

# Sustainable Storm Water Practices

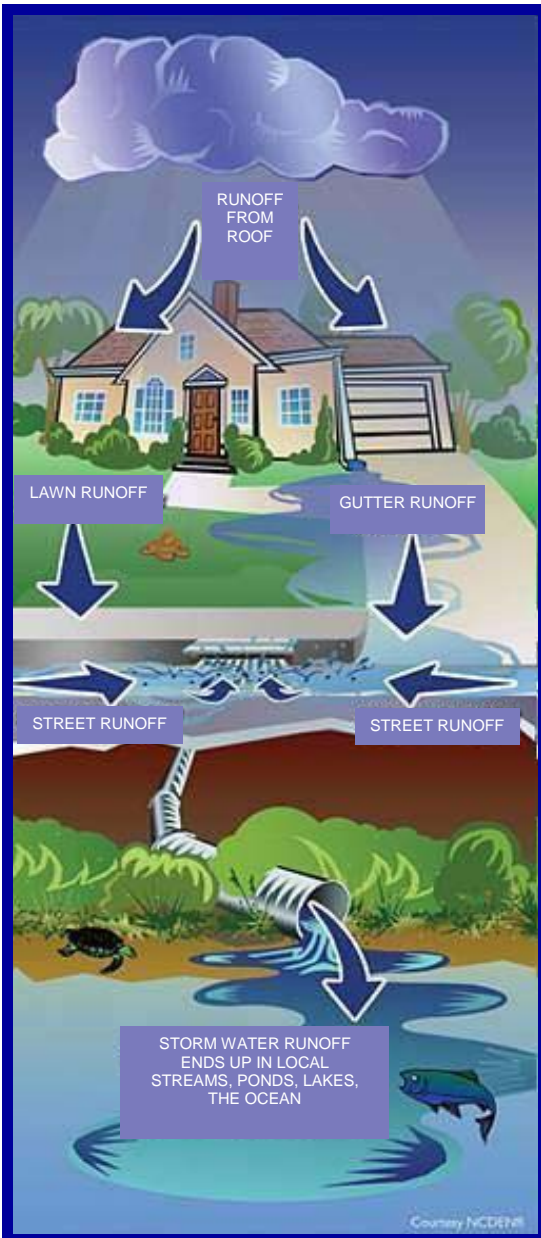
## Everyone can help prevent storm water pollution

### *Why be concerned about storm water?*

As impervious cover (any hard surface that water cannot penetrate) increases in an area, the natural capacity of the soil and vegetation to soak up the rain decreases, and more rainfall becomes storm water runoff.

This can produce negative impacts by causing erosion of land areas and stream banks, by causing or increasing flooding and by carrying pollutants in storm water runoff.

On a rainy day you can see the impact of storm water runoff as it moves from rooftops, lawns, gutters, driveways, streets, storm drains, to our streams and the ocean.



The storm drainage system includes open channels or enclosed pipes that rain water flows into whenever there is a storm. They take the water running off from homes and roadways to help prevent or minimize flooding.

Because the water flowing into a storm water drain does not pass through a treatment plant before discharging into the ocean, it is important that the water is as clean as possible and not contaminated with pollutants such as sediment, pet waste, trash, paint, and other chemicals.



Soil erosion during construction



Nutrient runoff from chicken manure



Paint wash water on City street



Trash inside a catch basin

Photos: City's Storm Water Branch

We are not talking about the water from the toilet or bathtub drain that is treated via the wastewater collection system.

*This water flows to our local beaches!*

# Sustainable Storm Water Practices

## Nine simple actions to be an everyday environmental hero

*... in the yard* **1** Keep soil covered by grass, shrubs and trees so the rain doesn't have a chance to get at it and move it. If the volume of water isn't great, divert the water running off yards and driveways into a vegetated area where the dirt can get trapped.

Rain can carry large amounts of soil to a storm drain or stream even on gentle slopes. A good idea is to plant a ribbon of trees and shrubs or a vegetated buffer, down slope of places like your home to capture soil and pollutants before they reach a stream. Minimize exposed areas on construction sites. Eroded soil is a major pollutant in our streams.



**2** When using fertilizer, read and follow the directions on the label, applying only the amount recommended. Consider non-chemical pest management, for example, using compost as an alternative to fertilizer. Overfertilizing your lawn can result in an excess of phosphorus and other nutrients that can decrease the oxygen necessary for aquatic life.

**3** Remove yard waste from sidewalks, street gutters and around storm drains. Reduce, reuse, recycle. This organic material decomposes in streams and decreases the oxygen necessary for aquatic life.

**4** Bag pet waste and throw it in the trash before you leave an area. Never hose it down the street, storm drain, or a stream. It contains nitrogen, phosphorous, harmful bacteria and parasites that pollute our streams.

**5** Direct roof drains to the yard, a rain barrel or rain garden instead of a driveway, street or storm drain.

*... in the garage* **6** Take your car to a commercial car wash where they recycle the wash water. Wash your car in an area that allows the water to soak into the ground, such as grass or gravel. A landscaping alternative may include using interlocking pervious pavers in areas such as home driveways that allow rain water to drain directly into the ground reducing runoff.

If you wash your car on a City street, use plain water, a bucket and a sponge or use a waterless car wash product. Car wash water carries soap, dirt and grease down the storm drain.

**7** Use a broom instead of a hose to clean driveways, sidewalks and gutter areas. Soak up auto leaks or chemical spills with an absorbent (e.g. rag, clay-based kitty litter, dirt), sweep up, and put it in the trash. Go to a professional who changes oil or use an oil change box if you do it yourself. Remember, it is your responsibility to keep the sidewalks, curbs and gutters fronting your property clean.



*... around the house* **8** After removing water-based paint from paint brushes and equipment, wipe onto dry rag, paper, etc. Brushes and equipment can be washed into a sink (sewer system). Store chemicals in a dry place protected from the rain. Do not allow paint wash water to flow to the street.

**9** Household hazardous waste must be properly disposed of to prevent pollution. Materials which present serious health and safety hazards, including pesticides and highly flammable substances like gasoline and kerosene, require special handling. Call 768-3201 for an appointment to drop off these materials at the hazardous waste handling facility contracted by the City.

# Sustainable Storm Water Practices

Green techniques in the backyard can help manage storm water runoff in a sustainable manner and improve the health of our waters.

## *Rain Barrels*



Photo: Honolulu Board of Water Supply

A rain barrel is a system that collects and stores rainwater from your roof that would otherwise be lost to runoff and diverted to storm drains and streams. The tap and hose at the bottom of the barrel allows easy access to the water so that it can be used later to water your plants.

### *... frequently asked questions*

#### **1. What kind of maintenance is required for a rain barrel?**

A rain barrel can be kept in perfect condition if you clean and apply a preservative a couple times a season.

Outside: Automotive cleaner—non toxic—biodegradable—ammonia free—use this product to remove bug, sap and other outdoor rain barrel stains and automotive preservative—SUN UV ray protector and preservative that is perfect for rain barrel plastic.

Inside: Visible inspection from time to time and if you see leaves or items that may eventually clog your hose bib, then just drain your barrel after pulling it away from the house. Stick a hose in the open down spout hole and spray it out and spray through the hose bib opening.

#### **2. How long does it take to fill a rain barrel?**

One inch of rain on a 1000 square foot rooftop yields 600 gallons of water. To calculate how much rain water your rooftop will produce multiply the square footage of your roof by 600 and divide by 1000.

#### **3. How can I get better pressure from my rain barrel?**

You may elect to elevate your rain barrel, but make sure that it is stable and level. If you use blocks make sure they are set on a firm, level surface. Higher is better (but be very careful because a full barrel can weigh 400 pounds+).

#### **4. Are there any concerns with using water stored in the rain barrel for watering plants?**

Do not use a rain barrel if you use chemical moss killers, spray a large volume of pesticides or herbicides, have a Zinc anti-moss strip on your roof, or if your roof is made with treated cedar shakes. These products are toxic chemicals that you might not want to store in your rain barrel. This is in relation to both water quality and algae issues. To be safe, it is recommended not to use on your vegetables. If the water is just to be used for general irrigation you might have less of a concern.

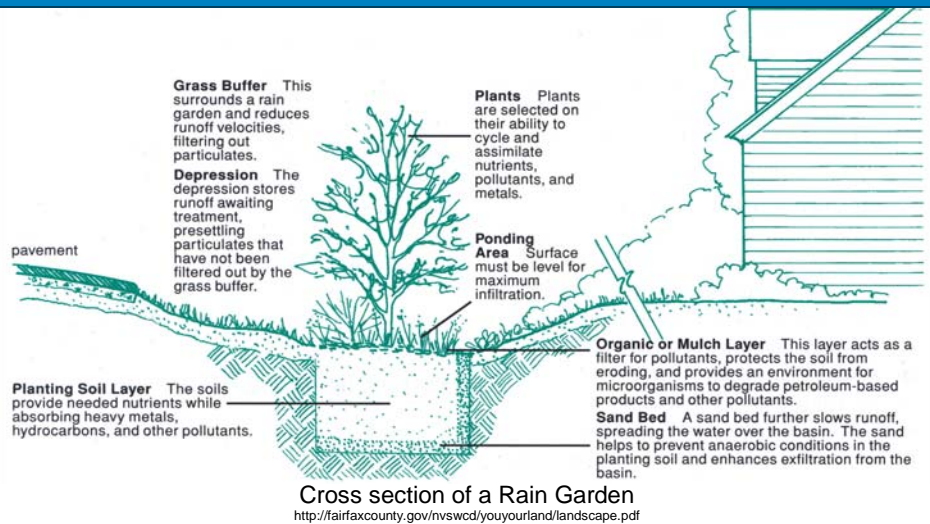
#### **5. What about mosquitoes?**

We recommend placing a screen at the opening of the barrel to not only reduce large items from getting into the barrel but also the potential for mosquitoes to breed. Mosquito Bits, when wet, release a biological larvicide's that is eaten by the baby mosquitoes (larvae) and is harmless to people, fish, birds, pets, and other animals.

For information on how to make a rain barrel, go to <http://www.boardofwatersupply.com>.

# Sustainable Storm Water Practices

## Rain Garden



Rain Gardens or bioretention swales are a low impact development approach to developing land and managing storm water that imitates the natural hydrology or movement of water of a site. They can effectively reduce runoff volumes, remove pollutants, and provide groundwater recharge. To learn how a rain garden works, first know the layers of the rain garden.

- A grass buffer strip around the garden that slows the velocity of the runoff;
- A mulch layer that provides a medium for the biological activities to occur and keeps the soil moist;
- Native plants that use the runoff for moisture and nutrient requirements;
- A soil layer where native plant roots collect the moisture and nutrients for their growth;
- A ponding area or depression of the garden that provides the storage needed for the runoff; and
- A berm or mound, at least six inches of soil or rocks, that works like a dam to pond the runoff.

Rain Gardens are in locations that collect storm water runoff, typically from roof downspouts, driveways, and parking lots, as a rain event occurs. They act as mini-retention ponds, reducing the volume of runoff, preventing the runoff from going into a curb and gutter storm drainage system, and helping to eliminate the pollutants from going directly into streams and eventually to the ocean. Hui Ku Maoli Ola native Hawaiian plant nursery, City and County of Honolulu Department of Environmental Services, Honolulu Board of Water Supply, and the State of Hawaii Department of Transportation will sponsor workshops in the summer and fall.

## Getting Involved and Reporting Pollution

1. Share your knowledge with family and co-workers.
2. Invite a guest speaker to talk about storm water pollution prevention.
3. Join a watershed group or attend a meeting
4. Call 780-8872 to volunteer to stencil storm drains with the message, “Dump No Waste” or participate in an Adopt-A-Stream/Adopt-A-Block cleanup, in the City’s portion of a stream or neighborhood block.
5. Help keep our roadways clean by adopting a section of State Highways by calling 831-6703, Adopt-A-Highway.
6. Report illegal discharges or dumping to the storm drainage system



**Call the City’s Environmental Concern Line at 768-3300, go to [www.cleanwaterhonolulu.com](http://www.cleanwaterhonolulu.com), click on contact us or call the State’s Highways Complaint Line at 831-6714.**

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