Understanding Stormwater & How to Manage It

Understanding Stormwater

(Reference: EPA 833-B-03-002 After the Storm – A citizen's guide to understanding stormwater, www.epa.gov/npdes/stormwater)

Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground. Heavy rains or snow are not needed to send pollutants rushing towards streams, wetlands, and lakes. A garden hose, alone, can supply enough water. Contrary to popular belief, most storm sewers **do not** carry storm water to wastewater treatments plants. Storm and sanitary sewers may be combined in some older communities.

Stormwater becomes a problem because it picks up debris, chemicals, dirt, and other pollutants and flows into a storm sewer system or directly into a lake, stream, river, or wetland. Anything that enters a storm sewer system is discharged, untreated, into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of untreated stormwater runoff (or pollution) are many, and adversely effect plants, fish, animals, and people.

- Sediment can cloud water, making it difficult or impossible for aquatic plants to grow and can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from water. Fish and other aquatic organisms can't exist in water with low, dissolved oxygen levels
- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris – plastic bags, six-pack rings, bottles, and cigarette butts – washed into waterbodies -- can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatments costs

How to Manage Stormwater

(Reference: Home.A.Syst Environmental Risk Assessment Guide, muextension.missouri.edu/explore)

Keep harmful chemicals and materials out of runoff! i.e.:

- ***Silt, sand, and clay particles and other debris***: bare spots in lawns & gardens, wastewater from washing cars and trucks on driveways or parking lots, unprotected stream banks.
- ***Nutrients***: over-used or spilled fertilizers, pet manure, grass clippings and leaves left on streets and sidewalks, leaves burned in ditches.
- ***Disease organisms***: Pet manure and garbage.
- ***Hydrocarbons***: Car & truck exhaust; leaks & spills of oil & gas, burning leaves & garbage.
- ***Pesticides***: Pesticides over-applied or applied before a rainstorm, spills & leaks.
- ***Metals***: Cars & trucks (brakes & tire wear, exhaust), galvanized metal gutters & downspouts.

Questions to ask yourself?

Where does the storm water go on my property*?*
Next time you are home during a rain shower, head out-doors with your boots and umbrella -- watch where does the rainwater goes. Make a simple sketch of your property and note the direction the water flows off driveways, rooftops, sidewalks, etc.

What is my soil type?
Soil type can affect water infiltration. Sandy soil = filtration quickly, clay or fine-grained silt = longer and harder to seep in to the ground.

How far it is to the nearest storm sewer, ditch, wetland, stream or body of open water?
Distance that runoff travels affects infiltration.

Are any car or truck wastes being carried away by my storm water?
Try washing your car on the lawn or take it to a commercial car wash.

Are household products stored outside the reach of storm water?
Keep such chemicals in waterproof containers and store up high –o out of the potential path of runoff or floods. Prevent them from freezing – they may burst rendering the product unusable and/or a potential pollutant.

Do you use and handle chemicals safely?
Mix chemicals within a washtub so spills are contained. If spilling occurs, act quickly to contain & clean up the spill. Use only the amount you need (pesticides or fertilizers) and time applications well before it rains (24-48 hours). Read all labels carefully for application instructions and restrictions.

Do you use road salt or other de-icing products?
Consider sand or regular kitty litter as a less toxic alternative and chipping ice off pavements is a good choice.

How is animal manure kept from becoming a pollution problem?
Droppings that are not mixed with litter or other materials should be flushed down the toilet or if local ordinances allow, droppings may either be buried or wrapped and put in the garbage for disposal.

Are yard & garden wastes kept out of stormwater?
Keep grass clippings and other yard wastes off sidewalks, driveways or roads -- which can wash away during the next storm. Compost excess amounts of plant matter. Avoid burning yard waste. Rain washes smoke particles out of the air and runoff picks up dust and ashes left on pavement or in ditches.

Plan landscaping and site management to control storm water runoff.
Minimize bare soil in gardens, newly seeded lawns, and around construction projects. Water from rain and snow can remove large amounts of soil and carry it into wetlands, rivers, and lakes. Control runoff and erosion during construction. Eliminate paved surfaces or install alternatives. When you have a choice, consider alternative materials such as gravel or wood chips for walkways.

Is your basement protected from storm water seepage or flooding?
Storm water in your basement can be a hazard – (1) water carries contaminants or disease organisms into your home, (2) it also picks up chemicals stored in your basement and carries them into the sewer or ground. Seal windows or doors in basements to avoid water entry points.

Does roof water flow onto pavement or grass?
Aim downspouts away from foundations and paved surfaces onto grassy areas. Homes without gutter systems, plant grass, spread mulch, or use gravel under the drip line to prevent solid erosion. Consider using cisterns or rain barrels to catch rainwater for watering lawns and gardens in dry weather.

Can you rearrange your current landscape layout to reduce runoff?
An essential part of stormwater management is keeping water from leaving your property or at least slowing its flow as much as possible. If your yard is hilly, consider terracing slopes to slow the flow of runoff and make mowing and gardening easier. Consider “naturalizing” areas with prairie, woodland or wetland plants. Add a buffer strip of thick vegetation along the waterfront.

While the suggestions and recommendations above are not exhaustive or complete, the intent is for our Town to begin thinking and considering what stormwater is and ways to manage it. In the coming months, we will be including more educational information on this topic.