

# From My Backyard to Our Bay

A Calvert County Resident's Guide to Improving Our Environment and Natural Resources



### **TABLE OF CONTENTS**

Environmental Issues in Your Community	4
Restoring the Chesapeake Bay	. 4
What is a Watershed?	. 4
Calvert County Watersheds—Everything Flows to the Bay	. 5
How Do Pollutants Get Into the Water?	. 5
The Hydrologic Cycle	. 6
The Chesapeake Bay is Threatened	. 7
Chesapeake Biological Laboratory	. 8
The Critical Area	. 9
Streams in Your Neighborhood Need Help	11
Creating Living Shorelines	12
Reporting Problems on our Bay, Rivers, and Streams	13
Forest Stewardship	14
Land Resources and Recreation	15
Water Resources and Recreation	16
Oyster Aquaculture	18
Environmental Issues in Your Backyard	19
Water Runoff Can Pollute	19
Stormwater Ponds	20
What Can I Do to Control Runoff?	20
Rain Gardens Can Help	21
Tips for Planting a Rain Garden	21
Rain Barrels	23
Keeping Water Away From Your House and Basement	24
Backyard Best Management Practices	26
Keeping a Healthy Lawn	26
Lawn Care Tips	27
The "Urben Forest"	
The ordan polest	28
Controlling Noxious Weeds and Invasive Plants	28 29





Are You Bay-Wise?	33
Pet Waste	34
Household Best Management Practices	35
Energy Conservation	36
Easy Ways to Save Water	37
Maintaining Your Vehicle	38
Recycling	39
Reusable Grocery Totes	39
Eating Sustainably	40
Composting and Yard Waste	42
Getting Rid of Household Hazardous Waste	43
Country Living	44
Taking Care of Your Septic System	44
Living on Well Water	47
Sights, Sounds, and Smells of Farming	48
Want to do more? Volunteer	50
Calvert County Citizen Green Team	51



# Environmental Issues in Your Community

## Restoring the Chesapeake Bay

The Chesapeake Bay is a national treasure that desperately needs our help. Experts agree that there is only one way to restore the Chesapeake Bay, and that's "one river at a time." But the problems don't start in the rivers; they start on the land surrounding the rivers—their watersheds. You live in a watershed. We all do. The way we treat the land in our watersheds affects the health of our streams, our rivers, and ultimately the Chesapeake Bay.

## What is a Watershed?

A watershed is all the land area that drains to a given body of water.

Topography (the elevation and the contour of the land) determines where and how fast stormwater runoff will flow and eventually drain to a surface water body such as a stream, creek,

or river. Every resident of Calvert County lives in a watershed that drains to the Chesapeake Bay or one of its tributaries.



### where to get help with... Watershed Questions

- Patuxent Riverkeeper www.PaxRiverkeeper.org
- CCalvert County Government www.co.cal.md.us/index.aspx?NID=550 or 410-535-1600
- Maryland Department of Natural Resources www.dnr.maryland.gov/waters
- Chesapeake Bay Foundation-www.cbf.org/how-we-save-the-bay/chesapeake-cleanwater-blueprint/state-watershed-implementation-plans/maryland/index.html
- Maryland Department of the Environment www.mde.state.md.us

### Calvert County Watersheds Everything Flows to the Bay

In a watershed everyone's actions and attitudes affect the health of the water that flows to the Bay. Some residents are misinformed and believe that a small amount of pollution from

their property will not make a difference. Others incorrectly believe that developers, farmers, and industry are the cause of all the problems. To make a positive difference, everyone must accept responsibility for careful land management, even a homeowner with a small backyard.

Over the last 30 years, the efforts of thousands of people and the expenditure of billions of dollars have been aimed at cleaning up the Chesapeake Bay. But the Bay is still in peril. To meet the goal of a healthy and stable Bay, all of us must do our part. Every resident in the Chesapeake Bay watershed can do something to help. But first, we must understand where the pollutants originate.

# How Do Pollutants Get Into the Water?

Bodies of water are polluted through two general

sources: point sources and non-point sources. A point source is a concentrated discharge, like the outflow from a pipe at an industrial operation or a sewage treatment plant. A non-point source is stormwater runoff from non-specific sources such as parking lots, lawns, farms, and roads. Over the last 30 years, many advances have been made in technology to reduce and control point source pollution. Point sources are easier to monitor because they come from identifiable sources. Polluted runoff from non-point sources, however, can result from stormwater flowing over large areas. In these cases, it is substantially more difficult to locate the sources and control the runoff and pollutants.



## The Hydrologic Cycle

Water is one of the most important natural resources on earth. Seventyfive percent of the earth's surface is covered by water. Most of the water, however, is seawater. Seawater becomes usable, safe for drinking, and free of harmful salt and minerals through the hydrologic cycle.

The hydrologic cycle begins with the sun. Energy from the sun converts water from the oceans, rivers, and land into water vapor. Air masses move the water vapor over land, where it condenses and becomes precipitation. Rain, sleet, snow, and hail are all forms of precipitation. Some precipitation evaporates while falling toward the earth. Some evaporates when it is intercepted by plants, buildings, and cars. Most of the precipitation soaks into the soil and eventually returns to rivers and oceans.

A person can survive on one gallon of clean water a day for drinking and cooking. The average American household uses 80 to 150 gallons of water per person, per day. It is important to remember that water is a natural resource. What contaminants run into our water and how we use that water each day affects the quality and availability of water for the future.



## The Chesapeake Bay is Threatened

## What's threatening the Bay?

Nitrogen. Phosphorus. Sediment. These are the major factors responsible for the decline of water quality in the Chesapeake Bay and its tributaries. Nitrogen and phosphorus are nutrients. They serve as essential food for living things, but too much can be lethal to the Bay. Too many nutrients spawn the growth of algae that can be toxic to marine life, pets, and humans. When those algae die, they remove life-giving oxygen from the water and create "dead zones" where fish,



oysters, clams, and crabs can't live because they can't breathe.

Sediment is soil that washes into the Bay when it rains. It clouds the water and prevents underwater grasses from growing. These grasses produce oxygen and provide a place for young fish and crabs to develop and thrive.

## So who's responsible?

Every one of us. Every drop of water that falls on Calvert County will make its way to the Bay or one of its tributaries. Along the way it will pick up and carry with it the things that we put on the ground.

## What can I do?

From My Backyard to Our Bay offers tips for living in harmony with the Bay. It explains how you can contribute to the health of your local watershed, maintain an environmentally-friendly lawn, and manage stormwater runoff, wells, and septic systems—all in ways that will reduce the flow of nutrients and sediment into the Bay.



Mrs. Ellis's 2nd Grade class from Barstow Elementary painted the stormdrains in their parking lot. This is one way that Calvert County Public School students can help spread the word to our community on the importance of not dumping any contaminants down our strom drains. Picture taken February 2018.

## The Chesapeake Biological Laboratory

Founded in 1925, the Chesapeake Biological Laboratory has long been a national leader in fisheries, environmental chemistry and toxicology, ecosystem science and restoration ecology. Located where the Patuxent River meets the Chesapeake Bay, CBL is home to approximately 120 scientists, graduate students and staff. Over the decades, CBL has developed a national and international reputation for the quality of its research.

Research is conducted at CBL in four main areas: Fisheries, Ecology, Geochemistry and Toxicology. The fisheries group played a pivotal role in research that led to the recovery of the striped bass, and most recently the blue crab, in the Chesapeake Bay. They conduct state-of-the-art work on habitat use by fish such as tuna, sturgeon and white perch. In addition to studying the Bay, the ecology group studies ecosystems from Calvert County



to the Arctic. These studies focus on understanding how previous changes in these ecosystems help in restoration and in forecasting how they may change in the future. Many of CBL's studies have direct applications – for example CBL scientists have considerable expertise in approaches to treating ship's ballast water to minimize introduction of exotic species. The geochemistry group studies the fate and transport of elements and chemicals throughout the environment. These studies use sophisticated instrumentation to measure trace amounts of chemicals in natural environments worldwide. Finally, the toxicology group integrates many of these disciplines to understand the harmful effects of the releases of chemicals, such as crude oil, into the environment.

CBL operates two principal outreach programs. A series of five public lectures, known as Science for Citizens, is offered every spring and autumn that deal with environmental issues affecting the Bay and our planet. Our Visitor Center is open to the public from May - December, and by appointment at other times.

For more information on both outreach programs, please go to http://www.umces.edu/cbl/ outreach or contact Sarah Brzezinski, the CBL Outreach Coordinator, at 410-326-7460 or brzezins@umces.edu

## **The Critical Area**

If you are fortunate enough to live within 1,000 feet of tidal waters or tidal wetlands, then you have some special obligations. Any changes to that area have such a direct and immediate impact on the Chesapeake Bay that in 1984 the Maryland legislature declared those lands the Critical Area and imposed special restrictions on human activities.



You need to take special precautions with your yard care—especially with fertilizer, herbicide, and pesticide application—in the Critical Area. That topic will be address later in this booklet.

**100-Foot Buffer:** Within the Critical Area, there is an even more sensitive zone: a 100-foot buffer immediately along the shorelines that serves as a transition between upland and aquatic habitats. This Critical Area Buffer, required by the Critical Area law, is measured 100 feet inland from mean high water, the landward extent of tidal wetlands, and the edge of tributary streams. Where steep slopes or particularly sensitive soils are present, the buffer may be even greater than 100 feet.

**Stop and ask!** Does this sound complicated? It can be. Any land– or vegetation-disturbing activities carried out within the Critical Area must follow specific provisions in the state-adopted Critical Area Criteria and local Critical Area Programs.

### Call First & Ask Questions 410-535-1600 ext 2356 Calvert County Dept. of Planning and Zoning

### More information can be found here: http://www.co.cal.md.us/index.aspx?nid=1246

Restrictions apply to activities such as clearing or pruning trees or brush, timber harvesting, removing vegetation, and increasing either pervious or impervious surfaces (areas that either can or can't absorb water).

Violations carry fines of up to \$10,000 per day, or may result in having to undo and/or remediate the work.

So to be safe (and to protect our Bay!), contact the Calvert County Department of Planning and Zoning at 410-535-1600 ext 2356 before taking any actions that will affect the Critical Area, including the 100- foot buffer,To determine if your property falls within the Critical Area, use the following link:



http://calvertgis.co.cal.md.us/Html5\_272/Index.html?configBase=http://ccg-gisweb02.calvert. ccg.local/Geocortex/Essentials/GC\_PROD/REST/sites/Critical\_Area\_Map/viewers/HTML5272/ virtualdirectory/Resources/Config/Default

## **Typical Violations**

- Clearing or pruning trees and/or vegetation, either living or dead, in both the Critical Area and the Critical Area buffer.
- Construction of accessory structures (shed, pool, deck, etc) in the buffer.
- Disturbance of the buffer, including grading, stockpiling of construction materials, or dumping.
- Building or grading without a permit in the Critical Area.

These activities may not be violations if the property owner has proper approval from the local planning and zoning office and a building and/or grading permit is displayed on the property. If you see work that you think may be a Critical Area violation, call the Calvert County Department of Planning and Zoning at 410- 535-1600 ext. 2356.

### where to get help with... Critical Issues

- Calvert County Dept. of Planning and Zoning 410-535-1600 ext. 2356
- Maryland Chesapeake Bay Critical Area Commission www.dnr.state.md.us/criticalarea
- Chesapeake Bay Foundation **410-268-8833**, *A Citizen's Guide to Maryland's Critical Areas Program -* **www.cbf.org/document-library/cbf-guides-fact-sheets/Citizens-Guide-to-MD-Critical-Area-Programdf0b.pdf**

## Streams in Your Neighborhood Need Help

Streams flowing through suburban areas need special care. As urban areas develop, natural stream channels are forced to handle a higher volume of stormwater due to the new expanses of impervious surfaces (roofs, parking lots, and streets). This destroys the natural state of the stream and causes the stream channel to increase in size. High, turbulent waters scour stream channels and undercut the banks until the tops of the stream banks cave in and are carried away, degrading the stream with tons of sediment.

Stream banks should be protected with vegetation and trees. Streamside vegetation acts as a filter for runoff flowing from upland areas and is very effective at trapping and absorbing runoff and associated pollutants. The shade from trees and shrubs whose canopies overhang the stream keeps the water cool to protect streamdwelling organisms. Buffers also provide excellent habitat for birds and other wildlife.

Landowners should bear in mind that **any grading or significant change within the stream channel that would affect the flow or cross-section of the channel requires a state permit.** This permit is granted only if the landowner can prove that the proposed change will not negatively impact the environment or the stream's ability to convey stormwater.

The best protection for streams is a **riparian buffer**, a protected area extending beyond the stream banks that is densely planted in grasses, shrubs, and trees. Many nonprofit organizations have stream buffer cleanup projects. You can volunteer to help with these projects. Contact Calvert County Department of Planning and Zoning for more information on installing buffers.



## **Creating Living Shorelines**

Erosion along shorelines is a natural but relentless process. Many methods have been used to try to slow or stop the erosion process. These methods include dumping recycled materials and tires and installing bulkheads and riprap. Unfortunately, these "solutions" often cause problems by impairing the aesthetics of a shoreline and eliminating the valuable fringing wetlands and sand beaches needed to improve water quality and sustain wildlife.



Shorelines are a critical part of the environment for many species of fish, turtles, shorebirds, and aquatic life.

Calvert County requires homeowners to look first at "living shorelines" to control erosion (see photo above). This technique employs materials such as native plants, stone, and sand to preserve the shoreline naturally. Unlike methods such as riprap or bulkhead, living shorelines are designed to maintain or minimize the disruption of normal coastal processes, such as movement of sediment along shorelines, and to restore or protect wetlands.

Living shorelines offer increased habitat for shorebirds, fish, mammals, reptiles, amphibians, and other aquatic organisms. Living shorelines can also increase property value. People are attracted to natural settings with aesthetic beauty and plenty of wildlife. The deep roots of marsh grasses, shrubs, and trees help to stabilize the shoreline and reduce erosion. Living shorelines help filter nitrogen and phosphorous from upland landscapes to prevent pollutants from flowing into streams and rivers.

### WHERE TO GET HELP WITH... STREAMS & SHORELINES

- Calvert County Dept. of Planning and Zoning 410-535-1600 ext. 2356
- Calvert Soil Conservation District 410-535-1521 ext. 3
- Maryland Department of Natural Resources www.dnr.maryland.gov/ criticalarea/pdfs/ Livingshorelines-FN.pdf

### Reporting Problems on Our Bay, Rivers, and Streams

We can all be the "eyes and ears" of our local waterways. Maryland has established the Chesapeake Bay Safety and Environmental Hotline— 1-877-224-7229—as a toll-free phone number for reporting problems on tidal waters. One call will direct you to the appropriate agency to make a report, 24 hours a day, 7 days a week. You can also voice your stewardship concerns about issues in tidal or non-tidal waters to the Patuxent Riverkeeper at 301- 249-8200.

### Use the hotline to report any of the following:

- Fish kill or algae bloom
- Public sewer leak or overflow
- Oil or hazardous material spill
- Wetlands violation
- Floating debris that poses a hazard to navigation
- Suspicious or unusual activity
- Sediments or mud running off a construction site
- · Boating accident or reckless activity
- Illegal fishing activity

### 1-877-224-7229 It's the 911 for the Chesapeake Bay.



#### FROM MY BACKYARD TO OUR BAY

Forest Stewardship Forestland is important to the overall health of the Chesapeake Bay. Forests provide several layers, from the canopy to the forest floor, that act as filters. They improve water quality, reduce sedimentation, remove nutrients and regulate stream flow during storms.

Maryland's 3.1 million acres of forest, most of which are privately owned, cover approximately 50% of the state's land area. Calvert County's land area is over 63% forested, and has more than 190 miles of shoreline. Wooded buffers along these shorelines are critical to improving Bay health. Acre for acre, forested lands produced the least amount of runoff and pollution. The County occupies a forest transitional zone, where the dominant tree species vary from oak/hickory to tulip poplar to sweet gum/ red maple and loblolly/Virginia pine.



Forests can be harvested on a sustainable basis for materials, including structural lumber, crates, shelving and furniture, flooring, mulch, and pulp for paper. Forests can, in most cases, provide these products while also maintaining and even enhancing wildlife habitat, recreational activities, and soil conservation. Timber harvests are closely monitored by a partnership of agencies, including the Calvert Soil Conservation District, the Calvert County Department of Planning & Zoning and the Maryland Department of the Environment.

County residents with questions about woodland stewardship and management, as well as timber harvesting, should contact their local DNR forester or a consultant forester. The State of Maryland maintains a database of private Licensed Professional Foresters (LPFs), who work cooperatively with the Department of Natural Resources (DNR) Forest Service to assist landowners with implementation of timber harvests. Lists of LPFs can be found at the DNR Web site below.

### WHERE TO GET HELP WITH... FOREST STEWARDSHIP QUESTIONS

- Maryland Dept. of Natural Resources www.dnr.maryland.gov/forests
- Calvert Co. Forestry Board www.calvertforestry.org
- Maryland Association of Forest Conservancy District Boards www.marylandforestryboards.org
- University of Maryland Extension: Woodland Stewardship Education https://extension.umd. edu/woodland - https://extension.umd.edu/woodland
- Call Before You Cut hotline: http://callb4ucut.com/maryland/

## Land Resources & Recreation

Whether hiking, bird watching, visiting parks, kayaking, boating, sailing, fishing, or hunting, the residents of Calvert County find ample opportunities to enjoy the abundant natural beauty that surrounds them. The health of the forests and tributaries is fundamental to the overall health of our rivers and the Chesapeake Bay.

The DNR and Calvert County require that homeowners manage trees and waterfront issues on their property according to state and local law. Special considerations apply within the Critical Area (1,000 feet from the shore). Before you cut or clear, or amend your shoreline, make sure you know what is permitted.



State and county parks are available for launching boats and kayaks, swim-

ming, fishing, bicycling, horseback riding, and hiking. Excellent hiking trails are located at Flag Ponds, American Chestnut Land Trust and Battle Creek Cypress Swamp Nature Center. Calvert Cliffs State Park permits bicycling and horseback riding.

### Hunting

Upland hunting and waterfowl hunting are quite popular in Calvert County. Trail hikers and riders should be aware of hunting areas and avoid these areas during hunting activities. Maryland laws forbid the harassment of hunters. If you are hiking during hunting season in a park adjacent to a hunting area, be sure to wear bright colors—orange is preferred and safest.

### WHERE TO GET HELP WITH... NATURAL RESOURCES QUESTIONS

- Calvert County Dept. of Parks and Recreation 410-535-1600 ext. 2649 or www.co.cal.md.us/residents/parks/
- Public Parkland, County and State www.dnr.state.md.us/PUBLICLANDS
- Maryland Dept. Natural Resources www.dnr.state.md.us/huntersguide

## Water Resources & Recreation

### Swimming

Public access to swimming can be found at Kings Landing Pool, Cove Point Pool, Calvert Cliffs State Park, Breezy Point, North Beach, and Chesapeake Beach Bayfront Park. Indoor swimming is provided to the public at the Edward T. Hall Aquatic Center, 130 Auto Drive, Prince Frederick.

### Sailing & Paddling

Calvert County has over 140 miles of shoreline, and boating opportunities exist along almost

every creek and shoreline. The Patuxent River can be paddled with launches available at Kings Landing Park, Jefferson Patterson Park and Museum, and Solomons. On the Chesapeake Bay side Parkers Creek and Fishing Creek offer excellent paddling. Larger boats can be launched onto the river from Benedict or Solomons and onto the Bay from Chesapeake Beach and Breezy Point.



### Power Boating

Recreation on Calvert County's many lakes, creeks, rivers, and the Bay includes a variety of power boats. Marinas abound in almost every cove or bend in Solomons and other sites throughout the county. They provide safe harborage as well as services. For those who trailer their boats, wellmaintained ramps can be found on both the bay and river. Some locations charge fees, but others are public access and free. For more information, visit the county website or visit Maryland Park Service.

### Patuxent River Water Trail Guide www.patuxentwatertrail.org



### Fishing

Harvesting the bounty of the watershed provides great enjoyment for the recreational fisherman and hunter as well as a way of life for the waterman. Responsible harvesting and safe consumption of fish, crabs, oysters, and clams requires knowledge of the health of the river as well as knowledge of regulations governing the limits on harvests. Licenses and



current regulations can be purchased at local bait shops and sporting goods stores.

Consult the Maryland Department of Natural Resources Web site for current licensing requirements and the Maryland Department of the Environment for fish consumption guidelines.

Be sure to register with the National Saltwater Angler Registry at www. countmyfish.noaa.gov/ register. This is a new requirement and it is free. if you have a state license you don't have to register.



### WHERE TO GET HELP WITH... WATER RESOURCES QUESTIONSS

- Maryland Dept. of Natural Resources, Fishing Regulations www.dnr.maryland.gov/fisheries/ pages/regulations/index.asp
- Maryland Dept. of Environment, Consumption Guidelines http://mde.maryland.gov/ programs/Marylander/fishandshellfish/Pages/fishconsumptionadvisory.aspx
- Calvert County Department of Economic Development www.ecalvert.com/ content.tourism/ visitorsguide
- · Sailing Center Chesapeake www.sailingcenterchesapeake.org

## **Oyster Aquaculture**

Oysters are filter feeders—they filter the water by eating algae and microscopic animals, while constantly removing sediments from the water column and placing them onto the bottom. An adult oyster (about 3-4 inches long) filters 60 gallons of water a day. Historically, oysters could filter the entire Chesapeake Bay waters in about three and a half days. Today, at 1% of their former numbers, there aren't enough of them to filter the water. Oysters, with their ability to cleanse our bays and tidal rivers, are an essential component in the restoration of the Chesapeake Bay.

Additionally, oysters create threedimensional habitats called reefs that attract a diverse assortment of plants and animals. Many of these animals are also filter feeders such as barnacles and shrimp. Blennies and Skilletfish abound in the oyster reef colony feeding on the smaller filter feeders, all the time trying not to become dinner for larger fish. Mature oysters bars are excellent places to fish for perch, rockfish, speckled trout, and croakers.

Oysters grown under residential docks provide miniature oyster reef habitats. Growing oysters is an excellent way to help clean the water and, in time, enjoy eating one of the Chesapeake Bay's finest culinary treats. Maryland residents can receive income tax credits of up to \$500 per tax-payer to offset the cost of growing oysters at home under their dock.

### **Marylanders Grow Oysters**

The Marylanders Grow Oysters program is active in Calvert County within the lower Patuxent River including Back, Mill, Hellen and St. Leonard creeks. Volunteers steward baby oysters through their first vulnerable year of life by tending them in cages tied to their piers. The year-old oysters are then placed onto a sanctuary reef within the river. To learn if you can volunteer, visit: www.oysters.maryland.gov/index.asp

### WHERE TO GET HELP WITH... OYSTER AQUACULTURE QUESTIONS

- Southern Maryland Oyster Cultivation Society www.smocs.org
- Chesapeake Bay Foundation, Oyster Restoration Center http://www.cbf.org/aboutcbf/ locations/maryland/facilities/oysterrestorationcenter/
- Coastal Conservation Association www.ccamd.org

# Environmental Issues in Your Backyard

## Water Runoff Can Pollute

When we say From My Backyard to Our Bay, there are two issues we need to consider. We must first examine the amount and speed of the water that moves across the ground—your backyard. We must also consider the contaminants the water picks up as it crosses your yard on its way to the Bay or its tributaries.



Improper yard maintenance causes erosion.

In a rainstorm, some rainfall "infiltrates," or soaks into the ground, and some runs off. Infiltrated water percolates through the soil and replenishes the groundwater that eventually supplies water to wells. Runoff can cause serious pollution problems.

For every house built, a considerable expanse of impervious surface is added—area that can't absorb water. A vacant lot can absorb rain-

fall over its entire surface, but when roofs, sidewalks, driveways, streets, and parking lots are installed, all of the rainfall striking these surfaces runs off with very little infiltration. Runoff from residential areas can quickly pick up pollutants on its path to the nearest storm drain or stream.

The most common pollutant is sediment. Soil particles carried by the runoff make "muddy" streams. When runoff slows down enough, the sediment settles out of the water and is deposited. Pollutants such as fertilizers or pesticides can be dissolved in runoff or attached to sediment particles. Other water-borne pollutants include pathogens, fecal coliform (which could come from wild animal or pet waste), gas, oil, grease, and exhaust particulates that wash off streets and parking lots. In suburban areas, runoff eventually flows into the storm drain system, headed for drinking water reservoirs and the Bay. It is far easier and more cost effective to solve pollution problems at the source. Once polluted runoff leaves your property, it becomes a public problem—and a much more expensive one.

## **Stormwater Ponds**

Suburban developments built since 1984 are required to provide permanent stormwater management practices to treat runoff and slowly release it to the nearest stream. This slow release prevents the concentrated flow that results in stream bank erosion, which can cause many thousands of tons of sediment from eroded stream banks to be moved downstream.

Stormwater ponds must be maintained if they are to do their job of protecting our tributaries.

Keeping the grass cut and other maintenance tasks usually fall to homeowners' associations. Make sure your association is maintaining your stormwater pond. It protects not only the Bay, but also you and your neighbors from the expense of repairing a failed pond.

### What Can I Do to Control Runoff?



Whether or not your neighborhood has a stormwater control pond, you can do a number of things to slow down or reduce the volume of water that runs off your property and into our Bay.

The first and simplest rule of conservation is to maximize infiltration of rainfall and minimize runoff. Protecting soil with grasses, shrubs, trees, or mulch will make the soil more resistant to erosion and more likely to absorb the maximum amount of rainfall before runoff begins to occur.

### WHERE TO GET HELP WITH... RUNOFF, EROSION, & SOIL QUESTIONS

- Calvert Soil Conservation District 410-535-1521 ext. 3
- Calvert County Dept. of Planning and Zoning 410-535-1600 ext. 2356
- Chesapeake Bay Foundation, A Citizen's Guide to Erosion and Sediment Control in Maryland cbf.org/document.doc?id=160
- Calvert County Dept. of Public Works 410-535-2204

## **Rain Gardens Can Help**

During a one-inch rainstorm, more than 750 gallons of water fall on 1,200 square feet (about half the space of ground covered by the average American house). All of that water moves rapidly into storm drains, saturates lawns and heads for the Bay and its tributaries.

Rain gardens are gaining popularity as a way to control stormwater runoff on residential properties. A rain garden is more than just a bed of pretty plants; properly sized and installed, it can collect and filter large quantities of water. This helps keep pollutants such as fertilizers, motor oil, and heavy metals out of our streams, and saves time and money that may otherwise be spent watering a lawn or flowers.

The difference between a traditional garden and a rain garden lies underground and in the plant selection. A rain garden is positioned slightly down slope of a gutter in order to catch

the rainwater. The ground is dug to a depth of about 6 inches and refilled about halfway with a mixture of topsoil and organic material, compost, or shredded leaves and sand. If heavy clay soils are present, other techniques (such as vertical cores of gravel) may be needed. To receive more information on soils types, visit the web soil survey found at: www.websoilsurvey.nrcs.usda. gov.



Rain gardens are generally best situated in sunny locations, and the plants that thrive in them prefer full to partial sun. Plants selected for rain gardens must tolerate drought as well as periodic flooding. Luckily, many attractive native plants fit these requirements. A two- to three-inch layer of mulch keeps the plants moist and provides additional filtration.

### Tips for Planting a Rain Garden

- **Pick the location:** Sunny areas where the land slopes slightly away from the house are best.
- **Determine size:** Measure the area of roof that will drain to the downspout. The garden should be about 20% of the size of the area to be drained.
- Keep your distance: Plant the rain garden at least 15 feet away from the house

• **Don't fear the mosquitos:** Their larvae take seven to ten days to mature. A well-designed rain garden should drain in three days or less. It will also attract predators such as birds, toads, and dragonflies to keep bugs at bay.

• Choose native plants with large root systems: They are generally best suited to the rain garden environment. Not all non-native (exotic or introduced) plants are invasive. However, many plants that have been classified as "invasive" or detrimental to the environment are still available in nurseries. See the "Controlling Noxious Weeds and Invasive Plants" section for more information. As you would in any garden, if the location is central, site tallest plants in the center and plant gradually shorter ones as you work toward the edges. If you are only viewing the garden from one side, plant the tallest ones in the back. Look for varieties that provide color throughout the seasons.

### View this nine-minute video Reduce Runoff: Slow It Down, Spread It Out, Soak It In http://www.youtube.com/watch?v=hu0\_NRn34GI



### WHERE TO GET HELP WITH... RAIN GARDENS & NATIVE PLANTS

- Rainscaping Campaign www.rainscaping.org
- Adkins Arboretum 410-634-2847 or www.adkinsarboretum.org/native\_plant\_resources
- Environmental Concern (backyard wetlands) www.wetland.org/nursery\_raingarden.htm
- Chesapeake Ecology Center http://www.livewellandgreen.org/

## **Rain Barrels**

Rain barrels are an old idea that has been recycled. They temporarily store rainwater runoff from rooftops, reducing the flow of water into our streams, rivers, and the Bay.

Rain barrels are plastic drums that are connected directly to a downspout. Water is collected in the drum for later use. Rain barrel water can be used to water lawns and gardens and to wash cars. Of course, rain barrels must be emptied before the next storm to function properly, but that lets you control when and how fast the water is released.



### WHERE TO GET HELP WITH... RAIN BARRELS

- Patuxent Riverkeeper www.paxriverkeeper.org
- Rainscaping Campaign www.rainscaping.org

## **Keeping Water Away From Your House and Basement**

Drainage of surface and subsurface water is an important concern for every homeowner. Rain gardens and rain barrels are two effective ways to keep your house and basement protected from water damage. Another factor in good drainage is proper grading, so that gentle slopes convey runoff away from the house and basement, and water is not left standing against walls or causing water pressure to build up under the basement floor.

Wet basements can result from water passing through cracks in the basement walls, through the joint between the basement wall and the floor, or through the basement window well.

If you have problems, check the exterior grading to ensure that rainwater will flow away from the house. Flower beds and foundation plantings may hold water against the walls. When regrading, avoid placing soil against wood or siding. Grading requires a county permit. For more information, call the Calvert County Dept. of Planning and Zoning at 410-535-1600 ext. 2356.



Inspect all areas where downspouts from the gutters around the house discharge onto the ground. Twice a year, clean out all gutters and downspouts to prevent overflows that will drip water too close to the foundation.

Because the flow from a downspout will be forceful in a storm, make sure that the area where it drains across the ground is adequately protected

with either sturdy vegetation, stone, or gravel. Usually a splash block of concrete or plastic placed directly under the downspout outfall will absorb the initial force of water gushing from the downspout. This will help disperse the water's erosive energy and move it away from the foundation. A rain barrel may be an excellent option for managing water from your gutters.

In some settings with difficult terrain or poorly drained soils in low-lying areas, the only solution may be an underground drainage system. There are several options for creating such a system:

Rain gardens (see page 11) allow excess water to slowly soak into the soil.

A **dry well** is a small pit filled with crushed stone. An infiltration test must be conducted prior to construction to determine if the dry well is appropriate to the site.

An **infiltration trench** collects and filters rainwater and then permits it to soak into the soil rather than flowing directly into the water system. The trenches are backfilled with stone aggre-



tion in the swale to prevent a gully from forming

gate and lined with filter fabric. Research has shown that infiltration trenches can remove up to 90% of sediments, metals, coliform bacteria, and organic matter. Up to 60% of phosphorous and nitrogen can be removed by infiltration trenches.

To help prevent surface water from standing in your yard, maintain a slight slope that drains toward a swale (an earthen channel) or storm drain. Whenever you concentrate runoff, you increase its erosive potential, so it's best to maintain a stand of sturdy vegeta-

### WHERE TO GET HELP WITH... DRAINAGE PROBLEMS

• Calvert Soil Conservation District - 410-535-1521 ext. 3 or www.calvertsoil.org

## Backyard Best Management Practices

It is important to consider what else you can do to limit the number of pollutants that the water picks up on its way to the Bay.

## **Keeping a Healthy Lawn**

For many of us, a lush, green, weed-free lawn has come to symbolize success as homeowners or gardeners. To achieve that look, though, we probably overapply fertilizer to encourage vigorous growth and use pesticides to control weeds, insects, and diseases.

According to the Maryland Department of Agriculture, there are more than 937,000 acres of residential lawns statewide. In 2009, more fertilizer was applied to residential lawns than to agricultural lands. If each of us



over-fertilizes our lawn by just one pound, a huge amount of excess nutrients ends up polluting groundwater, streams, rivers, reservoirs, and the Chesapeake Bay.

**Soil fertility should be tested** before seeding a new lawn and every three years for an established lawn to determine the amount of fertilizer and lime needed. Contact **Calvert County Soil Conservation District or University of Maryland Extension** for help with soil testing.

Before establishing a lawn, consider whether turf grass is suitable. Heavily shaded or severely sloped areas may not provide the conditions needed for turf, leading to erosion, pests, and a lack of soil nutrients.

Fertilizer-free and pesticide-free lawns are the best choice for the environment. The homeowner saves significant amounts of time and money by reducing the frequency of fertilizing and applying pesticides. Slow release and low- or nophosphorous fertilizers are optimal to promote a healthy environment. New lawns may require some phosphorous, but require very little once established. **Don't over-fertilize!** 

## Lawn Care Tips

- Most Calvert County lawns are cool season grasses that turn brown in summer but become green again in the fall. If fertilizer is needed, spread two or three small applications, one month apart (early September, October, and November), rather than one larger application.
- Do not apply fertilizer to frozen ground or dormant turf (especially when cool season grasses turn brown during summer months).
- Apply only the recommended amounts of fertilizer. Use no more than 1 pound of actual nitrogen per 1,000 square feet of lawn per application. Keep fertilizer off paved areas by sweeping it back onto the grass.
- Mow at an appropriate height to maintain a healthy lawn. Maintaining grass height of at least 2 ½ inches helps keep the soil cool and provides drought protection. Mowing too short may reduce root and stem development and encourage weed problems. Proper mowing height helps to reduce weeds by as much as 50–80%.
- Mow with a mulching blade to fertilize the lawn naturally with grass clippings. Routinely leaving grass clippings on the lawn lowers nitrogen fertilizer applications by 25% or more.
- Cool season grasses naturally go dormant in summer. Watering your lawn during the dormant season may cause undue stress to your lawn. For a healthy lawn, do not water between July 4th and Labor Day.
- In the spring or fall, watering slowly to wet the soil to a depth of 4–6" will prevent runoff from leaving your property. Early morning is the best time for watering. Light, frequent watering or watering in the evening can actually damage your lawn.
- For some areas (like steep slopes and shady places), groundcover or planting islands (areas with groupings of trees, shrubs, and flowers) may be a better choice than turf grass.

### WHERE TO GET HELP WITH... LAWN CARE

- Chesapeake Bay Foundation Healthy Lawns www.cbf.org/document.doc?id=59
- Maryland Department of Agriculture, Lawn Care www.mda.state.md.us/pdf/ lawncare.pdf
- University of Maryland Extension https://extension.umd.edu/sites/extension.umd.edu/ files/\_images/programs/hgic/Publications/FS-1014%20Landscapes%20That%20 Help%20the%20CB.pdf
- EPA, Outdoor Air—Lawn Equipment www.epa.gov/airquality/community/ details/ yardequip.html

## The "Urban Forest"

Though you may not realize it, your yard is part of the "Urban Forest." Urban forestry is the term commonly used to describe the care of individual yards, street trees and parks, as well as forest fragments like wooded parkland and unimproved lots.

The urban forest is critical to the health of the Chesapeake Bay. Deep root systems anchor trees, control erosion and take up pollutants that would otherwise enter the Bay via groundwater. Leaf canopies help reduce the erosive effect of heavy rains. The forest floor, with its layers of twigs, leaves and understory vegetation, acts like a sponge for stormwater. Trees also provide important wildlife habitat; many animals and birds depend on trees for a place to live and for food. Trees also store carbon and intercept airborne pollutants.



Trees can contribute to energy savings, too. The shade from trees planted at a proper exposure near a home can reduce summer cooling costs by 40%.

#### **Plant Native Trees**

Trees and shrubs native to Calvert County are good choices for adaptability to the local environment and for attracting birds and animals. Some of the most common choices are red and white oak, loblolly pine, redbud, eastern red cedar, yellow poplar, sycamore and red maple.

#### **Care for Your Trees**

Trees would prefer not to be pruned, but pruning and thinning tree branches correctly when they're damaged can improve the health and lifespan of your urban forest. Contact a licensed tree expert for advice and assistance with these important tasks, particularly if you live in the Critical Area. Most healthy trees do not need fertilizer.

### WHERE TO GET HELP WITH... URBAN FORESTRY

- Maryland Department of Natural Resources www.dnr.state.md.us/forests
- Calvert County Forestry Board www.calvertforestry.org
- Maryland Association of Forest Conservancy District Boards www.marylandforestryboards.org
- Maryland grants for community projects https://dnr.maryland.gov/forests/Pages/programs/ urban/mucfcgrant.aspxs
- International Society of Arboriculture www.treesaregood.com
- Casey Trees Washington DC National Tree Benefit Calculator www.treebenefits.com/calculator

## **Controlling Noxious Weeds and Invasive Plants**

Some weeds are so persistent, destructive, and difficult to eradicate that they have been designated as noxious. Maryland has a noxious weed law that requires landowners to control Canada thistle, johnsongrass, shattercane, and multiflora rose on private property. For effective control, both the seed and the root system of these weeds must be managed by mowing, cultivating, or treating with approved herbicide. For information on identifying or controlling these plants, contact Maryland Department of Agriculture Plant Protection and Weed Management at 410-841-5920 or http://www.mdinvasivesp.org. A vegetation removal permit may be required. For permit information, contact the Calvert County Department of Planning and Zoning.

Plants that are not native to Maryland, outcompete native plants and quickly take over natural areas, but are not regulated noxious weeds, are called invasive plants. When invasive plants are introduced into new landscapes, they can quickly take over. Invasive plants often spread by runner-type root systems or by easily distributed seeds spread by wind, birds, and other animals. These plants can have negative effects on wildlife habitats, native plant and insect communities, and even present a threat to human health.

Many common invasive plants were introduced commercially through horticulture and are used in landscapes. Before you purchase a plant, be sure it is not a listed invasive plant. Some of these plants include Empress of princess tree, Norway maple, Sawtooth oak, Wintercreeper or creeping euonymus, Chinese and Japanese wisteria, purple loosestrife, Miscanthus (Japanese or Chinese silver grass), barberries, winged euonymus (burning bush), Bradford or callery pear, English ivy, Vinca (periwinkle), Amur honeysuckle and Japanese stilt grass. Assistance is available for the removal of many invasive species.

### WHERE TO GET HELP WITH... INVASIVE PLANT CONTROL

- Calvert County Dept. of Planning and Zoning 410-535-1600 ext. 2356
- Maryland Invasive Species Council 410-841-5920 or www.mdinvasivesp.org
- U.S. Department of Agriculture www.invasivespeciesinfo.gov
- Plant Invaders of Mid-Atlantic Natural Areas www.invasive.org/eastern/midatlantic/

## Invasive Plants and Noxious Weeds





Japanese Barberry





**Oriental Bittersweet** 



Japanese Stiltgrass



**Miscanthus Grasses** 



English Ivy



Autumn Olive



Japanese Honeysuckle

## Garden To Help Reduce Climate Change

Climate change is caused by greenhouse gases in the atmosphere. These gases keep heat in and around the planet. Carbon dioxide is a major greenhouse gas. 350 ppm of carbon dioxide in the atmosphere is considered to be a safe level. In May 2019 Mauna Loa Observatory measured 415 ppm of carbon dioxide in the atmosphere. This is well above the safe level! Even if we stopped all carbon emissions right now, the level of carbon in the atmosphere is too much. We must bring carbon back out of the atmosphere.

Our gardens can actually take carbon dioxide out of the atmosphere!

Plants do photosynthesis. They take carbon dioxide from the atmosphere, and combine it with water and sunlight to make sugars. These sugars store that carbon from the atmosphere. The plants use some of the sugars to get energy, store some sugars in the body of the plant, and give a lot of the sugars to the microbes in the soil. (Soil microbes bring nutrients to plants, in exchange for the carbon.) Soil microbes also use sugar for energy, but in addition to that, they store it in the form of humus. Humus can store carbon in the soil for thousands of years.

#### 6 Ways You Can Help Your Garden Store Carbon

1) Don't disturb the soil: Every time we plow, till or dig our soil we break up valuable humus, and kill beneficial soil microbes. Disturbing the soil also leads to the loss of carbon to oxidation and erosion. Obviously, we have to disturb the soil from time to time, but the less the better.

**2)** Keep plants in the soil at all times: Keeping growing plants in the soil ensures that carbon is always moving out of the at-



mosphere and into the soil. We can grow cover crops during the winter if we grow annual vegetables. And, we can grow perennials.

**3)** Grow a diversity of native plants: Studies have shown that a diversity of native plants keeps a diversity of beneficial microbes alive in the soil, maximizing the amount of carbon the soil holds.

**4)** Plant perennials, and especially trees: Perennials consistently bring carbon into the soil. Even during the winter, they support beneficial microbes in the soil. They also hold carbon themselves. The larger the plant, the more carbon it can hold. Trees can hold huge amounts of carbon.

**5)** Use as few synthetic chemicals as possible: Synthetic fertilizers, pesticides and herbicides can all kill soil microbes. You will find that when your soil stores more carbon, the microbes and humus will provide your plant with many of its needs, and thus you will need fewer of these additives. When necessary, use less harmful organic additives.

**6)** Make and use compost: Composting waste materials allows you to collect carbon and feed it to your garden. Plants and soil microbes benefit from these carbon contributions. Compost can help you avoid using chemical additives.

#### **Other Benefits**

If you increase the soil's stored carbon, the soil will help your plants. Good humus in the soil provides an excellent home for soil microbes that help your plants. Humus also stores water and nutrients for your plants. When it rains the humus will soak up excess water and store it. When your plants need more water, they can get it from the humus. Rodale Institute has shown that plants growing in good humus consistently do better than other plants during drought conditions. This also means you don't need to water your plants as often, and your yard won't have as much runoff.

Humus also stores nutrients. When you add organic or other fertilizers to your garden many of the nutrients leach away. But, humus can retain these nutrients, and make them available to your plants, as they need them.



Plant perrenials

Keep plants growing in the soil

Use compost

### WHERE TO GET HELP WITH... GARDENING TO HELP REDUCE CLIMATE CHANGE

https://www.rodalesorganiclife.com/garden/carbon-nation

https://www.treehugger.com/lawn-garden/your-garden-eats-carbon-so-please-feed-itwell.html

https://rodaleinstitute.org/assets/WhitePaper.pdf

https://www.pri.org/stories/2016-12-27/some-advice-starting-your-own-backyardcarbon-farm

## Are you Bay-Wise?

Bay-Wise landscapes minimize negative impacts on our waterways by using smarter lawn management techniques and gardening practices. The Calvert County Bay-Wise program offers hands-on help with managing your landscape by providing information, site visits, and landscape certifications. The Master Gardeners yardstick checklist is easy to understand and follow, and the team of trained Master Gardeners can help guide you through it while offering suggestions to improve both the appearance and sustainability of your landscape.



#### Master Gardeners can help you learn ways to:

- Create a landscape design that will help to control stormwater runoff.
- Choose the right plant for the right place, and integrate more native plants in your landscape.
- Encourage wildlife and create a haven for birds, butterflies, and other pollinators.
- Protect the Chesapeake Bay and our local waterfront.
- Fertilize wisely to keep your plants and soil healthy.
- Water more efficiently and mow properly.
- Manage yard pests with Integrated Pest Management.
- Recycle yard wastes and mulch appropriately.



Residents who qualify will receive a **Bay-Wise certificate and sign for their yard.** Maryland Master Gardeners are volunteer educators for the University of Maryland Extension, and the Bay-Wise program is a homeowner education program that is designed to create a healthier world by following the basic principles of environmental stewardship.

### CALL NOW & SCHEDULE A VISIT 301-535-3662 Start a Movement in Your Neighborhood... Be the First to be Certified Bay-Wise!

https://extension.umd.edu/calvert-county/water-and-chesapeake-bay/bay-wise-resources



### Pet Waste

Animal waste can be carried easily by rainwater, untreated, to the nearest stream or storm drain. Pet waste contains many harmful bacteria. It is important to keep these bacteria out of drinking water sources and off the lawn. Pet waste may also contain parasites. Disease-causing bacteria and parasites can be harmful to your pet and your family. In addition, pet waste acts as a fertilizer in the water system and promotes the unhealthy growth of aquatic plants, including algae. The increased abundance of aquatic plant life can rob other aquatic life of much-needed oxygen.

When walking a dog, take a biodegradable bag along. Pick up the pet waste and flush it down the toilet, where it will be properly treated, or dispose of it with your other trash. If flushing is not an option, dig a small trench in the yard and layer pet waste with leaves, grass clippings, and dirt. Do not put pet waste down a storm drain or leave it exposed in your yard!



#### WHERE TO GET HELP WITH... CLEANING UP PET WASTE

• University of Maryland Extension, Pet Waste and Water Quality - https://extension.umd. edu/sites/extension.umd.edu/files/\_docs/programs/hgic/HGIC\_Pubs/non-HGIC\_pubs/ FS%20703\_PetsWasteWaterQuality\_2018.pdf

## Household Best Management Practices

Instead of From My Backyard to Our Bay, this booklet could easily be titled From My Lifestyle to Our Bay. Earlier we mentioned ways we all can cut down on water use as a way to relieve the strain on the Bay. Many other things we all can do in our daily lives will have an effect on our Bay.

## **Energy Conservation**

Scientists tell us that about 25% of the excess nutrients entering the Chesapeake Bay come from air pollution that is deposited on the land and then washed into the Bay's tributaries. Where does that air pollution come from?

A large amount of air pollution comes from transportation vehicles and stationary fossil-burning power generation plants that produce the electricity we all use. As the demand for energy increases in the United States along with population and development, it is important for individuals to begin conserving energy. Every household and every family can help reduce energy demand and the flow of pollutants to the Bay.



## **Tips for Conserving Energy**

- Turn off the lights when leaving a room.
- Keep doors, windows, and drapes closed when running the air conditioning; use drapes to take advantage of passive solar heating and cooling when possible.
- If your heating, ventilation, or air conditioning unit is old, replace it. A new energy-efficient model could save up to 50% on your electricity bill.
- Consider replacing conventional heating/air conditioning units with high efficiency geothermal systems.
- Air dry dishes and clothes instead of using the drying cycle on your dishwasher or a clothes dryer.
- Clean the lint filter in the clothes dryer after every load to improve circulation.
- Buy Energy-Star rated appliances when possible
- Plug appliances and electronics such as TVs and DVD players into power strips. When the appliance is not in use, turn off the power strip. Appliances still use energy when plugged in and not in use. Twenty percent of a typical American's electric bill is from appliances.
- Replace your conventional thermostat with a programmable thermostat. In winter, reducing your thermostat from 72 to 68 degrees for 8 hours a day (when at work) can lower your heating bill up to 10%.
- Lighting accounts for 15% of household electricity use. Fluorescent and LED bulbs reduce energy use by as much as 85% and last 10 to 25 times longer than incandescent bulbs. Since fluorescent bulbs contain mercury, dispose of them properly during biannual hazardous waste collection days. Some LED bulbs can be recycled.
- Windows account for significant loss of conditioned air. Consider replacing old or inefficient windows with new energy-efficient types or repairing leaks where possible.
- Consult your local power company for information on online or in-home energy audits.

### WHERE TO GET HELP WITH... CONSERVING ENERGY

- U.S. Department of Energy https://energy.gov/eere/buildings/residential-buildingsintegration
- Maryland Energy Administration 410-260-7655 or www.energy.maryland.gov/facts.
  empower.html
- SMEC0 www.smeco.coop/yourEnergy.aspx
- BG&E www.bgesmartenergy.com

## **Easy Ways to Save Water**

As the population grows in our region, more people vie for the same sources of water, so conserving water becomes ever more critical. By adopting a few simple habits, you can help extend precious water supplies and reduce the load you place on your septic system or public sewer system.



- Repair all leaks and drips around the house. A single running toilet can waste 200 gallons of water per day.
- Turn off the faucet while you brush your teeth, shave, or lather up.
- Install low-flow fixtures on showerheads, sinks, and toilets.
- Run only full loads of dishes or laundry.
- Make your next washing machine a front loading model. (They use less water.)
- Be savvy about lawn and garden care. Add organic matter to the soil to increase water absorption.
- Mulch bare areas to conserve moisture.
- Water deeply, thoroughly, and infrequently—early morning is the best time to water.
- Install drip irrigation and/or timers to reduce water use.
- Use nozzles on outside hoses. Wash cars with a bucket of water and use the hose only to rinse.



### WHERE TO GET HELP WITH... CONSERVING ENERGY

- Calvert County www.co.cal.md.us/residents/water/water\_conservation/
- Maryland Department of the Environment 1-800-633-6101 or www.mde.state.md.us/ Programs/WaterPrograms/WaterConservation
- USDA Natural Resources Conservation Service www.nrcs.usda.gov/wps/portal/nrcs/ detail/national/newsroom/features/?

## **Maintaining Your Vehicle**

Vehicle maintenance is an important and easy way to prevent oil, heavy metals, and other toxic chemicals from reaching our drinking water and the Bay. After oil or other fluids have leaked from a car, rainwater washes them toward the nearest storm drain, or toward a Bay tributary. It is estimated that 180 million gallons of oil are disposed of improperly each year. A single quart of oil can contaminate 250,000 gallons of drinking water.

- Check your vehicle regularly for fluid leaks and drips. If you find leaks or drips, fix them as quickly as possible.
- Use ground cloths or drip pans when you find leaks, while changing the oil, or when working on the engine.
- If a spill occurs while changing the oil or working on the engine, clean up the spill immediately and properly dispose of the cleanup materials.
- Collect used oil or antifreeze in containers with tightfitting lids (plastic jugs) and recycle at any Calvert County convenience center. Do not mix waste oil or antifreeze with gasoline, solvents, or other engine fluids. The oil and antifreeze will become contaminated and will not be reusable. Motor oil, antifreeze, transmission fluid, or



other engine fluids should never be dumped onto roads, into gutters, down a storm drain or catch basin, onto the ground, or into a ditch.

• Have your vehicle's emissions tested in accordance with Maryland regulations. Make any needed repairs as soon as possible.

### Where To Get Help With... VEHICLE MAINTENANCE

- U.S. Environmental Protection Agency www.epa.gov/climatechange/wycd/ road.html
- MD Vehicle Emissions Inspection Program http://www.mva.maryland.gov/vehicles/veip/

## Recycling

Recycling helps the Chesapeake Bay region in several ways.

- It helps control the amount of litter in the environment that can make its way into our streams, rivers and Bay through runoff. Litter such as plastic bags and plastic 6-pack containers is harmful to marine life.
- It reduces energy consumption, making it Bay-friendly. Recycling an aluminum can uses just 5% of the energy required to create a new one from mined bauxite ore.
- Recycling paper uses 60% of the energy required to produce virgin paper and uses 50% less water.
- Glass recycling saves about 30% of the energy it takes to make it from raw materials.
- Recycling in general offers a savings in landfill costs and space, extending the lifespan of landfills.

## **Reusable Grocery Totes**

Bring your own reusable tote bags on shopping excursions:

- It reduces waste by avoiding the use of plastic or paper disposable bags.
- It helps control the amount of litter in the environment and reduces energy consumption.
- You can support your favorite charity by purchasing reusable totes from them or getting them for free.
- It's very fashionable!
- Many retailers offer a 5¢ rebate for each bag used.
- Totes are generally stronger and last longer than disposable plastic bags.



- Calvert County Dept. of Public Works, Division of Solid Waste 410-326-0210 or or http:// www.co.cal.md.us/recycle
- Maryland Department of the Environment 410-537-3314 or www.mde.state.md.us/ Programs/Land/RecyclingandOperationsprogram



## **Eating Sustainably**

#### What does it mean?

Sustainable eating is choosing foods that are healthful for our environment and our bodies.

The growing scientific consensus is concluding that a return to consuming more plant-based foods and less animal-based foods is better for our environment and our health.

Plant-based foods include vegetables, fruits, legumes (lentils, beans, peas, peanuts), nuts and whole grains.

#### What's the problem?

Significantly more land, water and resources are needed for animal-based farming compared with plant-based farming.

"The food system is a major driver of climate change, changes in land use, depletion of freshwater resources, and pollution of aquatic and terrestrial ecosystems through excessive nitrogen and phosporus inputs." (1)

Animal products generate the vast majority of food-related greenhouse-gas emissions, up to 78% of total agricultural emissions.

"Beef is more than 100 times as emissions-intensive as legumes." "This is because a cow needs, on average, 10 kilograms [roughly 22 lb] of feed, often from grains, to grow 1 kilogram [roughly 2.2 lb] of body weight, and that feed will have required water, land and fertilizer inputs to grow."(1)

1.6 million Americans die annually from diseases that food choices played a role in causing or contributing to the development of the disease. The standard American diet is harming health and the environment.



#### Benefits of a plant-based diet.

A plant-based diet " is probably the single biggest way to reduce your impact on planet Earth, not just greenhouse gases, but global acidification, eutrophication, land use and water use," (2) It can also reduce our risk of developing heart disease, diabetes, high blood pressure, high cholesterol, certain cancers, and some auto immune diseases.

Michael Greger M.D. shares the latest science on the effects of food on the human body to help people make the healthiest choices on the website nutritionfacts.org. His 'Daily Dozen' recommendation has been created for optimal health.

A major misconception of eating a plant-based diet is protein deficiency, this myth has been dispelled by many scientists and health professionals, and has highlighted that the standard American diet contains far more protein than is needed and is in fact linked to the cause of many leading diseases.

Beans, lentils and peas are great sources of protein and are also the most sustainable protein sources on the planet. They require small amounts of water to grow, they can grow in harsh dry climates and they act like a natural fertilizer, capturing nitrogen from the air and fixing it in the soil. (3)

#### What you can do.

Choose to eat plant-based foods, buy locally seasonally grown when possible.

The vast array of plant-based foods means that there are endless opportunities to make a wide range of delicious food. Plant-based diets can be as simple or as gourmet as you like. You can make a plant-based version of almost any familiar meal making the move to a plant-based diet easier than you first thought.

- (1) Options for keeping the food system within environmental limits by Marco Springmann et al. published 10 October 2018
- (2) Reducing food's environmental impacts through producers and consumers. by J. Poore and T. Nemecek
- (3) Sharon Palmer, registered dietician nutritionist and plant-based food and stainability expert.

## **Composting and Yard Waste**

In 2013, the EPA estimated that each person in the U.S. contributes 4.4 pounds of garbage (municipal solid waste) daily. That equals 1,606 pounds of garbage per person per year! Much of this waste is organic and could decompose naturally if composted, saving space in landfills and reducing greenhouse gases. Composted organic material, sometimes called "black gold" by gardeners, adds structure and a host of essential nutrients to your soil, reducing the need for watering and enhancing the vitality of lawns, gardens and houseplants. Start reaping these benefits by setting up a backyard compost pile.

#### **Tips for Composting**

- There are many different methods to compost: the bins, tumblers, trench, sheet, and even vermicomposting (using worms to break down material). Some methods are simpler than others. Research which method works best for you.
- You should mix equal parts of brown ingredients (dry leaves, straw, sawdust, shredded newspaper) with green ingredients (grass clippings, weeds, kitchen fruit and vegetable scraps). Decomposition is fastest when the pile is slightly moist, so add water as needed.
- Do not add pet waste, grease, meat, or dairy products to a compost pile. These items may attract pests and do not compost well.



### WHERE TO GET HELP WITH... COMPOSTING

- Calvert County Dept. of Public Works, Division of Solid Waste 410-326-0210
- U.S. Environmental Protection Agency 800-438-474 or 215-814-5000 or www.epa.gov/ epawaste/conserve/rrr/composting or www.epa.gov/recycle/composting-home
- University of Maryland Extension https://extension.umd.edu/mg/locations/composting
- U.S. Composting Council 631-737-4931 or www.compostingcouncil.org

## **Getting Rid of Household Hazardous Waste**

Hazardous waste contains corrosive, toxic, ignitable or reactive ingredients. The average household contains between three and 10 gallons of materials that are hazardous to human health or to the environment.

Improper disposal of household hazardous waste can lead to leaks from landfills and contaminate groundwater and surface water, or can enter the air we breathe through emissions from landfills and incinerators. Some wastes are poisonous to humans or wildlife, while others may cause cancer, birth defects or other serious medical problems.

It is important to learn about the products you use in your home, garden and workshop, and how to dispose of them properly when they are no longer needed. Participate in the County's free hazardous waste collection events to dispose of hazardous waste.

To reduce the amount of hazardous waste you generate, find less hazardous substitutes, do not buy more than you need and follow the directions on the packaging. To prevent contamination,



store your waste materials in their original containers until you can take them for disposal.

### WHERE TO GET HELP WITH... HAZARDOUS WASTE

- Calvert County Dept. of Public Works, Division of Solid Waste **410- 326-0210 or www.co.cal.** md.us/hazardouswaste
- U.S. Environmental Protection Agency 800-438-2474 or 215-814- 5000 or www.epa.gov/ epawaste/hazard

# **Country Living**

## Taking Care of Your Septic (Wastewater) System

In areas without public sewer service, household wastewater (from the bathroom, kitchen, and laundry) is treated by individual septic systems. A septic system has two major components: a septic tank and a drain field. Wastewater sewage flows from the house to the septic tank, which retains wastewater long enough for the heavy solids to settle to the bottom. A solid pipe leads from the septic tank to a distribution box, where the untreated wastewater is channeled to the drain field—one or more perforated pipes set in trenches of gravel. Here the water slowly infiltrates into the underlying soil. Dissolved or suspended wastes and bacteria in the water are trapped or absorbed by soil particles or decomposed by microorganisms.



microorganisms perform the only treatment of the water before it percolates into the groundwater. Under normal conditions, the microorganisms perform well, unless very toxic materials overwhelm the septic system. Microorganism performance can also be diminished if the drain field becomes saturated with stormwater.

Nitrogen, a pollutant in high concentrations, is very soluable and travels from the drainfield through the soil via ground water to surface waters. Improved nitrogen-reducing septic systems are available and are required for all new installations county-wide and for repairs

in the Critical Area. If you have a failing septic system, contact the the Environmental Health Services of the Calvert County Health Department about the Bay Restoration Grant Program for a replacement, nitrogen-removing septic system. **Best Available Technology (BAT)** for septic systems is an advanced onsite sewage treatment system that will greatly reduce the amount of nitrogen emitted from a septic system. BAT units combine settling of solids, extended aeration, and recirculation to produce a greatly reduced amount of nitrogen in the effluent. The typical traditional household septic system produces 24.7 pounds of nitrogen per year. BAT systems can cut that load in half. Tips for Septic System Care

- Tanks generally need to be pumped out every 2 to 3 years, depending on use, the size of the tank, and the number of people in the house. If the tank gets too full, sludge particles will flush out of the tank and clog the drain lines. The EPA recommends tanks be pumped before sludge and scum accumulations exceed 30% of the tank volume.
- Do not add starter enzymes or yeast to your system. Additives have not been scientifically proven to improve the performance of your system.
- Do not pour fats and oils, chlorine bleach, solvents, chemicals, pesticides, paint thinner, or auto products down the drain. These substances can kill the bacteria that make the system function.
- **Do not put trash in the toilet** such as paper towels, tissues, cigarette butts, wipes (even the 'septic–safe' wipes!), disposable diapers, sanitary napkins, tampons, or condoms. These items do not break down quickly and can fill the septic tank.
- **Direct downspout discharges and runoff** away from the septic field to avoid saturating the drain field area with excess water.
- **Do not overload the system**—this is the primary cause of system failures. Early morning and bedtime are peak use times in the bathroom. Run dishwashers and washing machines at other times of the day. Try not to do more than one load of laundry each day.
- Dense grass cover and other shallow-rooted plants are beneficial over a drain field. However, do not plant trees near a drain field because large plant roots can clog or break the pipes.

- Avoid compacting the soil over a drain field to ensure proper percolation of effluent.
- Using a garbage disposal can double the amount of solids in the tank. Instead, consider composting organic matter. See the "Composting" section for tips.
- Look into getting a BAT unit for your septic system. BAT systems may be more expensive than traditional septic systems, but they are made more affordable through grant money available from the Bay Restoration Fund. Contact Maryland Department of the Environment at www.mde.state.md.us/Water/BayRestorationFund/ OnsiteDisposalSystems for more information on Bay Restoration Fund grant assistance.



Best Available Technology (BAT) septic system during instillation

### WHERE TO GET HELP WITH... SEPTIC SYSTEM ISSUES

- Calvert County Health Department, Environmental Health Services www.calverthealth.org/ community/environmentalhealthservices
- Bay Restoration Fund www.mde.state.md.us/Water/BayRestorationFund/ OnsiteDisposalSystems

## Living on Well Water

If you have a home well, you are responsible for maintaining the safety and quality of your drinking water. When your well system is suitably located, correctly installed, properly



uitably located, correctly installed, properly maintained, and regularly tested, you should have few problems with water quality.

Residential wells are replenished by rainwater that falls many miles away from the location of the well. Even so, the way you and your neighbors use the landscape can be an important factor in the quality of your water supply.

Be alert to possible sources of well water contamination, such as runoff from large paved areas, faulty septic systems, leaking underground fuel tanks, landfills, industrial spills or discharges, and inappropriate use of animal wastes, fertilizers, and pesticides.

### Tips for Safeguarding Well Water

- Test your water supply once a year for bacteria and nitrates. Consider seasonal testing if one sample shows elevated levels of contaminants. Prolonged periods of heavy rain can flush contaminants into groundwater.
- Test your water any time you notice unusual odors, colors, or cloudiness or if you note an interrupted supply, such as pumping air or sediment.

### WHERE TO GET HELP WITH... WELL WATER PROBLEMS

• Calvert County Health Department, Environmental Health Services - www.calverthealth.org/ community/environmentalhealthservices

## Sights, Sounds, and Smells of Farming

Agriculture is encouraged in Calvert County, and the County has a Rightto- Farm Ordinance. As a resident of a largely rural county, you may see, hear, and smell things that are quite different from an urban or suburban area. Many residences have been built in sight of, and perhaps downwind of, farmers' fields. Farmers sometimes receive complaints from their new neighbors about routine agricultural operations, dust, noise, and smells.

Farming is an occupation and a tradition that is often handed down from one generation to the next. Agriculture is the foundation of rural communities, and farmers expect and hope to live peacefully with their neighbors. Although in some cases farmers may be able to accommodate requests to modify their operations, the interface between agricultural and residential neighbors requires some cooperation and understanding on both sides to keep peace in the community.

Most farming operations use herbicides and pesticides to control weeds and insects. The Maryland Department of Agriculture requires a Pesticide Applicator's License to perform this work. Training and passing an exam are required before a license is issued. Modern pesticides are ap-

proved for use by the U.S. Environmental Protection Agency (EPA) after years of testing. Newer generation pesticides are used in very small quantities and are more environmentally friendly.

A big part of farming involves working with conditions that people can't control, especially the weather. As soon as the soil warms up and dries out enough to plant, farmers must get their crops in the ground to take advantage of the maximum number of days in the growing season. Harvesting is a particularly critical time, and farmers work every available hour until the crops are harvested from



the fields and processed. Part of the urgency is that crops can be seriously devalued or completely ruined if they get wet during harvest time. Also during this time, harvesting equipment and wagons may need to use the highway to get from fields to barns. Be patient when slowmoving farm equipment is on the road—that could be the producer of your dinner up ahead!

When the farm is a livestock or dairy operation, the efficient and environmentally safe disposal of manure is a major



consideration. Whenever possible, farmers use manure as organic fertilizer on crop fields, reducing their need for commercial fertilizer, which is both an economic and environmental benefit. Manure is usually stored in a facility that will protect it from runoff, and therefore prevent it from being washed from the barnyard into streams. The facility provides storage, but eventually the manure is spread on the fields. Manure handling involves odors, but under normal conditions the odor from manure spreading quickly dissipates.

If there are problems with new neighbors, especially those who have never lived in a rural area before, it is critical to address problems in a cooperative manner with an attitude that might allow changes on both sides for a peaceful solution. In some cases, a friendly visit to the farm to learn more about the operation can eliminate many misunderstandings.

### WHERE TO GET HELP WITH... AGRICULTURAL QUESTIONS

- Calvert Soil Conservation District 410-535-1521 ext. 3 or www.calvertsoil.org
- Maryland Department of Agriculture www.mda.state.md.us
- University of Maryland Extension, Home and Garden Information Center https://extension. umd.edu/hgic
- University of Maryland Extension, Calvert Office 410-535-3662 or https://extension.umd. edu/calvert-county/master-gardeners

## Want to do more? Volunteer

#### Visit Volunteer Southern Maryland at vsmd.csmd.edu to find local non-profit organizations where you can volunteer.



## Calvert County Citizen Green Team

The Calvert County Citizens' Green Team works to promote sustainable lifestyles by identifying and sharing innovative green technologies, hosting a Calvert County Green Expo and encouraging environmental stewardship among county citizens in their homes, workplaces and communities.

# The following partners aided in the development of this booklet.

Calvert County Citizens' Green Team Calvert County Deptartment of Planning and Zoning Calvert County Department of Public Works Calvert Soil Conservation District Cove Point Natural Heritage Trust Calvert County Master Gardners Calvert County Master Naturalists The League of Women Voters of Calvert County Calvert Forestry Board Chesapeake Biological Laboratory Annmarie Sculpture Garden & Arts Center Beryl Renewables

## From My Backyard to Our Bay

Version 7/19