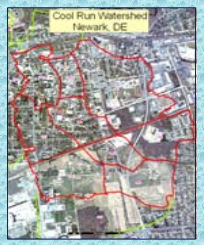
Sustainable UD water

WATERSHED ACTION TEAM FOR ECOLOGICAL RESTORATION

UD-WATER 2011 Interns(L to R): Rina Binder-Macleod, Dakota Laidman, Kimberly Teoli, Melissa Luxemburg, Melanie Allen

UD WATER Information



What is the Cool Run Watershed?
The Cool Run Tributary of the White Clay Creek Watershed lies within the Delaware River Basin. The Delaware River Basin covers 13,539 square miles and is fed by 216 tributaries draining parts of New York, Pennsylvania, New Jersey and Delaware The White Clay Creek (WCC) is a sub-watershed of the Christina River Basin, which is a sub-basin of the Delaware River Basin. In October 2000, congress approved the addition of a section of the lower Delaware River and the White Clay Creek to the National Wild and Scenic Rivers System. The White Clay Creek Wild and Scenic Rivers System Act designated the entire watershed, approximately 190 miles of segments and tributaries, as components of the national system (Delaware River Basin Commission, 2009). The creek flows from southeastern Pennsylvania to northwestern Delaware, through the UD campus and eventually joins the Christina River, a tributary to the Delaware River.

Goals of UD WATER

- To continue the work of the previous UD WATER interns
- To complete steps d-e (Funding and Education) for the EPA section 319
- To develop a micro-level raster analysis of runoff vulnerability from heterogeneous land uses in the Cool Run Watershed
- To compile all relevant data and correct local data anomalies in the Cool Run watershed to enable future watershed modeling with GIS
- To monitor macroinveterbrates to assess the aquatic ecosystem health

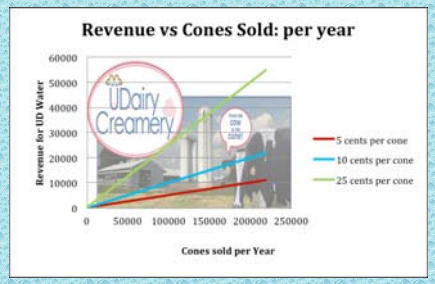
Rina Binder-Macleod
Dakota Laidman
Kimberly Teoli
Advisor: Jerry Kauffman, PE

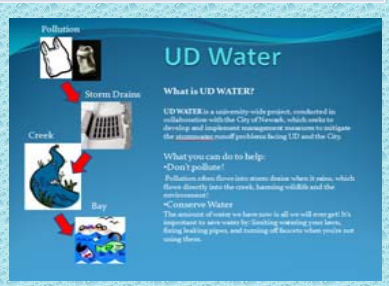
Funding and Education Recommendations

What are these recommendations for?
The funding recommendations are necessary to run the watershed project. The education recommendations are necessary to inform the public about our project.

Funding Source
UDairy Creamery
Senior Class Gift
Parking Fees
Plastic Water Bottles and Plastic Bags Fee
Grants

Educational Recommendation
Increased Signage
Social Media- UD WATER Facebook page
Storm Drain Stenciling
Article in the Review
Advertise on the Student Television Network, STN49





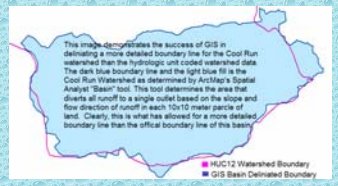
Geographic Information System Analysis of the Cool Run Watershed

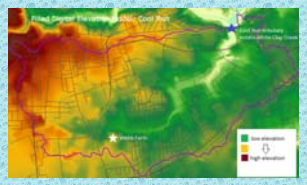
Melissa Luxemberg
Advisor: Dr. John Mackenzie

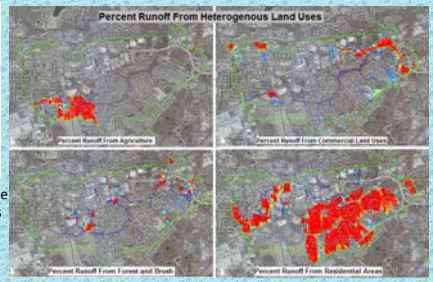
What is a Geographic Information System (GIS)?
A system that digitally manipulates spatial areas. It captures, stores, analyzes, manages and presents data with reference to a specific geologic location.

What is hydrologic modeling with GIS?
Hydrologic models produced with GIS can provide a spatial element that other models cannot with respect to a watershed. They can analyze specific terrain-based variables such as slope, aspect, and catchment area. They often help in determining best management practices for runoff control in a watershed, especially when combined with more detail (terrain roughness, soil percolation, vegetation types, soil types, impervious surfaces, evapotranspiration rates etc).

Data Compilation and Analysis Results





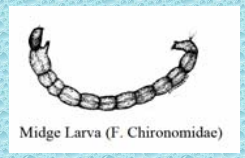


The images displayed above demonstrate the differing types of GIS tools and data used to analyze the Cool Run Watershed. (For more a more detailed explanation of the images and the GIS analyst tools used, please see the accompanying poster entitled "The UD WATER Project: Hydrologic Forecast Modeling of Heterogeneous Land Uses in the Cool Run Watershed.")

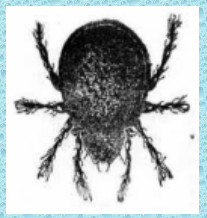
Melanie Allen
Advisor: Dr. Hough-Goldstein

Monitoring of Aquatic Macroinveterbates

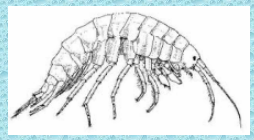
Why is monitoring of aquatic macroinveterbates useful?
Aquatic insects are abundant in numbers, have short life cycles, and are directly affected by changes in water chemistry and flow. Due to these factors, along with the relative ease of sampling, aquatic insects are excellent indicators of the aquatic ecosystem health. A mutation in a species composition is relatively easy to detect and can then be used to assess stream decline or recovery.



Midge Larva (F. Chironomidae)



Acari



Amphipoda

What is "UD WATER"?

The UD WATER Project (Watershed Action Team for Ecological Restoration) was formed in early 2008 as a collaborative initiative with the long-term goal of merging and facilitating university-wide efforts to minimize the environmental impacts of storm water runoff from our campus. The UD WATER initiative is synergistic with the University's Path to Prominence strategic goal to become a Green Campus.

The UD WATER team brings together a consortium of faculty, staff, and students from various departments and disciplines across campus to work collaboratively to implement creative and innovative storm water management techniques in the most holistic and efficient manner achievable. The ultimate goal for this team is to reduce the quantity and increase the quality of storm runoff from campus properties, which will ultimately benefit our local waterways and is consistent with the mission of EPA regulations requiring the University and City of Newark to have a National Pollutant Discharge Elimination System (NPDES) permit. Membership on this team include faculty and staff from Occupational Health and Safety, Facilities Planning and Construction, Facilities Grounds Maintenance Services, Delaware Water Resources Center and the Departments of Bioresources Engineering and Plant & Soil Sciences within the College of Agriculture and Natural Resources, the Delaware Geological Survey, the UD Water Resources Agency within the Institute for Public Administration in the College of Education and Public Policy, and stormwater specialists from the City of Newark. UD WATER has also funded 5 undergraduate interns to work with UD faculty and staff and develop a watershed management plan for the UD campus.

In the future, the UD WATER team hopes to add other faculty and students at UD with an interest in water resource management to participate in our efforts to use the UD campus as a storm water research laboratory for multiple disciplines. For more details, or to join the UD WATER project, contact one of the project co-directors, Dr. Tom Sims (Delaware Water Resources Center; jtsims@udel.edu) , Jerry Kauffman (UD Water Resources Agency, jerryk@udel.edu) or Leslie York-Hubbard (Occupational Health and Safety; lesliey@udel.edu).