

From My Backyard to Our Bay



An Anne Arundel County Resident's Guide to Improving our Environment and Protecting our Natural Resources

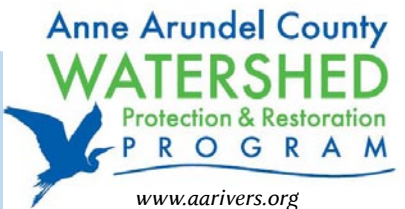


This booklet brought to you by:



ANNE ARUNDEL
SOIL CONSERVATION DISTRICT
www.aascd.org

The Watershed Stewards Academy trains community members to become Master Watershed Stewards, working on projects that reduce stormwater runoff in Anne Arundel County. Their role is to engage and educate citizens, businesses and organizations within neighborhoods on environmental issues. Stewards can help communities reduce pollutants, capture stormwater and clean up waterways. To find a Steward near you or to become a Steward, go to www.aawsa.org.



The Anne Arundel Soil Conservation District carries out both voluntary and mandated programs that focus on soil, water and natural resources conservation in accordance with Maryland policy. The District's efforts concentrate on the environmental effects of both agriculture and urban development, as both are equally essential to the local economy. Through these efforts, the District is dedicated to providing reliable, well-founded conservation information while conveying the message of sound environmental stewardship to the community.



www.aawsa.org

The Watershed Protection & Restoration Program (WPRP) is Anne Arundel County's program to meet federal- and state-mandated pollutant reductions to achieve the Chesapeake Bay Total Maximum Daily Load (TMDL), including TMDLs for county waterways. The WPRP uses state-of-the-art techniques to reduce sediment, nutrients and other pollutants to creeks, streams and rivers. Our goal is protection, enhancement, and restoration of the county's water resources.



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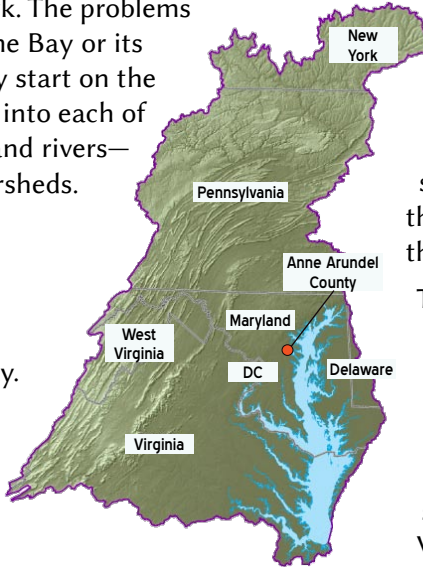
When you read through this PDF document and click on the interactive links, please change browsers if you encounter any difficulties.



Rx for the Chesapeake Bay

The Chesapeake Bay is a national treasure, but one that still desperately needs our help despite the last few decades of restoration work. The problems don't start in the Bay or its tributaries; they start on the lands that feed into each of these streams and rivers—the Bay's watersheds.

Each of us lives in a watershed that eventually drains into the Chesapeake Bay. The cumulative effect of our caretaking efforts on our own properties and our own communities make a significant difference in the health of our waterways, and of our Bay.



The Chesapeake Bay watershed drains portions or all of six states and D.C.

What is a Watershed?

A watershed is an area of land that drains into a particular river, lake or other body of water. Watersheds are also

called “basins” or “drainage basins.” Some watersheds, like those that drain to a creek, are small. Others, like the land that drains to the Bay, are large.

The Chesapeake Bay watershed covers 64,000 square miles, reaching well into New York State.

Portions of six states, along with Washington D.C., drain to the Bay.

In Anne Arundel County, every resident lives in

one of the 12 smaller watersheds that drain into the Bay.

This guide is for educational purposes only. Photos and some graphics are courtesy of: UMCES IAN, Chesapeake Bay Program, Severn River Association, NASA, USDA, Anne Arundel County Watershed Protection and Restoration Program and Chris Evans, University of Illinois. Cars and light bulb designed by Freepik.com.

Stormwater Runoff

We've all witnessed the gush of brown water running alongside roads, parking lots and other impervious areas when heavy rains fall. Any drop of rain that does not soak into the ground or evaporate becomes part of the swirling rush of water that runs too quickly off the land and into our waterways.

Known as stormwater, this surge of water picks up pollutants—soil, fertilizers, pesticides, pet waste, toxic substances, gas and oil—and



A massive sediment plume from runoff clouds the Severn River

washes them untreated into storm drains or streams. As this water runs over hard surfaces, such as rooftops, roads and parking areas,

it picks up speed and becomes more erosive.

The suspended soil particles wash into storm drains, streams, rivers and the Bay. Excess nutrients swept into the bodies of water by storms can ultimately cause problematic algae blooms. As these blooms die, they create dead zones—areas where the water's oxygen

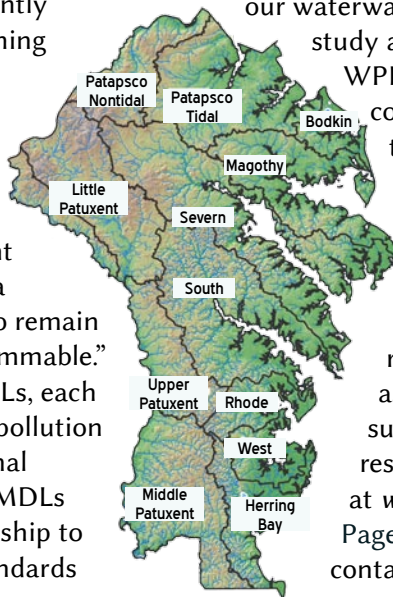
level has dropped so low that nothing can survive.



The Plight of our Waterways

Like the Bay, all of the waterways in our county are contaminated by two or more pollutants (e.g., nutrients, sediment, bacteria, toxic substances) and are considered “impaired.” Under the federal Clean Water Act, all waterways should be sufficiently clean to allow fishing and swimming.

Total Maximum Daily Loads, also known as TMDLs, are the maximum amount of a pollutant in a waterway for it to remain “fishable and swimmable.” To meet the TMDLs, each river is put on a “pollution diet.” For additional information on TMDLs and their relationship to water quality standards in Maryland, go to <http://mde.maryland.gov/programs/Water/>



The 12 major watersheds in Anne Arundel County

[TMDL/ChesapeakeBayTMDL/Pages/programs/waterprograms/tmdl/cb_tmdl/index.aspx](http://www.aarivers.org/TMDL/ChesapeakeBayTMDL/Pages/programs/waterprograms/tmdl/cb_tmdl/index.aspx).

The Anne Arundel Watershed Protection and Restoration Program (WPRP) is the local agency responsible for the TMDL pollution diet for all our waterways. After careful study and evaluation,

WPRP has created a comprehensive plan to reduce pollutants by upgrading our stormwater infrastructure and restoring local streams. You can read watershed assessments and a summary of WPRP restoration activities at www.aarivers.org. Page 33 of this booklet contains more information on WPRP.

Guidance for County Waterways

- 🔵 Anne Arundel County Watershed Restoration and Protection Program, www.aacounty.org/county-maps/, Choose Interactive Mapping Applications, then WPRP Watershed Mapping Application, 410-222-4240
- 🔵 Watershed Stewards Academy, www.aawsa.org
- 🔵 Chesapeake Bay Program and Chesapeake EcoCheck, Total Maximum Daily Loads: A Citizen’s Guide to the Chesapeake Bay TMDL, http://ian.umces.edu/pdfs/ian_newsletter_314.pdf



Who Monitors our Waterways' Health?

The Maryland Department of Natural Resources monitors portions of all of the rivers in Anne Arundel County.

Eyes on the Bay at <http://eyesonthebay.dnr.maryland.gov/eyesonthebay/index.cfm>,

posts these monitoring results. The Maryland BayStat site offers a report card on the Bay's status at <http://baystat.maryland.gov/> as well as

information on Bay restoration.

The Anne Arundel County Department of Health monitors bacteria levels at swimming

beaches throughout the summer.

The site, <http://aahealth.org/programs/evn-hlth/rec-water/advisories>, gives current advisories for local beaches. Storm waters can wash pet waste and harmful microorganisms into the water.

These pathogens may enter the body through open cuts,

wounds and scrapes, causing infection.

Several non-profit watershed organizations monitor both water quality and the effectiveness of restoration

efforts. Some deal with specific areas or watersheds; others are more general. Below are watershed organizations in the county.



The Anne Arundel County Department of Health advises residents not to swim or have any direct water contact in every county waterway for 48 hours after every rainstorm of 1/2 inch or more due to high bacteria levels which can cause health problems.

Non-Profit Watershed Organizations

- 🌊 Advocates for Herring Bay, www.herringbay.org
- 🌊 Anne Arundel Patapsco River Alliance, www.aaprmd.org
- 🌊 Back Creek Conservancy, www.backcreekconservancy.org
- 🌊 Koolhof Earth, www.koolhofearth.com
- 🌊 Magothy River Association, www.magothyriver.org
- 🌊 Patuxent RiverKeeper, www.paxriverkeeper.org
- 🌊 Restore Rock Creek, www.restorerockcreek.org
- 🌊 Severn River Association, www.severnriver.org
- 🌊 Severn Riverkeeper, www.severnriverkeeper.org
- 🌊 South River Federation and RiverKeeper, www.southernriverfederation.net
- 🌊 Spa Creek Conservancy, www.spacreek.org
- 🌊 West/Rhode Riverkeeper, www.westrhoderiverkeeper.org



What's the Problem with Our Waterways?

Nitrogen, Phosphorus, Sediment—the three most common culprits responsible for poor water quality in Anne Arundel County's waterways and the Chesapeake Bay. And, stormwater plays a major role in carrying them into our water.

Nitrogen and phosphorus are both nutrients necessary for plant growth. Too much of these nutrients, though, can trigger an overgrowth of algae, which then dies, decomposes and depletes the water of dissolved oxygen critical for fish and shellfish survival.

Sediments are fragments of rock, mineral and organic matter. If too much sediment washes into our waterways, the water becomes clouded and limits the growth of underwater grasses—plants that supply oxygen and nursery areas for young fish and crabs.

So Who's Responsible?

Every one of us is. Every drop of water that falls on our homes and yards will eventually make its way into the tributaries and ultimately, the Chesapeake Bay. Along its journey, the water will pick up and carry waste products (think dog poop), chemicals (like antifreeze, oils and gas), soil particles (from disturbed areas with few plants) into local waterways.

What Can I Do?

This booklet, *From My Backyard to Our Bay*, offers tips and resources to learn how to live in harmony with the Chesapeake Bay. It highlights steps you can take to create an environmentally friendly yard, manage stormwater runoff, and change your habits in ways that reduce the flow of pollutants into our Bay.



Can I Really Control Runoff?

You can! By changing a few ways that you deal with rainwater on your property, you can maximize the amount soaking in on-site. A 1-inch rainstorm drops more than 1,500 gallons of water on an average-size home. By minimizing runoff, you not only significantly affect the amount of stormwater that will run into nearby waterways, but also provide the deep watering that many plants require to stay healthy.

So, what can you do? You can create rain gardens, plant native trees, shrubs and perennials, install rain barrels, and put in

permeable pavers for walkways and driveways. These practices are proven, aesthetic solutions that successfully manage rainwater on properties. You don't have to do all of them to make a big difference; even one or two changes can drastically change the amount of stormwater washing off of your land. And, when a few neighbors make a few changes, the cumulative effect is substantial.

When considering which techniques to use, keep in mind the adage that guides rainscaping practices: Slow it down; Spread it out; Soak it in.

SLOW IT DOWN
SPREAD IT OUT
SOAK IT IN

Guidance for Rainscaping Practices

- ▲ Chesapeake Ecology Center, www.chesapeakeecologycenter.org
- ▲ Watershed Stewards Academy, Rainscaping Manual, <http://aawsa.org/wsa-rainscaping-manual-2>, 410-222-3831
- ▲ U.S. Botanic Garden, www.usbg.gov/rainscaping-beautiful-solution-water-pollution, 202-225-8333
- ▲ Lancaster County Conservation District, The Homeowner's Guide to Stormwater, www.stormwaterguide.org



THE PROBLEM

Everything that goes into the storm drain...

*Fertilizer,
Motor Oil,
Pet Waste...*

*Ends up in our
waterways unfiltered!*

THE SOLUTION

*Keep pollutants out
of our waterways.*

Reduce runoff...

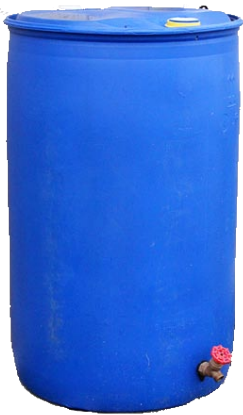


Most neighborhoods around the Chesapeake Bay have storm drains that flush directly into local streams, rivers and the Bay. Because of this, it's incumbent on everyone to keep as much stormwater as possible from washing off our properties and into these drains. We can do this using various rainscaping techniques that effectively slow this water, spread it out and allow it to soak in.



Install a Rain Barrel

Rain barrels are simply large closed containers that capture rain flowing off of rooftops, slowly releasing it to the ground to soak in and become cleansed and cooled. A soaker hose attached to the barrel allows water to seep out and irrigate nearby plant beds.



For proper functioning, you should let your barrel drain completely between rainstorms. Once difficult to find, rain

barrels are now readily available at local hardware and home improvement stores. You can also buy the components and fashion your own rain barrel.

If every house in Anne Arundel County had just one rain barrel, we could capture over 8 million gallons of water during our next rainstorm!

Cisterns

Similar to but larger than rain barrels, cisterns are sealed reservoirs that collect rainwater from rooftops. You can use this water for non-potable needs such as plant watering and car washing. Cisterns may sit either above or below ground.

Guidance for Rain Barrels/Cisterns

- 🔹 Watershed Stewards Academy, www.aawsa.org/rain-barrels-and-cisterns/, 410-222-3822
- 🔹 Arlington Echo Outdoor Education Center, www.arlingtonecho.org/restoration-projects/rain-barrels.html, 410-222-3822
- 🔹 University of Maryland Home and Garden Information Ctr., <http://extension.umd.edu/hgic>



Our Urban Forest

Although you may not realize it, the trees in your yard are part of an urban forest and are critical to the health of the Chesapeake Bay. Deep root systems anchor the soils and control erosion. Trees take up pollutants that would otherwise end up in the Bay. The canopy of leaves intercepts and slows heavy rains. Litter of twigs and leaves on the forest floor, as well as understory vegetation, soak up stormwater. Trees also absorb carbon, reducing its level in the the atmosphere.

Go Native

Acclimated to our area, native trees have the best chance to thrive without special care. Over 60 tree species are native to our county, including common ones—American beech, sycamore, white oak—and less known ones—pignut

hickory, butternut and American hornbeam.

Interested in planting native trees? The Chesapeake Bay Trust and the Maryland Department of Natural Resources (DNR) offer grant funding and tree planting resources. Ayton State Tree Nursery produces native seedlings for homeowners. DNR has resources for homeowners and communities: Tree-Mendous Maryland has reduced-cost trees for community properties and Marylanders Plant Trees offers \$25 coupons for native trees at participating nurseries.

Care for existing trees is as important as planting new ones. Ensure that vines don't climb mature trees and use a licensed tree expert to prune or remove trees.



Guidance for Native Trees

- 🔹 Watersheds Stewards Academy, www.aawsa.org/backyard-buffers/
- 🔹 MD Forest Service, <http://dnr2.maryland.gov/forests/Pages/default.aspx>
- 🔹 John S. Ayton State Tree Nursery, dnr2.maryland.gov/forests/Pages/nursery.aspx
- 🔹 Tree-Mendous Maryland, \$25 Tree Coupon, <http://dnr2.maryland.gov/forests/Pages/MarylandersPlantTrees/Introduction.aspx>
- 🔹 Chesapeake Bay Trust, www.cbtrust.org/site/c.mjJPKXPCJnH/b.7958753/k.3322/AA_Community_Tree_Planting_Mini, 410-974-2941



Conservation Landscaping

Landscaping your property with native plants creates aesthetically pleasing areas that absorb and filter stormwater. No weekly mowing necessary! Such conservation landscapes also provide beneficial wildlife and pollinator habitat. Interested in a conservation landscape? WSA has a tool that takes the guesswork out of designing a landscape for your yard: <http://aawsa.org/conservation-design-tool/>.

Plants native to the Mid-Atlantic Coastal Plain are adapted to local soils, rainfall and temperatures, and have developed defenses to many insects and diseases. Given these adaptations, native plants generally thrive with minimal use of water, fertilizers and pesticides. Once difficult to find, native plants are now available at many local nurseries. To find a local native plant nursery near you, visit www.mdflora.org/publications/nurseries.html.



Guidance for Conservation Landscapes

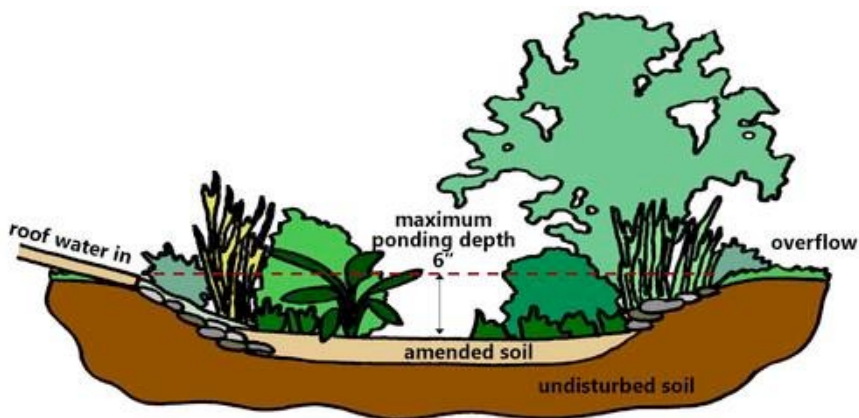
- ▲ Watershed Stewards Academy, www.aawsa.org/conservation-landscapes/
- ▲ U.S. Fish & Wildlife Service, Homeowner's Guide: Conservation Landscaping, www.fws.gov/chesapeakebay/conlascp.htm
- ▲ Chesapeake Conservation Landscape Council, 8 Essential Elements of Conservation Landscaping, www.chesapeakelandscape.org/the-eight-essential-elements/
- ▲ *The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden*, Rick Darke & Doug Tallamy, Timber Press, 2014



Create a Rain Garden

Rain gardens are one of the most popular and effective ways to control stormwater runoff on residential properties. These gardens are shallow depressions planted with native flowers, shrubs and trees. The design facilitates collection and filtering of rainwater coming from roofs, sidewalks and roads.

Collected water in a properly designed garden will soak in slowly within two days. This slow filtering process recharges the groundwater and prevents heavy metals, fertilizers, antifreeze and motor oil from flushing into local waterways. Importantly, rain gardens do not hold the rainwater long enough for mosquitoes to breed.



Guidance for Rain Gardens

- 1. Watershed Stewards Academy, www.aawsa.org/raingardens
- 2. Alliance for the Chesapeake Bay, www.allianceforthebay.org/take-action/structural-bmps/rain-gardens/, 443-949-0575
- 3. Rain garden information for Anne Arundel County, www.aacounty.org/services-and-programs/rain-gardens, 410-222-4240
- 4. Rain Gardens Across Maryland, <http://extension.umd.edu/learn/rain-gardens-across-maryland>



Green-roofed Homes

Green roofs are an innovative way to minimize rainwater runoff, save on heating and cooling expenses, improve air quality and provide habitat for pollinators and other animals. Although more often used on larger commercial buildings in cities, they can work on private homes as well.

Assessing whether your roof can become green depends on several factors. Most important,

the roof slope must be relatively shallow (preferably 5 degrees, but definitely under 25 degrees). The roof must also be supported by a sufficiently strong building structure. A structural engineer or architect can determine whether the roof can undergo conversion. If the roof satisfies structural criteria, local building codes and state design specifications will mandate restrictions and guidelines for construction.



Guidance for Green Roofs

- 🔗 A Quick Guide to Green Roofs, www.igra-world.com/links_and_downloads/images_dynamic/IGRA_Green_Roof_Pocket_Guide.pdf
- 🔗 www.greenroofs.org, 1-416-971-4494 (Canada)
- 🔗 Environmental Protection Agency, www.epa.gov/heat-islands/using-green-roofs-reduce-heat-islands
- 🔗 Greenroofs101, www.greenroofs.com/Greenroofs101/index.html



Curbing Out-of-Control Plants

In a natural and balanced ecosystem, native plants that have evolved over eons blanket the landscape. A wide variety of species grow in areas that suit their particular light, moisture, nutrient and topographic requirements. These plants provide the food, shelter and infrastructure conditions for endemic wildlife species to flourish.

Invasive plants can throw this delicate balance out of whack. Invasive plants are non-native

species that cause environmental, economic or human health harm. Some grow so quickly that they smother out the native vegetation. Others put a chokehold on trees. Still others release noxious chemicals that harm surrounding native plants.

The most effective way to control invasives is to not plant them on your property in the first place (many nurseries still carry invasive plants). If invasives are already established, you can tackle them by several means—either mechanical or chemical.



Japanese stiltgrass (Chris Evans, U. of Illinois, Bugwood.org)



Garlic mustard (Chris Evans, U. of Illinois, Bugwood.org)



Mile-a-minute vine USDA APHIS PPQ, Oxford, NC, Bugwood.org

Guidance for Invasive Plant Control

- 📍 Watersheds Stewards Academy, www.aawsa.org/invasive-species-removal/
- 📍 Mid-Atlantic Invasive Plant Council, www.maipc.org
- 📍 University of Maryland Extension, <http://extension.umd.edu/hgic/problems/introduction-invasive-plants>
- 📍 National Park Service, Least Wanted: Alien Plant Invaders of Natural Areas, www.nps.gov/plants/alien/factmain.htm



Re-creating Nature

Erosion is a normal process, one that occurs naturally over time; the concern isn't with erosion itself, but its pace. Landowners have used bulkheads, riprap and dumped materials to stabilize their shorelines and slow erosion. These methods eliminate the sand beaches and wetlands critical to wildlife, blocking their movement between land and water. Wetlands are essential for good water quality.

Living shorelines, on the other hand, replicate natural coastlines

using biologs, sand, stones, oyster reefs and other natural elements to restore the shoreline and protect wetlands, while permitting wildlife access and offering many benefits, such as:

- Allow natural coastal processes to occur.
- Increase land and water habitat.
- Filter nutrients from uplands. .
- Likely increase property value.

County residents with qualifying projects can obtain marsh grasses for free through the county's Emergent Grasses Program, along with project planning assistance.



Guidance for Living Shorelines

- Emergent Grasses Program, Anne Arundel County Dept. of Inspections and Permits, www.aacounty.org/departments/inspections-and-permits/environmental-programs/forms-and-publications/EmrgntGrasses.pdf
- VA Institute of Marine Science Ctr. for Coastal Resource Management, <http://ccrm.vims.edu/livingshorelines/index.html>, 804-684-7380
- Chesapeake Bay Foundation, www.CBF.org/Document.Doc?id=60
- Environmental Concern, Inc., www.wetland.org/restoration_livingshorelines.htm, 410-745-9620



Let the Rain Soak in

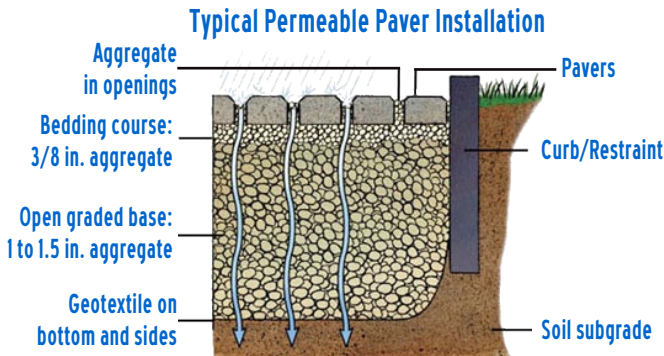
Replacing asphalt or concrete with pervious substitutes—pavers, plastic or concrete grids, gravel, or porous asphalt—permits some of the rainwater to infiltrate.

The visible top surface covers several layers of prepared base to ensure that the system operates as intended. These layers may include gravel layers, an underdrain and textile sheeting.

One of the primary benefits of pervious pavers—a commonly used driveway, sidewalk and patio material—is that they are as

functional and sturdy as asphalt or concrete. Small stones and sand fill the gaps between the pavers, allowing rainwater to soak into the gravel below.

Pavers, or other pervious solutions, are particularly good options for newly constructed homes. Any new pervious installation requires excavation and placement of a gravel base. Walkways and patios are a bit easier to tackle yourself; driveways may require a professional's help as they must be able to support a car's weight.



*Graphic (modified)
R.J. Wolfe and Sons*

Guidance for Pervious Hardscapes

- 🔵 Watershed Stewards Academy, www.aawsa.org/permeable-pavers/
- 🔵 Chesapeake Stormwater Network, www.chesapeakestormwater.net, 410-750-7635
- 🔵 Green Building Advisor, www.greenbuildingadvisor.com/green-basics/hardscapes-patios-and-driveways-0
- 🔵 Alliance for the Chesapeake Bay, www.stormwater.allianceforthebay.org/take-action/structural-bmps/pervious-pavers, 443-949-0575
- 🔵 Interlocking Concrete Pavement Institute, www.icpi.org, 703-657-6900



A Turn of Mind

You can curtail your use and disposal of pollutants if you learn to do things a bit differently at home. It may seem difficult at first, but persevere. Adopting simple habits that shift long-standing routines can really help to restore our local waterways.



Flip through and pick a few habits that appeal to you and begin to make these changes.

Once you realize how easy it is to change, you will feel empowered to make additional shifts in your daily habits. Even if you stop with just a few changes, you can feel good that these are making a difference.

Habits That Help Checklist

Habits in Your Yard

- ✓ Composting
- ✓ Lawn Care
- ✓ Pesticides/Herbicides
- ✓ Wildlife in Your Backyard
- ✓ Pet Waste

Habits in Your Home

- ✓ Recycling
- ✓ Home Hazardous Waste
- ✓ Septic System Care
- ✓ Energy Conservation
- ✓ Water Conservation

Habits on the Road

- ✓ Car Maintenance
- ✓ Boating Responsibly



Composting

In 2013, the EPA estimated that the typical American generates 4.4 pounds of trash each day. Food waste and yard debris comprise the greatest percentage of our waste. This refuse will naturally degrade and break down into usable compost.

Composting is a magical process that ultimately yields a soil conditioner and fertilizer also

known as black gold. Although starting your own compost may seem ominous, it's actually quite simple to set up and maintain.

DIY Compost

Lots of composting systems are available: bins, tumblers, trench and sheet. The easiest, however, is simply a pile in the backyard to which you add a mix of kitchen waste, leaves and other debris with occasional turning by you.

Composting Tips

- Use coffee grounds, eggshells, fruit and veggie peels and other scraps high in nitrogen to help the compost heat and degrade.
- Don't add pet waste, grease, meat or dairy to the pile as they attract animals and don't compost well.
- Don't keep your compost too wet as it may start to smell; aerate it by turning the contents with a pitchfork.
- Watch county Master Gardeners demonstrate composting and get a free compost bin.



Guidance for Composting

- Composting Demonstrations at Quiet Waters Park by Master Gardeners, <http://fqwp.org/composting-demonstrations>
- Home and Garden Information Center, FAQs Compost, <http://extension.umd.edu/hgic/faqs-compost>
- Compost Guide: Tips for Home Composting, www.compostguide.com
- Free compost bins for county residents, www.aacounty.org/services-and-programs/recycling-and-compost-bins



Lawn Care

Do you use a professional service for your lawn care? Would you like to ensure that they use safe techniques and products. Qualified companies are now offering the **Clean Lawn Care Program**. Developed by turf management experts in collaboration with

WSA, this program provides homeowners and their lawn care companies with a reliable way to reduce harmful chemicals while maintaining a healthy, lush lawn. For a list of qualified companies, visit www.aawsa.org or go to www.aawsa.org/bay-friendly-landscaping/ for do-it-yourself suggestions.

Tips for Lawn Care

- **Fertilizing.** Call 800-342-2507 or go to extension.umd.edu/hgic for labs that perform soil tests at cost. If you fertilize, you must abide by the Maryland Fertilizer Law that took effect in 2013.
- **Watering.** Tall fescue—the predominant grass in the county—is a cool-season grass that naturally browns in summer, so don't water from July 4 to Labor Day.

In a single hour, one 4-stroke lawnmower can emit emissions equivalent to an average car traveling about 500 miles.

- **Mowing.** Set your mower to 3 1/2" to reduce weeds by 50 to 80%. Leave the clippings on the lawn by using a mulching blade.
- **Treating Pests.** Try to use environmentally friendly practices to control weeds and insects through prevention, physical removal or use of less toxic substances.

Guidance for Lawn Care

- Watershed Stewards Academy, www.aawsa.org/clean-lawn-care
- Integrated Pest Management – A Homeowner's Guide, Alliance for the Chesapeake Bay, www.allianceforthebay.org/wp-content/uploads/2010/08/IntPestMgmt-HO_Guide.pdf
- Maryland Professional Lawn Care Manual, Maryland Dept. of Agriculture, <http://mda.maryland.gov/siteassets/pages/fertilizer/mdaprolawncaremanual6.24.13.pdf>
- Lawn Care – Best Practices, University of Maryland Extension, <http://extension.umd.edu/hgic/lawns/lawn-care-best-practices>



Herbicides/Pesticides

There's a simple point that might make you rethink your use of pesticides and herbicides. The root word, "cide" means "killer" or "act of killing" in Latin. These compounds *kill* problematic insects, rodents and weeds.

They can also result in serious issues for humans, pets and wildlife. These chemicals can cause immediate health effects; even low doses over time can lead to chronic disease. They can also contaminate land and surface waters, wells and groundwater.



Tips for Removing Weeds and Pests

- Research the problem; it may be that the insect or weed that you're concerned about poses only a minor issue.
- Consider alternatives that rely on physical removal or use less toxic substances; insecticides/pesticides should be the last resort.
- Use plants that naturally repel harmful insects or those that attract beneficial insects.
- Plant seed producers that will bring insect-eating wildlife to your yard.
- Prune plants with heavy infestations and dispose of the debris.
- Use a hose to wash mites and other insects off of plants.
- Select plants that tend to have resistance to diseases.



Guidance for Herbicides and Pesticides

- Maryland Pesticide Network, www.mdpestnet.org, 410-849-3090
- Maryland Department of Agriculture, mda.maryland.gov/plants-pests/Pages/Pesticide-Information-for-Consumers.aspx
- Household hazardous waste drop-off days, www.aacounty.org/services-and-programs/household-hazardous-waste-drop-off-days, 410-222-7000
- Try Pesticide Alternatives, http://mda.maryland.gov/resource_conservation/documents/tip1.pdf



Wildlife in Your Backyard

Wildlife has a tough time in our developed world. Houses, office buildings, parking lots and vast swaths of lawn make inhospitable places for wildlife to carve out a residence.

We can help. Our backyards and public spaces can become wildlife havens as long as we supply them with the essentials. To make yards and other areas attractive to wildlife—birds, insects and mammals—try the following tips.

Tips on Creating Wildlife Habitat

Plant a variety of natives. Vegetative diversity offers food, shelter, nesting and habitat to a wider variety of animals. Plants with nectar and pollen support pollinator insects and birds.

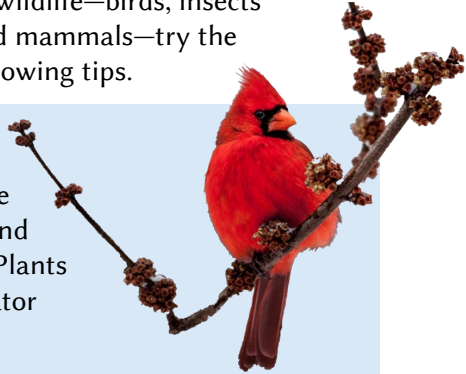
Provide clean water. If possible, offer water year-round, but especially during droughts.

Leave your garden a bit messy. Not pruning perennials until late winter provides seeds, shelter and nesting sites through the cold.

Create brush piles. Meticulous gardeners might balk at mounds of sticks, rocks and limbs, but they do provide wildlife cover.

Plant natives that offer winter food. Some good options are the various hollies, sumac, beautyberry and bayberry.

Set up and maintain nesting boxes and bird feeders.



Guidance for Wildlife in your Backyard

- 🔗 National Wildlife Federation, www.nwf.org/How-to-Help/Garden-for-Wildlife.aspx, 800-822-9919
- 🔗 Maryland's Wild Acres, <http://dnr2.maryland.gov/wildlife/Pages/habitat/wildacres.aspx>, 410-260-8540
- 🔗 U.S. Fish & Wildlife Service, www.fws.gov/pollinators/pollinatorpages/yourhelp.html, 800-344-WILD
- 🔗 Bringing Nature Home, www.bringingnaturehome.net/what-to-plant.html



Pet Waste

Even for the most avid pet owner, scooping up a freshly laid poop with a plastic-bag-swathed hand is hardly fun. But, it is necessary.

About 1.3 million dogs live in Maryland. That's a lot of poop. And, poop pollutes. Millions of bacteria

inhabit every gram of the stuff. If these bacteria wash into local waterways during storms, they can cause serious health problems. Dog feces is a significant source of bacteria found in local waterways.

Guess what that means? Even if your dog is confined to your

backyard, his poop is not. You should frequently and regularly survey your backyard and scoop up poop before rainwaters wash it away.

SCOOP IT • BAG IT • TRASH IT

A single gram of dog feces contains an average of 23 million fecal coliform bacteria. Yuck.

Dog feces can also contain viruses and parasites. Some of these pathogens remain viable (and infectious)

in the soil after the poop has degraded and disappeared.

Pet Waste Pickup

If you have a few dogs, not much time or just can't stomach the thought of picking up dog poop, there are local services that will come to your home regularly to remove waste from your yard.

Guidance for Pet Waste

- 🔗 Watershed Stewards Academy, <http://aawsa.org/pick-up-pet-waste/>
- 🔗 Chesapeake Bay Program, www.chesapeakebay.net/blog/post/dog_poop_happens_learn_how_to_deal_with_it
- 🔗 Pet Waste FAQs, www.ecy.wa.gov/programs/wq/stormwater/municipal/munidocs/poulsbopetwastefaq.pdf
- 🔗 MarylandPet.com, List of pet waste services, http://MarylandPet.com/pet_waste_removal_maryland.htm



Recycling

Throwing newspapers and cans into the recycle bin instead of the trash is second nature for many. But, the recycling logo has three green arrows in a loop for a reason. Collection is one step. To complete the cycle, purchase recycled products, such as printer paper, toilet paper and trash bags.

How it Helps

- Reduces litter and prevents plastics from entering the water.
- Lessens energy consumption.
- Decreases use of landfills.
- Reduces the need for virgin materials to fabricate new products.

Tips for Recycling in the County

Many think that by saving newspapers, bottles and cans, they are recycling all they can, but the recyclables list is actually much larger.

- **Paper:** All paper products, including milk cartons, books, pizza boxes and toilet rolls.
- **Metal:** Almost any metal is recyclable, including aluminum pans, aerosol cans and wire hangers.
- **Plastics:** Includes food containers, plastic bottles, flower pots, shrink wrap, plastic bags, toothbrushes, plates/cups and toys.
- **Glass:** Bottles/jars of any color.

Other materials are recyclable if taken to the Millersville landfill, including antifreeze, appliances, rubble, electronics, batteries, motor oil, tires and vinyl siding.



Guidance for Recycling

- Anne Arundel County Dept. of Public Works information and free wheeled recycling bins for county resident, www.aacounty.org/services-and-programs/recycling-and-compost-bins, 410-222-7582
- Recycle. More. Often. Anne Arundel County recycling site. www.recyclemoreoften.com
- Free recycling bins for City of Annapolis residents, www.annapolis.gov/government/city-departments/public-works/residential-recycling



Home Hazardous Waste

Paint, batteries, motor oil, drain cleaners, weed killers, nail polish—all products commonly found in the home and all toxic. The average U.S. citizen has 3 to 10 gallons of hazardous substances at home.

Proper disposal is essential.

Leaking wastes in landfills can contaminate ground and surface waters and

incineration of these compounds can pollute our air.

The absolute best way to stop generating hazardous waste is to find and use suitable, non-toxic alternatives. Use latex paint instead of oil-based. Try horticultural oils instead of toxic pesticides. Use common kitchen products like vinegar and baking soda to clean rather than harsh chemicals.

Americans generate 1.6 million tons of household hazardous waste per year and the average home has up to 100 lbs of such waste stored.

Tips to Reduce Home Hazardous Waste

- Follow the directions on the package and don't use any more product than necessary.
- Ensure that car products like antifreeze and motor oil are disposed of properly.
- Store products in their original containers to prevent leaks.
- Dispose of wastes properly by taking them to a county drop-off day; do not dump them in your trash or into your sink.

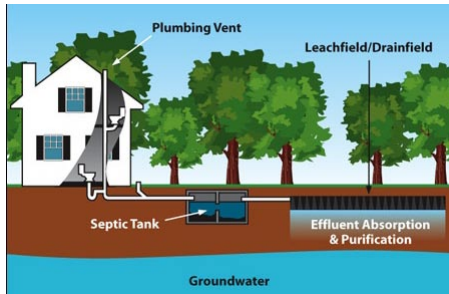
Guidance for Home Hazardous Waste

- Watershed Stewards Academy, www.aawsa.org/choose-non-toxic-products
- Household Hazardous Waste Drop-off Days, www.aacounty.org/services-and-programs/household-hazardous-waste-drop-off-days, 410-222-7000
- Household Hazardous Waste, www.epa.gov/hw/household-hazardous-waste-hhw



Septic System Care

Septic systems fall broadly into two categories: the traditional concrete tank in which solids settle or the newer best available technology (BAT) system in which nitrogen is removed through biological aeration. As of January 1, 2013, the state mandated use of BAT technology for any new construction.



To prolong the life of either traditional or BAT systems:

- Use bleach, detergents and other chemicals sparingly.
- Conserve water by fixing leaky plumbing, washing full loads of laundry and dishes, and installing low-flow plumbing fixtures.

- Dispose of motor oil, degreasers and other hazardous wastes at approved collection centers. For information about county hazardous waste collection, visit Anne Arundel County’s Waste Management website.

- Discard food and cooking grease in garbage or compost.

- Have your tank pumped out regularly

by a licensed liquid waste hauler—every 3 years, or more often, depending on use.

- Know the location of your septic system and keep records of maintenance. The Department of Health provides drawings of septic systems after final inspections.
- Upgrade failing systems.

Guidance for Septic System Care

- Watershed Stewards Academy, www.aawsa.org/septic-care/
- Bay Restoration Septic Fund, www.ahealth.org/programs/env-hlth/well-septic-systems/brf
- Homeowner’s Guide to Septic Systems, www3.epa.gov/npdes/pubs/homeowner_guide_long.pdf



Energy Conservation

Energy use contributes to the greenhouse gases implicated in climate warming. It also releases significant quantities of nitrogen

which overload our waterways. A third of the nitrogen entering the Bay comes from airborne sources, such as cars and the coal plants that provide electricity.

Energy Conservation Tips

- Get out of your car and walk, bike or take public transportation.
- Drive less aggressively; driving at consistent speeds uses less fuel.
- Wash clothes with cold water and clean the lint trap of the dryer after every load.

Did you know that you can get wind energy without erecting a wind turbine in your yard? Consult your power company to sign up for alternative energy sources.

- Install a programmable thermostat, which customizes room temperatures based on your habits and reduces your energy bill.
- Use energy-efficient lighting; Halogen, LED and CFL bulbs use 25% to 80% less energy and last from three to 25 times as long.
- Replace old air conditioners that are less efficient and use a fan for additional cooling.

Guidance for Energy Conservation

- Chesapeake Bay Program, www.chesapeakebay.net/takeaction/howtotips, 800-YOUR-BAY
- Maryland Home Performance, Saving energy, home energy audits and links to utility company rebates, www.mdhomeperformance.org
- Energy.gov, Energy Savings Guide, <http://energy.gov/energysaver/energy-saver-guide-tips-saving-money-and-energy-home>



Water Conservation

The average Marylander uses approximately 100 gallons of water each day. Showering, toilet flushing, clothes washing and just

running the faucet all add up to a lot of water down the drain. The good news is that it doesn't take much effort to make a big dent in this number.



Tips on Saving Water

- Replace old toilets with low-flush models.
- Install low-flow showerheads and faucet aerators.
- Swap out a top-loading clothes washer for a front loader.
- Repair any leaks, such as dripping faucets or leaky toilets, which can squander as much as 200 gallons of water each day.
- Take showers (rather than baths).
- Keep a pitcher of water in the refrigerator rather than running water from the faucet until cool.
- Run the clothes or dish washers only when completely full.
- Water gardens early or late when evaporation is at a minimum.
- Place an automatic shut-off valve on your hose.
- Landscape with drought-tolerant species.
- Place a thin layer of mulch on plant beds to reduce evaporation.

Guidance for Water Conservation

- Conduct a water audit of your home, www.mde.state.md.us/programs/Water/WaterConservation/Documents/www.mde.state.md.us/assets/document/ResAudit.pdf
- Water conservation tips, <http://environment.nationalgeographic.com/environment/freshwater/water-conservation-tips/>



Car Maintenance

Maintaining your vehicle can keep toxic substances out of the Bay. One quart of oil can contaminate 250,000 gallons of water.

- Check your vehicle regularly for drips and leaks.
- Get maximum gas mileage by keeping tires properly inflated and changing the air filter.
- Collect used oil and antifreeze in containers with tight lids and recycle at any county Public Works drop-off center.
- Never dump any car fluids onto roads, into gutters, down storm drains or onto the ground.
- Wash your car with biodegradable soap on your lawn. Better yet, take it to a car wash.

Green Driving Habits

- Don't drive aggressively. Quick starts and stops use more gas than steady speeds.
- Don't idle for more than one minute.
- Plan trips to avoid rush hour and other times of heavy traffic.
- Go the speed limit, which can save gas and reduce emissions.
- Remove your roof rack if you don't need it and don't carry around extra weight in your trunk.
- Use the ECO setting or cruise control if you have the option.



Guidance for Vehicle Maintenance

- Watershed Stewards Academy, www.aawsa.org/maintain-cars-and-boats/
- Chesapeake Bay Program, www.chesapeakebay.net/takeaction/howtotips/category/323
- Alliance for the Chesapeake Bay, www.stormwater.allianceforthebay.org/take-action/habits-to-help/vehicle-maintenance/
- Car Care Aware, www.carcare.org/go-green/



Boating Responsibly

Boaters experience our waterways more closely than most living in the region. As a boater, your

behavior while cruising the waters can have a direct effect on water quality. These tips can minimize your impact.

Boat Care Tips

- Hold onto your trash and retrieve anything that falls overboard.
- Control bilge oils by keeping your engine well tuned and fuel lines leak free, ensuring that oils do not get into the water.
- Clean deliberately using mild, phosphate-free, biodegradable, non-toxic cleanser.
- Maintain your boat sensibly by using non-toxic paints and thinners and disposing any remaining products at a hazardous waste collection facility.
- Never discharge raw sewage into the waterways. Pumpout stations generally charge \$5 for the first 50 gallons of sewage. Some rivers have honey dipper or pumpout boats that will cruise over to pump out your tank.
- Safeguard the shoreline by proceeding slowly in shallow areas and avoiding aquatic plants.



Guidance for Boating Responsibly

- Certified Maryland Clean Marinas, <http://dnr2.maryland.gov/boating/Pages/cleanmarina/cleanmarinas.aspx>
- Chesapeake Bay Foundation, Your Boat and the Bay, www.cbf.org/document.doc?id=169
- Pumpout locations in Maryland, <http://dnr2.maryland.gov/boating/Pages/pumpout/locations.aspx>
- Clean Boating and Environmental Stewardship, American Boating Association, <https://americanboating.org/clean.asp>



The Realities of Rural Lands

Bucolic scenes of pastoral farms dominate our collective mindset of agricultural lands, but the reality is sometimes much different. In response to new landowners moving into rural areas and objecting to the odors, sights and sounds of traditional farming, Maryland passed the 2004 Right-to-Farm law to protect farms from nuisance suits.



Land Management

Soil erosion poses the greatest threat to farm productivity and water quality in the Bay area. Farmers play an integral role in safeguarding water quality through nutrient management plans along with soil and water quality plans. They use various best management practices, known as BMPs, to

reduce soil and nutrient loss from their fields, pastures and environmentally sensitive areas.

Agricultural BMPs

Farmers can implement any of 116 agricultural BMPs. These BMPs vary widely, but include structural practices (e.g., waste storage facilities, fences and water control structures) and vegetative ones (e.g., filter strips grassed waterways, diversions, critical area plantings).

Agricultural BMPs help prevent further degradation of water quality by reducing the amount of sediment and phosphorus reaching nearby waterways. They remain a critical element in the multipronged approach to the restoration of the Bay and its tributaries.

Guidance for Agricultural Practices

- 🔗 Anne Arundel Soil Conservation District, www.aascd.org/agriculture_home
- 🔗 Chesapeake Bay Program, www.chesapeakebay.net/issues/issue/agriculture#inline, 800-YOUR-BAY
- 🔗 Agricultural Best Management Practices, MD Dept. of Agriculture, www.chesapeakebay.net/channel_files/18593/maryland_qapp_agriculture_bmp_072612.pdf



Revitalizing our Waterways

Over the past decade, the Department of Public Works' Watershed Protection and Restoration Program has invested considerable time and money in watershed assessments of each county river system. These assessments have involved walking hundreds of miles of streams, evaluating their biological and physical condition, and developing restoration plans to recover their health and arrest the flow of pollutants into them. The county's restoration plan focuses on three key areas:




- **Stormwater pond retrofits**
Existing facilities, such as dry ponds, detention ponds or

infiltration basins, that have failed will be rebuilt to optimize their pollution reduction capacity and provide an array of ecosystem benefits.

- **Stormwater outfall repairs**
Eroded or failing stormwater outfalls—where drainage systems discharge onto erodible soils—will be reconstructed so they can safely convey high flows and provide water quality and habitat benefits.
- **Stream and wetland restoration**
Stream erosion is the largest contributor of sediment and phosphorus to our local rivers. The county's strategy to re-hydrate valley bottoms through restoration will improve water quality, reestablish floodplain connections and renew broad ecological benefits.

Guidance for County Waterways Restoration

 Anne Arundel County Watershed Protection and Restoration Program, www.aarivers.org, 410-222-4240



The Watershed Protection and Restoration Fee Credit Program recognizes the significant stormwater control investments made by some property owners. It encourages runoff control practices that proactively and sustainably manage stormwater on private property.

Administered by the Office of Planning and Zoning, **the Stormwater Property Tax Credit** program offers a reduction in county property taxes for qualified stormwater improvements. Residents may receive credit on the watershed protection and restoration fee for installing and maintaining stormwater BMPs that limit nutrients (primarily nitrogen and phosphorus) and sediment by decreasing the quantity of

stormwater entering the county's waterways. The following link provides guidance on the credit program: *WPRF Stormwater Remediation Fee Credit Agreement Guidance Document*.

The Anne Arundel County Watershed Restoration Grant Program taps into the notion that successful conservation and preservation of the county's watersheds takes teamwork. To that end, in late 2014, the county's Department of Public Works, in partnership with the Chesapeake Bay Trust, announced the Anne Arundel County Watershed Restoration Grant Program, a new community program to support watershed restoration activities throughout the county to improve water quality in our local streams and rivers.

Guidance for County Property Incentives

- 1 Anne Arundel County Dept. of Public Works, www.aacounty.org/departments/public-works/wprp/wprf-credit-agreement/index.html
- 2 Anne Arundel County Property Tax Credit Application, www.aacounty.org/departments/public-works/highways/forms-and-publications/Stormwater%20Management%20Tax%20Credit%20Application.pdf, 410-222-1144
- 3 Anne Arundel County Watershed Restoration Grant Program, www.aacounty.org/services-and-programs/watershed-restoration-grant-program, 410-222-7000.



Protecting Sensitive Lands

In 1984, growing recognition of the importance of the land closest to the tidal waters of the Bay led to passage of the Chesapeake Bay Critical Area Law. Development or other activities in this 1,000-foot-wide strip—the Critical Area—disproportionately affect both Bay and tributary water quality.

If you live within 1,000 feet of tidal waters or tidal wetlands, you live in the Critical Area. The law mandates additional care when grading, clearing, pruning or clearing invasives. An Anne Arundel County-approved vegetation management plan is required to manage vegetation in this area. The 100-foot land strip closest to the water—known as the Critical Area Buffer—has even more stringent requirements.

Proper maintenance of trees and shrubs, with little or no use of pesticides, herbicides and

fertilizers is especially important since these chemicals can wash or seep into surrounding waters.

Since the Critical Area encompasses such a large swath of land, the Critical Area Commission (CAC) relies on citizen oversight for possible violations. The Anne Arundel County Department of Inspections and Permits enforces critical area regulations. Land-owners must receive approval for disturbance of soil or vegetation within this zone, including the building of any new structure.

Typical Violations

- Clearing or pruning of trees or other vegetation, living or dead, without a permit;
- Construction of secondary structures (e.g., shed, pool, gazebo) without a permit;

If you see any activity that may violate Critical Area restrictions, call the county's Inspections and Permits at 410-222-7790 or the CAC at 410-260-3460.

Guidance for Critical Area Issues

- Anne Arundel County Dept. of Inspections and Permits, www.aacounty.org/departments/inspections-and-permits/environmental-programs/index.html, 410-222-7777 for environmental violations, and 410-222-7784 for general information
- Maryland Chesapeake Bay Critical Area Commission, <http://dnr2.maryland.gov/criticalarea/Pages/default.aspx>, 410-260-3460
- Anne Arundel County Office of Planning and Zoning, www.aacounty.org/departments/planning-and-zoning, 410-222-7450



Environmental Hotlines

What can you do if you are concerned about an activity in your neighborhood that may be harmful to local waters?

Anne Arundel County has an environmental hotline for sediment and erosion problems (410-222-7777). Maryland's similar hotline (1-877-224-7229) is specifically for reporting problems on tidal waters. Calling this number will direct you to the appropriate agency. It operates 24 hours a day, 7 days a week. You can report a violation anonymously if you prefer.

Reporting Problems

You can use the Maryland hotline to report any of the following issues:

- Critical Area or wetlands violation
- Suspicious or unusual activity
- Boating accident or reckless activity
- Illegal fishing
- Oil or hazardous material dumping or spill
- Floating debris that presents a hazard to navigation
- Fish kills or algae blooms
- Public sewer leak or overflow



Guidance for Runoff and Erosion Problems or Soil Issues

- Anne Arundel Soil Conservation District, www.aascd.org, 410-571-6757
- Anne Arundel County Dept. of Inspections and Permits, www.aacounty.org/departments/inspections-and-permits/index.html, 410-222-7780 (main) or 410-222-7777 (hotline for environmental violations)



Agricultural Practices

- Anne Arundel Soil Conservation District, www.aascd.org/agriculture_home
- Chesapeake Bay Program, www.chesapeakebay.net/issues/issue/agriculture#inline, 800-YOUR-BAY
- Agricultural Best Management Practices, MD Dept. of Agriculture, http://mda.maryland.gov/resource_conservation/WIPCountyDocs/bmpdef_ho.pdf

Boating Responsibly

- Certified Maryland Clean Marinas, dnr2.maryland.gov/boating/Pages/cleanmarina/cleanmarinas.aspx
- Chesapeake Bay Foundation, Your Boat and the Bay, www.cbf.org/document.doc?id=169
- Pumpout Locations in Maryland, <http://dnr2.maryland.gov/boating/Pages/pumpout/locations.aspx>
- Clean Boating and Environmental Stewardship, American Boating Association, <https://americanboating.org/clean.asp>

Car Maintenance

- Watershed Stewards Academy, www.aawsa.org/maintain-cars-and-boats/
- Chesapeake Bay Program, www.chesapeakebay.net/takeaction/howtotips/category/323
- Alliance for the Chesapeake Bay, <http://stormwater.allianceforthebay.org/take-action/habits-to-help/vehicle-maintenance/>
- Car Care Aware, www.carcare.org/go-green/

Composting

- Composting Demonstrations at Quiet Waters Park by Master Gardeners, <http://fqwp.org/composting-demonstrations>
- Home and Garden Information Center, FAQs Compost, <http://extension.umd.edu/hgic/faqs-compost>
- Compost Guide: Tips for Home Composting, www.compostguide.com
- Free compost bins for county residents, www.aacounty.org/services-and-programs/recycling-and-compost-bins

Conservation Landscapes

- Watersheds Stewards Academy, www.aawsa.org/conservation-landscapes/
- U.S. Fish & Wildlife Service, Homeowner's Guide: Conservation Landscaping, www.fws.gov/chesapeakebay/conlascp.htm
- Chesapeake Conservation Landscaping Council, www.chesapeakelandscapes.org
- University of Maryland Extension Bay-Wise Program, <http://extension.umd.edu/baywise>, 410-531-5973
- *The Living Landscape: Designing for beauty and biodiversity in the home garden*, Rick Darke & Doug Tallamy, Timber Press, 2014



County Property Incentives

- Anne Arundel County Department of Public Works, www.aacounty.org/services-and-programs/watershed-protection--restoration-fee, 410-222-4240,
- Anne Arundel County Property Tax Credit Application, dev.www.aacounty.org/departments/finance/forms-and-publications/ConservationTaxCredit, 410-222-1144
- Anne Arundel County Watershed Restoration Grant Program, www.aacounty.org/services-and-programs/watershed-restoration-grant-program

County Waterways

- Anne Arundel County Watershed Restoration and Protection Program, www.aarivers.org, 410-222-4240
- Geographic Information Systems (GIS) Mapping Application, <http://dev.aacounty.org/county-maps>
- Watershed Stewards Academy, www.aawsa.org
- Chesapeake Bay Program and Chesapeake EcoCheck, Total Maximum Daily Loads: A Citizen's Guide to the Chesapeake Bay TMDL, http://ian.umces.edu/pdfs/ian_newsletter_314.pdf

County Waterways Restoration

- Anne Arundel County Watershed Protection and Restoration Program, www.aarivers.org, 410-222-4240

Critical Area Issues

- Anne Arundel County Dept. of Inspections and Permits, www.aacounty.org/departments/inspections-and-permits/environmental-programs/index.html, 410-222-7777 for environmental violations and 410-222-7784 for general information
- Maryland Chesapeake Bay Critical Area Commission, <http://dnr2.maryland.gov/criticalarea/Pages/default.aspx>, 410-260-3460
- Anne Arundel County Office of Planning and Zoning, www.aacounty.org/departments/planning-and-zoning, 410-222-7450

Energy Conservation

- Chesapeake Bay Program, www.chesapeakebay.net/takeaction/howtotips, 800-YOUR-BAY
- Energy.gov, Energy Savings Guide, <http://energy.gov/energysaver/energy-saver-guide-tips-saving-money-and-energy-home>

Green Roofs

- A Quick Guide to Green Roofs, www.igra-world.com/links_and_downloads/images_dynamic/IGRA_Green_Roof_Pocket_Guide.pdf
- www.greenroofs.org, 1-416-971-4494 (Canada)
- Environmental Protection Agency, www.epa.gov/heat-islands/using-green-roofs-reduce-heat-islands
- Greenroofs101, www.greenroofs.com/Greenroofs101/index.html, Livingroofs.org

Herbicides and Pesticides

- Maryland Pesticide Network, www.mdpestnet.org, 410-849-3090
- Maryland Department of Agriculture, <http://mda.maryland.gov/plants-pests/Pages/Pesticide-Information-for-Consumers.aspx>
- Household hazardous waste drop-off days, www.aacounty.org/services-and-programs/household-hazardous-waste-drop-off-days, 410-222-7000
- Try Pesticide Alternatives, http://mda.maryland.gov/resource_conservation/documents/tip1.pdf

Home Hazardous Waste

- Watershed Stewards Academy, www.aawsa.org/choose-non-toxic-products
- Household hazardous waste drop-off days, www.aacounty.org/services-and-programs/household-hazardous-waste-drop-off-days, 410-222-7000
- Household hazardous waste, www.epa.gov/hw/household-hazardous-waste-hhw

Invasive Plant Control

- Watersheds Stewards Academy, www.aawsa.org/invasive-species-removal/
- Mid-Atlantic Invasive Plant Council, www.maipc.org
- University of Maryland Extension, <http://extension.umd.edu/hgic/problems/introduction-invasive-plants>
- National Park Service, Least Wanted: Alien Plant Invaders of Natural Areas, www.nps.gov/plants/alien/factmain.htm

Lawn Care

- Watershed Stewards Academy, www.aawsa.org/clean-lawn-care
- Integrated Pest Management – A Homeowner’s Guide, Alliance for the Chesapeake Bay, www.allianceforthebay.org/wp-content/uploads/2010/08/IntPestMgmt-HO_Guide.pdf
- Maryland Professional Lawn Care Manual, Maryland Dept. of Agriculture, <http://mda.maryland.gov/siteassets/pages/fertilizer/mdaprolawncaremanual6.24.13.pdf>
- Lawn Care – Best Practices, University of Maryland Extension, <http://extension.umd.edu/hgic/lawns/lawn-care-best-practices>

Living Shorelines

- VA Institute of Marine Science Center for Coastal Resource Management, <http://ccrm.vims.edu/livingshorelines/index.html>, 804-684-7380
- Chesapeake Bay Foundation, www.CBF.org/Document.Doc?id=60, 410-268-8816
- Environmental Concern, Inc., www.wetland.org/restoration_livingshorelines.htm, 410-745-9620



Native Trees

- Watersheds Stewards Academy, www.aawsa.org/backyard-buffers/ Maryland Forest Service, List of licensed tree experts, dnr2.maryland.gov/forests/Pages/default.aspx
- John S. Ayton State Tree Nursery, <http://dnr2.maryland.gov/forests/Pages/nursery.aspx>
- Tree-Mendous Maryland, <http://dnr2.maryland.gov/forests/Pages/MarylandersPlantTrees/Print-Your-Coupon.aspx>
- Anne Arundel County Forestry Board, www.aafb.sailorsite.net

Non-Profit Watershed Organizations

- Advocates for Herring Bay, <http://herringbay.org/>
- Anne Arundel Patapsco River Alliance, www.aapramd.org
- Back Creek Conservancy, www.backcreekconservancy.org
- Koolhof Earth, www.koolhofearth.com
- Magothy River Association, www.magothyriver.org, 410-647-8772
- Patuxent RiverKeeper, www.paxriverkeeper.org, 301-249-8200
- Restore Rock Creek, www.restorerockcreek.org
- Severn River Association, www.severnriver.org, 443-569-3556
- Severn Riverkeeper, www.severnriverkeeper.org, 410-849-8540
- South River Federation and RiverKeeper, www.southernriverfederation.net, 410-224-3802 (main), 410-224-3760 (riverkeeper)
- Spa Creek Conservancy, www.spacreek.org, 410-721-7991
- West/Rhode Riverkeeper, www.westrhoderiverkeeper.org, 410-867-7171

Pervious Hardscapes

- Watershed Stewards Academy, www.aawsa.org/permeable-pavers/
- Chesapeake Stormwater Network, www.chesapeakestormwater.net, 410-750-7635
- Green Building Advisor, www.greenbuildingadvisor.com/green-basics/hardscapes-patios-and-driveways-0
- Alliance for the Chesapeake Bay, www.stormwater.allianceforthebay.org/take-action/structural-bmps/pervious-pavers, 443-949-0575
- Interlocking Concrete Pavement Institute, www.icpi.org, 703-657-6900

Pet Waste

- Watershed Stewards Academy, www.aawsa.org/pick-up-pet-waste/
- Chesapeake Bay Program, www.chesapeakebay.net/blog/post/dog_poop_happens_learn_how_to_deal_with_it
- Pet Waste FAQs, www.ecy.wa.gov/programs/wq/stormwater/municipal/munidocs/poulsbopetwastefaq.pdf
- MarylandPet.com, List of pet waste services, http://MarylandPet.com/pet_waste_removal_maryland.htm

Rain Barrels/Cisterns

- Watershed Stewards Academy, www.aawsa.org/rain-barrels-and-cisterns/, 410-222-3822



- Arlington Echo Outdoor Education Center, www.arlingtonecho.org/restoration-projects/rain-barrels.html, 410-222-3822
- University of Maryland Home and Garden Information Ctr., <http://extension.umd.edu/hgic>

Rain Gardens

- Watershed Stewards Academy, www.aawsa.org/raingardens
- Alliance for the Chesapeake Bay, www.allianceforthebay.org/take-action/structural-bmps/rain-gardens/, 443-949-0575
- Rain garden information for Anne Arundel County, www.aacounty.org/services-and-programs/rain-gardens, 410-222-4240
- Rain Gardens Across Maryland, extension.umd.edu/learn/rain-gardens-across-maryland

Rainscaping Practices

- Chesapeake Ecology Center, www.chesapeakeecologycenter.org
- Watershed Stewards Academy, Rainscaping Manual, <http://aawsa.org/wsa-rainscaping-manual-2>, 410-222-3831
- U.S. Botanic Garden, www.usbg.gov/rainscaping-beautiful-solution-water-pollution, 202-225-8333
- Lancaster County Conservation District, The Homeowner's Guide to Stormwater, www.stormwaterguide.org

Recycling

- Anne Arundel County Dept. of Public Works information and free wheeled recycling bins for Anne Arundel County residents, www.aacounty.org/services-and-programs/recycling-and-compost-bins, 410-222-7582
- Recycle. More. Often. Anne Arundel County recycling site. www.recyclomoreoften.com
- Free recycling bins for City of Annapolis residents, www.annapolis.gov/government/city-departments/public-works/residential-recycling

Runoff and Erosion Problems or Soil Issues

- Anne Arundel Soil Conservation District, www.aascd.org, 410-571-6757
- Anne Arundel County Dept. of Inspections and Permits, www.aacounty.org/departments/inspections-and-permits/, 410-222-7780 (main) or 410-222-7777 (environmental violations)

Septic System Care

- Watershed Stewards Academy, www.aawsa.org/septic-care/
- Bay Restoration Septic Fund, www.ahealth.org/programs/env-hlth/well-septic-systems/brf
- Homeowner's Guide to Septic Systems, www3.epa.gov/npdes/pubs/homeowner_guide_long.pdf



Water Conservation

- Conduct a water audit of your home, www.mde.state.md.us/programs/Water/WaterConservation/Documents/www.mde.state.md.us/assets/document/ResAudit.pdf
- Water conservation tips, <http://environment.nationalgeographic.com/environment/freshwater/water-conservation-tips/>

Wildlife in your Backyard

- National Wildlife Federation, www.nwf.org/How-to-Help/Garden-for-Wildlife.aspx, 800-822-9919
- Maryland's Wild Acres, <http://dnr2.maryland.gov/wildlife/Pages/habitat/wildacres.aspx>, 410-260-8540
- U.S. Fish & Wildlife Service, www.fws.gov/pollinators/pollinatorpages/yourhelp.html, 800-344-WILD
- Bringing Nature Home, www.bringingnaturehome.net/what-to-plant.html

Anne Arundel County by the Numbers

533 – Miles of shoreline

1,750 – Miles of nontidal streams that flow through the county's **12** watersheds

299 ft – Highest point in the county (Severn, MD)

40 in – Annual average precipitation

21.8 in – Annual average snowfall

1649 – When the European settlers first arrived in the county.

The county was originally designated on April **9, 1650**.

2010 – Census records show that **560,133** people live in the county with an average of **12,296** per square mile in the county's **415** square miles.

The Patuxent Wildlife Refuge Center in Laurel was established in **1936** as the U.S.'s first wildlife experiment station.

Rachel Carson used research studies on DDT from the Patuxent Wildlife Research Center for her book, "Silent Spring," which was published in **1962**.



Become a Master Watershed Steward!

Is there a flooding or drainage problem in your neighborhood or place of worship?
Do you want to lead your community or place of worship to reduce pollution?
Want to get off the sidelines and make a real change?

You don't have to be an expert, we'll show you the way!

The Watershed Stewards Academy is a great opportunity to learn how to solve environmental problems in your community and find a local network of energized leaders. Our hands-on, research-based certification course gives Stewards the tools to bring change to their communities, turning knowledge into action.

Watershed Stewards may serve within the community in which they live, work or worship to install beneficial projects such as rain gardens or conservation landscapes, reducing pollution at its source. Collectively, these small community-based actions are improving the health of the entire Chesapeake Bay watershed.

To become certified, Stewards attend a 15-session certification course, offered annually from October to April. Following the coursework, Stewards complete a capstone project, including a community assessment, outreach and education, and the installation of a small restoration project.

Interest meetings take place in mid to late summer. If you would like to learn more about the course and the rewards of becoming a Steward, or if you would like to be added to an interest meeting contact list, please visit www.aawsa.org or get in touch with Suzanne Etgen, Executive Director, setgen@aacps.org or 410-222-3822.

Join us and become a Master Watershed Steward!