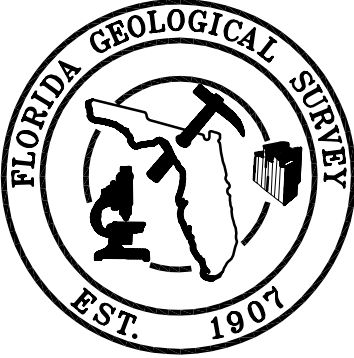


GEOLOGIC MAP OF THE  
WESTERN PORTION OF THE U.S.G.S.  
1:100,000 SCALE SARASOTA QUADRANGLE

BY  
RICHARD GREEN, P.G. # 1776,  
KEN CAMPBELL, P.G.,  
JON ARTHUR, P.G.,  
AND TOM SCOTT, P.G.  
1997



WALTER SCHMIDT  
STATE GEOLOGIST AND CHIEF

The western portion of the U.S.G.S. 1:100,000 scale Sarasota Quadrangle lies within the Sarasota River District of Scott (1997, in prep.). As a result of the presence of relatively impermeable Hawthorn Group sediments under this area, the Sarasota River District contains more rivers and streams than any other geomorphic district in the state (Scott, personal communication, 1997). The geomorphic features recognized within the study area include the Polk Uplands, the De Soto Plain, the Gulf Coastal Lowlands, and the islands of the Gulf Barrier Chain (White, 1970). Elevations within the study area range from mean sea level along the Gulf coast and lower Myakka River, to approximately 100 feet (30.5 meters) in the northeastern part of the study area. Elevations increase very gradually from the west and southwest towards the northeast. Very few natural exposures of sediments, other than undifferentiated Quaternary siliciclastics (Qu), occur within the study area. Natural exposures of older sediments are sometimes present where streams and rivers have downcut through these undifferentiated sediments. Numerous exposures of these older sediments were sampled throughout the study area, primarily in quarries, borrow pits, and excavations for retention ponds. Additional information was gathered through the inspection of cores, drill cuttings, driller's logs, and water-well permits.

Mapping of undifferentiated surficial siliciclastics provides little information regarding geology of the region. As a result of this factor, the practice of mapping the first identifiable lithostratigraphic unit within 20 feet (6.5 meters) of the surface was adopted. If the undifferentiated Quaternary sediments exceeded 20 feet (6.5 meters) in thickness, they were mapped as Qu. In cases where undifferentiated Quaternary sediments were less than 20 feet (6.5 meters) thick, the underlying stratigraphic unit was mapped. Cross sections A-A' through F-F' reflect the presence of the undifferentiated Quaternary sediments throughout the mapped area. The oldest unit mapped for this study was the Tertiary Arcadia Formation (Hawthorn Group (Tha)). Lithologies of the Oligocene to Miocene Arcadia Formation (Scott, 1958; Brewster-Wingard et al., 1997) consist of clayey, sandy/silt, phosphatic carbonates, clayey, carbonate-bearing, phosphatic sands, variably silty, silty, and clean clays, and clean clays. The carbonate sediments range from highly altered dolostones to soft, poorly consolidated limestones. A regionally consistent clay bed within the Arcadia Formation, the informal Venice clay, occurs in this area (Barr, 1996). The Arcadia Formation underlies the entire mapped region and dips to the east and south (cross sections A-A' through F-F').

West of Interstate 75 is an area, mapped as Tha, which occurs from Bradenton, south to Longboat Key and Siesta Key. The Arcadia Formation in this area is often covered with thin (up to 2.5 meters; see W-17512, cross section D-D'), localized, pockets of undifferentiated Tertiary/Quaternary fossiliferous sediments. However, due to the fact that TQsu sediments were not observed in the majority of drill cuttings and cores from this area, and that TQsu sediments are believed to be discontinuous, this area was mapped as Tha. The contact between the Tha, the TQsu, and the Holocene coastal sediments (Qc) in the vicinity of Longboat Key and Siesta Key is dashed due to lack of geologic control points in the southern part of this area. Inspection of drill cuttings indicated that the Arcadia Formation is often present within 20 meters of the surface in the vicinity of southern Longboat Key and northern Siesta Key. It should be noted that much of Lido Key and Bird Key were artificially constructed from dredged material (Slattery, et al., 1914). Therefore, the true top of Tha in this area is uncertain.

The Miocene to Pliocene Peace River Formation, Hawthorn Group (Thp), disconformably overlies the Arcadia Formation (Scott, 1988). It predominantly consists of phosphatic siliciclastics with carbonate (usually dolomite) present in the matrix and as thin beds of dolomite. The Peace River Formation thins to the west beneath the undifferentiated Tertiary/Quaternary fossiliferous sediments and the undifferentiated Quaternary sediments. It is commonly present within 20 feet (6.5 meters) of the surface near the southern edge of the De Soto Plain. It is also present in a small area west of Lake Manatee and east of Interstate 75, near the northern edge of the study area. The Peace River

Formation is absent under most of the western portion of the mapped area, except for in the vicinity of the South Venice core (W-16814, cross section D-D'). In this core, the Peace River Formation is approximately 55 feet (18 meters) thick. Hutchinson (1992) proposed a fault in southern Sarasota and northern Charlotte Counties which affected strata from the Suwannee Limestone to the lower Arcadia Formation. Due to the scarcity of geologic control points in the vicinity of the South Venice core, however, we cannot rule out the possibility that the Peace River Formation is present in a localized depositional basin.

The undifferentiated Tertiary/Quaternary fossiliferous sediments (TQsu) disconformably overlie the Arcadia and Peace River Formations throughout much of the mapped area in the Gulf Coastal Lowlands. There are problems in mapping these sediments as separate units because their historical definition is biostratigraphic, not lithostratigraphic (Scott and Allmon, 1990; Scott and Wingard, 1995). Scott (1995) informally applied the name Okeechobee formation to these sediments in an effort to provide a lithostratigraphic framework for these sediments. McCartan and Moy (1995) mapped several units in this area based upon ages inferred from fossils, stratigraphic position, and isotope age dates. Due to the similar lithologies of these units, and the difficulties encountered in attempting to differentiate them in drill cuttings, they are placed within the TQsu on this map. Ongoing research by staff members of the F.G.S. and U.S.G.S. will provide the necessary lithostratigraphic framework for these sediments. Since the Okeechobee formation has not been formally proposed, however, we have combined these undifferentiated Tertiary/Quaternary fossiliferous sediments for the purposes of this map.

The undifferentiated Tertiary/Quaternary fossiliferous sediments include Pinecrest, Colosahatchee, Bermont, and Fort Thompson sediments. Lithologies of the TQsu consist of clay, silt, sand, phosphate, and carbonate in varying admixtures. Virtually all of the individual lithologies are fossiliferous, containing some of the most macrofossiliferous sediments in the Atlantic Coastal Plain. For discussions of these sediments and the contained fossils refer to Petuch (1982), Scott and Allmon (1990) and Scott and Wingard (1995). The undifferentiated Quaternary sediments (Qu) overlie the Arcadia and Peace River Formations disconformably, and the TQsu conformably to disconformably. The Qu consists of siliciclastics ranging from clays to very coarse sands. Occasionally, shell fragments occur near the base of the unit. Qu covers virtually the entire area but is mapped only in those areas where it is more than 20 feet (6.5 meters) thick (see cross sections A-A' to F-F'). In the map area, these thick undifferentiated Quaternary sediments correspond to the Polk Uplands and much of the De Soto Plain.

The areas mapped as undifferentiated Quaternary coastal sediments (Qc) along the Gulf coast are Holocene sediments consisting of quartz sand with minor (recent) shell material, organic material, and minor phosphate. These sediments are mostly beach, barrier island, and lagoon deposits which have formed in the last 4000 to 5000 years (Campbell, 1988). No formations are recognized within this unit.

Acknowledgements

The authors would like to thank George Vattamattam, Polly Perry and Paul Matthew of the Sarasota County Health Department and Scott Riddle and Paul Jaworski of the Manatee County Environmental Management Department for their help in obtaining access to thousands of water well permits and driller's logs which were inspected for this study. Thanks also goes to Paul Winger and Don Shaulis of the Sarasota County Solid Waste Operations Division for their assistance in obtaining permission to drill a core at the Bee Ridge Landfill (W-17521). Rob Stephens of the Natural Science Division, Sarasota County, was particularly helpful in getting the authors access to various borrow pits in Sarasota County. Finally, C. Barineau, J. Stalvey, D. Jensen, L. Johnson, G. Means, and S. Mitchell of the Florida Geological Survey are thanked for their assistance in various phases of this project.

Selected Bibliography  
(See Surficial Sediments Map)

EXPLANATION

- Qc QUATERNARY COASTAL/BEACH SEDIMENTS  
Qu UNDIFFERENTIATED QUATERNARY SEDIMENTS  
TQsu UNDIFFERENTIATED TERTIARY/QUATERNARY FOSSILIFEROUS SEDIMENTS  
Thp PEACE RIVER FORMATION  
Tha ARCADIA FORMATION

- INTERSTATE/STATE HIGHWAY  
COUNTY LINE  
BOUNDARY OF STATE PARK  
CROSS SECTION LINE  
SELECTED CORES  
F.G.S. WELL NUMBERS

0 0.5 1 2 3 4 MILES  
0 1 2 3 4 5 6 KILOMETERS

SCALE

COOPERATIVELY FUNDED BY THE FLORIDA GEOLOGICAL SURVEY AND THE STATEMAP COMPONENT OF THE NATIONAL GEOLOGIC MAPPING ACT, ADMINISTERED BY THE U.S.G.S., DEPARTMENT OF THE INTERIOR, UNDER ASSISTANCE AWARD NUMBER 1434-HQ-96-AG-01480.

