RESIDENTIAL RAINWATER MANAGEMENT

Why is it important?

Before Sonoma County and its incorporated cities became developed, as much as 50% of rainwater soaked into the soil replenishing groundwater supplies, contributing to year-round stream flows, and sustaining ecosystem function. Another 40% was released into the atmosphere through evapotranspiration (evaporation of surface and ground water plus water loss from plants). Only about 10% contributed to stormwater runoff (rainwater that flows over the land surface).

Our modern day urban centers and rural neighborhoods are made up of impervious surfaces (hardened surfaces that do not allow water to pass through) such as roofs, streets, and parking areas. When rain falls on these surfaces, it flows faster and in greater amounts than it would have under pre-development conditions significantly increasing runoff and decreasing infiltration and evapotranspiration.

Runoff is typically conveyed by pipes, driveways, streets, and storm drains to creeks and rivers, where it contributes to flooding, road damage, stream erosion, and landslides. Runoff also carries sediment and other pollutants to beaches and rivers, making them unsafe for recreation and wildlife. Though it starts as relatively clean rainwater, runoff collects pollutants as it flows over the landscape. For example, excess lawn fertilizers, herbicides and pesticides, pet waste, soap from car washing, oil and grease from leaking engines, zinc from tires, and copper from brakes are just some contaminants that have been found in runoff in the county. Since nearly ALL storm drains in Sonoma County empty into local waterways UNTREATED, it's important to minimize the use of toxic substances on your property.

How can I reduce runoff on my property?

Fortunately there are simple low-cost things that we all can do to help decrease the volume of, and minimize the pollutants in, the runoff leaving our properties. In addition, many of these options have the added benefit of beautifying our gardens and property.

Pervious Hardscapes: There are many new types of pervious materials that allow runoff to pass through and SINK back into the soil. Some popular choices are paver stones, turf block and permeable asphalts and pavements. There are now pervious options for almost any application. For specifics on installation and use, contact your local retailer or product manufacturer.

Mulching: Using organic mulches such as wood chips or straw, or covering the ground with vegetation are key ingredients to SLOWING down and thus preserving valuable top soil, preventing sediment from being carried downstream, and reducing the potential for erosion.

Planting native or low-water use plants: provide excellent long-term erosion control.

DO

- Use California native plants or others adapted to wet winters and dry summers.
- Incorporate compost into the soil and use organic mulches to provide fertility.
- Provide for overflow drainage away from building foundations, especially in clay soils and soils with high water tables.

DON'T

- Use chemical fertilizers or pesticides.

More innovative actions Sonoma County residents and gardeners are taking to Slow It, Spread It, and Sink It!

Rain Gardens: Use plants to remove pollutants and improve infiltration, allowing water to soak back into the ground. In soils with low permeability this system may be used to temporarily store water (not completely infiltrate) and remove pollutants before they enter a waterway.

Rainwater catchment systems: Collecting and storing water from roofs is a way to SLOW water down by temporarily storing it. Captured water can be reused for irrigation or other non-potable options

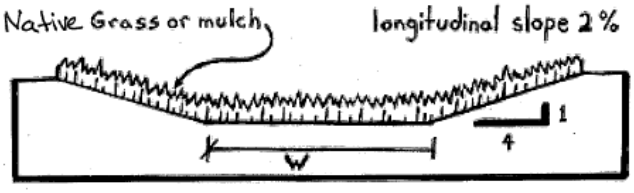
or released slowly after storms to allow for infiltration and reduced flooding. *Notes: Asphalt shingle roofs require the installation of a down spout diverter to keep asphalt and contaminants out so that the water is clean enough for irrigating edible garden crops. One inch of rain on a 1600 sq. ft. roof could provide about 800 gallons of water, so large tanks would be needed to store a significant quantity of rainwater. A small backyard garden with a drip system might use 2000 gallons of water in a hot month, so it is difficult to store an entire summer's irrigation water.*

- **Rain Barrels:** 50-gallon rain barrels have many advantages in urban settings: they take up very little space, are inexpensive, and easy to install. However, they will fill and be emptied very quickly.

- **Water Tanks (Cisterns):** Manufactured water storage containers for non-potable use come in larger sizes, up to 10,000 gallons or more. Water tanks can be installed both above and below ground. Cisterns may require a building permit, so contact your Planning Department to determine local requirements.

Swales: Are shallow channels that when saturated convey water to a safe outlet such as a rain garden or other infiltration areas where water can sink into the ground.

- **Native Grass Swales**: Grassed swales are vegetated with native perennial grass species along the bottom and sides of the channel. The vegetation in the channel slows runoff, allows sediments to filter out, and can help remove nutrients.

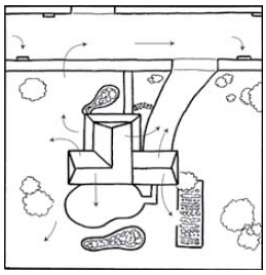


minimum (w) = 2 feet

- **Bioswales:** Bioswales are vegetated swales that use engineered media (usually a designed soil mix consisting of sand, loam soil and hardwood mulch) beneath the swale to improve water quality, reduce runoff volume, and control peak runoff rates. Bioswales have a greater capacity for water retention, nutrient removal, and pollutant removal than grassed swales.
- **Rock Lined Swales**: A rock-lined swale (or dry creek bed) uses rock instead of grass or other vegetation to safely infiltrate and convey runoff.

Important facts to know when taking the above actions

Stormwater Best Management Practices (practices thought to be the most practical and cost-effective) recommended in this guide move away from the old "pipe it and pave it" model and toward the "slow it, spread it, sink it" approach: Slow the water down, spread the water out, and sink the water into the land. Observe where rain flows off of your property during storms in order to discover where you can implement measures described in this guide.



Mosquito Control: When open water is left to stagnate, mosquito populations can soar. In addition to the nuisance of an itchy bite, mosquitoes also have the capability to transmit disease.

By: Sonoma County Water Agency, 2010