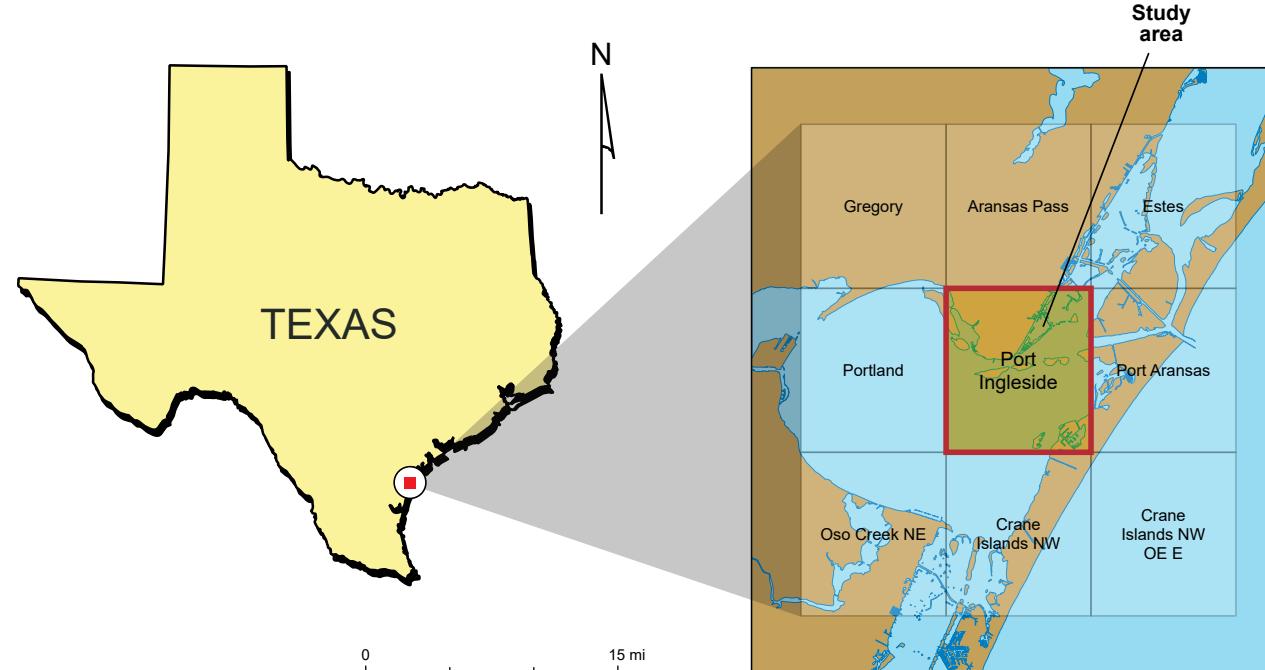
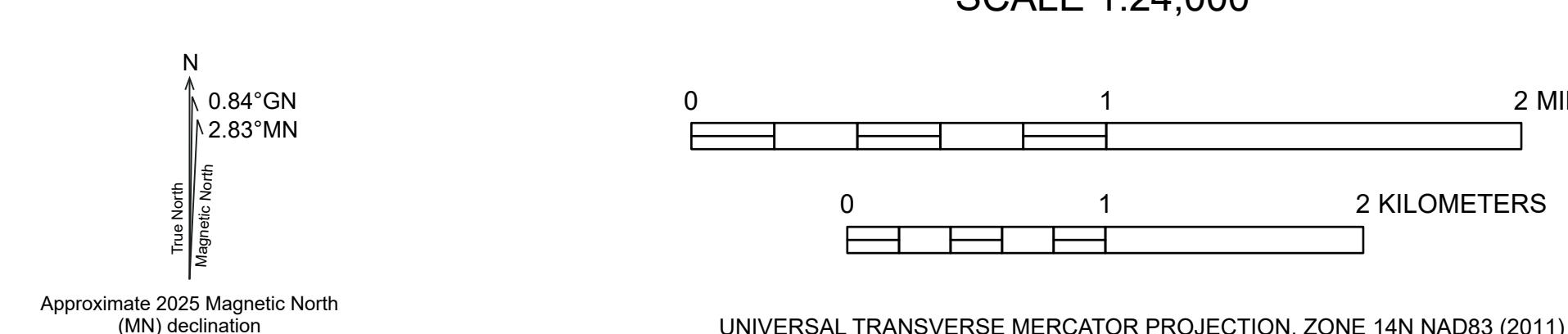
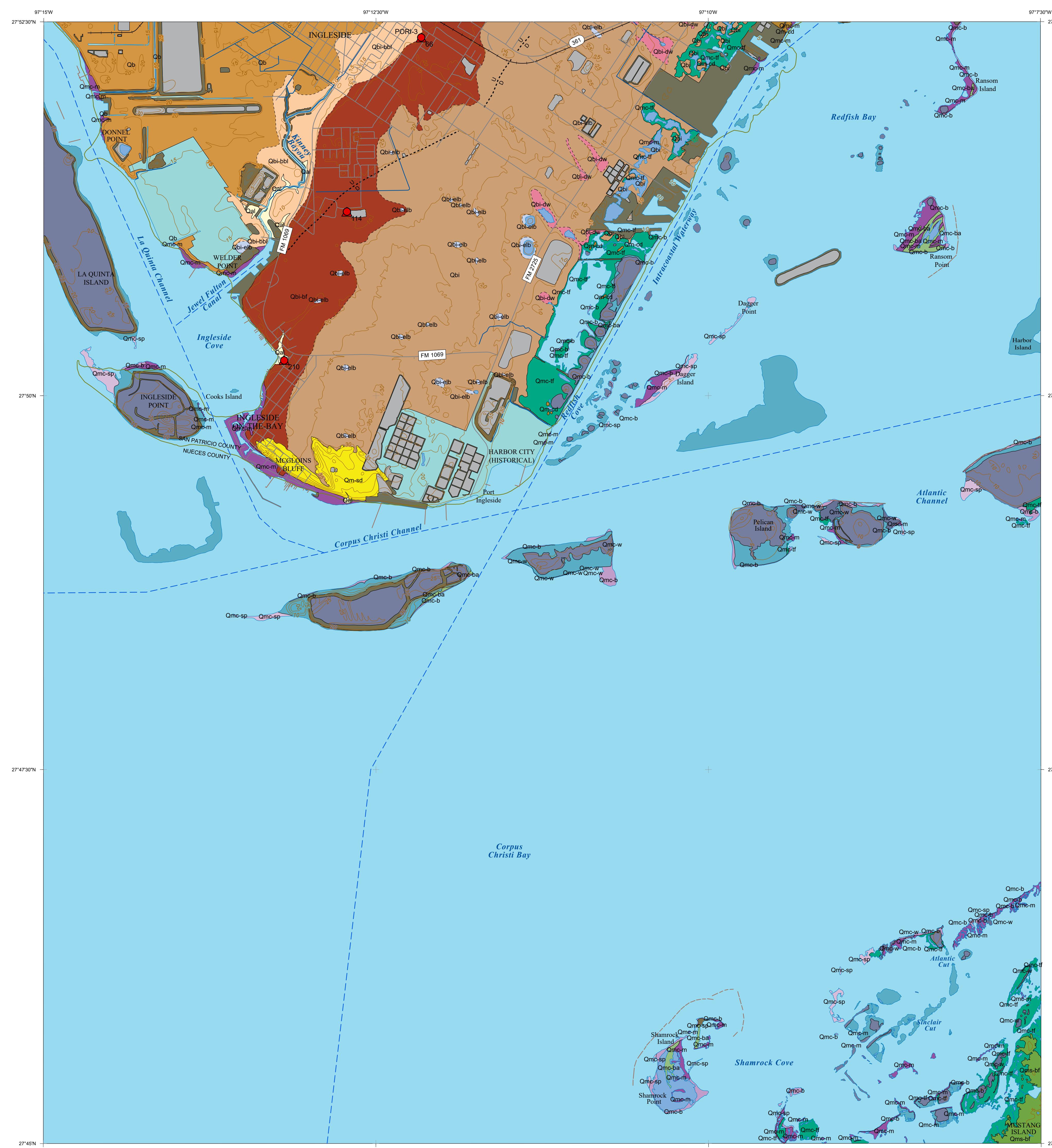


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GEOLOGIC MAP OF THE PORT INGLESIDE QUADRANGLE TEXAS GULF OF AMERICA COAST

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Explanation

HOLOCENE

Matagorda Formation

Qm-sd - Sand dune. Unconsolidated sand deposited by wind, including blowout dunes. May be active or stabilized by vegetation. May include Pleistocene deposits.

Qm-cd - Clay dune. Semiconsolidated silt, clay, and sand deposited by wind adjacent to active and abandoned tidal flats. May include storm deposits. Common coastal prairie vegetation.

Caranahua Member (Bay- and Estuarine-margin Deposits)

Qmc-m - Marsh. Unconsolidated mud and sand deposited in low-relief areas adjacent to bay shoreline. Common tidal channels.

Qmc-b - Beach or berm. Unconsolidated sand, shell, and mud deposited along bay shoreline from wave action. Beach is unvegetated; berm may be sparsely vegetated.

Qmc-ba - Beach or berm; abandoned. Unconsolidated sand, shell, and mud deposited in low berm along former bay shorelines from wave action.

Qmc-w - Washover. Unconsolidated sand and shell deposited adjacent to bay shoreline by high water level and wave activity during tropical cyclone passage.

Qmc-sp - Spit. Unconsolidated sand, shell, and mud deposited across bay and valley mouths from erosion of adjacent shoreline and lateral sediment migration. May include beach, berm, and washover deposits.

Qmc-tf - Tidal flat. Unconsolidated sand and mud deposited in a tidal flat that is periodically inundated by astronomical tides or wind-driven water at the margins of bays or tributary valleys. May include barren or vegetated areas and algal mats.

Saluria Member (Gulf-margin Deposits)

Qms-bf - Barrier flat. Unconsolidated sand deposited in low-relief barrier-island environment landward of the beach and dune system. May include washover and eolian deposits.

HOLOCENE TO PLEISTOCENE

Qal - Alluvium, undifferentiated. Unconsolidated sand, silt, and clay deposited in a variety of environments along streams and drainages. May include Pleistocene and Holocene deposits.

PLEISTOCENE

Beaumont Formation

Qb - Beaumont Formation, undifferentiated. Semiconsolidated clay, silt, sand, and minor gravel deposited in fluvial-deltaic, interdistributary, distributary, and bay and estuarine settings. Includes floodplain and delta-plain deposits and channel, levee, and crevasse-splay deposits.

Ingleside Unit

Qbi - Barrier island, barrier peninsula, and strandplain, undifferentiated. Semiconsolidated sand, silt, and lesser clay deposited in barrier island, barrier peninsula, or strandplain setting. Common pimple mounds, closed basins, and ridge-and-swale topography.

Qbi-bf - Barrier flat. Semiconsolidated sand and mud deposited in barrier-flat environment.

Qbi-bbl - Back barrier and lagoon. Semiconsolidated sand and mud deposited in back barrier or lagoon environment.

Qbi-dw - Barrier drainageway. Semiconsolidated sand, silt, and lesser clay deposited in former Ingleside larger swales, tidal channels, and washover channels. Generally low elevation with few pimple mounds. Generally flooded by storm-elevated tides.

Qbi-eb - Ephemeral lake basin. Semiconsolidated sand and mud deposited in closed or connected topographic basins in a barrier-island or strandplain environment. May include younger lacustrine deposits.

Map Symbols (lines, symbols, and patterns)

—	Contact (distinct)
- - -	Contact (gradational)
— U — D —	Normal fault - approximately located
— Stream (active or intermittent), drainage ditch, canal, or tidal channel	
— Ship channel	
— Coastal structure - Jetty, pier, groin, or breakwater	
— Waterline	
— County line	
— Road	
— Railroad	
— Elevation (ft); contour interval 5 ft	
▲	Apparent electrical conductivity (in millisiemens per meter, or ms/m) of the ground measured using a Geonics EM31 ground-conductivity meter in the vertical dipole coil orientation. Value shown is the bulk conductivity from the surface to depths of 10 to 20 ft (McNeill, 1980a, 1980b).
●	Time-domain EM sounding for subsurface lithostratigraphic interpretation.

References

Brown, L. F., Jr., Brewton, J. L., and McGowen, J. H., 1975, Geologic Atlas of Texas, Corpus Christi Sheet: The University of Texas at Austin, Bureau of Economic Geology, Geologic Atlas of Texas, map scale 1:250,000.

Brown, L. F., Jr., Brewton, J. L., McGowen, J. H., Fisher, W. L., Groat, C. G., and Evans, T. J., 1976, Environmental geologic atlas of the Texas coastal zone: Corpus Christi area: The University of Texas at Austin, Bureau of Economic Geology, map scales 1:125,000 and 1:250,000, 123 p.

McNeill, J. D., 1980a, Electrical conductivity of soil and rocks: Geonics Limited, Mississauga, Ontario, Canada, Technical Note TN-5, 22 p.

McNeill, J. D., 1980b, Electromagnetic terrain conductivity measurement at low induction numbers: Geonics Limited, Mississauga, Ontario, Canada, Technical Note TN-6, 15 p.

Paine, J. G., Collins, E. W., and Caudle, T., in press, Matagorda Formation: a new Holocene coastal stratigraphic unit, Texas: manuscript submitted to Stratigraphic Notes.

White, W. A., Calnan, T. R., Morton, R. A., Kimble, R. S., Littleton, T. G., McGowen, J. H., Nance, H. S., and Schmedes, K. E., 1983, Submerged lands of Texas, Corpus Christi area: sediments, geochemistry, benthic macroinvertebrates, and associated wetlands: The University of Texas at Austin, Bureau of Economic Geology, map scale 1:125,000, 154 p.

Acknowledgments

Photography used in the study included (1) 0.6-m pixel, natural color, National Agriculture Imagery Program (NAIP) digital imagery, photographed in 2002 and 2003 and (2) 1:24,000-scale Texas aerial photographic mosaics of the Port Ingleside quadrangle taken between March 1800 and April 1937 and in December 1959. NAIP imagery was obtained from the Texas Geographic Information Office (TGeo). Photography was supplemented by 1-m-cell size digital elevation models (DEMs) constructed from data acquired during an airborne lidar survey flown by the U.S. Geological Survey (USGS) in 2018. Previous regional maps that cover this area include the 1:250,000-scale Geologic Atlas of Texas, Corpus Christi Sheet (Brown and others, 1975), the 1:125,000-scale Environmental Geologic Atlas of Texas, Corpus Christi area (Brown and others, 1976), and the 1:125,000-scale map of Distribution of Wetlands and Benthic Macroinvertebrates from the Submerged Lands of Texas, Corpus Christi area (White and others, 1983). The rationale for the mapping approach to Holocene fluvial, deltaic, bay, and estuarine deposits is described in Paine and others (in press).

The study included field observations of surficial deposits and collection and interpretation of surface and subsurface electrical conductivities measured using Geonics EM31 and EM38 ground-based electromagnetic induction conductivity meters (McNeill, 1980a, 1980b) and time-domain electromagnetic induction instruments (TEMCompany sTEM). Elevation contours were obtained in GIS format from the U.S. Geological Survey. Roads, railroads, and dredged ship channels were obtained in GIS format from the Texas Department of Transportation. Streams and drainage ditches were mapped from aerial imagery and the lidar-derived DEM.

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System	Series	Time (ka)	Map Units					
			0	Eolian	Lacustrine	Fluvial and Deltaic	Bay and Estuarine	Gulf Margin
Quaternary	Holocene	0	Qm-cd	Qm-sd	Qal	Qmc-m	Qmc-b	Qmc-ba
		-12	Qm-cd	Qm-cd	Qal	Qmc-w	Qmc-sp	Qmc-if
Pleistocene		-2,600	Qb	Qb	Qb	Qbi-bf	Qbi-bbl	Qbi-dw
			Qbi-eb	Qbi-eb				