

# Assessing Riparian Areas in South Central Connecticut

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## Introduction

Applying fixed buffer widths along riparian areas without first understanding the processes underlying riparian zone functions is generally viewed as too ambiguous of an approach for effective watershed management.

Despite several years of riparian zone study, knowledge of functions and processes in the maintenance and improvement of water quality is still somewhat limited.

This study is being conducted along the West River in Guilford in a 100-m wide riparian zone.

The upland-riparian zone boundary has a relatively steep slope of 10-15% and is slightly convex.

The riparian zone is a mixed hardwood area with a wetland at the toe slope and subtle ridge and swale topography containing an oxbow wetland.

## Objective

To investigate hydrology, riparian sediment lithology, topography, and iron cycling in a riverine wetland located in the glaciated landscape of southern Connecticut.

## Methods

Transect of wells, piezometer nests, and redox probes installed extending from upland slope-riparian zone margin to West River. Each station consists of three well-piezometer-redox clusters (*Exception: upland site had no redox probes*).

Piezometer nests - one shallow, one deep - are constructed of ID 5-cm PVC pipe with 10 cm long slotted ends installed at depths between 35-45 cm and 50-60 cm.

Groundwater wells (ID 5 cm PVC pipe) installed with slotted screen throughout length to a depth of 50 cm.

Bentonite clay seals placed just above slotted pipe and at surface to prevent surface flow entering borehole.

Redox probes placed at depths of 30 cm and 60 cm; total nine each per station.

Redox potentials (corrected values) determined with Pt electrodes using calomel reference electrode.

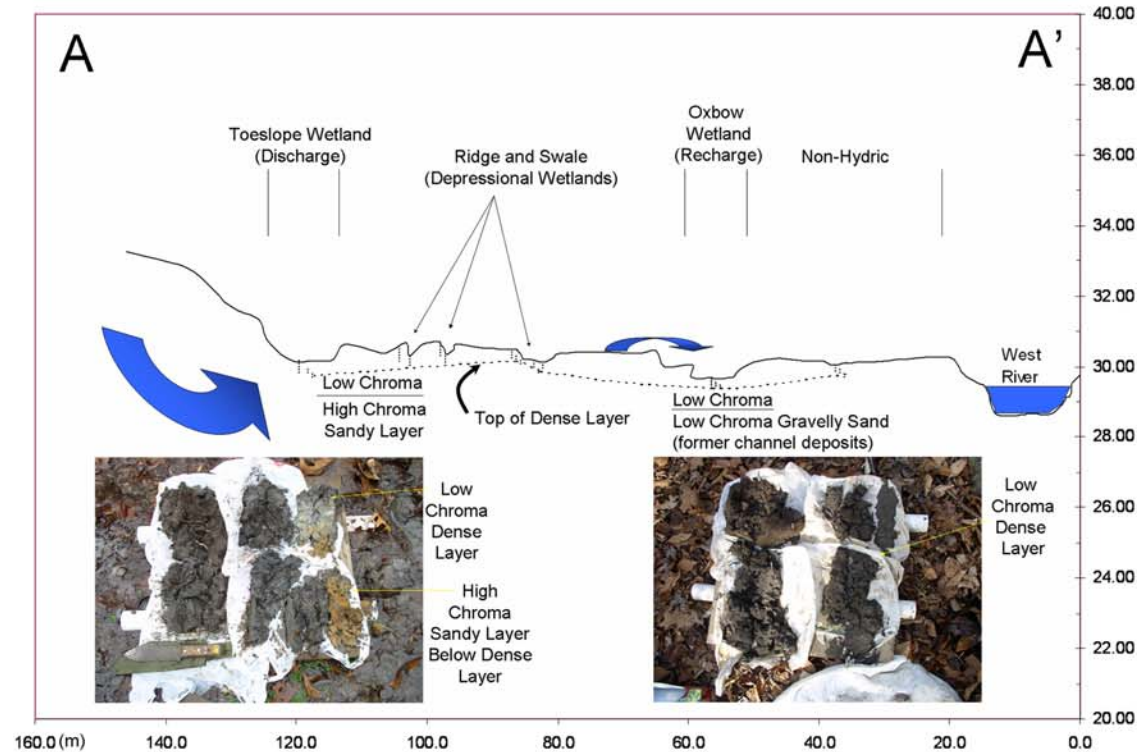
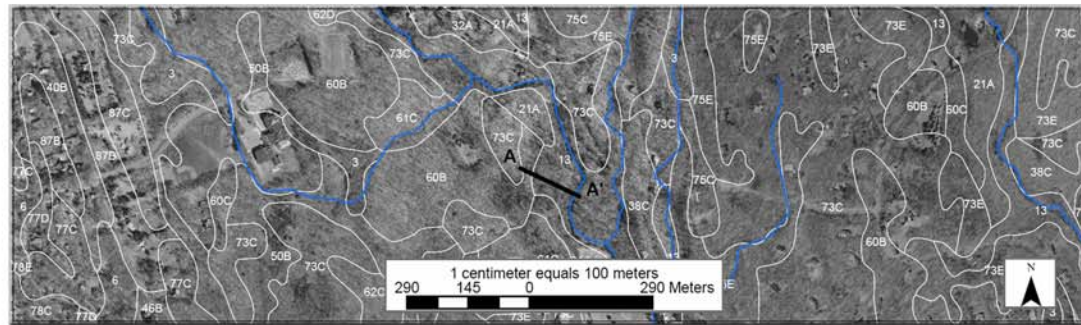
Riparian zone lithology determined from visual inspection of combination soil pits and hand augering. Soil samples later collected for next phase to include soil texture, % organic matter, and total and extractable iron.

Combination of field observation and topographic map used to determine length of upslope contributing to riparian zone.

Groundwater level, hydraulic heads, and redox probes measured at least once a month beginning in June 2007.

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## Results, Preliminary Conclusions, and Future Plans

A dense layer (till?) underlies the riparian zone and is a controlling factor in the geohydrology of the area.

Toeslope wetland appears to be a discharge wetland, based on geohydrology and soil lithology.

Soils at the toeslope wetland display low chroma colors within the dense layer underlain by high chroma colors. Presumably this is caused by oxygenated subsurface.

Oxbow wetland appears to be a recharge wetland, based on geohydrology and soil lithology.

Ridge and swale area appears to be transitional between the areas and influenced by seasonal water level changes.

To confirm seasonal changes, total iron concentrations will be measured in Spring 2008.

