The New York Times



**December 24, 2009**

# City's 'All Green' Stormwater Plan Raises Eyebrows at EPA

**By TARYN LUNTZ of Greenwire**

Philadelphia has a groundbreaking idea about what to do with stormwater: Use it to feed grass and trees instead of letting it rush into the sewers.

The concept may seem obvious. But for most cities, a stormwater management plan that doesn't expand sewers or treatment plants is counterintuitive.

Stormwater poses a costly and burgeoning problem in the United States, where 772 cities have sewer systems that collect wastewater and storm runoff in the same pipes. The systems are designed to overflow during heavy rains, sending raw sewage and other waste into streams and rivers so as not to overwhelm treatment plants.

In New York City, for example, which averages an overflow a week, a rainy day means 500 million gallons of filthy discharges pouring into waterways, according to nonprofit watchdog group Riverkeeper. That foul brew contaminates drinking water, forces beach closures and pollutes shellfish beds.

Most cities are working with U.S. EPA to curb overflows as part of a mandate to cleanse waters to federal standards.

But the traditional options are expensive. Philadelphia, for one, found it would need to build a $10 billion sewage tunnel under the Delaware River to solve its overflow problem the standard way -- with so-called "gray" infrastructure.

So the city is proposing an alternate solution: Invest $1.6 billion to turn a third of the city green in the next 20 years. The plan involves replacing streets, parking lots and sidewalks with water-absorbing porous pavement, street-edge gardens and trees.

"We want to do anything we can do to return us as close as possible to the way nature intended the water cycle to be," said Howard Neukrug, director of the Philadelphia Water Department's watersheds office. "But we need to do that within the context of a city that is fully grown, with incredible impervious cover everywhere."

Philadelphia is examining a number of options, Neukrug said, including digging up streets, planting trees and redesigning tree pits and curbs to trap water before it reaches sewer inlets. The city also may push for green roofs, rain barrels and other water-conserving measures for new and existing homes and buildings.

"We recognized that if we manage stormwater where it lands, whether on the ground or on a roof, that in very many circumstances we can not only prevent that gallon of water from overflowing, but we may be

able to find additional benefits for our customers," Neukrug said. "Things that impact the urban heat island effect, things that improve the aesthetic of a community."

The department contends the plan could give the city an economic boost, as well.

"The city officials see this as a way of revitalizing their community," said Nancy Stoner, co-director of the Natural Resources Defense Council's water program. "They see it as making it a more attractive place for people to live and work. Making it more healthful, creating green jobs, raising the property values, taking pollution out of the air."

A sewage tunnel would do none of those things, Neukrug said.

"Every dollar you can spend above ground that would give you an equivalent water quality result to below ground, it's probably better to spend that dollar above ground," he said.

EPA's decision

Cities ranging from New York to Kansas City, Mo., have said they are eager to explore green infrastructure, and a number of them already are using it to help them manage stormwater.

But experts said Philadelphia is the first city to propose an all-green stormwater solution to federal regulators.

"It's different from what any other city in the country is doing at his point," Stoner said. "It's the only stormwater plan I know of that basically is all green. It's really impressive for a place that's as densely populated and as paved over and urbanized as Philadelphia is."

The city's plan is now in the hands of EPA, which must decide whether to approve it.

While the agency officially encourages cities and states to use green infrastructure, EPA has never been asked whether it alone is an acceptable way to address combined-sewer overflows.

"The fact that they're proposing it to meet Clean Water Act regulatory requirements is fairly unique," said Jon Capacasa, director of water protection for EPA's Region 3 office in Philadelphia. "I think one of the key challenges will be putting the institutional measures in place to ensure the good vision here can be achieved."

Various city departments that oversee streets, sewers and development all must overhaul their regulations and coordinate their new policies to promote green measures if such a plan is to work, Capacasa said.

For example, developers who aim to control stormwater through green technologies may find themselves stymied by road and building codes that demand traditional materials and designs.

"There are a lot of barriers, because things have been done differently for years," Stoner said. "The structures just are not set up to facilitate this kind of integrated thinking."

Philadelphia also estimates its plan will fall slightly short of EPA requirements.

The city says it would capture 80 percent of its sewage and wastewater under the proposal. That's 5 percent less than EPA wants.

"The plan that's been submitted to us, in our initial review, doesn't get all the way to the endpoint," Capacasa said. "So there may be more work to do."

More challenges ahead

Neukrug said Philadelphia already is tackling the task of standardizing its building policies.

The city reworked its stormwater regulations in 2006 to require all new buildings to capture the first inch of rainwater and to grant expedited permit reviews to developers that use green infrastructure.

And the Water Department is creating design templates and standardized instructions for other utilities, departments and private developers to use, he said.

"The city of Philadelphia fully endorses this concept," Neukrug said. "Our sister agencies are working very closely with us to figure out how to implement this program."

But Neukrug acknowledges that addressing existing buildings will be a challenge.

"How do you encourage private landowners, who for the next 50 years do not plan to make any changes to their property, how do you get them to change?" he said. "That's where it's most costly."

While the department is still hashing out the details, Neukrug said it is firm in its commitment to the idea.

"We're not sure yet how we're going to be doing things five years from now, 10 years from now, other than we're pretty darn sure we're going to be moving forward with this green infrastructure concept," he said. "We can get there with green infrastructure. We just need time."



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