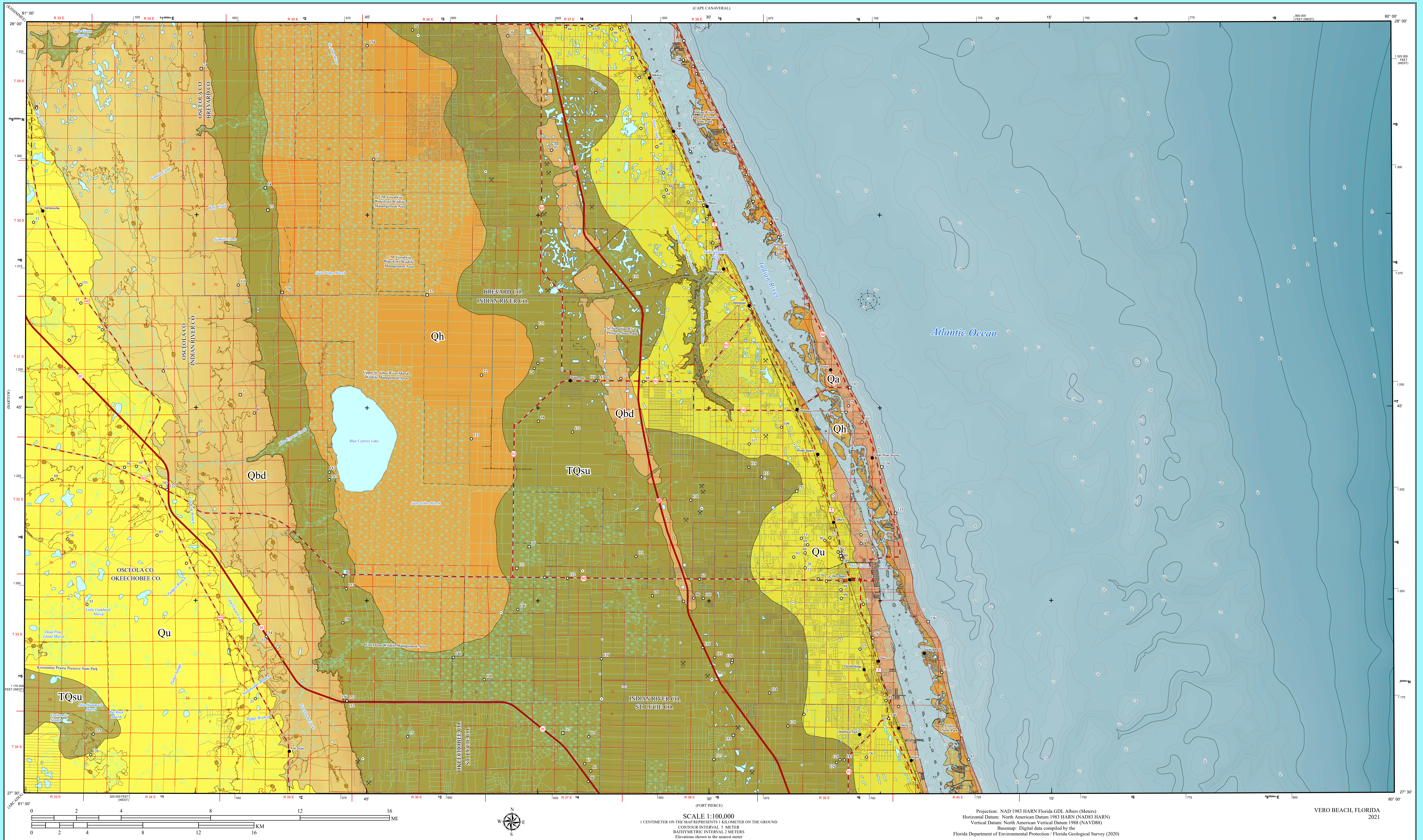


Jonathan D. Arthur
State Geologist and Director



OPEN-FILE MAP SERIES 112, Plate 1
GEOLOGIC MAP OF THE USGS VERO BEACH
30 X 60 MINUTE QUADRANGLE, CENTRAL FLORIDA
2021

BY
RICHARD C. GREEN, (P.G. # 1776), ALEXANDER G. LAMARCHE, CHRISTOPHER P. WILLIAMS, P.G.,
CRYSTAL L. HEBETS, GARRETT S. EVANS, AND CASEY K. ALBRITTON, P.G.



Holocene sediments
Qh Sediments mapped as Holocene (Qh) may include quartz sands, marls, organics, and minor carbonate sands and mud. They may also include fresh-water gastropods and modern shells. Within the study area, these occur near and along the present coastline in barrier islands on the Atlantic Ocean and the St. Johns River floodplain.

Quaternary beach ridge and dune sediments
Qbd Quaternary beach ridge and dune sediments (Qbd) are a subdivision of the undifferentiated Quaternary sediments that are noted based on surficial expression of relief beach ridges and dunes. While not a formally recognized lithostratigraphic unit, Qbd is mapped in order to facilitate a better understanding of Florida's geology. Beach ridge and dune sediments are dominantly siliclastic sands and are unconsolidated to poorly consolidated. Organics typically occur as disseminated organic matrix, roots and plant debris, carbonized remains, or charcoal.

Quaternary sediments
Qu While not a formally recognized lithostratigraphic unit, undifferentiated Quaternary (Qu) sediments are mapped in order to better understand Florida's geology. These undifferentiated Quaternary sediments consist of white to gray to orange, fine- to coarse-grained, clean to clayey unfossiliferous sands, sandy clays and clays with variable admixtures of organics.

Anastasia Formation
Qa The Anastasia Formation (Qa) is present within a narrow band along the eastern edge of the study area. The formation is composed of interbedded coquina limestone and quartz sands. It typically occurs as an coquina limestone to very-pale orange, unconsolidated to moderately indurated coquina consisting of whole and broken mollusk shells in a quartz and matrix. The coquina is commonly cemented by sparry calcite. The sands occur as light gray to tan and orange-brown, unconsolidated to moderately indurated, unfossiliferous to very fossiliferous beds. The unit sits unconformably on undifferentiated Tertiary/Quaternary shelly sediments.

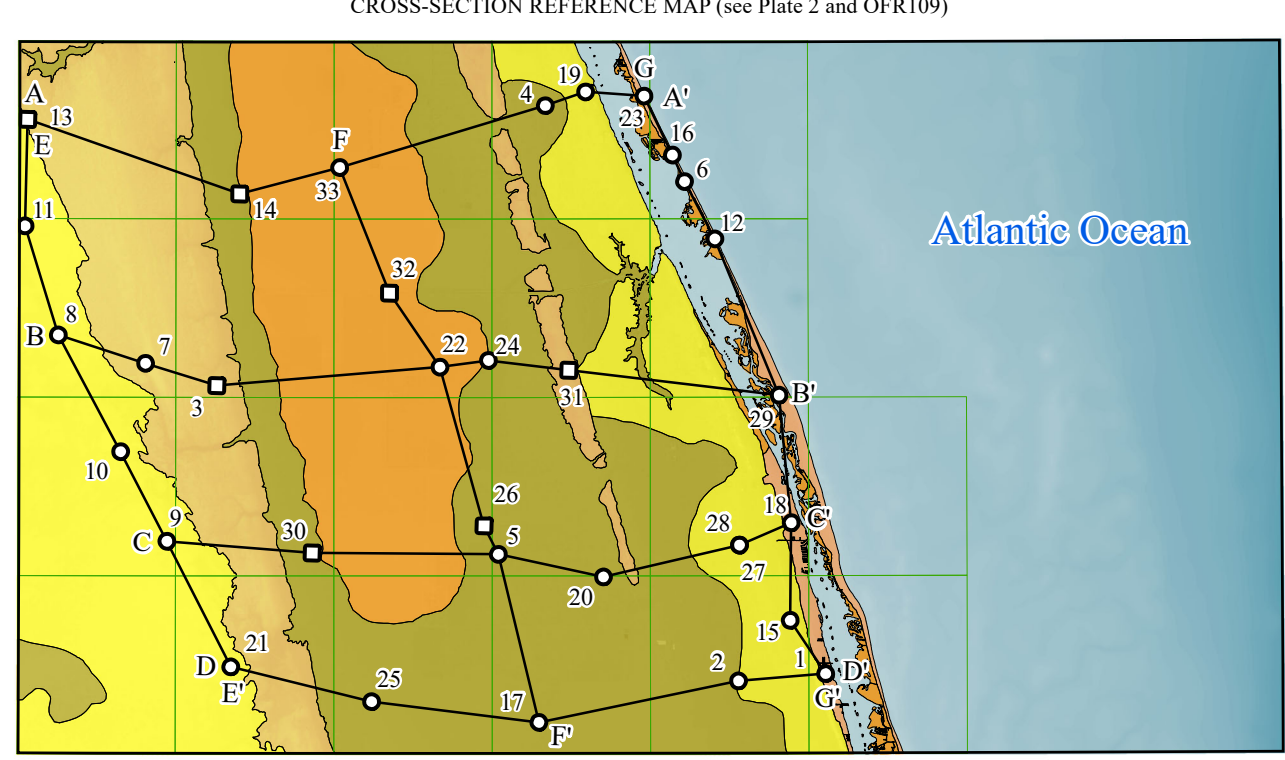
Undifferentiated Tertiary/Quaternary shelly sediments
TQsu Undifferentiated Tertiary/Quaternary shelly sediments (TQsu) typically consist of fine- to medium quartz sand with variable amounts of micrite, silt, marine mollusk shells, and clay. Shells, which may vary from whole to fragmented, can range from highly weathered and abraded to relatively intact, and may occasionally become the dominant lithology. Other accessory minerals may include calcite, aragonite, mica, heavy minerals, and phosphate sand and gravel. A basal phosphate lag is often present. Colors range from light gray to light-olive gray. In the study area, TQsu is predominantly in the form of unconsolidated sands, with varying percentages of shell fragments. The unit sits unconformably on the Peace River Formation throughout the mapped area.

SPOIL
The areas marked as spoil on the map are disturbed islands created by dredging in the Indian River along navigation channels. These are typically a mixture of sand and shells from either the undifferentiated Tertiary/Quaternary shelly sediments, the Anastasia Formation, or Holocene sediments.

LEGEND

- Primary highway
- Secondary highway
- Light duty road, principal street
- Railroad
- County boundary
- State lands and parks
- Contours (5m)
- Index
- Intermediate
- Bathymetry (2m)
- Index
- Intermediate
- Core
- Cuttings
- M-Series sample
- Outcrop/exposure
- Borrow pit
- Quarry / sand mine
- City/town
- USGS 1:24,000 Quadrangle tick mark
- Wells numbered 1 - 33 are used in cross-sections on OFMS 112, Plate 2
- Waterbody
- Wetland
- River or stream
- Cross section line
- U.S. Public Lands Survey Township/Range
- U.S. Public Lands Survey Section

Basemap Coordinate Explanation
10,000-meter grid, zone 17: Universal Transverse Mercator
25,000-foot grid ticks based on Florida coordinate system, east and west zones
9g = 9g000000
17TQ = 17TQ000000 (WEST)



ADJOINING MAPS

1	2
3	5

1 Kissimmee (OFMS 110)
2 Cape Canaveral
3 Bartow (OFMS 111)
4 Arcadia (OFMS 87/88)
5 Fort Pierce (to be mapped in 2021)

For more information or to order maps contact:
Librarian, Florida Geological Survey
3000 Commonwealth Blvd., Suite 1
Tallahassee, FL 32301
(850) 617-0316
<https://floridageo.dep.gov/gis/research/content/statemap>

This map was created using Florida Department of Environmental Protection (DEP) databases and data obtained by the Florida Geological Survey (FGS). It was completed March 31, 2021, by the DEP/FGS Geological Investigations Section. This document was prepared for the presentation of the geologic information shown and is not intended to replace site-specific or use-specific investigations. The FGS does not guarantee this document to be free from errors or inaccuracies and disclaims any responsibility or liability for inappropriate change of scale, interpretations, or decisions based thereon. Cooperatively funded by the DEP/FGS and the U.S. Geological Survey (USGS) National Cooperative Geologic Mapping Program under USGS assistance award number G19AC00313. The views and conclusions in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.