

## SmartDitch Stops Erosion in Goldsboro, NC Neighborhood

High velocity flows combined with unstable soil conditions provide an ideal situation for erosion to occur. In the past, engineers have utilized vegetation, rip-rap and geotextile fabrics to control these situations; inevitably however, there are some locations that these methods will not work. For these situations, SmartDitch is a viable solution. SmartDitch's rugged HDPE construction resists the hydraulic forces of the flow and provides a stable channel that will provide years of maintenance-free service.

On a recent project in Goldsboro, NC, SmartDitch was installed in a residential area that had drainage and erosion problems. A 15" concrete culvert pipe was discharging (storm water) into an earthen ditch behind houses and during heavy rain events washing out their yards. In the past, rip rap had been placed at the end of the culvert pipe to dissipate the energy of the flow with limited success. The local municipality reviewed and chose SmartDitch as a solution to stop the erosion and improve the drainage situation.



*(Earthen ditch behind homes in Goldsboro, NC)*



*(The 15" culvert pipe that discharges into the ditch)*

Starting at the end culvert pipe, 320 lineal feet of 12" trapezoidal SmartDitch was installed to provide a defined drainage channel behind the homes. Installation was performed by the City of Goldsboro Municipal crews and was completed in a couple of days.



*(City of Goldsboro Crews installing SmartDitch)*



*(320 lf of SmartDitch installed on first day)*

The decision to utilize SmartDitch was tested on the first day of construction. The 320 feet of SmartDitch was installed on the first day and the crew finished the day with only the need to complete finished grading and clean-up on the second day. That evening, a heavy rain event occurred and provided the first test of the new system. In less than two hours, over 3" of rain occurred and overloaded the entire

neighborhood drainage system. The 15" concrete culvert pipe emptying into the SmartDitch sections was flowing at 100% capacity during the event with the flows exceeding the 12" Trapezoidal section's flow capacities. The water flowed over the side walls of the SmartDitch sections but because the energy of the flow was dissipated by the corrugated side walls, no erosion occurred. The integrity of the ditch was maintained and the water moved quickly away from the residences, preventing serious flooding and damage. As the rain event subsided, the water that flowed over the sides drained back into the SmartDitch with no erosion occurring on the sides.



*(Water flowing from a 15" Culvert pipe during heavy rain event)*



*(The same section of SmartDitch a few hours after the event.)*

Within 48 hours of the rain event, the City of Goldsboro crew was able to return to the job site, complete the finish grade work and clean up the job site.