

WATERSHED ACTION TEAM FOR ECOLOGICAL RESTORATION



Above left: The UD WATER team surveys gulleys in Fairfield Run Watershed. Above right: UD WATER Interns 2012-2013 from left to right – Devika Banerjee, Megan Mauger, Megan Shaffer, Kate Aulenbach, Virginia Thornton.

Evolution of a Developed Piedmont Watershed

Virginia Thornton^{1,2}, Kate Aulenbach¹, Luc Claessens³, Gerald Kauffman⁴

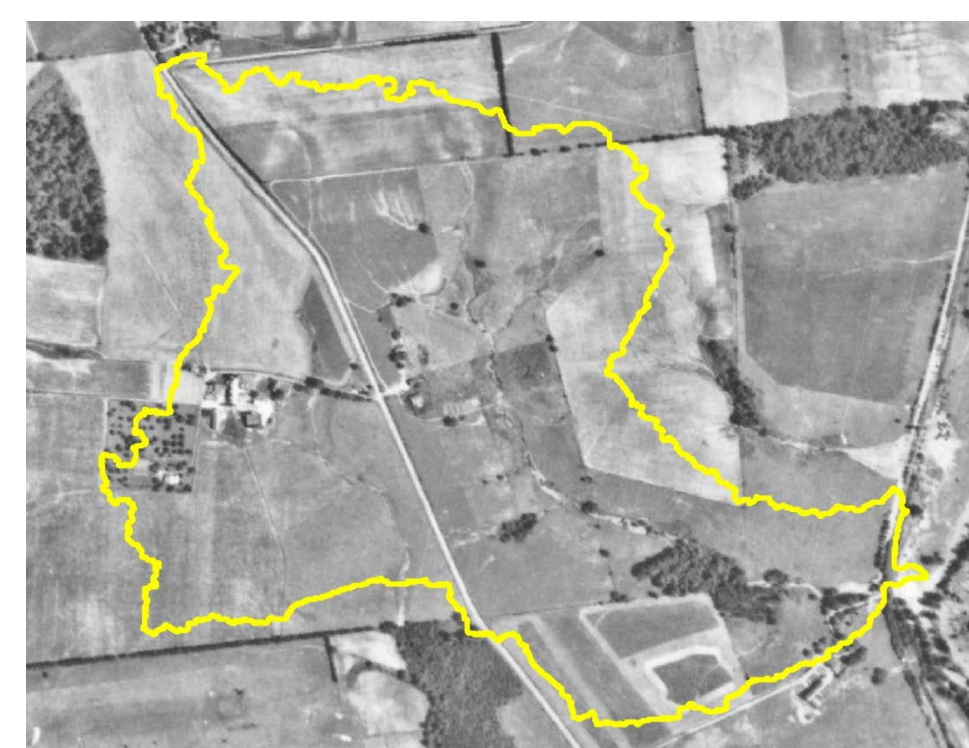
¹University of Delaware; Department of Environmental Engineering

²University of Delaware; Department of Energy and Environmental Policy

³University of Delaware; Department of Geography

⁴University of Delaware; Water Resources Agency

1937



In 1937, agriculture dominated the land use of Fairfield Run and contributed to a large nutrient pollutant load.

2007



Construction in the watershed has completed by 2007, leaving a mix of impervious land and forests.

The historical analysis of this watershed indicates that the progression of land use in this area developed significantly to the point of stability in the last 20 years.

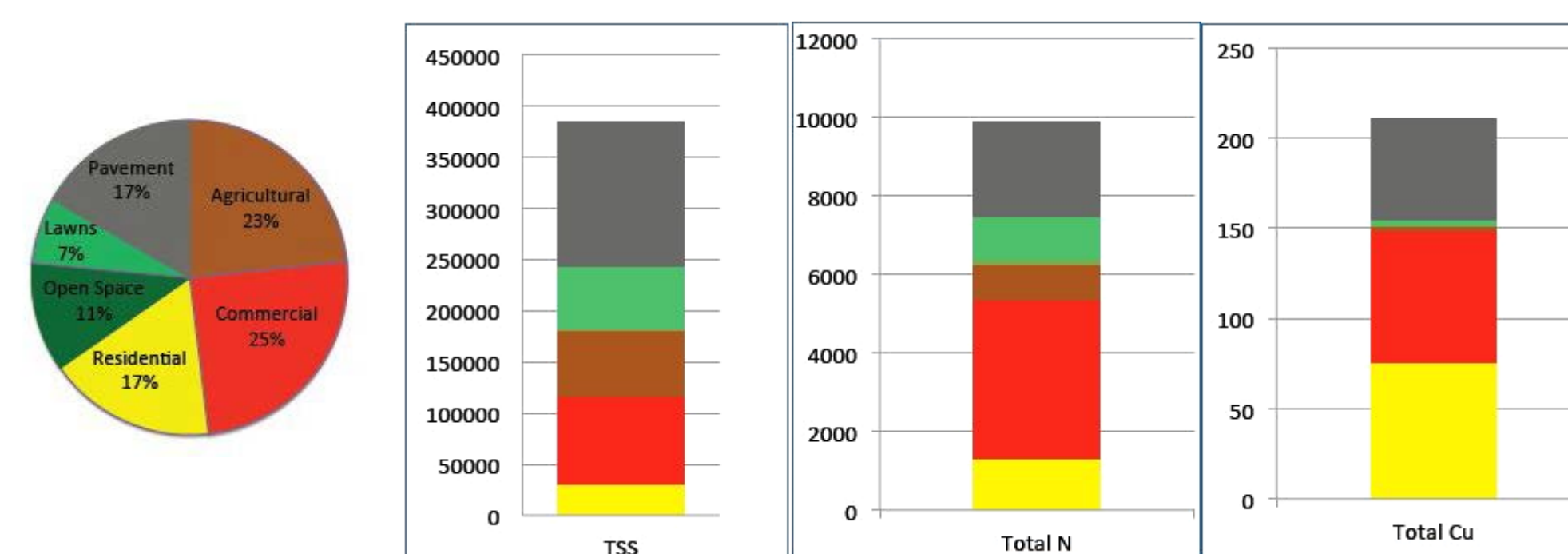
Watershed Plan for a Coastal Plain Watershed: Cool Run

Megan Mauger¹, Gerald Kauffman², Anastasia Chirnside³

¹University of Delaware; Department of Environmental Science

²University of Delaware; Water Resources Agency

³University of Delaware; Department of Bioresources Engineering



Land use and annual pollutant load (lb/watershed/yr) estimations for Cool Run Watershed.

A watershed management plan was created based on protocols by the EPA's Clean Water Act, Section 319.

Water Quality Monitoring at STAR Campus

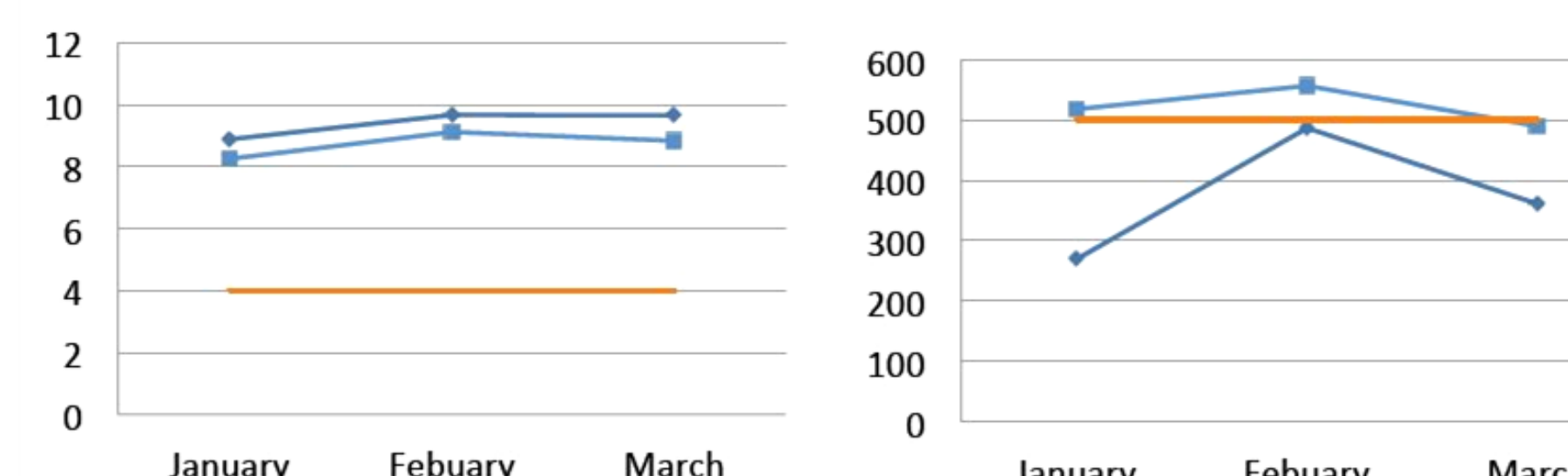


Fig. 3: Dissolved Oxygen for Inflow vs. Outflow (mg/L)

Fig. 4: Total Dissolved Solids (mg/L)

—Inflow —Outflow —Standard

Preliminary monitoring at UD's STAR campus will allow for water quality assessment during campus construction.

Hydrologic Response from a Developed Piedmont Watershed

Kate Aulenbach¹, Virginia Thornton^{1,2}, Luc Claessens³, Gerald Kauffman⁴

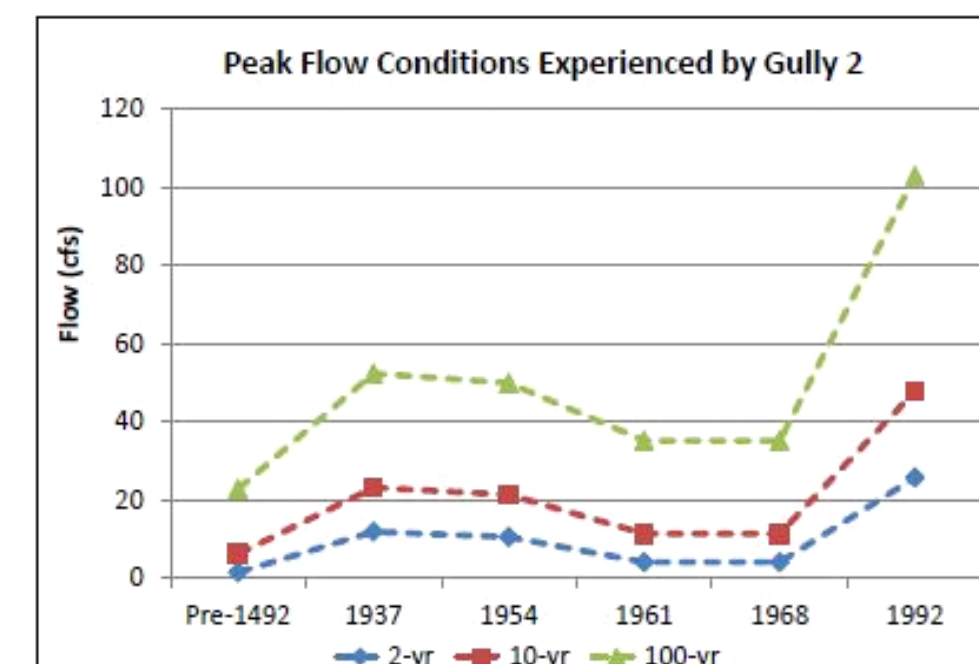
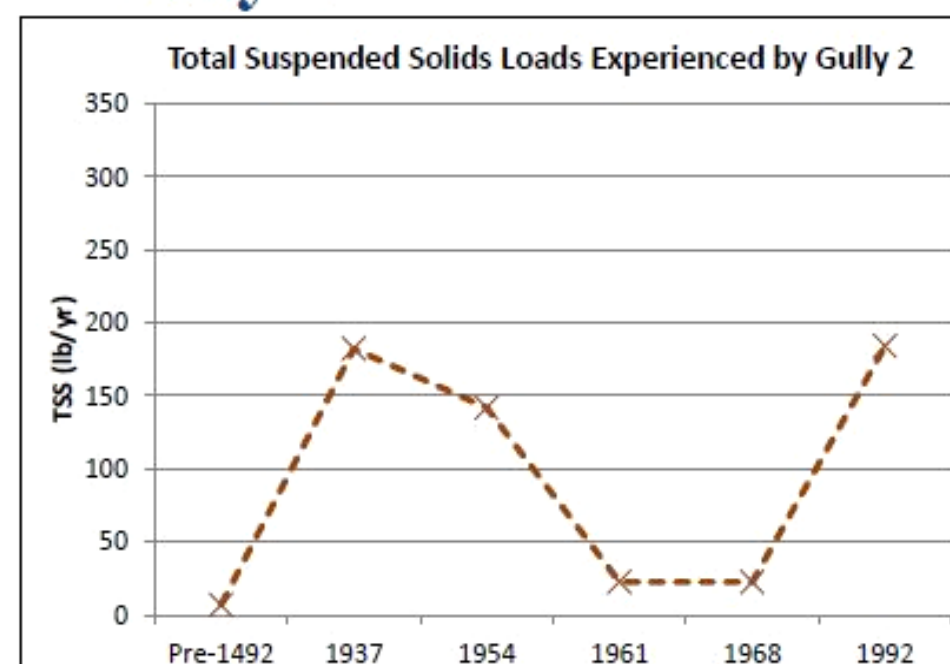
¹University of Delaware; Department of Environmental Engineering

²University of Delaware; Department of Energy and Environmental Policy

³University of Delaware; Department of Geography

⁴University of Delaware; Water Resources Agency

Gully 2



The analysis of the hydrologic responses of this watershed shows that changes in pollutant load and peak flows are attributable to changing land use and sub-watershed size.

Rise in both TSS load and peak flow in 1992 corresponds to increase in watershed boundary associated with Gully 2 due to the installation of a sewer system and large parking lot depicted on 1992 aerial photograph.

Preliminary Design of an Interpretive Trail of Stormwater Management in a Piedmont Watershed

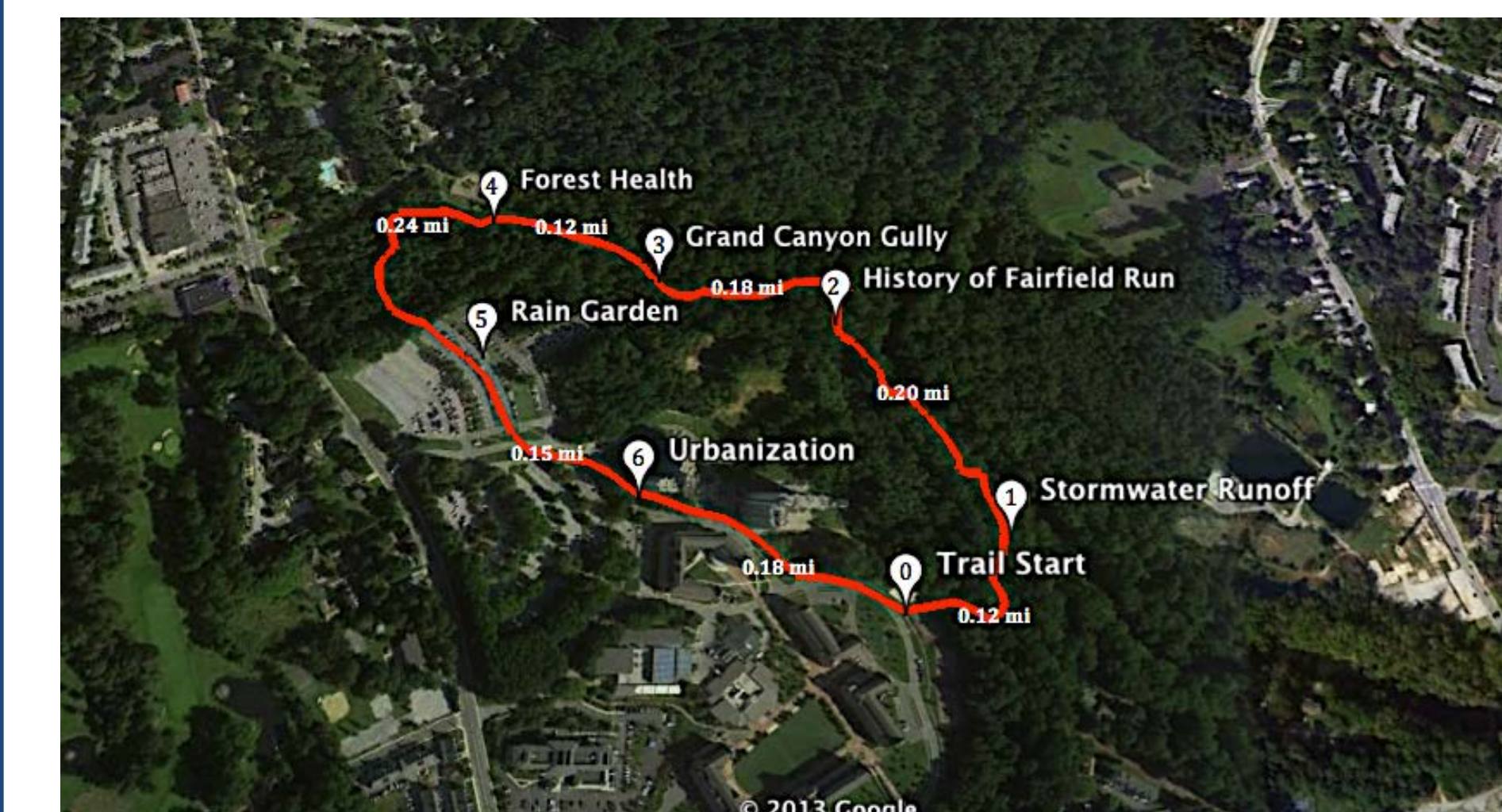
Devika P. Banerjee¹, Megan R. Shaffer², Luc Claessens³, Gerald J. Kauffman⁴

¹University of Delaware; Department of Biological Sciences

²University of Delaware; Department of Environmental Studies

³University of Delaware; Department of Geography

⁴University of Delaware; Water Resources Agency



An interpretive trail to highlight the impacts of stormwater runoff on campus and allow for greater education about stormwater management for trail users.

Assessment of Forest Quality Along an Urban-Rural Transition in a Piedmont Watershed

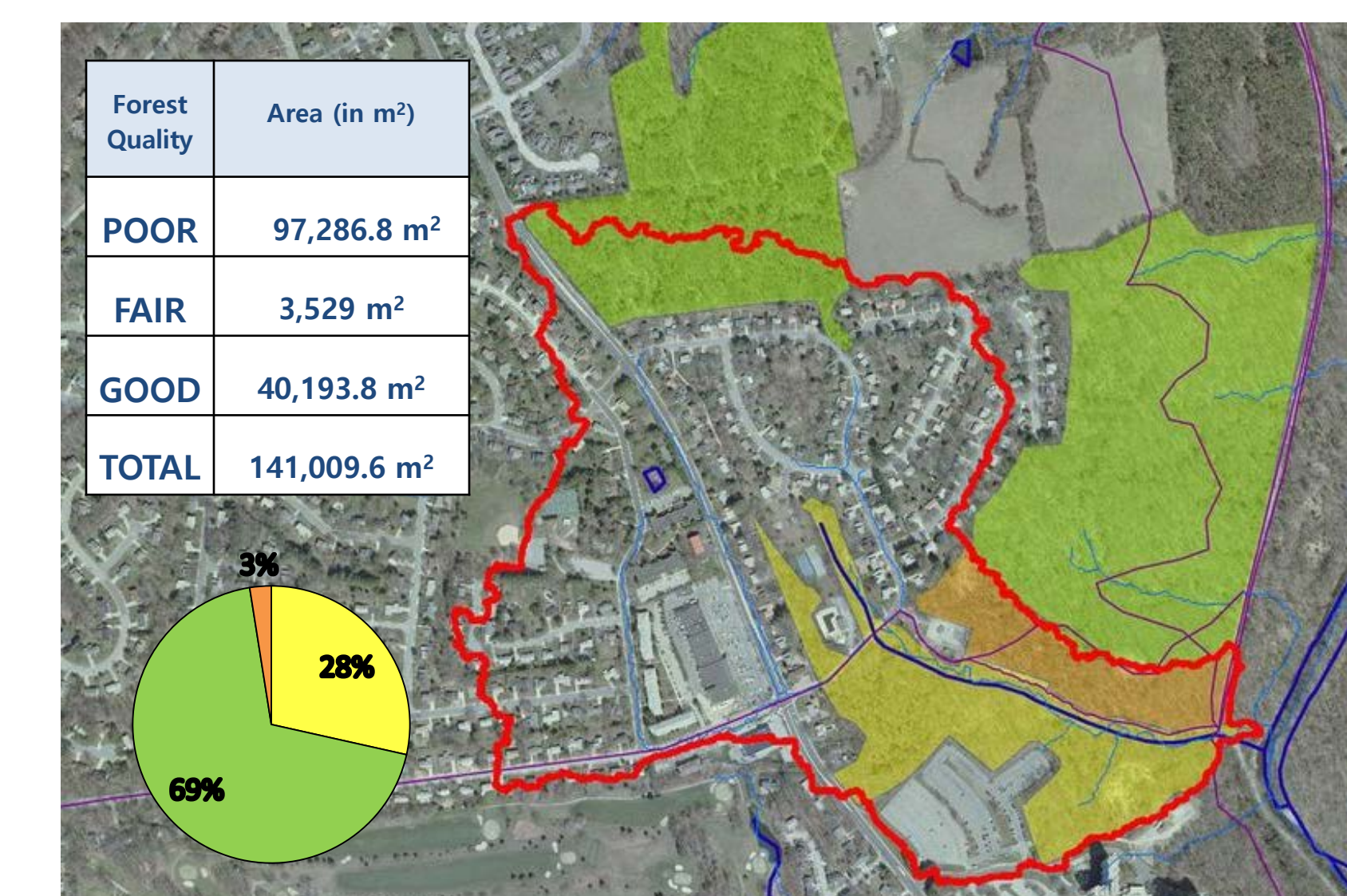
Megan R. Shaffer¹, Devika P. Banerjee², Luc Claessens³, Gerald J. Kauffman⁴

¹University of Delaware; Department of Biological Sciences

²University of Delaware; Department of Environmental Studies

³University of Delaware; Department of Geography

⁴University of Delaware; Water Resources Agency



A forest assessment revealed those forests fringing impervious surfaces and increased development were of poorer quality, calling for a need of forest restoration in those areas.

What is "UD WATER"?

The **UD WATER Project (Watershed Action Team for Ecological Restoration)** was formed in 2008 as a UD-wide initiative with the long-term goal of minimizing the environmental impacts of stormwater runoff from our campus. **UD WATER** brings together faculty, staff, and students from many departments and disciplines across campus to work on creative and innovative stormwater management techniques that will reduce the quantity and increase the quality of storm runoff from the campus, thus protecting downstream waters, such as the White Clay Creek Wild and Scenic River. **UD WATER** team members include faculty and staff from the Delaware Water Resources Center, the UD Water Resources Agency, the Delaware Geological Survey, the Departments of Bioresources Engineering, Civil and Environmental Engineering, Entomology and Wildlife Ecology, Food and Resource Economics, Biological Sciences and Plant & Soil Sciences and stormwater management experts from UD and the City of Newark. **UD WATER** has funded multiple undergraduate interns to work with UD faculty and staff to develop a watershed management plan for the UD campus. **For more information, please visit our website:**

<http://www.udel.edu/water/>