Franklin Zone	8/12/2004	08:00	Storm Surge/Tide	0	0	15K	0.00K
Franklin Zone	6/11/2005	12:00	Storm Surge/Tide	0	0	25K	0.00K
Franklin Zone	7/10/2005	06:00	Storm Surge/Tide	0	0	9.5M	0.00K
Franklin Zone	8/28/2005	20:00	Storm Surge/Tide	0	0	200K	0.00K
Franklin Zone	6/12/2006	12:00	Storm Surge/Tide	0	0	5K	0.00K
Franklin Zone	8/24/2008	06:00	Storm Surge/Tide	0	0	0.00K	0.00K
Franklin Zone	9/1/2008	02:00	Storm Surge/Tide	0	0	100K	0.00K
Franklin Zone	8/16/2009	17:00	Storm Surge/Tide	0	0	0.00K	0.00K
Coastal Franklin Zone	6/25/2012	14:24	Storm Surge/Tide	0	0	25K	0.00K
Coastal Franklin Zone	8/28/2012	07:00	Storm Surge/Tide	0	0	500K	0.00K
Coastal Franklin Zone	6/6/2016	12:00	Storm Surge/Tide	0	0	0.00K	0.00K
Coastal Franklin Zone	9/1/2016	19:00	Storm Surge/Tide	0	0	8.7M	0.00K
Coastal Franklin Zone	10/7/2017	13:00	Storm Surge/Tide	0	0	50K	0.00K
Coastal Franklin Zone	10/10/2018	05:00	Storm Surge/Tide	0	0	150M	0.00K
Coastal Franklin Zone	10/19/2019	05:45	Storm Surge/Tide	0	0	0.00K	0.00K
Totals:						**Property Damage: $169,620,000**	

Hazard Event Narrative – Extent and Impact

1. 9/5/2002, Carrabelle Beach – Storm surge heights of 4 feet combined with large battering waves eroded sand up to 5 feet at Dog Island. Two homes partially collapsed. At St. George Island, moderate beach erosion occurred. Overwash undermined a portion of Hwy 98 near Carrabelle Beach. Property damage was estimated at $500,000.

2. 7/10/2005, Franklin Zone – A 7 to 10 foot storm surge caused significant coastal flooding and moderate to severe beach erosion. Hwy 98 from Lanark Village to Carrabelle and Carrabelle to Eastpoint was washed out. CR 370 (Alligator Point Road) and SR 300 (bridge and entrance to St. George Island State Park) were closed. Five miles of the road into St. George Island State Park was damaged. The surge damaged 80% of the park's dunes, boardwalks and beach front restrooms. Oyster houses, boats and equipment were damaged. Septic tanks and wells on St. George and Dog Islands were contaminated. A total of 28 homes were destroyed, 141 damaged, and numerous businesses damaged or destroyed. The property damage estimates were $9,500,000.

3. 8/28/2012, Coastal Franklin Zone – The outer remnants of Hurricane Isaac spawned a couple of funnel clouds and tornadoes, and some coastal flooding did occur across Franklin County with storm surge. Significant

erosion occurred across the county with estimates of $500,000. The storm surge was measured at 3:45 feet at Apalachicola with a total storm tide of 3.92 inches. Water Street in Apalachicola flooded with over 1 foot of water in some places. Some occurred in St. George Island State Park with water passing the dune line and flooding parking areas.

4. 10/10/2018, Coastal Franklin Zone – Hurricane Michael is 3rd most powerful hurricane to hit the US as a category 5 hurricane. While preliminary peak storm surge inundation was slightly less east of Indian Pass, values were still life-threatening and caused significant damage. Along the coast, portions of US 98 and Alligator Drive were washed out and had to be patched and repaved. In Carrabelle, water was high enough to enter a restaurant, resulting in damage to furniture. In addition, numerous homes along the coast were destroyed and damaged as water slammed against the structures. In addition to extensive structural damage, hurricane force winds caused widespread power outages across a large portion of the tri-state region. Nearly 100% of customers across a large portion of the Florida Panhandle lost power, with some of these outages lasting weeks. The catastrophic winds also resulted in damage to the timber and agricultural communities across Florida and Georgia.

Hurricane Michael Storm Damage

Details from the Florida Department of Environmental Protection, Division of Water Resource Management, Hurricane Michael Post-Storm Beach Conditions and Coastal Impact Report

The storm tides of Hurricane Michael in Franklin County generally ranged from 8 to 12 feet above sea level. At Apalachicola on the mainland shore of Apalachicola Bay, storm tides were experienced of 8 to 9 feet above sea level. At the bay entrance of the Apalachicola River, a NOAA tide gauge measured a peak tide level from Hurricane Michael of 8.6 feet. At East Point on the mainland shore of St. George Sound behind St. George Island, the USGS measured high water marks ranging between 8.6 to 10.6 feet.

Photo source: Tallahassee Democrat

These elevations were comparable to those measured along the gulf shore of St. George Island. At the eastern end of St. George Island, a debris line was measured at 9.7 feet, and along the mainland beach adjacent to East Pass, a high-water mark was measured inside a storage shed to be 11.8 feet. No high-water marks have yet been measured on Dog Island, but storm tides of 9 to 10 feet above sea level were measured along the shoreline at Carrabelle fronting on St. George Sound. Likewise, storm tides of 9 to 11 feet above sea level were measured along the gulf fronting shoreline of St. James Island. The USGS measured high water marks along Alligator Peninsula, including the Southwest Cape and Lighthouse Point, ranging between 8.8 to 10.7 feet.

Hurricane Michael's storm surge caused extensive washover fans into the dune field and maritime forest of St. Vincent Island generally between DEP virtual stations. All along St. Vincent Island's gulf beach are storm tide runout channels that carried the ebbing flood waters back across the beach. A large developing cuspate foreland at the southwestern point of St. Vincent Island experienced substantial growth, enclosing a now entrapped lagoon. This lagoon is the seventh and most seaward of a progression of coastal lakes formed in likely similar manner. Immediately offshore, two subaerial shoals have substantially eroded with only a fragment of one now exposed. The sediment of these shoals may have contributed to the avulsive growth of the cuspate foreland.

The length of the St. George Island barrier complex experienced storm surge flooding and substantial overwash deposits. Extensive washover fans exist between on Little St. George Island. As was seen along St. Vincent Island, the Cape St. George area has several storm tide runout channels that carried the ebbing flood waters back across the beach. East of the cape, between Bob Sikes Cut, Hurricane Michael's storm surge caused extensive washover fans across the island. The western jetty at the cut is separated from the island at high tide. Substantial shoaling appears to have occurred within the inlet, with substantial beach material having been removed from the St. George Plantation east of Sikes Cut. At Sikes Cut, the eastern jetty was breached, separating it from St. George Island. The eastern and western jetty breaches had previously occurred during Hurricanes Elena and Kate in 1985.

Risk and Vulnerability Assessment

Vulnerability to storm surge events can be defined as to the extent to which people will experience harm and property will be damaged from the natural hazard. As stated by FDEM…"the greatest killer of people during hurricanes is storm surge – the dome of water pushed ashore by powerful hurricane winds. Entire buildings can be moved and can cause more damage than the winds of a hurricane itself. Florida is extremely vulnerable to surge flooding because of its coastal and low-lying geography."

Franklin County is located on the coast of the Gulf of Mexico, and damage from natural hazard events like storm surge is highly likely to occur causing significant coastal flooding, damage to structures and infrastructure affecting most of the residents that live in the county. Figure 4.11, storm surge zone map for Franklin County identifies the storm surge zones in the County that would be affected from categories 1-5.

Vulnerability for the Franklin County's Population

The County's entire population is vulnerable to a storm surge event, especially the residents that live in near the coast in the incorporated or unincorporated areas. The most vulnerable populations include the elderly persons, small children, chronic invalids, the poor and those residing in mobile homes.

Table 4.13 – Population in Coastal Flood, Storm Surge

County	Category 2	Category 5
Franklin	2,396	10,614

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Vulnerability for Franklin County's Structures, Facilities and Infrastructure

Franklin County's public and private buildings, infrastructure, critical facilities, some framed homes depending on zone location, and especially the mobile homes in the county 16.4% are very vulnerable to storm surge events. Franklin County has experienced storm surge events with heights up to 12 feet causing extensive damage on the County's structures and infrastructure.

Table 4.14 – Count and Value of State Facilities in Category 2 and 5 Storm Surge Zones

County	Category 2 State Facility Value ($)	Category 5 State Facility Value ($)
Franklin	$71,154,441	$77,400,833

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.15 – Summary of Facilities in Storm Surge Areas in a Category 2 Hurricane

County	Hos.	Hos. Value	FS	FS Value ($)	PS	PS Value ($)	SCH PU	PU Value ($)	SCH PR	PR Value ($)	OTH	OTH Value ($)	Total	Total Value ($)
Franklin	0	0	4	765,771	0	0	0	0	0	0	21	70,388,670	25	71,154,441

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.16 – Summary of Facilities in Storm Surge Areas in a Category 5 Hurricane

County	Hos	Hos Value	FS	FS Value ($)	PS	PS Value ($)	SCH PU	PU Value ($)	SC H PR	PR Value ($)	OTH	OTH Value ($)	Total	Total Value ($)
Franklin	1	802,589	6	999,800	2	319,265	2	1,489,986	1	389,010	32	73,400,183	44	77,400,833

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

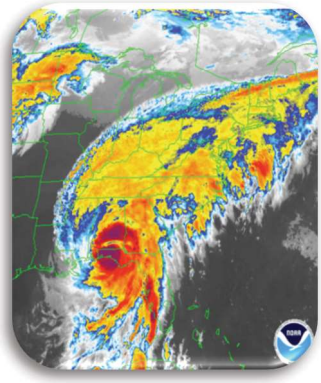
Key Code:
Hos – Hospital
FS – Fire Station
PS – Police Station
SCH – Schools (PU – Public, PR – Private)
OTH - Other

Summary details for storm surge events:

Probability of Future Occurrences	The probability of storm surge is high for the entire County (at least one occurrence every year).
Geographic Area	Figure 4.11, storm surge zone map for Franklin County identifies the storm surge zones in the County that would be affected from hurricane categories 1-5. Depending on the hurricane category type (category 1 – red; category 2 in orange; category 3 in yellow; category 4 in light green; and category 5 in violet), the storm surge could be significant throughout the entire County excluding the areas identified in grey (select northern portions of the county and an eastern area near the coastline just north of US highway 98).
Extent	The worse-case scenario for storm surge heights for all hurricanes of a given category regardless of forward speed, storm trajectory, landfall location and tide levels. Franklin County has had extensive storm surge event resulting in significant flooding throughout the County. Hurricane Michael The storm tides of Hurricane Michael in Franklin County ranged from 8 to 12 feet above sea level. At Apalachicola on the mainland shore of Apalachicola Bay, storm tides were experienced of 8 to 9 feet above sea level. At the bay entrance of the Apalachicola River, a NOAA tide gauge measured a peak tide level from Hurricane Michael of 8.6 feet. At East Point on the mainland shore of St. George Sound behind St. George Island, the USGS measured high water marks ranging between 8.6 to 10.6 feet. At the eastern end of St. George Island, a debris line was measured at 9.7 feet, and along the mainland beach adjacent to East Pass, a high-water mark was measured inside a storage shed to be 11.8 feet. No high-water marks have yet been measured on Dog Island, but storm tides of 9 to

	10 feet above sea level were measured along the shoreline at Carrabelle fronting on St. George Sound. Likewise, storm tides of 9 to 11 feet above sea level were measured along the gulf fronting shoreline of St. James Island. The USGS measured high water marks along Alligator Peninsula, including the Southwest Cape and Lighthouse Point, ranging between 8.8 to 10.7 feet. While preliminary peak storm surge inundation was slightly less east of Indian Pass, values were still life-threatening and caused significant damage. Along the coast, portions of US 98 and Alligator Drive were washed out and had to be patched and repaved. In Carrabelle, water was high enough to enter a restaurant, resulting in damage to furniture. In addition, numerous homes along the coast were destroyed and damaged as water slammed against the structures. Flooding occurred throughout the County with the storm surge waters and powerful winds. Hurricane Dennis Hurricane Dennis, a category 3 hurricane moved inland just east of Gulf Breeze on July 10. Rainfall totals ranged from 3 to 4 inches in the eastern Florida Panhandle to 6 to 10 inches in the Florida Big Bend. Maximum coastal storm surge heights ranged from 8 to 12 feet in Franklin County. Moderate to severe beach erosion was observed in several counties including Franklin. At St. George Island, five miles of road and numerous structures were damaged or destroyed by Dennis' storm surge. Dennis's deluge caused several rivers and creeks in the FL Panhandle and Big Bend to exceed their flood stages.
Impact	The Franklin County community, the residents, the structures and the infrastructure have been impacted from coastal flooding events from powerful hurricanes, tropical storms, along with astronomical storm surges, and heavy rains. Exposure of property to high water, high winds, and pounding wave action resulting in hundreds of millions of dollars in property damage. Hurricane Michael 10/10/2018, Coastal Franklin Zone – Hurricane Michael is 3rd most powerful hurricane to hit the US as a category 5 hurricane. While preliminary peak storm surge inundation was slightly less east of Indian Pass, values were still life-threatening and caused significant damage. Along the coast, portions of US 98 and Alligator Drive were washed out and had to be patched and repaved. In Carrabelle, water was high enough to enter a restaurant, resulting in damage to furniture. In addition, numerous homes along the coast were destroyed and damaged as water slammed against the structures. In addition to extensive structural damage, hurricane force winds caused widespread power outages across a large portion of the tri-state region. Nearly 100% of customers across a large portion of the Florida Panhandle lost power, with some of these outages lasting weeks. The catastrophic winds also resulted in damage to the timber and agricultural communities across Florida and Georgia. The estimated property damage was over $150,000,000.

Hurricane/Tropical Storms



According to NOAA… “hurricanes, known broadly as tropical cyclones, are rotating systems of clouds and thunderstorms that form over tropical or subtropical waters. One of nature’s most powerful storms, hurricanes can bring strong winds, storm surge flooding, heavy rainfall that can lead to inland flooding, tornadoes, and rip currents.”

A hurricane is a category of tropical cyclone characterized by thunderstorms and defined surface wind circulation. Hurricanes develop over warm waters and are caused by the atmospheric instability created by the collision of warm air with cooler air. Hurricane winds blow in a large spiral around a calm center, which can be 20-30 miles wide.

A tropical storm is a tropical cyclone with maximum sustained winds of at least 39 mph and is classified as a hurricane once winds goes up to 74 miles per hour or higher. Tropical storms are given official names once they reach these wind speeds. When the wind speeds reach 74 mph or greater, a tropical storm is called a hurricane, typhoon, or cyclone based on the storm location.

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures. In the western North Pacific, the term "super typhoon" is used for tropical cyclones with sustained winds exceeding 150 mph. See Table 4.17, the Saffir-Simpson Hurricane Wind Scale for specifics on a hurricane’s sustained wind speed.

Table 4.17 - Saffir-Simpson Hurricane Wind Scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
Í	74-95 mph 64-82 kt 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.

2	96-110 mph 83-95 kt 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	111-129 mph 96-112 kt 178-208 km/h	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (major)	130-156 mph 113-136 kt 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	157 mph or higher 137 kt or higher 252 km/h or higher	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: http://www.nhc.noaa.gov/aboutsshws.php

Hurricanes are a seasonal occurrence, with the Atlantic Coast/Gulf of Mexico hurricane season ranging from June 1 to November 30. Although it is rare, tropical storm and hurricane systems may develop outside of the hurricane season. Hurricanes pose a significant threat to Florida, particularly those residents living along the coast. Franklin County is a coastal County and is very vulnerable and highly susceptible to the strong winds, storm surge and flooding water damage that hurricanes and significant tropical storms can bring.

What Makes a Hurricane Season Active

According to NOAA, Science fact sheet…"Atlantic hurricanes, also called Atlantic tropical cyclones, are intense storms that occur over the North Atlantic Ocean, Caribbean Sea and Gulf of Mexico. Whether an Atlantic hurricane season is active or quiet generally depends upon the large-scale atmospheric and oceanic environment within the main development region, which spans the tropical North Atlantic Ocean and Caribbean Sea."

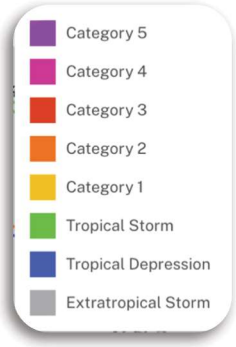
The conditions, which typically are associated with an active Atlantic hurricane season - and can also produce a more intense hurricane include:

- ✓ warmer tropical North Atlantic sea surface temperatures (SSTs);
- ✓ increased thunderstorm activity; and
- ✓ reduced vertical wind shear (changes of wind direction and/or speed with height) within the main development region, among other features.

Tropical Depression to a Tropical Storm

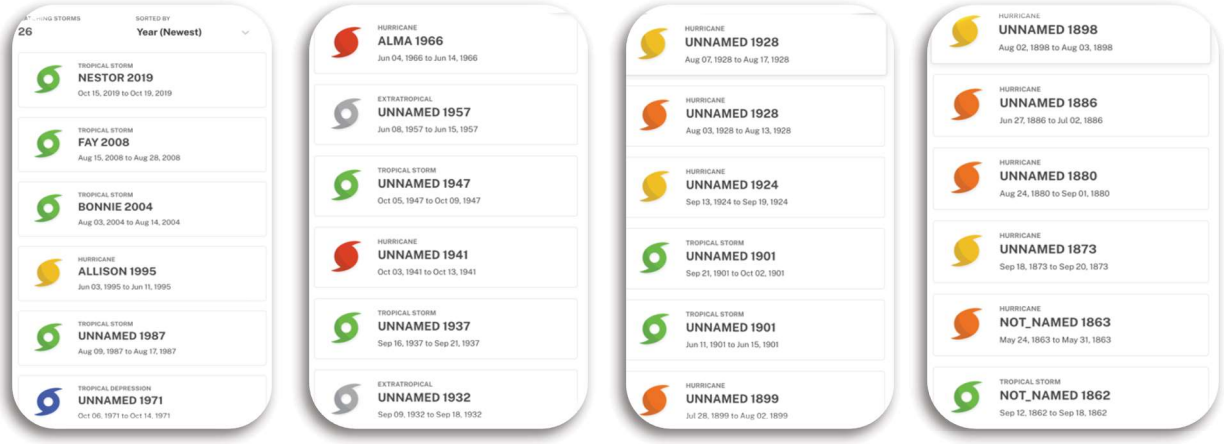
After a group of thunderstorms for a period of time have come together under the right atmospheric conditions, they organize into a tropical depression. The wind speed near the center are between 20 - 34 knots (23 to 39 mph). After a tropical depression has intensified to the point where its maximum sustained winds are between 35-64 knots (39-73 mph), it then becomes a tropical storm. It is at this time that it is assigned a name. During this time, the storm itself becomes more organized and begins to become more circular in shape resembling a hurricane.

Figure 4.12 – Key code for Historical Tracks



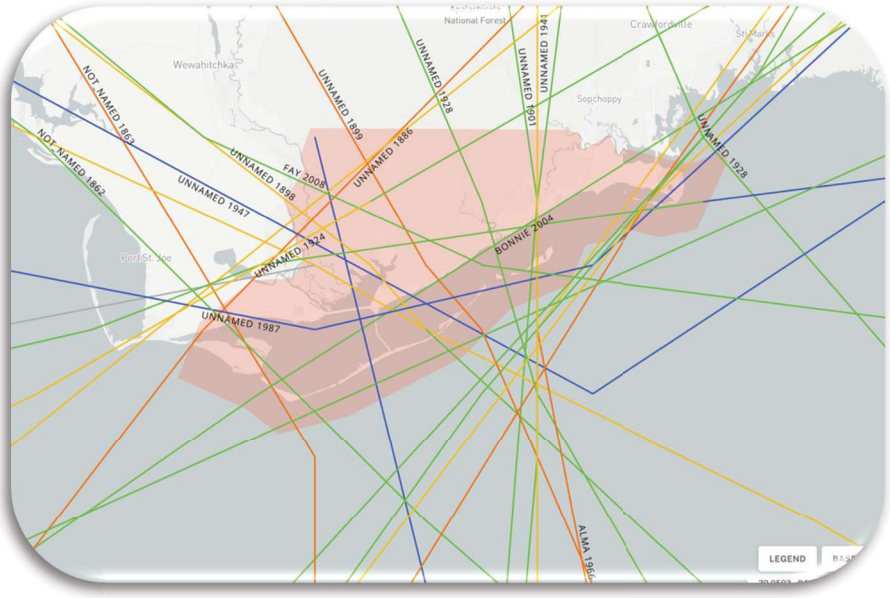
Details displayed in Figure 4.12 key code are storms that Franklin County has experienced tropical storms (in green), tropical depression (in blue), and hurricane categories 1, 2, and 3 identified (in yellow, orange, and red).

Figure 4.13 – Historical Hurricane Tracks (1862 – 2019)



Source: NOAA, National Ocean Service; https://coast.noaa.gov/hurricanes/#map=4.52/24.71/-87.77

Figure 4.14 – Historical Tracks of Hurricanes and Tropical Storms over the last 157 years for Franklin County



Source: https://coast.noaa.gov/hurricanes/#map=8.97/29.7759/-84.7516&search=eyJzZWFyY2hTdHJpbmciOiJGcmFua2xpbiBDb3VudHksIEZsb3JpZGEsIFVTQSIsInNlYXJjaFR5cGUiOiJnZW9jb2RlZCIsIm9zbUlEIjoiMTIxMDcxMiIsImNhdGVnb3JpZXMiOlsiSDUiLCJINCIsIkgzIiwiSDIiLCJIMSIsIlRTIiwiVEQiLCJFVCJdLCJ5ZWFycyI6W10sIm1vbnRocyI6W10sImVuc28iOltdLCJwcmVzc3VyZSI6eyJyYW5nZSI6WzAsMTE1MF0sImluY2x1ZGVVbmtub3duUHJlc3N1cmUiOnRydWV9LCJidWZmZXJVbml0IjpbIk1pbGVzIl0sInNvcnRZWxlY3Rpb24iOnsidmFsdWUiOiJ5ZWFyc19uZXdlc3QiLCJsYWJlbCI6IlllYXIgKE5ld2VzdCkifSwiYXBwbHlUb0FPSSI6dHJ1ZSwiaXNTdG9ybUxhYmVsc1Zpc2libGUiOnRydWV9

Historical Hurricane and Tropical Storm Occurrences

There were 9 recorded hurricane, 18 tropical storm events reported in Franklin County per the NCDC (1/1/1950 – 7/20/2020) over the last 70 years.

Table 4.18 – Hurricane and Tropical Storm Occurrences in Franklin County (1/1/1950 – 7/20/2020)

Location or County	Date	Time	Type	Death	Injuries	Property Damage	Crop Damage
Franklin Zone	10/7/1996	12:00	Tropical Storm	0	0	0.00K	0.00K
Franklin Zone	9/2/1998	12:00	Hurricane	0	0	750K	0.00K
Franklin Zone	9/28/1998	00:00	Hurricane	0	0	275K	0.00K
Franklin Zone	9/17/2000	08:00	Hurricane	0	0	0.00K	0.00K
Franklin Zone	9/21/2000	18:00	Tropical Storm	0	0	0.00K	0.00K
Franklin Zone	8/4/2001	15:00	Tropical Storm	0	0	0.00K	0.00K

Franklin Zone	9/25/2002	18:00	Tropical Storm	0	0	500K	0.00K
Franklin Zone	8/12/2004	00:00	Tropical Storm	0	0	0.00K	0.00K
Franklin Zone	9/5/2004	14:00	Tropical Storm	0	0	10K	0.00K
Franklin Zone	9/15/2004	00:00	Hurricane	0	0	150K	0.00K
Franklin Zone	9/26/2004	15:00	Tropical Storm	0	0	0.00K	0.00K
Franklin Zone	6/10/2005	18:00	Tropical Storm	0	0	25K	0.00K
Franklin Zone	7/9/2005	18:00	Hurricane	0	0	10M	0.00K
Franklin Zone	8/28/2005	18:00	Hurricane	0	0	200K	0.00K
Franklin Zone	9/22/2005	08:00	Hurricane/ High Surf	0	0	100K	0.00K
Franklin Zone	10/20/2005	00:00	High Surf	0	0	20K	0.00K
Franklin Zone	6/12/2006	12:00	Tropical Storm	0	0	5K	0.00K
Franklin Zone	8/22/2008	12:00	Tropical Storm	0	0	25K	0.00K
Franklin Zone	10/24/2008	09:00	High Surf	0	0	0.00K	0.00K
Franklin Zone	8/16/2009	03:00	Tropical Storm	0	0	25K	0.00K
Franklin Zone	11/9/2009	06:00	Tropical Storm	0	0	75K	0.00K
Coastal Franklin Zone	6/24/2012	07:00	Tropical Storm	0	0	10K	0.00K
Inland Franklin Zone	6/24/2012	07:00	Tropical Storm	0	0	5K	0.00K
Coastal Franklin Zone	9/1/2016	19:00	Hurricane	0	0	704K	0.00K
Inland Franklin Zone	9/1/2016	19:00	Hurricane	0	0	0.00K	0.00K
Coastal Franklin Zone	9/10/2017	22:00	Tropical Storm	0	0	750K	0.00K
Inland Franklin Zone	9/102017	22:00	Tropical Storm	0	0	250K	0.00K
Coastal Franklin Zone	10/19/2019	05:00	Tropical Storm	0	0	0.00K	0.00K
Inland Franklin Zone	10/19/2019	05:00	Tropical Storm	0	0	0.00K	0.00K
Totals:						**Property Damage: $13,879,000**	

Source: http://www.ncdc.noaa.gov/stormevents/listevents

Hazard Event Narrative – Extent and Impact

1. 9/3/1998, Franklin Zone - Hurricane Earl, a category 1 hurricane came ashore near Panama City early on 9/3/1998. The storm surge along the Florida Big Bend coast ranged from 6 to 12 feet above normal tide levels. Significant beach erosion occurred along Coastal Walton County as well as Carrabelle Beach and Alligator Point. In Franklin, storm surge flooding affected 136 homes and 15 businesses. FL 65, 98, 300, and the St.

George Causeway were closed to high water. Alligator Point Road washed out stranding 50 people at Alligator Point. Estimated property damage was $750,000.

2. 9/25/2002, Franklin Zone – Tropical Storm Isidore impact was storm surge flooding, beach erosion and tornadoes. Maximum storm surge heights ranged from 4 to 7 feet along the panhandle coast. Minor to moderate beach erosion occurred. The estimated property damage was $500,000.

3. 7/10/2005, Franklin Zone – Hurricane Dennis, a category 3 hurricane moved inland just east of Gulf Breeze on July 10. Rainfall totals ranged from 3 to 4 inches in the eastern Florida Panhandle to 6 to 10 inches in the Florida Big Bend. Maximum coastal storm surge heights ranged from 8 to 12 feet in Franklin County. Moderate to severe beach erosion was observed in several counties including Franklin. At St. George Island, five miles of road and numerous structures were damaged or destroyed by Dennis' storm surge. Dennis's deluge caused several rivers and creeks in the FL Panhandle and Big Bend to exceed their flood stages. The worst property damage occurred along the coast from Walton to Wakulla where more than 1,000 homes and businesses were affected. In addition, numerous trees and power lines were downed leaving about 75,000 customers without power. Property damage figures were $10,000,000.

4. 9/22/2005, Franklin Zone – High surf from Hurricane Rita caused moderate erosion of Walton County beaches. In Franklin County, the Eastpoint marina docs were flooded, Alligator Point was washed out, and moderate beach erosion occurred on St. George Island. The estimated property damage was $100,000.

5. 9/1/2016, Coastal Franklin Zone – Hurricane Hermine, a category 1 hurricane impacted the Florida big bend with significant storm surge along the coast and strong winds inland which downed numerous trees and power lines. The following inundation values (height above mean higher water) Apalachicola was 3.04 ft, Curtis Mill (US 3199). In Franklin a mandatory evacuation of residents on St. George Island occurred with the causeway being closed. Surge flooding was reported in Apalachicola, Carrabelle Beach, and Alligator Point. Approximately 27 homes or businesses were destroyed, 43 suffered major damage; 102 suffered minor damage and 100 others were affected. PA damage values were listed at $703,872, however, this figure was probably underestimated for property damage.

6. 9/10/2017, Coastal and Inland Franklin Zone – Hurricane Irma brought numerous impact to the Florida Big Bend. Specifics from NCDC identified the details as a tropical storm event. The greatest impact were across the eastern portion of the area near the 175 corridor. In Franklin there were several trees downed with some damaging homes along with several power outages. The estimated property damage for inland and coastal franklin zone was $1,000,000. Only details reported for Franklin County was recorded in this plan.

Hurricane Michael Storm Damage

Details from the Florida Department of Environmental Protection, Division of Water Resource Management, Hurricane Michael Post-Storm Beach Conditions and Coastal Impact Report

Hurricane Michael caused major structural damage to 165 major structures within the Coastal Building Zone on St. George Island, Dog Island, and the coast barrier system between Alligator Point and Bald Point. Past hurricanes impacted fewer major structures in the Coastal Building Zone of Franklin County, including Hurricanes Elena (22 major structures) and Kate (159 major structures) in 1985, Hurricane Opal (eight major structures) in 1995, Hurricane Earl (eight major structures) in 1998, and Hurricane Dennis (52 major structures) in 2005. Many of the structures damaged by Hurricanes Elena and Kate were located along U.S. Highway 98 between Apalachicola and St. Teresa Beach on St. James Island. The Department's damage survey teams did not conduct a detailed investigation of the damage along U.S. Highway 98 after Hurricane Michael; however, it was noted that a number of major structures were substantially damaged in and near Apalachicola, two commercial buildings were destroyed and five more sustained

major damage in Eastpoint, four single-family dwellings were destroyed and two more sustained major structural damage in Carrabelle Beach, and five single-family dwellings were destroyed along St. Teresa Beach.

On St. George Island, 96 major structures sustained major damage. In addition, another 29 single-family dwellings sustained understructure damage, and a number of older grade-level dwellings sustained static flood damage to their interiors. Along the St. George Island Plantation, the damages sustained were predominantly understructure damage to breakaway walls, parking slabs, and utilities due to the storm surge and waves, as well as some roof and siding damages. At least three swimming pools were sanded by the storm surge. Along East and West Gorrie Drive, major wind damage was sustained by roofs and siding, and static flood damage was sustained by grade-level dwellings. Three swimming pools along East Gorrie Drive were also sanded by the storm surge. Along the developed reach of St. George Island numerous beach access walkways were destroyed or sustained major damage. Fences, decks, and gazebos were also damaged.

In St. George Island State Park, five segments of the park road, totaling 625 feet, were destroyed however, much greater lengths were observed to have sustained minor to moderate damage. Additionally, long segments of the park road are under sand overwash deposits and the condition of the road in these areas was not observable. Likewise, the parking lots at the East Slough and Sugar Hill public access areas were covered with sand, although these paved structures do not appear to have sustained damage.

Figure 97. Dwelling destroyed near R179, Dog Island.

Figure 98. Pelican Inn destroyed near R183, Dog Island.

Photo Image: FDEP

The beach pavilions and bath houses at East Slough and Sugar Hill did not sustain major structural damage, but the beach access walkways were damaged throughout the park.

The damage to major structures on Dog Island from Hurricane Michael was the greatest of any past hurricane. A major factor for this has been the progressive erosion stress, which continues to deplete the natural beach and dune protection seaward of residential construction that was originally considered sufficiently well sited landward of the beach. Hurricane Kate (1985) caused major dune erosion, but only destroyed one dwelling by the storm surge and erosion, along with causing major damage to eight others by the wind. At that time, most dwellings were still substantially landward of the beach. After another 20 years of erosion, Hurricane Dennis caused major damage to 15 single-family dwellings, including seven that were destroyed. All but one of these were damaged by the storm surge and erosion. Following another 13 years of erosion with partial recovery after Hurricane Dennis, Hurricane Michael caused major

damage to 25 major structures, including 12 that were destroyed. A timber bulkhead of 165 feet was also destroyed, and ten dwellings sustained understructure damage. On Dog Island, a number of dwellings remain threatened by another storm of comparable intensity as Hurricanes Kate, Dennis, and Michael.

Between Alligator Point and Bald Point, Hurricane Michael caused major damage to 44 single-family dwellings, including five that were destroyed. An additional 1,506 feet of walls were damaged, along with 3,000 feet of rock

revetment that sustained major damage. Approximately 3000 feet of Alligator Point Drive paralleling the rock revetment was destroyed including where it connects to Chip Morrison Drive on the west end of the revetment. At the end of Gulf Shore Blvd on Lighthouse Point, the easternmost 175 feet of road was destroyed. These damages compare to those of Hurricane Dennis (2005), when 26 major structures sustained major damage, including 16 that were destroyed. Between Alligator Point and Bald Point, most of the damages sustained were predominantly understructure damage to breakaway walls, parking slabs, and utilities due to the storm surge and waves, as well as some roof and siding damages. Fences, decks, and walkovers were also damaged. Within Bald Point State Park, the beach walkovers were damaged and some of the picnic pavilions were left lightly sanded by the washover deposits. The pier at the end of Bald Point State Park was not damaged.

According to the NCDC, the property damage estimates were still be calculated, however, the estimated property damage figure at the time of the report was $150,000,000.

Additional Hurricane and Tropical Storm Occurrences (Disaster Declarations)

H - Hurricanes and T – Tropical Storms that were identified in the NCDC, NOAA data, Table 4.18

Table 4.19 - Disaster Declarations for Franklin County Due to Hurricane and Tropical Storm Events

IA, PA or both	Date – Incident Period	Disaster Event	Incident Type	Declaration #
IA, PA	August 29 – September 2, 1985	Hurricane Elena	Hurricane	743
IA, PA	November 21 – 22, 1985	Hurricane Kate	Hurricane	756
PA	July 2 – 29, 1994	Tropical Storm Alberto	Tropical Storm	3114
IA, PA	October 4 – 11, 1995	Hurricane Opal	Hurricane	1069
IA	September 3 – 4, 1998	Hurricane Earl - H	Hurricane	1241
PA	September 25 – October 2, 1998	Hurricane George - H	Hurricane	3131
IA, PA	September 25 – October 7, 1998	Hurricane George - H	Hurricane	1249
PA	September 21 – October 4, 2000	Tropical Storm - T	Tropical Storm	1344
PA	August 11 - 30, 2004	Hurricane Charley and Tropical Storm Bonnie – H/T	Hurricane	1539
PA	September 3 – October 8, 2004	Hurricane Frances	Hurricane	1545
IA, PA	September 13 – November 17, 2004	Hurricane Ivan	Hurricane	1551
IA, PA	July 7 – 20, 2005	Hurricane Dennis - H	Hurricane	1595
PA	August 24 – September 6, 2005	Hurricane Katrina	Hurricane	1602
PA	August 29 – October 1, 2005	Hurricane Katrina Evacuation	Hurricane	3220
PA	August 18 – September 12, 2008	Tropical Storm Fay - T	Severe Storm(s)	3288
PA	August 31 – September 7, 2008	Hurricane Gustav	Hurricane	1806
IA, PA	June 23 – July 26, 2012	Tropical Storm Debby - T	Severe Storm(s)	4068

PA	August 27 – 29, 2012	Hurricane Isaac	Hurricane	4084
PA	August 31 – September 11, 2016	Hurricane Hermine - H	Hurricane	4280
PA	September 4 – October 18, 2017	Hurricane Irma (identified as T)	Hurricane	4337
PA	September 4 – October 18, 2017	Hurricane Irma	Hurricane	3385
PA	October 7 – October 19, 2018	Hurricane Michael	Hurricane	3405
IA, PA	October 7 – October 19, 2018	Hurricane Michael	Hurricane	4399
PA	August 28 – September 9, 2019	Hurricane Dorian	Hurricane	3419

Data comparison from FEMA Disaster Declaration Table 4.19 compared to Table 4.18 the NCDC, NOAA data in reveals that only a few of the hurricane and tropical storm event were recorded in the NCDC county data even though IA and PA was requested by the County.

Risk and Vulnerability Assessment

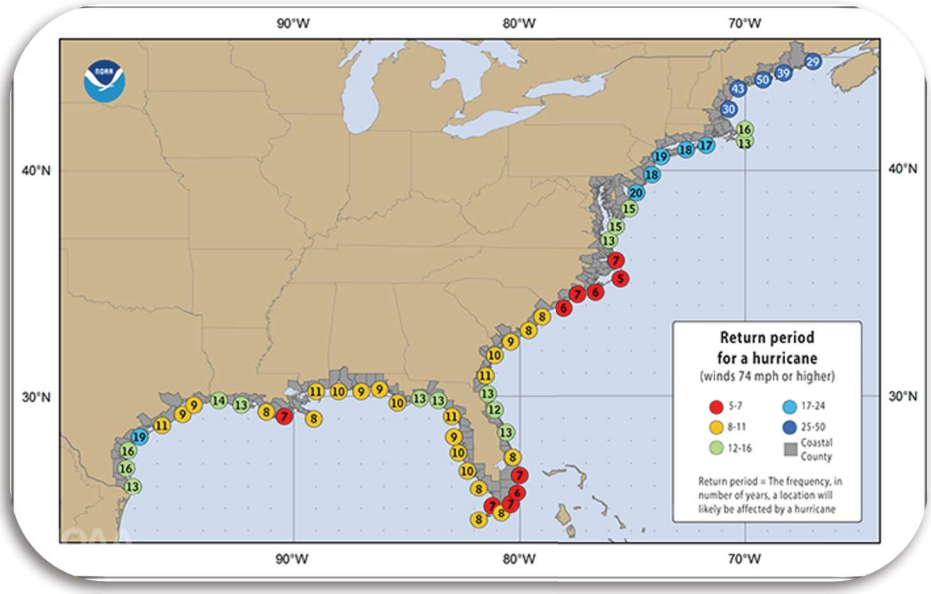
According to NOAA…."Every mile of the U.S. Gulf and East coast is vulnerable to a hurricane, but there are locations that have higher odds of being hit any given year. The National Hurricane Center uses an analysis tool that quantifies those chances called the hurricane return period. It's the frequency at which a hurricane can be expected to pass within 50 nautical miles of a specific location. For example, a return period of 20 years for a major hurricane means that on average during the previous 100 years, a Category 3 or stronger hurricane passed within 50 nautical miles of that location about five times. Looking forward one could expect five Category 3 or stronger hurricanes within that 50 nautical mile radius during the next 100 years."

In October 2018, Franklin County was impacted from Hurricane Michael, a Category 5 hurricane. What are the chances another hurricane will impact the County and how does the County prepare for future hurricane events. Recognizing that the coastal counties will endure the greatest force from the powerful and destructive winds and towering storm surges from the high seas, however, the inland counties close to the water will also need to prepare for possible impact.

What is the probability for the return period for Franklin County?

The first map depicts the return period for hurricane of any category. If we review the map for Franklin County, it looks as though the next time the County might experience this category of hurricane would be in approximately 10 years. Figure 4.15 - Depicts the return period for a hurricane of any category on the Saffir-Simpson Hurricane Wind Scale.

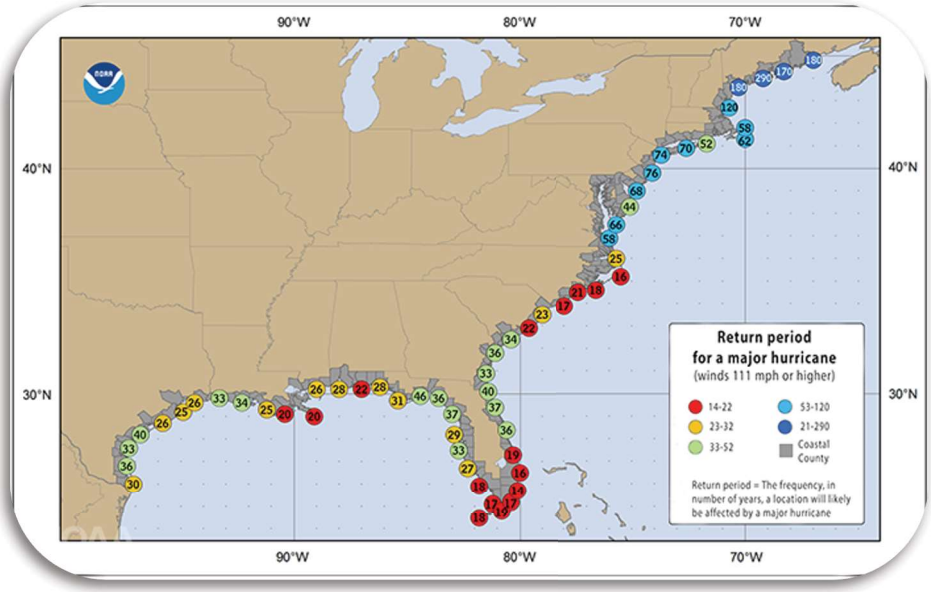
Figure 4.15 – Return Period for a Hurricane of Any Category Map



Map Source: https://www.noaa.gov/stories/what-are-chances-hurricane-will-hit-my-home

The second map depicts the return period for a major hurricane (Category 3 or higher). If we review the map for Franklin County, it looks as though the next time the County might experience this category of hurricane would be in approximately 31 years. Figure 4.16 - Depicts the return period for a major hurricane (Category 3 or higher) on the Saffir-Simpson Hurricane Wind Scale.

Figure 4.16 – Return Period for a Major Hurricane of a Category 3 or Higher Map

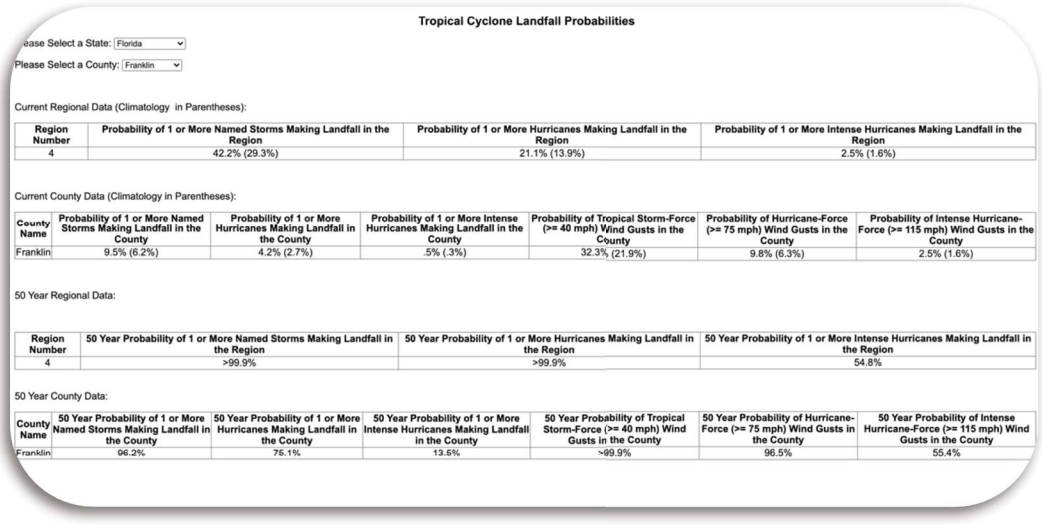


Map Source: https://www.noaa.gov/stories/what-are-chances-hurricane-will-hit-my-home

Hurricane Landfall Probabilities

According to the Colorado State University, 2020 Tropical Meteorology Project Forecast, Landfalling Hurricane Probability Project, the probability that Franklin County will experience intense hurricane force winds > or = 115 mph is 1.6%. Over a 50-year time period, the probability of the county experiencing intense hurricane force winds > or = 40 mph is 54.8%. Essentially, there is an extremely high probability of a hurricane or tropical storm event occurring in the county in the near future. The figure below provides supporting statistical data.

Figure 4.17 – Franklin County, Tropical Cyclone Landfall Probabilities



Tropical Cyclone Landfall Probabilities

Please Select a State: Florida

Please Select a County: Franklin

Current Regional Data (Climatology in Parentheses):

Region Number	Probability of 1 or More Named Storms Making Landfall in the Region	Probability of 1 or More Hurricanes Making Landfall in the Region	Probability of 1 or More Intense Hurricanes Making Landfall in the Region
4	42.2% (29.3%)	21.1% (13.9%)	2.5% (1.6%)

Current County Data (Climatology in Parentheses):

County Name	Probability of 1 or More Named Storms Making Landfall in the County	Probability of 1 or More Hurricanes Making Landfall in the County	Probability of 1 or More Intense Hurricanes Making Landfall in the County	Probability of Tropical Storm-Force (>= 40 mph) Wind Gusts in the County	Probability of Hurricane-Force (>= 75 mph) Wind Gusts in the County	Probability of Intense Hurricane-Force (>= 115 mph) Wind Gusts in the County
Franklin	9.5% (6.2%)	4.2% (2.7%)	.5% (.3%)	32.3% (21.9%)	9.8% (6.3%)	2.5% (1.6%)

50 Year Regional Data:

Region Number	50 Year Probability of 1 or More Named Storms Making Landfall in the Region	50 Year Probability of 1 or More Hurricanes Making Landfall in the Region	50 Year Probability of 1 or More Intense Hurricanes Making Landfall in the Region
4	>99.9%	>99.9%	54.8%

50 Year County Data:

County Name	50 Year Probability of 1 or More Named Storms Making Landfall in the County	50 Year Probability of 1 or More Hurricanes Making Landfall in the County	50 Year Probability of 1 or More Intense Hurricanes Making Landfall in the County	50 Year Probability of Tropical Storm-Force (>= 40 mph) Wind Gusts in the County	50 Year Probability of Hurricane-Force (>= 75 mph) Wind Gusts in the County	50 Year Probability of Intense Hurricane-Force (>= 115 mph) Wind Gusts in the County
Franklin	96.2%	75.1%	13.5%	>99.9%	96.5%	55.4%

Source: http://hurricanepredictor.com/County.aspx

Vulnerability for the Franklin County's Population

The County's entire population is vulnerable to a powerful, Category 3 or greater hurricane. The most vulnerable populations include the elderly persons, small children, chronic invalids, the poor and those residing in mobile homes.

Vulnerability for Franklin County's Structures, Facilities and Infrastructure

Franklin County's public and private buildings, infrastructure, critical facilities, some framed homes depending on zone location, and especially the mobile homes in the county 16.4% are very vulnerable to powerful hurricane events. The entire county is susceptible to heavy and widespread torrential rains, flooding, tornadoes, and lightning strikes which can come from hurricanes and tropical storm events. When strong winds risk category III or IV strike populated areas or critical facilities, they can be disastrous.

Table 4.20 – Probabilistic Hurricane Wind Count of Structures within the Return Period Areas

Probabilistic Hurricane Wind Count of Structures within Return Period Areas							
	10-Year	20-Year	50-Year	100-Year	200-Year	500-Year	1000-Year
Franklin	4	25	304	838	1572	3349	4258

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.21 – Probabilistic Hurricane Wind Value of Structures within the Return Period Areas

Probabilistic Hurricane Wind Value of Structures Damaged within Return Period Areas (in dollars)							
	10-Year	20-Year	50-Year	100-Year	200-Year	500-Year	1000-Year
Franklin	$236,000	$1,764,000	$8,619,000	$19,824,000	$41,689,000	$105,038,000	$179,152,000

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.22 – Direct Economic Loss for Buildings by Return Period Areas

Direct Economic Loss for Buildings by Return Period by County (in dollars)							
	10-Year	20-Year	50-Year	100-Year	200-Year	500-Year	1000-Year
Franklin	$237,000	$1,896,000	$9,413,000	$21,826,000	$47,418,000	$124,434,000	$212,256,000

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.23 – Probabilistic Hurricane Wind 10-Year, Economic Value

Probabilistic Hurricane Wind 10-Year – Total Economic Value by County (in dollars)						
	Tropical Storm	Category 1	Category 2	Category 3	Category 4	Category 5
Franklin	$2,568,510,028	$0	$0	$0	$0	$0

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.24 – Probabilistic Hurricane Wind 20-Year, Economic Value

Probabilistic Hurricane Wind 20-Year – Total Economic Value by County (in dollars)						
	Tropical Storm	Category 1	Category 2	Category 3	Category 4	Category 5
Franklin	$2,568,510,028	$0	$0	$0	$0	$0

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.25 – Probabilistic Hurricane Wind 50-Year, Economic Value

Probabilistic Hurricane Wind 50-Year – Total Economic Value by County (in dollars)						
	Tropical Storm	Category 1	Category 2	Category 3	Category 4	Category 5
Franklin	$0	$2,568,510,028	$0	$0	$0	$0

Source: Florida Division of Emergency Management, GIS Department,

Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.26 – Probabilistic Hurricane Wind 100-Year, Economic Value

Probabilistic Hurricane Wind 100-Year – Total Economic Value by County (in dollars)						
	Tropical Storm	Category 1	Category 2	Category 3	Category 4	Category 5
Franklin	$0	$2,557,832,378	$10,677,650	$0	$0	$0

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.27 – Probabilistic Hurricane Wind 200-Year, Economic Value

Probabilistic Hurricane Wind 200-Year – Total Economic Value by County (in dollars)						
	Tropical Storm	Category 1	Category 2	Category 3	Category 4	Category 5
Franklin	$0	$0	$2,568,510,028	$0	$0	$0

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.28 – Probabilistic Hurricane Wind 500-Year, Economic Value

Probabilistic Hurricane Wind 500-Year – Total Economic Value by County (in dollars)						
	Tropical Storm	Category 1	Category 2	Category 3	Category 4	Category 5
Franklin	$0	$0	$631,882,964	$1,936,627,064	$0	$0

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Table 4.29– Probabilistic Hurricane Wind 1000-Year, Economic Value

Probabilistic Hurricane Wind 1000-Year – Total Economic Value by County (in dollars)						
	Tropical Storm	Category 1	Category 2	Category 3	Category 4	Category 5
Franklin	$0	$0	$0	$2,568,510,028	$0	$0

Source: Florida Division of Emergency Management, GIS Department,
Data for the State of Florida Enhanced Hazard Mitigation Program, 2018

Summary details for hurricane and tropical storm events:

Probability of Future Occurrences	The probability of hurricane and tropical storm events is high (at least 1 occurrence every year).

Geographic Area	The City of Apalachicola, the City of Carrabelle and unincorporated areas along the coast line including the residents, businesses, government, and institutions in the following towns, cities, etc. (i.e. Eastpoint, St. George Island, Alligator Point, Bald Point, Lanark Village and St. Teresa) are at highest risk to hurricane and/or tropical storm events.
Extent	The worse-case scenario for Franklin County would be a Category 5 hurricane with winds of over 157 mph or higher which Franklin County experienced with Hurricane Michael. Hurricane Michael caused major structural damage to 165 major structures within the Coastal Building Zone on St. George Island, Dog Island, and the coast barrier system between Alligator Point and Bald Point. On St. George Island, 96 major structures sustained major damage. In addition, another 29 single-family dwellings sustained understructure damage, and a number of older grade-level dwellings sustained static flood damage to their interiors. The damage to major structures on Dog Island from Hurricane Michael was the greatest of any past hurricane. Hurricane Michael caused major damage to 25 major structures, including 12 that were destroyed. Between Alligator Point and Bald Point, Hurricane Michael caused major damage to 44 single-family dwellings, including five that were destroyed. In St. George Island State Park, five segments of the park road, totaling 625 feet, were destroyed however, much greater lengths were observed to have sustained minor to moderate damage. A timber bulkhead of 165 feet was also destroyed, and ten dwellings sustained understructure damage. An additional 1,506 feet of walls were damaged, along with 3,000 feet of rock revetment that sustained major damage. Approximately 3000 feet of Alligator Point Drive paralleling the rock revetment was destroyed including where it connects to Chip Morrison Drive on the west end of the revetment. At the end of Gulf Shore Blvd on Lighthouse Point, the easternmost 175 feet of road was destroyed.
Impact	The Franklin County community, the residents, structures, and critical facilities, can suffer from hurricane and/or tropical storm events. The impacts associated with hurricanes or tropical storms especially the destructive winds and water, which can be very destructive or catastrophic on the county residential, commercial, and public buildings, as well as the critical infrastructure such as transportation, water, energy, and communication systems. And the economic effect or financial impact could be devastating from a large-scale hurricane event not only during the crisis phase, which immediately follows the event, through the recovery and rebuilding stages.  *98. Pelican Inn destroyed near R183, Dog Island.* Hurricane Michael's Impact Hurricane Michael caused major structural damage to 165 major structures within the Coastal Building Zone on St. George Island, Dog Island, and the coast barrier system between Alligator Point and Bald Point. On St. George Island, 96 major structures sustained major damage. In addition, another 29 single-family dwellings sustained understructure damage, and a number of older grade-level dwellings sustained static flood damage to their interiors. The damage to

	major structures on Dog Island from Hurricane Michael was the greatest of any past hurricane. Hurricane Michael caused major damage to 25 major structures, including 12 that were destroyed. Between Alligator Point and Bald Point, Hurricane Michael caused major damage to 44 single-family dwellings, including five that were destroyed. In St. George Island State Park, five segments of the park road, totaling 625 feet, were destroyed however, much greater lengths were observed to have sustained minor to moderate damage. A timber bulkhead of 165 feet was also destroyed, and ten dwellings sustained understructure damage. An additional 1,506 feet of walls were damaged, along with 3,000 feet of rock revetment that sustained major damage. Approximately 3000 feet of Alligator Point Drive paralleling the rock revetment was destroyed including where it connects to Chip Morrison Drive on the west end of the revetment. At the end of Gulf Shore Blvd on Lighthouse Point, the easternmost 175 feet of road was destroyed. According to the NCDC, the property damage estimates were still be calculated, however, the estimated property damage figure at the time of the report was $150,000,000. Important Note: Over the last 35 years, **20** powerful hurricane, tropical storms, and severe storm events had an important effect on Franklin County requiring government assistance: Hurricane Elena, 8/29/1985 – 9/2/1985 (individual and public assistance) Hurricane Kate, 11/21/1985 – 11/22/1985 (individual and public assistance) Tropical Storm Alberto, 7/2/1994 – 7/29/1994 (public assistance) Hurricane Opal, 10/4/1995 – 10/11/1995 (individual and public assistance) Hurricane Earl, 9/3/1998 – 9/4/1998 (individual assistance) Hurricane George, 9/25/1998 – 10/7/1998 (individual and public assistance) Tropical Storm, 9/21/2000 – 10/4/2000 (public assistance) Hurricane Charley and Tropical Storm Bonnie, 8/11/2004 – 8/30/2004 (public assistance) Hurricane Frances, 9/3/2004 – 10/8/2004 (public assistance) Hurricane Ivan, 9/13/2004 – 11/17/2004 (individual and public assistance) Hurricane Dennis, 7/7/2005 – 7/20/2005 (individual and public assistance) Hurricane Katrina and Evacuation, 8/24/2005 – 10/1/2005 (public assistance) Tropical Storm Fay, 8/18/2008 – 9/12/2008 (public assistance) Hurricane Gustav, 8/31/2008 – 9/7/2008 (public assistance) Tropical Storm Debby, 6/23/2012 – 7/26/2012 (individual and public assistance) Hurricane Isaac, 8/27/2012 – 8/29/2012 – (public assistance) Hurricane Hermine, 8/31/2016 – 9/11/2016 (public assistance) Hurricane Irma, 9/4/2017 – 10/18/2017 (public assistance) Hurricane Michael, 10/7/2018 – 10/19/2018 (individual and public assistance) Hurricane Dorian, 8/28/2019 – 9/9/2019 (public assistance)

Tornado and Waterspouts

Tornadoes are nature's most violent storms. Spawned from powerful thunderstorms, tornadoes can cause fatalities and devastate a neighborhood in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 miles per hour. Damage paths can be in excess of one mile wide and 50 miles long. Every state is at some risk from this hazard. Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others.

Photo source: Apalachicola Times

Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible. Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

The most common type of tornado, the relatively weak and short-lived type, occurs in the warm season with June being the peak month. The strongest, most deadly tornadoes occur in the cool season, from December through April.

Some tornadoes are clearly visible, while rain or nearby low-hanging clouds obscure others. Some tornadoes develop rapidly with little advance warning and then may dissipate just as quickly. Most tornadoes are on the ground for less than 15 minutes. Before a tornado hits, the wind may die down and the air may become very still. A cloud of debris can mark the location of a tornado even if a funnel is not visible. It is not uncommon to see clear, sunlit skies behind a tornado.

Every state is at some risk from this hazard. Franklin County is vulnerable to these wind disasters due to a high concentration of the population residing in manufactured or mobile homes 16.4%. A tornado or a series of tornadoes could affect the population if it should occur in a highly populated area. Damage has occurred from tornadoes in the county.

The possible consequences of tornadoes include: power outages, infrastructure damage (road/culvert washout), erosion, property damage/loss from wind, water and fires, fresh-water flooding, evacuations (day/night, road congestion), agricultural damage/loss, economic loss, and debris.

Image Source: http://www.spc.noaa.gov/wcm/20ytora.png

Facts about tornadoes:

- ✓ They may strike quickly, with little or no warning.
- ✓ They may appear nearly transparent until dust and debris are picked up or a cloud forms in the funnel.
- ✓ The average tornado moves Southwest to Northeast, but tornadoes have been known to move in any direction.
- ✓ The average forward speed of a tornado is 30 MPH, but may vary from stationary to 70 MPH.
- ✓ Tornadoes can accompany tropical storms and hurricanes as they move onto land.
- ✓ Waterspouts are tornadoes that form over water.
- ✓ Tornadoes are most frequently reported east of the Rocky Mountains during spring and summer months.
- ✓ Peak tornado season in the southern states is March through May; in the northern states, it is late spring through early summer.
- ✓ Tornadoes are most likely to occur between 3 pm - 9 pm but can occur at any time.

Source: FEMA http://www.fema.gov/hazard/tornado/index.shtm

Waterspouts

Waterspouts usually develop over warm tropical ocean waters. Scientists that study waterspouts generally put them in two categories:

Tornadic

- ✓ The tornadic waterspouts may often begin as tornadoes over land and then move over water. They also form in severe thunderstorms over a body of water. They can wreak havoc with high winds, hail, and dangerous lightning.

EASTPOINT, Fla. - A waterspout was seen on April 23 off the coast of Eastpoint, Florida, as storms swept across the state and through the South. Footage captured by Eastpoint Beer Company shows the waterspout swirling over Apalachicola Bay, near the brewery. A man can be heard in the video, taken from the shoreline, saying: "That a tornado, basically in our front yard."

Photo source: fox35orlando.com

Fair Weather

- ✓ Fair weather waterspouts develop in calmer weather. They form only over open water, developing at the surface and actually climbing skyward towards the clouds. The size of all waterspouts can range from just a few feet, to several hundred feet wide.

Research shows that fair weather waterspouts exhibit a five-stage life cycle:

- ✓ Stage 1 is the formation of a disk on the surface of the water, known as a dark spot;
  Stage 2 is a spiral pattern on the water surface;
  Stage 3 is a formation of a spray ring;
  Stage 4 is where the waterspout becomes a visible funnel; and the lifecycle ends with
  Stage 5 is where the waterspout decays.

If a waterspout moves onshore, the NWS issues a tornado warning, as some of them can cause significant damage and injuries to people. Typically, fair weather waterspouts dissipate rapidly when they make landfall, and rarely penetrate far inland.

Like many forces in nature, waterspouts can be both beautiful and dangerous. They've been known to overturn boats, damage large ships, and put lives in jeopardy.

Source:https://oceantoday.noaa.gov/waterspouts/#:~:text=They%20are%20sometimes%20seen%20as,defined%20as%20tornadoes%20over%20water.

Enhanced Fujita Scale

According to NOAA's National Weather Service (NWS), Storm Prediction Center, the Enhanced Fujita (EF) Scale became operational in February 2007. It is used to assign a tornado a "rating" based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators (DIs) and Degrees of Damage (DoD) which help estimate better the range of wind speeds the tornado likely produced. From that, a rating (from EF0 to EF5) is assigned. The EF Scale was revised from the original Fujita Scale to reflect better examinations of tornado damage surveys so as to align wind speeds more closely with associated storm damage. The new scale has to do with how most structures are designed.

The EF Scale is a set of wind estimates (not measurements) based on damage. Its uses 3-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to the 28 indicators listed below. These estimates vary with height and exposure. The 3-second gusts is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured, and "one-minute mile" speed.

Table 4.30 - Enhanced F Scale

Fujita Scale			Derived EF Scale		Operational EF Scale	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

NWS is the only federal agency with authority to provide 'official' tornado EF Scale ratings. The objective when measuring a tornado is to assign an EF Scale category based on the highest wind speed that occurred within the damage path. An appropriate damage indicator (DI) from more than one of the 28 used in rating the damage. The construction or description of a building should match the DI being considered, and the observed damage should match one of the 8 degrees of damage used by the scale. A determination will be made within the range of upper and lower bound wind speeds, as to whether the wind speed to cause the damage is higher or lower than the expected value for the particular degree of damage. Several structures are evaluated before a final EF rating is determined.

Table 4.31 - Enhanced F Scale Damage Indicators

Number (Details linked)	Damage Indicator (DI)	Abbreviation
1	Small barns, farm outbuildings	SBO
2	One- or two-family residences	FR12
3	Single-wide mobile home (MHSW)	MHSW
4	Double-wide mobile home	MHDW
5	Apt, condo, townhouse (3 stories or less)	ACT
6	Motel	M
7	Masonry apt. or motel	MAM
8	Small retail bldg. (fast food)	SRB
9	Small professional (doctor office, branch bank)	SPB
10	Strip mall	SM
11	Large shopping mall	LSM
12	Large, isolated ("big box") retail bldg.	LIRB
13	Automobile showroom	ASR

14	Automotive service building	ASB
15	School - 1-story elementary (interior or exterior halls)	ES
16	School - junior or senior high school	JHSH
17	Low-rise (1-4 story) bldg.	LRB
18	Mid-rise (5-20 story) bldg.	MRB
19	High-rise (over 20 stories)	HRB
20	Industrial bldg. (hospital, govt. or university)	IB
21	Metal building system	MBS
22	Service station canopy	SSC
23	Warehouse (tilt-up walls or heavy timber)	WHB
24	Transmission line tower	TLT
25	Free-standing tower	FST
26	Free standing pole (light, flag, luminary)	FSP
27	Tree – hardwood	TH
28	Tree - softwood	TS

Data source: https://www.weather.gov/oun/efscale

Historical Tornado or Waterspout Occurrences

The NCDC (1/1/1950 –7/20/2020) information reports that for the last 70 years there have been 55 tornado and waterspout events in Franklin County. The storm events database documentation notes that the Tornado EF Scale was based on the Enhanced F-Scale.

Table 4.32 – Tornado and Waterspout Occurrences, Franklin County (1/1/1950 – 7/20/2020)

Location or County	Date	Time	Type	Mag. (magnitude)	Death	Injuries	Property Damage	Crop Damage
Franklin County	8/30/1950	16:00	Tornado	F1	0	0	25K	0.00K
Franklin County	5/26/1951	09:30	Tornado	F1	3	0	250K	0.00K
Franklin County	11/23/1961	02:50	Tornado	F2	0	1	25K	0.00K
Franklin County	6/23/1963	05:00	Tornado		0	0	25K	0.00K
Franklin County	9/20/1969	21:20	Tornado	F1	0	0	2.5K	0.00K
Franklin County	9/20/1969	21:45	Tornado	F2	0	3	25K	0.00K
Franklin County	10/1/1969	04:10	Tornado	F0	0	0	0.03K	0.00K
Franklin County	12/21/1969	15:45	Tornado	F1	0	0	2.5K	0.00K
Franklin County	10/27/1972	08:05	Tornado	F0	0	0	0.00K	0.00K
Franklin County	10/27/1972	12:10	Tornado	F2	0	0	250K	0.00K

Franklin County	2/19/1974	08:30	Tornado	F0	0	0	2.5K	0.00K
Franklin County	5/11/1974	16:20	Tornado	F1	0	0	25K	0.00K
Franklin County	5/11/1974	19:00	Tornado	F1	0	0	25K	0.00K
Franklin County	3/9/1976	04:30	Tornado	F0	0	0	25K	0.00K
Franklin County	4/23/1983	02:30	Tornado	F1	0	0	25K	0.00K
Franklin County	11/3/1984	20:00	Tornado	F1	0	0	2.5K	0.00K
Franklin County	4/3/1987	08:30	Tornado	F0	0	0	2.5K	0.00K
Franklin County	6/8/1989	15:30	Tornado	F0	0	0	0.00K	0.00K
Franklin County	6/8/1989	16:00	Tornado	F2	3	4	4.5M	0.00K
Franklin County	6/8/1989	16:05	Tornado	F0	0	0	0.00K	0.00K
Franklin County	6/10/1989	08:55	Tornado	F0	0	0	0.00K	0.00K
Franklin County	11/2/1992	04:00	Tornado	F0	0	0	25K	0.00K
Franklin County	8/16/1994	00:00	Tornado	F0	0	0	0.00K	0.00K
St. George Island	10/2/1994	13:45	Tornado		0	0	0.00K	0.00K
Lanark Village	11/11/1995	11:50	Tornado	F0	0	0	.50K	0.00K
Apalachicola	10/1/1996	13:55	Tornado	F1	0	0	10K	0.00K
Eastpoint	4/28/1997	05:56	Waterspout		0	0	0.00K	0.00K
Eastpoint	9/2/1998	21:30	Tornado	F1	0	0	150K	0.00K
Carrabelle Beach	11/30/1998	15:05	Waterspout		0	0	0.00K	0.00K
Carrabelle Beach	6/23/2000	11:24	Waterspout		0	0	0.00K	0.00K
St. Teresa	6/23/2000	19:20	Waterspout		0	0	0.00K	0.00K
St. Teresa	6/23/2000	19:25	Tornado	F0	0	0	0.00K	0.00K
Greenpoint	6/24/2000	07:15	Waterspout		0	0	0.00K	0.00K
Carrabelle Beach	6/24/2000	08:10	Tornado	F0	0	0	0.00K	0.00K
Carrabelle	6/25/2000	07:55	Waterspout		0	0	0.00K	0.00K
Apalachicola	7/20/2000	14:50	Waterspout		0	0	0.00K	0.00K
Carrabelle Beach	7/31/2000	07:45	Waterspout		0	0	0.00K	0.00K
Carrabelle Beach	7/31/2000	07:53	Tornado	F0	0	5	0.00K	0.00K
Eastpoint	9/6/2000	19:45	Waterspout		0	0	0.00K	0.00K
St. Teresa	9/22/2000	07:05	Tornado	F0	0	0	25K	0.00K

Eastpoint	9/22/2000	07:15	Tornado	F1	0	0	10K	0.00K
Apalachicola	6/11/2001	14:11	Waterspout		0	0	0.00K	0.00K
Carrabelle	8/5/2001	18:43	Tornado	F0	0	0	5K	0.00K
St. Teresa	9/1/2001	09:40	Waterspout		0	0	0.00K	0.00K
St. George Island	10/14/2001	00:30	Tornado	F1	0	0	325K	0.00K
Eastpoint	11/10/2002	18:15	Tornado	F0	0	0	15K	0.00K
Carrabelle	9/15/2004	20:15	Tornado	F0	0	0	10K	0.00K
Apalachicola	10/27/2006	18:10	Tornado	F1	0	0	1M	0.00K
Royal Bluff	6/23/2009	16:15	Tornado	EF0	0	0	5K	0.00K
Royal Bluff	4/21/2012	09:16	Tornado	EF0	0	0	0.00K	0.00K
Eastpoint	2/25/2013	13:22	Tornado	EF0	0	0	0.00K	0.00K
Eastpoint	4/14/2013	14:30	Tornado	EF0	0	0	20K	0.00K
Buck Siding	10/13/2014	19:29	Tornado	EF0	0	0	0.00K	0.00K
St. George Island	7/20/2015	10:57	Waterspout		0	0	0.00K	0.00K
Creels	1/22/2017	14:50	Tornado	EF1	0	0	0.00K	0.00K
Apalachicola	6/20/2017	09:15	Tornado	EF0	0	0	10K	0.00K
St. George Island	9/17/2018	15:29	Waterspout		0	0	0.00K	0.00K
St. George Island	7/12/2019	09:25	Waterspout		0	0	0.00K	0.00K
Totals:							**$6,823,000; 6 deaths; 9 injured**	

Sources: http://www.ncdc.noaa.gov/stormevents/listevents.jsp?eventType=%28C%29+Tornado
https://www.weather.gov/tae/tor_cli_franklin

Hazard Event Narrative – Extent and Impact

1. 5/26/1951, Franklin – Three fishermen drowned when their small boat was overturned near Carrabelle. Twenty homes had roof damage as the waterspout moved ashore and one home was unroofed. Property damage estimates was $250,000.

2. 6/8/1989, Franklin – A waterspout moved NE onto shore from Apalachicola Bay, crossed Magnolia Bluff and passed through Eastpoint. Three people, two of whom had taken refuge from a nearby mobile home, were killed and through 500 feet from a frame house., four residents were injured. The tornado destroyed or damaged 27 houses, trailers and businesses, and a dozen vehicles and boats. Sixty acres of trees were also destroyed. The property damage from the NWS, Franklin County Tornado Database noted $4,500,000.

3. 10/14/2001, St. George Island - A F1 tornado touched down on St. George Island and destroyed the house at 320 Marks Street and moderately damaged a neighboring home. Ten other homes on Marks Street sustained minor damage. Property damage estimates were $325,000.

4. 10/27/2006, Apalachicola – A waterspout came ashore near US Hwy 98 and 26th Street. The tornado then tracked NE through Apalachicola and lifted near Water Street and Avenue G. A few boats were capsized. Four homes were destroyed and four dozen others were damaged. Hundreds of trees were knocked down and numerous utility poles were down. A restaurant along US Hwy 98 sustained heavy damage to its roof and outbuildings. An elementary school received minor damage. The city's hospital suffered heavy damage as portion of the hospital roof collapsed, numerous windows were blown out, and two air handling units were torn from the roof. The estimated property damage was $1,000,000, however that was probably underestimated.

Risk and Vulnerability Assessment

Tornadoes can occur with very little or no warning. And taking precautions in advance of a tornado event such as monitoring tornado watches and warnings, can help the community stay safe if a tornado or waterspout occurs in the county. The vulnerability from a tornado can be disastrous and has the potential of causing power outages, destruction and damage to buildings and can result in loss of life. According to the NCDC, there were more than 55+ tornado events over the last 70 years resulting in 6 deaths, 9 injuries, and $6,823,000 in property damage.

Waterspouts occur in the Gulf of Mexico off the coast line in Franklin County. The vulnerability from a waterspout can be disastrous if it comes ashore and spawns into a tornado. As stated on October 27, 2006, a waterspout came ashore and developed into a tornado causing over $1,000,000 in damage. This would have been a tornadic waterspout. Most of the waterspout occurrences recorded over the last 23 years have been fair weather waterspouts which dissipate rapidly when they make landfall, and rarely penetrate far inland.

Vulnerability for the Franklin County's Population

The incorporated cities and the unincorporated towns and cities in Franklin County are particularly vulnerable to tornados because of the presence of a high number of mobile homes (16.4%) as a percentage of the housing inventory. Mobile home residents are considered highly vulnerable to hazards both for socioeconomic reasons and because of the limited protection provided by their housing structure.

The possible consequences of tornadoes include: power outages, infrastructure damage (road/culvert washout), erosion, property damage/loss from wind, water and fires, riverine flooding, evacuations (day and night, road congestion), agricultural damage/loss, economic loss, and debris. A tornado or a series of tornadoes could affect the population if it should occur in a highly populated area.

The population for Franklin County's coast line have some vulnerability to waterspouts if they spawn into a tornado which has occurred two times in the last 23 years however there wasn't any recorded injuries to the County residents.

Vulnerability for Franklin County's Structures, Facilities, and Infrastructure

Franklin County is vulnerable to these extreme wind disaster events due to a high concentration of the population residing in manufactured or mobile homes, 1,269, or 16.4% as of 2020. Tornadoes have caused significant damage to Franklin County with over $6,823,000 over the last 70 years. The damage is primarily caused by wind damage to roofs and tree debris impacting transportation and power services. Tornado warnings are issued several times a year and are evenly distributed throughout the County.

Because of their speed of onset and unpredictable paths, all buildings and facilities are considered to be uniformly exposed to this hazard and could be potentially impacted.

The Franklin County's coast line have some vulnerability to tornadic waterspouts if they spawn into a tornado which has occurred two times in the last 23 years and has caused power line damage, boats to capsize, trees downed, and homes damage and destroyed.

Summary details for tornado and waterspout events:

Probability of Future Occurrences	The probability of tornado occurrence is high (at least 1 occurrence every year). The probability of a waterspout occurrence is medium (at least 1 every 3 years).

Geographic Area	The entire planning area (the City of Apalachicola, the City of Carrabelle and unincorporated areas of Franklin County) is at high risk to tornado events. The entire County is particularly vulnerable to tornados because of the presence of the number of mobile homes as a 16.4% of the housing inventory. Mobile homes are particularly vulnerable to the impacts of tornados because of their construction. There is risk to the coast line residents and infrastructure (the City of Apalachicola, the City of Carrabelle and coast line unincorporated areas of Franklin County) if a tornadic waterspout comes ashore and spawns into a tornado.
Extent	The worse-case scenario would be an EF5 tornado that could be spawned from a waterspout with destructive winds of 261 – 318 mph with complete devastation of homes leveled off foundations and swept away; businesses, churches, schools and government and other buildings demolished, trees debarked, power lines downed, and the infrastructure destroyed resulting in a catastrophic event. The largest F-Scale in Franklin County was an EF2 (110 – 157 mph) on 6/8/1989. A waterspout moved NE onto shore from Apalachicola Bay, crossed Magnolia Bluff and passed through Eastpoint. Three people were killed and four residents were injured. The tornado destroyed or damaged 27 homes, trailers and businesses, and a dozen vehicles and boats. Sixty acres of trees were also destroyed.
Impact	The Franklin County community, the residents, the structures, and the critical facilities could suffer from tornado events. The impact of a tornado depends on its strength. Meteorologists use the enhanced Fujita or EF-scale to record the tornado activity to analyze and determine how strong the tornado is. Weak tornadoes may cause only minor damage to property, while a stronger tornado may devastate large parts of an entire town. The impacts associated with tornadoes or waterspouts can be very destructive or catastrophic on the County residential (especially the mobile homes which account for 16.4% of the residential structures), commercial, and public buildings, as well as the critical infrastructure such as transportation, water, energy, and communication systems. In addition, the economic effect or financial impact could be devastating from strong tornado event not only during the crisis phase, but through the recovery and rebuilding stage. The largest F-Scale in Franklin County was an EF2 (110 – 157 mph) on 6/8/1989. A waterspout moved NE onto shore from Apalachicola Bay, crossed Magnolia Bluff and passed through Eastpoint. Three people, two of whom had taken refuge from a nearby mobile home, were killed and through 500 feet from a frame house, four residents were injured. The tornado destroyed or damaged 27 houses, trailers and businesses, and a dozen vehicles and boats. Sixty acres of trees were also destroyed. The property damage from the NWS, Franklin County Tornado Database noted $4,500,000.

Severe Thunderstorms *(includes Strong Winds, Lightning and Hailstorms)*

A thunderstorm is a rain shower during which you hear thunder, and since thunder comes from lightning, all thunderstorms have lightning. There are three basic ingredients needed for thunderstorm development:

- ✓ moisture,
- ✓ an unstable atmosphere, and

some way to start the atmosphere moving.

Figure 4.18 – Severe Thunderstorm Risk Categories

Source:https://www.spc.noaa.gov/new/images/Outlook-category-descriptions.png

The moisture is necessary to produce the thunderstorm clouds and precipitation. In the summertime, most areas of the United States (US) have sufficient moisture to generate thunderstorms if the other ingredients are present. In the wintertime, thunderstorms favor southern areas of the US where moisture is more plentiful; however, southerly winds associated with well-developed storm systems can bring sufficient moisture northward to generate thunderstorms at any time of the year, even in the dead of winter.

The atmospheric instability plays an important role in thunderstorm development as rising air is needed to produce clouds, and rapidly rising air is needed to produce thunderstorms. For air to rise rapidly, it must become buoyant compared to the surrounding air. When the atmosphere is unstable, the air near the ground can become buoyant and rise rapidly through the atmosphere. And, the warmer the air is near the earth's surface and the colder the air is aloft, the more unstable the atmosphere can be.

The third ingredient needed for thunderstorm development is something that will trigger motion in the atmosphere. This may be some sort of boundary such as a front, heating caused by the sun, or cooling aloft. Once a thunderstorm has developed, it will continue to generate boundaries that can trigger additional storms.

A severe thunderstorm is defined as a thunderstorm containing one or more of the following; hail ¾ inch or greater, winds gusting in excess of 57.5 mph, and/or spawns a tornado. About 10% of thunderstorms are classified as severe and some of the most severe occur when a single thunderstorm affects one location for an extended period of time.

Long-lived thunderstorms are called super cell thunderstorms. A super cell is a thunderstorm that has a persistent rotating updraft. This rotation maintains the energy release of the thunderstorm over a much longer time than typical, pulse-type thunderstorms which occur in the summer months. According to NOAA, super cell thunderstorms are responsible for producing the majority of severe weather, such as large hail and tornadoes. Downbursts are also occasionally associated with severe thunderstorms. A downburst is a strong downdraft resulting in an outward burst of damaging winds on or near the ground. Downburst winds can produce damage similar to a strong tornado. Although usually associated with thunderstorms, downbursts can even occur with showers too weak to produce thunder. Strong squall lines can also produce widespread severe weather, primarily very strong winds and/or microburst.

When a severe thunderstorm approaches, the National Weather Service will issue alerts. Two possible alerts are:

- Severe Thunderstorm Watch – Conditions are favorable for the development of severe thunderstorms.
- Severe Thunderstorm Warning – Severe weather is imminent or occurring in the area.

Strong Winds

High winds are very strong winds with air moving from an area of high pressure to an area of low pressure. A high wind warning is defined as 1-minute average surface winds of 35 kt (40 mph or 64 km/hr) or greater lasting for 1 hour or longer, or winds gusting to 50 kt (58 mph or 93 km/hr) or greater regardless of duration that are either expected or observed over land.

Historical Thunderstorm Occurrences

According to the NCDC, from 1/1/1950 to 7/20/2020, there have been over 66+ thunderstorms/wind events documented in Franklin County in the last 70 years with an approximate total property damage figure of $312,750. The highest magnitude recorded in NCDC is 70 kts, approximately 81 mph.

Table 4.33– Thunderstorm Occurrences in Franklin County (1/1/1950 – 7/20/2020)

Location or County	Date	Time	Type	Magnitude	Death	Injuries	Property Damage	Crop Damage
Franklin County	2/8/1971	04:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	8/26/1977	09:20	Thunderstorm Wind	56 kts.	0	0	0.00K	0.00K
Franklin County	8/26/1977	10:20	Thunderstorm Wind	56 kts.	0	0	0.00K	0.00K
Franklin County	7/15/1979	14:47	Thunderstorm Wind	56 kts.	0	0	0.00K	0.00K
Franklin County	3/29/1980	00:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	3/29/1980	01:00	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	3/29/1980	03:00	Thunderstorm Wind	51 kts.	0	0	0.00K	0.00K
Franklin County	4/23/1983	05:30	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
Franklin County	2/6/1986	07:15	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	3/2/1991	06:55	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	3/3/1991	00:00	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
Franklin County	3/3/1991	02:30	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	7/9/1991	14:20	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	7/11/1991	12:40	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	11/21/1991	18:45	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Franklin County	6/14/1992	08:10	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K