




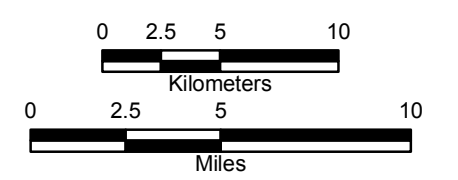


LEGEND

-  Topographic Profile Locations
-  Major Drainage (NCCGIA, 2002)
-  Postulated East Coast Fault System (ECFS) (Marple and Talwani, 2000)
-  Zone of River Anomalies (ZRA) (Marple and Talwani, 1993)
-  Axis of Cape Fear Arch (Marple and Talwani, 2000)

Base Map: Owens (1989) and Shaded Relief Map from LIDAR (NC DOT, 2005)



Progress Energy Carolinas
**Shearon Harris Nuclear Power Plant
 Units 2 and 3**
Part 2, Final Safety Analysis Report
 New Hill, North Carolina

Map Showing Topographic Profiles
 (Sets A and B) across the ECFS-C and
 Geology near the Cape Fear River
FIGURE 2.5.1-256 (SHEET 1 of 2) Rev. 1

DESCRIPTION OF GEOLOGIC UNITS

- Qh** Holocene Deposits - Clay beds in the Holocene sections are typically dark gray to dark green, pearly, and micaceous. Illite-smectite and, to a lesser degree, kaolinite are the major clay minerals. The sands are variable in composition, largely because of the mixing of reworked Coastal Plain sediments and much less weathered minerals from the crystalline rocks of the Piedmont.
- Qwa** Wando Formation - Sandy deposits that form a single barrier and a very large fluvial system. Barrier facies is restricted to a thin zone along the coast. Sands are high concentration of quartz and feldspar with immature heavy minerals.
- Qs** Socastee Formation - Has both marine and nonmarine facies. The marine facies is characterized by ridge-and-swale topography. The ridges are barriers and are closely spaced. The base of the formation consists of reworked shells, fine gravel, coarse sand, and woody pieces. The rest of the formation consists of interbedded sands and clays.
- Qph** Penholoway Formation - Backbarrier deposits are interbedded clay, clayey sand, and sand. Barrier sands consist of thinly bedded sand and silty clay. Barrier sands are mainly quartz and about 10 percent feldspar.
- Qw** Waccamaw Formation - A barrier and backbarrier sequence in the coastal region. A fluvial sequence is widespread in the valleys of the Cape Fear and Lumber Rivers. The fluvial facies are mostly sand and some gravel exposed in terraces with some surfaces containing large surface depressions, Carolina bays.
- Tb** Bear Bluff Formation - The marine (shelf) facies that typically consists of a basal shelly horizon, locally occurring in deep trenches. The barrier facies is very thin, laminated beds, burrowed tidal-flat deposits that overlie cross-bedded sands. The fluvial facies has abundant Carolina bays, with a thick clay-silt cap overlying a gravel unit.

- Td** Duplin Formation - Near the Orangeburg Scarp, basal beds of gravelly sand are typically 3 to 4.5 m thick. These gravelly beds are locally capped by interbedded, thin, dark gray clay and silt and light yellow sand.
- Kb** Bladen Formation - Consists of the intercalated sand-clay sequences that occur between the Donoho Creek Landing on the south and Dawsons Landing on the north. In the Cape Fear Valley, the basal beds consist of thin intercalated sand and clay beds.
- Kth** Tar Heel Formation - Characterized by rapid facies changes in the Cape Fear River valley. These facies include thin to thick bedded black clays and thin to thick, light-colored sand beds. The sands are massive to cross-bedded and mostly very micaceous.

Source: Owens (1989)

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<p>Map Showing Topographic Profiles (Sets A and B) across the ECFS-C and Geology near the Cape Fear River</p> <p>FIGURE 2.5.1-256 (SHEET 2 OF 2) Rev. 1</p>