City of South Portland Stormwater Manual
Design Specifications

Downspout Disconnection
Adopted from Milwaukee Metropolitan Sewerage District and City of Portland Oregon Environmental Services.

Overview
How it Works and What it Does
During a heavy storm, the roof on a typical home can deliver 12 gallons a minute to its gutters. If the gutters are connected to a downspout, the water is probably being piped directly to a stream or in certain areas of South Portland to the sewer treatment plant. Areas where rainwater is sent to the sewer system are termed Combined Sewer Overflow (CSO) zones. Heavy rains can overwhelm sewer capacity and result in the combined rainwater and untreated sewage being diverted into Casco Bay. Disconnecting downspouts in a CSO area reduces these overflow events and reduces demands on the sewer system. Even in areas where downspouts are connected to separated stormwater pipes, redirecting your roof runoff to a suitable natural or landscaped area will slow down, cool, and filter the runoff, protecting streams in your neighborhood.

You can disconnect your downspouts from existing standpipes and let rain flow over landscaped areas or lawns, provided you have enough space and adequate soils to safely infiltrate the rain into the ground. Disconnecting includes cutting the downspout; attaching elbows, extensions, and splashblocks to direct the water to flow away from the house; plugging the standpipe (if applicable); and securing the materials to existing structures.

Disconnecting gutters from a downspout can reduce combined sewer overflows, provided you have a suitable area for rainwater to infiltrate. Source: Milwaukee Metropolitan Sewer District
Difficulty Level
Downspout Disconnections can be designed and constructed using common materials and installed by hand. If the disconnection is integrated with a rain garden\(^1\) or a drywell\(^2\) the project may require light excavation equipment.

Any stormwater management system that stores water has the potential to contribute to drainage problems if layout and design are not well thought out. Many landscaping, building, or plumbing professionals are now familiar with the downspout disconnection concept and would be able to properly install these stormwater management features.

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\(^1\) See Rain Garden section of South Portland Stormwater Manual
\(^2\) See Maine DEP Stormwater Manual, Volume 3, Chapter 6, Section 6.2.1 for more information on dry wells.

http://www.state.me.us/dep/blwq/docstand/stormwater/stormwaterbmps/index.htm
Drainage Plan Requirements

Downspout disconnections can reduce both the volume and rate of runoff leaving a developed site and is consistent with drainage plan requirements, if sited appropriately. Certain disconnections will provide greater value than others. For example, the farther away from impervious surfaces, and the greater the infiltration capacity of the soils, the greater the stormwater benefit. In some cases, relocating or reattaching gutters to move downspouts further from paved areas may be necessary to get full credit for disconnecting downspouts.

Site Suitability

With some planning and consideration of location, downspout disconnections are generally suitable for any site with currently connected downspouts. Begin by preparing a good plan to ensure that the rooftop runoff soaks into the ground without damaging your structures or neighboring structures. Find out where runoff from each of your downspouts goes. Downspouts that drain into standpipes (pipes) may drain into a public sewer system, a curb cut (a hole in the curb at the sidewalk), soaking trench, a drywell, or other stormwater drainage system. Make sure you determine where existing downspouts are connected. Those currently discharging to a vegetated infiltration area do not need to be disconnected.

Enhancing drainage in your yard where disconnected downspouts are located may be required if disconnections drain onto highly compacted or wetland soils. Please see the Soil Quality Restoration section of the South Portland Stormwater Manual for more information.

Proximity to Structures

To avoid flooding improperly sealed foundations or poorly draining lawn areas, disconnected downspouts should discharge to a point approximately 6’ or more from a basement. Disconnected downspouts should discharge to areas that flow away from structures, should not be constructed on slopes over 10%, and should be 10-15’ from a neighboring property line. Do not disconnect directly over a septic system or drain field or within 10’ of a retaining wall. These are general guidelines and each site may be slightly different. Consult with a landscaping professional or builder for advice.

Depth to Groundwater

As downspout disconnections are designed to infiltrate into natural soils, the disconnection location should be above the seasonal high groundwater table. Discharging a downspout into a seasonally saturated area may only complicate drainage problems.

General Design Guidance

Installation

Mark downspouts to be disconnected on your existing site plan. Mark where you might pitch gutters, move downspouts, remove walkways or other impervious areas, or add extensions or elbows to get around plants or other obstructions. Make sure you have enough landscaped area for rain to soak safely into the ground. A rule of thumb is that the ground area must be at

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least 10% of the roof area that drains to the disconnected downspout. For example, to drain 500 square feet of rooftop, there should be at least 50 square feet of landscape.

You may have more than one option for directing each downspout. Consider combining elbows and extensions to send water to the side or front, or to get around obstacles and drain water away from the house. Downspouts can also be relocated along the gutter itself to discharge to a safe drainage location.

Materials
The following is a list of materials for downspout disconnection:
- hacksaw
- tape measure
- hammer
- screw driver
- pliers
- sheet metal screws
- downspout elbow
- downspout extension
- splash block (optional)
- downspout filter (optional)
- rubber cap (if applicable)

Use durable, gutter-grade materials such as aluminum, steel, copper, vinyl, and plastic. Black ABS SCH 40 plastic is a durable option found in most hardware stores and home centers. It is not recommended to use corrugated black plastic (ADS), roll-out-hose, PVC pipe, dryer hose, swivel or open-trough materials because of their limited durability. If the downspout discharges to a drywell or infiltration trench then a downspout filter may be necessary to limit clogging of the system.

Step 1
Cut the downspout with a hacksaw.

Step 2
Cap the sewer standpipe (if applicable). This prevents water from going in. In most cases, you should be able to use a simple rubber cap secured by hose clamp. You can also use a wing-nut test plug if available cap sizes don't fit.

Step 3
Insert the downspout INTO the elbow (if you put the elbow into the downspout, it will leak). You may need to crimp the end of the downspout with a pair of pliers to get a good fit.

3 The “Leaf Eater” filter is an example. http://www.rainharvest.com/shop/shopexd.asp?id=75&bc=no
Step 4
Attach a downspout pipe extension to carry water away from the house and foundation. Downspouts must drain at least 6 feet from basement walls and at least 2 feet from crawl spaces and concrete slabs. You can use a hacksaw to cut the extension to the desired length. Be sure to insert the elbow into the extension to prevent leaks. Secure the elbow and extension with sheet metal screws. To prevent erosion where the water drains, you can place a splash block at the end of the downspout extension.

Maintenance
Proper maintenance of your gutters, downspouts, and landscaping can reduce problems.

Gutters
- Clean at least once a year, and more often if you have overhanging trees.
- Make sure gutters are pitched to direct water to downspouts.
- Caulk leaks and holes.
- Make sure roof flashing directs water into the gutters.
- Look for low spots or sagging areas along the gutter line and repair with spikes or place new hangers as needed.

Downspouts
- Check and clear elbows, filters or bends in downspouts to prevent clogging.
- Each elbow or section of the downspout should funnel into the one below it. All parts should be securely fastened together with sheetmetal screws.

Landscaping
- The ground should slope away from structures.
- Don’t build up soil, bark dust, or woodpiles against the siding.
- Avoid draining water onto impermeable plastic weed block or cloth.