

# When it rains, it pours

Stormwater issues studied in Duluth hillside neighborhood

“Just by living the way we live, people have changed the way water flows.” Valerie Brady, NRRI aquatics scientist, is talking about stormwater. You know... the water that flows off your roof, through your gutters, down your driveway and into the street after a good rain.

Her point is that because of our homes and buildings, the water doesn't soak into the ground (like it would if the buildings were gone) and instead, flows like a deluge into nearby streams. Those streams—here long before we were—haven't adjusted to this excess, so the banks erode, the dirt muddies the water, the fish and other water critters struggle, and the ecosystem is out of whack.

To help scientists and the rest of us understand this problem better, NRRI is conducting an experiment to figure out exactly what homeowners can do that will make a measurable impact on keeping excess stormwater runoff out of nearby streams. They did this by identifying a neighborhood with stormwater that flows into Amity Creek. The people living there were asked to help move science forward, take stormwater pressure off an Amity Creek tributary, and hopefully fix some pesky water problems of their own.

Once they embarked on the project, the scientists learned that people do care about this issue. A whole 72 percent of the households contacted agreed to take a survey that would show just how much people already know—or don't—about stormwater issues and their local streams. Surprisingly, over 50 percent of the respondents didn't know there is a stream at the end of their street, or weren't sure. And 84 percent didn't know that Amity Creek is listed as an “impaired stream” by the Minnesota Pollution Control Agency

for muddiness. Fortunately, 76 percent were aware of the difference between stormwater and sanitary sewer water, and that they are treated differently. And 79 percent



were interested in learning more about the stormwater management project the scientists planned for the neighborhood.

Then the team of scientists held a public meeting. Brady, with colleagues from Minnesota Sea Grant and Minnesota's Lake Superior Coastal Program, presented the gathered crowd with information about their unique neighborhood stormwater issues and unveiled their experimental plan to measure stormwater “fixes.”

“The fix is hard, both because it's all about how we live on the land, and because the land up here, with its clay and bedrock on steep hillsides, doesn't give us a break,” said Brady.

Next the scientists want to find out how effective landscaping changes are to slowing down the water. The team measured how much stormwater is running off three neighborhood streets and found that each two-block stretch generated 300,000 to 400,000 gallons of runoff during a June 1.5 inch rainstorm. That's enough to fill a football field with a foot of water.

This spring, one of those streets will install things that slow down stormwater run-off—rain gardens, more trees and shrubs, rain barrels, grassy swales, and rock trenches.

Measurements of stormwater run-off after the “fixes” are in place (and in comparison with the streets that don't make any changes) will show whether or not the extra effort helps.

“These are very water-aware people,” said Brady of the experimental neighborhood. “They're getting wet basements, and sump pumps are putting the water in their yard where it's seeping into downhill neighbor's basements. They understand that the water has to go somewhere, and they want to do what they can to help.”

**NRRI is involving citizens in research to understand how excessive stormwater can lead to muddy streams.**

