



NEMO Bulletin

CT NEMO is a part of the Center for Land Use Education and Research at UConn.

Disconnecting Impervious Areas at Home: Rooftops

This bulletin is designed to provide guidance on how to reduce the amount of impervious surfaces on your property that are connected to your town's stormwater system. Impervious surfaces do not let rain water soak into the ground below. Instead rain often runs off rooftops, sidewalks, driveways and roads and into the nearest storm drain. These pipes lead either to the nearest surface water body (suburban and rural areas) or to a combined sewer system (urban areas) and the excess stormwater causes many problems downstream.

To reduce these downstream impacts, the guiding principle is to keep rainfall runoff on your property if possible and let it infiltrate into the ground. Sometimes it is difficult to determine where water will flow; the best way to figure this out is to observe your property when it is raining. This will help you to see if runoff is leaving your property and entering a stormwater system.

Rooftops

The largest area of imperviousness at most homes is the rooftop. However, it is usually the easiest and cheapest area to disconnect.

Downspout Disconnection

If a roof does not have a gutter system, rain-water will fall off the roof and infiltrate into the ground along the drip line, which is OK, but this fast moving water can often cause erosion of the soil in this area. Most roofs therefore have a gutter system to collect and direct the water through downspouts. Where the water goes from the downspout can vary.

Gutter downspouts are typically either:

1. Discharged directly to the surface, either the lawn or a driveway,
2. Connected to a pipe underground where they connect to the town's sewer or stormwater system (Figure 1)

3. Directed through the foundation and into the house sewer line
4. Connected to a pipe where they connect to a drywell (common in older homes)



Figure 1. Gutter downspout connected to underground pipe.

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NEMO (Nonpoint Education for Municipal Officials) provides information, education and assistance to local land use officials and other community groups on how they can accommodate growth while protecting their natural resources and community character.

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Figure 2. Avoid having gutter downspouts discharge directly to paved surfaces.



Figure 3. Gutter downspout discharging to lawn.

From a water pollution standpoint, the downspouts to focus on are those that discharge either directly (categories 2, 3) or indirectly (discharge to a driveway that slopes toward the street) to the stormwater system. (Figure 2). The simplest solution is to redirect those downspouts to a yard or garden area (Figure 3). Just note that if you have a basement, water should be discharged at least 10 feet from the foundation to avoid the chance of having water penetrate the foundation. A simple downspout extender can be used to move the water away from the foundation. If you do not have sufficient space to discharge the water, or if your yard is commonly wet or soggy in the area where you are considering, this may not be an appropriate choice, and roof runoff should be piped to another area for surface discharge if possible.

Rain Gardens

Directing roof runoff to a rain garden is another option. A rain garden is a depression in your yard that will help to collect and infiltrate water from your roof or other impervious surface (Figure 4). Just as with surface discharge of water, you will want to keep a rain garden at least 10 feet away from your house if you have

a basement. In addition to helping keep stormwater on your property and recharging groundwater supplies, a rain garden can be planted with beautiful native plantings that provide wildlife benefit and pollinator habitat. Not all sites are suitable for a rain garden, so use guidance available here to determine if this could be an option for you: <http://nemo.uconn.edu/raingardens> or use our smartphone app (available for iOS and Android- just search for “rain garden” in the app or Play Store).

CHECK OUT OUR RAIN GARDEN APP!





Figure 4. Residential rain garden in Haddam, CT.

Rainwater Harvesting

Rain barrels can be used to harvest runoff from your roof for use in your yard (Figure 5). Typical rain barrels are 30-50 gallons in size, so the amount of water you can collect is fairly limited, however the water can help reduce your potable water use in addition to reducing runoff. Rain water does not contain dissolved minerals, so it is considered “soft” and is good to use on plants. Just be careful not to water vegetable plants that you will eat directly, such as leafy greens, bacteria from the roof could potentially be ingested. A screen can also be used to keep mosquitoes out of the water in the barrel.



Figure 5. Rain barrel set up with rain chain at the author's home in Ashford CT.

There are many different places that sell rain barrels now, or you can make your own. Just remember to disassemble your rain barrel in the winter to avoid damage from ice formation. This video tutorial (<http://s.uconn.edu/rain-barrel>) provides helpful tips.

Maintenance considerations

All stormwater systems require maintenance; green infrastructure systems are no different, however, the practices discussed in this bulletin require fairly minimal maintenance. Information on rain garden maintenance can be found here: <http://nemo.uconn.edu/raingardens/maintenance.htm>.

For **rain gardens**, basic maintenance includes:

1. Watering plants until they are established
2. Removing weeds or invasive plants as necessary
3. Remulching with a light coat of mulch every year (being careful not to fill up the storage area)

4. Check for erosion of soil where water enters and exits

For **rain barrels**, basic maintenance includes:

1. Removing debris as necessary
2. Disassembling before winter to prevent ice damage

Contractors

To find a contractor in your area experienced in installing green infrastructure, visit the green infrastructure contractor page on our MS4 website: nemo.uconn.edu/ms4/implement/post-construction.htm.