Stormwater fixes could cost billions

The figure is staggering: Close to half a trillion dollars over the next 30 years. That’s what it could cost to completely address Puget Sound’s growing stormwater problem, according to an EPA-funded study presented last spring at the Salish Sea Ecosystem Conference.

The study, prepared by researchers at the King County Department of Natural Resources and Parks, projects the capital and maintenance costs of the stormwater treatment facilities that would be needed to fully comply with the Clean Water Act. A 30-year time frame could mean capital outlays of as much as $14 billion dollars per year. Jim Simmonds, the report’s lead author, acknowledges that, given the huge expense, a 30-year fix appears unlikely. But the report also looks at potential stormwater retrofits over the next 100 years. Costs over that time frame would average about $650 million dollars yearly. “That is far more realistic,” he says, and would help undo a century-old problem.

The figures far exceed last year’s state allocation of $100 million dollars, but Simmonds says the study is not meant to suggest that the legislature suddenly come up with an additional $14 billion dollars annually to deal with stormwater. Instead, he says, it tells a story of where we are and where we still have to go. Runoff—or stormwater—from roads, parking lots, and roofs is one of the largest sources of contaminants flowing into Puget Sound. “One of the questions that has come up repeatedly is ‘how much will it take to fix this problem?’” he says. “This report puts that in context.”

HOW WE GOT HERE

Sandwiched between the Olympic and Cascade mountain ranges, Puget Sound’s urban areas receive up to 40 inches of rain each year. Historically, most of this water soaked into the ground or was taken up by plants and soil. In forested areas in the Pacific Northwest, evergreen trees transport about 40% of rainfall back to the atmosphere through their needles. The remaining water filters through other plants and the soil. The ecosystem is driven by this water cycle, but over the past 100 years, human development has drastically altered this natural pattern.

Urban areas were originally designed to move stormwater quickly and efficiently downstream through a series of drains, pipes, and sewers. Flood prevention was the main reason for getting stormwater out of the city fast, but over the years municipalities have come to realize that speedy water removal is actually detrimental to the health of Puget Sound.

Without the filtering effect of plants and soil, surface runoff increases and stream flows become “flashier”—surges in runoff are more frequent and more intense. This means greater flooding, and more polluted water flowing into Puget Sound.
THE BIG IMPACT
OF LOW IMPACT DEVELOPMENT

Among the innovations grabbing the attention of scientists and engineers are low impact development approaches to stormwater treatment, which use a place’s natural hydrology to control stormwater runoff.

At the 2014 Salish Sea Ecosystem Conference, Mindy Fohn, a stormwater manager with Kitsap County, described one low impact development approach where managers are planting trees in notoriously impervious surfaces like parking lots to trap stormwater. In the past, these trees might have been planted on raised islands. Now planners are putting them in lower areas that draw the water between parking spots. These interventions are small, local, and often quite beautiful.

So far, bioretention from low impact development has shown promising results. A natural filtration system of soils and plants was recently demonstrated by NOAA to effectively eliminate some of the deadly effects of stormwater on coho salmon.

Another area of interest involves citizens themselves, in a more grass roots approach, installing rain gardens on their own properties. Rain gardens are simply landscaped areas that collect, absorb and filter stormwater runoff from rooftops, decks and other hard surfaces. The idea is to prevent stormwater from washing off individual properties which, if done in sufficient numbers, will have a large positive effect on watershed and basins. The Washington State University and Stewardship Partners are working together towards the goal of ‘12,000 Rain Gardens’ by the year 2016.