

# SKEETER SOLUTION

Pervious paver stops mosquitoes from colonizing in storm drain catch basins

By Peter Blundell

The Washoe County (Nev.) Health Department's Vector-Borne Disease Prevention Program had a problem. Mosquitoes were colonizing in the standing water of storm drain catch basins, giving rise to the potential of a West Nile virus threat. The obvious solution would be to drill holes in the bottoms of the basins to allow water to drain into the subsurface, but according to National Pollutant Discharge Elimination System (NPDES) guidelines, that would be considered an injection well and is not allowed.

In early winter 2009, Xeripave began working with Washoe County to develop a solution to the mosquito colonization problem. Xeripave proposed using its Super Pervious Pavers in various configurations to block the mosquitoes' access to the standing water while allowing storm water to flow through. The configuration chosen was a tray system, which is

a shelf of pavers placed inside a storm drain inlet system, below the inlet grate and above the standing water in the sump. The concern that the pavers would become plugged was addressed

pavers and the resulting overflow carried debris into the overflow pipe, which then got caught on the butterfly valve and caused the pipe to plug up. Instead of discarding the idea entirely,

the problems were readdressed with a better understanding of what was actually occurring. The pavers were reconfigured to allow the decomposed granite to pass through while catching the gross contaminants (particles bigger than 30  $\mu$ ). The overflow pipe was enlarged and redesigned to use an external flapper valve.

Now it was time to test the redesigned

storm water filter system. The system captures trash below the basins' inlet grates but above the outlet pipes, thus preventing the trash/debris from being discharged through the public infrastructure into tributaries of the Truckee River. The debris does not have a chance to decompose because it



with an overflow pipe using an internal butterfly valve.

## Testing

The paver tray system was installed and tested, but the system failed. Decomposed granite and sediment indigenous to the area plugged the

does not collect in the standing water of the sump, thereby preventing odor.

Four storm drain inlet basins were chosen in downtown Reno, Nev. They were cleaned out, sanitized and all standing water was removed. The system was installed in two of the basins. Two weeks later, the four basins were inspected and the water was tested for mosquito larvae. The two basins that did not have the new filtration system had standing water containing mosquito larvae that tested positive for West Nile virus. The two basins with the new system had standing water that did not contain mosquito larvae. It was verified that the system blocked the adult mosquitoes from accessing the standing water in the sumps of the basins.

After two years of testing, the filtration system was approved by Washoe County and the new design was placed in the County Orange Book, a list of regulations and requirements for new construction projects.

#### Widespread Installation

In 2011, Washoe County's Vector-Borne Disease Prevention Program received a grant from the Nevada Department of Environmental Protection to modify 100 catch basins in the Spanish Springs area. The goal of the Spanish Springs Storm Water Demonstration Project is to use the Xeripave filtration system to prevent sediment larger than 30 mm, debris, litter, etc., from entering the storm water catch basin infrastructure, thus reducing the pollutants being discharged into the Truckee River system, in addition to preventing mosquitoes from colonizing in the basins. Other aspects of the study will include installation and maintenance cost evaluation. One point noted about the maintenance costs is that the debris/material collected by the system is dry, easy to vacuum out and usually does not have to be decanted before disposal.

There are more than 35,000 storm water catch basins in the Washoe County area, not including those privately maintained. The Washoe County Health Department also requires all public schools to utilize the Xeripave system within their catch basins. New private developments also are required

to install the system.

The design and construction of the Xeripave storm water filter system was initiated and carried forward by the Washoe County Health Department in conjunction with Washoe County Community Development, Washoe County Public Works, Xeripave LLC, and engineering and industrial consultants. What the county referred to as the "prevention through design" approach moves away from a program

that utilizes pesticides sprayed into catch basins. The end results are less public concern over the use of pesticides and better public health within the county. **SWS**

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