



Florida Department of Transportation Research

Regional Stormwater Irrigation Facilities

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FDOT uses detention ponds to collect stormwater runoff from highways and other transportation facilities. The ponds can also receive offsite runoff from upstream land. The collected water has potential for irrigation use if it does not contain unsafe levels of pollutants, especially algae, bacteria, and toxins.

Researchers first determined the pollutant levels that commonly occur in detention pond water. Tests for cyanobacteria, which causes pond algae, and for *Cyanotoxin microcystin* were done on water samples from 14 central Florida detention ponds. Analysis showed that the bacterial and toxin levels of in the pond water were lower than those in central Florida natural lakes, as documented by private laboratory testing.

Researchers then conducted a field test to determine if filtering the pond water through soil into a horizontal well would further reduce the pollutant levels. A horizontal well is simply a pipe, perforated at the top to receive filtrate. The well is placed in a trench and overlaid with sand

or other filtration material. A pump raises the well water to the surface for irrigation. The well is located under or near the pond, which stores the runoff water for filtering into the well.

The test of the horizontal well, which was built next to a University of Central Florida detention pond, produced a sustained flow rate of about 600 gallons per minute. The water flow was sufficient to meet irrigation demands, even though the site was in a developed area where the compacted soil has poor infiltration and percolation. The pond water, withdrawn via the filtered horizontal well, met public access irrigation water quality standards, demonstrating that runoff water can be a cost-effective irrigation alternative to using either potable water resources or reclaimed or treated sewage water. The use of detention ponds combined with horizontal wells will soon be implemented throughout Florida and will likely become an important tool in meeting stormwater management requirements.



A golf course stormwater detention pond which filters runoff from nearby I-4 in Winter Park, Fla.

Project Manager: Rick Renna, Florida Department of Transportation, rick.renna@dot.state.fl.us
Principal Investigator: Marty Wanielista, University of Central Florida, wanielis@mail.ucf.edu