



## NC STATE UNIVERSITY

### Project Site Summary for CLEAN Center

**Site:** Discount Tire

**Address:** Discount Tire, 2002 St Charles Pl, Cary, NC 27513



**Figure:** Aerial photo of Discount Tire (left); main cell with outlet structure (center); inlet from parking lot (right)

A field test bioretention cell (BRC) is located at a Discount Tire store in Cary, North Carolina. The BRC receives influent urban runoff from an approximately 1.1 ac watershed. This traditionally designed BRC is approximately 2,800 square feet and accepts roof-top and parking lot runoff.

This study seeks to apply a cost-effective urban stormwater design enhancement and quantify and evaluate hydrologic and water quality performance post-retrofit. The BRC will be retrofitted to include an internal water storage (IWS) zone to foster denitrification; the main goals of the retrofit are to improve the removal of nitrate from effluent urban stormwater runoff as well as reduce total effluent volume.

The Discount Tire BRC is being monitored for hydrologic performance. Monitoring equipment has been installed at the BRC and consists of five U-20 HOBO Water Level Loggers attached to constructed weirs to serve as pressure transducers and monitor the site's hydrology. The site monitors influent from the parking lot and two rooftop drains and effluent from the underdrain of the BRC and from a weir attached to the outlet structure to collect overflow that bypasses treatment. Rainfall data will be taken from the nearby BRC research site at Advance Auto.

To quantify performance, data is being collected on the BRC pre- and post-retrofit. Water quality monitoring consists of sampling influent and effluent on a flow-paced basis following storm events producing rainfall greater than 0.20 inches. Hydrologic monitoring consists of recording influent and effluent volumes, discharge rates, and total rainfall and intensity.



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### Project Site Summary for CLEAN Center

**Site:** AAuto

**Address:** Advance Auto Parts, 205 Grand Heights Drive, Cary, NC 27513



**Figure:** Aerial photo of Advance Auto (left); main cell with outlet structure (center); inlet with sampling equipment (right)

A field test bioretention cell (BRC) is located at an Advance Auto Parts store in Cary, North Carolina. The BRC receives influent urban runoff from an approximately 0.9 ac watershed. This traditionally designed BRC is approximately 2,200 square feet and accepts mainly roof-top and parking lot runoff.

This study seeks apply a cost effective urban stormwater design enhancement and quantify and evaluate hydrologic and water quality performance post-retrofit. The BRC will be retrofit to include an internal water storage (IWS) zone to foster denitrification; the main goals of the retrofit are to improve the removal of nitrate from effluent urban stormwater runoff as well as reduce total effluent volume.

Monitoring equipment has been installed at the BRC and consists of ISCO 6712 Automated Samplers to collect flow paced composite samples for water quality, an ISCO 730 Bubbler Module attached to a v-notch weir and ISCO 750 Area-Velocity Meter to measure hydrology, and a manual rain gauge and recording tipping bucket to monitor precipitation.

To quantify performance, data is being collected on the BRC pre- and post-retrofit. Water quality monitoring consists of sampling influent and effluent on a flow-paced basis following storm events producing rainfall greater than 0.20 inches. Water quality samples are processed at the Center for Applied Aquatic Ecology in Raleigh, North Carolina for Total Kjehldahl Nitrogen, Nitrate plus Nitrite, Ammoniacal Nitrogen, Total Phosphorous, Orthophosphate, and Total Suspended Solids. Hydrologic monitoring consists of recording influent and effluent volumes, discharge rates, and total rainfall and intensity.