3 General Assessment/Characterization of Damages

The general types of damages the BPAT observed as a result of Hurricane Georges in the Gulf Coast are discussed below. More detailed descriptions of observed damages and mitigation successes are included in Sections 4, 5, and 6.

3.1 Flood Damage Observations

Hurricane Georges produced significant flooding in riverine and coastal areas. Heavy rainfall resulted in riverine flooding in low-lying areas. Coastal storm surge resulted in inundation along exposed regions of the coastline. In some areas, a combination of riverine and coastal storm surge flooding caused building damage.

3.1.1 Riverine Flood Damage

Hundreds of inland residential structures in Alabama, Florida, and Mississippi were inundated with water by riverine flooding. Structural damage, however, was limited; most damages were caused by water inundation (Figures 3-1 and 3-2). Damages observed included loss of contents, flooring, interior finishes, and portions of wallboard and insulation. Elevated homes generally performed well and required only minor cleanup (Figure 3-3).

FIGURE 3-1 Houses inundated by 2 to 3 feet of floodwaters in the Florida Panhandle.

FIGURE 3-2 Typical flooding to homes in low-lying areas.

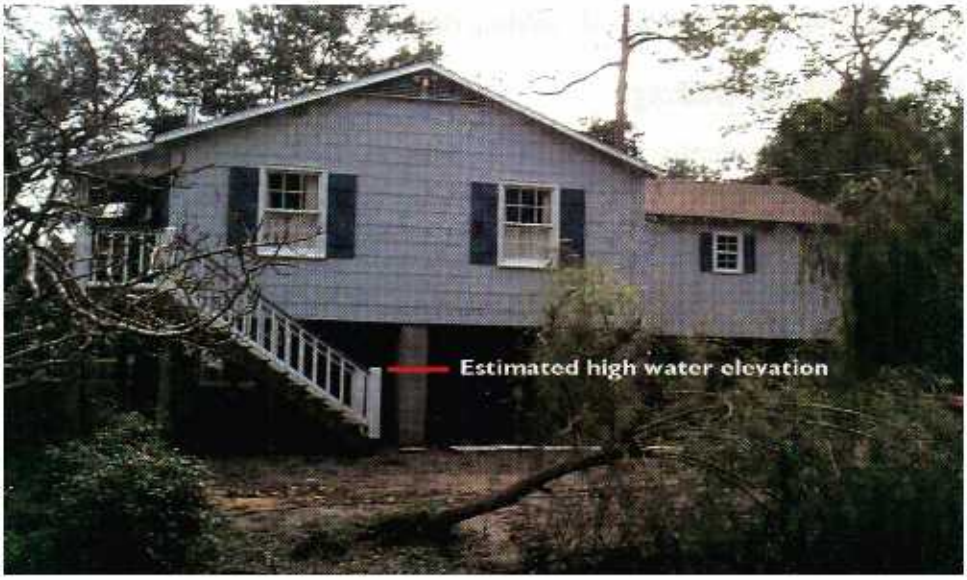

FIGURE 3-3 Elevated home along the Fish River in Baldwin County, Alabama, that received minimal damage.

3.1.2 Coastal Surge Damage

The Gulf Coast region lost several vertical feet of sand along beaches as a result of Hurricane Georges. The most significant loss occurred in Gulf Shores and Dauphin Island, Alabama. Moderate overwash was observed in Alabama and along parts of the Mississippi coast. Higher overwash volumes were found in Florida (where sand supply is high) while little to no sand was overwashed elsewhere in Mississippi. Regionally, sand that moved offshore into sandbars during the storm returned to the beach within a few weeks. Bluff and bulkhead erosion was common, but failure or complete undermining of shoreline protection structures was rare.

Building damage was concentrated on the front row of houses. Houses set back and properly elevated on deep pilings suffered little damage. The most severe damage caused to structures by coastal surge was observed on Dauphin Island, Alabama. Pile foundations on several Dauphin Island homes failed due to a combination of erosion and inadequate pile embedment, resulting in the collapse of structures (Figure 3-4). From Gulfport to Biloxi, Mississippi, minimal damage due to coastal surge was observed (Figure 3-5). Few homes are sited on the open coast and little overwash was evident.

FIGURE 3-4 Front-row house separated from its foundation and destroyed by the storm on Dauphin Island, Alabama. Note the properly elevated and set back house on the right fared very well.

FIGURE 3-5 Mississippi Gulf Coast near Biloxi. Minimal coastal surge damage or overwash was observed.

Coastal areas from Gautier to Pascagoula, Mississippi suffered some damage (Figure 3-6). Along Mobile Bay in Alabama, coastal surges severely damaged fishing piers and boatlifts. In addition, scour behind bulkheads caused some damages to front-row buildings (Figures 3-7 and 3-8). In the Florida Panhandle, limited structural damage was observed. Significant sand deposition, however, required extensive cleanup efforts (Figure 3-9).

FIGURE 3-6 Overwashed sand accumulation and minor structural damage near Gautier, Mississippi.

FIGURE 3-7 Remnants of fishing piers in Mobile Bay near Fairhope, Alabama. Note scour behind the bulkhead on the left.

FIGURE 3-8 In some cases, scour behind bulkheads resulted in structural damage along Mobile Bay, Alabama.

FIGURE 3-9 Sand accumulation from overwash in Pensacola Beach, Florida.

Pre-FIRM structures are those built before the effective date of the first FIRM issued by FEMA for the community in which the structure is located. Similarly, a post-FIRM structure is one built after the effective date of the first FIRM. In general, the effective date of a FIRM corresponds approximately to a community's adoption of floodplain management ordinances incorporating NFIP regulations for new construction and substantial improvements of buildings in special flood hazard areas (SFHAs). These regulations include the requirement for elevation of residential structures in SFHAs. In general, the BPAT observed that post-FIRM, elevated structures set back from the shoreline performed well during Hurricane Georges (Figure 3-10).

FIGURE 3-10 Properly elevated and set back houses sustained little damage.

3.2 Wind Damage Observations

Hurricane Georges did not cause significant wind-related structural damage along the Gulf Coast. Buildings along the open coast suffered minor wind damage, including loss of sections of composition roof shingles and siding (Figure 3-11).

Many homes that lost their roofs were susceptible to further interior damage from subsequent rainfall. Wind damage in inland areas included damage to trees and signs. The most severe inland wind damage occurred to signs, roofs, and trees in the Pascagoula, Mississippi area (Figure 3-12).

FIGURE 3-11 These condominiums near Pascagoula, Mississippi suffered wind damage to roofing shingles and siding.

FIGURE 3-12 Wind damage to roofs and trees in Pascagoula, Mississippi.