# Wetland Restoration and Mitigation Banking in the Cool Run Watershed at the UD Farm

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Introduction

Wetlands are a vital aspect of a land area's water resources and bring a variety of ecosystem services to its surrounding areas including improving water quality and flood control, providing recreational benefits, and serving as a habitat for wildlife. The South Campus total acreage of wetlands has not been mapped in many years, which can inhibit UD from properly managing their wetland mitigation bank in accordance with Section 404 of the Federal Clean Water Act criteria.
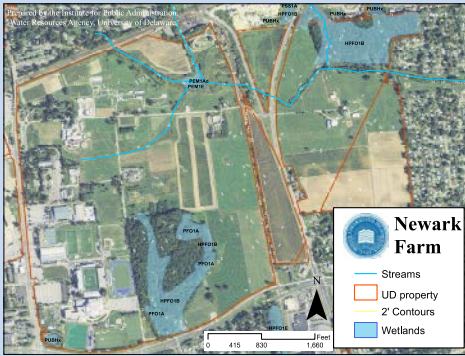
Figure 1. Existing wetlands delineation from DNREC (NWI 2009)

Research Objective

To map and identify the type and quality of the existing wetland system and identify likely wetland mitigation areas in the Cool Run watershed, a tributary of the White Clay Creek National Wild and Scenic River.

Methods

Task 1- Prepare a base map of the UD Farm with streams, landscape, soils , and topography.

Task 2- Delineate wetland systems by the Federal Interagency parameters of hydrology, hydrophytic vegetation, and hydric soils.

Task 3- Field identify locations and type of wetland systems using GPS and GIS technology.

Task 4- Use ArcMap GIS to map the locations of the wetlands.

Task 5- Estimate the ecosystem goods and services value of the wetland system based on value transfer from the literature.

Figure 2. Updated GIS map of wetland bank on the UD Farm

Figure 3. Map of USDA hydrologic soil groups
(Hydric soils are hydrologic soil group D)
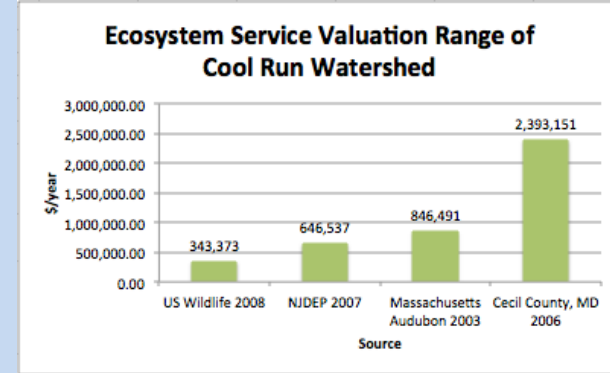
Figure 4. Ecosystem services value of wetlands at UD Farm (54.78 ac.) (Kauffman et al. 2012. Economic Value of Barnegat Bay Watershed)

Results

Total area of delineated wetlands is 54.78 acres. The present value (PV) of the UD wetland bank ranges from $343,374 to $2,393,152 per year. Each study used a different technique and valuation method in determining the economic value of each acre.

Conclusion

Our updated analysis will allow UD to more accurately observe the existing wetland system, as well as identify other likely wetland mitigation areas that can be used as a wetland bank in the 2:1 or 3:1 mitigation aerial basis. The economic value will provide us with broad insight as to how valuable wetlands are to us.

Acknowledgements