Department of the Environment (DoE) has enhanced the health of the Patuxent River Watershed through tree planting and litter reduction programs. Students and community groups can plant native trees in their school yards and neighborhoods through DoE's Arbor Every Day and Tree ReLeaf programs. These trees improve water quality by intercepting storm water runoff and reducing the amount of pollutants carried into the storm drain system. During 2015-16, 95 native trees were planted in the Patuxent River Watershed through these two programs.

DoE also administers the Comprehensive Community Cleanup Program. This program is designed to revitalize, enhance, and help maintain unincorporated areas of the county through 21 concentrated cleanups each year. Through this program, DoE, the county Department of Permitting, Inspections and Enforcement (DPIE) and the county Department of Public Works and Transportation (DPW&T) partner with civic and homeowner associations to provide a cleanup and maintenance services during a two-week period. Services provided by this program include bulk-trash collection, tagging and removal of abandoned vehicles, housing code/zoning ordinance violation surveys, storm drain outfall screening/sampling, roadside litter pick-up, tree trimming, and storm drain maintenance. In 2016, 26 tons of trash were collected through the program.



City of Laurel

The City of Laurel adopted the stormwater management construction and permit requirements of Prince George's County as the "Stormwater Management Code of the City of Laurel." Administration, inspection and enforcement of the stormwater management regulations in the city are subject to the jurisdiction of the Watershed Protection Branch of the Prince George's County DoE pursuant to the Prince George's County Code.

In 2016, the Mayor and City Council approved an updated Master Plan which contains a Land Use Element, WRE, and Sensitive

Areas Element that address the Patuxent River Primary Management Area. To help restore the health of the river and encourage public access, the Mayor and City Council are working with KIMCO Realty to obtain a 100-foot easement from U.S Route 1 North and the Patuxent River south to MD 198 to construct a nature walk and complete a Riverfront Park.



The Washington Suburban Sanitary Commission and Patuxent Reservoirs Watershed Protection Group

The Patuxent Reservoirs Watershed Protection Group (PRWPG), which works to protect the water quality in the Patuxent reservoirs, is a partnership that includes several Patuxent River Commission members (Howard County, Montgomery County, Prince George’s County, M-NCPPC, and WSSC) as well as the Howard and Montgomery Soil Conservation Districts.

As part of an innovative project completed in 2016, the PRWPG conducted an evaluation of the progress toward reducing pollutant loads to the Patuxent Reservoirs over the past 15 years and the remaining load reductions required to meet the Patuxent Reservoirs TMDLs. The Patuxent Reservoirs had TMDLs established in 2008 for nutrients (Rocky Gorge and Triadelphia) and sediment (Triadelphia only). Required load reductions are 48 percent for phosphorus in Rocky Gorge Reservoir, 58 percent for phosphorus in Triadelphia Reservoir, and 29 percent for sediment in Triadelphia Reservoir.

The PRWPG provided funding for the progress assessment conducted by a consultant engaged by WSSC. The consultant estimated pollutant load reductions, due to the combination of land use changes and installation of urban and agricultural BMPs, since 2000, which was the “baseline” year established for the reservoir TMDLs by Environment.

The approach was based on Environment guidance, including use of a pollutant load model (the Maryland Assessment Scenario Tool, MAST) to run scenarios of both baseline and current conditions. The PRWPG developed a geodatabase to account for land use changes; added to these were estimated load reductions associated with the installation of hundreds of urban BMPs (mainly stormwater management systems for the counties’ MS4 NPDES permits), as well as many other BMPs on agricultural land, along with afforestation/reforestation areas from county sources.

The findings of the Patuxent Reservoirs TMDL progress evaluation are:

	Phosphorus in Rocky Gorge	Phosphorus in Triadelphia	Sediment in Triadelphia
TMDL Pollutant Reduction Goal	48%	58%	29%
Achieved To-Date	17%	9%	8%
Remaining Gap	31%	49%	21%

As next steps, the counties will determine if a timeline can be established for meeting the TMDLs under both current and accelerated pollutant reduction rates. The counties have MS4 NPDES permits that require development of TMDL implementation plans; however, the MS4 permits apply only to the urban point-source waste load allocations in the TMDL (representing only 15 percent of the total pollutant loads in the reservoir watersheds). While a timeline for future urban load reductions can be derived from the counties’ MS4 implementation plans, a majority of remaining loads (i.e., the “gap”) would need to be met from non-point sources, such as stream scour of legacy sediments in floodplains, and nutrient discharges from rural residential and agricultural sectors.

With ownership of the new geodatabase, the PRWPG has a tool and system in place that will allow for continued tracking of pollutant load reduction progress even if such progress is ad hoc (i.e., outside of a comprehensive implementation plan framework).

With regard to drinking water protection, WSSC expanded the protected lands in the Patuxent reservoirs watershed by about 66 acres in 2015-16.



Maryland Department of Transportation

Transportation continues to comply with federal and Maryland laws and regulations for stormwater management (SWM) as well as Environment permit requirements. Transportation continues to implement the practices in the 2000 Maryland Stormwater Design Manual and remains in compliance with the Stormwater Management Act of 2007, including the revised Chapter 5 of the 2000 Maryland Stormwater Design Manual, by implementing Environmental Site Design to the maximum extent practicable for all new and redevelopment projects.

Within the Patuxent River Watershed, Transportation’s State Highway Administration (MDOT-SHA) owns, operates and maintains an extensive roadway network with significant drainage and SWM systems. The MDOT-SHA Water Quality Bank, which was created by providing impervious surface

treatment above SWM requirements, created excess water quality treatment through SWM BMPs and Environmental Site Designs on major highway, bridge and district special projects. This bank currently has a credit of approximately 20 acres in the Patuxent River watershed.

MDOT-SHA has established a Systematic Stormwater and Drainage Asset Management Program to operate and remediate permanent drainage and stormwater assets that convey and treat highway runoff. The program's goal is to provide preventive and remedial solutions for the drainage and stormwater infrastructure within MDOT-SHA right-of-way (ROW) to provide required water quality treatment and protect valuable resources within the Patuxent River Watershed. The SWM inventory database is continuously updated to include newly constructed SWM facilities. Rapid increase of projects within the SWM inventory is expected in upcoming years because of new watershed restoration efforts.

Between January 2015 and October 2016, MDOT-SHA completed three Bay restoration projects within the Patuxent River Watershed, with a fourth project currently under construction. The projects include 28.7 acres of tree plantings throughout Montgomery, Prince George's, Anne Arundel, and Charles counties, equivalent to 7.9 acres of impervious area treatment; 4,500 linear feet of stream restoration for the Upper Little Patuxent River in Howard County, equivalent to 45 acres of impervious area treatment; and retrofitting existing stormwater facilities throughout Anne Arundel County, treating a total of 13.46 acres. The total impervious area treatment for this period was 66.36 acres.

MDOT-SHA also has an outreach program designed to coordinate pollution reduction strategies with each of the MS4 jurisdictions and counties. The purpose is to establish a cooperative relationship and to identify partnering opportunities. MDOT-SHA is also actively pursuing Memoranda of Understanding (MOUs) with MS4 jurisdictions, government agencies, and private organizations with the intent to share resources in restoring local and regional waters. Several meetings were held between MDOT-SHA and each county with jurisdiction within the Patuxent River Watershed between January 2015 and October 2016:

- Montgomery County: MOU under review by county.
- Howard County: MOU executed. Meeting held on 8/31/2016.
- Prince George's County: MOU under review by county. Meetings held on 5/7/2015 and 9/21/2016.
- Anne Arundel and Charles County: MOU executed. Meetings held on 2/27/2015, 4/30/2015, 5/13/2015, 8/19/2015, 9/16/2015, 2/27/2016, and 8/2/2016.

In addition, MDOT-SHA continued to implement its Integrated Roadside Vegetation Management Program, which includes the control of invasive plant species within the ROW. MDOT-SHA continues to control *Phragmites* (common reed grass) within its ROW and at mitigation sites.

Lastly, MDOT-SHA maintains compliance with Agriculture's fertilizer application requirements for turf establishment. This has resulted in a reduction in the amount of fertilizer applied to the soil from 1,000 pounds per acre to 200 pounds per acre for turf establishment.



Maryland Department of Natural Resources

Through the Chesapeake and Atlantic Coastal Bays Trust Fund, Natural Resources provides support to a range of restoration grants within the Patuxent watershed. In 2015-2016, the Trust Fund provided more than \$7 million to implement 144 projects to improve water quality and aquatic habitat in the Patuxent. These projects include the restoration of 50 acres of forested stream buffer, 11,570 linear feet of stream and three acres of wetland habitat. Additionally, 137 stormwater best management practices were installed, more than 19,500 trees planted, and 3,500 volunteers engaged in these restoration projects. Natural Resources is also working with the State Highway Administration to design and install stormwater retrofit practices and a large stream restoration project at Rosaryville State Park (near Upper Marlboro).

Natural Resources also supports the Chesapeake Bay – National Estuarine Research Reserve (CB-NERR) working in Jug Bay and Patuxent River Park. The reserve area includes 2,068 acres of wetlands, open water, and terrestrial habitat. CB-NERR's mission is "to improve coastal resource management by increasing scientific understanding of estuarine systems and making estuarine research relevant, meaningful, and accessible to managers and stakeholders." Within the Patuxent River, CB-NERR conducts research and monitoring on a variety of water quality and habitat parameters to inform and guide restoration and management of aquatic resources.



Maryland Department of the Environment

In September 2016, Environment conducted a 12-year shellfish harvesting area sanitary survey of the Patuxent River, in compliance with the requirements of the National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish. These requirements include a map and description of the harvesting area location, the harvesting area classification and its classification history, identification and evaluation of pollution sources, hydrographic and meteorological

characteristics affecting the harvesting area, shellfish harvesting area water quality studies, and the interpretation of these data to determine if the sanitary quality of the Patuxent River meets NSSP criteria for the harvesting area's existing classification.

The 2016 Patuxent River sanitary survey included the evaluation of shoreline surveys (conducted in accordance with NSSP Guide requirements), which resulted in the identification and evaluation of all actual and potential sources of pollution that may affect the harvesting area. Environment also evaluated the meteorological, hydrographic and geographic characteristics, which may affect the distribution of pollutants over the harvesting area. The sanitary survey included the collection and analysis of shellfish harvesting area water samples to ensure compliance with NSSP bacteriological water quality standards. The number and location of the sampling stations produced the data necessary to effectively evaluate all pollution sources. After identifying the sampling stations, Environment collected water samples through a systematic random sampling program to account for conditions of varying meteorological, hydrographic and seasonal differences.

For areas classified as “approved” (growing areas where harvest for direct marketing is allowed) or “restricted” (growing areas where harvesting is allowed only by special license, and following harvest the shellfish must be treated), Environment completed its evaluation using data collected under the systematic random sampling program as specified in the NSSP. For areas classified as “conditionally approved” (growing areas that meet the criteria for “approved” except under certain conditions described in a management plan), Environment completed its evaluation using samples collected only during those time periods approved for shellfish harvesting. This was accomplished by extracting from the systematic random sampling data set only those samples collected outside the three days following a rain event of one or more inches in 24 hours. This rain event represents the condition under which conditionally approved areas are restricted to shellfish harvesting.

The results of the 2016 Patuxent River shellfish survey are as follows: the “approved” sections of this shellfish harvesting area continue to meet the requirements set forth in the NSSP for approved area classification; areas “restricted” to shellfish harvesting continue to exceed standards set for approved shellfish harvesting waters; and “conditionally approved” areas continue to meet the requirements set forth in the NSSP for approved area classification for those days when shellfish harvesting is permitted.

With regard to stormwater permits, Environment reissued Phase I NPDES MS4 permits for the following counties in the Patuxent River basin in 2014: Anne Arundel, Charles, Howard, Prince George’s and those parts of the State Highway System in those counties. St. Mary’s County has recently been designated a Phase

II MS4 jurisdiction and will be covered under a new Phase II MS4 permit, scheduled to be issued in 2017.

Environment received stormwater waste load allocation restoration plans for the following subwatersheds within the Patuxent 6-digit (021311) watershed in 2015-16:

- Howard County (Rocky Gorge Reservoir, Patuxent River Upper, Little Patuxent River)
- Anne Arundel County (Little Patuxent River, Patuxent River Upper)
- Prince George's County (Patuxent River Upper, Rocky Gorge Reservoir)
- Charles County (Patuxent River Lower)

Also during the reporting period, through the state's Bay Restoration Funds, Environment supported enhanced nutrient removal (ENR) upgrades of several WWTPs that discharge to the Patuxent River, including the Patuxent and Maryland City WWTPs in Anne Arundel County and the Western Branch WWTP in Prince George's County. This means that all seven of the major WWTPs that discharge to the Patuxent River are now upgraded to ENR.



Maryland Department of Agriculture

Soil conservation district staff provide assistance to Patuxent River watershed landowners to enhance farming operations and implement BMPs to protect water quality, prevent flooding, safeguard streams and reservoirs, foster wildlife habitat, manage forest resources, and address natural resource impacts from urban growth. Maryland's Water Quality Cost-Share Program and federal programs like the Environmental Quality Incentive Program provide farmers with grants to install BMPs on their farms that prevent soil erosion, manage nutrients and safeguard water quality in the Patuxent River. During 2015-2016, Agriculture and soil conservation district staff helped farmers implement a total of 611 agricultural BMPs such as grassed waterways, streamside fencing, field borders, and waste storage facilities in the Patuxent River watershed. In addition, conservation planners developed 382 soil conservation and water quality plans on 14,706 acres within the Patuxent River watershed during 2015-2016.

Cover crops are important to the health of the Patuxent River and the productivity of Maryland's farmland. In the fall, cold-hardy cereal grains such as wheat, rye, barley, and approved mixed crops are planted as cover crops in newly harvested fields. Once established, cover crops recycle unused plant nutrients remaining in the soil from the previous summer crop along with nutrients released by the mineralization of crop residue. In addition to their water quality benefits, cover crops protect fields against wind and

water erosion, improve soil health, increase organic matter in the soil, reduce weeds and pests, and provide habitat for beneficial insects. Agriculture and soil conservation district staff helped farmers plant an average of 16,382 acres per year within the Patuxent River watershed during 2015-2016.

Maryland's Conservation Reserve Enhancement Program (CREP) helps Patuxent River watershed landowners plant streamside buffers, establish wetlands, protect highly erodible land, and create wildlife habitat, while providing them with steady, dependable land rental income. CREP is a state-federal (Agriculture and Farm Service Agency) partnership that makes it easy for farmers to do their part to protect local waterways without hurting their bottom line. During 2015-2016, Agriculture and soil conservation district staff wrote five CREP contracts for 53.1 acres within the watershed.

Advocacy Strategy Implementation: 2015-2016

Between 2015 and 2016, the local jurisdictions and PRC completed the following tasks in support of the Advocacy strategies in the Policy Plan:

Scientific & Technical Workgroup

In early 2016, the PRC created the Scientific & Technical Workgroup (STWG) to help the PRC understand and promote scientific research that can improve the Patuxent River.

The Workgroup's mission, supported by the Commission, is as follows:

1. To find and present research and other information to the Patuxent River Commission.
2. To respond to Commission requests for information.
3. To synthesize information that helps the Commission understand the information gaps and the limits of inference with regard to available information.
4. Provide scientific consensus and review to the Commission on particular issues.
5. Communicate the differences and similarities between the Patuxent River ecosystem and the Chesapeake Bay ecosystem.
6. Identify when technology and approaches are not yet known for addressing particular issues.

The Patuxent STWG evolved from PRC participation in the 2015 Patuxent River Research Conference. A dozen entities from government, academia, and the not-for-profit sectors sponsored the conference. After being briefed about the conference, the PRC

reaffirmed that scientists and policy experts need to work more closely together: the scientists can provide sound data and the non-scientists can use it to build sound policy. The PRC, informed by the STWG, will seek to fulfill this role as a bridge between the two groups.

In late 2016, after the PRC received two briefings—one about oyster management issues generally, and a second about Natural Resources’ *Oyster Management Review: 2010-2015* study—the STWG was asked to guide the PRC on upcoming Patuxent oyster management decisions. In response, the STWG provided guidance to the PRC and its staff on how to assemble a panel discussion, how to frame the issues appropriately, and what the appropriate decisions or outcomes should be. Following the STWG’s recommendations, the PRC held a panel discussion on Patuxent oyster management issues in January 2017.

Sewage Spill Notification Workgroup

After a significant sewage spill overflow event at the end of April 2014 into the Western Branch of the Patuxent River, several PRC members reported that there was incomplete public notification and confusion regarding where to post signs along the river and when to lift them. The Commission discussed the impact this has on recreational use of the Patuxent River and the protection of the public health for boaters, swimmers and fishermen. In response to these concerns, the PRC created the Sewage Spill Notification Workgroup to develop recommendations to Environment on updating state regulations or regulatory guidance on sewage spill notification (written before the advent of fast, modern communication technologies) and on when to lift warning signs on the river.

State regulations (COMAR 26.08.10.08.D) require that a “public advisory shall remain in effect until the Department of Health and Mental Hygiene, local health department, environmental health director, or a designee determines that sampling data for the receiving water shows return to normal or prior background levels.” One of the problems identified by the workgroup is that “normal or prior background levels” for bacteria are difficult or impossible to determine.

In 2015, the Workgroup convened several times and completed its analysis of the existing state regulations. After presenting its recommendations to the PRC, the Commission endorsed the recommendations and requested Environment’s assistance in carrying out the following:

A. Changes to the 24-hour notification deadline about sewage overflows into the Patuxent River

The Commission recommends that Environment issue regulatory guidance saying that even though COMAR

26.08.10.08.B allows 24 hours, the regulation should be interpreted, except under extraordinary circumstances, as something much shorter—6 hours—in this age of advanced communications.

Here is the text of the regulations (emphasis added):

“Public notification shall be made as soon as practicable, *but not later than 24 hours* after the time that the owner or operator becomes aware of the event....”

A notification period shorter than six hours is certainly “practicable” today.

B. Notifying downstream jurisdictions of sewage overflows

The Commission recommends that Environment’s regulatory guidance direct owners and operators of WWTPs to notify downstream jurisdictions in addition to the counties in which the spill occurs. COMAR 26.08.10.08. B.1 already mandates this action (emphasis added):

“Public notification shall be made as soon as practicable, but not later than 24 hours after the time that the owner or operator becomes aware of the event and shall be made:

(1) By a public service announcement or paid advertising in a daily newspaper, radio station, or television station serving the immediate area where the overflow occurred *and any other areas where the overflow is likely to have an adverse impact...*”

C. Additional methods of notification

The methods of public notification currently included in the regulation are “a public service announcement or paid advertising in a daily newspaper, radio station, or television station.” The existing regulation does not take advantage of virtually instantaneous notification through the internet and social media.

The Commission recommends that Environment’s regulatory guidance direct each WWTP and county to create an online system through which anybody—including officials downstream, kayakers, fisherman, etc.—can sign up for electronic notification of sewage spills, to be posted as quickly as possible.

D. When to lift postings

The current regulations require monitoring for bacteria levels after a sewage spill overflow and postings are to be removed once background levels for bacteria are reached; however, no county health department is doing this. Some are using time-based approaches (e.g., lifting postings after 30 days), while others are removing postings once health-based standards are

reached. The Commission believes this unnecessarily harms recreational use of the river (by unduly restricting use of the river) while at other times might put river users at risk (given that time-based approaches do not rely on monitoring). The Commission recommends that Environment issue regulatory guidance for a single, statewide standard for lifting sewage spill postings that both protects human health and promotes recreational use of the river.

In response to the PRC's letter, in November 2015, the Secretaries of Planning and Environment met, along with the Chair and Vice-Chair of the PRC and workgroup members to discuss the workgroup's recommendations. In 2016, in response to Environment's direction, the workgroup compiled and analyzed the different county protocols in the Patuxent watershed for sewage spill notification and the lifting of postings to identify best practices. Through this analysis, the workgroup determined that some counties, like Anne Arundel County, are using an innovative and detailed approach to both protect human health and minimize impacts to recreation after sewage spills. The workgroup will present its findings to the Commission in 2017.



Maryland Department of Planning

Planning staff coordinates and facilitates the meetings of both the Scientific & Technical Workgroup and the Sewage Spill Notification Workgroup. Our work includes drafting agendas and minutes and writing up the workgroups' findings for the PRC. Planning staff also completes research and analysis tasks to inform the workgroups' policy discussions and recommendations.



Prince George's County

The county's Storm Drain Stenciling Program continued to raise community awareness about the connection between the county's storm drains and the Chesapeake Bay, particularly the harm caused by litter and other pollutants that enter the storm drain system and discharge to the Patuxent River and other waterways that flow into the Bay. While the county requires the stenciling of inlets in new developments, many inlets in older communities have either never been stenciled or, over time, the stencils have faded. This program focuses on stenciling as a means of educating citizens, especially in older communities. The county purchases the paint, tools, and stencils used by the volunteers to stencil the "Don't Dump – Chesapeake Bay Drainage" message. In the past two years, 205 inlets were stenciled.

DoE seeks opportunities to promote environmental awareness, green initiatives, and community involvement to protect our natural resources and promote clean and healthy communities.

As human behavior is a significant source of storm water pollution, the county provides an array of volunteer opportunities to control pollutants at the source, prevent storm water pollution, and restore watersheds. The county also integrates water quality outreach as a vital component of watershed restoration projects. Since January 2015, DoE has engaged grade K–12 students as well as the general public in numerous outreach and education events in the Patuxent River Watershed.



Calvert County

In 2015-16, to raise public awareness of water resource issues, the Calvert County Environmental Commission provided a display at Patuxent River Appreciation Days (PRAD), an annual festival at the Calvert Marine Museum, and at the Green Expo, an annual fair to promote water quality and other green technologies.



Charles County

During the 2015-2016 reporting period, Charles County revamped its Watershed Protection and Restoration Program website, which serves as an outreach and educational tool regarding water conservation, septic tanks, nutrient reduction, and stormwater management. In addition, the county distributes watershed-focused brochures at community events such as the County Fair and at its biannual rain barrel workshops.

PRC Legislative Review

During each Maryland legislative session, the PRC reviews proposed legislation germane to its mission and selects priority bills to support or oppose (PRC members who represent state agencies abstain from voting). The PRC provided testimony to the legislature on several bills in 2015-16.

eXcitement Strategy Implementation: 2015-2016

Between 2015 and 2016, the local jurisdictions and PRC completed the following tasks in support of the Advocacy strategies in the Policy Plan:

Tourism Workgroup

The PRC created the Tourism Workgroup, a partnership that includes local governments and other stakeholders, to attract

more canoers and kayakers to the Patuxent River. Workgroup goals include:

- ensuring a rewarding experience through access to the river and to related economic activities and businesses including outfitters, lodging, campgrounds, historic and cultural resources, and dining; and
- promoting the use of the existing Patuxent Water Trail (see <http://patuxentwatertrail.org/>) for paddlers and expanding its connection to points of interest nearby, including accommodations, dining, and entertainment.

To achieve these goals, the workgroup:

- completed an inventory of Patuxent River-related businesses;
- conducted an assessment of needs, opportunities and barriers for recreational activities on the water, focused on the quality of public access points;
- strengthened its relationship with local tourism offices to promote the Patuxent River as a Maryland amenity, and;
- developed proposed travel itineraries for paddlers that can increase the enjoyment of the many cultural, ecological, and historic resources of the river basin.

The Tourism Workgroup created an inventory of river-related businesses in the entire watershed with assistance from the Maryland Department of Commerce. The workgroup then sought to identify those businesses found in the inventory within a walkable half-mile of each boat launch site along the Patuxent River Trail (at this time, no businesses meet this criterion) and to identify all historical and cultural sites near the launch points.

The workgroup completed a needs/opportunities assessment of the boat launch points along the Patuxent Water Trail to evaluate aspects of these facilities that help paddlers reach and enjoy the river, including parking spaces, distance from parking to water, the path from parking to the water, the ease of paddle approach, visibility of water trail signs from water, ADA accessibility, hours of operation, fees/permits, toilets available, potable water available, number of picnic tables and benches, presence of a fire ring, camping sites, and tourism-related businesses. This assessment will allow park planners to determine which points along the river best meet the needs for paddlers and which points need improvement.

In accordance with the PRC's 2016 Annual Action Plan, the Tourism Workgroup reached out to State and local agencies "to expand Patuxent River-related opportunities within the watershed." Doing so has increased the PRC's network with a number of organizations promoting the river and other resources

within the watershed. The workgroup met with the Maryland Office of Tourism, which frequently responds to out-of-state inquiries about opportunities in Maryland to enjoy water sports, including kayaking and canoeing, and learned how the workgroup could use their services. Since the next statewide theme for tourism will center on water recreation, the workgroup looks forward to working with the Tourism Office to ensure that the Patuxent River is featured. The workgroup also reached out to the Southern Maryland Heritage Consortium, which provides grants that might be useful in implementing the workgroup's goals.

In 2016, the workgroup convened a meeting with the local Tourism Officials in the watershed so that they might become acquainted with the PRC and the Patuxent Water Trail. The officials shared with each other and the workgroup information concerning economic activities that related to the Patuxent and local efforts to support and promote kayaking and canoeing. The experience demonstrated the value of local governments and the PRC working together to promote the entire Patuxent as a Maryland tourism asset. The tourism officials agreed to meet regularly with the Tourism Workgroup in 2017 to continue to share ideas and to plan a major event that would focus on the river.

To help create and encourage opportunities for river-related economic activities, the workgroup explored two ideas to raise awareness of the river as an enjoyable place to visit. The first idea was to create placemats that would be marketed to restaurants in the watershed. The placemats would showcase the resources of the river, points of interest, and amenities for visitors. This project was set aside because of cost. The second idea was to create travel itineraries that would enhance the paddlers' experience of the river, encouraging them to stop and enjoy a special feature of the river and to dine at local restaurants. These itineraries are now complete.

One itinerary guides the paddler from Jefferson Patterson Park and Museum (JPPM). From the beach launch on the park, one can travel south and explore the beach and marsh grass habitat. A mile down the shore the paddler can explore St. Leonard's Creek, where more than 200 years ago American sailors were at battle with the British near the end of the war of 1812. After heading back to the launch site, the paddler can either enjoy a picnic lunch on the JPPM park grounds, explore many of the exhibits at JPPM (including a replica American Indian Village), or drive to a local restaurant. Nan's Cove launch is close by for paddlers seeking to explore several quiet areas along the Patuxent River. Points of interest within a short driving distance include local wineries, a brewery and a farm stand.

The second itinerary focuses on the steamboats that once traveled the Patuxent River and which represented Calvert County's

introduction to the Industrial Age. The story of the steamboat is one of commerce and community. Most of the river's wharves have disappeared without visible trace, yet the paddlers can imagine and experience the history of the great highway of commerce and elegance at paddle-friendly sites along the Patuxent including Solomon's Island Wharf, Mackall's Wharf, Parker's Wharf, Hallowing Point Wharf and the wharf at Lower Marlboro.

The third itinerary, along the Jug Bay Water Trail, includes two camp sites (through discussions with tourism officials, the Workgroup found that overnight accommodations are a key to tourists' staying longer and spending more money). The itinerary provides the paddler with access to a variety of interesting resources, including Historic Mount Calvert; the Jug Bay Wetlands Sanctuary (the largest freshwater tidal marsh in Maryland); hiking trails; restaurants and shopping in Upper Marlboro; an alpaca farm; and a winery.



Maryland Department of Planning

Planning staff coordinates and facilitates the meetings of the Tourism Workgroup. Our work includes drafting agendas and minutes and writing up the Workgroup's findings and recommendations for the PRC. Planning also takes the lead in building a network of tourism advocates focused specifically on the Patuxent River, including county tourism staff, and in investigating and implementing the Workgroup's ideas.



Charles County

Charles County's efforts to implement the Benedict Waterfront Village Revitalization Plan (adopted in January 2012) are ongoing. The Plan aims to enhance community access to the Patuxent River, coinciding with the eXcitement strategies of the *2015 Patuxent River Policy Plan*. Efforts are underway by a private developer to partner with the county on a gateway center and public access project that would increase accessibility to the river and recreational opportunities. This effort is still in the beginning stages and agreements have not yet been made.



Anne Arundel County

The Anne Arundel County Executive formed the Water Access Commission by Executive Order in April 2016. The Commission advises the county on how to increase public access to local waterways. The Patuxent Riverkeeper, who is a PRC member and Tourism Workgroup member, was appointed to the county's Water Access Commission. Items under consideration for the Patuxent River include a recommended upriver campsite at

Stocketts Run, and a recommended downriver campsite at Emery Landing.

PRC Boat Trips

Beginning in 2015, the PRC initiated an annual boat trip for PRC members to obtain firsthand experience regarding particular issues facing the river and to generate excitement about the river. In September 2015, the boat trip launched from Patuxent River Park in Prince George's County. Hosted by the CB-NERR, it focused on the connection between science and policy. In October 2016, the boat trip was hosted by Mike Hewitt, Patuxent River Commissioner and Commissioner of St. Mary's County. The PRC viewed the steep, eroding cliffs along the Patuxent River in St. Mary's County. The erosion is not only a threat to the houses atop the cliffs but also deposits a significant amount of sediment into the Patuxent River and local creeks. A discussion of causes and solutions was led by Dr. Curt Larson, a cliff erosion specialist formerly with the U.S. Geological Service.

Recommendations to Facilitate Implementation of the 2015 Patuxent Policy Plan

As required by state law, the biennial report includes specific recommendations from Planning concerning implementation of the Patuxent River Policy Plan. At this time, implementation of the Policy Plan is moving forward. The PRC is serving its role as a means for increasing collaboration among the local governments and state agencies within the Patuxent River watershed, and for gathering and sharing information about the variety of helpful work in support of the Patuxent River.

Although Planning does not have specific recommendations at this time for changing the way the PRC, the local governments, or the state agencies address and implement the Policy Plan, Planning does recommend that the PRC, local governments, and state agencies work collaboratively to address two areas of focus in the near-term, based on the issues identified by the PRC through its workgroups in 2015-16:

1. **Sewage Spill Notification and Signage Requirements.** Since late 2014, the PRC and its Sewage Spill Notification Workgroup have worked to identify and promote improvements to the state's sewage spill notification and sign posting regulations. The PRC submitted the Workgroup's recommendations to Environment in 2015

and met with the Secretaries of Environment and Planning in late 2015. In 2016, the Workgroup analyzed current local procedures for implementing the regulations to identify best practices. To help implement the Advocacy strategies of the *2015 Patuxent Policy Plan*, the PRC should seek in 2017 to ensure local implementation of the Sewage Spill Workgroup's recommendations, including any additional recommendations the workgroup might develop as a result of its identification of current local best practices.

2. **Local TMDL Implementation.** In 2016, the PRC explored obstacles to implementation of local TMDLs, which if achieved, would help meet water quality standards for different portions of the Patuxent River and its tributaries. Two obstacles identified included the lack of a deadline for completing implementation of local TMDLs and the need for significant funding. To help implement the P6 strategy of the *2015 Patuxent Policy Plan*, "Support the work of local jurisdictions and the state in meeting their respective water quality goals as stated in approved plans and permits", the PRC could support a study on the pluses and minuses, and obstacles, of setting deadlines for implementation of the local Patuxent River TMDLs; and, explore whether special allocations of state funds could be made to support implementation of local TMDLs, perhaps conditioned on the completion of certain studies or plans (such as a TMDL scoping plan or local watershed assessment) by local governments or regional bodies.



State of Maryland

Larry Hogan, Governor

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Maryland Department of Planning

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