planktonic foraminifera). The environment of the continental shelf water-mass was unique for the Georgia-Florida region during Miocene and early Pliocene time in that phosphates, magnesium-rich clays, and dolomitic sediments are characteristic of, and siliceous microfossils and siliceous sediments are locally abundant in, Hawthorne deposits.

The coastal configuration during the deposition of the Hawthorne Group was apparently different than it was during much of the Tertiary in Georgia. Sandy coastal/beach-type deposits (lithologically and genetically similar to Barnwell and Citronelle-Miccosukee-Cypresshead-type deposits) are absent in the Hawthorne Group. Because of the high clay content of the Hawthorne Group and the equivalent Altamaha Formation, it is probable that the coastal area was muddy and swampy and without well-defined barrier island systems.

Age

The time span of the Hawthorne Group in Georgia is from earliest Miocene (early Aquitanian Stage) through the early Pliocene (Zanclean Stage) (Pl. 1). Those stages identified in Georgia include the Aquitanian, Burdigalian, Serravallian, and Zanclean. The Langhian and Tortonian Stages have been identified to date on the continental shelf but not on the mainland in Georgia, and the Messinian Stage has not yet been identified with certainty anywhere in the southeastern United States. The specific ages of the various components of the Hawthorne Group will be discussed more fully in the following descriptions of each formation and member.

PARACHUCLA FORMATION OF THE HAWTHORNE GROUP (reintroduced and revised)

Definition

The Parachucla Formation of Sloan (1908, p. 273-274, 435, 465-466), referred to by him variously as Parachucla phase, Parachucla marl, Parachucla shale, Parachucla formation (p. 466), and Parachucla series (p. 327), is reintroduced herein as the lowest and oldest described formation of the Hawthorne Group in Georgia. The Parachucla of Sloan (1908) is expanded and revised here to include both the Combahee phase (in Georgia) of Sloan (1908, p. 274, 465-466) and the Parachucla marl and shale. The reasons for combining the Georgia Combahee and Parachucla into one formation are that (1) they are closely related lithologically, genetically, and temporally, and (2), they are lithologically more similar to each other than they are to the other overlying formations of the Hawthorne Group. The Parachucla of Sloan (1908) was never adopted by other workers, but was abandoned immediately after the name was proposed. Therefore, the Parachucla of Sloan (1908) can not be considered to ever have been an accepted or "formal" stratigraphic unit. Because Sloan (1908) appears to have used the name Parachucla more in a lithostratigraphic sense (marl, shale, and formation), because the name Combahee as Sloan (1908) applied it in Georgia is lithostratigraphically inconsistent with the Combahee that he described elsewhere from the type area in South Carolina, and because the deposits that comprise the Combahee and Parachucla of Sloan (1908) in Georgia constitute a lithostratigraphic unit of formation rank, the expansion of the name Parachucla to encompass both the Combahee and Parachucla of Sloan (1908) is justified. Moreover, in recognition and in honor of Earle Sloan's contributions to the Miocene of Georgia, I wish to retain the lithostratigraphic ranking of his name Parachucla as he apparently intended it.

Veatch and Stephenson (1911, p. 343) abandoned the names Parachucla and Combahee in Georgia because they considered these units to be "stratigraphic representatives of the Alum Bluff formation." However, Veatch and Stephenson (1911) were not consistent in their transferral of the Parachucla to the Alum Bluff in the type area of the Parachucla. At Sloan's main reference locality for the Parachucla at Porters Landing on the Savannah River, Veatch and Stephenson (1911, p. 371-372) transferred only the Parachucla marl of Sloan (1908, 273-274) to the Alum Bluff Formation. They included the overlying Parachucla shale in the Marks Head Formation. Cooke (1936, 1943) abandoned both the names Alum Bluff and Marks Head and replaced them with the name Hawthorne.

Elsewhere in Georgia, deposits included in the Parachucla Formation of the present report have been referred to as Tampa (Fortson and Navarre, 1959; Counts and Donsky, 1963; Herrick, 1961, p. 17-20; also see Furlow, 1969), Hawthorne Formation (MacNeil, 1947a, 1947b; Georgia Geological Survey, 1976; Weaver and Beck, 1977), and Miocene (undifferentiated) (Herrick, 1961).

The Parachucla Formation is divided into two formal members in Georgia: the Tiger Leap Member (= Combahee of Sloan, 1908) and the overlying Porters Landing member (= Parachucla marl and shale of Sloan, 1908).

Type Section

The name Parachucla was taken from the site of a boat landing on the Savannah River in Hampton County, South Carolina, that around the turn of the century was called Parachucla Landing. The name Parachucla has disappeared from local usage, and the current name of the boat landing is Stokes Ferry Landing. Stokes Ferry Landing is approximately 4.5 airline miles (7.3 km) downriver from Porters Landing in Georgia. Because Stokes Ferry Landing is located in the middle of the Savannah River Floodplain, there are no exposures of pre-Quaternary deposits at the landing.

Sloan (1908) did not explicitly designate a type locality for the Parachucla. However, it is clear that he considered the section exposed at Porters Landing the most significant and

Wabasso planktonic foraminifera have been observed by the author from basal Satilla sediments in the core Chatham 13 (GGS-1445) from Chatham County. Therefore, the unit most likely occurs only as erosional outliers in the subsurface of eastern Chatham County. The Wabasso beds have not yet been identified from wells or cores elsewhere in Georgia.

In Chatham County, the Wabasso beds disconformably overlie the Tybee Phosphorite Member of the Coosawhatchie Formation, and are disconformably overlain by the Satilla Formation (Pl. 2). In the core Phred 1 (W-13958) in Indian River County, Florida, the Wabasso beds overlie an undifferentiated massive, phosphatic, calcareous, argillaceous, medium-grained sand of the Hawthorne Group, and are disconformably overlain by the lower Pleistocene Nashua formation.

Very little is known about the thickness of the Wabasso beds. The Wabasso beds that Herrick reported as Duplin Marl (1976, p. 129) are 40 feet (12 m) thick in Beaufort County, South Carolina, and 25 feet (7.5 m) and 28 feet (8.5 m) thick respectively in the wells GGS-772 and GGS-381 in Chatham County, Georgia. In the core Phred 1 (W-13958), the Wabasso beds are approximately 82 feet (25 m) thick.

The environment of deposition of the Wabasso beds in Georgia is open-marine, continental shelf. There is only a small component of brackish water species in the benthic foraminiferal assemblage indicating that the water-mass had near-normal salinities. In addition, the abundance of planktonic foraminifera and the relatively high diversity of the benthic foraminifera indicates that the environment of deposition of the Wabasso beds was the deepest water and most open-marine of all of the Hawthorne deposits of Georgia.

Age

The following planktonic foraminifera have been identified from the Wabasso beds in Georgia and Florida:

Globorotalia menardii (dextral)
G. margaritae margaritae
Neogloboquadrina acostaensis
N. humerosa
Globigerina nepenthes
G. bulloides
G. apertura
G. cf. *rubescans*
Globigerinoides quadrilobatus
G. obliquus obliquus
G. obliquus extremus
G. cf. conglobatus
Globigerinalla siphonifera
Globigerinita glutinata
G. uvula
Globoquadrina altispira
Sphaeriodidinellopsis seminulina
Orbulina universa

The co-occurrence of *Globorotalia margaritae margaritae* and *Globigerina nepenthes* is indicative of Zone PL1 of Berggren (1973). The dextral coiling directions of *Globorotalia menardii, Neogloboquadrina acostaensis,* and *N. humerosa* is characteristic of the upper part of Zone PL1. The Wabasso beds are, therefore, early Pliocene (Zanclean) is age (Pl. 1).

ALTAMAHA FORMATION (reintroduced, redefined, revised)

Definition

The Altamaha grit of Dall and Harris (1892, p. 81-82) and Harper (1906a, 1906b), and the Altamaha Formation of Veatch (1908, p. 71-74; 1909, p. 70-73) and Veatch and Stephenson (1911, p. 400-423), is herein reintroduced as the Altamaha Formation. As defined in this report, the Altamaha Formation is largely the same as the Altamaha grit of Dall and Harris (1892) and Harper (1906a, 1906b), and the Altamaha Formation of Veatch (1908), but it differs in some respects from the Altamaha Formation of Veatch (1909) and Veatch and Stephenson (1911). Veatch (1909) and Veatch and Stephenson (1911) included deposits in their Altamaha Formation that are now assigned to the Miccosukee Formation in southwestern Georgia and to the Cypresshead Formation in eastern Georgia. In other areas, Veatch and Stephenson (1911) assigned deposits to their Alum Bluff Formation that are included in the Altamaha Formation in this report. For example, the section exposed at Berry Hill Bluff on the Oconee River in Treutlen County is considered by this author to be typical Altamaha Formation but was included in the Alum Bluff Formation by Veatch and Stephenson (1911, p. 358).

Stephenson and Veatch (1915, p. 89-94) abandoned the Altamaha Formation in favor of the Alum Bluff Formation of western Florida because "The investigations of recent years have led to the conclusion that the bulk of the deposits included by Harper, Veatch, and Stephenson in the Altamaha Formation are of Oligocene age and are probably contemporaneous with a part of the Alum Bluff formation." The abandonment of the Altamaha Formation, therefore, was based on presumed age and correlation and not on lithologic characteristics or physical distinctions. In addition, replacing the name Altamaha with the name Alum Bluff in Georgia was also contemporaneous with, and probably related to, replacing the name Hawthorne with the name Alum Bluff in Florida (Vaughan and Cooke, 1914). This marks the beginning of the trend, in the southeastern Coastal Plain, in the systematic reduction of stratigraphic units based on lithology, in favor of stratigraphic units based on age and correlation. In accord with Stephenson and Veatch (1915), the name Alum Bluff Formation was applied to deposits that had been included in both the Altamaha and Alum Bluff Formations of Veatch and Stephenson (1911) (Brantly, 1916; Shearer, 1917; Teas,

1921; Prettyman and Cave, 1923). Later, Cooke (1939; 1943, p. 89-98) replaced the name Alum Bluff in Georgia with Hawthorne Formation (also see Cooke and Mossom, 1929; Cooke, 1936), and mapped the Altamaha Formation of this report with the Hawthorne Formation. Subsequent authors (Cooke, 1936, 1939, 1943; MacNeil, 1947a; Cooke and MacNeil, 1952; LeGrand and Furcron, 1956; Siple, 1967; and Herrick and Counts, 1968) referred to these deposits (both Altamaha Formation and Hawthorne Group of this report) under the name Hawthorne Formation. Other names that have been applied to the Altamaha Formation of this report include "Undifferentiated Miocene and Oligocene to Pleistocene inclusive" (Brantly, 1916); Brandywine, Coharie, and Sunderland formations (Cooke, 1939; 1943, p. 106-107); undifferentiated Miocene and Oligocene deposits (LaMoreaux, 1946a); residuum of Oligocene and Miocene formations (LaMoreaux, 1946b); "Duplin marl and Hawthorn formation" (MacNeil, 1947b); Citronelle Formation (Doering, 1960); Miocene (Undifferentiated) (in part) (Herrick, 1961); Recent to Miocene Series (in part) (Herrick and Vorhis, 1963); Ashburn formation (Olson, 1967); Neogene undifferentiated, Miccosukee Formation (in part), and Pleistocene-Pliocene sands and gravels (in part) (Georgia Geological Survey, 1976); and upland fluvial channel deposits (Nystrom and Willoughby, 1982b). The exposure of the Altamaha Formation in the railroad cut 1 mile (1.6 km) east of the railroad station at Barnwell, South Carolina, has been referred to the Barnwell Formation in the past (Cooke, 1936) and has been proposed as the type locality for the Barnwell Formation (Connell, 1968a). The Screven Member of the Altamaha Formation was informally introduced by Huddlestun (1981) as the Screven formation.

The Altamaha Formation is recognized as a formation separate from the Hawthorne and Alum Bluff Groups in this report because of its lithologic distinctiveness. Lithologically the Altamaha Formation is unique among formations in the southeastern Coastal Plain. The only other formations I know that resemble the Altamaha in any way are the "Tuscaloosa" Formation of the Chattahoochee River area, and some phases of the Cape Fear Formation. The Altamaha Formation consists of variably indurated to nonindurated, variably siliceous, kaolin-rich clays and argillaceous, pebbly, feldspathic sands of fluvial origin that are devoid of carbonates, fossils, phosphate, and magnesian clays. The Altamaha Formation is excluded from the Hawthorne Group because Hawthorne deposits generally consist of variably phosphatic, variably dolomitic or calcareous, rarely siliceous, fossiliferous to nonfossiliferous sands and variably magnesium-rich clays of marine, continental shelf origin. The Altamaha Formation is excluded from the Alum Bluff Group because Alum Bluff deposits generally consist of variably calcareous (never dolomitic), typically fossiliferous, nonsiliceous sands and clays (nonmagnesian) of marine, continental shelf origin. The Hawthorne Group is an Atlan- continental shelf deposit, the Alum Bluff Group is an -astern Gulf of Mexico continental shelf deposit, and the Altamaha Formation is a fluvial to upper estuary deposit.

The Altamaha Formation is a multideposit unit; that is, it was deposited during more than one depositional episode. The Altamaha Formation in the inner part of the Coastal Plain and in the Savannah River area is probably early Miocene (Aquitanian) in age, whereas the typical Altamaha Formation of the Altamaha River area is probably middle Miocene (Serravallian) in age. Furthermore, the Altamaha Formation in some regions is divisible into an upper and lower part. The lower part of the Altamaha Formation typically consists of thick bedded, massive sandy clays and argillaceous sands, and claystones and sandstones. The upper part consists of prominently cross-bedded, pebbly to gravelly sands with clay lenses, and appears to be of fluvial channel, cut-and-fill origin. In this report, the upper part of the middle Miocene Altamaha Formation (in the Altamaha and Satilla Rivers area) is named the Screven Member of the Altamaha Formation. The Screven lithofacies occurs locally in the lower Miocene Altamaha Formation, but it is discontinuous and absent over large areas.

Type Section

The name Altamaha was taken from the Altamaha River in southern Georgia. Dall and Harris (1892, p. 82), the authors of the Altamaha lithostratigraphic unit, observed that "Between Rocky Hammock and Doctor Town, all the bluffs (which are mostly on the right bank of the river) are composed of the grit, sometimes extremely hard and flinty and at others more disposed to crumble." They added that "The Altamaha grit is well exposed in these bluffs, ... ". The stretch of river described by Dall and Harris (1892) extends from western Jeff Davis County to central Wayne County, a distance of about 80 miles (128 km). The only reference of Veatch and Stephenson (1911, p. 401) relevant to a type locality or type area of the Altamaha Formation was that "The name 'Altamaha grit' was applied by Dall in 1892, from typical exposures along Altamaha River." Evidently the original authors of the Altamaha Formation and subsequent authors did not conceive of a specific type locality for the formation, only a type area. The type area they thought of is that stretch of the Ocmulgee River and Altamaha River from Jeff Davis County (Rocky Hammock is now in Jeff Davis County, Jeff Davis County having been a part of Coffee County in 1892) to Wayne County.

Because a type section has not been designated for the Altamaha Formation by earlier authors, I am designating as lectostratotype (principal reference section) the exposures of the formation at Upper Sister Bluff on the Altamaha River (also see Veatch and Stephenson [1911, p. 359-360]). Upper Sister Bluff, the principal reference locality of the Altamaha Formation, is located on the south bank of the Altamaha River in Applin County, Georgia, where Georgia highways 121, 144, and 169 cross the river (Fig. 41). The lectostratotype includes the section exposed in the bluff and the series of road cuts along Ga. 121, 144, and 169 to the top of the hill 0.6 miles (1.0 km) south of the bluff. The lower part of the

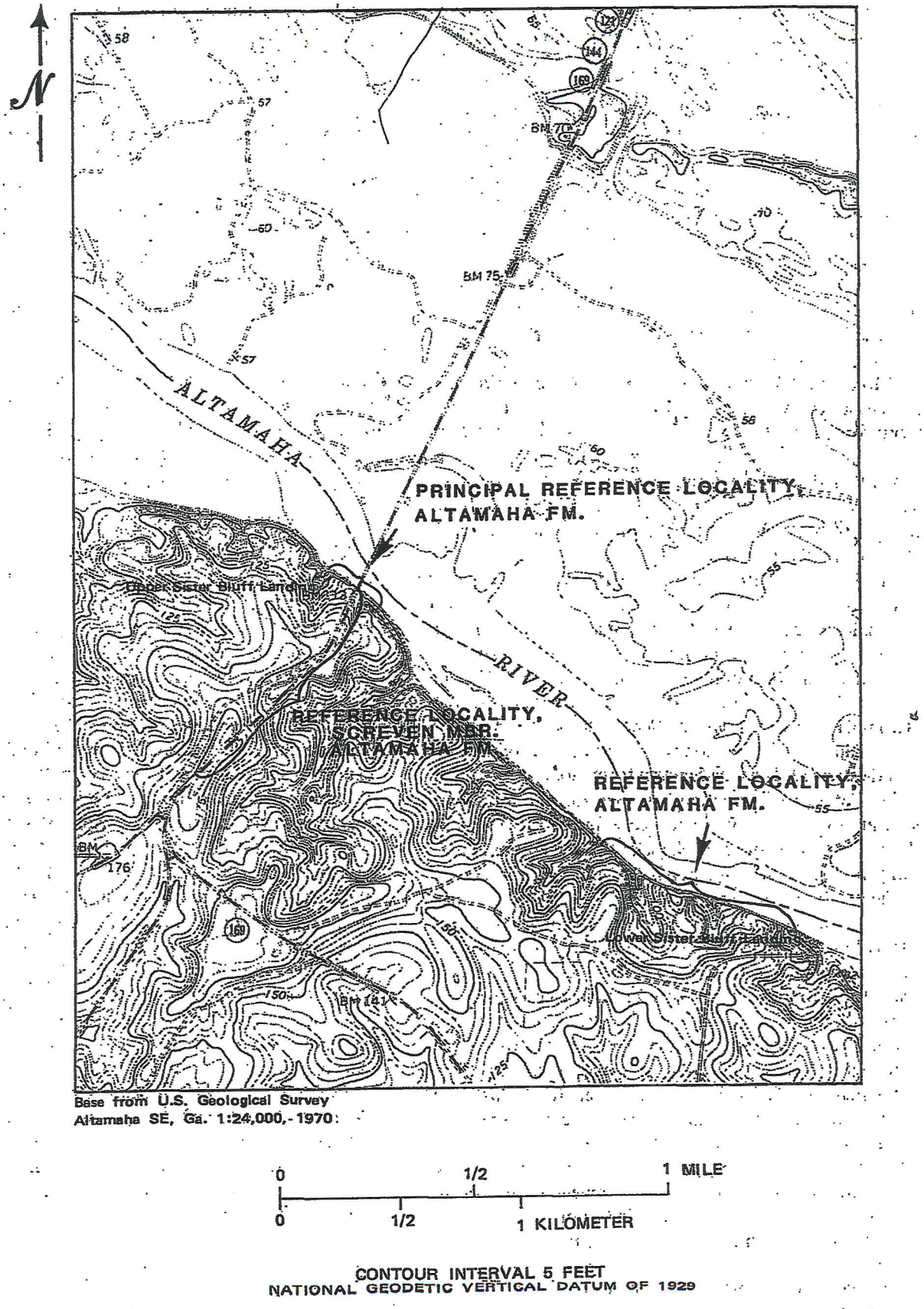

Figure 41. The principal reference locality of the Altamaha Formation.

lectostratotype (exposures in the bluff) extends for several hundred feet (about 100 m) along the face of the bluff under the highway bridge and is currently exposed from approximately 15 feet (4.6 m) above the river at mean-low-water to the top of the bluff at approximately 65 feet (20 m) above the river. The series of road cuts extends from the top of the bluff to the top of the hill at an elevation of approximately 140 feet (43 m) above the river.

Four other sections are herein designated reference localities and hypostratotypes of the Altamaha Formation. Lower Sister Bluff, a reference locality and hypostratotype, is approximately 1 mile (1.6 km) downriver from the lectostratotype at Upper Sister Bluff (Fig. 41; also see Veatch and Stephenson, 1911, p. 359-360, 410-411). This locality is significant because it exposes the best stratigraphic section on the Altamaha River and because the indurated phase of the Altamaha Formation is poorly developed at this site.

Lower Fort James Bluff (see Veatch and Stephenson, 1911, p. 411), herein designated a reference locality and hypostratotype, is located in northern Wayne County (Fig. 2). The Altamaha Formation is exposed at the boat landing and in the roadcut leading down to the landing at the bluff. This section is significant, because it is the easternmost good exposure of the Altamaha Formation, because the Screven lithology in the upper part of the Altamaha Formation is not well-developed at this site, and because the Altamaha Formation is overlain by Cypresshead Formation.

The bluff on the west side of the Oconee River, in a county park at the Georgia highway 46 crossing in northernmost Wheeler County, is herein designated a reference locality and hypostratotype of the Altamaha Formation (Fig. 2). This section shows the close stratigraphic relationship between the sandstone and the poorly sorted, pebbly, clayey sand phases of the formation.

Berryhill Bluff (see Veatch and Stephenson, 1911, p. 358-359) on the Oconee River in Treutlen County is designated herein as a reference locality and hypostratotype (Fig. 2). Berryhill Bluff is significant because it displays the thick, massive sandstone phase of the formation better than any other exposure.

Lithology

The Altamaha Formation consists of thin to thick bedded or crossbedded, well-sorted to very poorly sorted, variably feldspathic, sporadically pebbly or gravelly, argillaceous sand, sandstone, sandy clay, clay, and claystone. Calcite and dolomite, phosphate, the magnesian clays palygorskite and sepiolite are unknown in the formation.

Quartz sand is the dominant lithic component of the Altamaha Formation, but clay is also significant and dominates the lithology of the formation at some sites. The sand ranges in size from fine through very coarse, with coarser quartz ranging from granule to cobble size. The quartz gravel of the Altamaha is subangular to well-rounded, and is characteristically coarser than the gravel in the older Cretaceous and Lower Tertiary deposits in Georgia. Quartz cobbles up to 7 inches (18 cm) in diameter along the major axis have been observed in Washington County, Georgia, and Aiken County, South Carolina. Generally, the finer the upper limit of the sand-size present, the better the sorting; and conversely, the coarser the upper limit of the sand-size present, the poorer the sorting. Poorly sorted, clayey, gravelly sands are characteristic of the Altamaha Formation in the updip areas. Commonly, the coarser beds in the Altamaha are conspicuously feldspathic, and lath-shaped feldspar pebbles within the gravelly beds have been reported by Veatch and Stephenson (1911).

Generally, in the Altamaha Formation, the sand and clay occur in varying states of admixture, with lithologies ranging from argillaceous sand to sandy clay. Beds or lenses of relatively pure sand occur locally but are exceptional. Relatively pure clay or claystone, however, is commonly encountered only in the lower Miocene component of the Altamaha Formation.

The clay mineral suite of the Altamaha Formation is dominated by kaolinite whereas illite and smectite are generally minor constituents (Hetrick, pers. comm., 1986; Hetrick, *in* Huddlestun, 1985). In weathered outcrops, however, kaolinite is generally the only clay mineral present. Both smectite and illite are more significant elements of the clay mineral suite in those sections transitional between typical Altamaha Formation and typical Hawthorne Group.

Secondary silica is locally conspicuous in the Altamaha Formation. Most commonly, the silica occurs as thin veins of siliceous material that has a woodgrain-like texture. In addition, Veatch and Stephenson (1911) speculated that the cementing agent in the indurated phases of the formation is silica.

Bedding style is variable in the Altamaha Formation but typically consists either of rude, thick to very massive bedding or of vague and inconspicuous to very prominent cross-bedding on small to large scales. In the thick-bedded deposits, beds are typically less than 10 feet (3 m) thick, but massive sections of sandstone or clay up to 50 feet (15 m) thick have been observed in outcrops and cores. Generally, the sediments within bedding units are well-mixed and homogeneous. Clays in thick beds, however, are more commonly laminated. Cross-bedding is locally prominent and in the Screven Member cross-bedding is characteristic of the unit. Cross-bedding is generally associated with channel cut-and-fill structures of a wide range of sizes. The cut-and-fill structures generally are either filled with cross-bedded, gravelly, feldspathic sands with clay clasts, or with laminated to massive, blocky clays. The channel cut-and-fill structures are more commonly encountered in the upper part of the middle Miocene component of the Altamaha Formation, but they are also encountered in the lower part of the lower Miocene component of the formation.

The most characteristic lithologies of the Altamaha Formation are the thick-bedded and massive, structureless

sandstones and claystones that produce extensive areas of flat rock outcrops and low bluffs (Dall and Harris, 1892, p. 81-82; Veatch and Stephenson, 1911, p. 403-405). Olson (1967) informally called these indurated phases of the Altamaha Formation the Ashburn formation, after exposures of the sandstone cropping out along Interstate 75 north of the town of Ashburn in Turner County, Georgia. The name Ashburn has not been adopted in this report because Ashburn is a junior synonym of the Altamaha Formation, the name has never been formalized, and the indurated phases (Ashburn) are known to be discontinuous in outcrop and cannot be mapped over any large area (also see Georgia Geological Survey, 1976). There is evidence, however, that the lower part of the middle Miocene Altamaha Formation is pervasively indurated in the subsurface, and that the sporadic distribution of outcropping indurated phases of the formation is due to weathering and leaching of the cementing material. At this time, there are few cores that penetrate the entire middle Miocene portion of the Altamaha Formation. In these cores, however (Coffee 3 and 4, GGS-3539, GGS-3541; Berrien 10, GGS-3542; Colquitt 3, GGS-3179; see Fig. 2), the lower part of the Altamaha Formation is consistently indurated. The typical outcropping, middle Miocene Altamaha Formation that occurs in the stratigraphic position of the indurated sediments, consists of weathered, thick-bedded to massive and structureless, sandy clay and argillaceous sand. These weathered sandy clays and argillaceous sands are closely related to the indurated sediments in outcrop. At many outcrop sites, small (as little as 1 x 0.5 foot [30 x 15 cm]) to large (greater than 3 x 1 feet [1 x 0.3 m]) pods of apparently unweathered sandstone are enclosed or surrounded by weathered sands and clays, indicating that the surrounding weathered sediments are weathering products of the indurated sediments (sandstones and claystones). It is likely, therefore, that the typical unweathered, unleached, lower part of the middle Miocene Altamaha Formation consists of argillaceous sandstone and sandy claystone, and that this is the typical unaltered lithology of the lower part of the unit.

A lower, indurated phase is not so readily apparent in the lower Miocene part of the Altamaha Formation. The indurated phases of the lower Miocene do appear to be encountered more in the lower part of the unit or, perhaps more accurately, at lower elevations in the outcrop area. Field studies, in addition to a few cores that penetrate much of the lower Miocene Altamaha Formation (Washington 8, GGS-1179; Washington 10, GGS-1182; Washington 17, GGS-1189; Screven 4, GGS-1007; see Fig. 2), indicate that the indurated phases are not as pervasive as in the middle Miocene, and they tend to be more interstratified with nonindurated sands and clays.

Whereas channel-fill lithologies (cross-bedded sands and gravels) are encountered in the upper part of the middle Miocene Altamaha, channel-fill lithologies occur more randomly throughout the lower Miocene Altamaha. Field observations also indicate that channel-fill lithologies are more closely associated with the indurated phases in the lower Miocene.

The above observations suggest that there are some systematic but subtle differences between the lower Miocene and middle Miocene components of the Altamaha Formation. Particular lithologies are not known to be restricted to either the lower or middle Miocene parts of the Altamaha Formation. However, thick beds of unweathered clay, finely sandy claystone, and claystone that are devoid of sand appear, at this time, to be more characteristic of the lower Miocene Altamaha. Indurated sediments in the middle Miocene Altamaha generally consist of variably argillaceous sandstones or, less commonly, sandy claystones.

The Altamaha Formation is essentially nonfossiliferous. Scattered oyster shell fragments have been reported from the formation at Collins in Tattnall County (Veatch and Stephenson, 1911, p. 406). I have seen evidence of a few burrows in Coffee, Emanuel, and Screven Counties. Small irregular burrows, approximately 1 mm in diameter and constructed of fine-grained sand cemented with siliceous material, are locally abundant in fine-grained sediments of the formation in the Altamaha River area. Presumably these are trace fossils, but they are unlike trace fossils found in other Coastal Plain deposits in Georgia. No other fossils or trace fossils are known from the Altamaha Formation.

Stratigraphic Relationships

The Altamaha Formation is the most widespread outcropping lithostratigraphic unit in Georgia (Fig. 42). Its eastern, or seaward, limit is the Orangeburg Escarpment-Trail Ridge trend in eastern Georgia. The Altamaha Formation grades laterally eastward into the Aquitanian Tiger Leap Member of the Parachucla Formation (Hawthorne Group) in the vicinity of the Orangeburg Escarpment in the Savannah River area (Pl. 2). In the Southeast Georgia Embayment region south of Bulloch County, the Altamaha Formation grades laterally eastward into the middle Miocene Ebenezer Member of the Coosawhatchie Formation of the Hawthorne Group in the vicinity of the Orangeburg Escarpment in the north and Trail Ridge in the south (Fig. 11). The updip limits of the Altamaha Formation in Georgia extend from northern Burke County in the east, westward through Jefferson, Washington, northern Laurens, and southeastern Twiggs Counties. Farther south, the updip limits of the Altamaha Formation are in the vicinity of the Ocmulgee River in the north, and the Pelham Escarpment in the south (Fig. 42). The southern limit of the Altamaha Formation approximates a line (or zone of facies change) that extends from Ware County in the east through Colquitt County in the west. East of the vicinity of Cook and Lowndes Counties, the Altamaha Formation appears to grade laterally southward into the Statenville Formation of the Hawthorne Group. West of the Little River, the Altamaha Formation appears to thin and pinch out in a southward direction in Colquitt County. The Altamaha Forma-

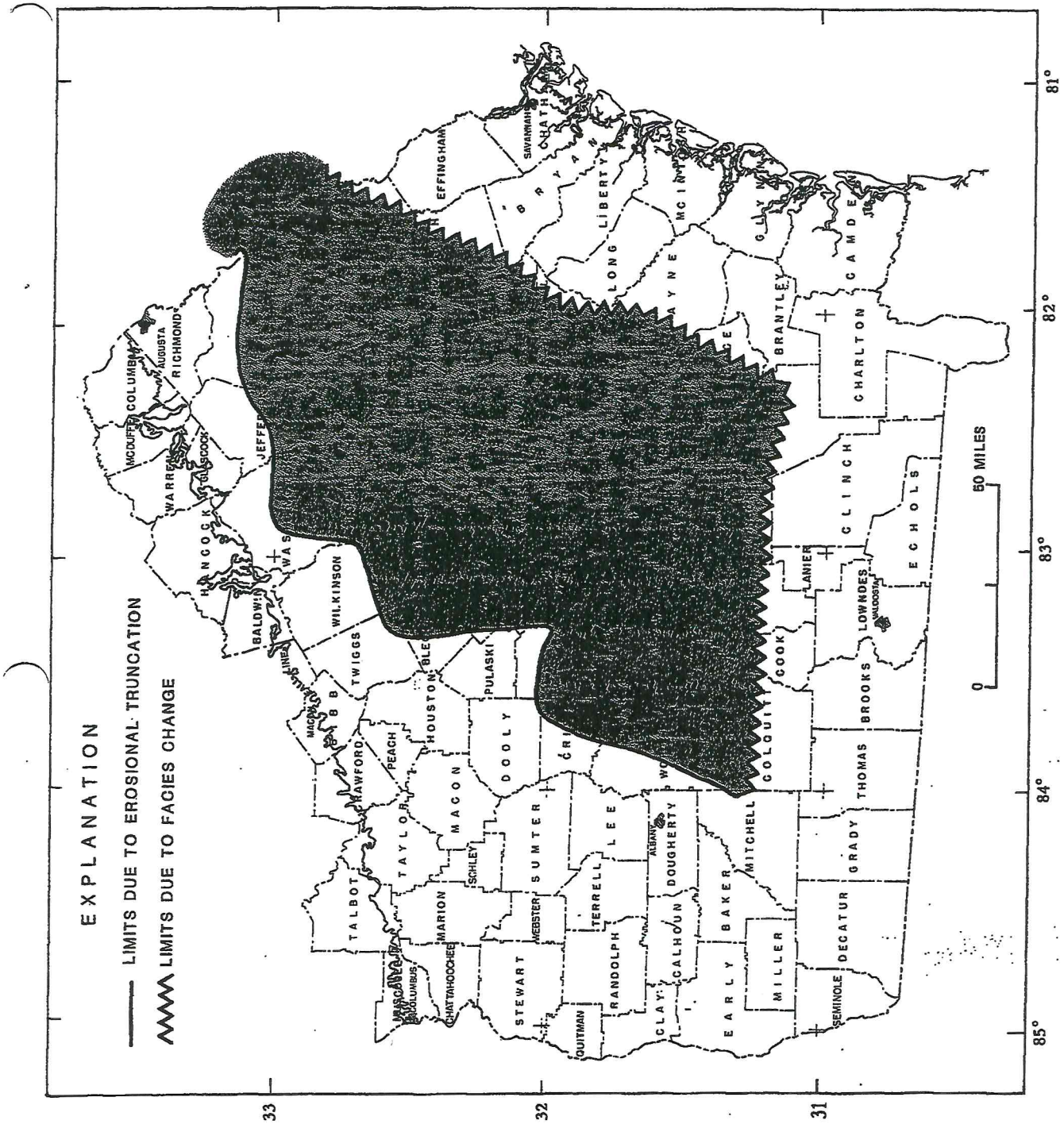

Figure 42. The areal distribution (outcrop and subcrop) of the Altamaha Formation in Georgia.

tion in most places is the only formation that crops out within the geographic confines outlined above.

More stratigraphic information can be gleaned from the Altamaha by recognizing lower and middle Miocene parts of the formation. Recognition of and discrimination between the lower and middle Miocene parts of the Altamaha Formation is based, at this time, mainly on physical correlation with datable marine deposits, and on stratigraphic position. Furthermore, as discussed above, the lower and middle Miocene Altamaha exhibit some lithologic distinctions, but the stratigraphic control is currently insufficient for one to be certain of regional systematic differences. The lower Miocene and middle Miocene components of the Altamaha Formation are not referred to here as lower and upper Altamaha Formation because the two components are not generally present together in the same area or at the same site. Rather, it appears that the lower Miocene Altamaha occurs in the inner part of the Coastal Plain and the middle Miocene Altamaha occurs only in the central and eastern part of the Coastal Plain. The updip limit of the middle Miocene Altamaha Formation, where it thins and pinches out, is in the same area where the underlying lower Miocene Altamaha grades seaward into the calcareous, fossiliferous Parachucla Formation in the subsurface (Fig. 11). As a result, at this time no areas or sections are known with certainty where middle Miocene Altamaha formation directly overlies lower Miocene Altamaha Formation in outcrop or subcrop.

The lower Miocene (Aquitanian) component of the Altamaha Formation can be traced from Screven and Burke Counties in the Savannah River area, westward through Jenkins, northern Emanuel, Jefferson, Washington, Johnson, and Laurens Counties. The stratigraphic position of the outcropping Altamaha Formation in Treutlen County is uncertain but could consist of both lower and middle Miocene components. In addition, the stratigraphic position of the Altamaha Formation southwest of the Ocmulgee River and northwest of the Gulf Trough is uncertain. It is noted, however, that claystone, a prominent lithology of the lower Miocene Altamaha Formation, is widespread in Turner County, Georgia (the type area of the Ashburn formation of Olson, 1967).

The lower Miocene Altamaha Formation grades laterally (or seaward) into calcareous, fossiliferous Parachucla Formation in the subsurface (Fig. 11; Pl. 2). The trend of the Altamaha-Parachucla facies change, in Georgia, extends in the east from southern Screven County westward through central Emanuel County, and thence westward through Treutlen and northwestern Wheeler County (Fig. 15). The Altamaha-Parachucla stratigraphic relationships are uncertain southwest of Wheeler County.

There is no evidence yet of an upper lower Miocene (Burdigalian) component of the Altamaha Formation. That is, the Marks Head Formation, or its stratigraphic equivalent, does not appear to grade updip (or landward) into Altamaha Formation. The absence of Marks Head-equivalent Altamaha Formation may account for a broad east-west belt, extending from Bulloch County westward through south-central Emanuel County, where the typical indu phases and prominently cross-bedded feldspathic sands gravels (Screven lithofacies) of the Altamaha Formation are absent, and only deeply weathered sands and clays are poorly exposed. Possibly this belt of poorly developed Altamaha deposits represents the outcrop belt of the Burdigalian, with the lower Miocene (Aquitanian) Altamaha Formation occurring in outcrop north of the belt and the middle Miocene (Serravallian) Altamaha Formation occurring in outcrop south of the belt. This belt does not extend into Treutlen County, suggesting that the updip limit of the Burdigalian deposits (Marks Head-equivalent) is overlapped by the middle Miocene Altamaha Formation and also that the Burdigalian occurs only in the subsurface of the central Georgia Coastal Plain. Moreover, this stratigraphic model suggests that the middle Miocene part of the Altamaha Formation could directly overlie the lower Miocene (Aquitanian) part of the Altamaha Formation in Treutlen County, thus accounting for the unusually thick Altamaha section in Treutlen County.

The updip limits of the middle Miocene part of the Altamaha formation can be traced, approximately, from southwestern Bulloch County in the east, westward through Candler County to southern Emanuel and northern Toombs Counties where the Altamaha Formation overlies the Meigs Member of the Coosawhatchie Formation in outcrop. The middle Miocene Altamaha Formation changes tren Treutlen County to a more southwesterly direction, passing through Wheeler and Telfair Counties. The updip limits of the middle Miocene Altamaha are uncertain southwest of the Ocmulgee River in Georgia, but the middle Miocene Altamaha is known to occur in the Gulf Trough as far southwest as the vicinity of Norman Park in northeastern Colquitt County.

The Altamaha Formation disconformably overlies various formations in Georgia, including the Tobacco Road Sand of the Barnwell Group, Ocmulgee Formation, and several Oligocene limestone formations. The Altamaha Formation conformably overlies a basal tongue of the Tiger Leap Member of the Parachucla Formation in southern Screven County in the Savannah River area (Pl. 2), and Meigs Member of the Coosawhatchie Formation in the central southwestern Georgia Coastal Plain (Fig. 10).

The Altamaha Formation generally occurs at the top of the local geologic sections in Georgia. Overlying deposits, where present, include colluvium, undifferentiated surficial sands, undifferentiated alluvial deposits, and undifferentiated lacustrine and paludal deposits. In a narrow belt a few miles (a few km) wide west of Trail Ridge in Wayne and Pierce Counties, however, the Altamaha Formation is disconformably overlain by the upper Pliocene Cypresshead Formation (Pl. 3).

The average thickness of the Altamaha Formation Georgia, based on scattered information, is between 100 and

200 feet (30 and 60 m). The formation is at least 125 feet (38 m) thick at and near the type locality. The Altamaha is approximately 150 feet (46 m) thick in northern Screven County, southern Emanuel, and northern Toombs Counties. It is 77 feet (23 m) thick in the core Coffee 3 (GGS-3539) in northern Coffee County; 112 feet (34 m) thick in the core Berrien 10 (GGS-3542) in northern Berrien County; 125 feet (38 m) thick in the core Colquitt 3 (GGS-3179) in northeastern Colquitt County; at least 123 feet (37 m) thick in the core Screven 4 (GGS-1007) in northwestern Screven County; and 171 feet (52 m) thick in the core Screven 8 (GGS-3198) in southeastern Screven County, where the Altamaha Formation is undergoing facies change into the Tiger Leap Member of the Parachucla Formation (Hawthorne Group) (Pl. 2). The Altamaha Formation is unusually thick in Treutlen County where the formation is exposed from the highest upland elevations (350 feet [107 m]) to bluffs at river level on the Oconee River at elevations of 130 feet (40 m). There is at least, then, 220 feet (67 m) of Altamaha Formation in Treutlen County. If the top of the Oligocene in Treutlen County varies from sea level to +100 feet (30 m) as indicated by Herrick and Vorhis (1963, p. 12), then the thickness of the Altamaha Formation in Treutlen County could be more than 250 feet (76 m). This compares well with the thickness of 283 feet (86 m) of Altamaha Formation (as interpreted in this report) in the well GGS-600 in northern Montgomery County (Herrick, 1961, p. 311-312).

The environment of deposition of the Altamaha Formation is interpreted to be fluvial to upper estuarine. None of the typical marine lithic components (i.e., phosphate, glauconite, calcite, limestone, dolomite, dolostone, magnesium-rich clays) are known to occur in the Altamaha Formation. Consistent with this, the clay mineral suite is dominated by kaolinite, the sands are generally feldspathic, and the sorting of the sediments is characteristically poor (a condition not normally found in deposits of open-marine origin).

No fossils are known with certainty from the Altamaha Formation. The oyster shell fragments reported by Veatch and Stephenson (1911) from Collins could have come from the underlying Meigs Member of the Coosawhatchie Formation. The burrow structures I have seen in the Altamaha in Coffee and Emanuel Counties could be root structures although they appear to be burrows. Only those burrow structures I have seen in Screven County and in exposures along the Altamaha River (e.g., at the principal reference locality) do I consider to be real burrows. However, it is not clear whether the organisms responsible for the burrows lived in a subaerial, fresh water, or brackish marine environment. Perhaps significantly, bioturbation structures which are characteristic of marine sediments, whether of coastal origin or open-marine origin, are also unknown in the Altamaha Formation.

Age

The Altamaha Formation being nonfossiliferous, its age must be inferred from physical correlation and stratigraphic position. In the type area along the Altamaha River, the Altamaha Formation grades laterally eastward into the marine, inner continental shelf, Coosawhatchie Formation (Pl. 3). Therefore, the type Altamaha Formation is roughly time-equivalent to the Coosawhatchie Formation and is probably middle Miocene (Serravallian) in age, equivalent to planktonic foraminiferal Zones N10 or N11 of Blow and Banner (1966) and Blow (1969) (Pl. 1). From northeastern Colquitt County to northern Toombs County, the Altamaha Formation grades downsection into sands and diatomaceous clays of the Meigs Member of the Coosawhatchie Formation. This unit has been dated as middle Miocene (Gremillion, 1965; Andrews and Abbott; 1985) and biostratigraphically equivalent to the Berryville Clay Member of the Coosawhatchie Formation of eastern Georgia (Andrews and Abbott, 1985; Abbott, pers. com., 1984).

In the Savannah River area, however, the Altamaha Formation grades laterally southeastward (seaward) in southern Screven County into the Tiger Leap Member of the Parachucla Formation (Hawthorne Group) of earliest Miocene (Aquitanian) age (Pl. 2). Therefore, in Screven and Burke Counties, the Altamaha Formation is early Aquitanian in age, and equivalent to planktonic foraminiferal Zone N4 of Blow (1969) (see Pl. 1). There may be other chronostratigraphic components of the Altamaha Formation, but their existence is unknown.

SCREVEN MEMBER OF THE ALTAMAHA FORMATION (new name)

Definition

The Screven Member of the Altamaha Formation is a new name proposed herein for prominently cross-bedded, feldspathic, gravelly sands. The Screven Member of this report is restricted to the upper part of the Altamaha Formation (middle Miocene) in the region south of the Altamaha and Ocmulgee Rivers in Georgia. The occurrence of Screven lithologies in the upper part of the middle Miocene Altamaha Formation north of the Altamaha and Ocmulgee Rivers is erratic, discontinuous, and for practical purposes, unmappable. Those Screven lithologies, therefore, are not included in the Screven Member in this report, but are referred to as Screven lithofacies[1]. Screven-type lithofacies

[1]The stratigraphic relationships of the Screven lithofacies to the rest of the Altamaha Formation in Georgia is analogous to the lithofacies relationships of the members of the upper Eocene Dry Branch Formation of the Barnwell Group (Huddlestun and Hetrick, 1979, 1986; Nystrom and Willoughby, 1982a). The Twigs Clay and Irwinton Sand Members of the Dry Branch Formation are mappable lithostratigraphic units in some areas, and are discontinuous, unmappable, but distinctive lithofacies in other areas. Similarly, the Screven Member of the Altamaha Formation is a distinctive, mappable lithostratigraphic unit in one area, and is a discontinuous, unmappable, but distinctive lithofacies in other areas.

APPENDIX C
USDA SOIL MAP INFORMATION

Map Scale: 1:18,100 if printed on A portrait (8.5" x 11") sheet.

Meters: 0 250 500 1000 1500

Feet: 0 500 1000 2000 3000

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 17N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 21, 2014—Sep 8, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BeB	Blanton sand, 0 to 5 percent slopes	26.5	2.6%
CoB	Cowarts loamy sand, 2 to 5 percent slopes	35.9	3.6%
CuD	Cowarts-Uchee-Blanton complex, 8 to 12 percent slopes	6.5	0.6%
DnA	Dothan-Norfolk complex, 0 to 2 percent slopes	75.0	7.5%
DnB	Dothan-Norfolk complex, 2 to 5 percent slopes	280.3	28.0%
FuA	Fuquay loamy sand, 0 to 2 percent slopes	210.0	21.0%
GCA	Grady and Croatan soils, 0 to 2 percent slopes, ponded	53.6	5.4%
NaB	Nankin loamy sand, 2 to 5 percent slopes	7.9	0.8%
NcC2	Nankin-Cowarts complex, 5 to 8 percent slopes, eroded	114.2	11.4%
PeA	Pelham loamy sand, 0 to 2 percent slopes	5.4	0.5%
SuA	Surrency mucky sand, 0 to 1 percent slopes, frequently flooded	121.4	12.1%
UbC	Uchee-Blanton complex, 5 to 8 percent slopes	38.8	3.9%
W	Water	26.1	2.6%
Totals for Area of Interest		1,001.7	100.0%

Screven County, Georgia

DnA—Dothan-Norfolk complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2qbfb
Elevation: 70 to 300 feet
Mean annual precipitation: 49 to 60 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 310 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Dothan and similar soils: 65 percent
Norfolk and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dothan

Setting

Landform: Broad interstream divides
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 9 inches: loamy sand
E - 9 to 17 inches: loamy sand
Bt - 17 to 42 inches: sandy loam
Btv - 42 to 68 inches: sandy clay loam
BC - 68 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Norfolk

Setting

Landform: Broad interstream divides
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 10 inches: loamy sand
Bt - 10 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Hydric soil rating: No

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

DnB—Dothan-Norfolk complex, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2qbfc
Elevation: 70 to 300 feet
Mean annual precipitation: 49 to 60 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 310 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Dothan and similar soils: 65 percent
Norfolk and similar soils: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dothan

Setting

Landform: Broad interstream divides
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 9 inches: loamy sand
E - 9 to 17 inches: loamy sand
Bt - 17 to 42 inches: sandy loam
Btv - 42 to 68 inches: sandy clay loam
BC - 68 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Norfolk

Setting

Landform: Broad interstream divides
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 10 inches: loamy sand
Bt - 10 to 80 inches: sandy clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

FuA—Fuquay loamy sand, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2tddq
Elevation: 100 to 400 feet
Mean annual precipitation: 40 to 69 inches
Mean annual air temperature: 55 to 70 degrees F
Frost-free period: 190 to 310 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Fuquay and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fuquay

Setting

Landform: Interfluves
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Interfluve
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits over loamy marine deposits

Typical profile

Ap - 0 to 10 inches: loamy sand
E1 - 10 to 17 inches: loamy sand
E2 - 17 to 24 inches: loamy sand
Bt1 - 24 to 29 inches: sandy clay loam
Bt2 - 29 to 38 inches: sandy clay loam
Btv - 38 to 65 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 40 to 61 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: B
Hydric soil rating: No

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

NcC2—Nankin-Cowarts complex, 5 to 8 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2qdy7
Elevation: 70 to 300 feet
Mean annual precipitation: 44 to 52 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 260 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Nankin and similar soils: 65 percent
Cowarts and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nankin

Setting

Landform: Broad interstream divides
Landform position (two-dimensional): Backslope, shoulder, summit
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey marine deposits

Typical profile

Ap - 0 to 4 inches: sandy loam
Bt - 4 to 41 inches: sandy clay
C - 41 to 84 inches: sandy loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Cowarts

Setting

Landform: Broad interstream divides
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 4 inches: sandy loam
Bt - 4 to 25 inches: sandy clay loam
BC - 25 to 36 inches: sandy clay loam
C - 36 to 79 inches: sandy loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

UbC—Uchee-Blanton complex, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2qdyg
Elevation: 70 to 300 feet
Mean annual precipitation: 49 to 60 inches
Mean annual air temperature: 64 to 70 degrees F
Frost-free period: 230 to 310 days
Farmland classification: Not prime farmland

Map Unit Composition

Uchee and similar soils: 85 percent
Blanton and similar soils: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Uchee

Setting

Landform: Broad interstream divides
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 6 inches: sand
E - 6 to 35 inches: sand
Bt - 35 to 41 inches: sandy clay loam
BC - 41 to 53 inches: clay
C - 53 to 62 inches: sandy clay loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 1.28 in/hr)
Depth to water table: About 42 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Description of Blanton

Setting

Landform: Broad interstream divides
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Sandy marine deposits and/or loamy marine deposits

Typical profile

A - 0 to 8 inches: sand
E - 8 to 70 inches: sand
Bt1 - 70 to 75 inches: sandy loam
Bt2 - 75 to 80 inches: sandy clay loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

CoB—Cowarts loamy sand, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2qbf7
Elevation: 70 to 300 feet
Mean annual precipitation: 44 to 52 inches
Mean annual air temperature: 63 to 70 degrees F
Frost-free period: 230 to 260 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Cowarts and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cowarts

Setting

Landform: Broad interstream divides
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy marine deposits

Typical profile

Ap - 0 to 8 inches: loamy sand
Bt1 - 8 to 14 inches: sandy loam
Bt2 - 14 to 30 inches: sandy clay loam
BCt - 30 to 38 inches: sandy loam
Cd - 38 to 60 inches: coarse sandy loam
C - 60 to 80 inches: loamy sand

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Hydric soil rating: No

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

BeB—Blanton sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1vrv4
Elevation: 70 to 300 feet
Mean annual precipitation: 49 to 52 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 237 to 245 days
Farmland classification: Not prime farmland

Map Unit Composition

Blanton and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Blanton

Setting

Landform: Broad interstream divides
Down-slope shape: Linear, convex
Across-slope shape: Linear
Parent material: Sandy marine deposits and/or loamy marine deposits

Typical profile

A - 0 to 8 inches: sand
E - 8 to 70 inches: sand
Bt1 - 70 to 75 inches: sandy loam
Bt2 - 75 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.20 to 1.98 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A

Hydric soil rating: No

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

SuA—Surrency mucky sand, 0 to 1 percent slopes, frequently flooded

Map Unit Setting

National map unit symbol: 2qdyc
Elevation: 70 to 300 feet
Mean annual precipitation: 49 to 52 inches
Mean annual air temperature: 64 to 66 degrees F
Frost-free period: 237 to 245 days
Farmland classification: Not prime farmland

Map Unit Composition

Surrency and similar soils: 85 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Surrency

Setting

Landform: Drainageways, depressions
Landform position (three-dimensional): Dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Parent material: Sandy marine deposits and/or loamy marine deposits

Typical profile

A - 0 to 22 inches: mucky sand
Btg1 - 22 to 35 inches: sandy loam
Btg2 - 35 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Available water storage in profile: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018

Screven County, Georgia

GCA—Grady and Croatan soils, 0 to 2 percent slopes, ponded

Map Unit Setting

National map unit symbol: 2qdy0
Elevation: 70 to 300 feet
Mean annual precipitation: 42 to 56 inches
Mean annual air temperature: 52 to 81 degrees F
Frost-free period: 209 to 281 days
Farmland classification: Not prime farmland

Map Unit Composition

Grady and similar soils: 65 percent
Croatan and similar soils: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Grady

Setting

Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Clayey marine deposits

Typical profile

A - 0 to 5 inches: loam
Btg - 5 to 80 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Description of Croatan

Setting

Landform: Depressions

Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Organic material over loamy marine deposits

Typical profile

Oa - 0 to 28 inches: muck
Ag - 28 to 60 inches: mucky fine sandy loam
Cg2 - 60 to 80 inches: sandy clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 2.00 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 15.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Screven County, Georgia
Survey Area Data: Version 8, Sep 10, 2018