



NEON Site-Level Plot Summary

Lenoir Landing (LENO)

Document Information

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Site Background

The Lenoir Landing site is located southeast of Butler, AL, on the west side of the Tombigbee River. The site is in Major Land Resource Area (MLRA) 133A–Southern Coastal Plains. The site consists of 4,029 acres and is on river terraces, flood plain steps, depressions, rises and talfs (broad flat areas dominated by closed depressions and a non-integrated or poorly integrated drainage systems) of the flood plain to the Tombigbee River in Choctaw Co., AL.

Site Information

Elevation ranges from approximately 60 to 80 feet above sea level.

The parent materials at the LENO site are some recent but mostly Holocene aged alluvial deposits. The upstream source of the alluvium is mainly Eocene aged materials from the Wilcox and Claiborne groups.

Land use on site is dominated by bottomland hardwood forest. A few areas are open wildlife plantings and there are some natural wetlands.

Plant communities are mainly oak and hickory trees, with some cypress in depressions.

Major soil series on the site include Urbo, Mooreville and Una, with minor extents of Riverview and Mantachie on higher positions as well as variants of all named soils (Table 1).

These soils are on the following landforms: river terraces, flood plain steps, talfs, rises, and depressions.

Analysis of Plots for Sampling

Most of the plots were located in the west Tombigbee flood plain and south of Okatuppa Creek. The confluence of these two water bodies creates a broad flood plain with classic natural levee, meander belt and backwater areas. The 18 plots sampled were chosen because of the lack of inundation, and various proximities from the water features. These plots are a very good sampling of the exposed soils in the entire system. Sampled map units represent approximately 72.1 percent of the NEON site area (Table 2). Some vegetation and micro-landscape diversity is captured in this sampling. All plots were sampled by pits that were 1m x 1m x 1m in size.

The selected sample plots are typical for the map unit delineation (Table 1). The plots are a wide cross-section of the series in the map units and similar soils (inclusions, Table 2). For the most part, the series indicated fall within or near the Range in Characteristics (RIC) of the individual major component, except for a few variants, noted below. The plot selection is well placed to pick up the subtle elevation changes in this relatively flat area. Most elevations of the flood plain steps, talfs, and even a natural levee area, are represented in the sampling.

Map Unit Symbol	Acres	%Area	# NEON Plots per Map Unit	Calculated Minimum No. Plots
ArF	52.4	1.30	0	0.39
BbA	11.5	0.29	0	0.09
BeB	175.1	4.35	1	1.30
BrE2	6.7	0.17	0	0.05
IzA	11.7	0.29	0	0.09
RvA	102.5	2.54	1	0.76
SaB	1	0.02	0	0.01
SmB	1	0.02	0	0.01
SmD	5	0.12	0	0.04
UnA	518.7	12.87	1	3.86
UrB	2111.4	52.40	27	15.72
Water	1032.1	25.62	0	7.68
Totals	4029.1	100.00	30	

Table 1. Soil map units present at the NEON LENO site based on existing data, with areal coverages and the number of NEON established plots within each map unit. Calculated minimum number of plots is based on analysis of the areal coverage of a particular map unit across the NEON site.

Map Unit Symbol	Map Unit Name	# Plots Selected	% Total Area
UrB	Urbo-Mooreville-Una complex, gently undulating, frequently flooded	15	52.4
UnA	Una clay, ponded	1	12.9
RvA	Riverview loam, 0 to 2 percent slopes, occasionally flooded	1	2.5
BeB	Bigbee loamy sand, 0 to 5 percent slopes, rarely flooded	1	4.3
	Total	18	72.1

Table 2. Soil map units selected for sampling at the NEON Lenoir Landing site and total areal coverage of the map units represented by the selected plots.

Plot Findings

The 18 pedons sampled represent 4 soil map units. The major components are Bigbee, Riverview, Una, and Urbo with inclusions of Arundel, Lenoir, Mantachie, Mooreville, and Riverview. It is important to note subtle elevation changes intermingled at each site. Most of these series vary only by one or two physical characteristics. Not all series described are represented in the original soil survey, but if mapped today would be included in the map units.

Landforms—NEON Sampled plots were 61% flood plain steps, and 39% stream terraces. Plots LENO_002, 003, 007, 011, 012, 014, 020, 021, 022, 027, and 029 are on flood plain steps. Plots LENO_006, 009, 015, 016, 017, 019, and 023 are on stream terraces.

Summary of Soils

All sampled soils were under bottomland hardwood forest cover in areas of frequent inundation. The soils generally had very thin organic horizons ranging from 1 to 3 cm in thickness. These were not described or sampled.

The most sampled soil plots (15 plots) were in the UrB - Urbo-Mooreville-Una complex, gently undulating, frequently flooded map unit (Table 3). This map unit comprises 52 percent of land area at Lenoir Landing and occurs on both river terrace and flood plain positions.

NEON Plot ID	Soil Name as Sampled	Taxonomic Classification	Landscape Position
LENO_002	Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts	Flood plain
LENO_003	Mooreville	Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrudepts	Flood plain
LENO_006	Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts	Terrace
LENO_009	Mooreville	Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrudepts	Flood plain
LENO_011	Mooreville	Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrudepts	Flood plain
LENO_012	Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts	Flood plain
LENO_014	Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts	Flood plain
LENO_015	Mooreville	Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrudepts	Terrace
LENO_016	Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts	Terrace
LENO_017	Mooreville	Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrudepts	Terrace
LENO_019	Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts	Terrace
LENO_020	Lenoir	Fine, mixed, semiactive, thermic Aeric Paleaquults	Flood plain
LENO_021	Mooreville	Fine-loamy, siliceous, active, thermic Fluvaquentic Dystrudepts	Flood plain
LENO_022	Mantachie	Fine-loamy, siliceous, active, acid, thermic Fluventic Endoaquepts	Flood plain
LENO_027	Urbo	Fine, mixed, active, acid, thermic Vertic Epiaquepts	Flood plain

Table 3. List of NEON plots at LENO that are located in the Urbo soil map unit.

Urbo and Mooreville soils differ in clay content and depth to (or presence of) redoxomorphic features (Vertic Epiaquepts vs. Fluvaquentic Dystrudepts, respectively). Urbo soils are deep, somewhat poorly drained, formed in clayey alluvium on flood plains, and show evidence of vertic properties. Mooreville soils are very deep, moderately well drained soils that formed in loamy alluvium on flood plains. The Mooreville soils observed at Lenoir Landing have a higher

than typical clay content, and upon the completion of laboratory analysis may be a “Mooreville-like” soil with a fine (>35% clay) particle size control section. Lenoir soils developed in clayey sediment of Coastal Plain uplands, and differ from Urbo soils in that they have an argillic horizon (presence of illuviated clay). Mantachie soils consist of very deep, somewhat poorly drained, moderately permeable soils on flood plains of the Southern Coastal Plain. They formed in loamy alluvium. Mantachie soils are fine-loamy, or have <35% clay in their particle size control section, and have no evidence of vertic soil properties.

The second most dominantly mapped soil is UnA – Una clay, ponded. This map unit occupies 13 percent of the land area at Lenoir Landing. One plot, LENO_007, was sampled in this map unit. This plot correlated to Una when sampled. Una soils are poorly drained soils occurring on flood plains of streams in the Southern Coastal Plain. This soil has a very slow permeability rating and a seasonal high-water table near the surface during wet periods. Una soils are formed in acid clayey alluvium. Una soils differ from Urbo soils in that they are poorly drained rather than somewhat poorly drained. Urbo soils are slightly higher positions on low swells or near incised channels. Una soils have a fine particle size control section, >35% clay.

The BeB – Bigbee loamy sand, 0 to 5 percent slopes, rarely flooded occurs on 4 percent of the Lenoir Landing site. Plot LENO_023 was sampled in this map unit and correlated to Riverview when sampled. Riverview is a minor component of this map unit. Bigbee is a very deep, excessively drained soil whereas Riverview is a very deep, well-drained soil. Bigbee soils also differ from Riverview in that they formed in sandy alluvium on natural levees and higher positions on flood plains rather than loamy alluvium in lower positions on floodplains. Bigbee soils are sandy, while Riverview soils are loamy. Riverview soils are more developed, as evident by their increased structural grade and kind.

The RvA – Riverview loam, 0 to 2 percent slopes, occasionally flooded map unit encompasses 3 percent of the land area at the Lenoir Landing site. One plot was sampled in this mapping unit, LENO_029. When sampled, LENO_029 correlated to Riverview. Riverview is a very deep, well drained, moderately permeable soil that formed in loamy alluvium on flood plains. Riverview soils have a solum thickness of 24 to 60 inches and a depth to bedrock of greater than 60 inches. Reaction ranges from very strongly acid to slightly acid (4.5 to 6.5) in the surface horizon, and strongly to moderately acid (5.1 to 6.0) in the subsurface horizons.