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New Spellings of “Sustainable”

My dictionary tells me that “sustainable” means “able to be maintained”, and my textbooks tell me it means “exploiting natural resources without destroying the ecological balance of a particular area.” Combining these concepts gives us an opportunity to apply the “s” word to more than figuring out how to get potable water to the explosive development in our arid southwest. The news is full of intriguing variations and new approaches to land use that could allow us to address our clients’ projects a little differently.

One solution to the problem of preserving the environment and human use of it comes from the fishermen of Maine, whose concern about preserving their livelihoods has spurred them to join with towns and residents in buying the state’s working waterfronts. Fishermen, ferry operators, and boat builders historically have not owned the docks and wharves where they work. With high demand in the real estate market for waterfront properties, communities



Mill Creek runs through the lawns of homes in Lower Merion Township, Montgomery County, Pennsylvania, ripping away at its banks each time it overflows.

reviewing proposals for a second round of grants to be awarded in July. Here, sustainability literally translates into life or death for seaside communities.

Another resolution is something called “the sustainable trail initiative”, an

heavily used areas encompasses about 57 miles of trail through the 1,800 acres of Wissahickon Park, where numerous fall line trails run steeply down hill. When it rains, these trails become streams, eroding the trail, the hillside, and anything else in the path of water heeding the call of gravity. As a little geological background, this area is in the Piedmont uplands, with outcrops of metamorphic rocks (especially the Wissahickon schist so prevalent in local construction) that were formed from compacted clay-rich sediments deposited in the shallow ocean covering Pennsylvania about 600 to 460 million years ago. With this watery beginning, it should be no surprise that underground streams surface as springs and creeks throughout the parks and the city.

Our trails are so worn down after over a century and a half of use that we have

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are at risk of losing their businesses and their public access to the water. Maine’s Working Waterfront Access Pilot Program made its first awards this year, \$1.2 million in matching grants to six communities and organizations, and is

internationally applied method recently introduced here in the Philadelphia region. The city has about 9,200 acres of open space in the 63 regional and neighborhood parks making up Fairmount Park. One of the most



A residential work in progress: an attempt to re-create Mill Creek's desire for a gentler bank along its steeper side, with regrading and seeding in the floodplain. Some hardscaping remains, but damage will be less severe with reduced restriction of the creek's flow.

become accustomed to walking in what amount to shoulder-high ditches and canyons. Where trail users (hikers, mountain bikers, and horseback riders) circumnavigate the mushier spots, the growth along the former trail edges can no longer hold water in the soil, or even hold those soils in place, compounding the problem. For us, the application of sustainable trail concepts began with closing some existing trails that could not be redesigned, to allow them to recover. Filling some eroded trails with organic matter brought them close to the grade of the surrounding land, and contouring other areas facilitated stormwater dispersal, slowing flow to allow percolation. Designs for existing and new trails meander more than old trail configurations, in part using logs and boulders as human traffic calmers.

Elsewhere in southeastern Pennsylvania, another stretch of park is temporarily closed to the public because of erosion. Since the first European colonists settled along the streams in Penn's Woods, structural methods have reigned supreme in attempting both to utilize the water and to control it. Stone walls meant to "reclaim" the banks, generate power, and hold back flood waters have not proved as strong as nature's powers, and even some of the newer constructions have failed in the face of the last several years of hur-

ricane-induced water flow. In some areas, the undermined walls have collapsed. Elsewhere, intermittent streams now run through steep-sided gullies that erode with each new storm, whether of hurricane force or more normal spring downpour.

We should remember that water, left to its own devices, generally creates its own 30-degree or less banks. Last summer I asked a homeowner about the stone-lined slope on the opposite side of the creek from her refurbished mill-house. Large boulders littered the area, both in the water and above the top of bank, and I wondered about them. She told me that her attempt to gain "just a few more feet of usable yard" by sloping the bank to 45 degrees and lining it with those boulders had failed completely, and that the late-summer storms of the prior year had ripped her construction back to its current – and original – 30-degree angle. The scattered boulders were nature's way of reminding her that money and human labor can't always overcome the elements.

Returning to my township parks' streams, their banks are being bulldozed back to gentler slopes, recreating floodplains and holding them in place with water-loving plants and trees. The unrestricted streams will be able to jump the banks during high flow, rather than being forced into the narrow, hard-walled

runs that currently increase water height and velocity. Outside of the park's limits, homeowners along the same streams are extending the work. Habitat is the primary concern inside the park; preserving properties from erosion is a large motivator outside of it.

Sustainability takes many forms, and another economic version of it is making its way across the country in the form of flood control or storm water utility fees. In most localities, these are dedicated funds for the repair or replacement of drains and pipes. Avoiding the dreaded label of "tax", some proponents note that sewer rates can decrease in areas where storm water fees are in place. Wilmington, Delaware bases its fees on the amount of a property's impervious surface. Philadelphia instituted similar fees about 40 years ago, but because they are based on the size of the water-meter connection, some of the worst contributors to runoff (such as parking lot owners) pay nothing. Watershed protection is inspiring a regional search for a solution, since the city's neighbors, elevated above Philadelphia, contribute to the city's storm water problems.

While these examples relate primarily to water, we can extrapolate from them to develop other sustainable, sometimes non-standard, approaches to land use challenges. *A*