

Southeastern Section - 58th Annual Meeting (12-13 March 2009)

Paper No. 16-28

Presentation Time: 8:30 AM-12:30 PM

THE IMPACTS OF GOLF COURSES ON STREAM WATER pH AND DISSOLVED OXYGEN IN THE UPPER PIEDMONT, GREENVILLE, SC

SAUNDERS, Megan, Environmental Studies Department, Colby College, 4881 Mayflower Hill Drive, Waterville, ME 04901, mcsaunde@colby.edu, DRIPPS, Weston R., Earth and Environmental Sciences, Furman University, 3300 Poinsett Highway, Greenville, SC 29613, ASHMAN, Kevin, Department of Geology and Geography, Georgia Southern University, Box 8149, Statesboro, GA 30460, and DRAKE, Summer, Department of Geosciences, Depauw University, 602 South College Avenue, Greencastle, IN 46135

Golf courses are an increasingly prominent feature across the southern U.S. landscape. Most courses contain streams that pass through the course grounds. The impact that these courses have on a stream's aquatic ecosystem is an area of active research. Previous work has focused on the impacts of course runoff and potential non-point source pollution on stream chemistry, but significantly less work has been done on the impacts to physical characteristics like stream water pH, dissolved oxygen, and temperature.

In this study a comparative analysis of stream water pH, dissolved oxygen, and temperature was conducted at four different golf courses in Greenville, South Carolina. Courses were selected that had continuous, tributary free and lake free reaches that passed through the golf course grounds. At each course, one YSI sonde was placed just upstream of the golf course and a second was placed in the same stream just downstream of the golf course for somewhere between three to six days, depending on the weather and flow conditions. The sondes were secured to cinder blocks on the stream bottom and synchronized to make simultaneous readings every 5 minutes for pH, dissolved oxygen, and temperature for the period of deployment.

There were distinct differences in pH, dissolved oxygen, and temperature between the up and downstream sites at each course, although relative differences among sites were not consistent, with some sites having higher pH and/or dissolved oxygen downstream and other sites exhibiting the opposite. All sites downstream of the courses exhibited markedly larger diurnal ranges for all three parameters compared to their upstream counterparts. The exact reasons for the observed differences are an area for further study, but are presumed to be related to the lack of riparian cover along the golf course stream reach and the consequent increase in sunlight exposure and associated biological activity in stream. Regardless of the causes, the differences are significant and suggest that most golf courses are likely having a measurable impact on the stream physical parameters.

[Southeastern Section - 58th Annual Meeting \(12-13 March 2009\)](#)
[General Information for this Meeting](#)

Session No. 16--Booth# 28

[Undergraduate Research \(Posters\)](#)

Hilton St. Petersburg Bayfront Hotel: Grand Bay Ballroom
8:30 AM-12:30 PM, Friday, 13 March 2009

Geological Society of America *Abstracts with Programs*, Vol. 41, No. 1, p. 43

© Copyright 2009 The Geological Society of America (GSA), all rights reserved. Permission is hereby granted to the author(s) of this abstract to reproduce and distribute it freely, for noncommercial purposes. Permission is hereby granted to any individual scientist to download a single copy of this electronic file and reproduce up to 20 paper copies for noncommercial purposes advancing science and education, including classroom use, providing all reproductions include the complete content shown here, including the author information. All other forms of reproduction and/or transmittal are prohibited without written permission from GSA Copyright Permissions.
