

# The Problem with Paving the Planet

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If you've lived in the Ross Valley for many years, it may seem like Corte Madera Creek and its tributaries overflow more quickly these days, particularly during a heavy rain. This isn't just your imagination.

A recent study by hydrologist and public policy advisor Annalise Blum and her colleagues used an extremely large data set covering 39 years of records from 280 stream gauges in the U.S., combined with a statistical model developed from economics, to untangle the relationship between impervious surfaces and their impact on nearby waterways. The result? For every 1 percent a town increased public impervious surfaces—roads, parking lots, sidewalks—the annual flood magnitude in nearby rivers and streams increased 3.3 percent.

We have gotten quite good at diverting and piping rainwater away from our homes but all that water has to go somewhere. In a natural landscape, a good portion would soak into the ground where it falls. This replenishes the water table, keeps our vegetation alive by feeding the plants and the microbial communities among their roots, and yields plants with a higher moisture content that don't dry out and catch fire as quickly. A higher water table also feeds creeks in the summer, benefitting fish. Slowing the water down and keeping it on site has numerous benefits. Why are we so quick to label it a problem and shunt it off to the storm drain?

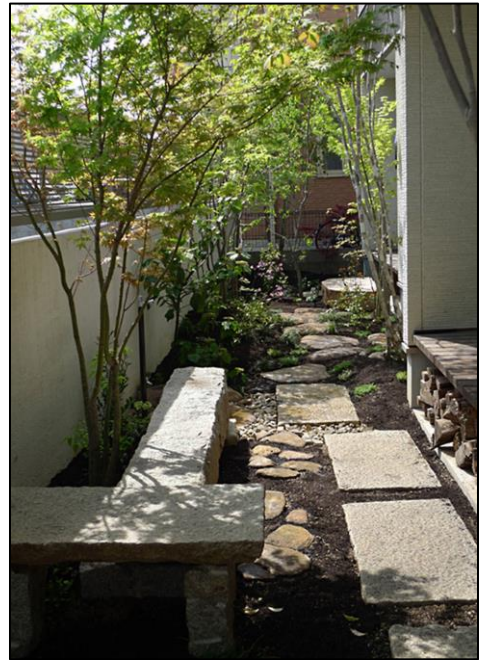
Blum's study used data from towns and cities but it applies to homeowners as well. There is a great deal that individuals can do. Every square foot of impervious surface around our homes that we remove and replace with materials that allow rain to soak in helps the soil beneath us and reduces flood levels in nearby creeks. What we accomplish ourselves eliminates the need for more taxes and the wait for the county to act. Here are some options.

**Cement** We are incredibly fond of laying concrete as an inexpensive solution to everything, but how many of these uses really have to be solid concrete? Can the path to your garage be stones or bricks laid in sand? How about using decomposed granite, very fine rock particles that are compacted to be quite stable but remain water absorbent? It comes in beautiful natural colors and resists weeds once compact. Convert the pad under your barbecue grill to slabs of stone (or even squares of concrete) with creeping thyme planted in between; then you can add a little thyme to the coals to flavor what you're grilling! Many types of walkways and outdoor pads can easily be made more porous.

**Curb Cuts** These are, as they sound, cuts in the curbs along streets and driveways that allow water running along curbs to be diverted into vegetated areas rather than into the storm drain. The area on your property adjacent to the cut needs to slope away from the roadway and will need a swale—a scooped depression in the earth that will catch and hold the water until it has a chance to soak in. These swales may have rocks on the edges for aesthetics and soil stabilization, and should be vegetated with moisture-loving plants that don't mind having wet feet for a short while. The Mill Valley Library on Throckmorton has a bioswale full of native plants that catches and slows rain at the southeast end of their building.

**Weed Cloth** Choose weed cloth with a very fine mesh rather than solid black plastic as the weed-blocking layer under gravel areas and trees. The soil needs air circulation as well as water to remain healthy.

**Paving** Replacing asphalt with something pervious is a big undertaking. If you will be redoing your driveway or parking areas, however, consider using pervious paving. It looks just like regular asphalt but water



*A path of blocks invites creativity and allows rain to soak in. Photo by Uzu Design*



*An informal path of decomposed granite is an environmentally friendly alternative to concrete. Photo by Matt Ross*

can soak through it, preventing pooling and puddling and the resulting cracking. The Central Marin Police Station in Larkspur has permeable paving in the parking lots. You would never guess it isn't standard asphalt; it looks much the same. Other options include using brick or stones set in sand on a gravel bed for some portion of the pavement, or simply considering just how much really needs to be paved and if some could be returned to lawn and garden beds.

#### **Filter Strips**

If Impervious pavement remains, vegetated filter strips of small rock and porous soil and plants can be placed along the edges of paving to increase the capture and

filtration of water running off these surfaces. However, these should not be closer than 2 feet to the side of the house so water is not pooling next to foundation walls. If there is a full basement, allow 10 feet of separation between the two.

**Compost** If water tends to run off your soil instead of sinking into it, add compost. Soil doesn't absorb water unless it has carbon in it, it just sheds it. Carbon comes from organic matter—anything that is, or once was, living. Add any type of green compost: shredded leaves, grape seed mulch, mushroom compost, fireplace ashes, grass clippings, etc. The higher the soil's carbon content, the more water it absorbs.

All of us have played a part in creating the conditions we currently face: a world with buildings and driveways and lots of concrete that prevent much of the winter precipitation from finding its way back into the water table. Corte Madera Creek empties into the Bay, which is now higher due to sea level rise, creating a "plug" at the mouth of the creek that prevents creek flow from draining out of the watershed during high tides. Under these conditions, all it can do is spread sideways. No one needs to wait for the county to engineer a solution, however. Every household can undertake one or more actions on this list and get us closer to our goal. Let's help that water get back in the ground where it is beneficial and needed.

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