

# Kent projects aim to protect watershed

Molly Murray, The News Journal 8:19 p.m. EDT September 14, 2014



(Photo: JASON MINTO/SPECIAL TO THE NEWS JOURNAL )

Drive west through Frederica and it's farm country – field upon field of corn and soybeans interspersed with woods and newer subdivisions.

It is here that Kent County officials are working on a series of projects that will offset nitrogen and phosphorus loads going into the Murderkill River watershed.

The Murderkill has two main sources of man-made pollution – runoff from the land and the county's regional wastewater treatment facility.

Because of these projects, Kent County will be able to reduce pollution in one location and offset the impact from the downstream treatment plant.

Just off Del. 12, the east-west road that links Frederica to Felton, there is a mature forest.

“This is first growth,” said Hans Medlarz, Kent County Public Works director. The trees – large oaks, hickories and some pines – have been growing ever since the site was first logged, likely decades ago.

“It's a very beautiful site,” he said.

Walk down the farm road, and surrounded by the forest is a farm.

The county's goal is to reclaim farmland, reforest it and reduce pollution going to the Murderkill. Tree seedlings use lots of nitrogen and phosphorus as they grow and mature.

Medlarz said the county worked with state officials on a restoration and maintenance plan for this 150-acre property. The plan is to reforest 91 open acres that were once farmed.

The county spent \$1.3 million on the land using sewer enterprise money, and the main goal is to improve water quality in the Murderkill by capturing pollution on the site. A side benefit will be improved habitat for wildlife.

Medlarz said state land preservation officials helped the county find the site and provided help in how to best reforest it.

“A lot of things had to fall into place,” he said.

The Murderkill drainage basin, which meanders through farmland west of Harrington, along drainage ditches, through shallow guts and into ponds that flow into creeks, is a complicated area. All this water eventually flows into the Murderkill, which flows into the Delaware Bay.

Among the pollution concerns are seasonally low oxygen levels and elevated nitrogen and phosphorus, which can fuel the growth of aquatic plants and lead to poor water quality.

A detailed, multi-year study of the Murderkill River concluded that seasonally low oxygen levels in the tidal section of the watershed were a natural occurrence, caused not by pollution but by the organic matter sloughing off the marsh.

That will be reflected in new water quality standards that were developed as part of the total maximum daily load limits for the Murderkill Estuary.

State environmental officials expect to release those new standards in the October registry of state regulations, said John Schneider, state watershed assessment manager.

The water improvement plan has taken more than a decade to develop for the 106-square-mile Murderkill basin.

Farming and undeveloped land account for much of the Murderkill's drainage problems. Farm-associated nitrogen and phosphorus nutrients, along with treated sewage and septic systems, are a major focus of the cleanup plan. Reductions of one-third to one-half of some pollution flows could be needed to meet federal standards. Bacteria levels need to fall by 67 percent along some segments and tributaries.

Kent County operates a wastewater plant that discharges into a tributary of the Murderkill. The county challenged the Department of Natural Resources and Environmental Control calls for tighter, and potentially more expensive, treatment levels at the plant, arguing that the state had failed to account for unique conditions in the tidal marshes around its plant.

The debate played out after Kent reformed its treatment operation, moving from a frequent violator of discharge limits and target of odor complaints in the 1980s to a facility that received an Environmental Protection Agency performance award in 2005.

Bill Ullman, professor of marine and geological sciences at the University of Delaware, has been studying the Murderkill for many years.

Most of the nitrogen pollution comes from agriculture in the watershed, he said.

But a string of ponds along the waterway, along with high flushing rates, seem to minimize the impacts.

Ullman said Kent County's project reduces the environmental impact of the treatment plant on the watershed. "That is spectacular," he said.

When he started looking at the watershed, Ullman said he expected to see more environmental problems.

But, "the amount of water going through that estuary is just enormous," he said.

Schneider said the one concern both state and federal regulators initially had were the seasonally low oxygen levels.

But studies concluded that during the summer months, oxygen dropped because of sediment coming off the marshes in the tidal areas of the river.

And state officials found that fish weren't dying as a result. Schneider said some fisheries biologists believe that very young fish may be able to survive and thrive in shallow, low oxygen settings, while larger predator fish can not.

To test the theory of tidal marshes contributing to low oxygen, state officials also looked at the St. Jones River, which also includes large areas of wetlands and has seasonally low levels of oxygen. There is no point source of pollution there such as a wastewater treatment facility.

"There was just no difference," he said. "We see the same low dissolved oxygen. ... We were all floored, absolutely floored."

At the county's Spring Creek Reforestation site, some 40,000 seedlings will be planted, said William "Rob" Pierce, the project manager for the county.

The field – now covered in high grasses – will be sprayed with a weed killer and then mowed to clear space for the trees. Planting could begin later this fall, Pierce said.

An estimated 435 seedlings will be planted per acre. Seeds from the nearby forest will likely be spread by animals, and additional trees will sprout.

"We're just trying to help things along," he said.

Walk past the field and back into the woods and the Murderkill River borders this land. This time of year, trees shade the riverbank. A woodpecker hammers away at a tree nearby, and there are signs of other wildlife like deer.

North of the Frederica site – past Andrews Lake and McGinnis Pond – land that was once farmed is now subdivided into building lots and housing developments.

At the Village of Chestnut Ridge, county officials have purchased a second site – once the second phase of a proposed development. They are working to fill a farm pond, expand a stream corridor buffer and plant trees on a little over 12 acres adjacent to the Village of Chestnut Ridge. The land and stream corridor drain into the Murderkill watershed, Pierce said. The project includes backfilling and grading a 15-foot-deep pond that was once used to irrigate an apple orchard, forming a narrow channel and adding vegetation to limit runoff from the land, he said.

Last year, the Levy Court purchased an additional property in the watershed that had been slated for a 339-home development near Frederica. Medlarz said that if the property is reforested, it also would qualify for nutrient credits.

Schneider said the county's land conservation efforts have two impacts: one is to reduce runoff pollution from the land into the Murderkill and uptake nutrients from the ground. Second, he said, the projects take land that could have been subdivided.

"They're taking the most sensitive lands out of play and they're preserving their capacity," at the wastewater treatment facility, Schneider said.

The two restoration projects will be used to give the county credits toward meeting a cleanup plan for the Murderkill.

Schneider said county officials deserve credit for looking at innovative ways – such as wetland and forest restoration – to offset pollution in the watershed.

“They are trying to offset the load” from the treatment plant, he said.

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