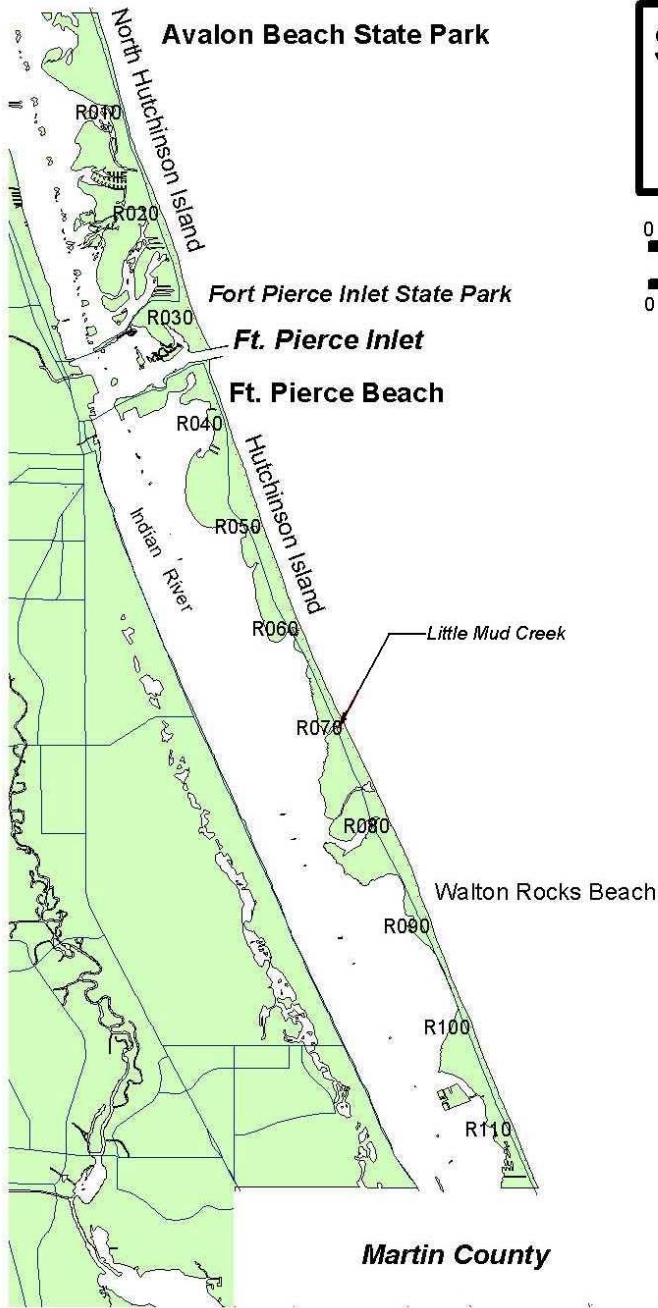
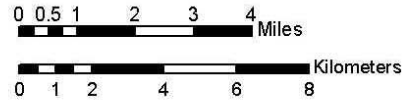


**Indian River County**



**ST LUCIE COUNTY**  
Hurricane Frances and Jeanne  
Damage Assessment  
Location Map



Atlantic Ocean



**Martin County**

Figure 18: St. Lucie County Location Map

## **Saint Lucie County**

The Atlantic Ocean fronting beaches of St. Lucie County extend for 21.5 miles between Indian River and Martin Counties (Figure 18). Prior to landfall of the two storms, two beach segments of St. Lucie County (5.7 miles) were designated as critically eroded. The northern critical erosion area (R34-R46) extends south from Ft. Pierce Inlet. Most of this area is a federal beach restoration project. The southern 3.4 miles of the county shoreline (R98-R115+1000) was also designated critically eroded. Ft. Pierce Inlet has a federal navigation project, and some shoaling likely occurred from Hurricanes Frances and Jeanne. The St. Lucie County beaches extended approximately 27 to 5 miles from the center of both hurricanes' eyes at landfall, placing St. Lucie County in the region of the highest storm surge.

### **Beach and Dune Erosion and Storm Surge on North County Beaches**

Generally, major beach and dune erosion (Condition IV) was experienced throughout St. Lucie County during both Hurricanes Frances and Jeanne. In areas where no dunes or only low profile dunes existed, substantial inland flooding was experienced 300 to 400 feet inland from the beach.

The county beaches north of Ft. Pierce Inlet (R1-R33) sustained major beach and dune erosion. Historically, this stretch has been relatively stable and even accretional approaching the inlet. At R6, within Avalon State Park, the public beach access site was severely impacted by both Frances and Jeanne. Frances caused severe erosion resulting in a dune retreat of between 50 and 60 feet that undermined the seaward edge of the parking lot (Photo 25). Beach and dune erosion attributed to Hurricane Jeanne continued through the parking lot, resulting in a cumulative dune retreat of about 100 feet.

A high water mark represented by a wrack line after Hurricane Frances was located at an elevation determined by the Department's vertical elevation on monument R6, which was +12 ft. NGVD. It is believed that this high water mark is indicative of the storm surge generally throughout the region and represents a 100-year frequency combined storm tide level from St. Lucie, Indian River, and northern Martin Counties. The storm tide of Hurricane Jeanne was comparable, if not slightly, higher.

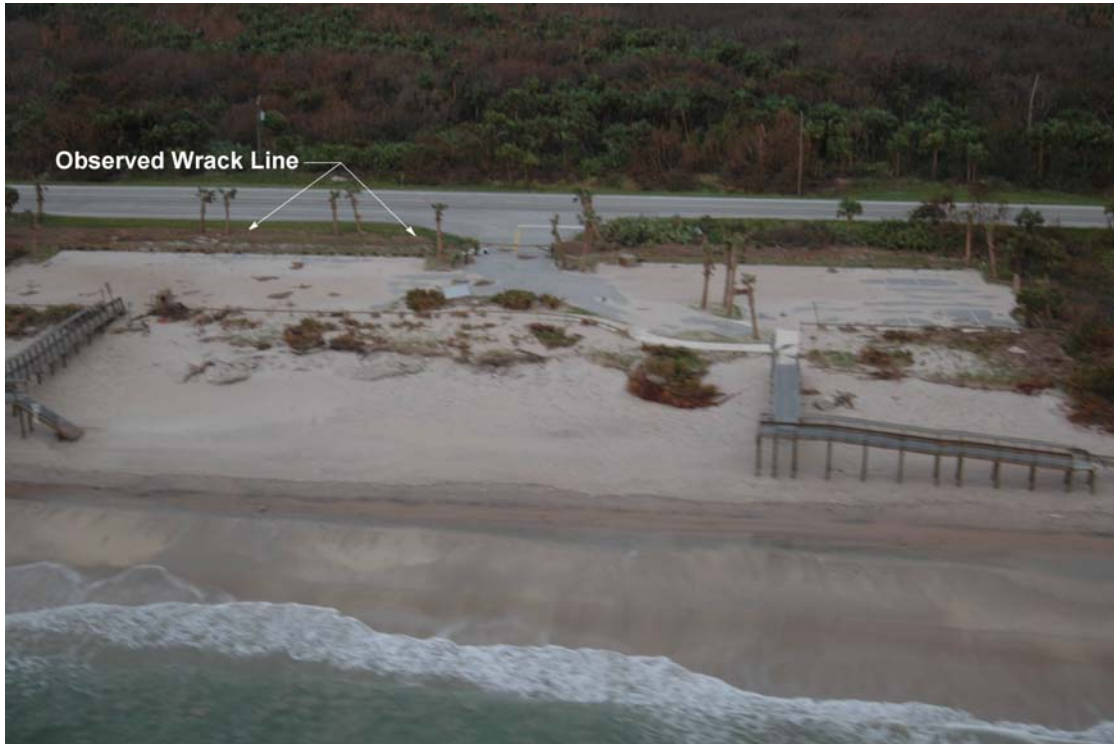


Photo 25: Avalon State Park after Frances, North St. Lucie County (R6)

### **Beach and Dune Erosion and Storm Surge on Hutchinson Island**

South of Ft. Pierce Inlet the beach was recently nourished. Although the beach berm did not appear to be significantly eroded from either storm it is likely that follow-up surveys will reveal significant volumetric losses of sand from the project area. Significant overwash was experienced throughout Ft. Pierce Beach during both storms between R36 and R44. The largest overwash deposits occurred between R37 and R39 and between R42 and R44. Up to three feet of sand was deposited on Ocean Drive, U.S. A1A. Also, between R44 and R48, substantial accretion resulted from the translation of beach nourishment material southward.

South of Ft. Pierce Beach along the sparsely developed reach of Hutchinson Island (R47-R98) major beach and dune erosion (Condition IV) occurred during both hurricanes. This region experienced severe storm surge flooding and major sediment washover deposits as much as 500 feet inland of the beach. Along the developed south St. Lucie County segment of Hutchinson Island major beach and dune erosion (Condition IV) and substantial inland flooding occurred during both hurricanes. Substantial dune overtopping and storm surge overwash was experienced throughout this area, resulting in many structures like swimming pools and ground floors of condominiums being flooded and filled with sand deposits (Photo 26). An average of 50 feet of dune line recession was experienced throughout south St. Lucie County in response to both hurricanes. A wide beach recovery berm was observed along this area seaward of a shore-parallel beach erosion trough.



Photo 26: Dune Erosion and Washover, South Hutchinson Island

### **Northern St. Lucie County Damage**

North of Ft. Pierce Inlet, the beaches of St. Lucie County are sparsely developed between R1 and R25 and include the Avalon State Park. Condominium development between R25 and R28 is set back a substantial distance from what was a relatively stable stretch of beach, and most of the remaining beach to Ft. Pierce Inlet is part of the Ft. Pierce Inlet State Park. Throughout northern St. Lucie County, Frances caused major damage to 15 single-family dwellings, a restaurant, and a number of carports and garage buildings. Notably, at R2 the storm surge and waves of Frances destroyed a quadraplex and a portion of a backshore sill (Photo 27). At Avalon State Park's beach access sites, a 250-foot asphalt parking area was damaged at R6 and a 450-foot parking area near R8 was covered with sand. The handicapped beach access ramps at both sites were substantially damaged. Hurricane Jeanne caused additional wind damage throughout northern St. Lucie County to several condominium buildings. Two buildings at R18 and another near R21 had upper floors substantially damaged by Jeanne's winds. The storm surge of Hurricane Jeanne also substantially destroyed the Avalon State Park's parking areas at R6 and R8 (Photo 28).



Photo 27: Destroyed Quadraplex, North St. Lucie County (R2)



Photo 28: Avalon State Park after Hurricane Jeanne, North St. Lucie County (R8)

### **Ft. Pierce Beach Damage**

Sustained winds were measured in Ft. Pierce at 80-mph, gusting to 108-mph. The south jetty at Ft. Pierce Inlet sustained significant damage to its asphalt walkway during both Hurricanes Frances and Jeanne. Protected by the recently nourished beach restoration project, the development of Ft. Pierce Beach did not sustain the severe impact experienced in Indian River County. There was, however, substantial flooding and sand deposition on the ground floors of many residences and businesses both seaward and landward of U.S. Highway A1A. Several condominiums with their parking garages and single-family dwellings sustained major wind damage during both hurricanes. Two houses had their roofs blown off during Hurricane Frances. The South Beach Ocean Park had damage throughout to its facilities including a destroyed pavilion. Throughout Ft. Pierce Beach during the storms was also moderate to major wind damage to minor structures, signs, power poles and lines, roofing, siding, trees and shrubs.

### **Damage between Ft. Pierce Beach and Normandy Access (R47-R98)**

This largely undeveloped 10-mile stretch of Hutchinson Island experienced the severe flooding and overwash impacts of both storms. The most notable damage during Hurricane Frances was the structural collapse of the Little Mud Creek north bridge abutment (R69.5) (Photo 29). Designed for the lower flows typically experienced with a tidal creek adjacent the Indian River Lagoon, the bridge culvert could not carry the extreme flow of a 100-year storm surge and the north bridge abutment catastrophically collapsed. The beach access park and all its facilities seaward of the bridge was also totally destroyed. The storm surge from Jeanne also damaged a stretch of U.S. Highway A1A near R60 caused by the storm surge flowing across the road into Middle Cove. An additional 100 feet of road damage was sustained by the storm surge at R65.7. U.S. Highway A1A was buried in sand by the storm surge overwash between R64 and R66. The Blind Creek bridge (R76) survived but Blind Creek Park was destroyed again as it was by Hurricane Irene in 1999.



Photo 29: U.S. Highway A1A Breakthrough at Little Mud Creek (R69.5)

Near R81, the Florida Power and Light (FPL) nuclear power plant saw its discharge canal threatened with breaching due to the toe erosion of the confinement berm. The FPL intake canal (R83) had erosion to its interior side slopes. To the south, Walton Rocks Beach Park and its facilities (R85-R87) sustained severe damage throughout the park from both storms. At the Dune Walk condominiums (R88.7), the north building had a balcony collapse and the recreation building had its roof blown off. More storm surge damage and lagoon shoreline erosion occurred at R94 and R97, causing significant damage to the south bound lane of U.S. Highway A1A.

### **South St. Lucie County Damage**

The south St. Lucie County beaches were designated critically eroded following special surveys and studies after Hurricanes Floyd and Irene (1999). The majority of upland development along this 3.4-mile reach to the Martin County line is now imminently threatened from future storms. At least 16 multifamily dwellings (mostly condominiums, a motel and restaurant) saw flooding and interior damages to their ground floors from both storms. Several swimming pools were substantially filled with sand. Among the worst damage was observed near R106 at the Hutchinson Inn and Shuckers Restaurant. The roof blew off the Hutchinson Inn, a 21-room bed and breakfast motel, during Hurricane Frances, and the erosion, storm surge, and waves of Hurricane Jeanne substantially damaged the seaward end of the building. Next door the Shuckers Restaurant saw its seaward porch and decks destroyed, and the building had initial

undermining during Frances. The building then sustained substantial damage by the erosion, storm surge, and waves of Jeanne. The pool deck of the 60-unit condominium attached to Shuckers was also destroyed (Photo 30). A commercial building to the south at the Nettles Island beach access was also substantially damaged by the storm surge and waves of Jeanne. South of the Waveland Beach access, a 1,100-foot backshore sill was destroyed adjacent to the Island Crest condominiums during Frances. At the Marriott Courtyard (R115) three units of the eighth floor were substantially damaged by Jeanne's winds.



Photo 30: Erosion and Damage, South Hutchinson Island (R106)

### **Summary of St. Lucie County Damage on the Coast**

In summary, Hurricane Frances destroyed or caused major damage to 100 major structures, including 50 single-family dwellings, 21 multifamily dwellings, six commercial or other buildings, and 23 nonhabitable major structures. Hurricane Jeanne destroyed or caused major damage to 40 major structures, including four single-family dwellings, 22 multifamily dwellings, four commercial or other buildings, and 10 nonhabitable major structures. Both storms also destroyed 1,300 feet of backshore sills. Countywide, the St. Lucie County Building Department reported nearly 17,000 residences and buildings sustained damage.