



Soil and Plant Science Division

Technical Soil Services

South Central Soil Survey Region



Deep East Texas Pond Investigation in Major Land Resource Area (MLRA) 133B—Western Coastal Plain

Nacogdoches, Texas, MLRA Soil Survey Office (SSO)

Purpose

On May 12, 2026, Soil Scientist Sara Russell from the Nacogdoches MLRA SSO assisted a landowner in Nacogdoches County in an area of Texas known as Deep East Texas (fig. 1). The landowners requested Russell's assistance determining site suitability for pond construction. Landowners routinely contact NRCS personnel for advice on water retention structures. Oftentimes an onsite determination is necessary to assess a specific location's suitability for the construction of a pond or to discuss the need for an alternative solution for providing water to the area. During a site investigation, NRCS field staff evaluate multiple soil physical properties, including texture, clay percentage, presence of fragments, and bedrock depth.

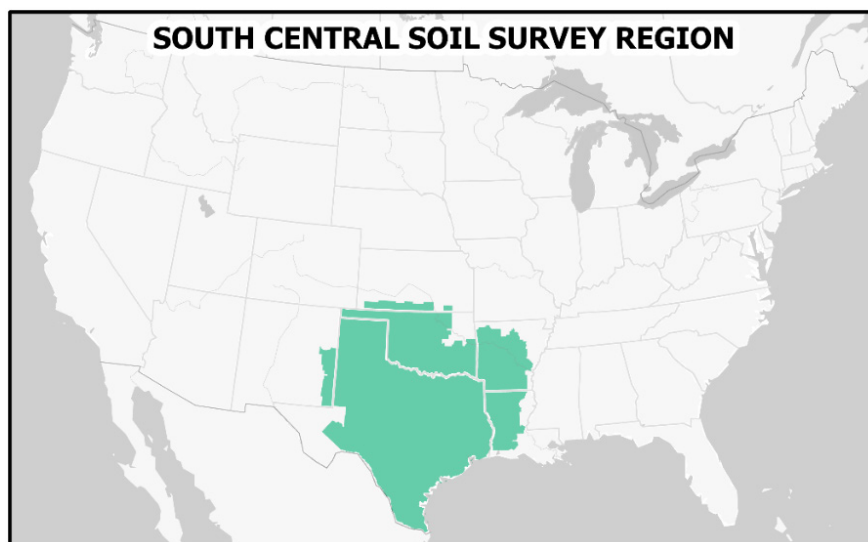


Figure 1.—Nacogdoches County is located within the South Central Soil Survey Region.

Background

During this investigation, Russell worked with the landowner to evaluate four potential pond sites on the property (fig. 2). She assessed each location using soil augering to determine soil texture, depth, and suitability for water retention. Three of the four sites contained deep sandy soils with large sandstone fragments, resulting in insufficient clay content and seepage concerns. Because clay is necessary to create an effective pond seal, these sites were ruled out based on their high permeability and poor water-holding capacity.



Figure 2.—One of the sites evaluated for pond location.

The fourth site, however, contained a significantly higher percentage of clay within the soil horizons. This texture is much more conducive to retaining water, making the location suitable for pond construction. Based on these findings, this site was the most viable option for establishing a functional and sustainable pond (fig. 3).



Figure 3.—Pasture view depicting landscape for the site selected for the pond.

Key Outcomes

NRCS employees strive to work with landowners to meet their needs, adapting strategies to work with whatever size and scope the operation requires. Interactions like this pond site determination highlight how NRCS soil scientists work with landowners to provide high quality, science-based information they can use when making land-management decisions.