# Urban Stormwater Drainage

What is a drainage vs. conservation easement?

In newer neighborhoods, there may be **drainage easements**. An easement is a portion of land set aside for a specific purpose, by property deed. Easements are most often used for utilities and stormwater conveyance. Stormwater drainage easements are used to safely convey water across properties to a storm drain or stormwater pond. The easement allows the local jurisdiction access for repairs and maintenance. It is important that these easements be kept free of obstructions to maintain proper conveyance of stormwater runoff. Placement of wood piles, debris, play structures, fences, and other potential obstructions is prohibited.
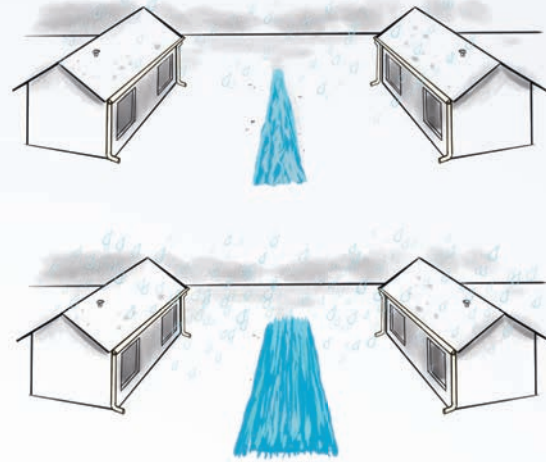
Drainage easement in residential neighborhood.
Draphic: ISWEP

Photo: NRCS

In comparison, a **conservation easement** is a voluntary agreement between a landowner and land trust or government entity in which the landowner retains some of the private property rights. It is used to permanently protect natural resources and the conservation resources of a property. Conservation easements can be used to protect vegetative habitats and stream buffers, and areas of historical significance, and can be used for creating outdoor recreation opportunities.

Home Owners Associations (HOAs)

Some HOAs will oversee some or all of the management and maintenance of property that might be used for stormwater practices or to protect natural resources in a development. Stormwater features might include bioswales or grassed swales used to convey stormwater runoff. HOAs might oversee flood control practices as well, such as wet ponds (retention basins), dry ponds (detention basins), and wetlands. In some communities the stormwater practices may be managed in part or whole by the local jurisdiction. Some HOA land areas may also be reconstructed prairie that are part of a larger stormwater treatment train. A treatment train is a series of interconnected stormwater practices that may function to remove pollutants and minimize flooding. Woodland areas can also be protected and managed by the HOA. Sometimes these areas are made more accessible to the neighborhood through interconnected trails.


Photo: ISWEP

What happens to rain that falls on my yard?

If you have healthy soil under your lawn, a lot of the rain will soak into the ground and be absorbed by trees and plants. However, many urban lawns have heavily compacted soils. These soils act like concrete and shed rainwater similar to other impervious surfaces, such as driveways, sidewalks, streets, and rooftops.

Rainwater that is not absorbed by your lawn typically enters a nearby storm sewer intake in the street. From there, an underground storm sewer pipe system carries it to a neighborhood pond, or nearby stream, river, or lake. During periods of intense rainstorms, excess stormwater runoff is generated that can cause localized flooding. Homes and yards located too close to waterways are often adversely impacted in this all-too-common scenario.

Some homeowners experience drainage issues following significant rainfall. Luckily, there are many solutions that you can use on your property. Learn more about common drainage issues and effective methods for addressing these problems.

Rooftop • Downspout • Driveway • Street • Neighborhood Creek
Photo: ISWEP

Summer 2021
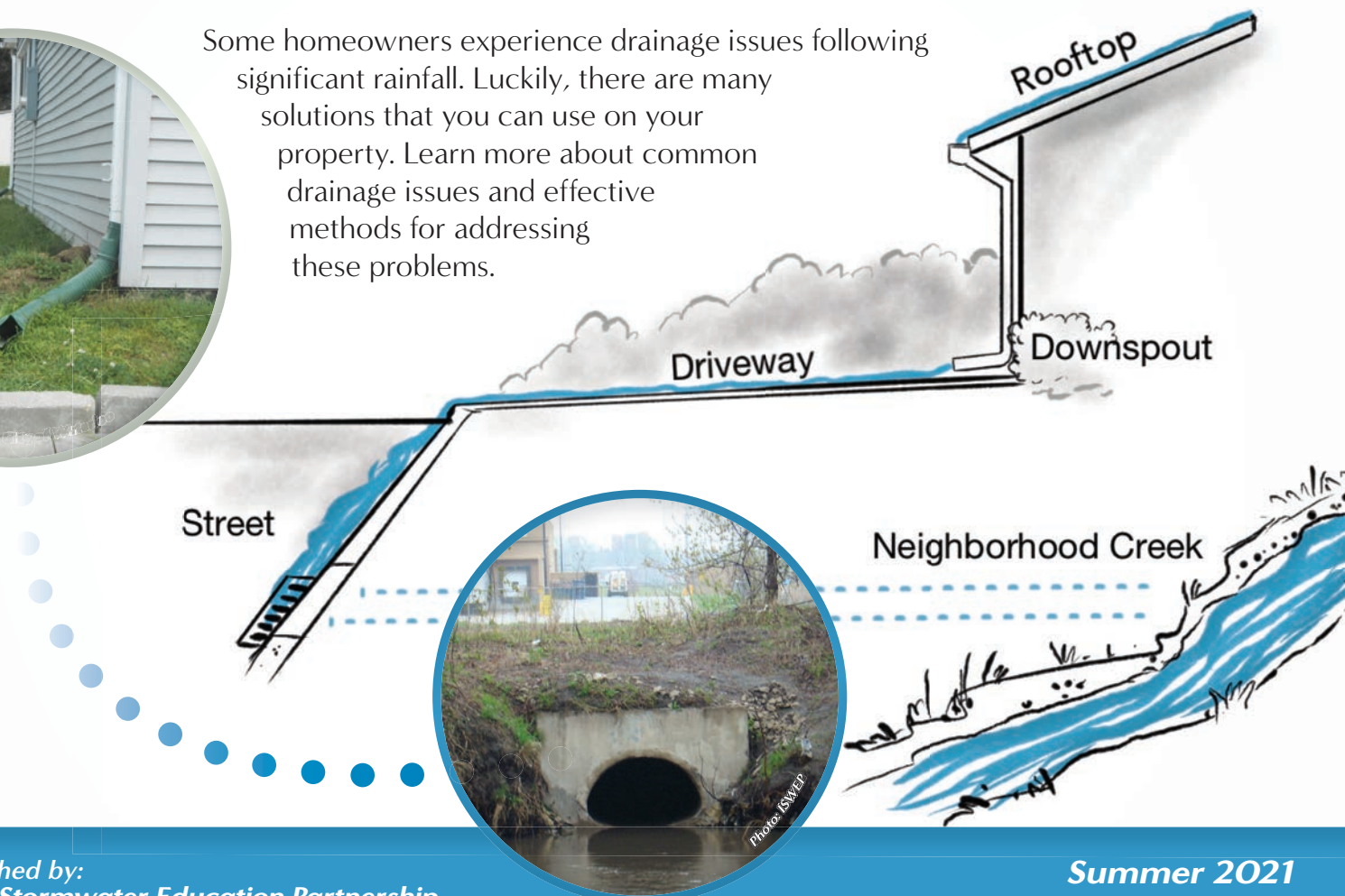
Common Drainage Issues

Drainage issues may look different from home to home, but most problems stem from compacted soils and concentrated drainage that causes erosion, flooding, and sump pump concerns.

Heavily Compacted Soils & Erosion

There may be areas in your yard where it is hard to grow grass and other plants. There may also be areas that remain wet after rain. This may be caused by poor soil health. Due to mass grading practices during and after construction, yards in newer developments often have soils that are heavily compacted with little topsoil to sustain a lawn. Soil particles are packed more closely together in compacted soils, making it more difficult for rain to soak into the soil. It also makes it more difficult for grass, plants, and tree roots to spread out and grow to find nutrients and water during dry spells. Often, very little topsoil is returned to the lawn and only clay soils remain. Clay soils contain small soil particles that are difficult to drain, especially when compacted.

Additionally, areas that erode after a rainfall typically receive too much concentrated rainfall drainage at one time. The vegetation on the soil surface is unable to withstand the force of the water. Eroded sediment can also accumulate in some of these areas that can smother existing vegetation and cause a surface crust that prevents rain from soaking into the soil. This can be caused by excessive drainage from upslope areas on the property or neighboring property drainage that is directed to and overwhelming an area of the yard.

Flash Flooding

Homes located near rivers and streams in the floodway or floodplain are highly susceptible to flooding. This is especially true during large rainfall events and extended periods of rainfall. In some cases, homes are located too close to stormwater management features such as wet or dry basins. During large rainfall events, the height of the water in these practices may enter a home through basement windows.

Sump Pump Concerns

Most homes have subsurface foundation drains that are connected to sump pumps that pump water to the surface of a yard or are connected to a storm sewer. They are used to lower groundwater levels to prevent water from backing up into the basement. If grounwater levels are naturally close to the surface in your area, you may have continual sump pump discharges.

? *Do you have further questions? Contact your local community to learn more about options to address drainage issues.*

Photo: City of Waterloo

Photo: City of Waterloo

Photo: City of Waterloo

Simple Drainage Solutions

Soil Quality Restoration (SQR)

Drainage on existing lawn soils can be improved through SQR that includes deep tine aeration, topdressing with 3/4 of an inch of compost and seeding over the top. Deep tine aeration (a minimum of 4 inches) helps to reduce compaction. Compost adds organic matter and nutrients to the soil. Over time, the lawn should require less fertilizer and water to maintain a healthy soil profile.
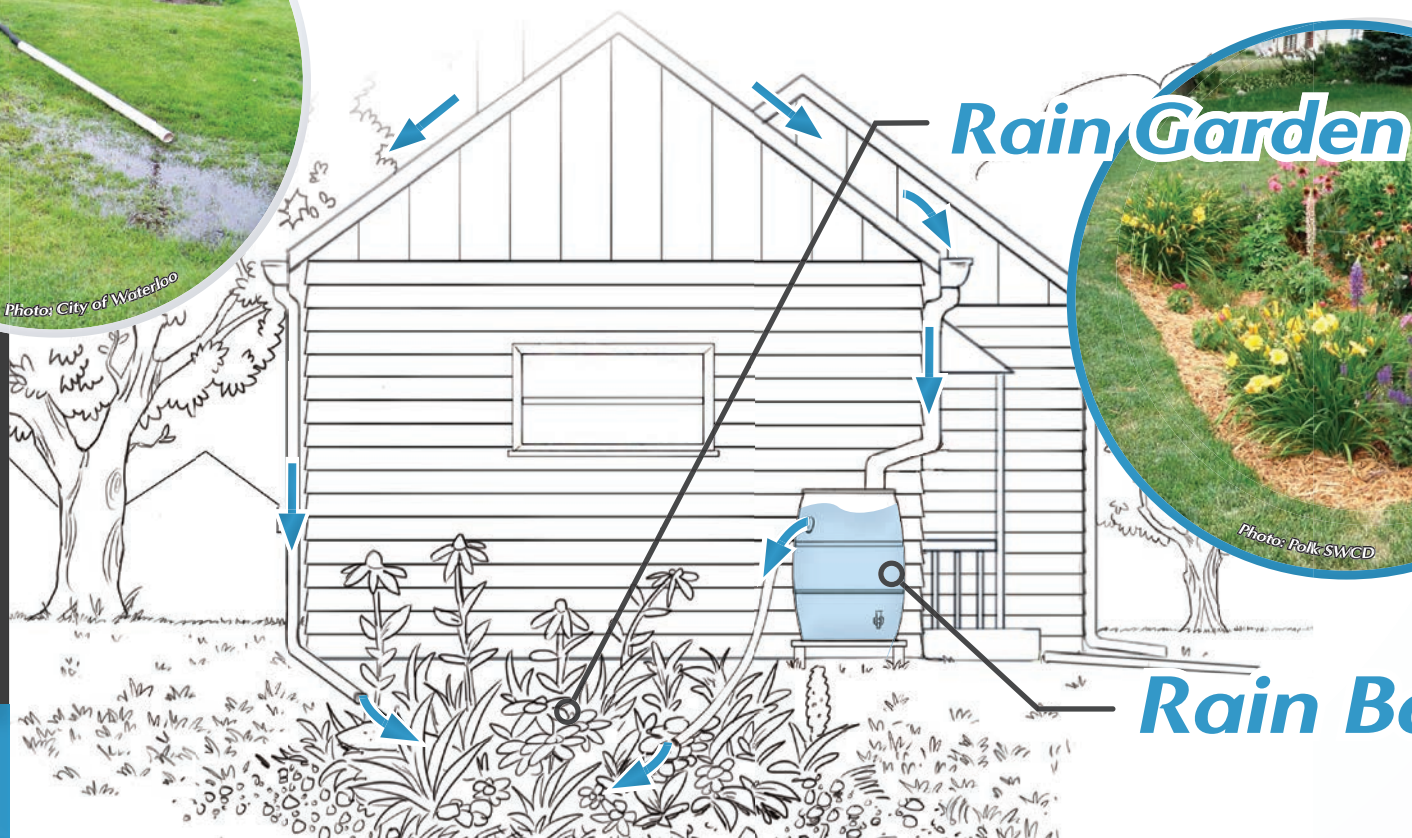
Or, improve soil health by converting part of the grass in your yard to native prairie plants. Native plants have deep roots that help soak up rainfall and improve soil health over time. They also provide habitat for pollinators such as butterflies.

Redirect Downspouts

Redirecting downspouts from impervious surfaces such as sidewalks and driveways to vegetated areas is another simple solution for drainage issues. Try to disperse the concentrated flow by simply placing a flat rock or paver block to prevent soil erosion. **Subsurface drain tile** can be connected to the downspout and directed to a downslope area in the yard.

Another option would be to redirect a downspout to a **rain garden.** Place the garden at least 10 feet downslope from a home foundation. A rain garden is a shallow landscaped area that is planted to native plants or horticultural cultivars. Rainfall runoff is temporarily ponded, then drains into the subsurface soils. The soils must be able to drain properly to prevent extended ponding of water that would kill off vegetation.

Downspouts can also be redirected to a **rain barrel**. Collected rainwater can be used to water plants in gardens or lawn areas. You will be amazed by how much rainfall runoff is collected from a rooftop area during rainfall events!

SQR
Photo: City of Pleasant Hill

Rain Garden
Photo: Polk SWCD

Rain Barrel
Photo: Pat Sauer