What is Stormwater?

Stormwater is the water produced when rain, snow, sleet, etc. falls to earth. This stormwater can either seep into the ground or collect to potentially become a flood.

To protect the people of Boonsboro from flooding and protect water quality, the Town has a series of drains, pipes, and water quality improving Best Management Processes (BMPs) called a Municipal Separate Storm Sewer System (MS4).

The MS4 directly drains to our lakes, streams, rivers, and ponds so it plays a very important part in keeping our waters clean.

Did you know that every waterway in Boonsboro drains to Antietam Creek, which eventually flows to the Chesapeake Bay? That means that any contaminants released into our watershed are contributing to the degradation of one of the most critically endangered ecosystems in our region.

Boonsboro is doing its part to protect local waterways by helping to keep the water clean before it reaches our streams.

You can help too, by following the advice in this pamphlet and by participating in local stormwater events. More information on these events can be found on the back of this of this pamphlet.

Town of Boonsboro Stormwater Resources

For more information regarding stormwater events, public meetings, and other public participation opportunities, please visit the Town website at the bottom of this page. The Stormwater Management subpage also contains an educational survey and an illicit discharge reporting form.

Boonsboro Town Hall

21 North Main Street
Boonsboro, MD 21713

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(301) 432-5141

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www.town.boonsboro.md.us

What is Stormwater?

For Town Residents

ARRO

What is a BMP?

Most stormwater infrastructure is all about conveyance. It serves to transport the stormwater from around your home and neighborhood quickly and safely away to avoid flooding. But not all of it is just for transport. Some parts of the system have been built to clean the water as it passes through.

You may have already noticed man-made ponds, basins, and channels around the Town. Pipes leading into these structures transport water from other areas of the Town to infiltrate into the ground instead of directly discharging into a waterway. These structures are called Best Management Practices, or BMPs.

It is unavoidable that stormwater runoff will pick up sediment and other pollutants from roads and other surfaces as it makes its way into our drains. These BMPs help to clean the stormwater before it reaches our waterways.

Because these BMPs serve such an important role, it is important that they be maintained in working order. If you have one in your neighborhood, they may not be the best place to play in. And they should be kept clear of any litter and debris.

Please take care of our BMPs so that they can take care of our stormwater!

What can I do to help?

Much of the land in Boonsboro is residential property, like your home and backyard. This means that if everyone joins in, we can make big changes to the quality of our stormwater!

Lawn Chemicals

Use chemicals like fertilizers and pesticides only according to instructions provided on the labels. Using too much or applying improperly can cause havoc on aquatic life and vegetation when it reaches our waterways.

Pet Waste

Everyone loves their pets, but it's important that you take care of their waste. Leaving it on the street, while an unsanitary practice on its own, can also lead to unhealthy bacteria and viruses entering our waterways.

Car Maintenance

Taking care of your car is important, especially in areas like ours where road salt is needed to get through the winters. But if you aren't careful when you wash your car, all of the dirt, cleaning chemicals, and other products can make their way into our rivers. Make sure not to wash your car where it drains to our stormwater system. Take care when changing oil or other fluids to prevent leaks and immediately clean up any spills if they do occur.

What is an Illicit Discharge?

40 CFR 122.26(b)(2) defines an illicit discharge as any discharge to an MS4 that is not composed entirely of storm water, except allowable discharges pursuant to an NPDES permit, including those resulting from firefighting activities.

- The rule of thumb is, **only stormwater should go into stormwater drains!**
- Illicit discharge can happen intentionally, such as someone draining their pool water into the storm to a municipal separate storm sewer drain near their house.
- It can also happen accidentally, such as someone leaving oil or chemical residue on their driveway and letting the rain wash it into the MS4.
- Boonsboro needs your help to find and eliminate illicit discharge. If you see anything that is not stormwater entering the storm drains or other parts of the MS4, please report it through one of the following options:
  - Call the Town Office at (301) 432-5141 during business hours
  - Visit the Stormwater Management subpage of the Town website to submit an electronic report

Why is Stormwater Important?

The Town of Boonsboro is subject to a Maryland Department of the Environment (MDE) General Permit for Municipal Stormwater Discharge. This permit must be renewed every five years and reports on the progress of the permit must be submitted every October 31st. These reports document the work done to meet permit requirements for the preceding period of July 1st to June 30th.

You may have been to one of our yearly Municipal Separate Storm Sewer System (MS4) Training days and other MS4 events. Those are a part of what is required by the MDE. This brochure will act as a brief guide for your part of the Town MS4 program.

Town Staff like yourself are involved in all parts of the MS4 program, but the basic components that you will spend the most time on will fall into the following categories:

- Public Education/Public Involvement
- Illicit Discharge Prevention/Detection
- Good Housekeeping of Municipal Properties and Operations

This brochure will go over these tasks, but for more information please feel free to ask the Town Manager or ARRO Staff.

Town of Boonsboro Stormwater Resources

A large part of the MS4 program is keeping the Town residents engaged and involved. If a resident asks for more information regarding stormwater events, public meetings, and other public participation opportunities, please direct them to the Town website at the bottom of this page.

The Stormwater Management subpage also contains an educational survey and an illicit discharge reporting form.

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Why is Stormwater Important?

For Town Staff

How to Keep the Public Informed and Involved

Two of the focuses of the Town's MS4 permit are public education and public involvement. You are often the face of the Town to the public and can help to keep them up to date and educated on the progress that Boonsboro makes. Please see the below information on some of the priority points the public should be aware of.

Public Meetings

In order to communicate the Town's progress toward compliance with its stormwater (MS4) permit, stormwater is often discussed at public meetings. It is also where important items such as the Chesapeake Bay Restoration Plan and the annual MS4 reports are discussed. The public is strongly encouraged to comment on the MS4 progress and make their thoughts known on their priorities.

Public Involvement Events

At least once a year, Boonsboro advertises a public involvement event to get the people of the Town to work alongside the municipality to help our waterways. It could be a trash pickup, inlet stenciling, or other similar event. It is important to get the word of these events out to the public so that as many people as possible are involved. As much of this process as possible should be recorded, including pictures and names of those involved, to include in annual reports.

Good Housekeeping

One of the major tasks of the Town's MS4 Permit is to make sure that Town staff and operations do not contribute to the problem.

EVERYONE who works for the Town or is contracted by the Town that performs a task that could pose a possible impact on local waterways must receive training on how to perform their tasks without causing negative impacts.

For your reference, please see the below example tasks that could result in pollutant runoff:

- Landscaping/Lawn and Grounds Care
- Vehicle Operations and Maintenance
- Leaf and Debris Pickup
- Snow Removal/De-icing

You most likely have already received MS4 training on these tasks, as Town standard operating procedures regarding the use/handling/storage of materials and operation/management of facilities have been created with this in mind.

If you are handling materials or performing tasks and feel that there may be a chance of pollutant runoff, feel free to reach out. Ask your Town Manager or ARRO Consulting for help and advice to keep our waterways clean and our Town permit compliant.

What is Illicit Discharge?

40 CFR 122.26(b)(2) defines an illicit discharge as any discharge to an MS4 that is not composed entirely of storm water, except allowable discharges pursuant to an NPDES permit, including those resulting from firefighting activities.

The rule of thumb is, **only stormwater should go into stormwater drains!**

The Town of Boonsboro needs the public to help to find and eliminate illicit discharge. Please direct everyone in the Town to report illicit discharge through one of the following options. Call the Town Office during normal business hours or fill out a report on the Town website.

Once a report of illicit discharge is made, it needs to be investigated immediately. If the investigation confirms the presence of an illicit discharge, please follow the below directives:

- If it is a hazardous material spill, please call the emergency number **IMMEDIATELY**.
- Record everything, both in writing and take pictures. This includes remediating actions taken.
- Take as many precautions as possible to stop the discharge from reaching the waterways. Then clean the site to remove the discharge.
- Contact ARRO Consulting to see if further action is required.

What is Stormwater?

Stormwater is surface water runoff resulting from a precipitation event or snowmelt. This water can either seep into the ground, or if it is unable to infiltrate, collect to potentially become a flood.

In urban and suburban areas covered with buildings and pavement, much of the stormwater cannot infiltrate into the ground. Instead, it is captured by a series of drains, pipes, and water quality improving Best Management Practices (BMPs) called a Municipal Separate Storm Sewer System (MS4) in order to mitigate the risk of flooding.

The MS4 directly drains to our lakes, streams, rivers, and ponds, and it carries with it everything the runoff picks up along its way to the storm drain. Our MS4 plays a very important part in keeping our waters clean.

What does construction have to do with it?

Residential construction activities, such as the addition of a deck, pool, driveway, or shed, increase the impervious area of your property. More impervious area means more stormwater runoff, which leads to an increased risk of pollution in our streams.

The loss of infiltration from the increase in impervious surfaces is also to blame for a decreased rate of groundwater recharge. Lack of available groundwater can spell trouble for both wells and municipal water supplies during times of drought.

Additional Resources

For more information on the impacts of development and best practices for residential construction activities, please refer to the websites linked below. Additional stormwater information can be found on the MS4 Information subpage of the Town website.

Homeowner's Guide to Stormwater Management
http://www.stormwaterguide.org/static/HomeownersGuide.pdf

Protecting Water Quality from Urban Runoff
https://www.epa.gov/sites/production/files/2015-09/documents/nps_urban-facts_final.pdf

Boonsboro Town Code
https://www.town.boonsboro.md.us/

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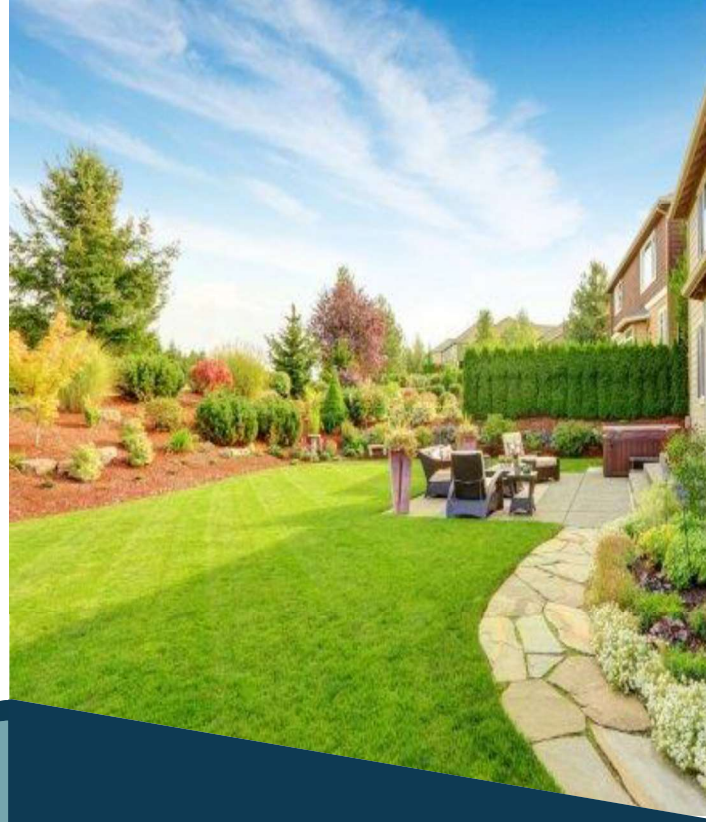

Stormwater & Construction

For Town Residents

Controlling Impacts of Impervious Development

There is a wide variety of alternatives to traditional methods of construction that can make a big difference in improving stormwater quality.

For Pavement

Permeable pavement allows for stormwater infiltration unlike conventional asphalt and concrete. It can also help filter out pollutants and reduce the need for deicers. Pervious concrete, porous asphalt, and interlocking pavers are some of the most commonly used. While more expensive than traditional pavements, permeable alternatives have been shown to have longer lifespans and less maintenance costs over their lifetimes.

For Structures

When installing a new shed or home addition, additional runoff from new roofs must be considered. Rain barrels capture runoff from a roof and store it for future use on lawns and gardens. Rain barrel kits can be purchased inexpensively and in varying capacities and designs.

Rain gardens are another option for managing runoff in a useful way. They are shallow, vegetated basins designed to collect and absorb rainwater. Rain gardens offer a versatile and aesthetic solution to stormwater that can be scaled to your particular project's needs.

Permeable Pavement

Credit: USGS Wisconsin Water Science Center

Rain Barrel

Credit: CT DEEP, Winooski Natural Resources Conservation District

Rain Garden

Credit: MA Watershed Coalition

Container Garden

Credit: National Garden Bureau, Miriam Manon

For Decks

If installing a deck or patio on your property, consider wood construction that allows for stormwater to drain and infiltrate into the soil beneath the structure. Stone pavers, bricks, or other forms of permeable pavement are other options to consider. If you choose a concrete deck, consider installing a small rain garden or rock garden to assist with proper drainage.

For Pools

Runoff from discharged swimming pool water containing chlorine and other chemicals can have harmful effects on aquatic life. Measure the pH and total residual chlorine levels of your pool before draining or lowering the water level. Ensure pH is between 6 and 9 before proceeding to drain. If lowering the water level of the pool, do so slowly, and drain to a lawn to prevent flow from reaching the MS4.

Other Practices

It is important not to discount the benefit of micro-scale practices for stormwater management. Container gardens placed on impervious surfaces make use of rainwater that would have otherwise become runoff. Planting trees also helps improve stormwater quality. Tree roots don't just aid the infiltration of rainwater, they absorb it too!

What is Low Impact Development?

Low Impact Development, or LID, is the practice of developing with stormwater in mind. It encompasses a variety of design practices aimed at mimicking or preserving natural stormwater drainage processes, like allowing for infiltration in beds rather than letting water become runoff that then collects in ditches or low points on impervious surfaces. The alternative is to channel stormwater into the Municipal Separate Storm Sewer System (MS4), but the various pollutants picked up along the way, such as sediment, road salts, oil, and heavy metals, are largely responsible for the widespread degradation of our local waterways.

What are the Benefits of LID?

Improved water quality is not the only benefit of LID. A more stormwater-centric approach to design is also associated with a lower risk of flooding events, improved groundwater recharge, and enhanced beautification of developments, which in turn increases property values.

LID techniques can be applied at any stage of development and are scalable to any project size. Contrary to popular belief, they can also be cost effective. According to a 2007 study by the U.S. Environmental Protection Agency (EPA) on reducing costs of LID strategies and practices, total LID capital costs range, on average, 15 to 80 percent lower than conventional methods.

Additional Resources

For more information on LID practices and how LID can benefit communities, please refer to the websites linked below. Additional stormwater information can be found on the MS4 Information subpage of the Town website.

Benefits of Low Impact Development
https://www.epa.gov/sites/production/files/2015-09/documents/bbfs1benefits.pdf

National Management Measures to Control Nonpoint Source Pollution from Urban Areas
https://www.epa.gov/sites/production/files/2015-09/documents/urban_guidance_0.pdf

Addressing Barriers to LID
https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/AddressingBarrier2LID.pdf

Boonsboro Town Code
https://www.town.boonsboro.md.us/index.asp?SEC=0D39A8A3-5070-4FBD-A5E3-572AE1F7424A

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Stormwater & Construction

For Developers

ARRO

LID Practices

While all development projects are unique and may not allow for every type of LID, consideration of practical and scalable LID techniques should be a regular part of all development within the Town. LID not only helps improve water quality in stormwater runoff, but also help fulfill the Town's MS4 Impervious Surface Restoration Requirement.

Permeable Pavement

Permeable pavement allows for stormwater infiltration unlike conventional asphalt and concrete. It is recognized by EPA as a Best management Practice (BMP) that helps filter out pollutants and reduce the need for deicers. Pervious concrete, porous asphalt, and interlocking pavers are ideal for parking lots, sidewalks, and road shoulders. While initially more expensive than traditional pavements, permeable alternatives have shown to have longer lifespans and less maintenance costs over their lifetimes.

Stormwater Reuse & Rainwater Harvesting

Rain barrels capture runoff from roofs and store it for future use on community lawns and gardens. For a cost-effective option, rain barrel kits can be purchased inexpensively and in varying capacities and designs. Cisterns provide a larger scale solution for diverting runoff from roofs, and even can include their own underground collection and infiltration systems.

Considerations During Construction

In addition to how the development is constructed, construction activity itself also has the potential to negatively impact water quality. To mitigate the effects, the following rules should be followed on active construction sites:

- Sequence construction activities to minimize the amount of exposed soil at one time
- Fence off and clearly mark sensitive environmental areas to protect them from disruption
- Install key sediment control practices before construction begins
- Remove mud and dirt from construction vehicles before they enter roadways
- Keep construction entrances clear of excessive soil
- Keep all seed and dirt stockpiles covered
- Vegetate, mulch, or otherwise stabilize any exposed soil as soon as land alterations are complete
- Inspect silt fences after each rain event
- Stabilize slopes or divert stormwater away from them

Rain Gardens

Rain gardens are another option for managing runoff in a useful way. They are shallow vegetated basins, typically planted with native perennials, designed to collect and absorb rainwater. Rain gardens offer a versatile and aesthetic solution to stormwater that can be scaled to your particular project's needs.

Trees & Shrubs

Planting trees and shrubs also helps improve stormwater quality. Tree roots don't just aid the infiltration of rainwater, they absorb it too. Maybe that's why they're known as "vertical rain gardens!" Trees can be planted alongside permeable pavement or in green spaces, and shrubs can be used in container gardens in existing developments.

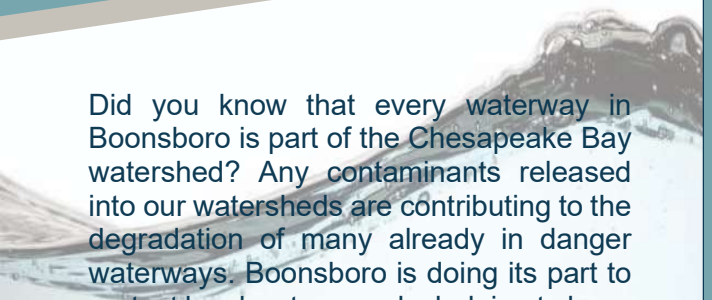
Open Space Development

Designating as much of your site as possible to open space is the best way to improve stormwater site design. Other LID practices such as permeable walkways, rain gardens, and tree plantings can be implemented in the open space. BMPs like detention basins can be placed in areas requiring large scale stormwater management. For smaller areas, adding a park or recreational area can add beauty and increase property value in new developments.

What is Stormwater?

Stormwater is the water produced when rain, snow, sleet, etc. falls to earth. Stormwater can either seep into the ground or collect to potentially become a flood.

To protect the Town of Boonsboro from flooding and to preserve water quality, the Town has a series of drains, pipes, and water quality improving Best Management Practices (BMPs) which make up the Municipal Separate Storm Sewer System (MS4). The MS4 directly drains to our lakes, streams, rivers, and ponds and it plays a very important part in keeping our waters clean.



Did you know that every waterway in Boonsboro is part of the Chesapeake Bay watershed? Any contaminants released into our watersheds are contributing to the degradation of many already in danger waterways. Boonsboro is doing its part to protect local waterways by helping to keep the water clean before it reaches our streams. You can help too, by following the advice in this pamphlet and by participating in local stormwater events.

Town of Boonsboro Stormwater Resources

For more information regarding stormwater events, public meetings, and other public participation opportunities, please visit the Town's website (listed below). The Stormwater Management subpage also contains links to the Town's ordinances, educational information, and a list of helpful resources on a variety of stormwater-related topics.

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What is Stormwater?

For Local Businesses

ARRO

What is a BMP?

You may have noticed man-made ponds, basins, and channels around the Town or on your property. Stormwater is collected and directed to these structures by a network of pipes and inlets. These structures are called Best Management Practices, or BMPs. These structures help remove pollutants from stormwater runoff prior to entering our natural waterways

Town staff will inspect these structures annually to ensure they are functioning as designed. If you have a BMP on your property which is not properly maintained, you may receive a notice from the Town to repair the structure.

Common maintenance issues include:

-Clogged inlets/outlets
-Trash and debris
-Dead grass/vegetation
-Structure erosion
-Sediment and organic waste build up

How can local businesses help reduce stormwater pollution?

Much of the area in Boonsboro is suburban, with significant areas of impervious surfaces like your business or parking lot which is a large contributor to stormwater pollution. This means that if everyone joins in, we can make big changes to the quality of our stormwater!

-Inspect/Maintain BMPs on their property

-Clean Stormwater inlets, outlets, swales on property

-Ensure private on lot sewer systems are maintained

-Collect waste from property (grass clippings, leaves, sediment) so it does not go into the stormwater system.

-Limit the use of pesticides, fertilizers, and deicers

-Store materials, especially those that contain potential pollutants, indoors or under a cover (overhead, tarp)

What is an Illicit Discharge?

Federal regulations define an illicit discharge as "...any discharge to an MS4 that is not composed entirely of stormwater." This can include cleaning products, lawn products, trash, and organic debris.

We ask the public to not contaminate our stormwater system with debris such as these.

How can an Illicit Discharge be Reported?

The Town has illicit discharge reporting information on the Town's Stormwater (MS4) page. If you witness an illicit discharge, please call the Town's phone number (301-432-5141).

Additional Resources

Municipal Website

www.town.boonsboro.md.us

County Website

https://www.washco-md.net/

Maryland DEP/EPA

https://mde.maryland.gov/Pages/index.aspx

US EPA

https://www.epa.gov/npdes/npdes-stormwater-program

What is Stormwater?

Stormwater is the water produced when rain, snow, sleet, etc. falls to earth. Stormwater can either seep into the ground or collect to potentially become a flood. Often, stormwater will make its way to our streams and creeks.

To protect Boonsboro from flooding, and to keep our streams healthy for fish and other wildlife, the Town has many drains, pipes, and ponds that make up the “storm sewer system”. The storm sewer system directly drains to our streams, rivers, and ponds and plays a very important part in keeping our waters clean.

Did you know that the Town of Boonsboro is part of the Chesapeake Bay watershed? And that the watershed is so big that six states are part of it?

You can protect the watershed by following the advice in this pamphlet and by participating in local stormwater events. More information on these events can be found on the Town’s website.

Environmental Protection Agency Stormwater Resources

For stormwater information and activities, like puzzles and videos, please visit the Environmental Protection Agency (EPA) website below.

https://www.epa.gov/nps/resources-students-and-educators-about-nonpoint-source-nps-pollution

Visit the Town’s website or attend a Town meeting to learn more about stormwater.

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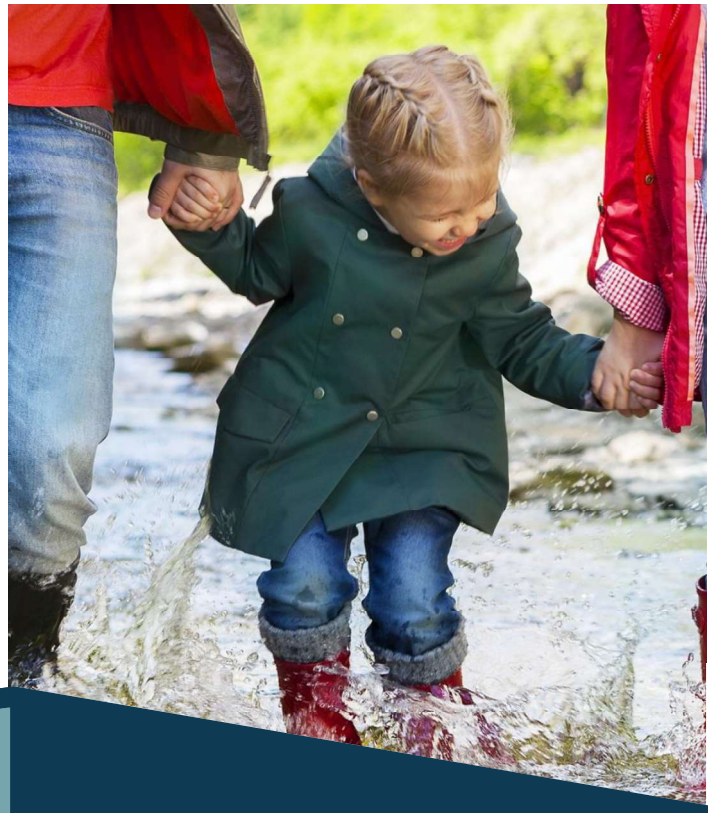

What is Stormwater?

For Kids and Schools

Why should we care about stormwater?

Keeping our streams clean is very important. Everything that lives in and around our streams, like fish and other wildlife, needs clean water to live healthy lives.

Many of our rivers, streams, and lakes contain pollution that hurts the health of the waterway and the creatures that live in it.

Rain falls everywhere outside, so anything that is left outside can make its way into our streams. This means that, while leaving a small piece of trash might look like it is not a big deal, all the trash and other harmful things left outside add up to equal sick fish and animals.

What can I do to help?

Taking care of waterways is everyone's job!

Clean up after your dog! Make sure you pick up dog waste.

Pick up your trash! Rain has to travel to get to our streams. As it goes, it can pick up whatever is in its path. If trash is left lying around, the rain will pick it up and carry it right into our streams. To keep our water clean, please pick up after yourself!

Don't put anything down storm drains.

Stay out of stormwater ponds, culverts, etc. This is VERY important for safety.

Keep our streams healthy!

The rain that falls onto your house often finds its way into creeks and streams. It's very important that the water stays clean as it flows into larger waterways.

You can help keep our water clean by making your home and neighborhood as friendly to water as possible!

To protect your neighborhood from damaging floods and high water, storm drains, and other pipes were built to carry water away from homes and deliver it to the streams and creeks. You probably have seen these drains around; they look like metal boxes with bars on the side of the road, just like the picture below!

Because rain travels through inlets, it is very important that the inlets stay clean. If someone puts trash into the drain, the rain will carry it right to the stream, so keep our drains clean!