

Stormwater runoff at Smith Mountain Lake was a serious problem until an engineering firm let nature take its course

BY CHRISTIAN MOODY

Water quality in Smith Mountain Lake is a hot-button issue in and around the communities in the vicinity of the lake, but efforts to improve it by filtering storm water flowing in have met with universal approval. For Blacksburg-based Anderson & Associates, an engineering and consulting firm, the solution is an old one, with a new twist. Let nature take its course.

Anderson and Associates recently completed five bio-retention ponds, which work as filters for storm water in Smith Mountain Lake State Park. The state is overseeing about 20 new cabins in the state park, and the road extended to the cabin sites is paralleled by a ditch system that directs storm water into the new bio-retention ponds, rather than allowing it to wash into the lake, full of chemicals picked up on the ground.

Project manager Ray Varney says most of the contaminants picked up by storm water run-off dissolve into the first inch of rain that falls. That water can be handled by the retention ponds, even though additional rainwater will wash over the full ponds and run into the lake. He says the system is not perfect, but it allows for most of the petroleum by-products and phosphorus to be carried into the natural filter system, rather than being carried directly into the lake. The system of ditches routes the water into man-made ponds measuring about 30 by 40 feet. The ponds are landscaped with trees, grasses and shrubbery which can tolerate wet roots.

The filtering system works two ways: First, the plants in the retention pond absorb the chemicals brought in by the storm water. This concept is not new, but previous state ordinances made grass the only viable

option for planting. A change toward more earth-friendly regulations now allows more species of flora to be included. "We use trees that don't mind wet feet," Varney says. Oaks, willows and sycamores are the primary hardwood of choice. Grass is also used in the ponds.

The second way for the natural filtering process works in by allowing the water to perk through the soil. It leaves the contaminants behind as

it seeps into the ground. Sand was added to the soil in the bio-retention ponds to expedite the process. The clay-rich soil around Smith Mountain Lake is not permeable enough without the sand.

There is a balance to achieve in the time it takes the water to perk out of the pond. "The longer you hold the water, the more pollutants will settle," Varney says.

Bio-retention is a method of

cleaning run-off which works well with roadways and parking lots. To date, Smith Mountain Lake State Park is the only area around the lake where bio-retention ponds are being used to keep run-off from adding contaminants to the water. Varney says he has no estimate for the cost of such a system in other areas of the lake.

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