ALABAMA/MISSISSIPPI HURRICANE EVACUATION STUDY TRANSPORTATION ANALYSIS – 2023 RE-STUDY

PARSONS CDM Smith

November 2023 – Final Report

FEMA

TABLE OF CONTENTS

List of Figures

List of Tables

EXECUTIVE SUMMARY – TRANSPORTATION ANALYSIS

The Alabama/Mississippi (ALMS) Hurricane Evacuation Study (HES) was completed under the National Hurricane Program, a multi-agency federal partnership led by the Federal Emergency Management Agency (FEMA), along with the U.S. Army Corps of Engineers (USACE) and the National Oceanic and Atmospheric Administration's National Hurricane Center (NOAA-NHC). The ALMS HES includes five main analyses: Hazard, Vulnerability, Behavioral, Shelter, and Transportation. The ALMS HES helps to support state and local governments with ongoing hurricane evacuation planning efforts.

The previous statewide HES was last completed in 2012 for Alabama and Mississippi; several improvements have since been made, including:

- Updated hazard maps using the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model.
- Development of updated evacuation zones using directional storm data and storm surge modeling results from the SLOSH model.
- Updated demographic data by county to estimate the 2020 population that is vulnerable and that may be ordered to evacuate.
- Updated behavioral assumptions.
- Updated shelter location, capacity, and demand data.
- Updated Transportation Analysis representing 2020 conditions (population and roadway network).

A notable change compared to previous studies is the use of the Real Time Evacuation Planning Model (RtePM), a free, web-based transportation modeling tool with updated population and transportation network data sources. The primary outputs of RtePM are the clearance times from an evacuation. A *clearance time* represents the time it takes to clear the roadway of all evacuating vehicles, measured from the moment an evacuation order is issued until the time when the final evacuating vehicle reaches its point of safety. RtePM also graphically shows the overall evacuation traffic control flow on an hourly timestep. However, it is a macro-scale transportation model; therefore, it is not designed to model the exact traffic flow, does not contain the entire roadway network, and approximates population, behavior, and traffic. This report provides detailed information on the Transportation Analysis, which results in 265 different evacuation scenarios to provide Alabama and Mississippi emergency managers with an array of parameters and a range of clearance times to better plan for an evacuation. This report summarizes the assumptions, evacuation scenarios, and clearance time results of 265 evacuation scenarios. The restudy incorporates input that was coordinated with local, state, and federal agencies and included, but were not limited to: combinations of zones to be evacuated during local vs. regional evacuations, overall evacuation participation rates, public shelter participation rates, road modifications (i.e., contraflow), evacuation destinations, evacuation routing, evacuation response rates, background traffic conditions, and seasonal (tourist) populations.

Some evacuation scenarios modeled during the Transportation Analysis include Louisiana and Florida evacuees. However, the results from the ALMS HES do not supersede and nor dictate any changes to the recently completed Southeast Louisiana HES and Emerald Coast Regional Council Regional Evacuation Study in Florida (which encompasses the Pensacola area in Escambia County, Florida). The inputs and results of the Southeast Louisiana and the Emerald Coast evacuation studies are reviewed to inform the ALMS HES only.

Table ES-1 summarizes the range of clearance times given four evacuating geographies: Alabama only; Mississippi only; Mobile County, Alabama and Jackson County, Mississippi; and the ALMS region, which includes combined AL/MS counties and neighboring states[1]. The range of clearance times also represents the implementation of high, medium, and low, evacuation participation rates. Countywide scenarios with progressive zone evacuation (Zone A,

[1] Low, Medium, and High participation rates are referred from Alabama Hurricane Evacuation Study Behavioral Analysis – 2022 Re-Study and Mississippi Hurricane Evacuation Study Behavioral Analysis – 2022 Re-Study

Zone A+, Zone B), etc.) are modeled and documented in this report as a sensitivity analysis but are not considered scenarios for overall regional evacuation planning.

Table ES-1 Range of Clearance Times by Participation Rate

Region	Evacuation Participation Rate[1]	Evacuation Clearance Time (Hrs)
Alabama Scenarios (includes scenarios with and without Florida)	High	24 - 43 hrs
	Medium	9 - 36 hrs
	Low	7 - 32 hrs
Mississippi Scenarios (includes scenarios with and without Louisiana)	High	14 - 44 hrs
	Medium	8 - 32 hrs
	Low	7 - 32 hrs
ALMS Regional Scenarios (includes scenarios with and without Louisiana and with and without Florida)	High	22 - 43 hrs
	Medium	17 - 35 hrs
	Low	12 - 31 hrs

Although this report and the figures, appendices, and charts related to this report are static, the results from the newly updated SLOSH model and RtePM are best leveraged in a dynamic mapping environment and are intended to be integrated into the National Hurricane Program's web-based platform, HURREVAC – a widely-used hurricane decision-support tool. In addition, the ability to use RtePM allows users to test many different evacuation scenarios, which makes this macro-scale model a useful tool in the decision-making toolbox. Geographic information system databases containing data and maps are included in the online county-specific dashboards associated with each state's Vulnerability Analysis[2]. The results and information can be shared between federal, state, tribal, and local levels of government to quickly make decisions and to better inform the general public when a storm approaches.

[2] Refer to Alabama Hurricane Evacuation Study Vulnerability Analysis – 2022 Re-Study and Mississippi Hurricane Evacuation Study Vulnerability Analysis – 2022 Re-Study.

Baldwin Dashboard: https://parsonscorp.maps.arcgis.com/apps/dashboards/cbb18428f14a4353b33d41dba711fa87
Mobile Dashboard: https://parsonscorp.maps.arcgis.com/apps/dashboards/c1e7701b47d649be9c43ad32341dade7
Hancock Dashboard: https://parsonscorp.maps.arcgis.com/apps/dashboards/f8422921feb94fcbb0f0e2a34fc3c3f3
Harrison Dashboard: https://parsonscorp.maps.arcgis.com/apps/dashboards/1a424f88ee0942ee8442af06d6fd7232
Jackson Dashboard: https://parsonscorp.maps.arcgis.com/apps/dashboards/21d81f1301f149a5b22e1d471ad85526

1 Introduction

1.1 Background

The Alabama/Mississippi (ALMS) Hurricane Evacuation Study (HES) is conducted under the National Hurricane Program (NHP) – a multi-agency partnership led by the Federal Emergency Management Agency (FEMA), along with the U.S. Army Corps of Engineers (USACE), and the National Oceanic and Atmospheric Administration's National Hurricane Center (NOAA-NHC). The study includes five different analyses: Hazard, Vulnerability, Behavioral, Shelter, and Transportation. The ultimate output of the ALMS HES Transportation Analysis is to determine *clearance times*, which represent the time it takes to clear the roadway of all evacuating vehicles, measured from the moment an evacuation order is issued until the time when the final evacuating vehicle reaches its point of safety.

Data developed during the Hazard, Vulnerability, Behavioral, and Shelter Analyses are incorporated directly into the transportation modeling along with additional inputs developed for the Transportation Analysis. Data from these recent efforts are organized to allow for direct integration into Real-Time Evacuation Planning Model (RtePM) software, a web-based transportation modeling tool that is integrated into HURREVAC and has been used for other recent HESs. The reports listed below detail the HES analyses and can be found in the HES Documents Library in HURREVAC or upon request.

- Alabama HES Hazard Analysis – 2022 Re-Study for Baldwin and Mobile Counties
- Alabama HES Vulnerability Analysis – 2022 Re-Study for Baldwin and Mobile Counties
- Alabama HES Behavioral Analysis – 2022 Re-Study for Baldwin and Mobile Counties
- Alabama HES Shelter Analysis – 2023 Re-Study for Baldwin and Mobile Counties

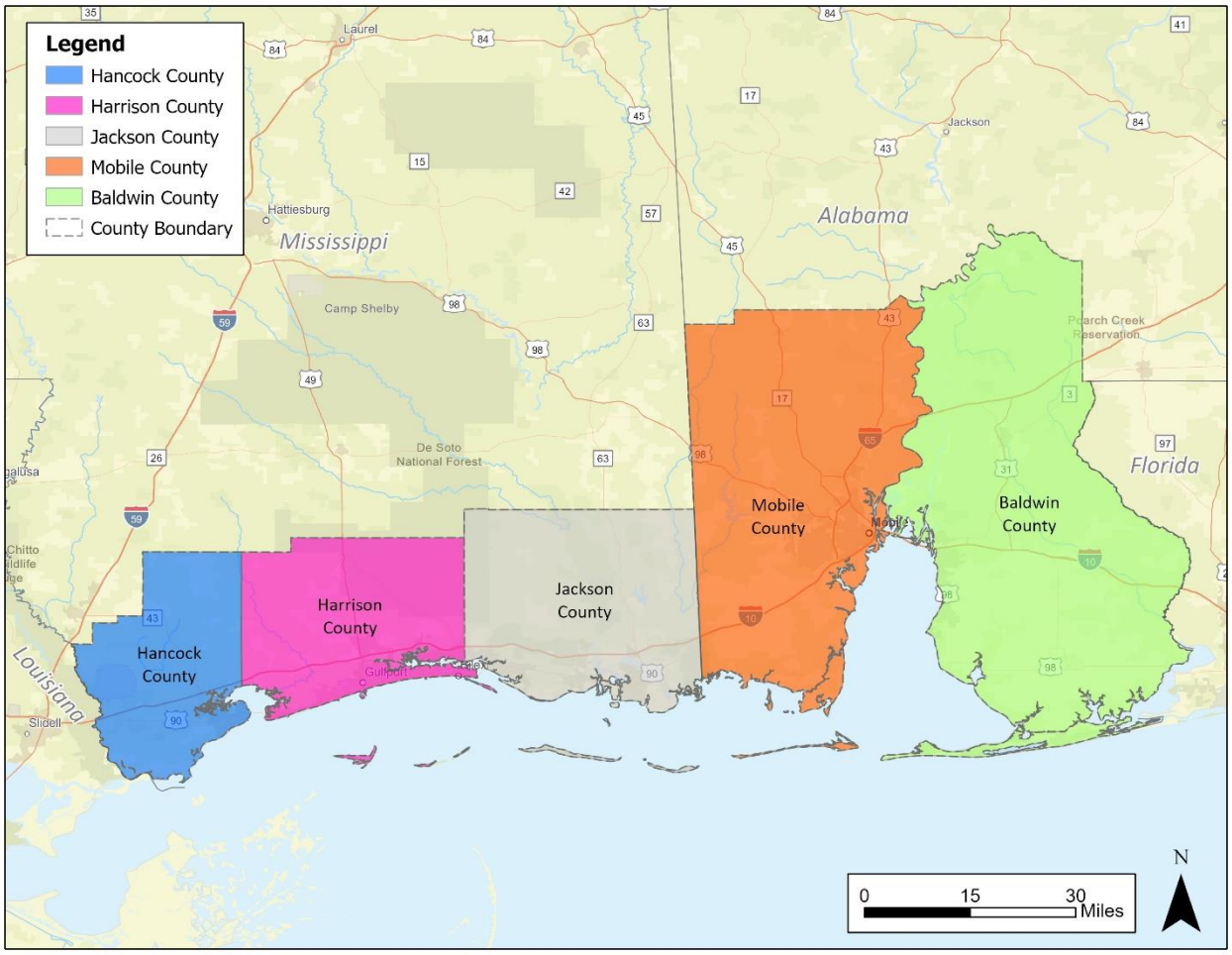
- Mississippi HES Hazard Analysis – 2022 Re-Study for Hancock, Harrison, and Jackson Counties
- Mississippi HES Vulnerability Analysis – 2022 Re-Study for Hancock, Harrison, and Jackson Counties
- Mississippi HES Behavioral Analysis – 2022 Re-Study for Hancock, Harrison, and Jackson Counties
- Mississippi HES Shelter Analysis – 2023 Re-Study for Hancock, Harrison, and Jackson Counties

The Transportation Analysis is focused on analyzing how long it would take vulnerable populations to evacuate if a tropical cyclone forced an evacuation of Alabama and Mississippi's coastal and tidal inland areas. Given the size of the region, the Transportation Analysis encompasses evacuation from both states. However, scenarios are developed with individual states in mind. In addition, Alabama is impacted by evacuees from Florida, while Mississippi is impacted by evacuees from Louisiana. Thus, information from these two neighboring areas is also considered in the ALMS HES Transportation Analysis.

The overall goal of the ALMS HES is to support state and local governments with ongoing hurricane evacuation planning and operations efforts. This current study builds on recent re-study efforts and incorporates new data. The last hurricane evacuation transportation analysis addressing the coast of Alabama were the *2010 Transportation Analysis for Alabama Hurricane Evacuations,* the *2012 Alabama Hurricane Evacuation Study Technical Data Report for Baldwin and Mobile Counties,* and the *Baldwin County 2015 Update*. Similarly, the *2012 Mississippi Hurricane Evacuation Study Technical Data Report* and the *2012 Mississippi Hurricane Evacuation Study Transportation Analysis* were the last analyses addressing coastal counties in Mississippi coastal counties.

The study area for the ALMS HES encompasses the coastal counties in Alabama (Mobile and Baldwin) and three coastal counties in Mississippi (Hancock, Jackson, and Harrison) as shown in **Figure 1-1**.

Figure 1-1 Study Area



1.1.1 Study Purpose

The objective of the Transportation Analysis is to calculate evacuation timing that can be used by emergency managers for both emergency management planning and emergency operations during a storm event. By incorporating demographic data into RtePM based on a suite of scenarios that Alabama and Mississippi would face during an evacuation, the result is an updated set of clearance times associated with evacuating population. This report provides detailed information on the various inputs required for the ALMS HES Transportation Analysis, describes key elements of the RtePM model, provides clearance time results, and identifies general evacuation recommendations that can be used by emergency managers in Alabama and Mississippi.

The Transportation Analysis addressed five primary steps:

- Developing evacuation scenarios
- Establishing an evacuation roadway network
- Calculating the number of evacuees and vehicles
- Conducting evacuee trip generation and assigning destinations
- Routing evacuees along the evacuation roadway network

Stakeholder input is an important part of the development of the Transportation Analysis and the overall HES. The following coordination occurred to support the Transportation Analysis:

- Initial Stakeholder Coordination and Kickoff Meeting on Transportation Analysis – November 3, 2021
- Stakeholder Coordination Meetings on other HES Components – October 2021 through September 2022 (see the corresponding analysis reports for dates)
- Stakeholder Preference Survey on Transportation Analysis and Follow-up Discussions – November 2022 to January 2023
- State of Alabama Leadership Briefing – April 18, 2023
- Transportation Analysis Update Meeting on Priority Transportation Scenarios – April 26, 2023
- Transportation Analysis Update Meeting on Draft Final Results – June 29, 2023

2 Transportation Model and Evacuation Network

2.1 RtePM Background

The ALMS HES uses the RtePM software for conducting the Transportation Analysis. RtePM is a free, web-based transportation model designed to capture the impacts of traffic flow along a regional roadway network to calculate clearance times, which as previously stated, represents the time it takes to clear the roadway of all evacuating vehicles, measured from the moment the evacuation order is issued until the time when the final evacuating vehicle reaches its point of safety. RtePM allows users to set parameters and conditions including, the area to be evacuated by specifying roadways, the number of evacuees and vehicles involved in the evacuation, the speed at which evacuees respond to evacuation orders, and the destinations that evacuees travel to.

Johns Hopkins University Applied Physics Laboratory initially developed the model in 2009 for the U.S. Department of Homeland Security's Virtual USA initiative. From 2012 to 2015, the Old Dominion University Virginia Modeling, Analysis, and Simulation Center expanded on the work of Johns Hopkins University and made additional improvements to the model. Between 2018 and 2021, the Massachusetts Institute of Technology Lincoln Laboratory (MIT-LL) worked with the NHP to further enhance RtePM for modeling evacuation. It is currently being maintained by Sea Island Software. The goal of adopting RtePM as the primary transportation analysis model was to standardize the HES process and create an open source capability, which could be readily updated in future years.

2.2 Evacuation Network

RtePM uses the HERE[3] transportation network data, which includes highways, major arterials, minor arterials, and smaller roadways. Existing roads can be modified, and new roads can be added within RtePM. RtePM provides the option of selecting and modifying roads and road networks when defining evacuation routes. This is accomplished by identifying and editing selected roads, evacuation end points, modified roads, and other additional roads. RtePM defines these options as:

- **Selected Roads:** These are potential pathways from an evacuation area. RtePM automatically selects the most efficient pathways from the evacuation area using the proprietary road network data. RtePM also allows for the designation of which road classifications are included in the selection process, including highways, major arterials, minor arterials, and other lower classified roadways.
- **Evacuation End Points:** These are the final destinations or the points from which evacuees leave the evacuation area to continue traveling to their final destination. RtePM allows end points to be either active or inactive. Active end points are locations at the edge of the study area or other inland locations that users deem to be reasonable destinations for evacuees to thereby clear the roadway network in the event of an

[3] HERE represents HERE Technologies (previously NAVTEQ, Inc.), a company that provides mapping, roadway networks, location data, and related services.

evacuation order. Inactive end points are locations that may physically exist in the roadway network, but for various reasons may not be suitable evacuation destinations for a particular evacuation scenario.

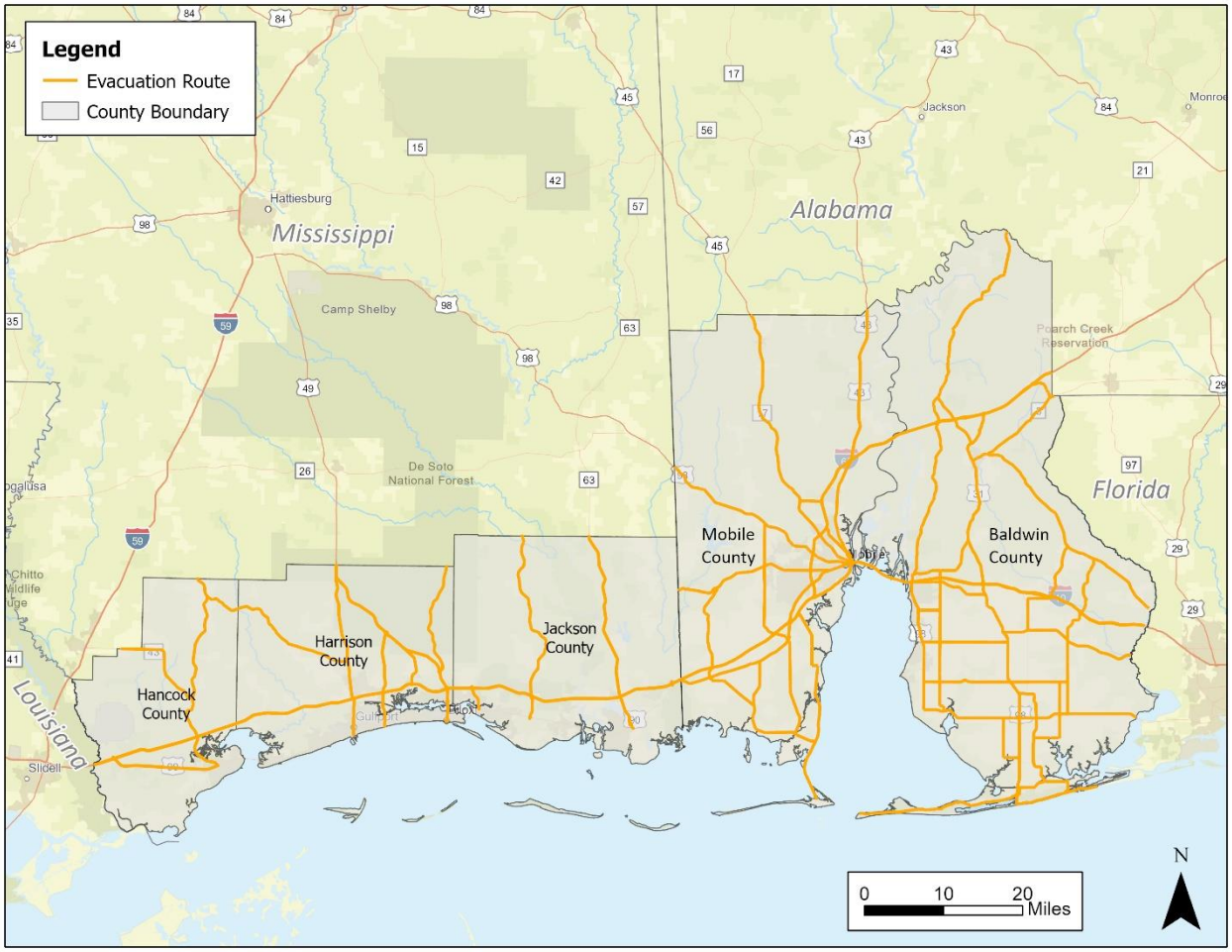
- **Modified Roads:** This option allows the user to select roadways that may be modified for road closures, contraflow (also called "lane reversal" operations), shoulder use, free flow speed, or the number of lanes.
- **Additional Roads:** This option allows the user to define additional roadways that are not included in the proprietary road network data.

2.2.1 Designated Evacuation Routes in Alabama/Mississippi

Identification of the evacuation network is a critical step as it determines the route that potential evacuees take for evacuation within RtePM. The ALMS HES uses evacuating populations from the Vulnerability Analysis representing the year 2020. Therefore, the RtePM evacuation network also reflects year 2020 conditions. The RtePM evacuation network used for modeling transportation scenarios includes stakeholder-designated evacuation routes as well as other roadways that support these routes. In RtePM, the evacuation network must service all of the Census Block Groups (CBGs) within the ALMS HES study area and must also connect to identified public shelter locations.

Figure 2-1 illustrates the evacuation routes in Alabama/Mississippi within the study area, but not necessarily the evacuation network as selected in RtePM. Some of the evacuation routes may be impacted by storm surge if a tropical cyclone comes ashore. **Appendix A** contains a series of maps overlaying the evacuation routes with the results from the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model for each of the storm surge extent groupings described in the Alabama HES Hazard Analysis – 2022 Re-Study and Mississippi HES Hazard Analysis – 2022 Re-Study.

Figure 2-1 Alabama/Mississippi Evacuation Routes



2.2.2 Alabama/Mississippi Evacuation Network in RtePM

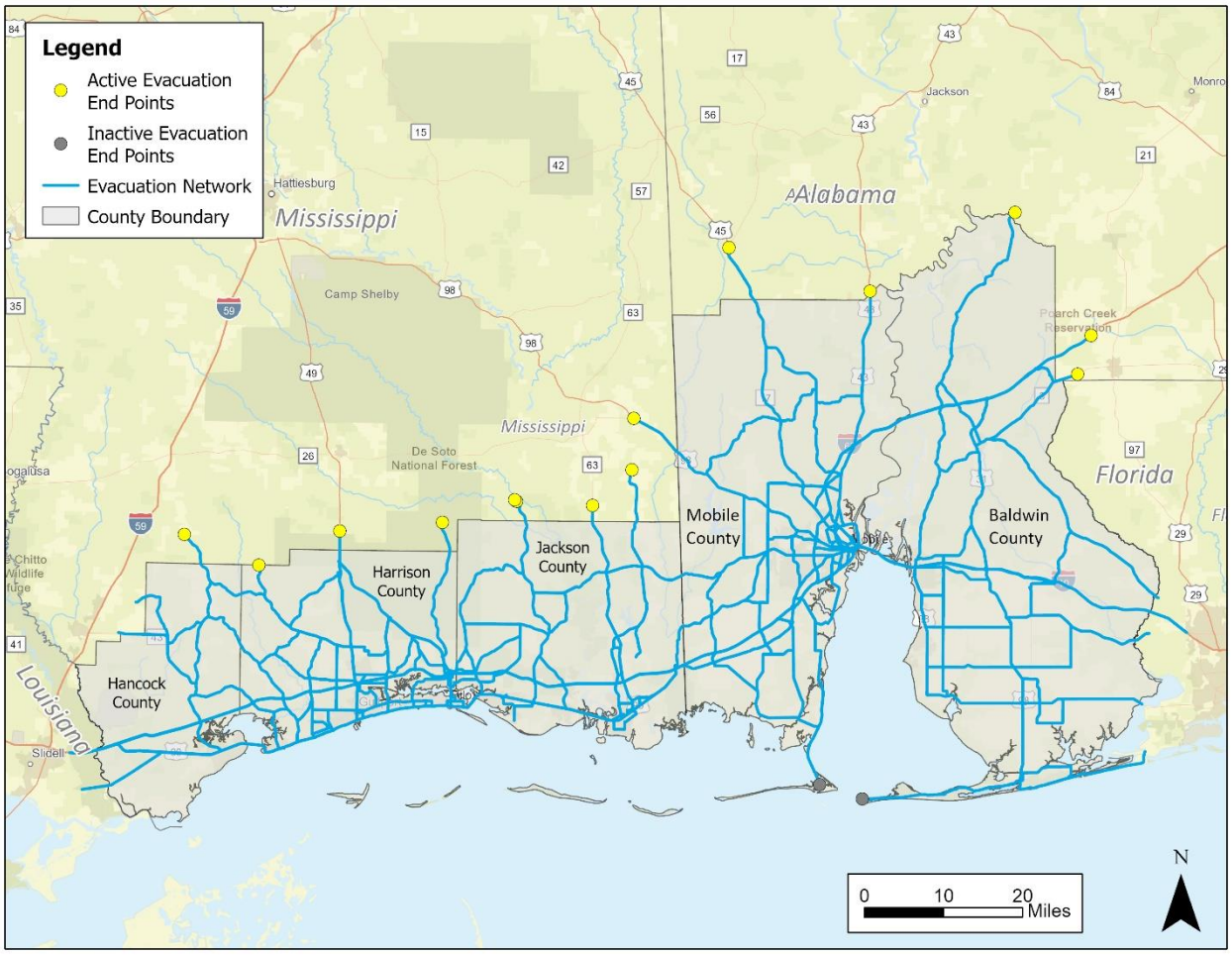
After the evacuation routes and the supporting roadway network are identified within RtePM, the network is reviewed to reflect year 2020 conditions to match the same year of population. The Alabama Department of Transportation (ALDOT) Southwest Region Projects [4] and the *2040 Mississippi Gulf Coast Metropolitan Transportation Plan*[5] are used to identify potential roadway construction projects that would impact evacuation routes as shown in **Table 2-1**. These projects are related to the potential of an increase in roadway capacity (e.g., new roadways, roadway widening, new interstate ramps). The projects implemented by 2020 are reviewed in Google Earth and in RtePM to determine whether they are implementable for the Transportation Analysis. **Figure 2-2** illustrates the Alabama/Mississippi evacuation network identified for evacuation scenarios within RtePM.

Table 2-1 Potential Roadway Construction Projects

State	County	Type of Work	Route	Description	Timeframe and Model Implementation
Alabama	Baldwin	Lane widening	SR-181	Widen to four lanes between just north of SR-104 to just south of CR-64	Planned for 2022. Not incorporated into the parent scenario due to the project being after 2020.
	Mobile	Roadway extension	SR-158	Roadway extension from east of SR-217 to the junction of Schillinger Rd. and roadway extension from east of Glenwood Rd. to West of SR-217	Planned for 2024. Not incorporated into the parent scenario due to the project being after 2020.
		Lane widening	I-10	Widening 4-lane to 6-lane on I-10 from the CR-39 interchange to the CR-69 (Plantation Road) overpass.	Planned for 2024. Not incorporated into the parent scenario due to the project being after 2020.
Mississippi	Hancock	Road improvements	Kiln-Delisle Road and Hwy 603	Intersection improvements	Planned for 2021 to 2030. Not incorporated into the parent scenario due to the project being after 2020.
		Road improvements	I-10 and Diamondhead Drive	Intersection improvements	Planned for 2021 to 2030. Not incorporated into the parent scenario due to the project being after 2020.
		Road improvements	I-10 and Hwy 603	Interchange improvements	Planned for 2021 to 2030. Not incorporated into the parent scenario due to the project being after 2020.
		Road improvements	I-10 and MS-43	Intersection improvements	Planned for 2021 to 2030. Not incorporated into the parent scenario due to the project being after 2020.
	Harrison	Lane widening	Three Rivers Road	Widen to four-lane divided	2016 – 2020. Not an evacuation route and not within the evacuation roadway network.
		Lane widening	Landon Road	Widen to four -lane divided	2016 – 2020. Not an evacuation route and not within the evacuation roadway network.
		Lane widening	Airport Road	Widen to four -lane divided	2016 – 2020. Not an evacuation route and not within the evacuation roadway network.
		Lane widening	Popp's Ferry Road	Widen to four -lane divided	2016 – 2020. Not an evacuation route and not within the evacuation roadway network.
		Road improvements	Popp's Ferry Road	New four-lane divided construction	2016 – 2020. Not an evacuation route and not within the evacuation roadway network.
		Lane widening	Dedeaux Road	Widen to four -lane divided	2016 – 2020. Not an evacuation route and not within the evacuation roadway network.
	Jackson	Lane widening	I-10 (from Highway 609 to Gautier-Vancleave Rd)	Widen to 6 lanes	2010 imagery shows 4 lanes on the segment. Implemented in 2022 as a 6-lane highway from Hwy. 609 to Baker Rd.

[4] Alabama Department of Transportation Regional Projects. Accessed at https://www.dot.state.al.us/projects/regionProjects.html
[5] Gulf Regional Planning Commission, 2016. Mississippi Gulf Coast 2040 Metropolitan Transportation Plan. Accessed at http://www.grpc.com/wp-content/uploads/2016/12/Mississippi-Gulf-Coast-MTP-Summary-8.5x11.pdf

Figure 2-2 Alabama/Mississippi Evacuation Networks



2.2.2.1 End Points

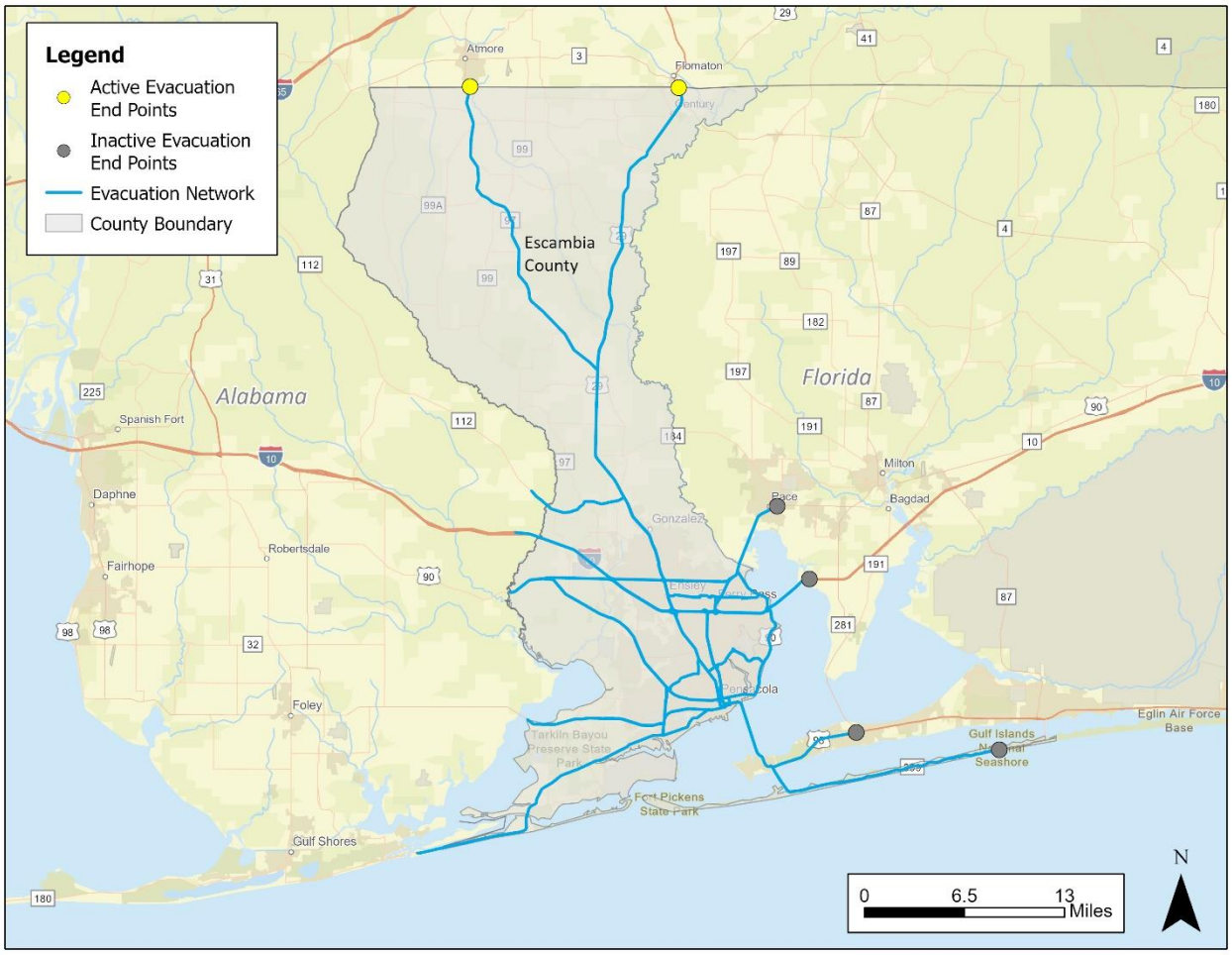
Figure 2-2 also shows evacuation end points within RtePM. These are the locations where evacuees leave the evacuation network toward a point of safety. Evacuees not traveling to public shelters will evacuate to one of the active end points on the network. As shown in Figure 2-2, active evacuation end points are shown as yellow circles, and inactive evacuation end points are shown as gray circles. Inactive evacuation end points indicate that evacuees cannot use those points to leave the evacuation network. For the Transportation Analysis, the evacuation end points are located beyond the extent of the ALMS county boundaries. In Mississippi, evacuees head north toward Hattiesburg. The counties inland of the coast are not considered in the Transportation Analysis, so extending the roadway network to an end point in Hattiesburg did not yield significant changes in overall clearance time and also allows for more detailed information at each of the routes exiting the counties in the Transportation Analysis.

2.2.3 Escambia County, FL Roadway Network

The Transportation Analysis evaluates the impacts of evacuees from neighboring states on eastern Alabama, primarily the Pensacola, FL area (i.e., Escambia County). The Florida portion of the evacuation network is sourced from the *2021 Emerald Coast Regional Council Evacuation Study*[6] and the Transportation Interface for Modeling Evacuations (TIME) model. For the Transportation Analysis, evacuees from Florida have two options: travel north into non-coastal portions of Alabama or travel into Baldwin County, AL before evacuating north. The evacuation end points in the southern portion of Alabama and Florida are inactive to force evacuees to travel north in the RtePM model simulation. The evacuation network used in Escambia County, FL is illustrated in **Figure 2-3**.

[6] Florida Division of Emergency Management, 2021. Emerald Coast Regional Council Evacuation Study Regional Destination Rates. Accessed at https://portal.floridadisaster.org/preparedness/RES/Studies/SitePages/RES.aspx.

Figure 2-3 Escambia County, Florida Evacuation Network in RtePM

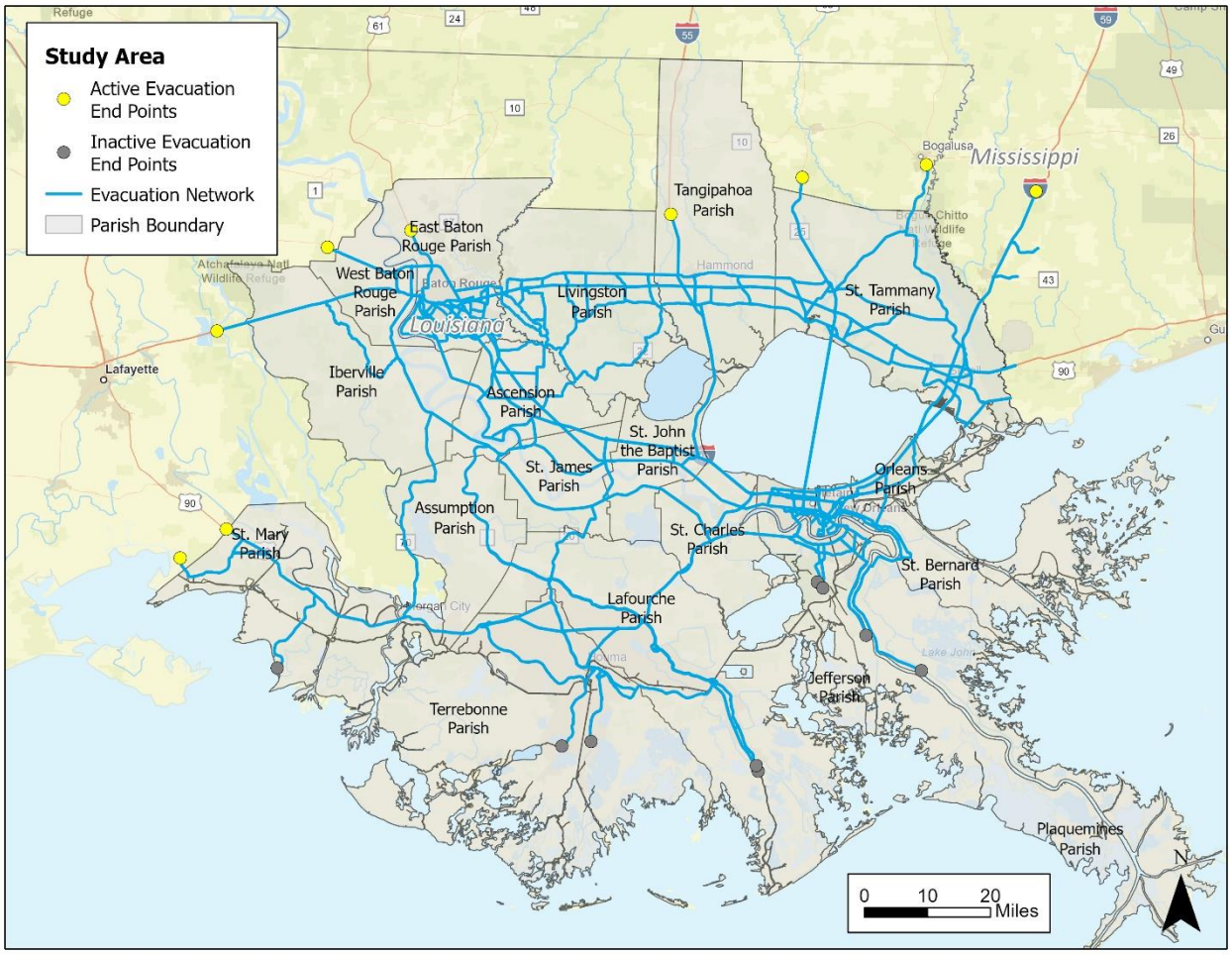


2.2.4 Southeast Louisiana Roadway Network

The Transportation Analysis evaluates the impacts of evacuees from neighboring states on western Mississippi, primarily the New Orleans, LA region. Evacuees from Louisiana travel north within Louisiana toward Mississippi. The Louisiana portion of the evacuation network is from the *2020 Southeast Louisiana Hurricane Evacuation Study Transportation Analysis Report*[7] and correspondence with the transportation modeling contractor who conducted the study. The evacuation zones for the Southeast Louisiana HES encompass a significantly large portion of the area; thus, the roadway network that accompanied the evacuation zones is adopted. The evacuation end points in the southern portion of Mississippi and Louisiana are inactive, forcing evacuees to travel north in the RtePM model simulations. The evacuation network used in Southeast Louisiana is illustrated in **Figure 2-4.**

[7] USACE Institute of Water Resources, 2020. Southeast Louisiana Hurricane Evacuation Study Transportation Analysis Report. Accessed at https://hvx.hurrevac.com/docs/HES/LA/

Figure 2-4 Southeast Louisiana Evacuation Network in RtePM



2.2.5 Contraflow Lane Operations

Implementing contraflow lane operations (also referred to as "lane reversal" operations) is a common method adopted by transportation professionals during hurricane evacuations. By reversing the incoming traffic lanes, the highway capacity available for evacuation traffic is increased though not doubled. RtePM allows the ability to assess contraflow operations within evacuation scenarios by specifying roadways with this capability. Therefore, for the Transportation Analysis, several scenarios are identified to evaluate the impacts of contraflow operations.

The contraflow operation plans from ALDOT[8], the Mississippi Department of Transportation (MDOT)[9], and the Louisiana Department of Transportation (LaDOT)[10] are reviewed as the transportation scenarios are constructed with contraflow operations in RtePM. The State of Florida replaced contraflow operations with emergency shoulder use (ESU) implementation. The *2021 Emerald Coast Regional Council Evacuation Study* TIME model does not state any ESU implementation for Escambia County, FL.

Table 2-2 summarizes the contraflow plans in Alabama, Mississippi, and Louisiana that are incorporated into RtePM scenarios. Several road and ramp connections are added or removed during the development of contraflow scenarios in RtePM. **Figure 2-5** illustrates a scenario network in RtePM with contraflow plans (shown as arrows in the direction of contraflow) listed in **Table 2-2**. According to the MDOT 2021 Hurricane Evacuation Guide, "Category

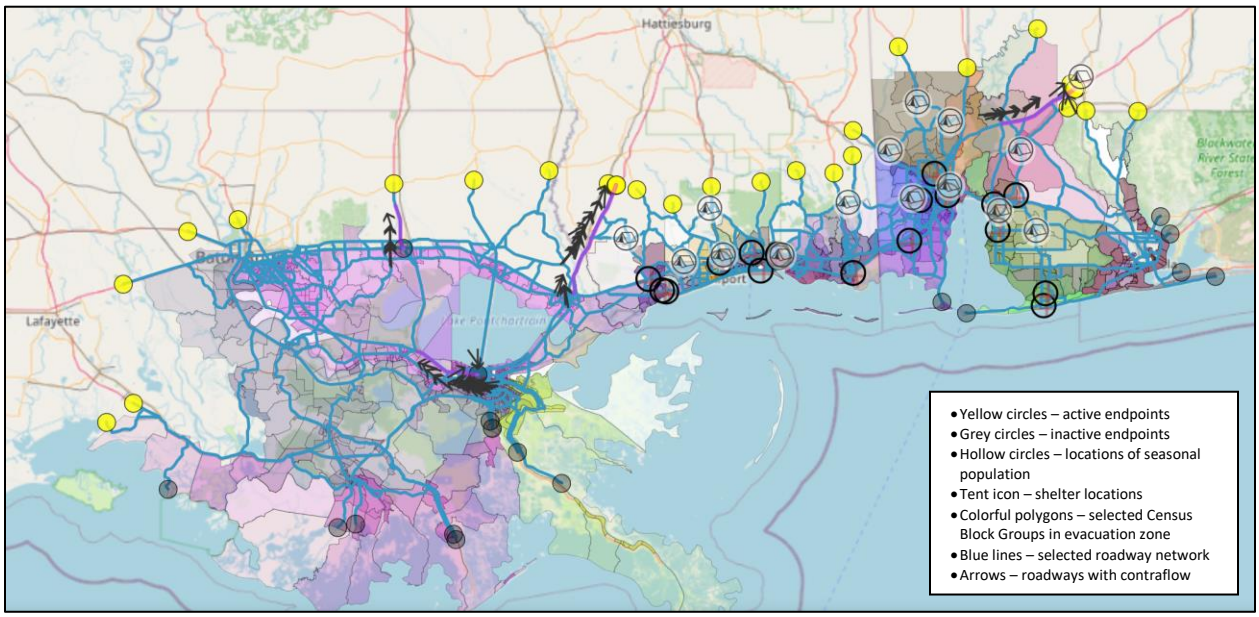
[8] Alabama Department of Transportation, 2020. Contraflow Plans. Accessed at https://www.dot.state.al.us/travel/I65ReverseLaning.html
[9] Mississippi Department of Transportation, 2020. MDOT Hurricane Evacuation Guide. Accessed at https://mdot.ms.gov/documents/Planning/Guides/Hurricane%20Evacuation%20Guide/hurricane%20evacuation%20guide.pdf
[10] Louisiana Department of Transportation, 2020. LADOT Emergency Guide. Accessed at http://gohsep.la.gov/Portals/0/Documents/Prevent/Emergency%20Guide%20v65_5-24-2022.pdf

3, 4, or 5 hurricanes in the Gulf of Mexico might cause a mandatory evacuation of the greater New Orleans area." Therefore, contraflow operations for Mississippi scenarios are simulated for Category 3 or higher scenarios.

Table 2-2 Contraflow Plans in Alabama, Mississippi, and Louisiana

State	Route Name	Specific Location
Alabama	Interstate 65	The southbound lanes of I-65 are reversed toward northbound. Contraflow operations begin in Baldwin County just south of Exit 31 (State Road 225) and end in Montgomery just north of Exit 167 (U.S. 80)
Mississippi	Interstate 59	The I-59 North contraflow operations begin at I-10 West in Louisiana, extend into Mississippi, and end just south of Hattiesburg.
	Interstate 55	The I-55 North contraflow operations begin at I-12 West in Louisiana, extend into Mississippi, and end just south of Brookhaven.
Louisiana	Interstate 10	The I-10 West contraflow operations begin at US 190 (Causeway) and ends just east of I-55.

Figure 2-5 Contraflow RtePM Model Configuration



3 Vulnerability Analysis Inputs

3.1 Purpose

This section gives a brief overview of the results of the Alabama/Mississippi Vulnerability Analysis, which are used as inputs to the Transportation Analysis. This section summarizes the inputs for contributing populations from Florida and Louisiana.

3.2 Hurricane Evacuation Zones

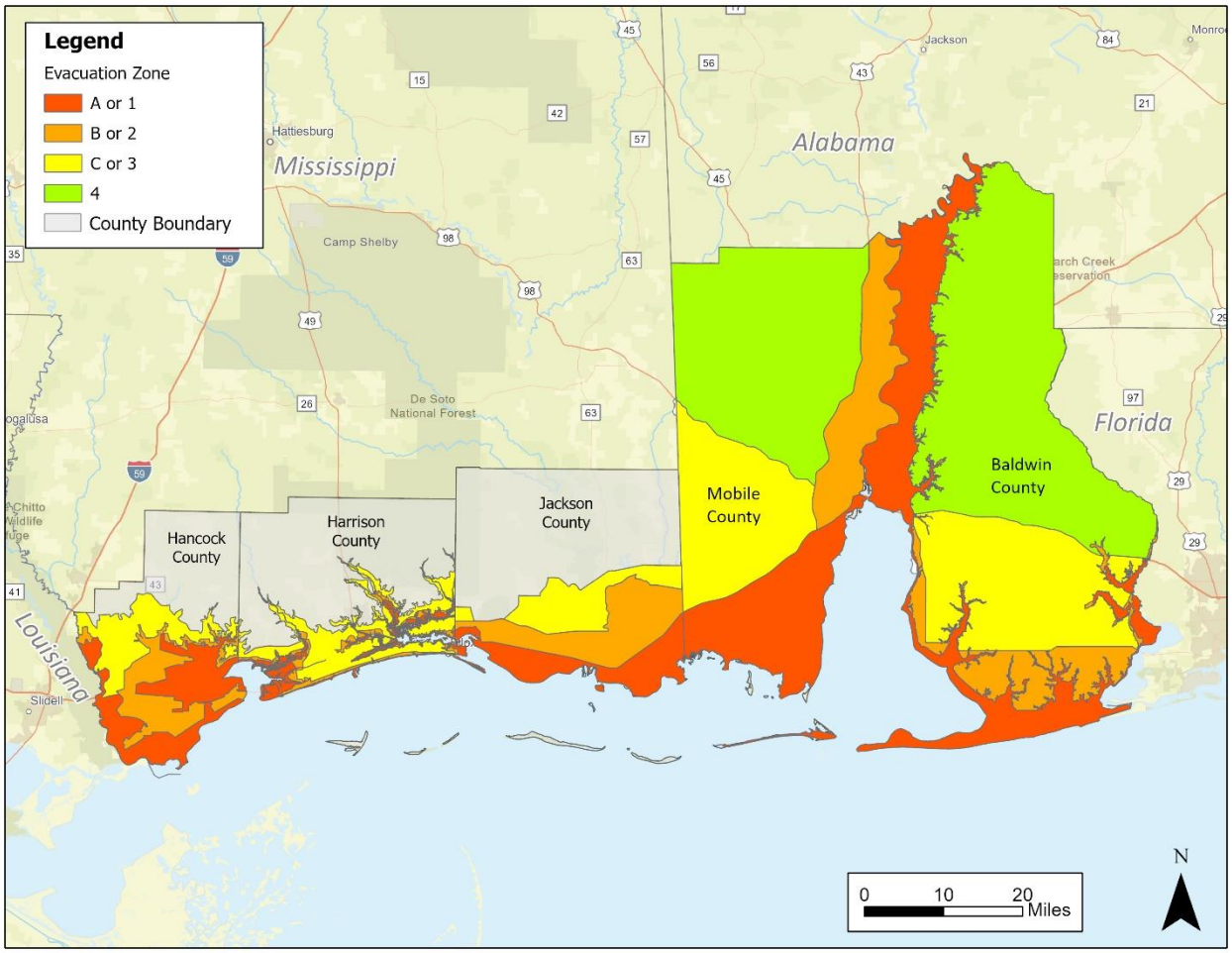
3.2.1 Alabama/Mississippi Hurricane Evacuation Zones

The Alabama HES Vulnerability Analysis - 2022 Re-Study and the Mississippi HES Vulnerability Analysis - 2022 Re-Study summarize the development of evacuation zones for each state. Four evacuation zones (EZ1, EZ2, EZ3, and EZ4) are identified for the counties in Alabama. Three evacuation zones (EZA, EZB, and EZC) are identified for the

counties in Mississippi. The zone nomenclature for each state is unique (letters vs. numbers are based on stakeholder preference) and is maintained throughout the Transportation Analysis.

Figure 3-1 shows the Alabama evacuation zones for Mobile and Baldwin Counties and Mississippi evacuation zones for Hancock, Jackson, and Harrison Counties.

Figure 3-1 Alabama/Mississippi Hurricane Evacuation Zones



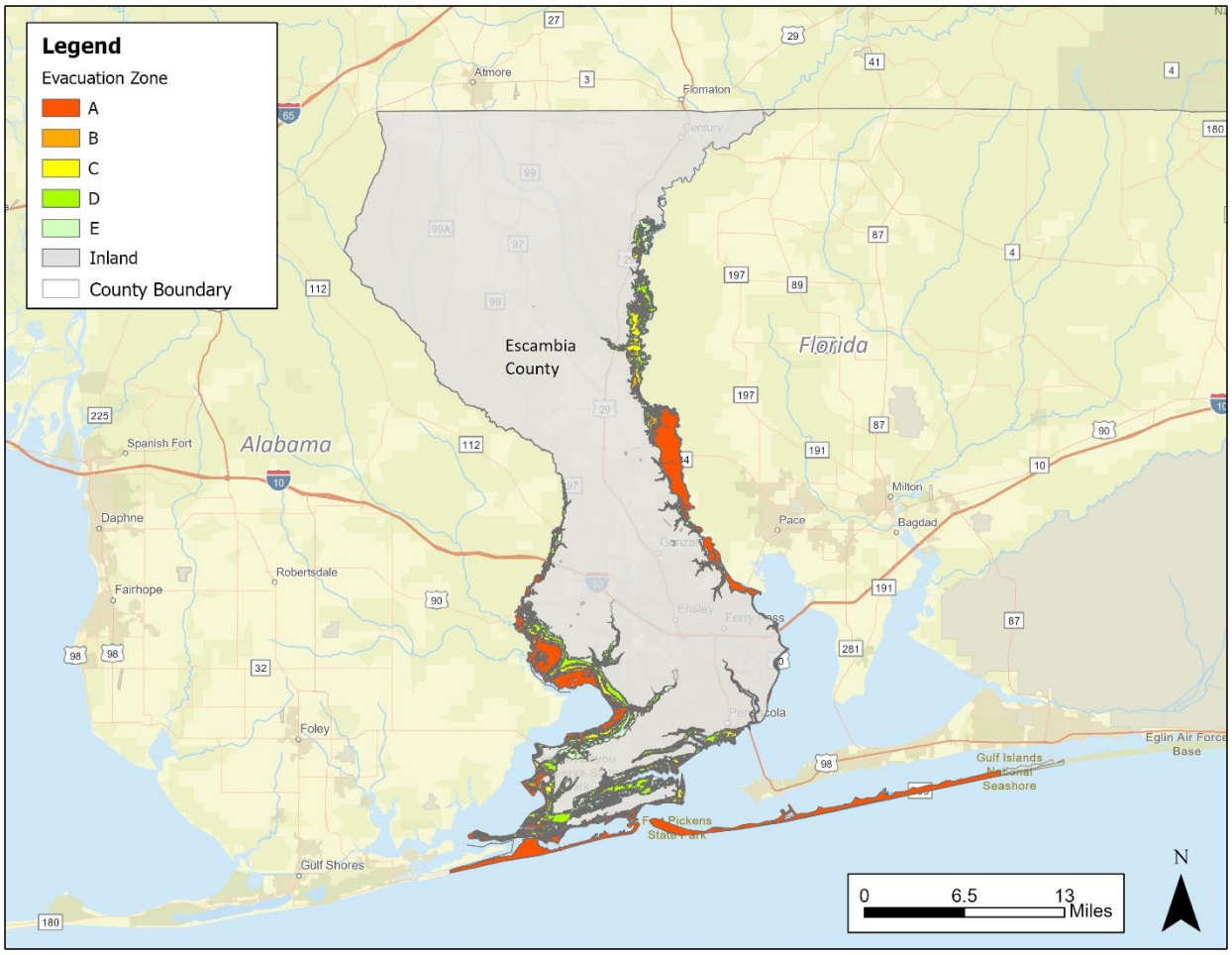
3.2.2 Escambia County, FL and Southeast Louisiana Hurricane Evacuation Zones

The Transportation Analysis includes the impacts of evacuating population from Escambia County, FL through Alabama and from Louisiana through Mississippi. The results from the ALMS HES do not dictate changes and do not supersede the recently updated Emerald Coast and Southeast Louisiana HESs. The inputs and results from the studies are only used to inform the ALMS HES.

The densely populated area of Pensacola is the primary concern on impacts to evacuating population in Alabama. There are five evacuation zones (A, B, C, D, and E)[11] in Escambia County, FL that are used in the Transportation Analysis as shown in **Figure 3-2**. Due to the raw edge effects in the Escambia County, FL evacuation zones, GIS processing of the evacuation zones was completed before importing the shapefiles into RtePM.

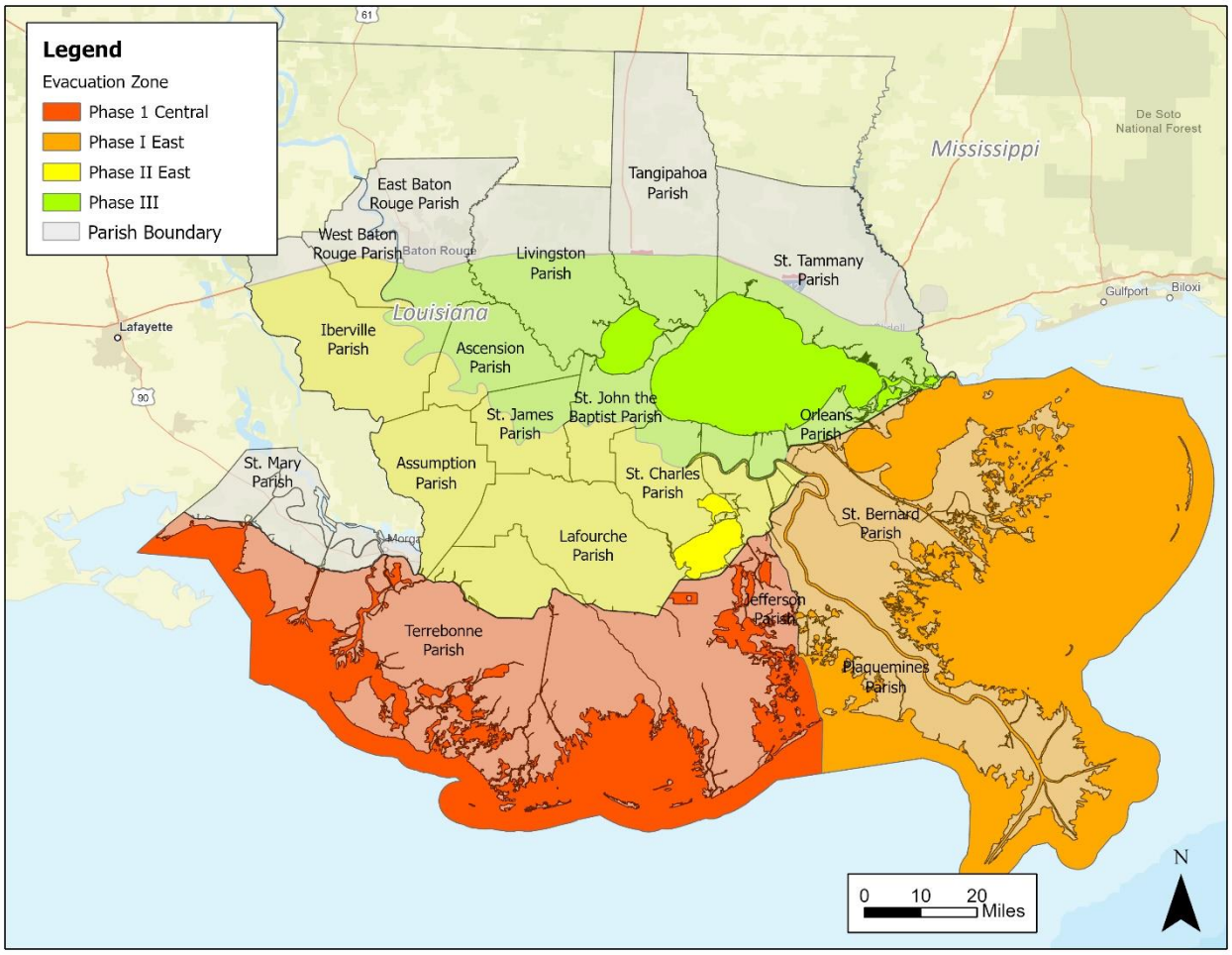
[11] Florida Division of Emergency Management, 2021. Emerald Coast Regional Council Evacuation Study. Accessed at https://portal.floridadisaster.org/preparedness/RES/Studies/SitePages/RES.aspx.

Figure 3-2 Escambia County, Florida Evacuation Zones



The Southeast Louisiana HES documents scenarios with the Phase 1 Central, Phase 1 East, Phase 2 East, and Phase 3 evacuation zones traveling toward Mississippi. The four evacuation zone covers portions of the 17 Louisiana parishes, including Ascension, Assumption, East Baton Rouge, Iberville, Jefferson, Lafourche, Livingston, Orleans, Plaquemines, St. Bernard, St. Charles, St. James, St. John the Baptist, St. Mary, St. Tammany, Tangipahoa, and Terrebonne Parishes as shown in **Figure 3-3**.

Figure 3-3 Southeast Louisiana Evacuation Zones



3.3 Vulnerable Population

3.3.1 Alabama/Mississippi Vulnerable Population

The evacuation zones are used to quantify the vulnerable population in each county. GIS software is used to map the locations of the evacuation zones for each county and overlay with U.S. Census Bureau data to estimate the number of people living in those areas (see the county-specific dashboards from the Hazards Analysis and Vulnerability Analysis). The summary of the total vulnerable population in Alabama/Mississippi by evacuation zone is shown in **Table 3-1** and corresponds with the Alabama HES Vulnerability Analysis – 2022 Re-Study and Mississippi HES Vulnerability Analysis – 2022 Re-Study documentation. For the Alabama/Mississippi region, 926,324 people are located within an evacuation zone.

Table 3-1 Vulnerable Population within Alabama and Mississippi Evacuation Zones

State	County	Evacuation Zone	Total Population
Alabama	Baldwin	1	34,014
		2	46,222
		3	98,230
		4	39,823
		Total	218,289
	Mobile	1	53,817
		2	103,494
		3	194,569
		4	62,097
		Total	413,977
Mississippi	Hancock	A	15,300
		B	17,160
		C	4,774
		Not in Zone*	10,105
		Total	47,339
	Harrison	A	22,621
		B	22,183
		C	95,823
		Not in Zone*	65,542
		Total	206,169
	Jackson	A	53,207
		B	50,051
		C	12,939
		Not in Zone*	26,675
		Total	142,872

*Not in Zone indicates population that are not located within an identified evacuation zone, but are located within the county.

Source: U.S. Census Bureau, ACS 5-Year Estimates (2016-2020) from the Vulnerability Analysis

3.3.1.1 Tourist Populations

RtePM can capture tourist populations that are considered seasonal visitors to the area's hotels, motels, short-term rentals, campgrounds, and day trips. The Alabama HES Behavioral Analysis – 2022 Re-Study and Mississippi HES Behavioral Analysis – 2022 Re-Study estimate tourist populations and occupancy rate scenarios (high, medium, low) for each county within the state. The re-study efforts did not revisit the distribution of seasonal population across the recently updated evacuation zones. The *2012 Alabama and Mississippi Hurricane Evacuation Technical Data Reports* summarize tourist population by evacuation zone. The 2012 distribution is used to re-distribute the updated 2020 tourist population estimates. The same percent distribution is used for each of the occupancy rates. In the Transportation Analysis, the tourist population occupancy rate assumption is paired with the evacuation participation rate (i.e., high seasonal population with high evacuation participation) to streamline the various scenario assumptions.

Table 3-2 lists the tourist populations in Alabama/Mississippi by evacuation zones. The Mississippi HES Behavioral Analysis – 2022 Re-Study documents 3.24 tourists per vehicle and the Alabama HES Behavioral Analysis – 2022 Re-

Study documents 4 tourists per vehicle in Alabama. Since RtePM Is limited to an integer value for this input, the assumption of 4 tourists per vehicle is used for both states.

Table 3-2 Alabama/Mississippi Tourist Population by Evacuation Zones

State	County	Evacuation Zone	Distribution of Total Tourist Population	High Occupancy	Medium Occupancy	Low Occupancy
Alabama	Baldwin	1	60%	19,948	13,133	6,825
		2	30%	9,936	6,541	3,399
		3	1%	438	288	150
		4	9%	3,129	2,060	1,070
	Mobile	1	10%	1,149	935	701
		2	26%	2,917	2,373	1,779
		3	46%	5,046	4,105	3,077
		4	18%	1,961	1,595	1,196
Mississippi	Hancock	A	68%	1,158	757	272
		B	27%	457	299	107
		C	5%	77	50	18
	Harrison	A	55%	23,981	15,692	5,630
		B	36%	15,987	10,461	3,754
		C	9%	4,026	2,634	945
	Jackson	A	34%	2,025	1,325	475
		B	46%	2,701	1,767	634
		C	20%	1,153	755	271

3.3.2 Florida and Louisiana Contributing Vulnerable Population

The focus of the ALMS HES is primarily on Alabama/Mississippi, but the populations from Florida and Louisiana can impact the evacuating population flow into Alabama/Mississippi. The Florida and Louisiana 2020 population projections are based on the *2021 Emerald Coast Regional Council Evacuation Study*[12] and the *2020 Southeast Louisiana Hurricane Evacuation Study Transportation Analysis Report*, respectively. As discussed in Section 3.2.2, evacuation zones from Florida and Louisiana are included in the ALMS HES RtePM model.

Not all evacuees from Florida and Louisiana evacuate toward the Alabama/Mississippi region. Only those that evacuate "out-of-state" contribute to the Alabama/Mississippi evacuations. For the population in Escambia County, FL a 55.67% out-of-state rate is listed in the regional destination rates in the Emerald Coast Regional Evacuation Study[13]. The out-of-state rates for the Louisiana evacuation zones are derived from the destination weights[14] in the Southeast Louisiana HES by considering the routes destined for Mississippi. **Table 3-3** shows the out-of-state rates for the Louisiana evacuation zones. **Table 3-4** summarizes the potential population impacting the region from each evacuation zone in Florida and Louisiana.

[12] Florida Division of Emergency Management, 2021. Emerald Coast Regional Council Evacuation Study. Accessed at https://portal.floridadisaster.org/preparedness/RES/Studies/SitePages/RES.aspx.
[13] Florida Division of Emergency Management, 2021. Emerald Coast Regional Council Evacuation Study regional destination rates. Accessed at https://portal.floridadisaster.org/preparedness/RES/Studies/SitePages/RES.aspx.
[14] USACE Institute of Water Resources, 2020. Southeast Louisiana Hurricane Evacuation Study Transportation Analysis Report. Accessed at https://hvx.hurrevac.com/docs/HES/LA/

Table 3-3 Louisiana Out-of-State Rates

Evacuation Zone	Out-of-State Rates
Phase 1 Central	41%
Phase 1 East	44%
Phase 2 East	40%
Phase 3	40%

Table 3-4 Population in Florida and Louisiana Evacuation Zones

State	Evacuation Zone	Estimated 2020 Population	Evacuating Population into AL/MS
Escambia County, Florida	A	50,676	28,211
	B	62,897	35,015
	C	88,209	49,106
	D	121,443	67,607
	E	150,228	83,632
	Total	473,453	263,571
Southeast Louisiana Parishes	Phase 1 Central	78,778	32,299
	Phase 1 East	67,840	29,850
	Phase 2 East	488,513	195,405
	Phase 3	1,112,598	445,039
	Total	1,747,730	702,593

Unlike Alabama/Mississippi, tourist populations from Florida and Louisiana are not included in the ALMS HES. The *2020 Southeast Louisiana Hurricane Evacuation Study Transportation Analysis Report* did not include tourist or seasonal populations. The *2021 Emerald Coast Regional Council Evacuation Study* reports approximately 7,100 tourist vehicles for Escambia County but does not describe their behavior of evacuating in or out of state. A sensitivity test results in little to no change in overall clearance time when Escambia County tourist vehicles are included in the model simulation.

4 Behavioral Analysis Inputs

4.1 Purpose

The purpose of this section is to summarize the behavioral assumptions used in the Transportation Analysis. They identify the populations that will participate during an evacuation order and their subsequent behaviors in response to that order. Four primary behavioral assumption parameters are used in the Transportation Analysis: evacuation participation rates, response curves, vehicle usage parameters, and destination rates and are described as follows:

- Evacuation participation rates identify the proportion of the population participating in an evacuation.
- Response curves pertain to the amount of time (in hours) for evacuees to respond to an evacuation order.
- Vehicle usage parameters include the number of people evacuating per vehicle and vehicle towing rates. The number of people evacuating per vehicle is used in RtePM to calculate the total number of vehicles

evacuating on the network, while vehicle towing rates define the proportion of towed and trailered vehicles in the total number of evacuating vehicles.

- Destination rates represent the proportion of the population traveling to a point of safety.
    - Public shelter usage rates are part of the destination rate parameter and pertain to the proportion of evacuees who will use a shelter as their point of safety.
    - The other destination rate evaluated is the end point assignment, which represents regional destination flows as the number of evacuees traveling north, south, east, or west toward a point of safety.

Behavioral data from the recent efforts are documented in the Alabama HES Behavioral Analysis – 2022 Re-Study and the Mississippi Hurricane Evacuation Study Behavioral Analysis – 2022 Re-Study. The Behavioral Analysis is closely tied to the development and designation of the evacuation zone as thoroughly described in the Alabama HES Vulnerability Analysis – 2022 Re-Study and the Mississippi Hurricane Evacuation Study Vulnerability Analysis – 2022 Re-Study. Both analyses are used to develop the behavioral assumptions used in the Transportation Analysis.

Appendix B provides a graphical summary for each county of the evacuation zone impacted by storm surge, the storm surge groupings developed during the Hazard Analysis, and a description of the evacuation zone from the Vulnerability Analysis. To determine when an evacuation zone is ordered to evacuate, the development (and description) of the evacuation zone is paired with a review of the Hazard Analysis to identify the storm category associated with the evacuation zone OR when an evacuation zone has the potential to be impacted by storm surge. The Transportation Analysis attempts to provide data to support evacuation planning, but it is ultimately the decision of the emergency managers coordinating with state, federal, and local agencies to decide when an evacuation is ordered, and which zones are ultimately ordered to evacuate based on the hazards that may impact the region.

The Hazard Analysis accounts for the direction of approach in storm surge groupings and at times, what is used to develop the evacuation zone. Participation rate development, as detailed in the Behavioral Analysis, only accounts for participation rates tied to storm category since behavioral surveys are generally limited and do not account for direction.

Shadow evacuees are not ordered to evacuate but leave because of a perceived threat. They are shown in the evacuation participation rate tables as shaded cells. Non-shaded cells represent evacuation zones that are ordered to evacuate. The Transportation Analysis does not distinguish between voluntary or mandatory evacuation orders, but assumes that a range of participation rates can provide scenarios to account for the evacuation order (i.e., low participation rates could be used to represent a voluntary evacuation). Regardless of whether a particular evacuation zone is being shown as ordered or has shadow evacuees, people are participating in an evacuation independent of zone, storm category, or direction to evacuate.

4.2 Evacuation Participation Rates

4.2.1 Alabama Evacuation Participation Rates

A range of evacuation participation rates (high, medium, low) represents a “spectrum” of participation that may occur during an evacuation. The Behavioral Analysis summarizes the participation rate for each evacuation zone in Baldwin and Mobile Counties, AL. Unlike the *2012 Alabama Hurricane Evacuation Study Technical Data Report*, there are no scenarios documented in this Transportation Analysis that assume 100 percent of the population within all evacuation zones are ordered to evacuate.

Table 4-1 presents the high, medium, and low evacuation participation rates by storm category for Alabama counties. Each cell represents an evacuation participation rate that is applied to the population within an evacuation zone. The participation rates are applied in RtePM for each transportation scenario to calculate the number of people that are expected to use the roadway network to travel to a point of safety (either to a shelter or to an end point).

To read the table, start by locating the block that shows the evacuation participation rate (high, medium, or low) for the evacuating county. Next, identify the zone of interest in the zones column. The intersection of storm category columns and evacuation zones (in the rows) yields the evacuation participation rate. For instance, for Mobile County with a medium evacuation participation rate in Evacuation Zone 3, the evacuation participation rate in a Category 2 event is 15%. As the storm category increases, the participation rate generally increases as more people tend to evacuate. It should be noted that the Transportation Analysis did not consider any transportation scenarios for tropical storm events based on stakeholder preference, but the participation rates are reported in these tables for completeness.

For Baldwin County, a Category 2 event with a direction of approach of north-northeast has storm surge impacts in Zone 2. Zone 3 and Zone 4 are not associated with storm surge impacts and are shown as shadow evacuation zones. For Mobile County, a Category 2 event with a direction of approach of north and north-northeast has storm surge impacts in Zone 2. Zone 3 and Zone 4 are described as being associated with a Category 3, 4, and 5 event. **Appendix B** contains a graphical summary of the evacuation zone and storm surge groupings.

Table 4-1 Alabama High, Medium, and Low Evacuation Participation Rates by County

Baldwin County	**High Evacuation Participation Rate**						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	1	70%	70%	70%	90%	100%	100%
	2	65%	65%	65%	85%	95%	95%
	3	60%	60%	60%	80%	90%	90%
	4	55%	55%	55%	75%	85%	85%
	Medium Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	1	20%	20%	25%	50%	65%	70%
	2	15%	15%	20%	45%	60%	65%
	3	10%	10%	15%	35%	50%	55%
	4	5%	5%	5%	20%	35%	40%
	Low Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	1	10%	15%	15%	50%	50%	55%
	2	5%	10%	10%	35%	40%	50%
	3	5%	5%	10%	20%	25%	25%
	4	5%	5%	5%	10%	10%	15%
Mobile County	**High Evacuation Participation Rate**						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	1	55%	55%	55%	65%	75%	80%
	2	50%	50%	50%	60%	70%	75%
	3	45%	45%	45%	55%	65%	70%
	4	40%	40%	40%	50%	55%	60%
	Medium Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	1	15%	20%	25%	40%	55%	60%
	2	10%	15%	20%	35%	50%	55%
	3	5%	10%	15%	30%	45%	50%
	4	5%	5%	10%	15%	25%	30%
	Low Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	1	5%	10%	15%	35%	35%	40%
	2	5%	10%	10%	20%	25%	30%
	3	5%	5%	5%	5%	10%	10%
	4	5%	5%	5%	5%	5%	5%

4.2.2 Mississippi Evacuation Participation Rates

Similar to Alabama, high medium, and low participation rates are identified in the Mississippi Hurricane Evacuation Study Behavioral Analysis – 2022 Re-Study for each evacuation zone in the three counties. The Behavioral Analysis summarizes the participation rate for each evacuation zone in Hancock, Harrison, and Jackson Counties. **Table 4-2** presents the high, medium, and low evacuation participation rates by storm category for Mississippi counties. Similarly, shadow evacuees that are not ordered to evacuate but leave because of a perceived threat are shown in the evacuation participation rate table in the shaded cells.

To read the table, start by locating the block that shows the evacuation participation rate (high, medium, or low) for the evacuating county. Next, identify the zone of interest in the zones column. The intersection of storm category columns and evacuation zones (in the row) yields the evacuation participation rate. For instance, for Harrison County with a medium evacuation participation rate in Evacuation Zone C, the evacuation participation rate in a Category 2 event is 30 percent. As the storm category increases, the participation rate generally increases as more people tend to evacuate. It should be noted that the Transportation Analysis did not consider any transportation scenarios for tropical storm events based on stakeholder preference, but the participation rates are reported in these tables for completeness.

For Hancock County, a Category 2 event with a direction of approach of west, west-northwest, northwest, north-northwest, north, or east has storm surge impacts in Zone C. For a storm category greater than Category 2, all zones are impacted by storm surge. For Harrison County, a Category 2 event with a direction of approach of west-northwest, northwest, north-northwest, north, or north-northeast, also has storm surge impacts in Zone 2. For Jackson County, a Category 2 event has storm surge impacts in Zone C. However, Zone A is described as being associated with a Category 2 event. Zone B is described as being associated with a Category 3 event. Zone C is described as being associated with a Category 5 event and is shown in Table 4-2.

Appendix B contains a graphical summary of the evacuation zone and storm surge groupings. The emergency managers that are using the evacuation zones are making decisions based on the potential storm surge and hurricane impact on the evacuation zones and will ultimately decide on which evacuation zone to order.

Table 4-2 Mississippi Final Evacuation Participation Rates by County for High, Medium, and Low

Hancock County	**High Evacuation Participation Rate**						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	75%	75%	75%	90%	95%	95%
	B	70%	70%	70%	90%	90%	90%
	C	65%	65%	65%	90%	90%	90%
	Medium Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	40%	50%	65%	75%	95%	95%
	B	30%	35%	50%	70%	90%	90%
	C	15%	20%	30%	55%	90%	90%
	Low Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	30%	40%	50%	75%	80%	85%
	B	25%	30%	35%	70%	75%	80%
	C	10%	15%	20%	50%	60%	65%
Harrison County	**High Evacuation Participation Rate**						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	55%	55%	55%	80%	85%	85%
	B	60%	60%	60%	80%	80%	80%
	C	60%	60%	60%	75%	80%	80%
	Medium Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	15%	20%	25%	80%	85%	85%
	B	25%	25%	30%	75%	75%	80%
	C	20%	25%	30%	65%	75%	80%
	Low Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	15%	15%	20%	75%	75%	75%
	B	20%	25%	25%	60%	70%	70%
	C	15%	20%	25%	50%	55%	65%
Jackson County	**High Evacuation Participation Rate**						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	60%	60%	60%	85%	90%	90%
	B	60%	60%	60%	80%	85%	85%
	C	55%	55%	55%	70%	75%	75%
	Medium Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	20%	25%	35%	75%	80%	85%
	B	25%	25%	35%	70%	75%	80%
	C	15%	20%	25%	50%	60%	65%
	Low Evacuation Participation Rate						
	Storm Category						
	Zones	TS	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
	A	15%	20%	25%	60%	70%	75%
	B	20%	25%	25%	60%	65%	70%
	C	15%	15%	20%	35%	45%	55%

4.3 Response Curves

The response curve is a measure of the time it takes people to prepare and evacuate their homes after receiving an evacuation order. The clearance time includes both the time it takes for individuals to respond to the evacuation order and the time it takes for the evacuees to leave the impacted area to reach a safe location. Various response times (fast, medium, slow) are generally used in transportation analyses to assess the different behavioral responses to evacuation orders.

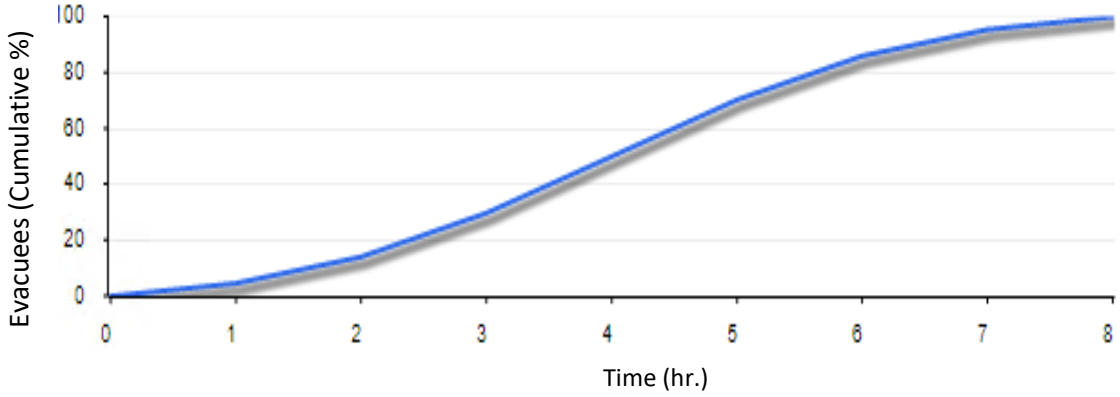
For the Transportation Analysis, the prior *2012 Alabama and Mississippi Hurricane Evacuation Study Technical Data Report* presents the response time shown in **Table 4-3**. The report notes, "No response time delays were assumed in the rapid response scenario" hence the Alabama fast response curve is shown as null. In consultation with the stakeholders for the Transportation Analysis, data to inform changes in the response time does not exist. The 2012 information is used for the Transportation Analysis. Due to RtePM requiring an integer value to define a response curve, the medium response curve used for Alabama is 3 hours. For Florida and Louisiana, constant response times are derived from their respective studies.

Table 4-3 Response Curves

Response Curve	Alabama Response Time (Hours)	Mississippi Response Time (Hours)	Florida Response Time (Hours)	Louisiana Response Time (Hours)
Fast	-	4	-	-
Medium	3	7	-	-
Slow	5	9	-	-
Constant	-	-	12	8

Figure 4-1 illustrates an example of an 8-hour medium response curve in RtePM. As depicted in the graph, at the end of the 8th hour of the evacuation order, 100 percent of the evacuees have left their homes to evacuate.

Figure 4-1 Example Medium Response Curve



4.4 Vehicle Usage Parameters

The number of people per vehicle is used in RtePM to calculate the number of total vehicles evacuating on the network from each evacuation zone. The average number of people per vehicle for each county in Alabama and Mississippi is identified, respectively, in the Alabama HES Behavioral Analysis – 2022 Re-Study and Mississippi HES Behavioral Analysis – 2022 Re-Study. **Table 4-4** lists the average number of people per vehicle for the counties in Alabama and Mississippi. The number of people per vehicle for Florida and Louisiana evacuation zones is derived from their respective studies with an assumed average of 2.0 people per vehicle.

Table 4-4 Average Number of People per Vehicle

State	County	Average Number of People Per Vehicle
Alabama	Baldwin	1.90
	Mobile	1.78
Mississippi	Hancock	1.57
	Harrison	1.90
	Jackson	1.80
Florida	Escambia	2.00
Louisiana	Multiple Parishes	2.00

Vehicle towing rates indicate the percentage of evacuating vehicles that are towing motor homes or trailers. They can take up more space on the road and potentially increase overall clearance time by creating congestion in the roadway and slowing down evacuating traffic. RtePM has a feature to evaluate vehicle towing. Vehicle towing rates for Alabama and Mississippi are identified in the Alabama HES Behavioral Analysis – 2022 Re-Study and the Mississippi HES Behavioral Analysis – 2022 Re-Study. The *2020 Southeast Louisiana Hurricane Evacuation Study Transportation Analysis Report* defines a vehicle towing rate of 24%. The *2021 Emerald Coast Regional Council Evacuation Study* does not define a rate for trailered vehicles. **Table 4-5** summarizes the vehicle towing rates by state used in the Transportation Analysis.

Table 4-5 Vehicle Towing Rate

State	Vehicle Towing Rate
Alabama	10%
Mississippi	15%
Florida	Not Applicable
Louisiana	24%

The percentages of the "type of vehicle" used during evacuations is another vehicle parameter in RtePM. For the Transportation Analysis, public transit usage and pedestrians are assumed to be zero for all evacuation zones.

4.5 Destination Rates

End points and shelters are the two main destination points in the RtePM transportation network. Destination rates identify the portion of the population that will arrive at these points of safety.

End point assignment rates identify the proportion of evacuees traveling to a particular end point based on their location. Active and inactive end points are discussed in Section 2.2. In the RtePM transportation model, end point assignment rates can be identified by the user or calculated by RtePM during the simulation run. RtePM cannot choose route preference, only end point preference. In this study, RtePM dynamically calculates end point assignment rates during the simulation run.

The other destination rate used in RtePM is to determine shelter usage. According to the Alabama HES Shelter Analysis – 2023 Re-Study and the Mississippi HES Shelter Analysis – 2023 Re-Study, the shelter usage rate for both states is 5 percent of the evacuating population. For evacuation scenarios with Florida and Louisiana, the evacuating population from the two states does not use Alabama/Mississippi public shelters and the public shelter usage rates are set to zero percent.

5 Shelter Analysis Inputs

The objective of the shelter analysis is to evaluate if there is sufficient shelter capacity to meet the demand in the event of a hurricane evacuation. The Alabama Hurricane Evacuation Study Shelter Analysis - 2023 Re-Study and Mississippi Hurricane Evacuation Study Shelter Analysis - 2023 Re-Study present findings of the Shelter Analysis and details about shelter locations and their capacities in Alabama and Mississippi. Shelters are also categorized according to their availability for public use or if they are restricted for first responders or special needs individuals. For the Transportation Analysis, shelters open to the general public in Alabama and Mississippi and their corresponding capacities are uploaded and represented geospatially in RtePM. This section summarizes the RtePM shelter inputs by evacuation zone.

5.1 Alabama Shelter Inventory

The list of the Alabama shelters open to the general public by evacuation zone is presented in **Table 5-1**. The total available shelter capacity for any given evacuation is 8,072 individuals in Baldwin County and 13,200 individuals in Mobile County.

Table 5-1 Alabama Shelter Inventory by Evacuation Zone

	Shelter Name	Capacity (# of People)	Facility Type	Evacuation Zone
Baldwin County	Baldwin County Coliseum	1,900	General Public	3
	Baldwin County High School	866	General Public	4
	Bay Minette Middle School	700	General Public	4
	Central Baldwin Middle School	543	General Public	3
	Daphne Civic Center	250	General Public	2
	Daphne East Elementary School	388	General Public	3
	Daphne Middle School	850	General Public	3
	Fairhope High School	905	General Public	3
	Faulkner State Community College	250	General Public	4
	Robertsdale High School	573	General Public	3
	Spanish Fort High School	847	General Public	4
	TOTAL	8,072		

	Shelter Name	Capacity (# of People)	Facility Type	Evacuation Zone
Mobile County	Baker High School	1,500	General Public	3
	Bernice Causey Middle School	400	General Public	3
	Craighead Elementary School	400	General Public	2
	Cranford H Burns Middle School	600	General Public	3
	Collier Elementary School	400	General Public	3
	Collins-Rhodes Elementary School	600	General Public	4
	Dawes Intermediate	400	General Public	3
	E R Dickson Elementary School	400	General Public	3
	Eichold-Mertz Magnet School	600	General Public	2
	Ella Grant Elementary School	400	General Public	2
	Forest Hill Elementary School	400	General Public	3
	Haskew, Pearl Elementary School	400	General Public	3
	Jeremiah A Denton Middle School	1,500	General Public	3
	John L Leflore Magnet High School	1,000	General Public	2
	Kate Shepard Elementary School	400	General Public	3
	McDavid Jones Elementary School	1,000	General Public	4
	North Mobile Middle	600	General Public	4
	Semmes Middle School	600	General Public	3
	Theodore High School	1,000	General Public	1
	Wilmer Elementary School	600	General Public	4
	TOTAL	13,200		

For the model to be able to complete a simulation, RtePM requires enough shelter capacity for the identified shelter demand in the model in order. Therefore, for modeling purposes only, an additional public shelter location called a "dummy" shelter is created in RtePM to accommodate excess shelter demand and is generally located near end points of the major interstates. The capacity of the dummy shelter is identified based on the shelter deficit.

5.2 Mississippi Shelter Inventory

The list of the Mississippi shelters by evacuation zone is presented in **Table 5-2**. The total available shelter capacity for any given evacuation is 1,203 individuals in Hancock County; 14,100 individuals in Harrison County; and 2,240 in Jackson County.

Table 5-2 Mississippi Shelter Inventory by Evacuation Zone

	Shelter Name	Capacity (# of People)	Facility Type	Evacuation Zone
Hancock County	Dedeaux Shelter	364	General Public	Not in any Evacuation Zone
	Flat Top Catahoula	364	General Public	Not in any Evacuation Zone
	Kiln Shelter	364	General Public	Not in any Evacuation Zone
	Necaise Ball Field Shelter	111	General Public	Not in any Evacuation Zone
	TOTAL	1,203		

	Shelter Name	Capacity (# of People)	Facility Type	Evacuation Zone
Harrison County	County Farm 361 Shelter	500	General Public	Not in any Evacuation Zone
	D'Iberville High School 361	3,000	General Public	Not in any Evacuation Zone
	Gulfport Central Elementary	300	General Public	C
	Gulfport Central Middle	500	General Public	C
	Harrison Central Elementary	450	General Public	Not in any Evacuation Zone
	Harrison Central High School	1,700	General Public	Not in any Evacuation Zone
	Lobouy 361 Shelter	500	General Public	Not in any Evacuation Zone
	North Bay Elementary	300	General Public	C
	North Woolmarket K-8 School	1,200	General Public	Not in any Evacuation Zone
	Orange Grove 361 Shelter	250	General Public	Not in any Evacuation Zone
	River Oaks Elementary School	1,200	General Public	Not in any Evacuation Zone
	Saucier-Lizana 361 Shelter	500	General Public	Not in any Evacuation Zone
	West Harrison High School 361	2,500	General Public	C
	West Wortham K-8 School	375	General Public	Not in any Evacuation Zone
	TOTAL	14,100		

	Shelter Name	Capacity (# of People)	Facility Type	Evacuation Zone
Jackson County	Central Jackson County Shelter	375	General Public	Not in any Evacuation Zone
	East Central Community Center	60	General Public	Not in any Evacuation Zone
	East Jackson County Shelter	375	General Public	Not in any Evacuation Zone
	St. Martin High School	480	General Public	B
	Vancleave High School	575	General Public	C
	West Jackson County Shelter	375	General Public	B
	TOTAL	2,240		

As stated in Section 4.5, public shelter usage rates are set to zero percent for the evacuation zones in Florida and Louisiana. This implies that evacuees from these states do not produce additional demand for shelters in Alabama and Mississippi. Hence, there is no inventory for the shelters in Florida and Louisiana.

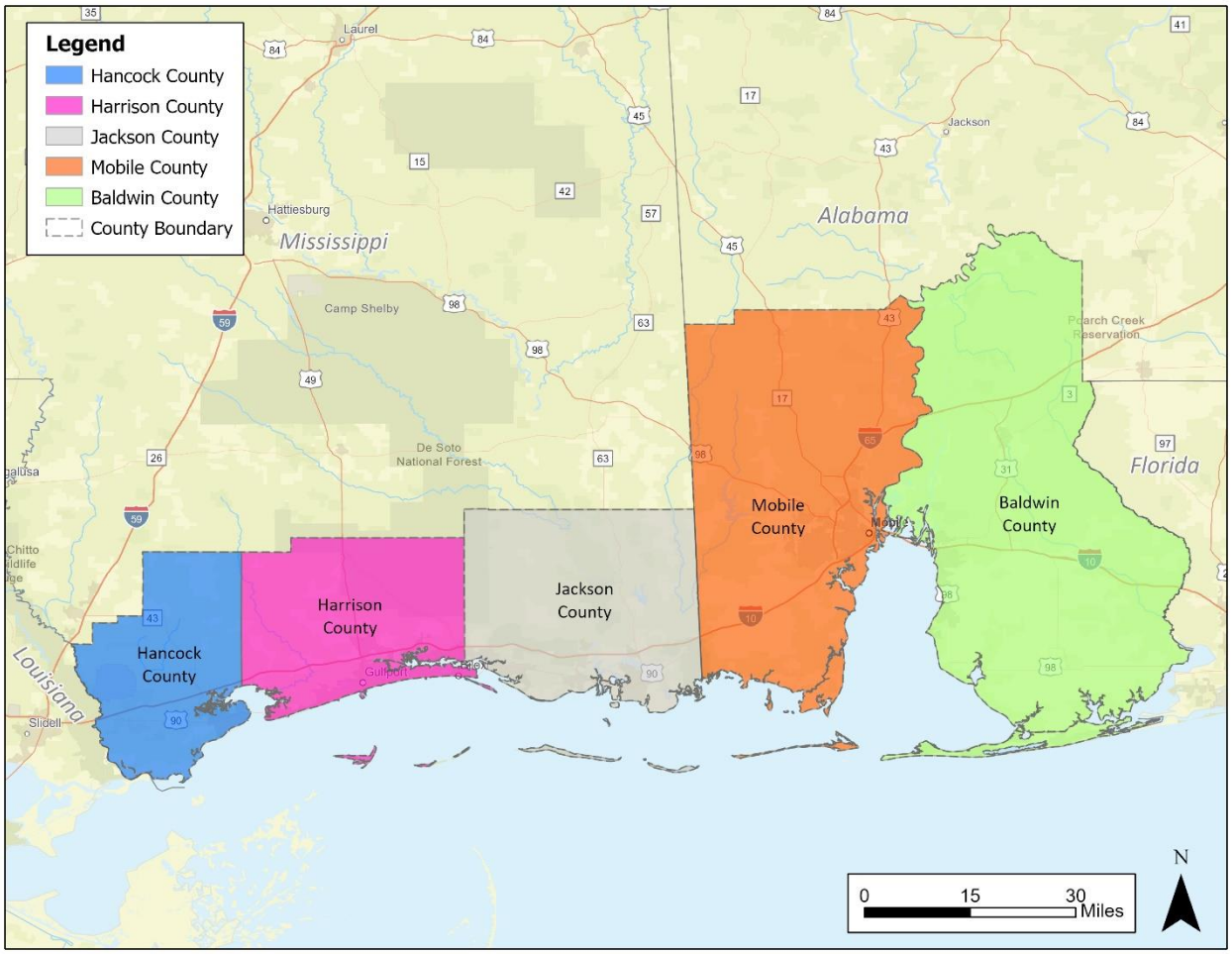
6 Transportation Analysis Modeling and Results

6.1 Purpose

The primary purpose of the Transportation Analysis is to compute the clearance times needed to conduct a safe and timely evacuation for a range of hurricane threats. Basic assumptions in the Transportation Analysis relate to storm scenarios; vulnerable populations and their behavioral and socioeconomic characteristics; roadway systems and traffic control; and destination locations. These assumptions are derived from the other HES components and best professional experience. The Transportation Analysis is conducted for the two counties in Alabama and three counties in Mississippi as depicted in **Figure 6-1**. RtePM is the transportation model used to calculate clearance times for ALMS HES. The primary outputs from RtePM are clearance times and overall evacuation flow. Traditionally, traffic demand models are calibrated to the observed traffic counts; however, evacuation traffic differs from daily traffic patterns. Since RtePM is not designed to model typical traffic patterns or traffic demand, it is not calibrated for that purpose. In other words, traffic volume on the roadways in RtePM do not represent a typical traffic volume observed

in the field. The population and number of people per vehicle parameters in RtePM are updated to estimate the total evacuating vehicles. In RtePM, clearance times are generated when all of the evacuating vehicles have left the roadway network for an evacuation scenario by either reaching an end point or a public shelter. This section describes the development of evacuation scenarios and provides calculated clearance times.

Figure 6-1 Counties in the ALMS HES Study Area



6.2 Development of Evacuation Scenarios

This section discusses the development of the evacuation scenarios used in the Transportation Analysis clearance time modeling. In total, 265 evacuation scenarios are developed and assessed for the ALMS HES. **Appendix C** includes a summary of the evacuation scenarios and the clearance time results. A companion MS Excel workbook with the evacuation scenarios and clearance time results is also included for ease of reference, sorting, filtering of clearance time results, and incorporation into HURREVAC.

Evacuation scenarios apply varying behavioral assumptions, except the following (which are held constant for all evacuation scenarios):

- Permanent population
    - In RtePM, each evacuation zone uses US Census Block Group data from 2010. There is a parameter for percent population change that is used to adjust the 2010 population to match the 2020 population totals developed during the Vulnerability Analysis (Section 3.3 Vulnerable Population)
- People per vehicle (Section 4.4 Vehicle Usage Parameters)

- Vehicle towing (Section 4.4 Vehicle Usage Parameters)
- Shelter location and shelter usage rate (Section 5 Shelter Analysis Inputs)
- Percent of the population using a private vehicle, public transit, or as a pedestrian (Section 4.4 Vehicle Usage Parameters)
- Background traffic
    - Background traffic is used to simulate vehicles using the roadway network that are not actively participating in the evacuation. For this study, low and high background traffic is used for various evacuation scenarios. For each evacuation scenario in RtePM, only one background traffic variable can be selected. This is strictly a RtePM parameter.

These variables remain unchanged so comparisons between study evacuation scenarios would provide more useful information for decision-making. Individual evacuation scenario files exported from RtePM can be uploaded to ArcGIS, reviewed, and manipulated. In addition, during the spring 2023 coordination meetings with stakeholders, discussions about scenarios, including neighboring states, scenario priorities and preferences were incorporated into scenario development.

Evacuation scenarios may be different based on the assumptions below:

- Evacuation participation rates (low, medium, or high [Section 4.2])
- Include areas outside of Alabama and Mississippi (i.e., with or without Escambia County, FL, with or without Southeast Louisiana evacuation zones [Section 3.2.2 Hurricane Evacuation Zones and 3.3.2 Contributing Vulnerable Population])
- Evacuation zones (some combination of the following [Section 3.2]):
    - Alabama: Zones 1, 2, 3, and 4
    - Mississippi: Zones A, B, and C
    - Louisiana: Zones Phase 1 Central, Phase 1 East, Phase 2 East, and Phase 3,
    - Florida: Zones A, B, C, D and E
- Contraflow lane operations (Section 2.2.5)
- Response curves (slow, medium, or fast [Section 4.3])
- Shelter capacity (Section 5.0)
    - “Dummy” shelter capacity is determined by the maximum shelter deficit.

6.3 Clearance Time Results

As previously described, clearance times are generated as one of the end products of RtePM. A clearance time represents the time it takes to clear the roadway of all evacuating vehicles, measured from the moment an evacuation order is issued until the time when the final evacuating vehicle reaches its point of safety.

The following subsections summarize the resulting clearance times modeled for statewide, regionwide, and countywide (for sensitivity) evacuation scenarios. RtePM is a macro-scale transportation model and does not contain the entire roadway network, and is not designed to model typical traffic volume on the roadways. Population and behavioral parameters in RtePM are approximated based on the best available information and assumptions to estimate the evacuation traffic flows. These assumptions are derived from the other HES components and best professional experience.

In addition to the clearance times, a congestion analysis is conducted to identify key roadway segments that experience congestion as well as intersections that experience delay. RtePM provides speed and density information on a road link basis to help illustrate congestion. In addition, it identifies intersections or interchanges that are impacted by delays. For route congestion, the trend in travel speeds within the evacuation scenarios is reviewed.

There are instances in RtePM where an evacuation scenario warning appears informing the user that not all vehicles can leave the network, although RtePM reports a 99 percent evacuation summary. RtePM conducts a stochastic run for each model simulation; although the Transportation Analysis reports a single value, minor deviations on the order of +/- 1 clearance time hour are observed if scenarios are re-run to completion. In addition, there may be minor deviations (on the order of 1 to 2 percent) in the reported population due to rounding in RtePM that may also result in a change of, at most, one hour.

6.3.1 Alabama Evacuation Scenario Results

There are 84 evacuation scenarios involving only the counties in Alabama. The 84 scenarios represent events from a Category 1 to Category 5, low/medium/high evacuation participation rates with low/medium/high seasonal population, and slow/medium response curves. **Table 6-1** summarizes the scenarios completed for Alabama with the range of clearance times by major parameter groupings.

Table 6-1 Alabama Scenarios Summary by Grouping – Evacuation Clearance Times

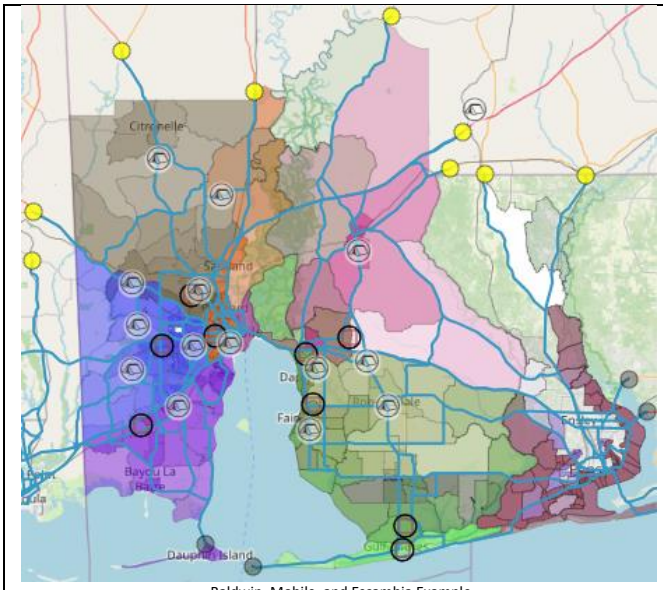
Grouping	Number of Scenarios	Minimum Clearance Time (hrs)	Maximum Clearance Time (hrs)
Category 1 Event	12	7	38
Category 2 Event	12	7	37
Category 3 Event	24	11	41
Category 4 Event	9	12	43
Category 5 Event	9	13	43
High Participation Rate	22	24	43
Med Participation Rate	22	9	36
Low Participation Rate	22	7	32
With Florida	36	28	43
Without Florida	30	7	34
With Contraflow	18	11	41
Without Contraflow	48	7	43
Baldwin County, AL and Escambia County, FL	18	31	40

Table 6-2 detailed summary table of the scenarios completed for Alabama and the parameters that supported each model run. The values in each cell of an evacuation zone indicate the evacuation participation rate of the zone for a scenario. If the evacuation zone is colored blue, this indicates that that the evacuation zone can be "ordered" to evacuate based on storm surge threat or associated storm category as summarized in Appendix B for each county. The companion MS Excel workbook allows for the user to filter and review the evacuation parameters for all scenarios with better resolution. The Baldwin County, AL and Escambia County, FL scenarios are simulated for Category 3 and greater events based on stakeholder input. **Figure 6-2** shows the RtePM model configuration for the scenarios. **Figure 6-3** shows the evacuation clearance times for the Alabama scenarios with selected scenario IDs displayed (overlapping scenario IDs are not displayed) to show an overall sense of the evacuation trends based on population**.**

Table 6-2 Alabama Scenarios – Evacuation Clearance Times

Scenario	GROUPING	Alabama										HURRICANE INTENSITY					Participation Rate			Include Louisiana?		Include Florida?		Background Traffic		Seasonal			One Day Response Curve			Contraflow		Clearance Time (hrs)	Evacuating Vehicles	Evacuating Population
		Baldwin	Evacuation Zones				Mobile	Evacuation Zones																											
			EZ1	EZ2	EZ3	EZ4		EZ1	EZ2	EZ3	EZ4	CAT1	CAT2	CAT3	CAT4	CAT5	Low	Med	High	YES	NO	YES	NO	Low	High	Low	Med	High	Slow	Med	Fast	With	W/O			
ALMS-001	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																						7	29,196	63,899
ALMS-002	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																						10	48,153	106,023
ALMS-003	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						25	189,088	373,551
ALMS-004	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																						7	33,353	71,478
ALMS-005	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																						11	64,118	135,747
ALMS-006	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						25	189,088	373,551
ALMS-007	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						11	65,021	129,170
ALMS-008	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						17	119,295	237,485
ALMS-009	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						30	235,410	458,600
ALMS-010	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																						7	29,196	63,899
ALMS-011	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																						9	48,153	106,023
ALMS-012	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						24	189,088	373,551
ALMS-013	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																						7	33,353	71,478
ALMS-014	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																						10	64,118	135,747
ALMS-015	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						24	189,088	373,551
ALMS-016	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						11	65,021	129,170
ALMS-017	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						16	119,295	237,485
ALMS-018	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						29	235,410	458,600
ALMS-019	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																						29	160,971	327,437
ALMS-020	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																						30	179,928	369,561
ALMS-021	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						38	320,863	637,089
ALMS-022	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																						29	165,128	335,016
ALMS-023	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																						30	195,893	399,285
ALMS-024	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						37	320,863	637,089
ALMS-025	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						31	196,796	392,708
ALMS-026	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						33	251,070	501,023
ALMS-027	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						41	367,185	722,138
ALMS-028	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																						28	160,971	327,437
ALMS-029	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																						29	179,928	369,561
ALMS-030	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						37	320,863	637,089
ALMS-031	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																						29	165,128	335,016
ALMS-032	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																						30	195,893	399,285
ALMS-033	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																						37	320,863	637,089
ALMS-034	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						30	196,796	392,708
ALMS-035	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						33	251,070	501,023
ALMS-036	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						40	367,185	722,138
ALMS-037	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						12	65,021	129,170
ALMS-038	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						17	119,295	237,485
ALMS-039	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						31	235,410	458,600
ALMS-040	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						11	65,021	129,170
ALMS-041	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						17	119,295	237,485
ALMS-042	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						30	235,410	458,600
ALMS-043	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						31	196,796	392,708
ALMS-044	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						33	251,070	501,023
ALMS-045	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						41	367,185	722,138
ALMS-046	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																						30	196,796	392,708
ALMS-047	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																						33	251,070	501,023
ALMS-048	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																						41	367,185	722,138
ALMS-049	ALABAMA		50%	40%	25%	10%		35%	25%	10%	5%																						12	76,802	151,071
ALMS-050	ALABAMA		65%	60%	50%	35%		55%	50%	45%	25%																						22	168,704	329,182
ALMS-051	ALABAMA		100%	95%	90%	85%		75%	70%	65%	55%																						34	267,805	518,680
ALMS-052	ALABAMA		55%	50%	25%	15%		40%	30%	10%	5%																						13	85,618	167,247
ALMS-053	ALABAMA		70%	65%	55%	40%		60%	55%	50%	30%																						23	185,750	360,800
ALMS-054	ALABAMA		100%	95%	90%	85%		80%	75%	70%	60%																						34	278,701	539,385
ALMS-055	ALABAMA		50%	40%	25%	10%		35%	25%	10%	5%																						31	208,577	414,609
ALMS-056	ALABAMA		65%	60%	50%	35%		55%	50%	45%	25%																						36	300,479	592,720
ALMS-057	ALABAMA		100%	95%	90%	85%		75%	70%	65%	55%																						43	399,580	782,218
ALMS-058	ALABAMA		55%	50%	25%	15%		40%	30%	10%	5%																						32	217,393	430,785
ALMS-059	ALABAMA		70%	65%	55%	40%		60%	55%	50%	30%																						36	317,525	624,338
ALMS-060	ALABAMA		100%	95%	90%	85%		80%	75%	70%	60%																						43	410,476	802,293
ALMS-238	ALABAMA		50%	40%	25%	10%		35%	25%	10%	5%																						31	208,577	414,609
ALMS-239	ALABAMA		65%	60%	50%	35%		55%	50%	45%	25%																						36	300,479	592,720
ALMS-240	ALABAMA		100%	95%	90%	85%		75%	70%	65%	55%																						43	399,580	782,218
ALMS-241	ALABAMA		55%	50%	25%	15%		40%	30%	10%	5%																						32	217,393	430,785
ALMS-242	ALABAMA		70%	65%	55%	40%		60%	55%	50%	30%																						36	317,525	624,338
ALMS-243	ALABAMA		100%	95%	90%	85%		80%	75%	70%	60%																						43	410,476	802,923
ALMS-220	BALDWIN-FLORIDA		50%	35%	20%	10%																										32	167,401	333,307
ALMS-221	BALDWIN-FLORIDA		50%	45%	35%	20%																										33	182,824	366,624
ALMS-222	BALDWIN-FLORIDA		90%	85%	80%	75%																										38	240,640	475,882
ALMS-223	BALDWIN-FLORIDA		50%	35%	20%	10%																										31	167,401	333,307
ALMS-224	BALDWIN-FLORIDA		50%	45%	35%	20%																										32	182,824	366,624
ALMS-225	BALDWIN-FLORIDA		90%	85%	80%	75%																										38	240,640	475,882
ALMS-226	BALDWIN-FLORIDA		50%	40%	25%	10%																										31	171,366	340,368
ALMS-227	BALDWIN-FLORIDA		65%	60%	50%	35%																										34	201,223	399,375
ALMS-228	BALDWIN-FLORIDA		100%	95%	90%	85%																										40	252,900	497,716
ALMS-229	BALDWIN-FLORIDA		55%	50%	25%	15%																										32	175,996	348,604
ALMS-230	BALDWIN-FLORIDA		70%	65%	55%	40%																										35	207,357	410,292
ALMS-231	BALDWIN-FLORIDA		100%	95%	90%	85%																										39	252,900	497,716
ALMS-232	BALDWIN-FLORIDA		50%	40%	25%	10%																										31	171,366	340,368
ALMS-233	BALDWIN-FLORIDA		65%	60%	50%	35%																										34	201,223	399,375
ALMS-234	BALDWIN-FLORIDA		100%	95%	90%	85%																										39	252,900	497,716
ALMS-235	BALDWIN-FLORIDA		55%	50%	25%	15%																										32	175,996	348,604
ALMS-236	BALDWIN-FLORIDA		70%	65%	55%	40%																										34	207,357	410,292
ALMS-237	BALDWIN-FLORIDA		100%	95%	90%	85%																										40	252,900	497,716

Figure 6-2 Alabama Scenarios – Example RtePM Model Configuration



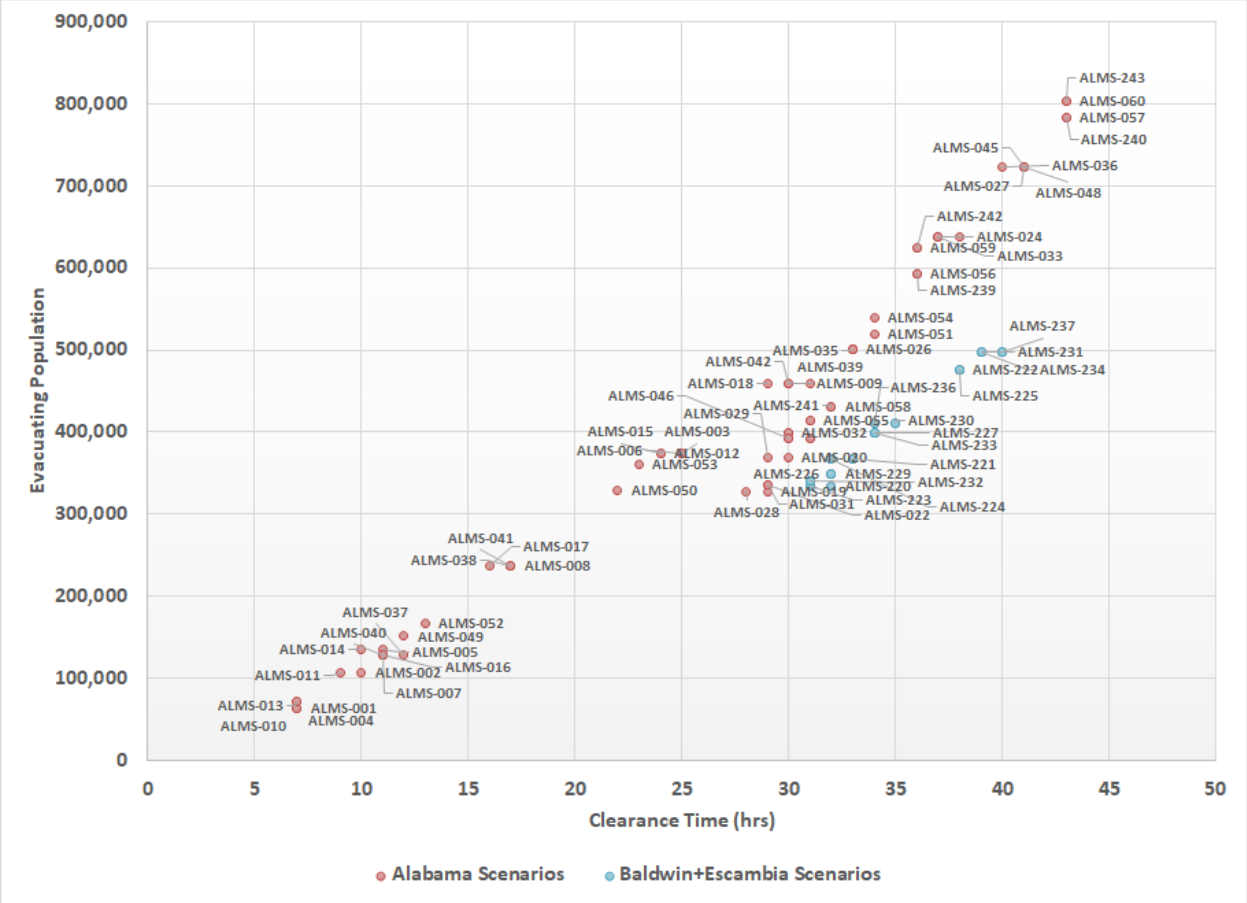
Baldwin, Mobile, and Escambia Example

- Yellow circles – active endpoints
- Gray circles – inactive endpoints
- Hollow circles – locations of seasonal population
- Colorful polygons – selected Census Block Groups in evacuation zone
- Blue lines – selected roadway network
- Tent icon – shelter locations

Baldwin and Escambia Example

- Yellow circles – active endpoints
- Gray circles – inactive endpoints
- Hollow circles – locations of seasonal population
- Colorful polygons – selected Census Block Groups in evacuation zone
- Blue lines – selected roadway network
- Tent icon – shelter locations

Figure 6-3 Alabama Scenarios – Graph of Evacuation Clearance Times



6.3.2 Mississippi Evacuation Scenario Results

There are 114 evacuation scenarios involving only the counties in Mississippi. The 114 scenarios represent events from a Category 1 to Category 5, low/medium/high evacuation participation rates with low/medium/high seasonal population, and slow/medium/fast response curves. **Table 6-3** summarizes the scenarios completed for Mississippi with the range of clearance times by major parameter groupings.

Table 6-3 Mississippi Scenarios Summary by Grouping – Evacuation Clearance Times

Grouping	Number of Scenarios	Minimum Clearance Time (hrs)	Maximum Clearance Time (hrs)
Category 1 Event	21	7	31
Category 2 Event	21	8	32
Category 3 Event	24	12	32
Category 3 Event - Louisiana Sensitivity[15]	3	-	44
Category 4 Event	24	12	30
Category 5 Event	24	14	30
High Participation Rate	40	14	32
High Participation Rate - Louisiana Sensitivity[13]	3	-	44
Med Participation Rate	37	8	32
Low Participation Rate	37	7	32
With Louisiana[13]	48	29	44
Without Louisiana	66	7	26
With Contraflow[13]	63	12	44
Without Contraflow	51	7	32
Jackson County, MS and Mobile County, AL	21	10	26

Table 6-4 summarizes the scenarios completed for Mississippi and the parameters that supported each model run. The values in each cell of an evacuation zone indicate the evacuation participation rate of the zone for a scenario. If the evacuation zone is colored blue, this indicates that that the evacuation zone can be "ordered" to evacuate based on storm surge threat or associated storm category as summarized in Appendix B for each county. The companion MS Excel workbook allows for the user to filter and review the evacuation parameters for all scenarios with better resolution.

Overall, the evacuation clearance time for a Category 3 to Category 5 event is on the order of 30-32 hours. As reported, the RtePM results account for *high* background traffic for a Category 3 event and *low* background traffic for a Category 4-5 event (under the assumption that more people being ordered evacuate would result in less background traffic). Another factor is the overall impact that Louisiana evacuees have on the Mississippi clearance times. The difference in evacuating population for a Category 3 high participation to a Category 5 high participation is approximately 12,000 people in Mississippi compared to the 1 million people evacuating in the MS scenarios (for example, ALMS-120).

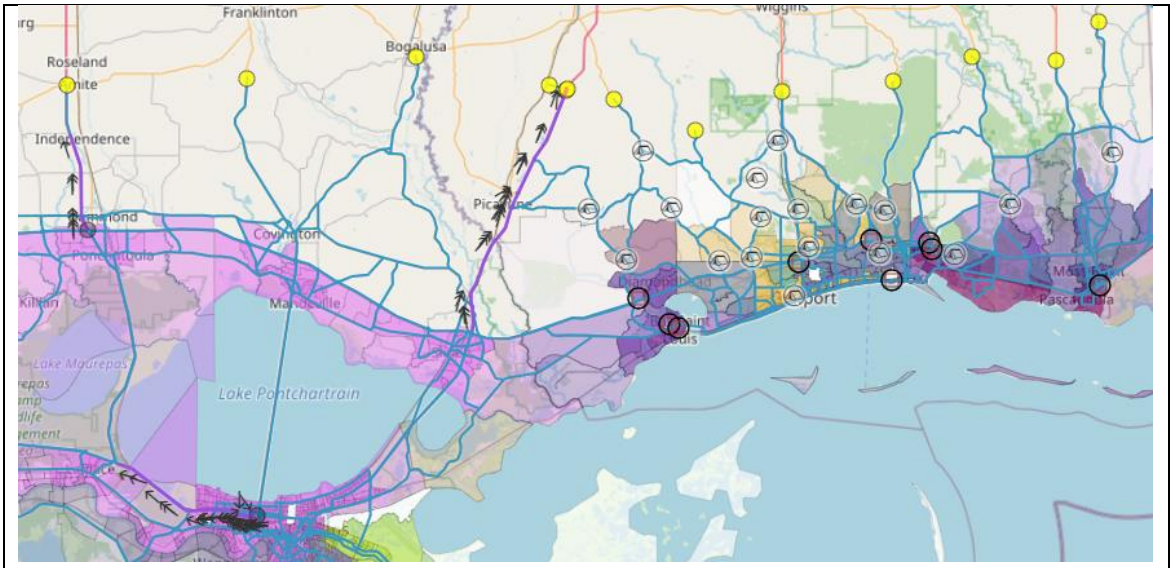
[15] Scenarios ALMS-096, ALMS-105, ALMS-114 are sensitivity scenarios with Mississippi and Louisiana evacuees where Louisiana evacuees are limited to evacuating towards I-55, LA-25, LA-21/LA-41, and I-59. These runs result in a clearance time of 42-44 hours. Only a Category 3 event with high evacuation participation rate was simulated with varying response curves. Due to how Louisiana evacuation areas are delineated as large regions within the Southeast Louisiana Study, the simulation results are considered relatively conservative.

Table 6-4 Mississippi Scenarios – Evacuation Clearance Times

Scenario	GROUPING	Mississippi												HURRICANE INTENSITY					Participation Rate			Include Louisiana?		Include Florida?		Background Traffic		Seasonal			One Day Response Curve			Contraflow		RTEPM OUTPUT Clearance Time (hrs)*	Clearance Time (hrs)	Evacuating Vehicles	Evacuating Population
		Hancock	Evacuation Zones			Harrison	Evacuation Zones			Jackson	Evacuation Zones																										
			EZA	EZB	EZC		EZA	EZB	EZC		EZA	EZB	EZC	CAT1	CAT2	CAT3	CAT4	CAT5	Low	Med	High	YES	NO	YES	NO	Low	High	Low	Med	High	Slow	Med	Fast	With	W/O				
ALMS-061	MISSISSIPPI		40%	30%	15%		15%	25%	20%		20%	25%	15%																						10.0	10	40,403	77,281
ALMS-062	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						12.0	12	54,241	110,780
ALMS-063	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						15.0	15	116,313	230,469
ALMS-064	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						11.0	11	47,030	89,146
ALMS-065	MISSISSIPPI		65%	50%	30%		25%	30%	30%		35%	35%	25%																						12.0	12	67,431	134,124
ALMS-066	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						15.0	15	116,313	230,469
ALMS-067	MISSISSIPPI		75%	70%	50%		75%	60%	50%		60%	60%	35%																						13.8	14	98,594	182,647
ALMS-068	MISSISSIPPI		75%	70%	55%		80%	75%	65%		75%	70%	50%																						15.6	16	124,169	238,270
ALMS-069	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						16.5	17	147,619	287,099
ALMS-070	MISSISSIPPI		40%	30%	15%		15%	25%	20%		20%	25%	15%																						10.0	10	40,403	77,281
ALMS-071	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						10.0	10	54,241	110,780
ALMS-072	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						14.0	14	116,313	230,469
ALMS-073	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						11.0	11	47,030	89,146
ALMS-074	MISSISSIPPI		65%	50%	30%		25%	30%	30%		35%	35%	25%																						11.0	11	67,431	134,124
ALMS-075	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						14.0	14	116,313	230,469
ALMS-076	MISSISSIPPI		75%	70%	50%		75%	60%	50%		60%	60%	35%																						12.1	12	98,594	182,647
ALMS-077	MISSISSIPPI		75%	70%	55%		80%	75%	65%		75%	70%	50%																						14.2	14	124,169	238,270
ALMS-078	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						16.5	17	147,619	287,099
ALMS-079	MISSISSIPPI		40%	30%	15%		15%	25%	20%		20%	25%	15%																						7.0	7	40,403	77,281
ALMS-080	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						8.0	8	54,241	110,780
ALMS-081	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						14.0	14	116,313	230,469
ALMS-082	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						8.0	8	47,030	89,146
ALMS-083	MISSISSIPPI		65%	50%	30%		25%	30%	30%		35%	35%	25%																						10.0	10	67,431	134,124
ALMS-084	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						14.0	14	116,313	230,469
ALMS-085	MISSISSIPPI		75%	70%	50%		75%	60%	50%		60%	60%	35%																						11.7	12	98,594	182,647
ALMS-086	MISSISSIPPI		75%	70%	55%		80%	75%	65%		75%	70%	50%																						14.6	15	124,169	238,270
ALMS-087	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						16.1	16	147,619	287,099
ALMS-088	MISSISSIPPI		40%	30%	15%		15%	25%	20%		20%	25%	15%																						30.6	31	391,674	779,896
ALMS-089	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						29.5	30	405,512	813,395
ALMS-090	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						30.8	31	467,584	933,084
ALMS-091	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						29.6	30	398,301	791,761
ALMS-092	MISSISSIPPI		65%	50%	30%		25%	30%	30%		35%	35%	25%																						30.4	30	418,702	836,739
ALMS-093	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						30.6	31	467,584	933,084
ALMS-094	MISSISSIPPI		75%	70%	50%		75%	60%	50%		60%	60%	35%																						31.9	32	449,865	885,262
ALMS-095	MISSISSIPPI		75%	70%	55%		80%	75%	65%		75%	70%	50%																						30.5	31	475,440	940,885
ALMS-096	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						44.0	44	498,890	989,714
ALMS-097	MISSISSIPPI		40%	30%	15%		15%	25%	20%		20%	25%	15%																						31.4	31	391,674	779,896
ALMS-098	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						30.5	31	405,512	813,395
ALMS-099	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						31.0	31	467,584	933,084
ALMS-100	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						30.6	31	398,301	791,761
ALMS-101	MISSISSIPPI		65%	50%	30%		25%	30%	30%		35%	35%	25%																						31.9	32	418,702	836,739
ALMS-102	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						31.0	31	467,584	933,084
ALMS-103	MISSISSIPPI		75%	70%	50%		75%	60%	50%		60%	60%	35%																						30.8	31	449,865	885,262
ALMS-104	MISSISSIPPI		75%	70%	55%		80%	75%	65%		75%	70%	50%																						31.7	32	475,440	940,885
ALMS-105	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						42.4	42	498,890	989,714
ALMS-106	MISSISSIPPI		40%	30%	15%		15%	25%	20%		20%	25%	15%																						30.9	31	391,674	779,896
ALMS-107	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						29.6	30	405,512	813,395
ALMS-108	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						30.2	30	467,584	933,084
ALMS-109	MISSISSIPPI		50%	35%	20%		20%	25%	25%		25%	25%	20%																						30.4	30	398,301	791,761
ALMS-110	MISSISSIPPI		65%	50%	30%		25%	30%	30%		35%	35%	25%																						29.7	30	418,702	836,739
ALMS-111	MISSISSIPPI		75%	70%	65%		55%	60%	60%		60%	60%	55%																						30.5	31	467,584	933,084
ALMS-112	MISSISSIPPI		75%	70%	50%		75%	60%	50%		60%	60%	35%																						30.2	30	449,865	885,262
ALMS-113	MISSISSIPPI		75%	70%	55%		80%	75%	65%		75%	70%	50%																						31.6	32	475,440	940,885
ALMS-114	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						43.5	44	498,890	989,714
ALMS-115	MISSISSIPPI		80%	75%	60%		75%	70%	55%		70%	65%	45%																						29.8	30	459,961	903,474
ALMS-116	MISSISSIPPI		95%	90%	90%		85%	75%	75%		80%	75%	60%																						30.2	30	489,867	966,219
ALMS-117	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						29.6	30	505,716	1,002,207
ALMS-118	MISSISSIPPI		85%	80%	65%		75%	70%	65%		75%	70%	55%																						29.7	30	469,778	921,385
ALMS-119	MISSISSIPPI		95%	90%	90%		85%	80%	80%		85%	80%	65%																						29.0	29	496,183	977,927
ALMS-120	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						30.0	30	505,716	1,002,207
ALMS-121	MISSISSIPPI		80%	75%	60%		75%	70%	55%		70%	65%	45%																						29.8	30	459,961	903,474
ALMS-122	MISSISSIPPI		95%	90%	90%		85%	75%	75%		80%	75%	60%																						30.1	30	489,867	966,219
ALMS-123	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						30.1	30	505,716	1,002,207
ALMS-124	MISSISSIPPI		85%	80%	65%		75%	70%	65%		75%	70%	55%																						28.6	29	469,778	921,385
ALMS-125	MISSISSIPPI		95%	90%	90%		85%	80%	80%		85%	80%	65%																						30.4	30	496,183	977,927
ALMS-126	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						30.3	30	505,716	1,002,207
ALMS-127	MISSISSIPPI		80%	75%	60%		75%	70%	55%		70%	65%	45%																						29.7	30	459,961	903,474
ALMS-128	MISSISSIPPI		95%	90%	90%		85%	75%	75%		80%	75%	60%																						30.2	30	489,867	966,219
ALMS-129	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						30.1	30	505,716	1,002,207
ALMS-130	MISSISSIPPI		85%	80%	65%		75%	70%	65%		75%	70%	55%																						29.2	29	469,778	921,385
ALMS-131	MISSISSIPPI		95%	90%	90%		85%	80%	80%		85%	80%	65%																						29.8	30	496,183	977,927
ALMS-132	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						29.8	30	505,716	1,002,207
ALMS-133	MISSISSIPPI		80%	75%	60%		75%	70%	55%		70%	65%	45%																						14.2	14	108,690	200,859
ALMS-134	MISSISSIPPI		95%	90%	90%		85%	75%	75%		80%	75%	60%																						15.8	16	138,596	263,604
ALMS-135	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						16.0	16	154,445	299,592
ALMS-136	MISSISSIPPI		85%	80%	65%		75%	70%	65%		75%	70%	55%																						14.5	15	118,507	218,770
ALMS-137	MISSISSIPPI		95%	90%	90%		85%	80%	80%		85%	80%	65%																						14.9	15	144,912	275,312
ALMS-138	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						16.0	16	154,445	299,592
ALMS-139	MISSISSIPPI		80%	75%	60%		75%	70%	55%		70%	65%	45%																						12.3	12	108,690	200,859
ALMS-140	MISSISSIPPI		95%	90%	90%		85%	75%	75%		80%	75%	60%																						15.2	15	138,596	263,604
ALMS-141	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						16.3	16	154,445	299,592
ALMS-142	MISSISSIPPI		85%	80%	65%		75%	70%	65%		75%	70%	55%																						14.0	14	118,507	218,770
ALMS-143	MISSISSIPPI		95%	90%	90%		85%	80%	80%		85%	80%	65%																						15.5	16	144,912	275,312
ALMS-144	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						16.4	16	154,445	299,592
ALMS-145	MISSISSIPPI		80%	75%	60%		75%	70%	55%		70%	65%	45%																						12.8	13	108,690	200,859
ALMS-146	MISSISSIPPI		95%	90%	90%		85%	75%	75%		80%	75%	60%																						15.2	15	138,596	263,604
ALMS-147	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						17.2	17	154,445	299,592
ALMS-148	MISSISSIPPI		85%	80%	65%		75%	70%	65%		75%	70%	55%																						13.8	14	118,507	218,770
ALMS-149	MISSISSIPPI		95%	90%	90%		85%	80%	80%		85%	80%	65%																						16.0	16	144,912	275,312
ALMS-150	MISSISSIPPI		95%	90%	90%		85%	80%	80%		90%	85%	75%																						17.2	17	154,445	299,592
ALMS-244	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						32.0	32	498,890	989,714
ALMS-245	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						30.7	31	498,890	989,714
ALMS-246	MISSISSIPPI		90%	90%	90%		80%	80%	75%		85%	80%	70%																						31.6	32	498,890	989,714
ALMS-199	MOBILE-JACKSON										20%	25%	15%																						10.0	10	31,157	61,872
ALMS-200	MOBILE-JACKSON										25%	25%	20%																						10.0	10	45,058	90,161
ALMS-201	MOBILE-JACKSON										60%	60%	55%																						19.0	19	145,087	279,812
ALMS-202	MOBILE-JACKSON										25%	25%	20%																						11.0	11	34,421	67,892
ALMS-203	MOBILE-JACKSON										35%	35%	25%																						11.0	11	62,040	121,828
ALMS-204	MOBILE-JACKSON										60%	60%	55%																						19.0	19	145,087	279,812
ALMS-205	MOBILE-JACKSON										60%	60%	35%																						13.0	13	66,791	127,264
ALMS-206	MOBILE-JACKSON										75%	70%	50%																						17.0	17	114,755	219,655
ALMS-207	MOBILE-JACKSON										85%	80%	70%																						23.0	23	180,903	346,453
ALMS-208	MOBILE-JACKSON										70%	65%	45%																						14.0	14	79,671	151,218
ALMS-209	MOBILE-JACKSON										80%	75%	60%																						20.0	20	149,356	285,060
ALMS-210	MOBILE-JACKSON										90%	85%	75%																						25.0	25	204,266	390,510
ALMS-211	MOBILE-JACKSON										75%	70%	55%																						15.0	15	87,445	165,618
ALMS-212	MOBILE-JACKSON										85%	80%	65%																						21.0	21	163,486	311,567
ALMS-213	MOBILE-JACKSON										90%	85%	75%																						26.0	26	215,162	411,215
ALMS-214	MOBILE-JACKSON										70%	65%	45%																						14.0	14	79,671	151,218
ALMS-215	MOBILE-JACKSON										80%	75%	60%																						20.0	20	149,356	285,060
ALMS-216	MOBILE-JACKSON										90%	85%	75%																						24.1	24	204,266	390,510
ALMS-217	MOBILE-JACKSON										75%	70%	55%																						15.0	15	87,445	165,618
ALMS-218	MOBILE-JACKSON										85%	80%	65%																						20.9	21	163,486	311,567
ALMS-219	MOBILE-JACKSON										90%	85%	75%																						25.8	26	215,162	411,215

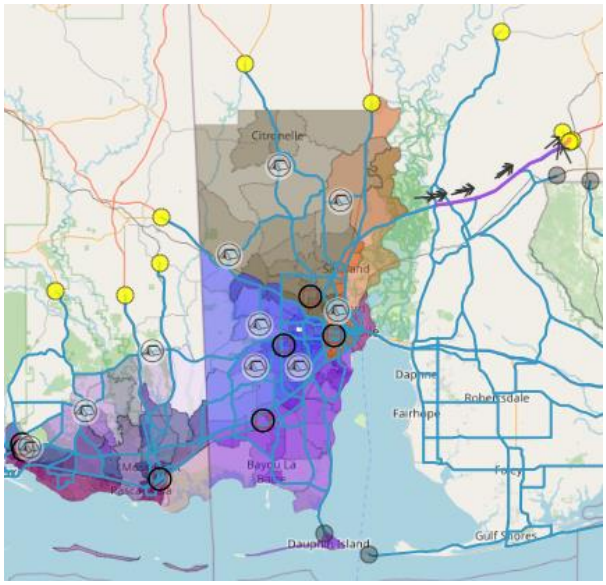
Figure 6-4 shows the RtePM model configuration for the scenarios. **Figure 6-5** shows the evacuation clearance times for the Mississippi scenarios with selected scenario IDs displayed (overlapping scenario IDs are not displayed). The figure shows the evacuation clearance time and evacuating population for the scenarios in Table 6-4 (above) and provides an overall sense of the evacuation trends based on population. The addition of the Louisiana evacuees are those that result in approximately 800,000 or more evacuating. The graphic also shows the cluster of the sensitivity scenarios at the 44 hour clearance time.

Figure 6-4 Mississippi Scenarios – Example RtePM Model Configuration



Mississippi and Louisiana Example

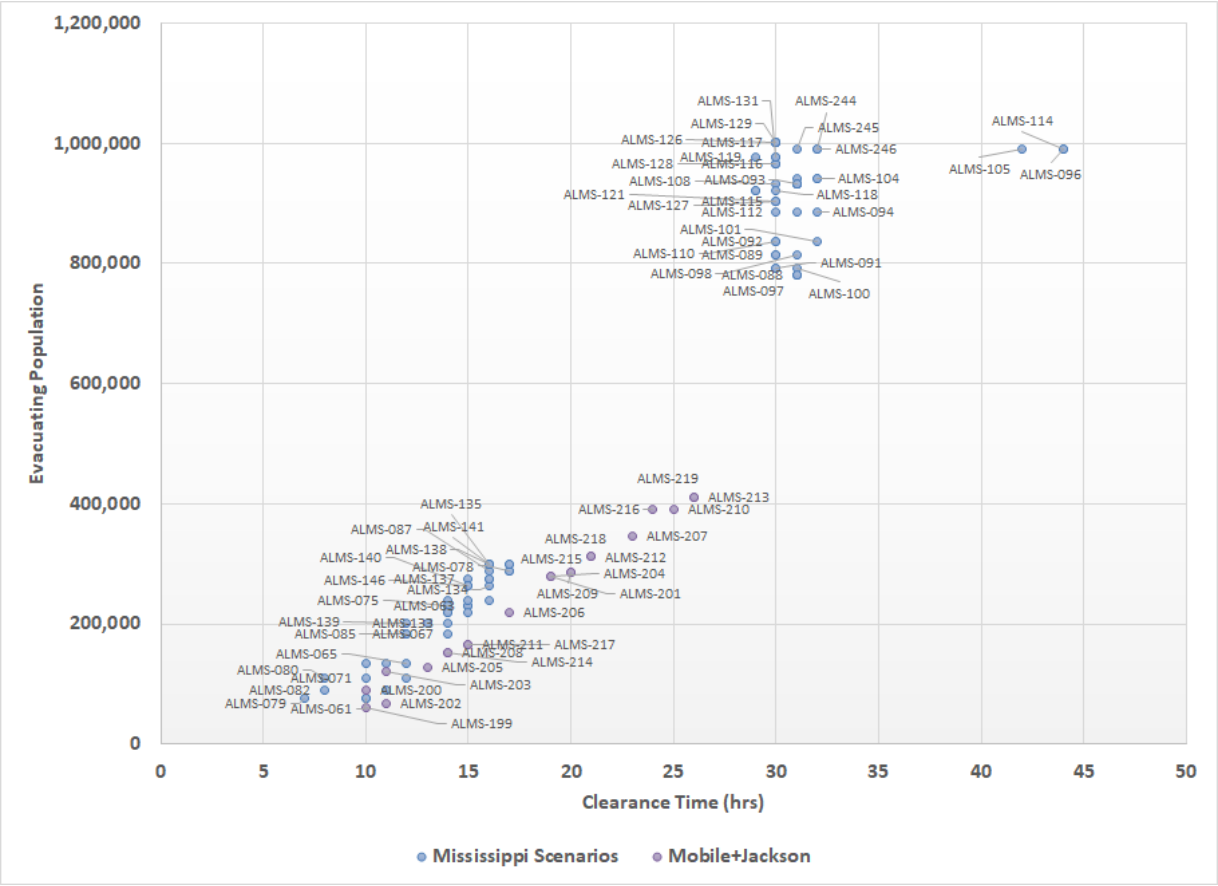
- Yellow circles – active endpoints
- Gray circles – inactive endpoints
- Hollow circles – locations of seasonal population
- Colorful polygons – selected Census Block Groups in evacuation zone
- Blue lines – selected roadway network (arrows showing direction of contraflow)
- Tent icon – shelter locations



Mobile, AL and Jackson, MS County Example

- Yellow circles – active endpoints
- Gray circles – inactive endpoints
- Hollow circles – locations of seasonal population
- Colorful polygons – selected Census Block Groups in evacuation zone
- Blue lines – selected roadway network (arrows showing direction of contraflow)
- Tent icon – shelter locations

Figure 6-5 Mississippi Scenarios – Evacuation Clearance Times



6.3.3 Regional Evacuation Scenario Results

There are 50 scenarios that evacuate both Alabama and Mississippi. The scenarios represent events from a Category 4 and Category 5 (assuming that an event this intense would force evacuations in multiple states), low/medium/high evacuation participation rates with low/medium/high seasonal population, and slow/medium response curves. **Table 6-5** summarizes the scenarios completed for the regional scenarios with the range of clearance times by major parameter groupings.

Table 6-5 Regional Scenarios Summary by Grouping – Evacuation Clearance Times

Grouping	Number of Scenarios	Minimum Clearance Time (hrs)	Maximum Clearance Time (hrs)
Category 4 Event[16]	25	12	41
Category 5 Event[14]	25	13	43
High Participation Rate[14]	18	22	43
Med Participation Rate	16	17	35
Low Participation Rate	16	12	31
With Louisiana[14]	26	30	43
Without Louisiana	24	12	29

[16] Scenarios ALMS-165 and ALMS-168 are included as sensitivity scenarios where Louisiana evacuees are limited to evacuating towards I-55, LA-25, LA-21/LA-41, and I-59. These runs result in a clearance time of 41-43 hours. ALMS-165 is a Category 4 event and ALMS-168 is a Category 5 event with high evacuation participation rate. Due to how Louisiana evacuation areas are delineated as large regions within the Southeast Louisiana Study, the simulation results are considered relatively conservative.

Grouping	Number of Scenarios	Minimum Clearance Time (hrs)	Maximum Clearance Time (hrs)
With Florida	26	30	43
Without Florida	24	12	29
With Contraflow	26	12	43
Without Contraflow	24	14	40

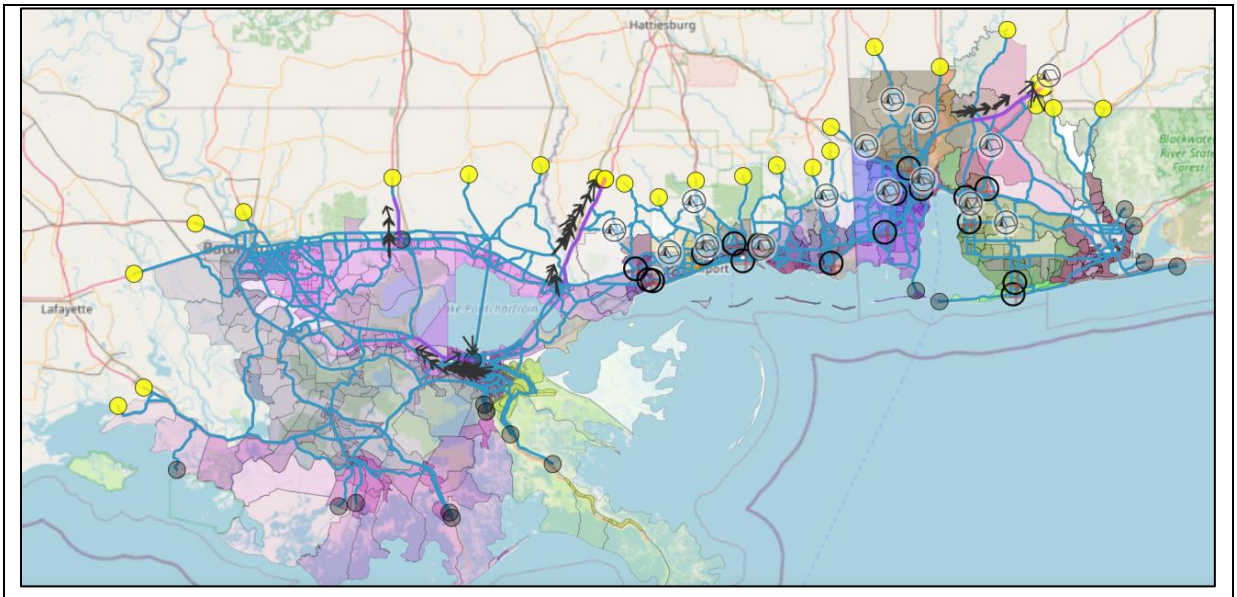
Table 6-6 is a detailed summary table of the scenarios completed and the parameters that supported each model run. The values in each cell of an evacuation zone indicate the evacuation participation rate of the zone for a scenario. If the evacuation zone is colored blue, this indicates that that the evacuation zone can be "ordered" to evacuate based on storm surge threat or associated storm category as summarized in Appendix B for each county. The regional scenarios are only simulated for Category 4 or Category 5 event with the expectation that a storm large enough and intense enough to impact the region will cause widespread evacuations across multiple states. The evacuation participation rates used for each evacuation zone is in line with the assumptions described in Section 4.2.

Table 6-6 Regional Scenarios – Evacuation Clearance Times

Scenario	GROUPING	Alabama										Mississippi										HURRICANE INTENSITY					Participation Rate			Include Louisiana?		Include Florida?		Background Traffic		Seasonal			One Day Response Curve			Contraflow		Clearance Time (hrs)	Evacuating Vehicles	Evacuating Population
		Baldwin	Evacuation Zones				Mobile	Evacuation Zones				Hancock	Evacuation Zones			Harrison	Evacuation Zones			Jackson	Evacuation Zones																									
			EZ1	EZ2	EZ3	EZ4		EZ1	EZ2	EZ3	EZ4		EZA	EZB	EZC		EZA	EZB	EZC		EZA	EZB	EZC	CAT1	CAT2	CAT3	CAT4	CAT5	Low	Med	High	YES	NO	YES	NO	Low	High	Low	Med	High	Slow	Med	Fast	With	W/O			
ALMS-151	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					12	185,492	351,930
ALMS-152	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					17	307,300	592,786
ALMS-153	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					22	422,250	818,272
ALMS-154	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					13	204,125	386,017
ALMS-155	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					18	330,662	636,112
ALMS-156	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					22	433,146	838,977
ALMS-157	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					14	185,492	351,930
ALMS-158	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					18	307,300	592,786
ALMS-159	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					28	422,250	818,272
ALMS-160	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					15	204,125	386,017
ALMS-161	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					20	330,662	636,112
ALMS-162	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					29	433,146	838,977
ALMS-163	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					30	668,538	1,318,083
ALMS-164	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					33	790,346	1,558,939
ALMS-165	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					41	905,296	1,784,425
ALMS-166	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					30	687,171	1,352,170
ALMS-167	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					34	813,708	1,602,265
ALMS-168	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					43	916,192	1,805,130
ALMS-169	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					30	668,538	1,318,083
ALMS-170	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					35	790,346	1,558,939
ALMS-171	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					40	905,296	1,784,425
ALMS-172	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					31	687,171	1,352,170
ALMS-173	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					35	813,708	1,602,265
ALMS-174	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					40	916,192	1,805,130
ALMS-175	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					14	185,492	351,930
ALMS-176	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					17	307,300	592,786
ALMS-177	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					22	422,250	818,272
ALMS-178	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					14	204,125	386,017
ALMS-179	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					18	330,662	636,112
ALMS-180	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					23	433,146	838,977
ALMS-181	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					14	185,492	351,930
ALMS-182	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					19	307,300	592,786
ALMS-183	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					28	422,250	818,272
ALMS-184	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					15	204,125	386,017
ALMS-185	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					19	330,662	636,112
ALMS-186	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					28	433,146	838,977
ALMS-187	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					30	668,538	1,318,083
ALMS-188	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					33	790,346	1,558,939
ALMS-189	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					39	905,296	1,784,425
ALMS-190	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					31	687,171	1,352,170
ALMS-191	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					33	813,708	1,602,265
ALMS-192	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					38	916,192	1,805,130
ALMS-193	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																					31	668,538	1,318,083
ALMS-194	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																					35	790,346	1,558,939
ALMS-195	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					40	905,296	1,784,425
ALMS-196	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																					31	687,171	1,352,170
ALMS-197	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																					35	813,708	1,602,265
ALMS-198	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					40	916,192	1,805,130
ALMS-247	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					38	905,296	1,784,425
ALMS-248	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																					39	916,192	1,805,130

Figure 6-6 shows the RtePM model configuration for the scenarios. **Figure 6-7** shows the evacuation clearance times for the regional scenarios with selected scenario IDs displayed (overlapping scenario IDs are not displayed) to show overall evacuation trends.

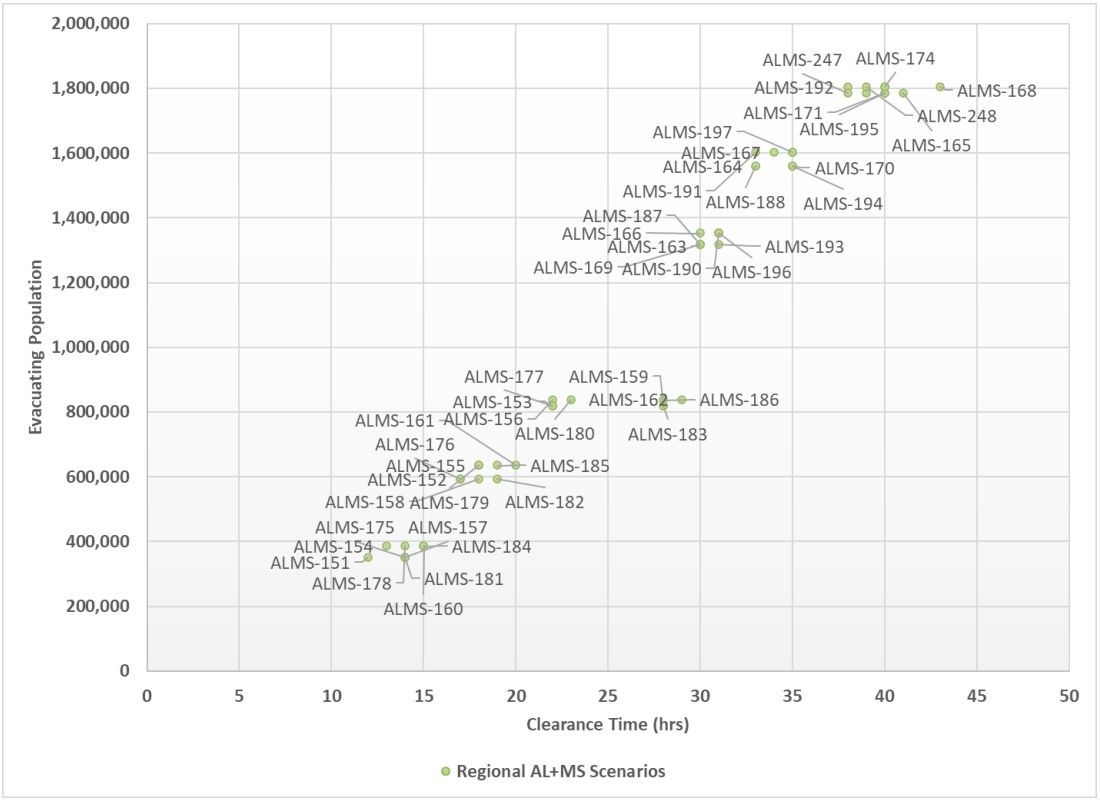
Figure 6-6 Regional Scenario – Example RtePM Model Configuration



Regional Scenario Example

- Yellow circles – active endpoints
- Gray circles – inactive endpoints
- Hollow circles – locations of seasonal population
- Colorful polygons – selected Census Block Groups in evacuation zone
- Blue lines – selected roadway network (arrows showing direction of contraflow)
- Tent icon – shelter locations

Figure 6-7 Regional Scenarios – Evacuation Clearance Times



6.3.4 Countywide Evacuation Scenario Results

Countywide scenarios are evacuation scenarios that are for only one county. These evacuation scenarios aid in benchmarking clearance times (it is assumed to be unrealistic for only one county to evacuate, instead of several counties or an entire region). The assumptions for the countywide scenarios include:

- Progressive evacuation (Zone 1, Zone 1+2, etc.) for each county
- Medium response curve
- Medium evacuation participation rate for a Category 5 event
- Seasonal population within the county
- No contraflow
- No Louisiana or Florida evacuees

Table 6-7 shows the medium participation rate applied to each evacuation zone for the scenario, the clearance time, the evacuating population for Alabama, and the model configuration in **Figure 6-8**. **Table 6-8** shows the medium participation rate applied to each evacuation zone for the scenario, the clearance time, the evacuating population for Mississippi, and the model configuration in **Figure 6-9**. A zero percent indicates that no population are evacuating from the evacuation zone in the scenario.

Table 6-7 Alabama Countywide Scenario Clearance Times

Scenario	Baldwin				Mobile				Clearance Time (hrs)	Evacuating Population
	EZ1	EZ2	EZ3	EZ4	EZ1	EZ2	EZ3	EZ4		
ALMS-249	70%	0%	0%	0%					8	36,943
ALMS-250	70%	65%	0%	0%					12	73,526
ALMS-251	70%	65%	55%	0%					17	127,838
ALMS-252	70%	65%	55%	40%					20	145,829
ALMS-253					60%	0%	0%	0%	7	33,225
ALMS-254					60%	55%	0%	0%	14	92,516
ALMS-255					60%	55%	50%	0%	27	193,908
ALMS-256					60%	55%	50%	30%	28	214,133

Table 6-8 Mississippi Countywide Scenario Clearance Times

Scenario	Hancock			Harrison			Jackson			Clearance Time (hrs)	Evacuating Population
	EZA	EZB	EZC	EZA	EZB	EZC	EZA	EZB	EZC		
ALMS-257	95%	0%	0%							8	15,290
ALMS-258	95%	90%	0%							8	31,033
ALMS-259	95%	90%	90%							8	35,378
ALMS-260				85%	0%	0%				8	34,911
ALMS-261				85%	80%	0%				8	63,121
ALMS-262				85%	80%	80%				12	142,413
ALMS-263							85%	0%	0%	9	46,548
ALMS-264							85%	80%	0%	21	88,355
ALMS-265							85%	80%	65%	22	97,521

Figure 6-8 Alabama Counties – Example RtePM Model Configuration

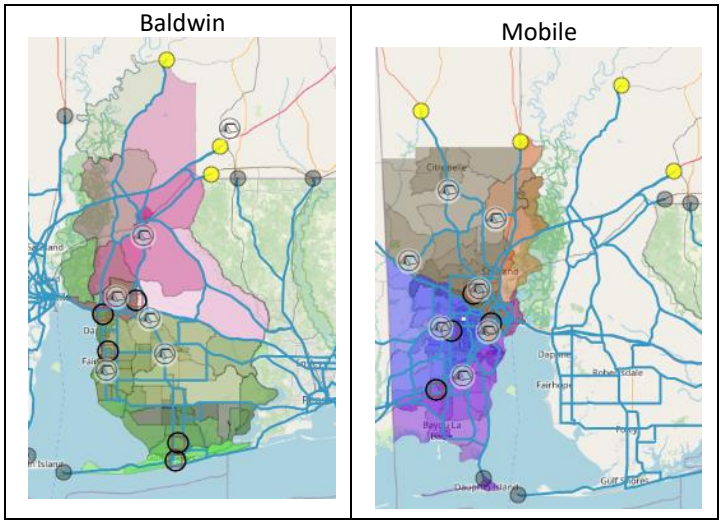
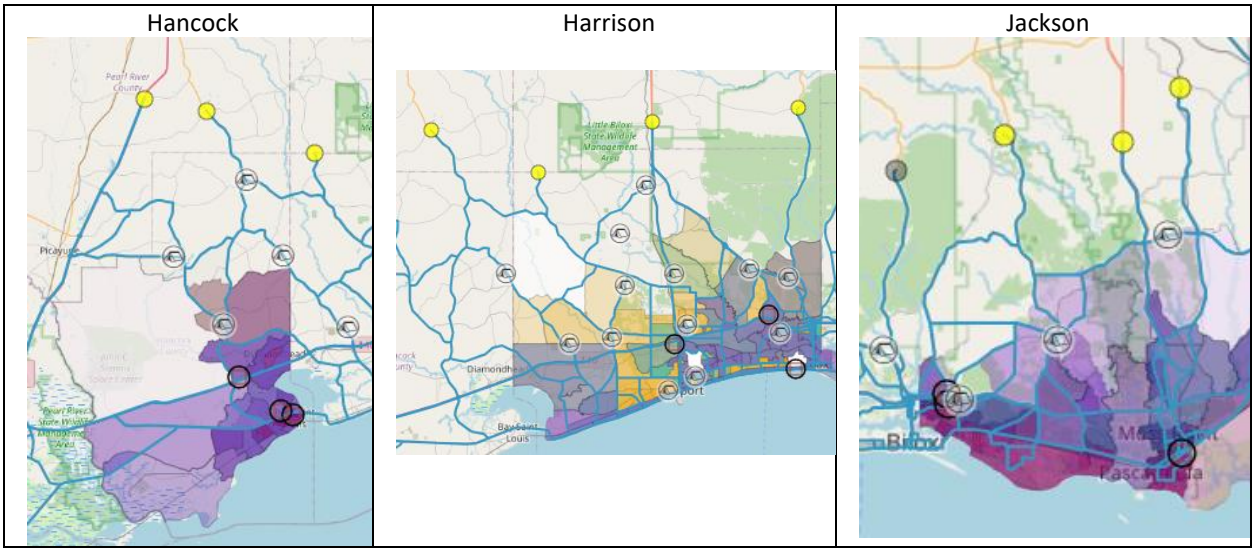


Figure 6-9 Mississippi Counties – Example RtePM Model Configuration

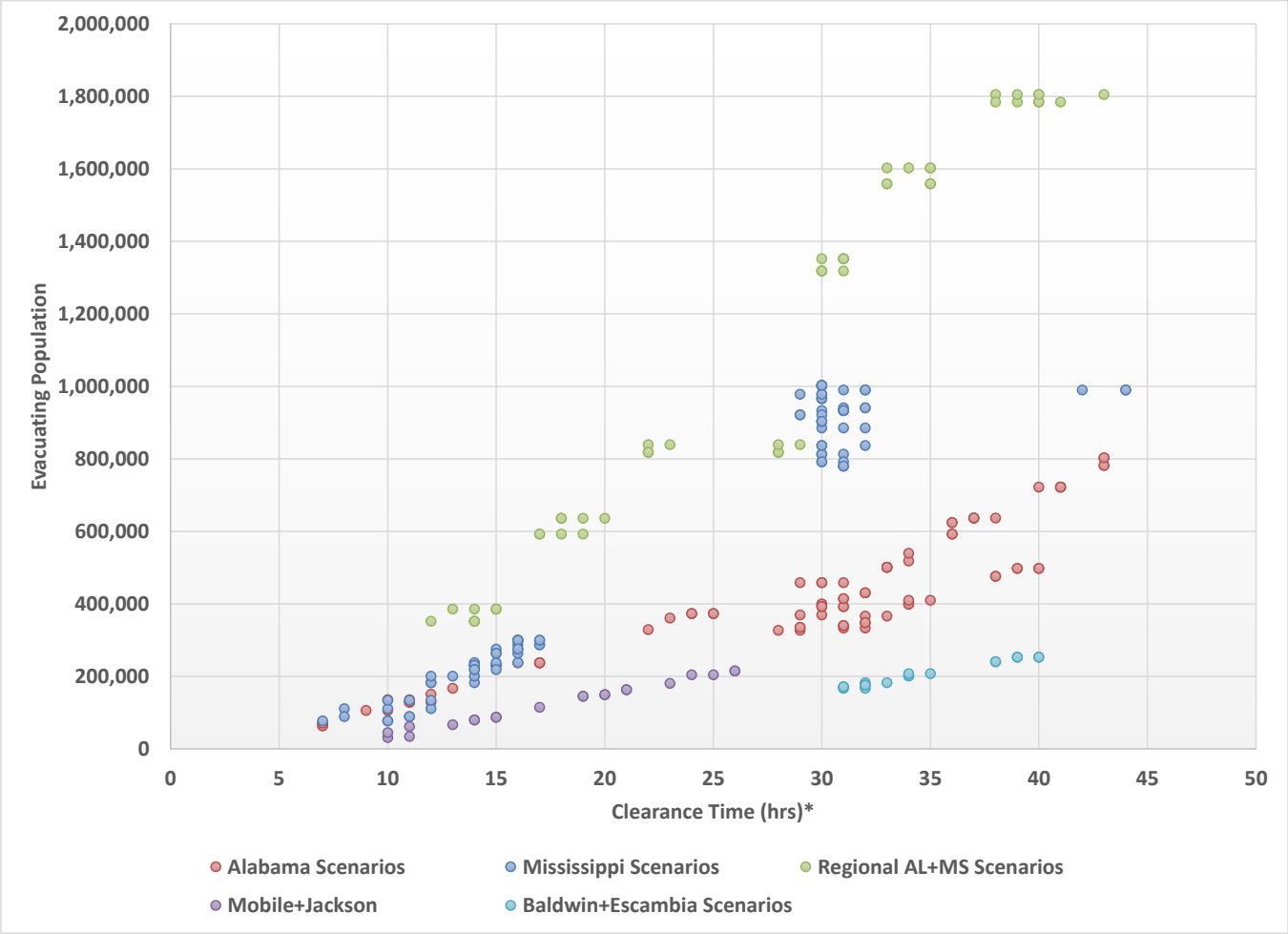


6.3.5 Summary of Transportation Modeling Results

The state-focused and regional evacuation scenarios capture the various evacuation conditions that may impact the region. The input parameters referenced in Section 6.2 are used to develop various assumptions for the evacuation scenarios. The results from the evacuation scenarios provide a spectrum approach to evacuation scenarios. Based on the inputs and the display of traffic flow on the selected roadway network, RtePM produces and reports a clearance time.

Figure 6-10 plots the clearance time results from all of the state-focused and regional study evacuation scenarios by the number of people evacuating. The data shown in this graph may assist emergency personnel in decision-making activities. The RtePM results form a relatively linear relationship between evacuating population and clearance times.

Figure 6-10 Clearance Times for All Scenarios

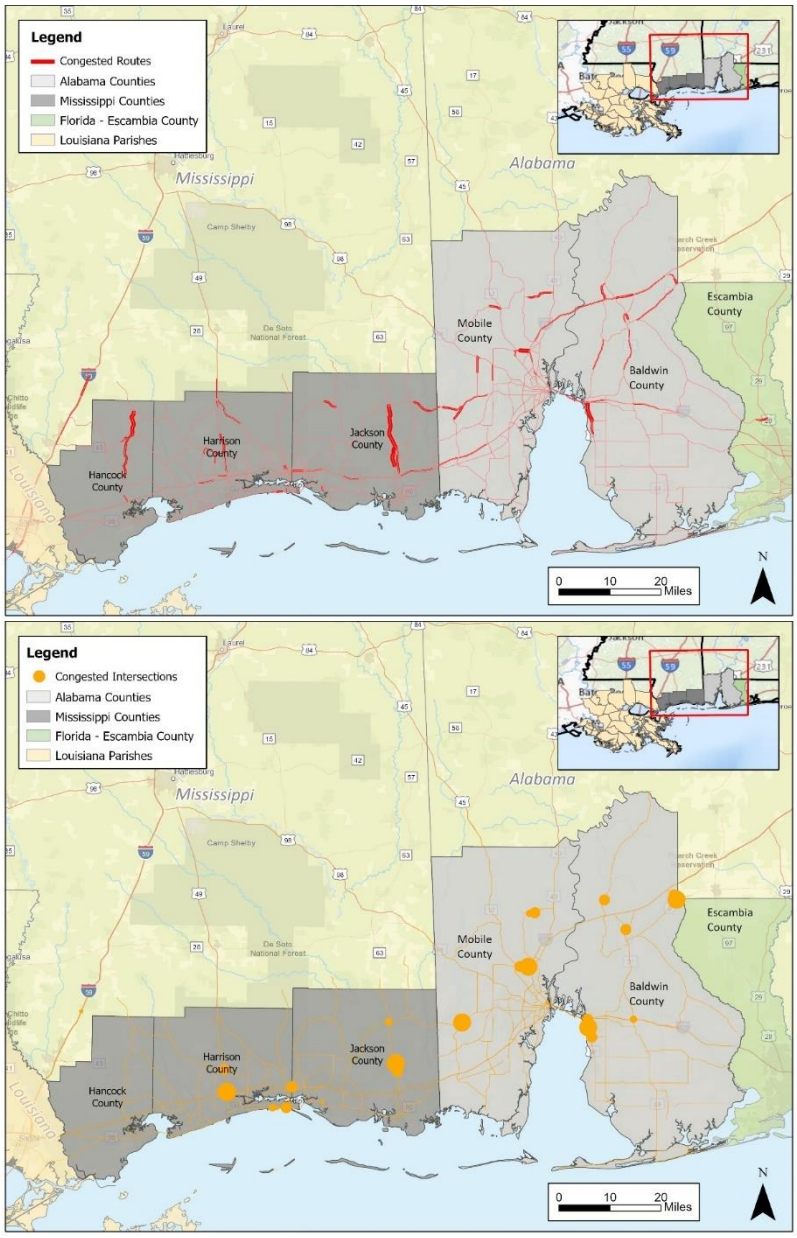


6.3.5.1 Traffic Congestion

The RtePM is capable of providing speed measurements for evacuation traffic, whether it is moving at normal or congested speeds. In this section, the congested conditions for routes and intersections in selected scenarios are analyzed. Graphics from selected scenarios represent regionwide scenarios.

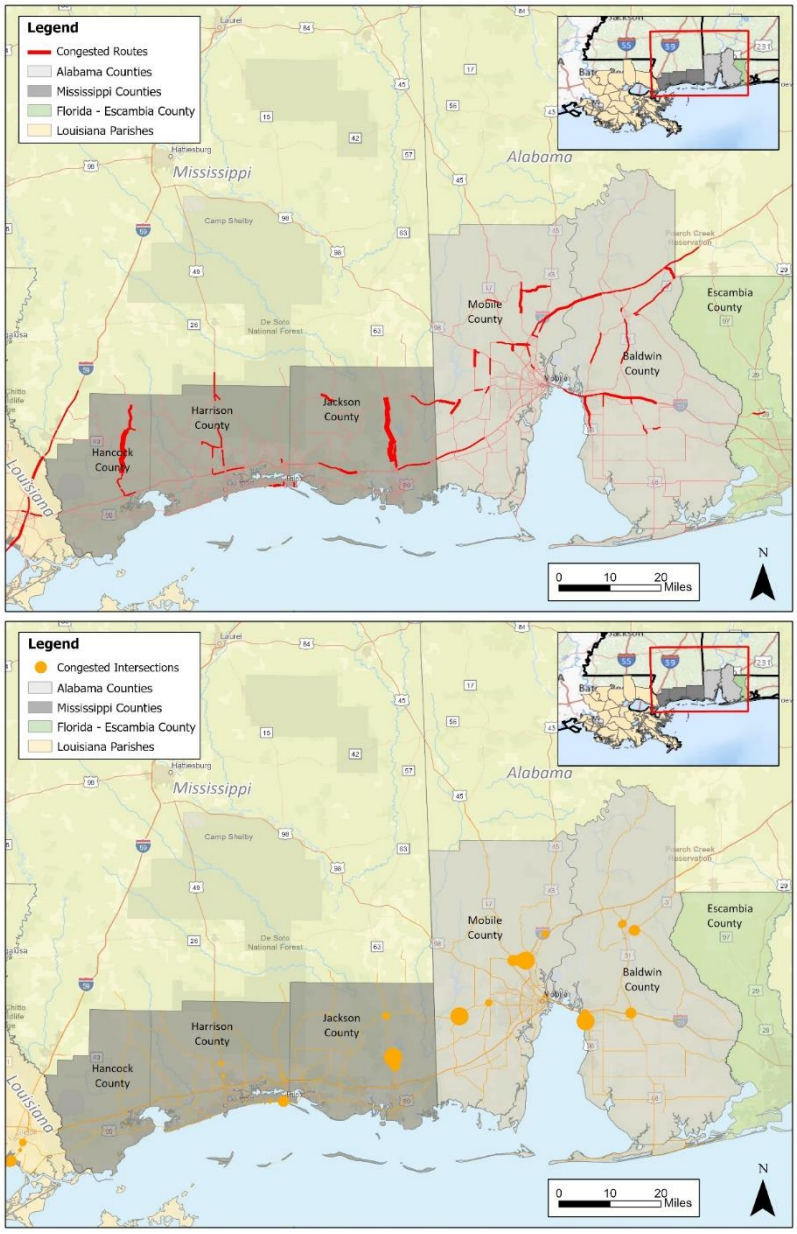
The congested routes and intersections from a scenario with both Florida and Louisiana evacuating and with contraflow operations are shown in **Figure 6-11**. The roadway shows any roadway that experiences congestion in the color red. The graphic shows that the thicker the line, the more congestion the route experiences.The bottom portion of the figure shows intersections that experience congestion. The figure shows that the larger areas in orange demonstrate congestion or slowdown in this region for this scenario.

Figure 6-11 Congested Roadways and Intersections - With Contraflow Scenario



A similar scenario without contraflow is shown in **Figure 6-12**. The roadway shows any roadway that experiences congestion in the color red. The graphic shows that the thicker the line, the more congestion the route experiences. Comparing the two scenarios, the without contraflow scenario shows more congestion.

Figure 6-12 Congested Roadways and Intersections - Without Contraflow Scenario



6.3.6 HURREVAC Integration

HURREVAC is a web-based, evacuation decision-support tool for federal, state, and local emergency managers. This tool tracks storms and uses HES-calculated clearance times, along with NOAA-NHC forecasts and advisories, to help determine the evacuation start times needed to evacuate a certain percentage of individuals in a threatened area before the arrival of tropical storm hazards.

The companion MS Excel workbook with the evacuation scenarios and clearance time results is included for ease of reference, sorting, filtering of clearance time results, and integration into HURREVAC. The clearance times are made available in HURREVAC so that decision-making can use the best-available timing calculations.

HURREVAC provides a range of clearance times for each county by default, which represents all evacuation scenarios modeled for that county during the Transportation Analysis. The user has the option to filter through various parameters (evacuation participation rate, evacuation zones, response curves, with or without Florida and Louisiana evacuees, etc.) to extract individual evacuation scenario clearance times. HURREVAC provides users tools that subtract the hours required for the evacuation (clearance time) from the estimated point in time when the sustained tropical storm winds will arrive to reach a suggested evacuation decision start time. This approach is based on the need to have evacuees out of harm's way before hazards reach the coast.

7 Recommendations

For future regional and state planning efforts, the following statewide and general evacuation considerations are recommended:

- Movement of evacuating vehicles during a hurricane evacuation requires extensive traffic control efforts to make maximum use of the roadway capacity and to expedite a safe escape from tropical storm hazards. Directing resources to areas identified as potential congestion bottlenecks may help alleviate congestion.

- If possible, arrangements should be made with tow truck operators to be pre-positioned along key travel corridors and critical roadway facilities, such as bridges.

- Coordination should occur with hotels, motels, and campgrounds in regard to evacuating the seasonal visitor population earlier than the permanent population. Accounting for the information identified and summarized in this study, the state and local emergency management officials should consider potential pre-evacuation policies.

- Data developed during the Transportation Analysis highlights the potential impacts across state lines and should be considered in evacuation planning and coordination. In the evacuees from Alabama and Mississippi, impacts from Louisiana and Florida should be considered early on. The Transportation and Shelter Analysis has not accounted for the inflow of out-of-state evacuees on Alabama and Mississippi shelter system, which could cause for even more demand of available shelter space.

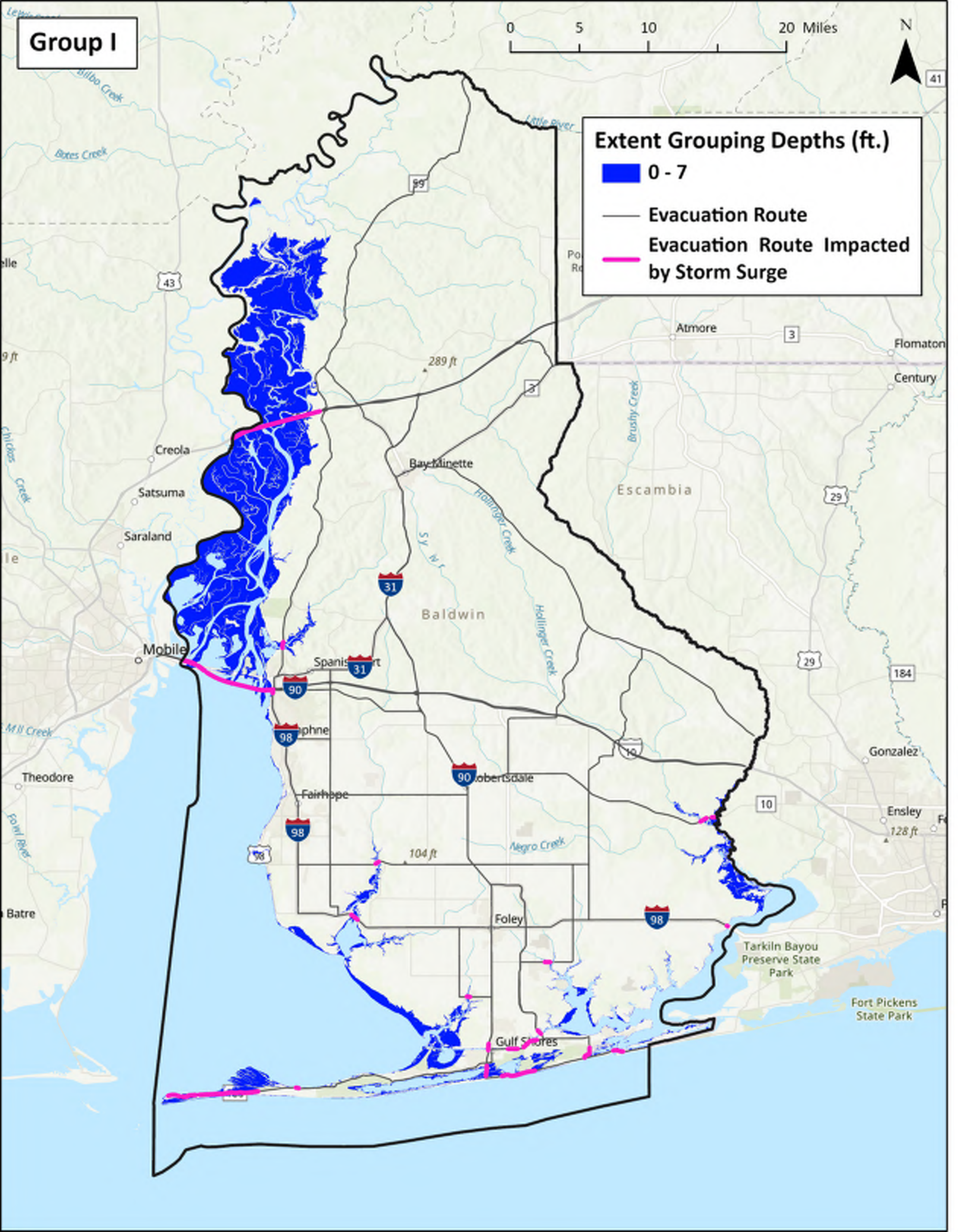
- Several emergency managers noted that contraflow operations are an operational challenge. Based on the implementation of contraflow plans and the results from the Transportation Analysis, there were no significant improvements in clearance times when contraflow plans are implemented. Additional consideration on contraflow implementation should be discussed at an agency level.

For Alabama and Mississippi emergency managers, effective hurricane evacuation planning is paramount to safeguard the lives and well-being of residents. This includes leveraging the updated evacuation zones based on storm surge risks and coordinating evacuation orders in a timely manner to ensure residents have enough time to evacuate safely. The Transportation Analysis is one tool in the emergency manager's toolbox.

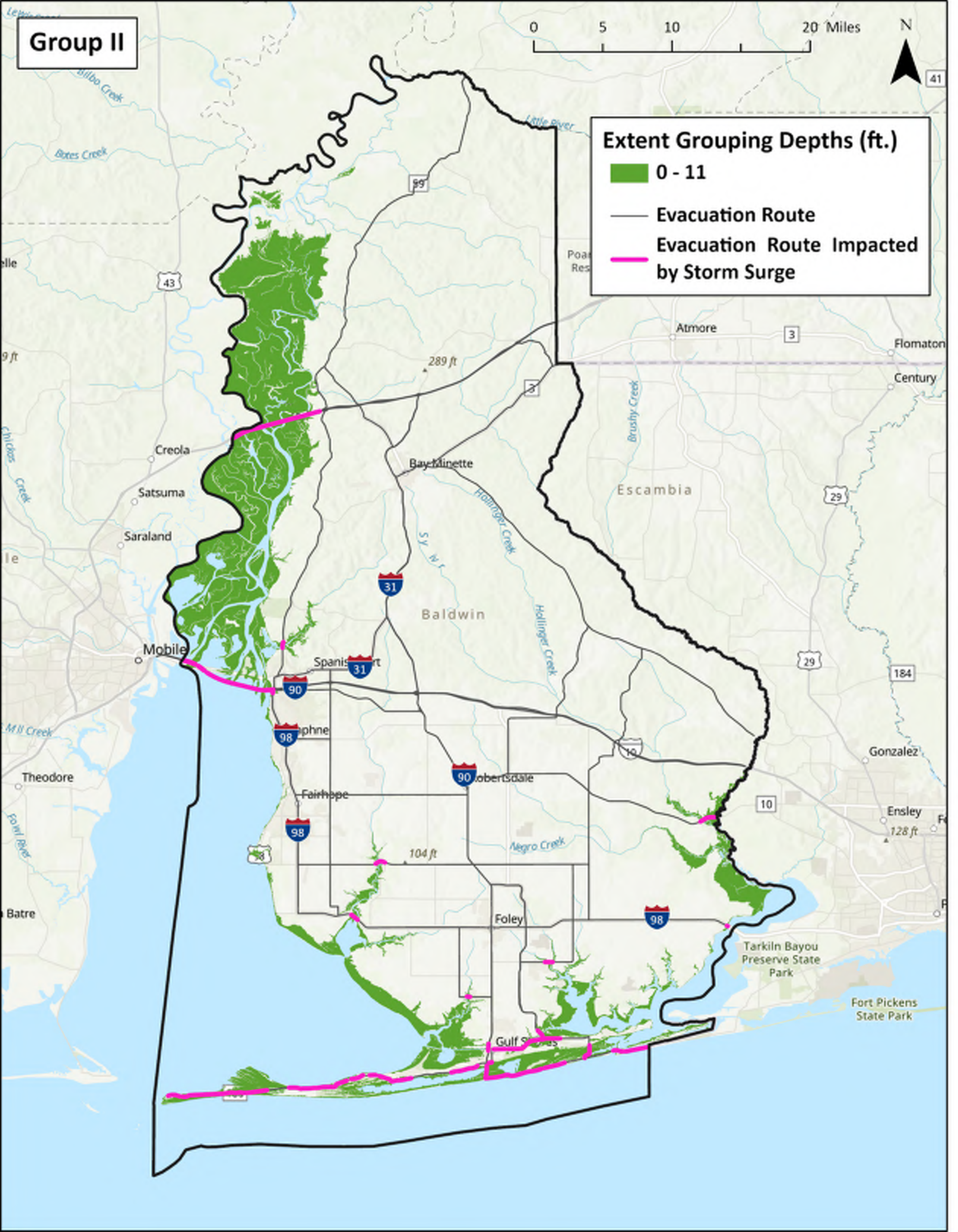
Transportation considerations are a critical aspect of hurricane evacuation planning in both states. Emergency managers collaborate with transportation agencies to establish efficient evacuation routes and implement traffic management measures to facilitate the smooth flow of evacuees. Areas of congestion or congestion hotspots as detailed in the Transportation Analysis can help target specific areas for additional focus, signage, and potential stationing. Additionally, emergency managers prioritize the transportation needs of vulnerable populations, such as those with disabilities or without private vehicles, by arranging for accessible transportation options and coordinating with local transit authorities. Regular communication and coordination with transportation agencies, including monitoring road conditions and providing real-time updates to the public, are key components of successful hurricane evacuation planning in Alabama and Mississippi.

APPENDIX A
Evacuation Routes Impacted by Storm Surge

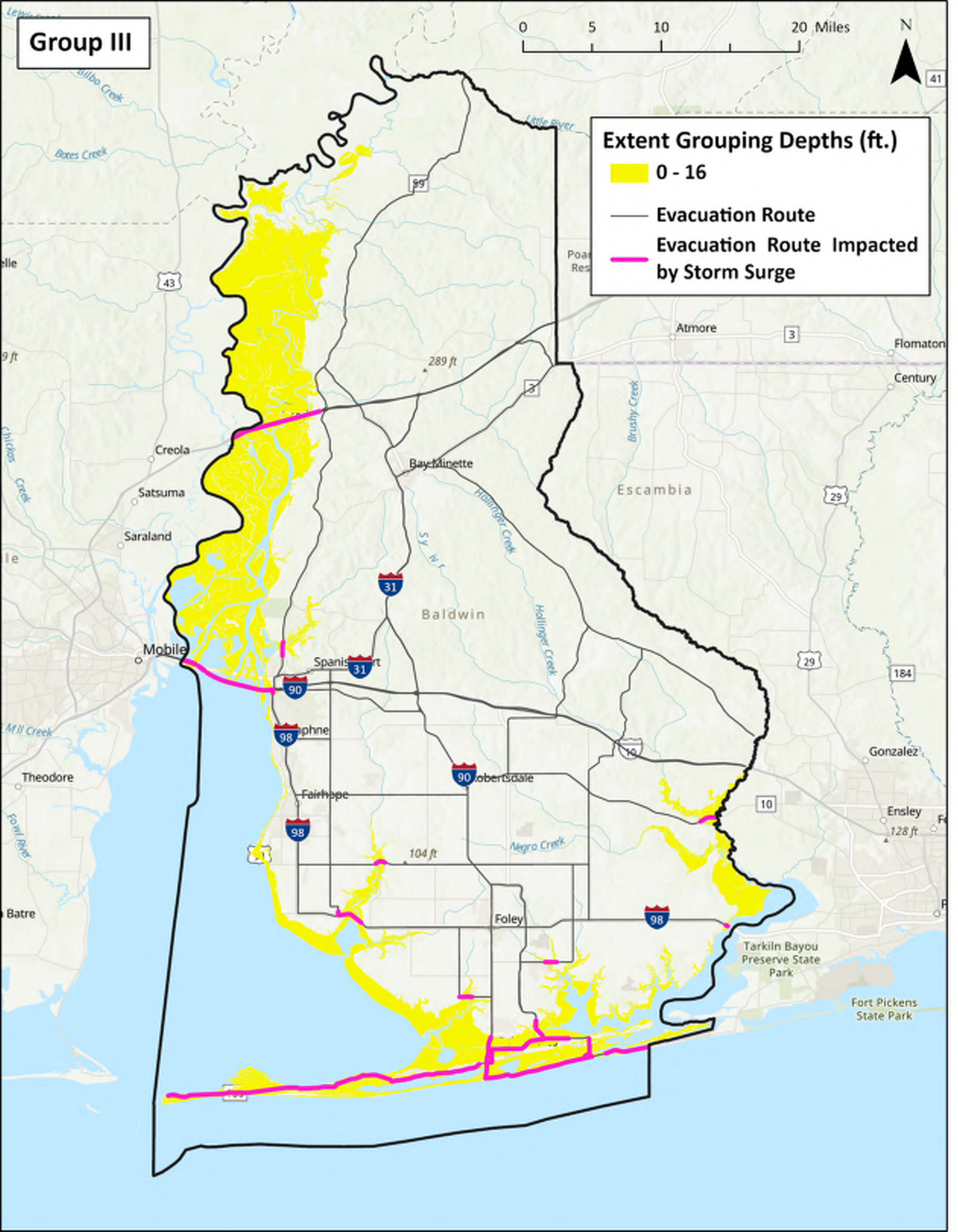
BALDWIN COUNTY, ALABAMA



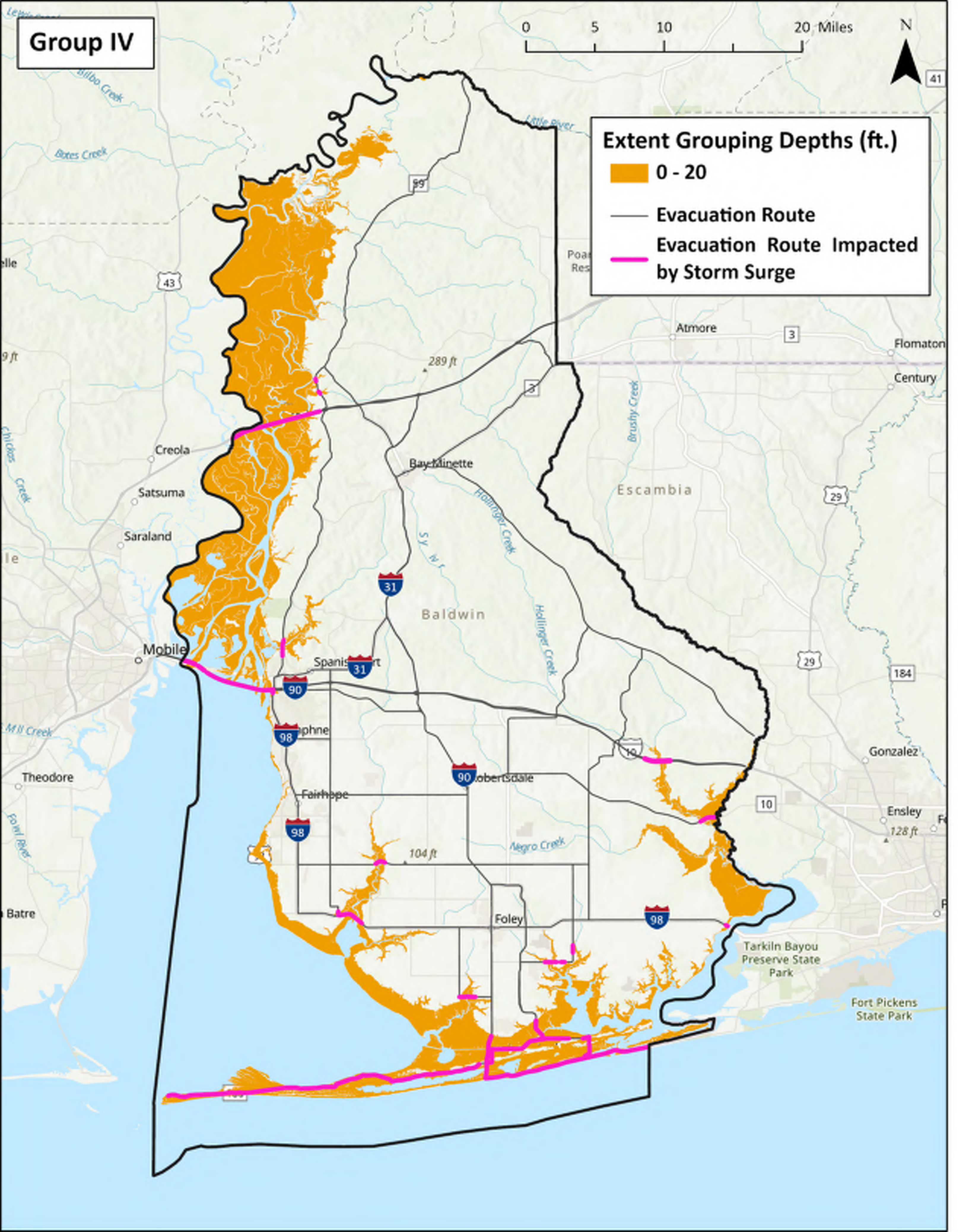
Group I
0 5 10 20 Miles
N
Extent Grouping Depths (ft.)
0 - 7
Evacuation Route
Evacuation Route Impacted by Storm Surge
Bilbo Creek
Bates Creek
Little River
Creola
Satsuma
Saraland
Mobile
Theodore
Bay Minette
Baldwin
Escambia
Spanish Fort
Daphne
Fairhope
Robertsdale
Foley
Gulf Shores
Atmore
Flomaton
Century
Gonzalez
Ensley
Hollinger Creek
Brushy Creek
Negro Creek
Tarkiln Bayou Preserve State Park
Fort Pickens State Park
289 ft
104 ft
128 ft

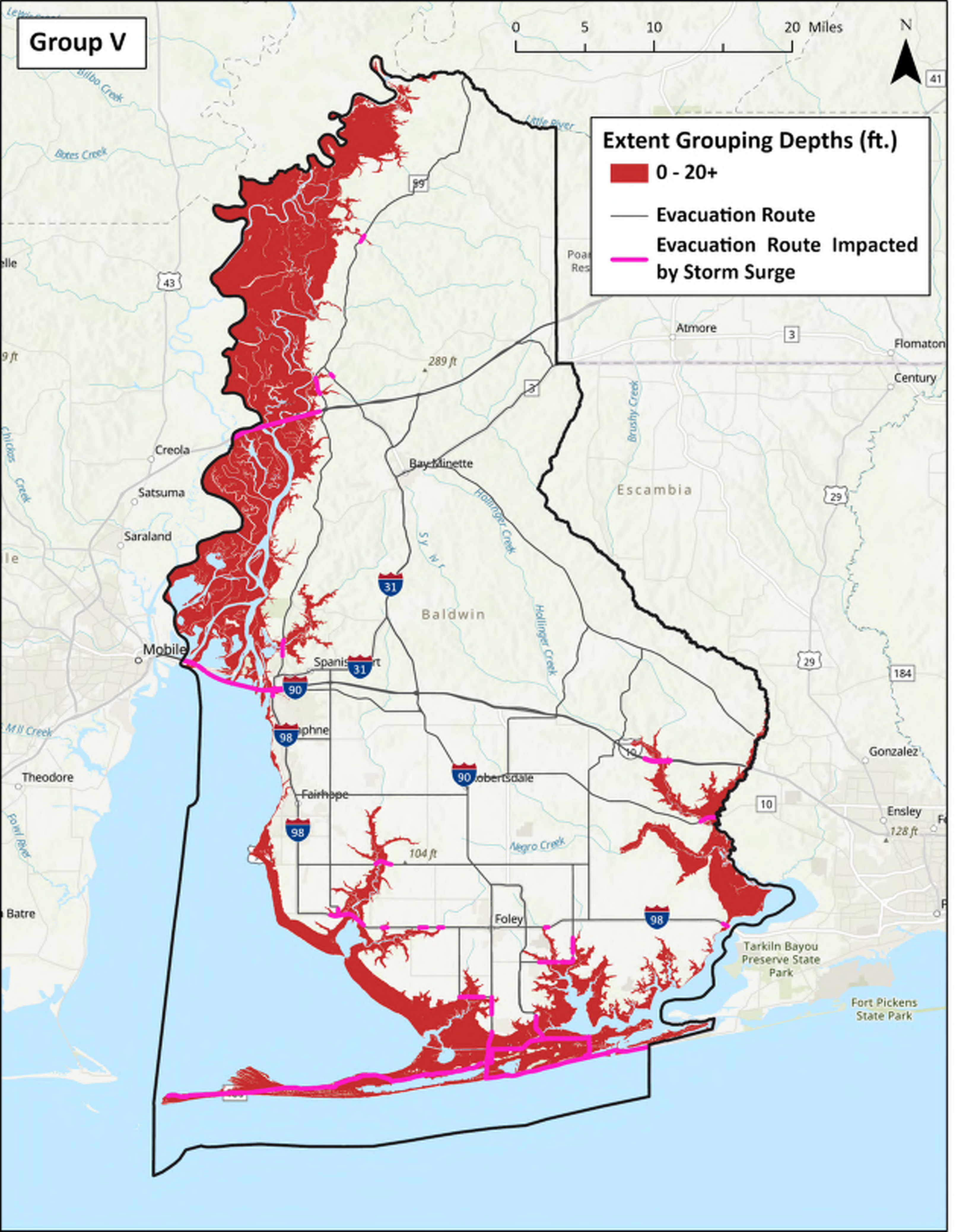


Group II
0
5
10
20 Miles
N
Extent Grouping Depths (ft.)
0 - 11
Evacuation Route
Evacuation Route Impacted by Storm Surge
Bilbo Creek
Bates Creek
Little River
Atmore
Flomaton
Century
289 ft
Creola
Satsuma
Saraland
Bay Minette
Escambia
Brushy Creek
Hollinger Creek
Baldwin
Mobile
Theodore
Fairhope
Foley
Gonzalez
Ensley
128 ft
104 ft
Negro Creek
Gulf Shores
Tarkiln Bayou Preserve State Park
Fort Pickens State Park



Group III
0
5
10
20 Miles
N
Extent Grouping Depths (ft.)
0 - 16
Evacuation Route
Evacuation Route Impacted by Storm Surge
Atmore
Flomaton
Century
Creola
Satsuma
Saraland
Mobile
Bay Minette
Escambia
Baldwin
Spanish Fort
Daphne
Fairhope
Robertsdale
Foley
Theodore
Gonzalez
Ensley
Tarkiln Bayou Preserve State Park
Fort Pickens State Park
Hollinger Creek
Negro Creek
Brushy Creek
Little River
Bates Creek
Bilbo Creek
289 ft
104 ft
128 ft

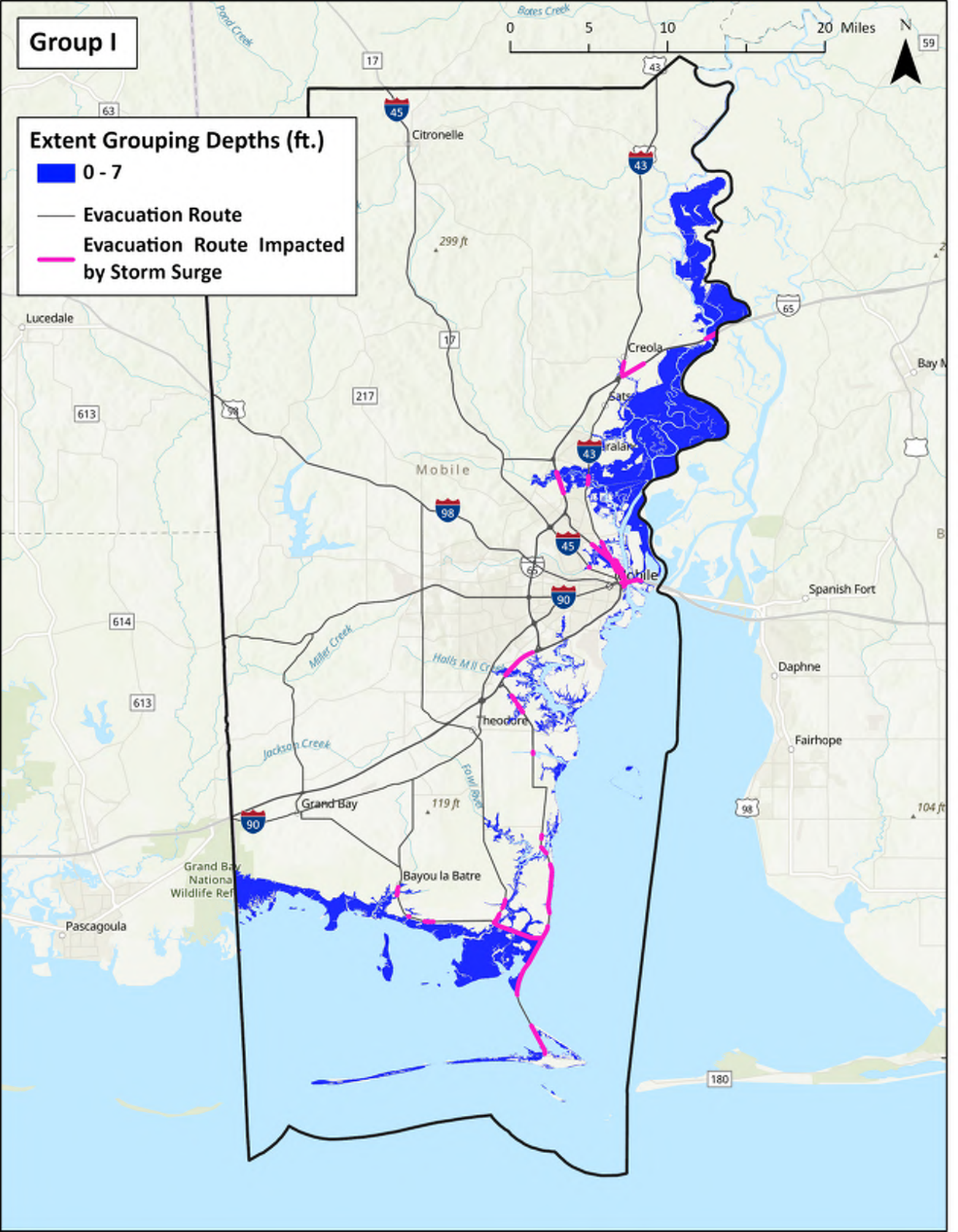

Group IV
0
5
10
20 Miles
N
Extent Grouping Depths (ft.)
0 - 20
Evacuation Route
Evacuation Route Impacted by Storm Surge
Bilbo Creek
Little River
Bates Creek
Atmore
Flomaton
Century
289 ft
Creola
Satsuma
Saraland
Bay Minette
Escambia
Hollinger Creek
Baldwin
Mobile
Spanish Fort
Gonzalez
Theodore
Fairhope
Robertsdale
Ensley
128 ft
104 ft
Negro Creek
Foley
Tarkiln Bayou Preserve State Park
Fort Pickens State Park
Brushy Creek
41
43
99
3
31
90
98
10
29
184

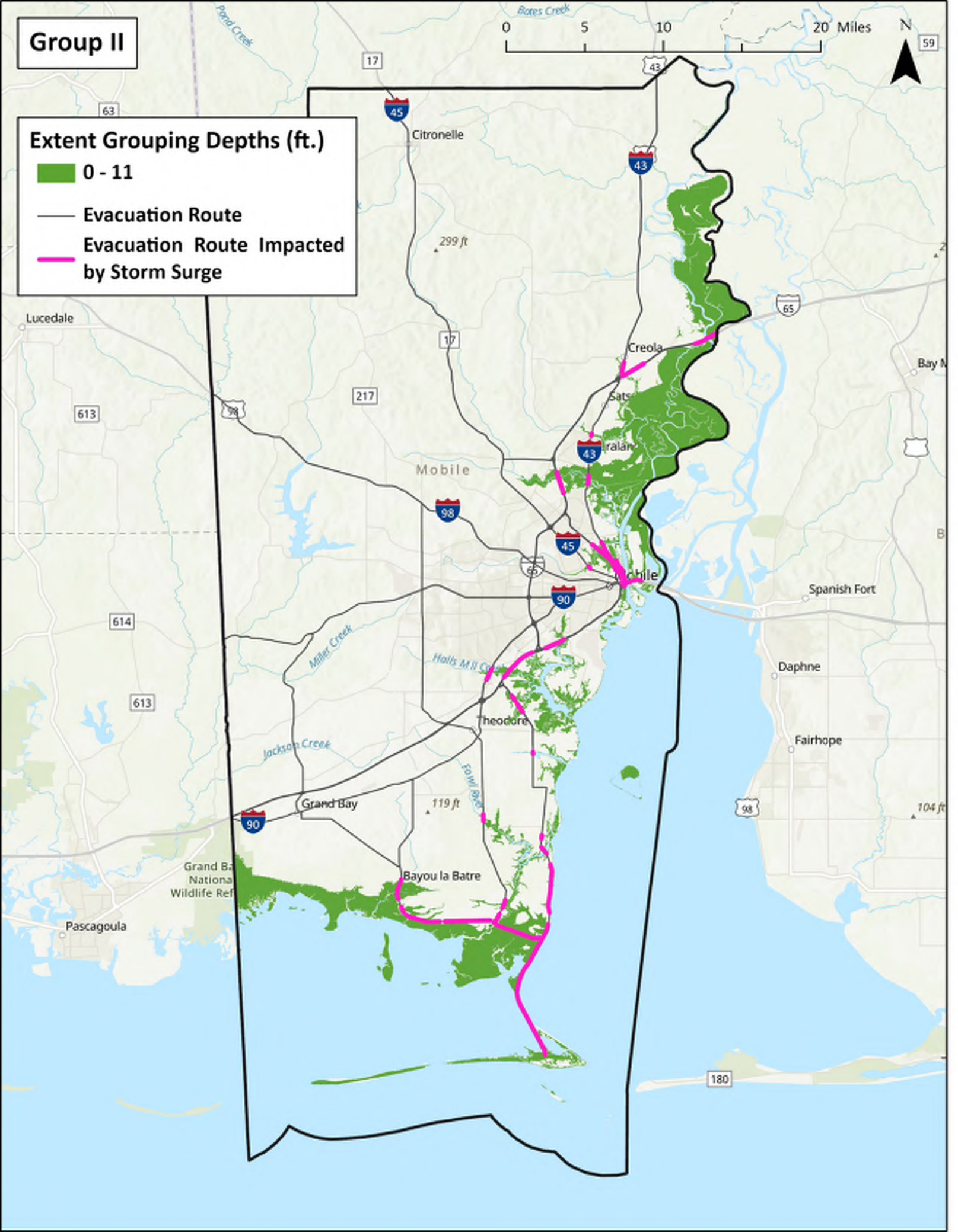


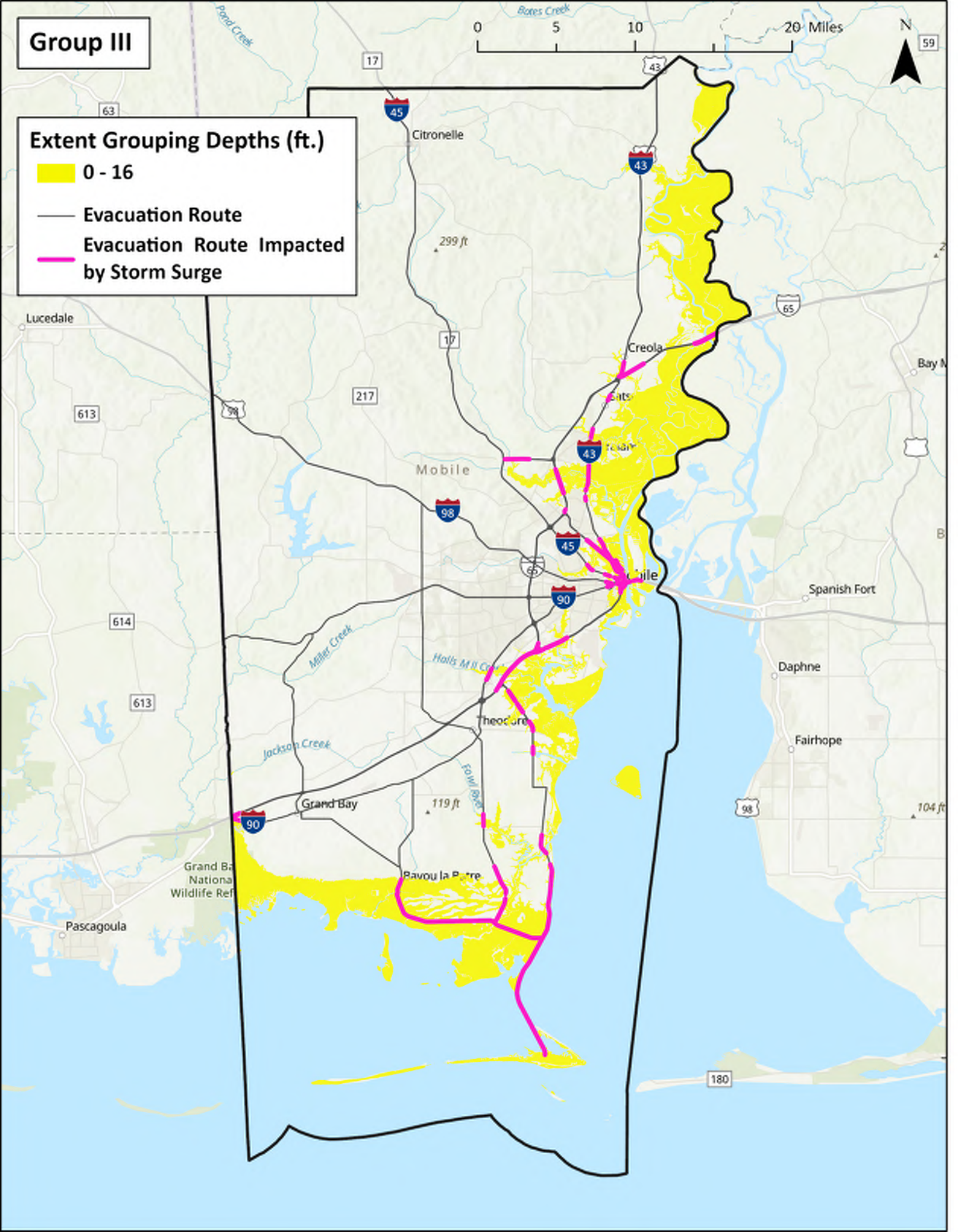
Group V
0 5 10 20 Miles
N
Extent Grouping Depths (ft.)
0 - 20+
Evacuation Route
Evacuation Route Impacted by Storm Surge
Bilbo Creek
Bates Creek
Little River
Atmore
Flomaton
Century
Creola
Satsuma
Saraland
Mobile
Bay Minette
Escambia
Baldwin
Hollinger Creek
Brushy Creek
Spanish Fort
Fairhope
Robertsdale
Gonzalez
Ensley
Theodore
Foley
Negro Creek
289 ft
104 ft
128 ft
Tarkiln Bayou Preserve State Park
Fort Pickens State Park

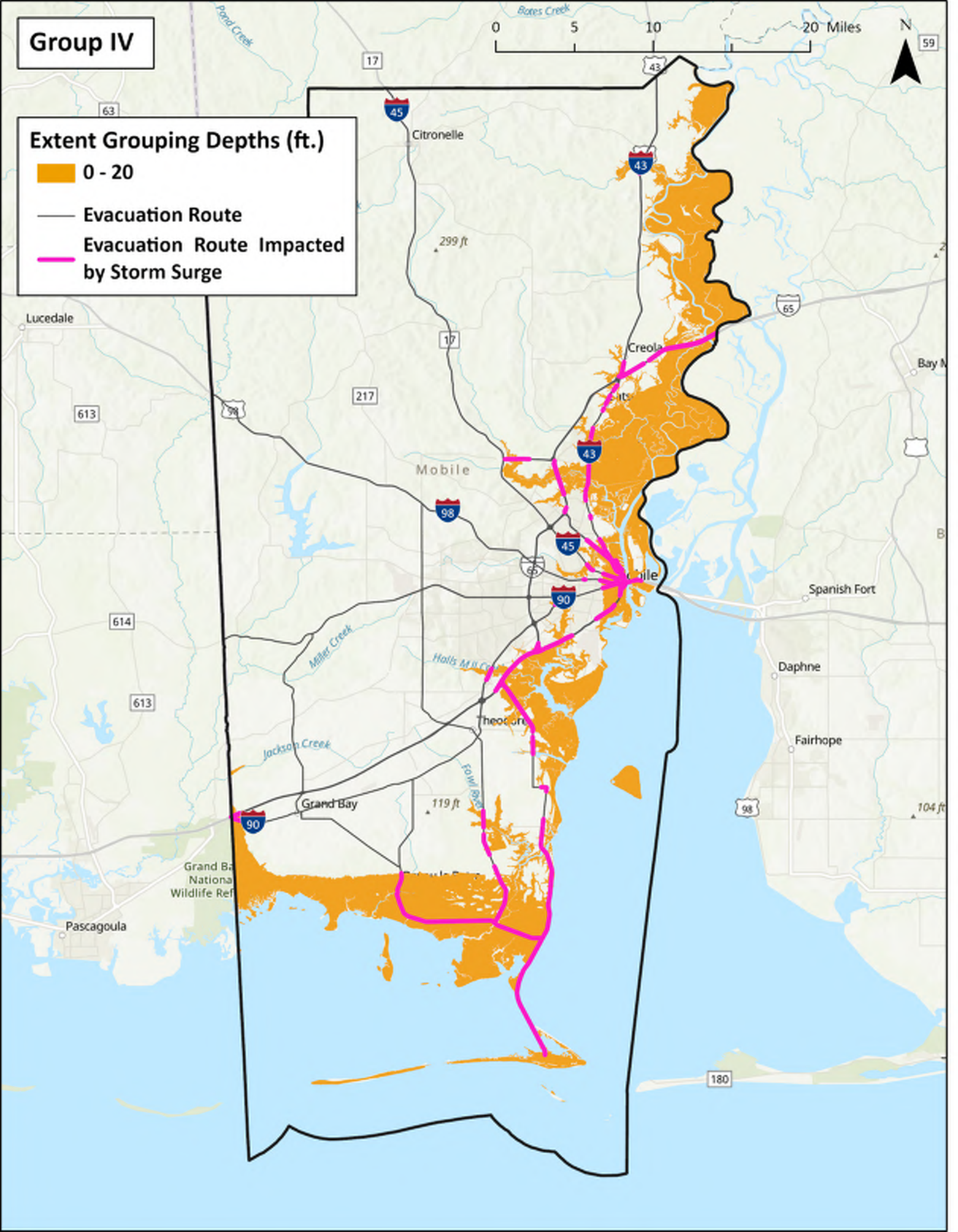
Evacuation Routes Impacted by Storm Surge

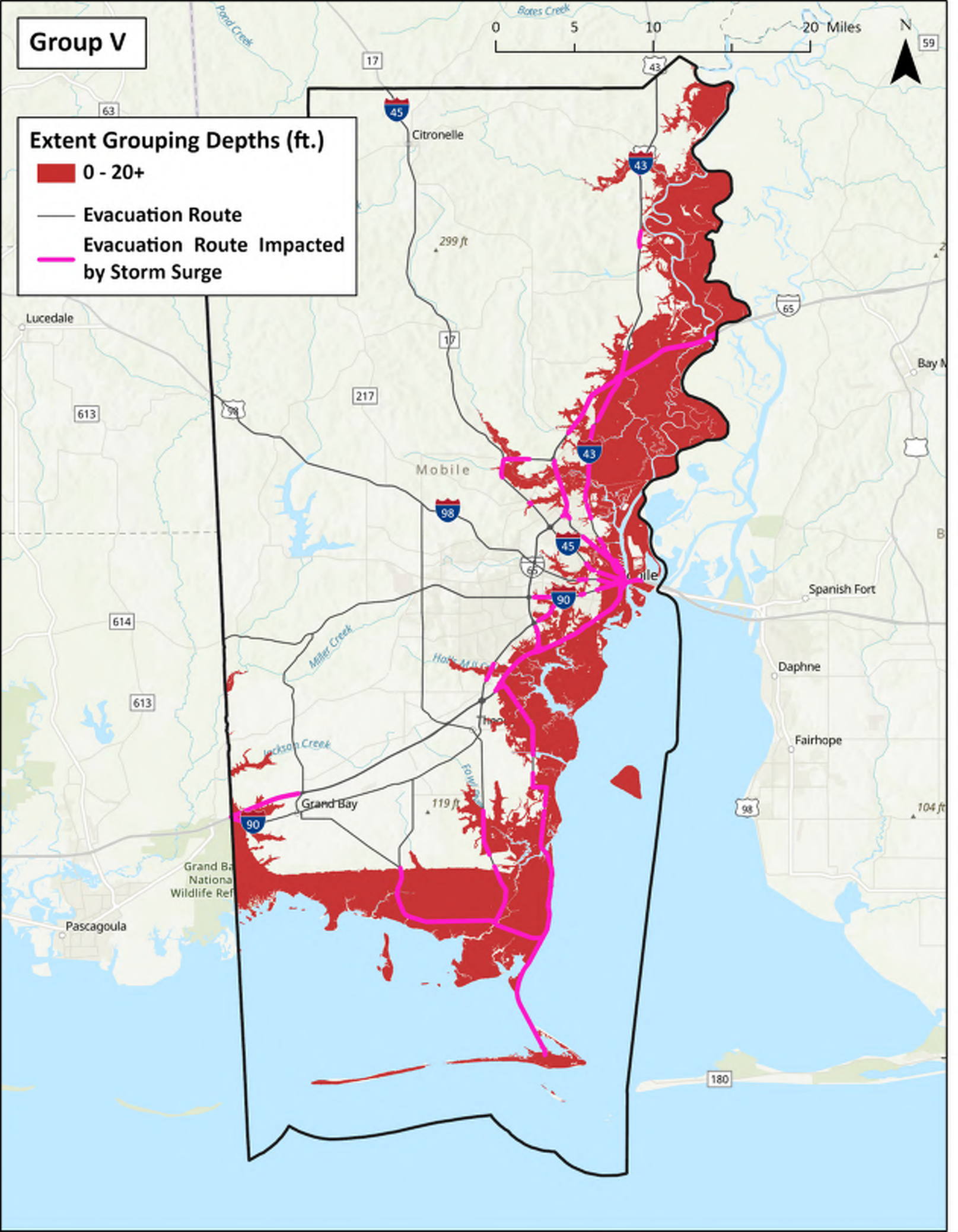
MOBILE COUNTY, ALABAMA


Group I
Extent Grouping Depths (ft.)
0 - 7
Evacuation Route
Evacuation Route Impacted by Storm Surge
0 5 10 20 Miles
N
Citronelle
Lucedale
Creola
Mobile
Spanish Fort
Daphne
Fairhope
Theodore
Grand Bay
Bayou la Batre
Pascagoula
Grand Bay National Wildlife Ref
Miller Creek
Jackson Creek
Fowl River
299 ft
119 ft
104 ft


Group II
Extent Grouping Depths (ft.)
0 - 11
Evacuation Route
Evacuation Route Impacted by Storm Surge
0 5 10 20 Miles
N
Citronelle
Lucedale
Creola
Mobile
Spanish Fort
Daphne
Fairhope
Theodore
Grand Bay
Bayou la Batre
Pascagoula
Miller Creek
Jackson Creek
299 ft
119 ft
104 ft

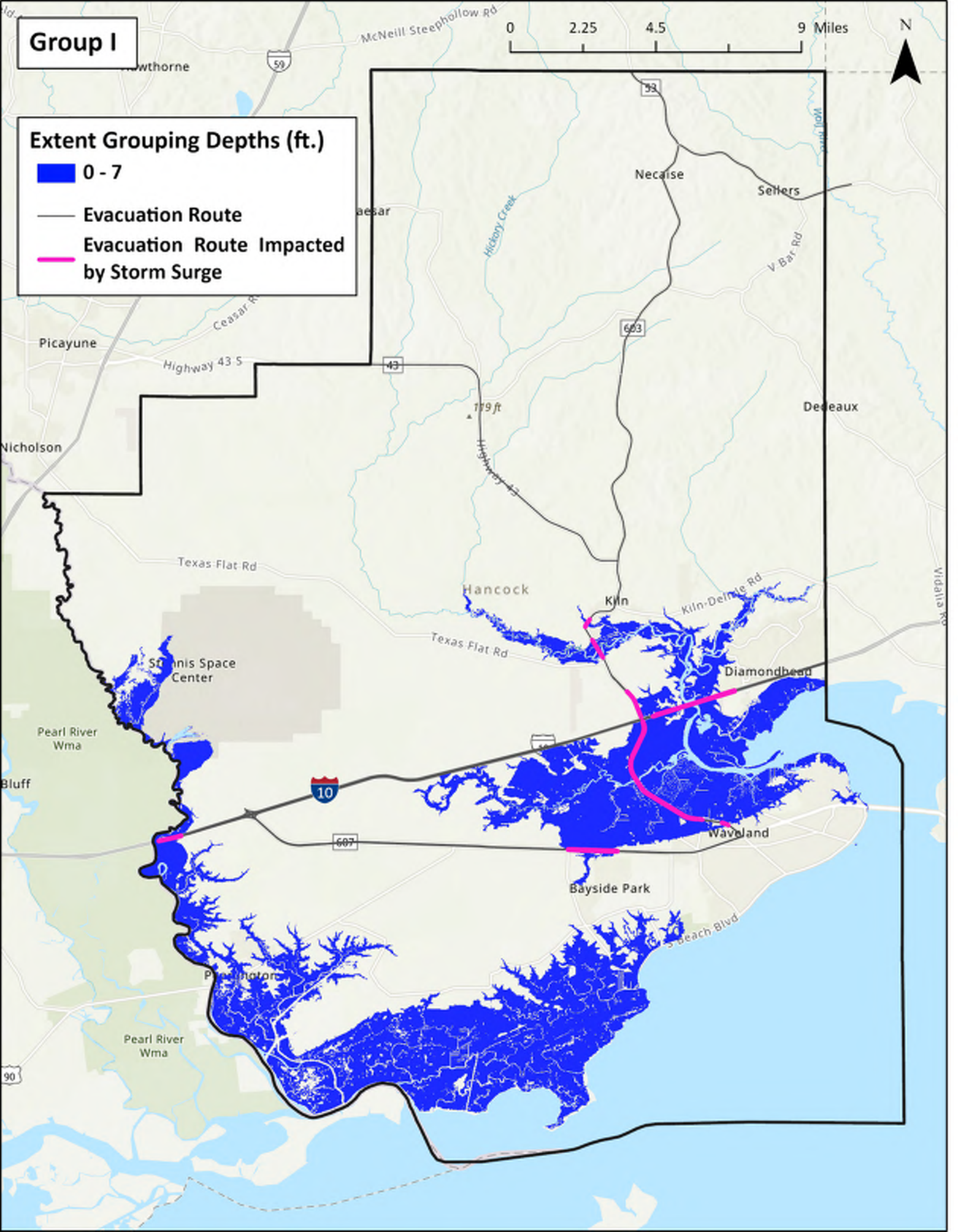

Group III
0 5 10 20 Miles
N
Extent Grouping Depths (ft.)
0 - 16
Evacuation Route
Evacuation Route Impacted by Storm Surge
Citronelle
Lucedale
Creola
Mobile
Spanish Fort
Daphne
Fairhope
Theodore
Grand Bay
Pascagoula
Bayou la Batre
Miller Creek
Jackson Creek
Fowl River
299 ft
119 ft
104 ft
Boles Creek
Pond Creek

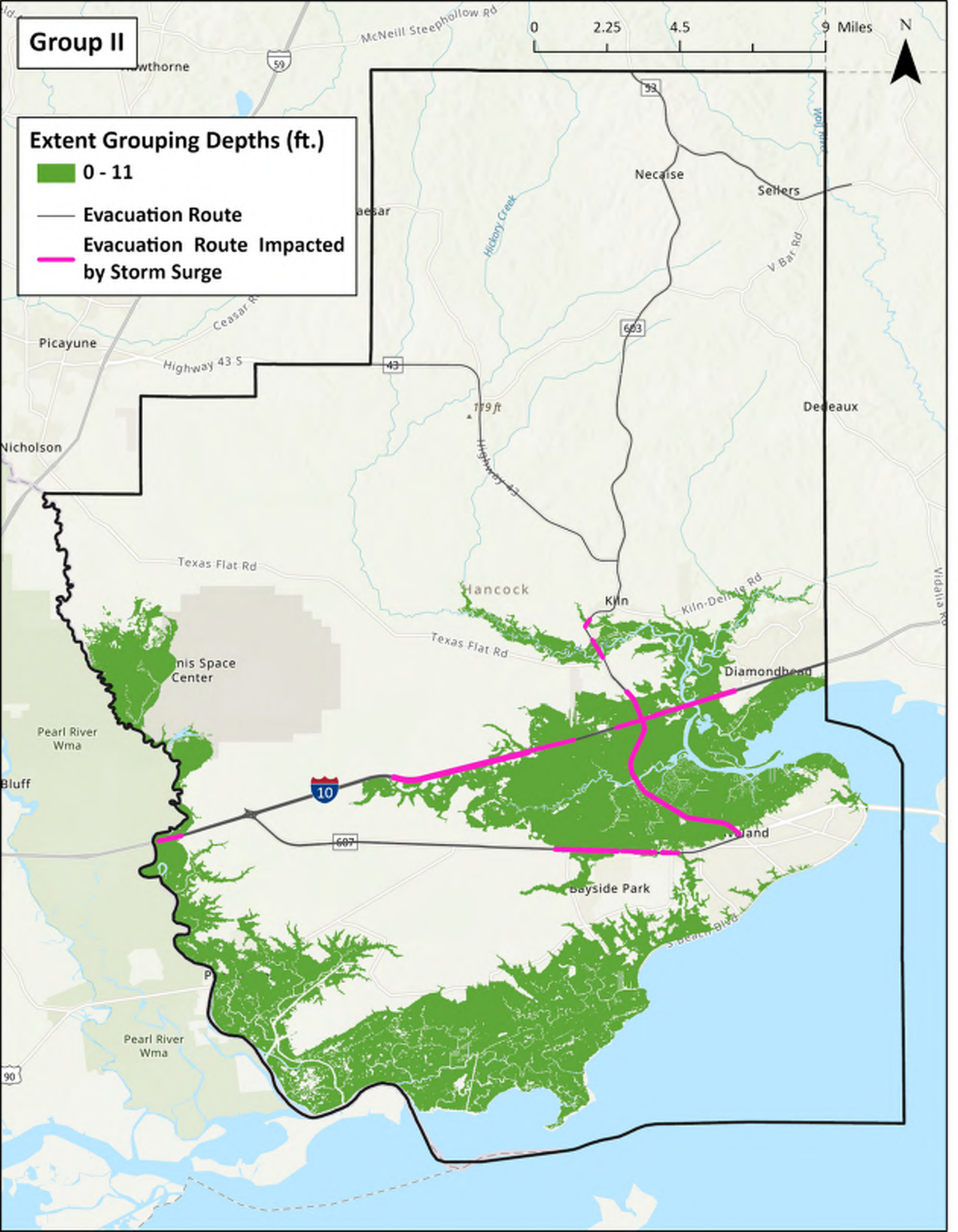

Group IV
Extent Grouping Depths (ft.)
0 - 20
Evacuation Route
Evacuation Route Impacted by Storm Surge
0 5 10 20 Miles
N
Citronelle
Lucedale
Creola
Mobile
Spanish Fort
Daphne
Fairhope
Grand Bay
Pascagoula
Miller Creek
Jackson Creek
299 ft
119 ft
104 ft

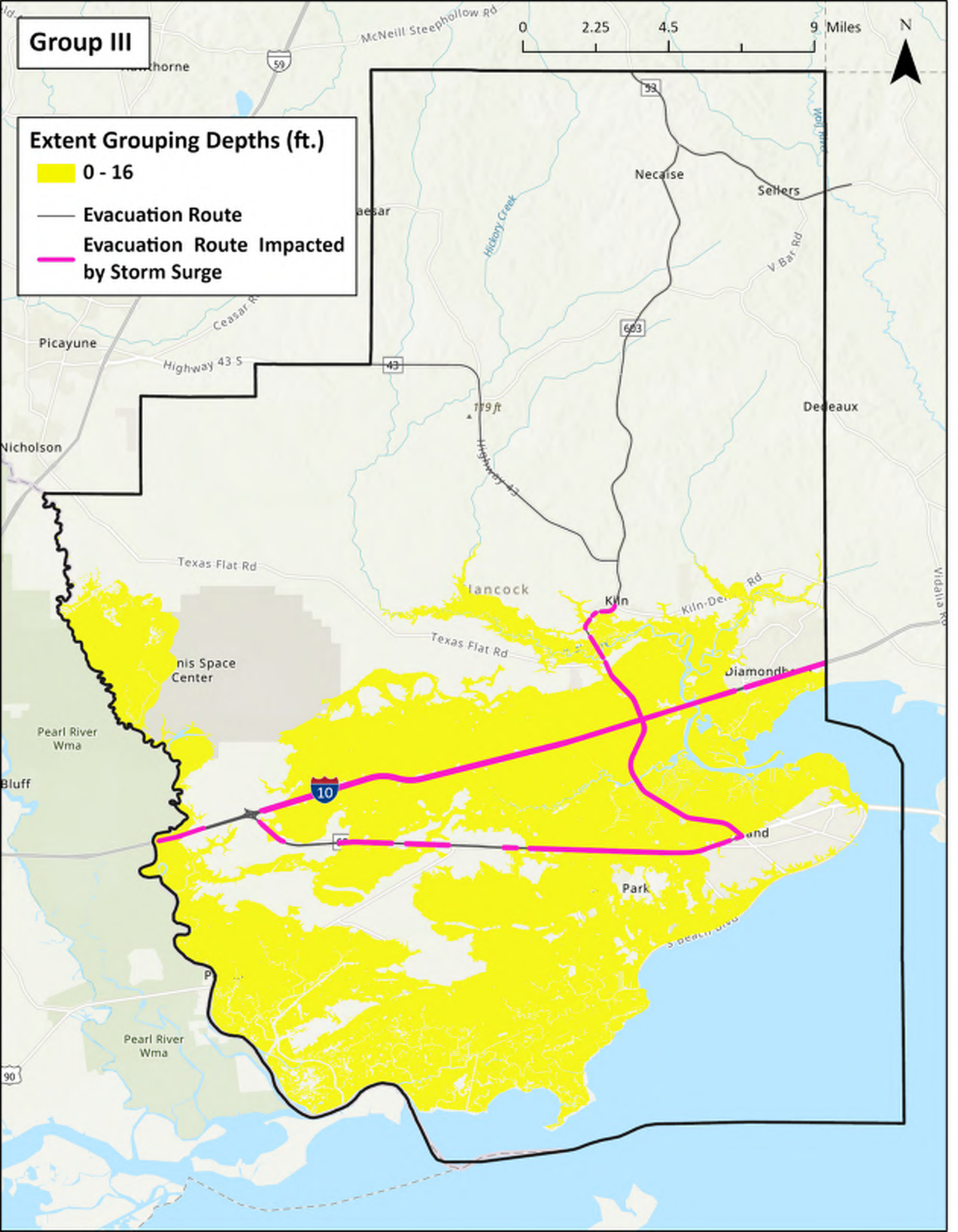

Group V
Extent Grouping Depths (ft.)
0 - 20+
Evacuation Route
Evacuation Route Impacted by Storm Surge
0 5 10 20 Miles
N
Citronelle
Lucedale
Mobile
Spanish Fort
Daphne
Fairhope
Grand Bay
Pascagoula
Miller Creek
Jackson Creek
299 ft
119 ft
104 ft
45
43
98
90
65
59
17
63
613
614
217
180

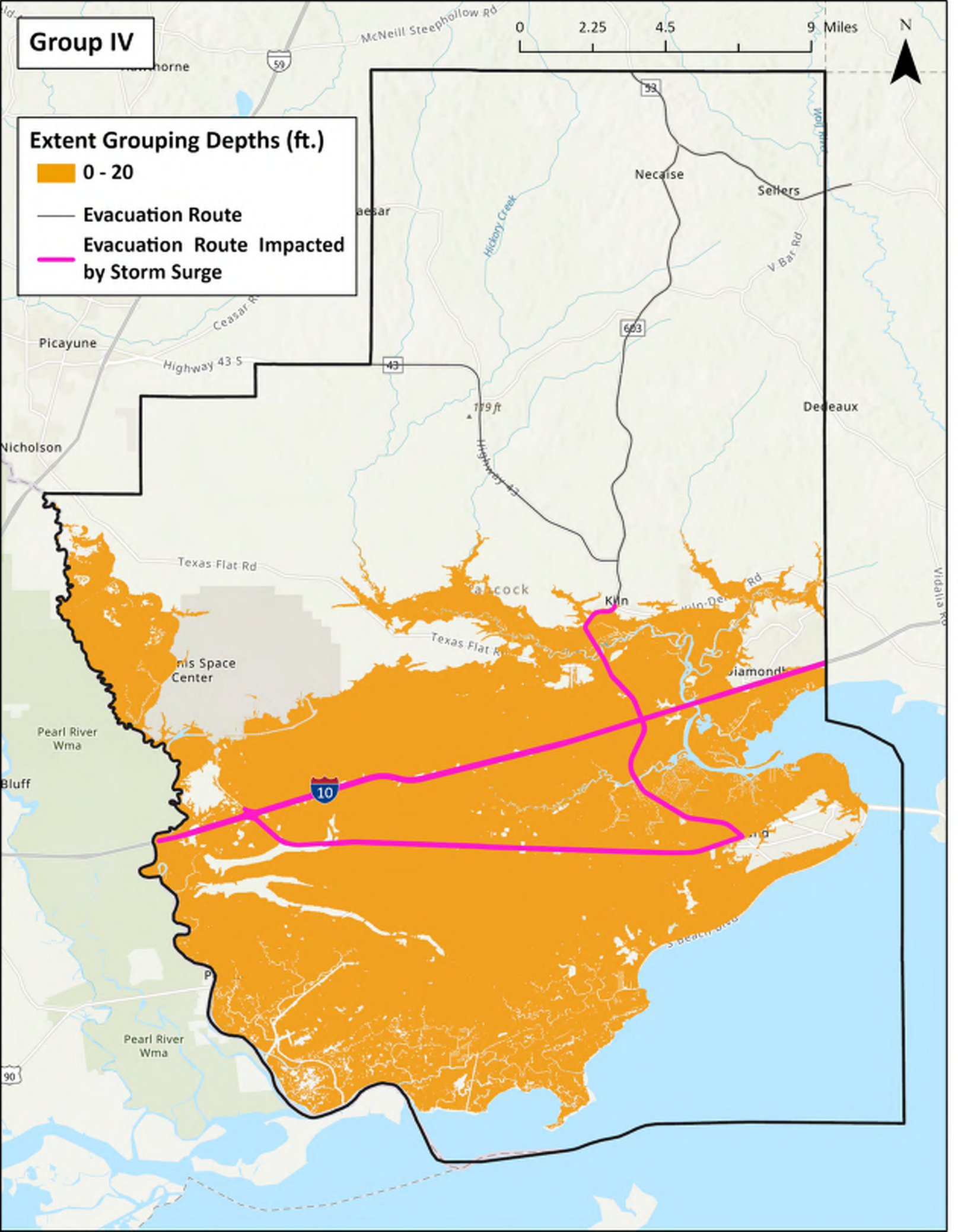
Evacuation Routes Impacted by Storm Surge

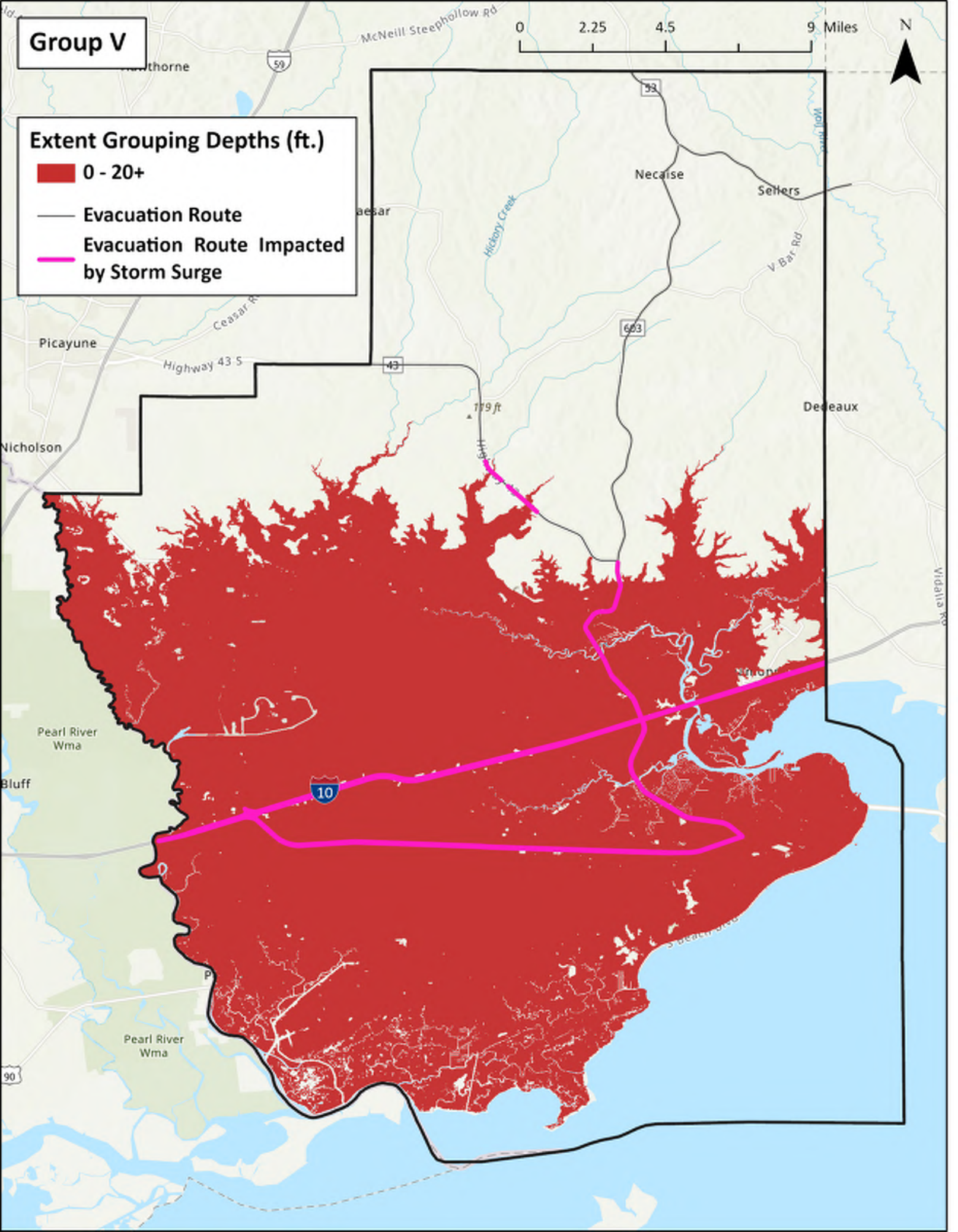
HANCOCK COUNTY, MISSISSIPPI


Group I
Extent Grouping Depths (ft.)
0 - 7
Evacuation Route
Evacuation Route Impacted by Storm Surge
0
2.25
4.5
9 Miles
N
McNeill Steephollow Rd
Hawthorne
59
Necaise
Sellers
Hickory Creek
V Bar Rd
603
Picayune
Highway 43 S
43
179 ft
Deeaux
Nicholson
Texas Flat Rd
Hancock
Kiln
Kiln-Delisle Rd
Diamondhead
Pearl River Wma
10
Bluff
607
Waveland
Bayside Park
Pearl River Wma
90


Group II
Extent Grouping Depths (ft.)
0 - 11
Evacuation Route
Evacuation Route Impacted by Storm Surge
0
2.25
4.5
9 Miles
N
McNeill Steephollow Rd
Hawthorne
59
Necaise
Sellers
Hickory Creek
V Bar Rd
603
Picayune
Highway 43 S
43
179 ft
Deeaeaux
Nicholson
Texas Flat Rd
Hancock
Kiln
Kiln-Delisle Rd
Diamondhead
Pearl River Wma
10
607
Bayside Park
Pearl River Wma
90

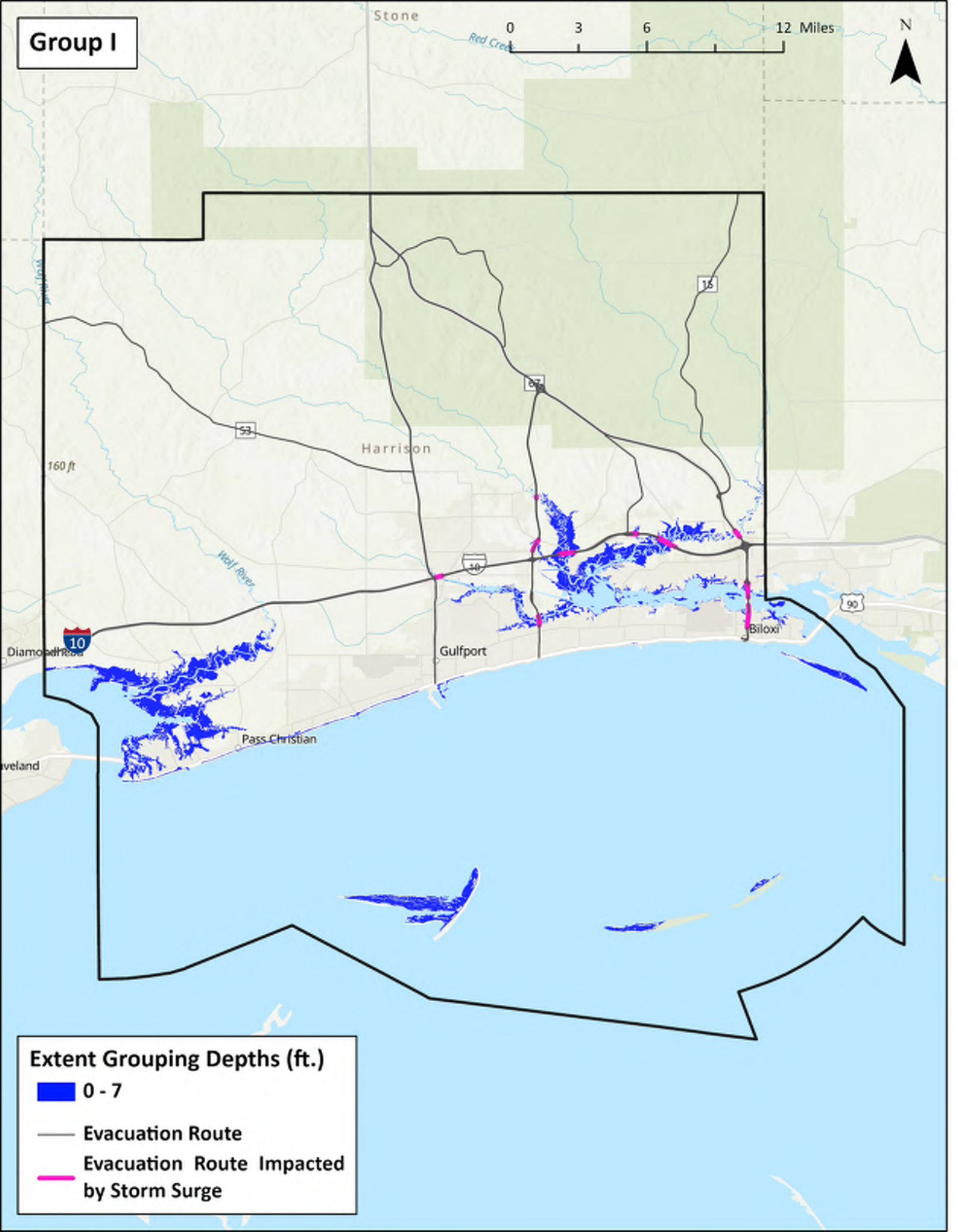

Group III
Extent Grouping Depths (ft.)
0 - 16
Evacuation Route
Evacuation Route Impacted by Storm Surge
0
2.25
4.5
9 Miles
N
McNeill Steephollow Rd
Necaise
Sellers
Hickory Creek
V Bar Rd
Picayune
Highway 43 S
Deeaux
Nicholson
Texas Flat Rd
Kiln
Pearl River Wma
Bluff
10
Park
Pearl River Wma

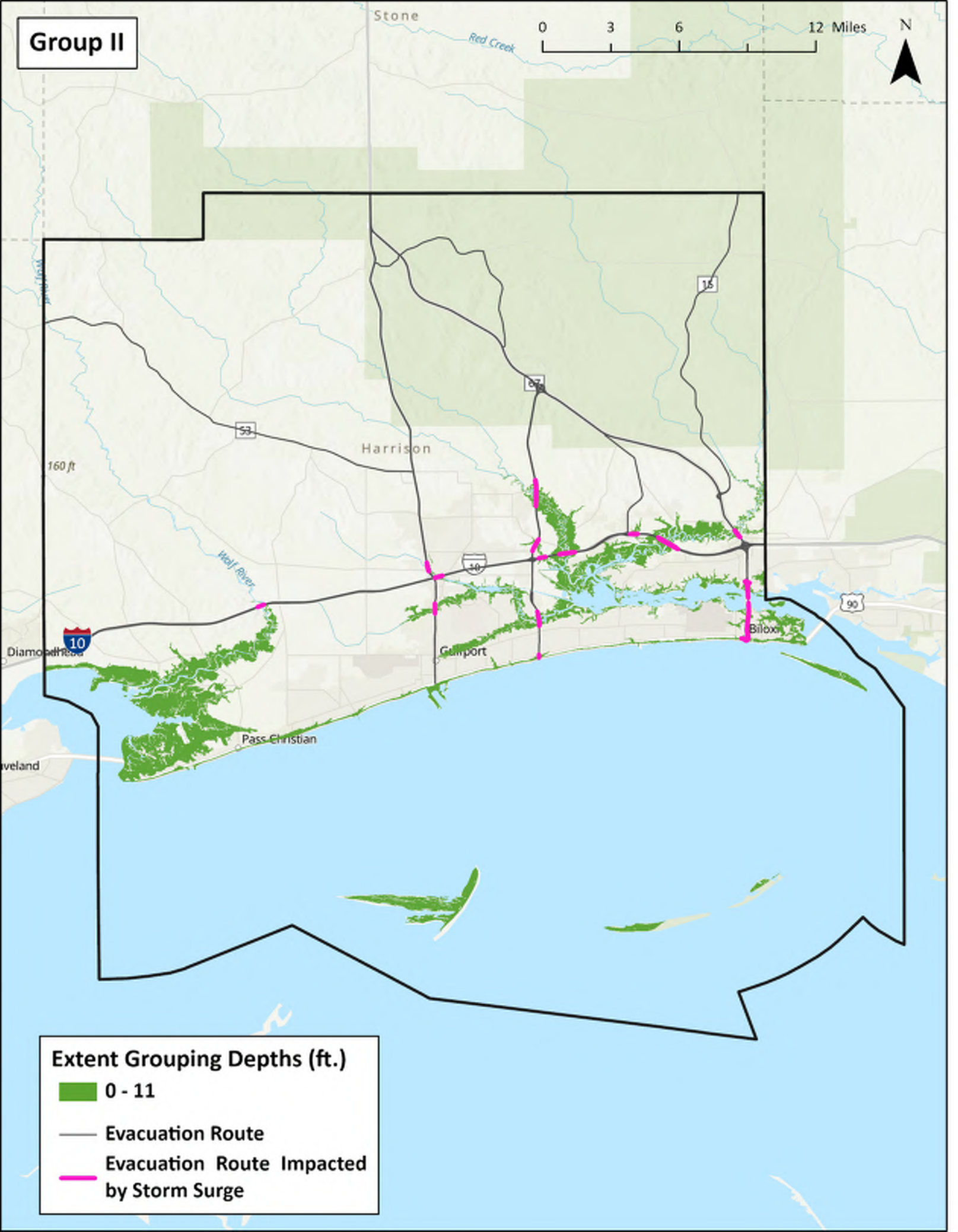

Group IV
Extent Grouping Depths (ft.)
0 - 20
Evacuation Route
Evacuation Route Impacted by Storm Surge
0
2.25
4.5
9 Miles
N
McNeill Steephollow Rd
59
Necaise
Sellers
Hickory Creek
V-Bar Rd
603
Picayune
Highway 43 S
43
179 ft
Deeaux
Nicholson
Texas Flat Rd
Kiln
Texas Flat R
Center
Pearl River Wma
Bluff
10
Pearl River Wma
90

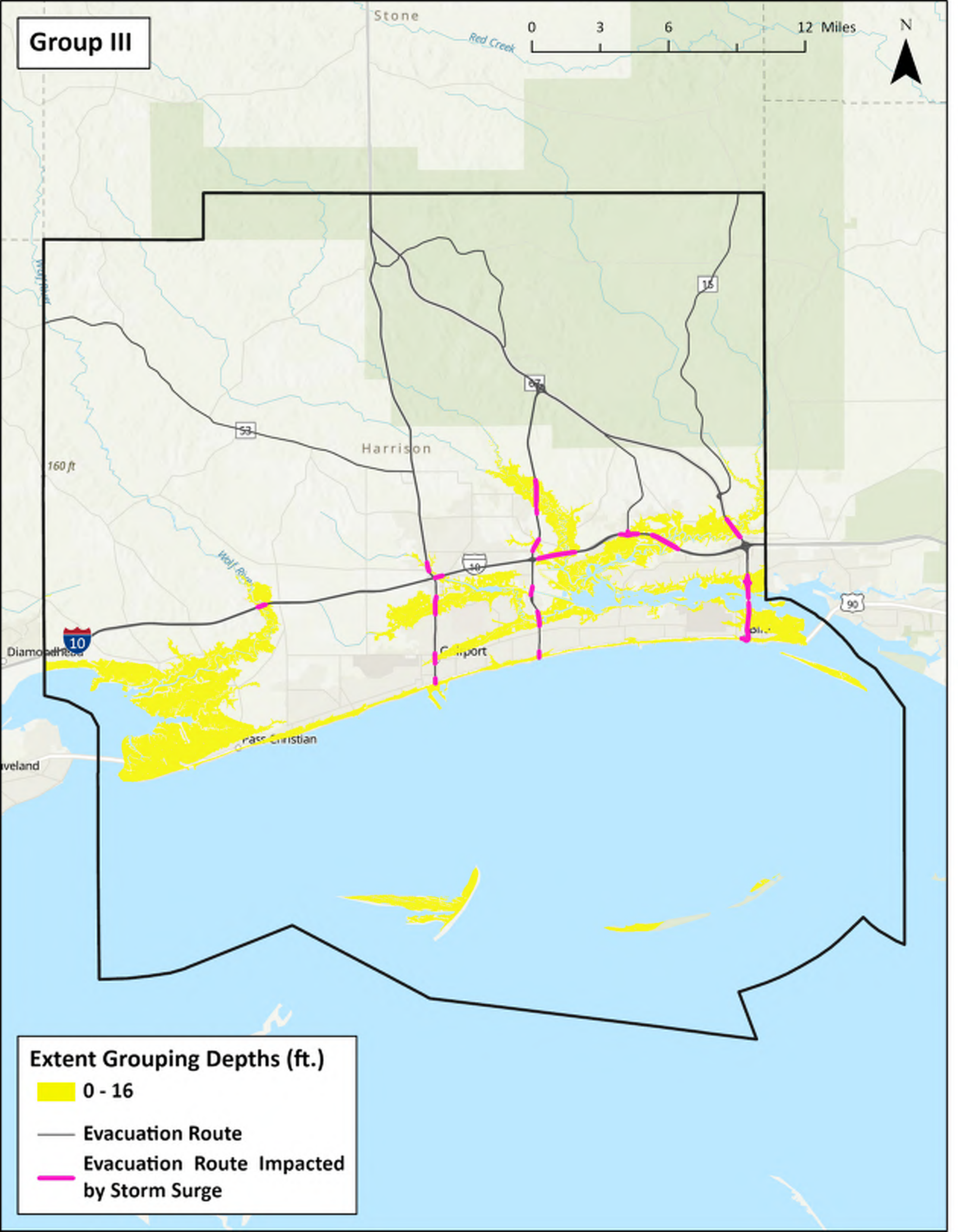

Group V
Extent Grouping Depths (ft.)
0 - 20+
Evacuation Route
Evacuation Route Impacted by Storm Surge
0
2.25
4.5
9 Miles
N
McNeill Steephollow Rd
59
Necaise
Sellers
Hickory Creek
V Bar Rd
603
Picayune
Highway 43 S
43
119 ft
Deeaux
Nicholson
Pearl River Wma
Bluff
10
Pearl River Wma
90

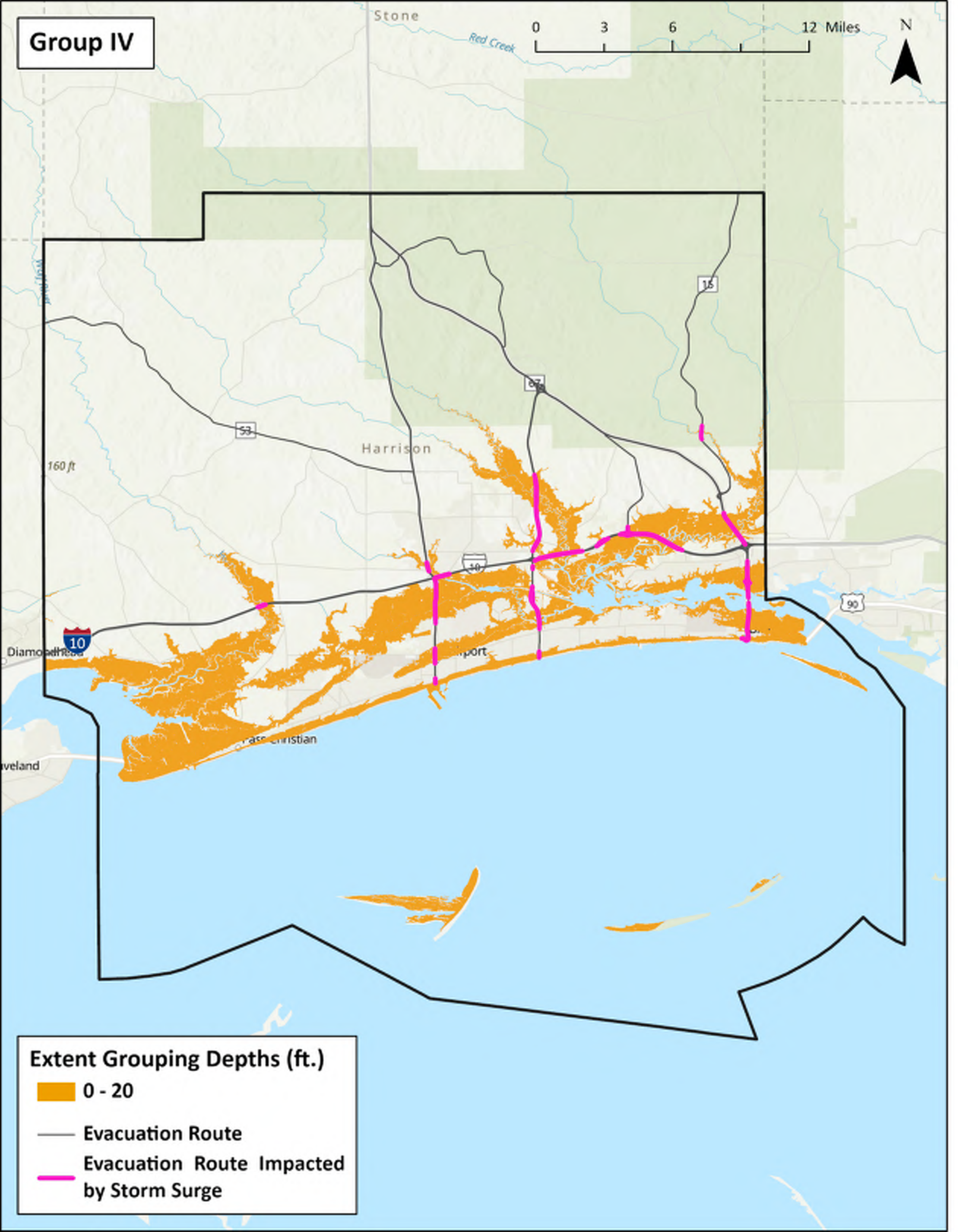
Evacuation Routes Impacted by Storm Surge

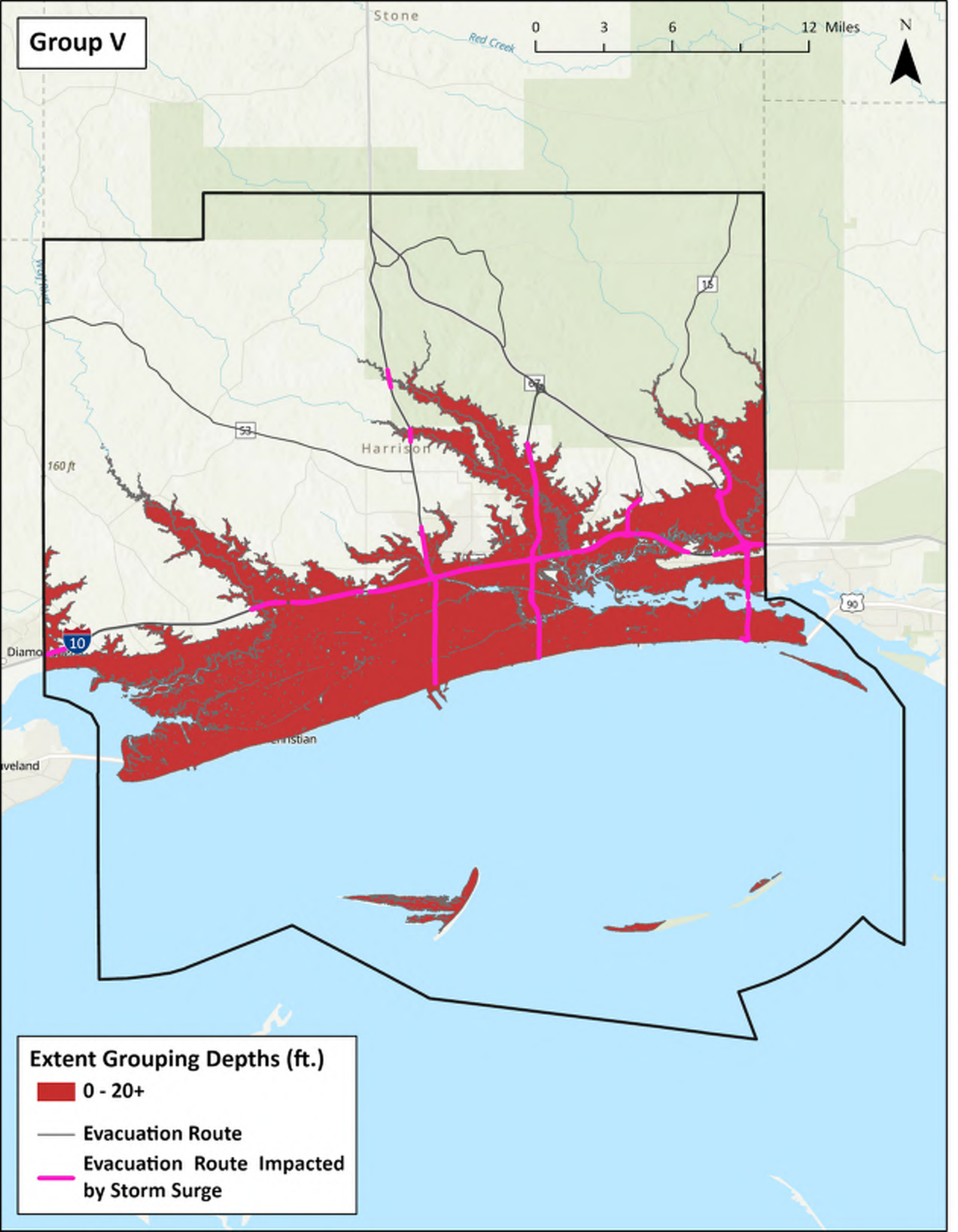
HARRISON COUNTY, MISSISSIPPI


Group I
Stone
0
3
6
12 Miles
N
Red Creek
Harrison
53
67
15
10
90
160 ft
Wolf River
Biloxi
Gulfport
Pass Christian
Extent Grouping Depths (ft.)
0 - 7
Evacuation Route
Evacuation Route Impacted by Storm Surge


Group II
Stone
Red Creek
0
3
6
12 Miles
N
Harrison
160 ft
Wolf River
Biloxi
Gulfport
Pass Christian
Extent Grouping Depths (ft.)
0 - 11
Evacuation Route
Evacuation Route Impacted by Storm Surge

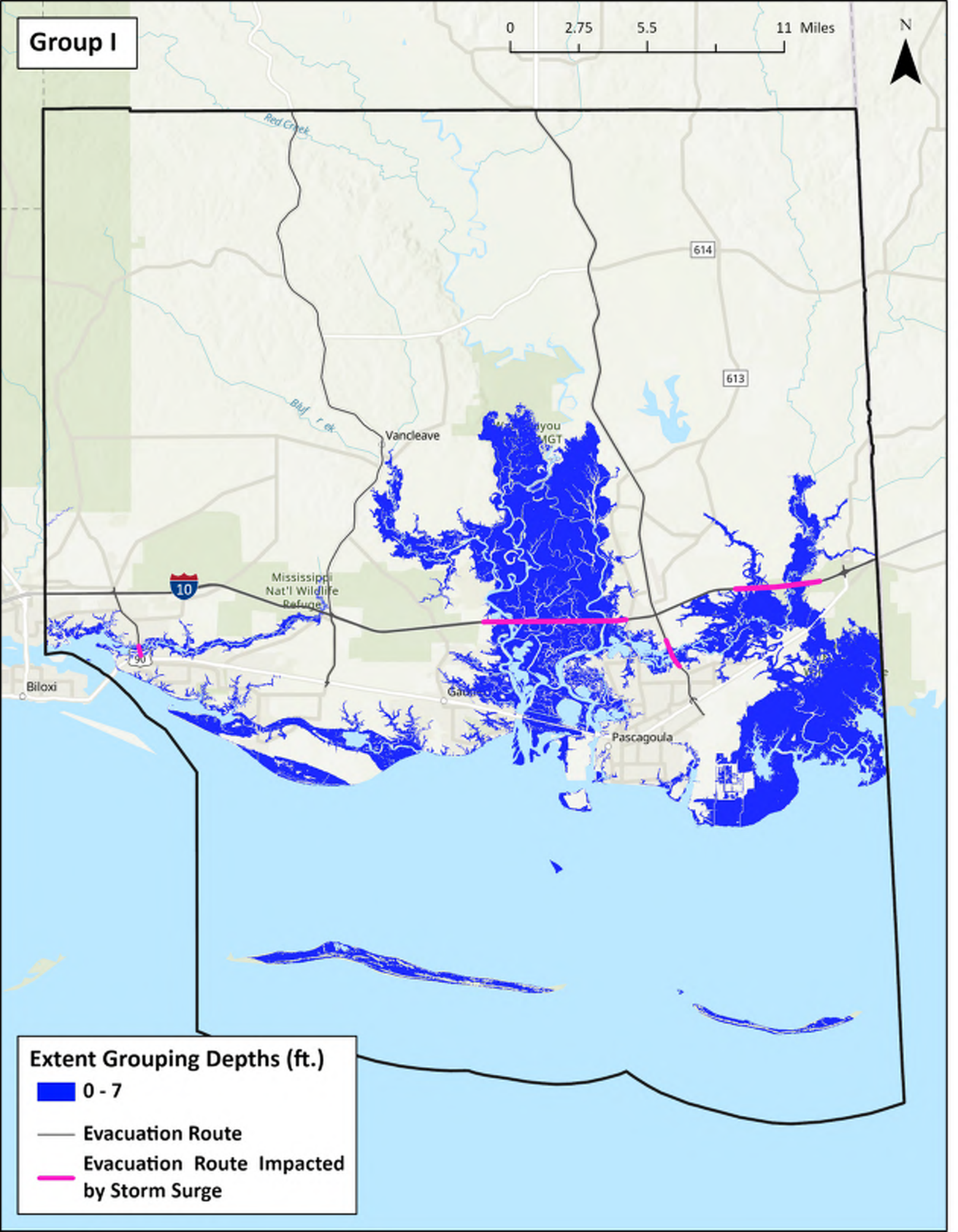

Group III
Stone
Red Creek
0 3 6 12 Miles
N
15
67
53
Harrison
160 ft
Wolf River
10
90
Gulfport
Pass Christian
Extent Grouping Depths (ft.)
0 - 16
Evacuation Route
Evacuation Route Impacted by Storm Surge

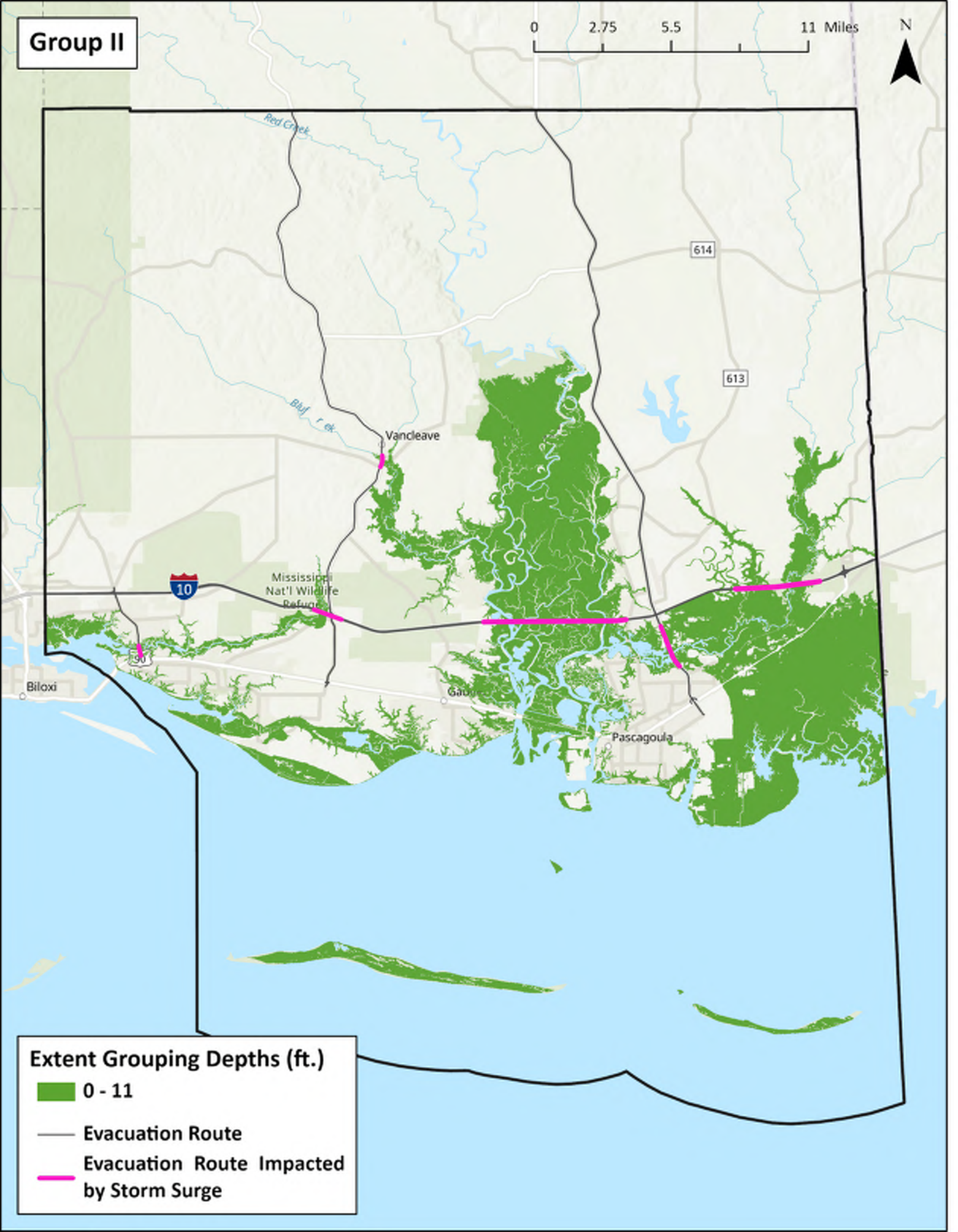

Group IV
Stone
Red Creek
0
3
6
12 Miles
N
15
67
53
Harrison
160 ft
10
90
Pass Christian
Extent Grouping Depths (ft.)
0 - 20
Evacuation Route
Evacuation Route Impacted by Storm Surge

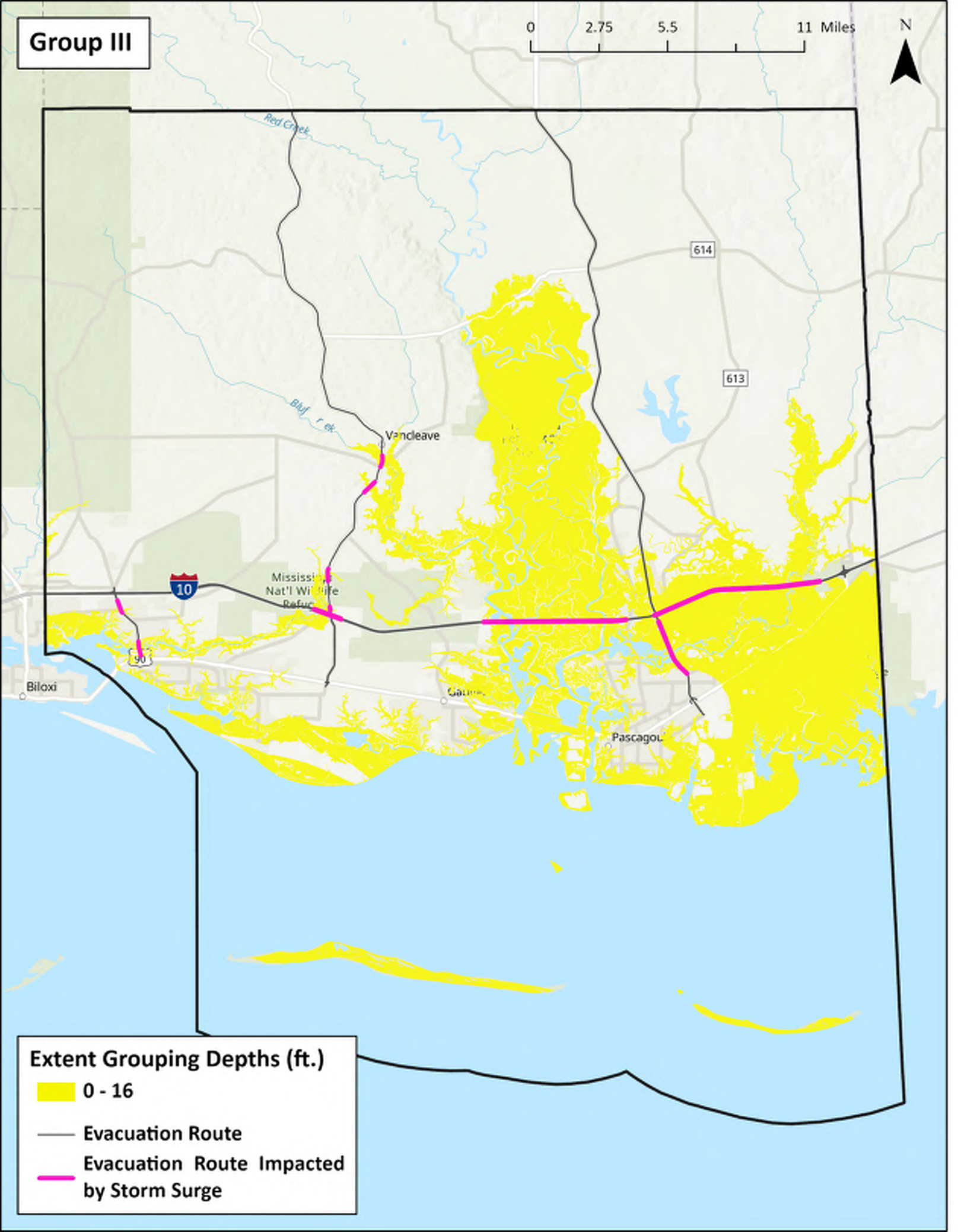

Group V
Stone
Red Creek
0
3
6
12 Miles
N
Harrison
160 ft
10
90
Diamo
Extent Grouping Depths (ft.)
0 - 20+
Evacuation Route
Evacuation Route Impacted by Storm Surge

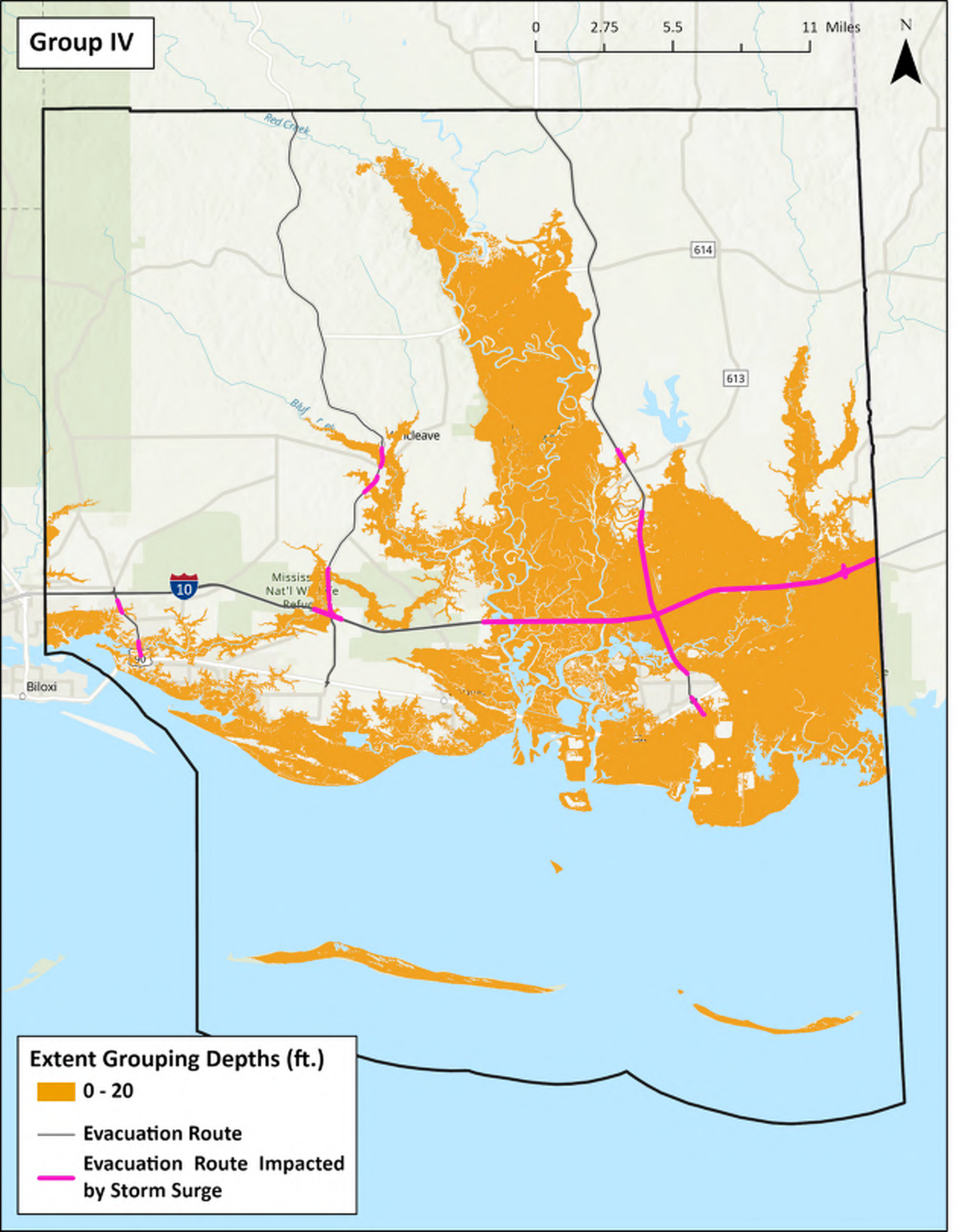
Evacuation Routes Impacted by Storm Surge

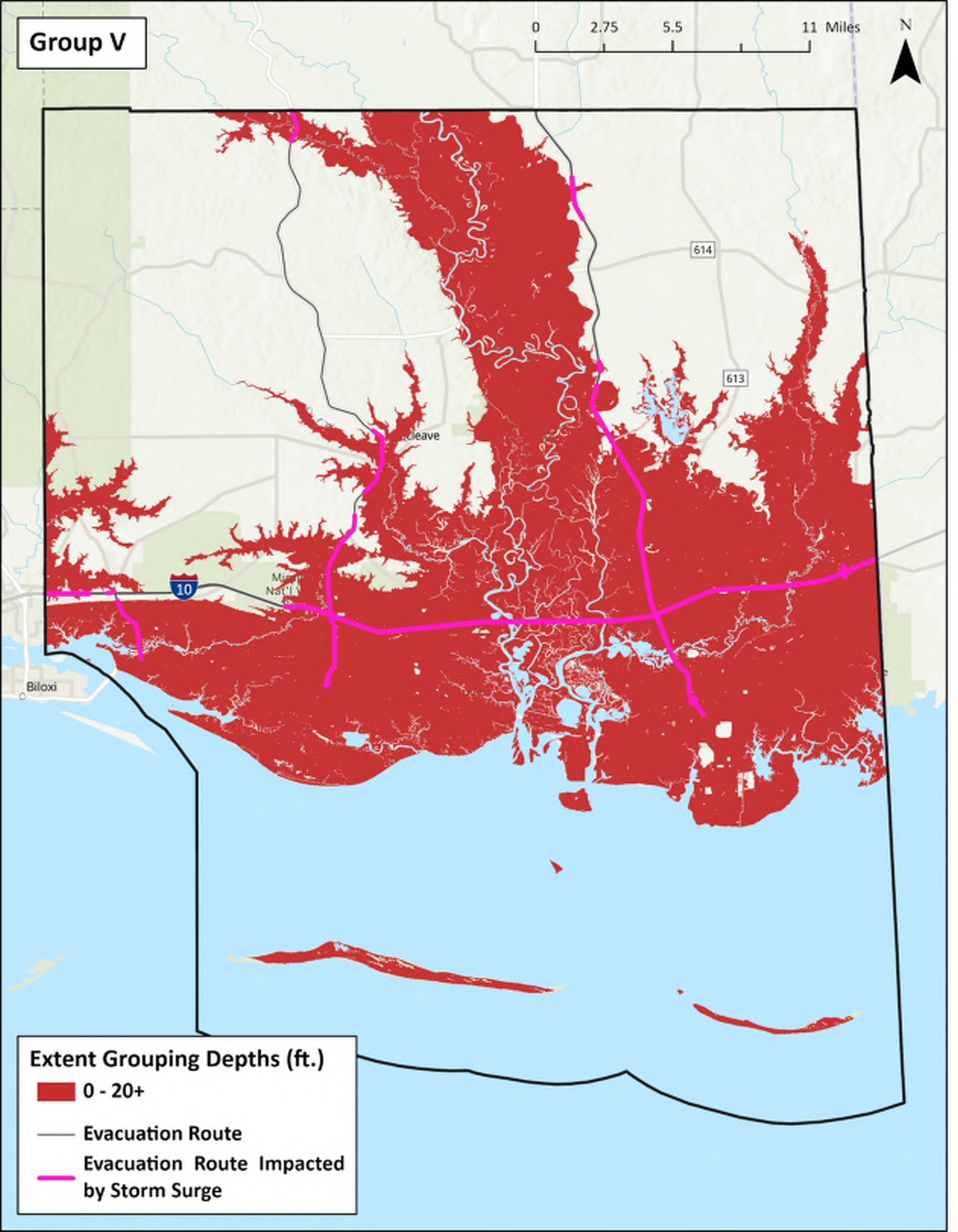
JACKSON COUNTY, MISSISSIPPI


Group I
0
2.75
5.5
11 Miles
N
Red Creek
Bluf r ek
Vancleave
614
613
10
Mississippi
Nat'l Wildlife
Refuge
90
Biloxi
Pascagoula
Extent Grouping Depths (ft.)
0 - 7
Evacuation Route
Evacuation Route Impacted
by Storm Surge


Group II
0
2.75
5.5
11 Miles
N
Red Creek
614
613
Bluff Creek
Vancleave
10
Mississippi
Nat'l Wildlife
Refuge
90
Biloxi
Gautier
Pascagoula
Extent Grouping Depths (ft.)
0 - 11
Evacuation Route
Evacuation Route Impacted
by Storm Surge


Group III
0
2.75
5.5
11 Miles
N
Red Creek
Bluff Creek
614
613
Vancleave
10
90
Biloxi
Pascagoula
Extent Grouping Depths (ft.)
0 - 16
Evacuation Route
Evacuation Route Impacted by Storm Surge


Group IV
0
2.75
5.5
11 Miles
N
Red Creek
614
613
Bluff
Vancleave
10
Mississ
Nat'l Wi   fe
Refu
90
Biloxi
Extent Grouping Depths (ft.)
0 - 20
Evacuation Route
Evacuation Route Impacted by Storm Surge


Group V
0
2.75
5.5
11 Miles
N
614
613
10
Biloxi
Extent Grouping Depths (ft.)
0 - 20+
Evacuation Route
Evacuation Route Impacted by Storm Surge

APPENDIX B
Evacuation Zone Summaries

BALDWIN COUNTY, ALABAMA

Evacuation Zone Impacted by Storm Surge

Baldwin County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1
CAT1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1
CAT2	EZ1	EZ1	EZ1	EZ1	EZ1	EZ2	EZ1	EZ1	EZ1
CAT3	EZ1	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ1	EZ2
CAT4	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ1	EZ2
CAT5	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2

EZ1 – Evacuation Zone 1; EZ2 – Evacuation Zone 2.

Storm Surge Groupings

Baldwin County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	I	I	I	I	I	II	I	I	I
CAT1	II	II	II	II	II	III	III	II	II
CAT2	II	II	III	III	III	IV	III	II	III
CAT3	III	IV	IV	IV	IV	IV	IV	III	IV
CAT4	IV	V	V	V	V	V	V	III	V
CAT5	V	V	V	V	V	V	V	IV	V

Roman numbers in the table represent the extent groups from the Evacuation Zone Description table.

Maximum surge depths: Extent Group I: 0-7 feet; Extent Group II: 0-11 feet; Extent Group III: 0-16 feet; Extent Group IV: 0-20 feet; Extent Group V: 0- >20 feet).

Evacuation Zone Description

Zone	Description	Extent Group	Max Depth	Storms
1	Designated based on Groups I, II, II; FEMA 1% Annual Chance Storm; and roadway networks when possible.	**I**	7'	**TS:** W, WNW, NW, NNW, N, NE, ENE, E
		II	11'	**TS:** NNE **CAT 1:** ENE, W, WNW, NW, NNW, N, E **CAT 2:** ENE, W, WNW
		III	16'	**CAT 1:** NE, NNE, *CAT1-MOM* **CAT 2:** NNW, NW, E, NE, N **CAT 3:** ENE, W **CAT 4:** ENE
2	Based on Groups IV and V; FEMA 0.2 % Annual Chance Storm; and roadway networks when possible.	**IV**	20'	**CAT 2:** NNE, *CAT2-MOM* **CAT 3:** WNW, NNW, NW, E, NE, NNE, N, *CAT3-MOM* **CAT 4:** W **CAT 5:** ENE
		V	>20'	**CAT 4:** WNW, E, NW, NNW, N, NE, NNE, *CAT4-MOM* **CAT 5:** W, WNW, E, NW, NE, NNW, N, NNE, *CAT5-MOM*
3	Based off existing Zone 4, removing storm surge inundation.	N/A	N/A	N/A
4	Based off existing Zone 5, removing storm surge inundation.	N/A	N/A	N/A

MOBILE COUNTY, ALABAMA

Evacuation Zone Impacted by Storm Surge

Mobile County	Direction of Approach								
Hurricane Intensity	W	WNW	NW	NNW	N	NNE	NE	ENE	E
TS	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1
CAT1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1	EZ1
CAT2	EZ1	EZ1	EZ1	EZ1	EZ2	EZ2	EZ1	EZ1	EZ1
CAT3	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ1	EZ2
CAT4	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2
CAT5	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2	EZ2

EZ1 – Evacuation Zone 1; EZ2 – Evacuation Zone 2.

Storm Surge Groupings

Mobile County	Direction of Approach								
Hurricane Intensity	W	WNW	NW	NNW	N	NNE	NE	ENE	E
TS	I	II	II	II	II	II	I	I	II
CAT1	II	II	III	III	III	III	III	II	III
CAT2	III	III	III	III	IV	IV	III	II	III
CAT3	IV	IV	IV	V	V	V	IV	III	IV
CAT4	V	V	V	V	V	V	V	IV	V
CAT5	V	V	V	V	V	V	V	IV	V

Roman numbers in the table represent the extent groups from the Evacuation Zone Description table. Maximum surge depths: Group I: 0-7 feet; Group II: 0-11 feet; Group III: 0-16 feet; Group IV: 0-20 feet; Group V: 0->20 feet).

Evacuation Zone Description

Zone	Associated Storm	Description
1	Category 1 & 2	Consists of all areas of Mobile County south of Interstate 10. This includes Dauphin Island, residents of manufactured homes, low lying areas and flood prone areas anywhere in the County.
2	Category 1 & 2	Consists of all areas of Mobile County north of Interstate 10 and east of a line formed by Interstate 65 north to US. Highway 43 then north to the county line.
3	Category 3, 4 & 5	Consists of all areas of Mobile County north of Interstate10 but south of U.S. Highway 98/Moffatt Road and west of Interstate 65.
4	Category 3, 4 & 5	Consists of all areas of Mobile County north of U.S. Highway 98/Moffatt Road and west of a line formed by Interstate 65 north to U.S. Highway 43 then north to the County line.
1A	Category TS, 1 thru 5 OR Dauphin Island specific events called by the Mayor	Consists of Dauphin Island west end to St. Stephens Street. Dauphin Island will always evacuate during a TS or when any of the numbered evacuation zones 1-4 are called to evacuate. Certain storms and coastal events that do not affect the rest of Mobile County will cause problems on Dauphin Island.
1B		Consists of St. Stevens Street to Pelican Street on Dauphin Island. Dauphin Island will always evacuate during a TS or when any of the numbered evacuation zones 1-4 are called to evacuate. Certain storms and coastal events that do not affect the rest of Mobile County will cause problems on Dauphin Island.
1C		Consists of Pelican Street to Lemoyne Drive on Dauphin Island. Dauphin Island will always evacuate during a TS or when any of the numbered evacuation zones 1-4 are called to evacuate. Certain storms and coastal events that do not affect the rest of Mobile County will cause problems on Dauphin Island.
1D		Consists of east of Lemoyne Drive to the east end of Dauphin Island. Dauphin Island will always evacuate during a TS or when any of the numbered evacuation zones 1-4 are called to evacuate. Certain storms and coastal events that do not affect the rest of Mobile County will cause problems on Dauphin Island.

HANCOCK COUNTY, MISSISSIPPI

Evacuation Zone Impacted by Storm Surge

Hancock County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	EZA	EZA	EZA	EZA	EZA	EZA	EZA	EZA	EZA
CAT1	EZB	EZB	EZB	EZB	EZB	EZB	EZB	EZA	EZB
CAT2	EZC	EZC	EZC	EZC	EZC	EZB	EZB	EZB	EZC
CAT3	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC
CAT4	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC
CAT5	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC

EZA – Evacuation Zone A; EZB – Evacuation Zone B; EZC – Evacuation Zone C.

Storm Surge Groupings

Hancock County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	II	II	II	II	II	II	II	I	II
CAT1	III	III	III	III	III	III	III	II	III
CAT2	IV	IV	IV	IV	IV	III	III	III	IV
CAT3	V	V	V	V	V	IV	IV	IV	V
CAT4	V	V	V	V	V	V	V	V	V
CAT5	V	V	V	V	V	V	V	V	V

Roman numbers in the table represent the extent groups from the Evacuation Zone Description table. Maximum surge depths: Group I: 0-7 feet; Group II: 0-11 feet; Group III: 0-16 feet; Group IV: 0-20 feet; Group V: 0->20 feet).

Evacuation Zone Description

Zone	Description	Equivalent Storm Surge Inundation Extent Groups	Max Depth	Storms
A	**Based on extent Groups I and II, and roadway networks when possible.**	**I**	**7'**	**TS: ENE**
		II	**11'**	**TS: W, NNE, NE, N, E, WNW, NNW, NW** **CAT 1: ENE**
B	**Based on extent Groups III and IV, evacuation islands in Waveland and Bay St. Louis, and roadway networks when possible.**	**III**	**16'**	**CAT 1: W, NNE, NE, E, NNW, N, *CAT1-MOM*** **CAT 2: NNE, NE**
		IV	**20'**	**CAT 2: W, N, ENE, E, NNW, WNW, NW, *CAT2-MOM*** **CAT 3: NNE, NW**
C	**Based on extent Group V, evacuation islands in Diamondhead, and roadway networks/utility easements when possible.**	**V**	**>20'**	**CAT 3: WNW, W, NE, NNW, N, E, *CAT3-MOM*** **CAT 4: WNW, W, NW, NWW, NNE, NE N, ENE, E, *CAT4-MOM*** **CAT 5: WNW, W, NW, NNW, NNE, NE, N, ENE, E, *CAT5-MOM***

HARRISON COUNTY, MISSISSIPPI

Evacuation Zone Impacted by Storm Surge

Harrison County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	EZA	EZA	EZA	EZA	EZA	EZA	EZA	EZA	EZA
CAT1	EZB	EZB	EZB	EZB	EZB	EZB	EZA	EZA	EZB
CAT2	EZB	EZC	EZC	EZC	EZC	EZC	EZB	EZB	EZB
CAT3	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZB	EZC
CAT4	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC
CAT5	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC

EZA – Evacuation Zone A; EZB – Evacuation Zone B; EZC – Evacuation Zone C.

Storm Surge Groupings

Harrison County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	II	II	II	II	II	II	II	I	II
CAT1	III	III	III	III	III	III	II	II	III
CAT2	III	IV	IV	IV	IV	IV	III	III	III
CAT3	V	V	V	V	V	V	IV	III	IV
CAT4	V	V	V	V	V	V	V	IV	V
CAT5	V	V	V	V	V	V	V	V	V

Roman numbers in the table represent the extent groups from the Evacuation Zone Description table. Maximum surge depths: Group I: 0-7 feet; Group II: 0-11 feet; Group III: 0-16 feet; Group IV: 0-20 feet; Group V: 0->20 feet).

Evacuation Zone Description

Zone	Description	Equivalent Storm Surge Inundation Extent Groups	Max Depth	Storms
A	**Based on extent Groups I and II, and roadway networks when possible.**	**I**	**7'**	**TS: ENE**
		II	**11'**	**TS: W, NNE, NE, N, E, WNW, NNW, NW** **CAT 1: ENE**
B	**Based on extent Groups III and IV, evacuation islands in Waveland and Bay St. Louis, and roadway networks when possible.**	**III**	**16'**	**CAT 1: W, NNE, NE, E, NNW, N, *CAT1-MOM*** **CAT 2: NNE, NE**
		IV	**20'**	**CAT 2: W, N, ENE, E, NNW, WNW, NW, *CAT2-MOM*** **CAT 3: NNE, NW**
C	**Based on extent Group V, evacuation islands in Diamondhead, and roadway networks/utility easements when possible.**	**V**	**>20'**	**CAT 3: WNW, W, NE, NNW, N, E, *CAT3-MOM*** **CAT 4: WNW, W, NW, NWW, NNE, NE N, ENE, E, *CAT4-MOM*** **CAT 5: WNW, W, NW, NNW, NNE, NE, N, ENE, E, *CAT5-MOM***

JACKSON COUNTY, MISSISSIPPI

Evacuation Zone Impacted by Storm Surge

Jackson County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	EZA	EZA	EZA	EZA	EZA	EZA	EZA	EZA	EZA
CAT1	EZA	EZB	EZB	EZB	EZB	EZB	EZA	EZA	EZA
CAT2	EZB	EZC	EZC	EZB	EZC	EZC	EZB	EZA	EZB
CAT3	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZB	EZC
CAT4	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC
CAT5	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC	EZC

EZA – Evacuation Zone A; EZB – Evacuation Zone B; EZC – Evacuation Zone C.

Storm Surge Groupings

Jackson County	Direction of Approach								
Hurricane Intensity	**W**	**WNW**	**NW**	**NNW**	**N**	**NNE**	**NE**	**ENE**	**E**
TS	II	II	II	II	II	II	I	I	I
CAT1	II	III	III	III	III	III	II	II	II
CAT2	III	IV	IV	III	V	IV	III	II	III
CAT3	IV	V	V	V	V	V	IV	III	IV
CAT4	V	V	V	V	V	V	V	IV	V
CAT5	V	V	V	V	V	V	V	IV	V

Roman numbers in the table represent the extent groups from the Evacuation Zone Description table. Maximum surge depths: Group I: 0-7 feet; Group II: 0-11 feet; Group III: 0-16 feet; Group IV: 0-20 feet; Group V: 0->20 feet).

Evacuation Zone Description

Zone	Storm Surge	Description
A	Category 2	South of Hwy 90 from the Alabama state line west through Ocean Springs. North of Ocean Springs up Hwy 609 / Washington Ave. on the west side up to Lemoyne Blvd. then west to the Harrison County line covering everything south of Lemoyne and west of Hwy 609 / Washington Ave.
B	Category 3	South of I-10 from the Harrison County line going east until it gets to the East Pascagoula River, then up north to a line where Hwy 613 and Hwy 63 intersect, then continuing north up Hwy 613 to Saracennia Rd. intersection, then south approx. half mile to Nutbank Rd., then east on Nutbank Rd. to Lily Orchard Rd. From there, the boundary extends across the Escatawpa River to the intersection of Forts Lake Rd. and Maples Ln.
C	Category 5	Starting from the Forts Lake Rd. and Alabama state line west across to Hwy 613 / Carters Rd., west to Hwy 63 /Lampkin Rd., continuing west across the river to Poticaw Bayou Rd. to the Hwy 57 intersection. South on Hwy 57 to Humphrey Rd., west on Humphrey to Old Ft. Bayou Rd., then south to I-10. The western portion of C zone is north up Tucker Rd. to McClellan Rd., then west to the Harrison County line.

APPENDIX C Evacuation Scenarios – Clearance Time Results

*See the attached Excel workbook (ALMS_HES_ScenarioTracker_RtePM.xlsx) for the combination of inputs and outputs, and the ability to filter the scenarios "by color."

Scenario	GROUPING	Alabama										Mississippi												HURRICANE INTENSITY					Participation Rate			Include Louisiana?		Include Florida?		Background Traffic		Seasonal			One Day Response Curve			Contraflow		Clearance Time (hrs)	Evacuating Vehicles	Evacuating Population
			Evacuation Zones					Evacuation Zones					Evacuation Zones				Evacuation Zones				Evacuation Zones																											
		Baldwin	EZ1	EZ2	EZ3	EZ4	Mobile	EZ1	EZ2	EZ3	EZ4	Hancock	EZA	EZB	EZC	Harrison	EZA	EZB	EZC	Jackson	EZA	EZB	EZC	CAT1	CAT2	CAT3	CAT4	CAT5	Low	Med	High	YES	NO	YES	NO	Low	High	Low	Med	High	Slow	Med	Fast	With	W/O			
ALMS-001	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																																			7	29,196	63,899
ALMS-002	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																																			10	48,153	106,023
ALMS-003	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			25	189,088	373,551
ALMS-004	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																																			7	33,353	71,478
ALMS-005	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																																			11	64,118	135,747
ALMS-006	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			25	189,088	373,551
ALMS-007	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			11	65,021	129,170
ALMS-008	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			17	119,295	237,485
ALMS-009	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			30	235,410	458,600
ALMS-010	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																																			7	29,196	63,899
ALMS-011	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																																			9	48,153	106,023
ALMS-012	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			24	189,088	373,551
ALMS-013	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																																			7	33,353	71,478
ALMS-014	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																																			10	64,118	135,747
ALMS-015	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			24	189,088	373,551
ALMS-016	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			11	65,021	129,170
ALMS-017	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			16	119,295	237,485
ALMS-018	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			29	235,410	458,600
ALMS-019	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																																			29	160,971	327,437
ALMS-020	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																																			30	179,928	369,561
ALMS-021	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			38	320,863	637,089
ALMS-022	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																																			29	165,128	335,016
ALMS-023	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																																			30	195,893	399,285
ALMS-024	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			37	320,863	637,089
ALMS-025	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			31	196,796	392,708
ALMS-026	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			33	251,070	501,023
ALMS-027	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			41	367,185	722,138
ALMS-028	ALABAMA		15%	10%	5%	5%		10%	10%	5%	5%																																			28	160,971	327,437
ALMS-029	ALABAMA		20%	15%	10%	5%		20%	15%	10%	5%																																			29	179,928	369,561
ALMS-030	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			37	320,863	637,089
ALMS-031	ALABAMA		15%	10%	10%	5%		15%	10%	5%	5%																																			29	165,128	335,016
ALMS-032	ALABAMA		25%	20%	15%	5%		25%	20%	15%	10%																																			30	195,893	399,285
ALMS-033	ALABAMA		70%	65%	60%	55%		55%	50%	45%	40%																																			37	320,863	637,089
ALMS-034	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			30	196,796	392,708
ALMS-035	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			33	251,070	501,023
ALMS-036	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			40	367,185	722,138
ALMS-037	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			12	65,021	129,170
ALMS-038	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			17	119,295	237,485
ALMS-039	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			31	235,410	458,600
ALMS-040	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			11	65,021	129,170
ALMS-041	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			17	119,295	237,485
ALMS-042	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			30	235,410	458,600
ALMS-043	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			31	196,796	392,708
ALMS-044	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			33	251,070	501,023
ALMS-045	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			41	367,185	722,138
ALMS-046	ALABAMA		50%	35%	20%	10%		35%	20%	5%	5%																																			30	196,796	392,708
ALMS-047	ALABAMA		50%	45%	35%	20%		40%	35%	30%	15%																																			33	251,070	501,023
ALMS-048	ALABAMA		90%	85%	80%	75%		65%	60%	55%	50%																																			41	367,185	722,138
ALMS-049	ALABAMA		50%	40%	25%	10%		35%	25%	10%	5%																																			12	76,802	151,071
ALMS-050	ALABAMA		65%	60%	50%	35%		55%	50%	45%	25%																																			22	168,704	329,182
ALMS-051	ALABAMA		100%	95%	90%	85%		75%	70%	65%	55%																																			34	267,805	518,680
ALMS-052	ALABAMA		55%	50%	25%	15%		40%	30%	10%	5%																																			13	85,618	167,247
ALMS-053	ALABAMA		70%	65%	55%	40%		60%	55%	50%	30%																																			23	185,750	360,800
ALMS-054	ALABAMA		100%	95%	90%	85%		80%	75%	70%	60%																																			34	278,701	539,385
ALMS-055	ALABAMA		50%	40%	25%	10%		35%	25%	10%	5%																																			31	208,577	414,609
ALMS-056	ALABAMA		65%	60%	50%	35%		55%	50%	45%	25%																																			36	300,479	592,720
ALMS-057	ALABAMA		100%	95%	90%	85%		75%	70%	65%	55%																																			43	399,580	782,218
ALMS-058	ALABAMA		55%	50%	25%	15%		40%	30%	10%	5%																																			32	217,393	430,785
ALMS-059	ALABAMA		70%	65%	55%	40%		60%	55%	50%	30%																																			36	317,525	624,338
ALMS-060	ALABAMA		100%	95%	90%	85%		80%	75%	70%	60%																																			43	410,476	802,293
ALMS-061	MISSISSIPPI												40%	30%	15%		15%	25%	20%		20%	25%	15%																							10	40,403	77,281
ALMS-062	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							12	54,241	110,780
ALMS-063	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							15	116,313	230,469
ALMS-064	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							11	47,030	89,146
ALMS-065	MISSISSIPPI												65%	50%	30%		25%	30%	30%		35%	35%	25%																							12	67,431	134,124
ALMS-066	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							15	116,313	230,469
ALMS-067	MISSISSIPPI												75%	70%	50%		75%	60%	50%		60%	60%	35%																							14	98,594	182,647
ALMS-068	MISSISSIPPI												75%	70%	55%		80%	75%	65%		75%	70%	50%																							16	124,169	238,270
ALMS-069	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%																							17	147,619	287,099
ALMS-070	MISSISSIPPI												40%	30%	15%		15%	25%	20%		20%	25%	15%																							10	40,403	77,281
ALMS-071	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							10	54,241	110,780
ALMS-072	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							14	116,313	230,469
ALMS-073	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							11	47,030	89,146
ALMS-074	MISSISSIPPI												65%	50%	30%		25%	30%	30%		35%	35%	25%																							11	67,431	134,124
ALMS-075	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							14	116,313	230,469
ALMS-076	MISSISSIPPI												75%	70%	50%		75%	60%	50%		60%	60%	35%																							12	98,594	182,647
ALMS-077	MISSISSIPPI												75%	70%	55%		80%	75%	65%		75%	70%	50%																							14	124,169	238,270
ALMS-078	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%																							17	147,619	287,099
ALMS-079	MISSISSIPPI												40%	30%	15%		15%	25%	20%		20%	25%	15%																							7	40,403	77,281
ALMS-080	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							8	54,241	110,780
ALMS-081	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							14	116,313	230,469
ALMS-082	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							8	47,030	89,146
ALMS-083	MISSISSIPPI												65%	50%	30%		25%	30%	30%		35%	35%	25%																							10	67,431	134,124
ALMS-084	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							14	116,313	230,469
ALMS-085	MISSISSIPPI												75%	70%	50%		75%	60%	50%		60%	60%	35%																							12	98,594	182,647
ALMS-086	MISSISSIPPI												75%	70%	55%		80%	75%	65%		75%	70%	50%																							15	124,169	238,270
ALMS-087	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%																							16	147,619	287,099
ALMS-088	MISSISSIPPI												40%	30%	15%		15%	25%	20%		20%	25%	15%																							31	391,674	779,896
ALMS-089	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							30	405,512	813,395
ALMS-090	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							31	467,584	933,084
ALMS-091	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							30	398,301	791,761
ALMS-092	MISSISSIPPI												65%	50%	30%		25%	30%	30%		35%	35%	25%																							30	418,702	836,739
ALMS-093	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							31	467,584	933,084
ALMS-094	MISSISSIPPI												75%	70%	50%		75%	60%	50%		60%	60%	35%																							32	449,865	885,262
ALMS-095	MISSISSIPPI												75%	70%	55%		80%	75%	65%		75%	70%	50%																							31	475,440	940,885
ALMS-096	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%																							44	498,890	989,714
ALMS-097	MISSISSIPPI												40%	30%	15%		15%	25%	20%		20%	25%	15%																							31	391,674	779,896
ALMS-098	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							31	405,512	813,395
ALMS-099	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							31	467,584	933,084
ALMS-100	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							31	398,301	791,761
ALMS-101	MISSISSIPPI												65%	50%	30%		25%	30%	30%		35%	35%	25%																							32	418,702	836,739
ALMS-102	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							31	467,584	933,084
ALMS-103	MISSISSIPPI												75%	70%	50%		75%	60%	50%		60%	60%	35%																							31	449,865	885,262
ALMS-104	MISSISSIPPI												75%	70%	55%		80%	75%	65%		75%	70%	50%																							32	475,440	940,885
ALMS-105	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%																							42	498,890	989,714
ALMS-106	MISSISSIPPI												40%	30%	15%		15%	25%	20%		20%	25%	15%																							31	391,674	779,896
ALMS-107	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							30	405,512	813,395
ALMS-108	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							30	467,584	933,084
ALMS-109	MISSISSIPPI												50%	35%	20%		20%	25%	25%		25%	25%	20%																							30	398,301	791,761
ALMS-110	MISSISSIPPI												65%	50%	30%		25%	30%	30%		35%	35%	25%																							30	418,702	836,739
ALMS-111	MISSISSIPPI												75%	70%	65%		55%	60%	60%		60%	60%	55%																							31	467,584	933,084
ALMS-112	MISSISSIPPI												75%	70%	50%		75%	60%	50%		60%	60%	35%																							30	449,865	885,262
ALMS-113	MISSISSIPPI												75%	70%	55%		80%	75%	65%		75%	70%	50%																							32	475,440	940,885
ALMS-114	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%																							44	498,890	989,714
ALMS-115	MISSISSIPPI												80%	75%	60%		75%	70%	55%		70%	65%	45%																							30	459,961	903,474
ALMS-116	MISSISSIPPI												95%	90%	90%		85%	75%	75%		80%	75%	60%																							30	489,867	966,219
ALMS-117	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							30	505,716	1,002,207
ALMS-118	MISSISSIPPI												85%	80%	65%		75%	70%	65%		75%	70%	55%																							30	469,778	921,385
ALMS-119	MISSISSIPPI												95%	90%	90%		85%	80%	80%		85%	80%	65%																							29	496,183	977,927
ALMS-120	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							30	505,716	1,002,207
ALMS-121	MISSISSIPPI												80%	75%	60%		75%	70%	55%		70%	65%	45%																							30	459,961	903,474
ALMS-122	MISSISSIPPI												95%	90%	90%		85%	75%	75%		80%	75%	60%																							30	489,867	966,219
ALMS-123	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							30	505,716	1,002,207
ALMS-124	MISSISSIPPI												85%	80%	65%		75%	70%	65%		75%	70%	55%																							29	469,778	921,385
ALMS-125	MISSISSIPPI												95%	90%	90%		85%	80%	80%		85%	80%	65%																							30	496,183	977,927
ALMS-126	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							30	505,716	1,002,207
ALMS-127	MISSISSIPPI												80%	75%	60%		75%	70%	55%		70%	65%	45%																							30	459,961	903,474
ALMS-128	MISSISSIPPI												95%	90%	90%		85%	75%	75%		80%	75%	60%																							30	489,867	966,219
ALMS-129	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							30	505,716	1,002,207
ALMS-130	MISSISSIPPI												85%	80%	65%		75%	70%	65%		75%	70%	55%																							29	469,778	921,385
ALMS-131	MISSISSIPPI												95%	90%	90%		85%	80%	80%		85%	80%	65%																							30	496,183	977,927
ALMS-132	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							30	505,716	1,002,207
ALMS-133	MISSISSIPPI												80%	75%	60%		75%	70%	55%		70%	65%	45%																							14	108,690	200,859
ALMS-134	MISSISSIPPI												95%	90%	90%		85%	75%	75%		80%	75%	60%																							16	138,596	263,604
ALMS-135	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							16	154,445	299,592
ALMS-136	MISSISSIPPI												85%	80%	65%		75%	70%	65%		75%	70%	55%																							15	118,507	218,770
ALMS-137	MISSISSIPPI												95%	90%	90%		85%	80%	80%		85%	80%	65%																							15	144,912	275,312
ALMS-138	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							16	154,445	299,592
ALMS-139	MISSISSIPPI												80%	75%	60%		75%	70%	55%		70%	65%	45%																							12	108,690	200,859
ALMS-140	MISSISSIPPI												95%	90%	90%		85%	75%	75%		80%	75%	60%																							15	138,596	263,604
ALMS-141	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							16	154,445	299,592
ALMS-142	MISSISSIPPI												85%	80%	65%		75%	70%	65%		75%	70%	55%																							14	118,507	218,770
ALMS-143	MISSISSIPPI												95%	90%	90%		85%	80%	80%		85%	80%	65%																							16	144,912	275,312
ALMS-144	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							16	154,445	299,592
ALMS-145	MISSISSIPPI												80%	75%	60%		75%	70%	55%		70%	65%	45%																							13	108,690	200,859
ALMS-146	MISSISSIPPI												95%	90%	90%		85%	75%	75%		80%	75%	60%																							15	138,596	263,604
ALMS-147	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							17	154,445	299,592
ALMS-148	MISSISSIPPI												85%	80%	65%		75%	70%	65%		75%	70%	55%																							14	118,507	218,770
ALMS-149	MISSISSIPPI												95%	90%	90%		85%	80%	80%		85%	80%	65%																							16	144,912	275,312
ALMS-150	MISSISSIPPI												95%	90%	90%		85%	80%	80%		90%	85%	75%																							17	154,445	299,592
ALMS-151	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							12	185,492	351,930
ALMS-152	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							17	307,300	592,786
ALMS-153	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							22	422,250	818,272
ALMS-154	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							13	204,125	386,017
ALMS-155	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							18	330,662	636,112
ALMS-156	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							22	433,146	838,977
ALMS-157	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							14	185,492	351,930
ALMS-158	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							18	307,300	592,786
ALMS-159	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							28	422,250	818,272
ALMS-160	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							15	204,125	386,017
ALMS-161	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							20	330,662	636,112
ALMS-162	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							29	433,146	838,977
ALMS-163	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							30	668,538	1,318,083
ALMS-164	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							33	790,346	1,558,939
ALMS-165	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							41	905,296	1,784,425
ALMS-166	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							30	687,171	1,352,170
ALMS-167	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							34	813,708	1,602,265
ALMS-168	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							43	916,192	1,805,130
ALMS-169	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							30	668,538	1,318,083
ALMS-170	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							35	790,346	1,558,939
ALMS-171	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							40	905,296	1,784,425
ALMS-172	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							31	687,171	1,352,170
ALMS-173	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							35	813,708	1,602,265
ALMS-174	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							40	916,192	1,805,130
ALMS-175	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							14	185,492	351,930
ALMS-176	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							17	307,300	592,786
ALMS-177	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							22	422,250	818,272
ALMS-178	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							14	204,125	386,017
ALMS-179	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							18	330,662	636,112
ALMS-180	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							23	433,146	838,977
ALMS-181	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							14	185,492	351,930
ALMS-182	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							19	307,300	592,786
ALMS-183	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							28	422,250	818,272
ALMS-184	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							15	204,125	386,017
ALMS-185	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							19	330,662	636,112
ALMS-186	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							28	433,146	838,977
ALMS-187	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							30	668,538	1,318,083
ALMS-188	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							33	790,346	1,558,939
ALMS-189	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							39	905,296	1,784,425
ALMS-190	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							31	687,171	1,352,170
ALMS-191	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							33	813,708	1,602,265
ALMS-192	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							38	916,192	1,805,130
ALMS-193	REGIONAL		50%	40%	25%	10%		35%	25%	10%	5%		80%	75%	60%		75%	70%	55%		70%	65%	45%																							31	668,538	1,318,083
ALMS-194	REGIONAL		65%	60%	50%	35%		55%	50%	45%	25%		95%	90%	90%		85%	75%	75%		80%	75%	60%																							35	790,346	1,558,939
ALMS-195	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							40	905,296	1,784,425
ALMS-196	REGIONAL		55%	50%	25%	15%		40%	30%	10%	5%		85%	80%	65%		75%	70%	65%		75%	70%	55%																							31	687,171	1,352,170
ALMS-197	REGIONAL		70%	65%	55%	40%		60%	55%	50%	30%		95%	90%	90%		85%	80%	80%		85%	80%	65%																							35	813,708	1,602,265
ALMS-198	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%																							40	916,192	1,805,130
ALMS-199	MOBILE-JACKSON							10%	10%	5%	5%										20%	25%	15%																							10	31,157	61,872
ALMS-200	MOBILE-JACKSON							20%	15%	10%	5%										25%	25%	20%																							10	45,058	90,161
ALMS-201	MOBILE-JACKSON							55%	50%	45%	40%										60%	60%	55%																							19	145,087	279,812
ALMS-202	MOBILE-JACKSON							15%	10%	5%	5%										25%	25%	20%																							11	34,421	67,892
ALMS-203	MOBILE-JACKSON							25%	20%	15%	10%										35%	35%	25%																							11	62,040	121,828
ALMS-204	MOBILE-JACKSON							55%	50%	45%	40%										60%	60%	55%																							19	145,087	279,812
ALMS-205	MOBILE-JACKSON							35%	20%	5%	5%										60%	60%	35%																							13	66,791	127,264
ALMS-206	MOBILE-JACKSON							40%	35%	30%	15%										75%	70%	50%																							17	114,755	219,655
ALMS-207	MOBILE-JACKSON							65%	60%	55%	50%										85%	80%	70%																							23	180,903	346,453
ALMS-208	MOBILE-JACKSON							35%	25%	10%	5%										70%	65%	45%																							14	79,671	151,218
ALMS-209	MOBILE-JACKSON							55%	50%	45%	25%										80%	75%	60%																							20	149,356	285,060
ALMS-210	MOBILE-JACKSON							75%	70%	65%	55%										90%	85%	75%																							25	204,266	390,510
ALMS-211	MOBILE-JACKSON							40%	30%	10%	5%										75%	70%	55%																							15	87,445	165,618
ALMS-212	MOBILE-JACKSON							60%	55%	50%	30%										85%	80%	65%																							21	163,486	311,567
ALMS-213	MOBILE-JACKSON							80%	75%	70%	60%										90%	85%	75%																							26	215,162	411,215
ALMS-214	MOBILE-JACKSON							35%	25%	10%	5%										70%	65%	45%																							14	79,671	151,218
ALMS-215	MOBILE-JACKSON							55%	50%	45%	25%										80%	75%	60%																							20	149,356	285,060
ALMS-216	MOBILE-JACKSON							75%	70%	65%	55%										90%	85%	75%																							24	204,266	390,510
ALMS-217	MOBILE-JACKSON							40%	30%	10%	5%										75%	70%	55%																							15	87,445	165,618
ALMS-218	MOBILE-JACKSON							60%	55%	50%	30%										85%	80%	65%																							21	163,486	311,567
ALMS-219	MOBILE-JACKSON							80%	75%	70%	60%										90%	85%	75%																							26	215,162	411,215
ALMS-220	BALDWIN-FLORIDA		50%	35%	20%	10%																																								32	167,401	333,307
ALMS-221	BALDWIN-FLORIDA		50%	45%	35%	20%																																								33	182,824	366,624
ALMS-222	BALDWIN-FLORIDA		90%	85%	80%	75%																																								38	240,640	475,882
ALMS-223	BALDWIN-FLORIDA		50%	35%	20%	10%																																								31	167,401	333,307
ALMS-224	BALDWIN-FLORIDA		50%	45%	35%	20%																																								32	182,824	366,624
ALMS-225	BALDWIN-FLORIDA		90%	85%	80%	75%																																								38	240,640	475,882
ALMS-226	BALDWIN-FLORIDA		50%	40%	25%	10%																																								31	171,366	340,368
ALMS-227	BALDWIN-FLORIDA		65%	60%	50%	35%																																								34	201,223	399,375
ALMS-228	BALDWIN-FLORIDA		100%	95%	90%	85%																																								40	252,900	497,716
ALMS-229	BALDWIN-FLORIDA		55%	50%	25%	15%																																								32	175,996	348,604
ALMS-230	BALDWIN-FLORIDA		70%	65%	55%	40%																																								35	207,357	410,292
ALMS-231	BALDWIN-FLORIDA		100%	95%	90%	85%																																								39	252,900	497,716
ALMS-232	BALDWIN-FLORIDA		50%	40%	25%	10%																																								31	171,366	340,368
ALMS-233	BALDWIN-FLORIDA		65%	60%	50%	35%																																								34	201,223	399,375
ALMS-234	BALDWIN-FLORIDA		100%	95%	90%	85%																																								39	252,900	497,716
ALMS-235	BALDWIN-FLORIDA		55%	50%	25%	15%																																								32	175,996	348,604
ALMS-236	BALDWIN-FLORIDA		70%	65%	55%	40%																																								34	207,357	410,292
ALMS-237	BALDWIN-FLORIDA		100%	95%	90%	85%																																								40	252,900	497,716
ALMS-238	ALABAMA		50%	40%	25%	10%		35%	25%	10%	5%																																			31	208,577	414,609

ALMS-239	ALABAMA		65%	60%	50%	35%		55%	50%	45%	25%													36	300,479	592,720
ALMS-240	ALABAMA		100%	95%	90%	85%		75%	70%	65%	55%													43	399,580	782,218
ALMS-241	ALABAMA		55%	50%	25%	15%		40%	30%	10%	5%													32	217,393	430,785
ALMS-242	ALABAMA		70%	65%	55%	40%		60%	55%	50%	30%													36	317,525	624,338
ALMS-243	ALABAMA		100%	95%	90%	85%		80%	75%	70%	60%													43	410,476	802,923
ALMS-244	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%	32	498,890	989,714
ALMS-245	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%	31	498,890	989,714
ALMS-246	MISSISSIPPI												90%	90%	90%		80%	80%	75%		85%	80%	70%	32	498,890	989,714
ALMS-247	REGIONAL		100%	95%	90%	85%		75%	70%	65%	55%		95%	90%	90%		85%	80%	80%		90%	85%	75%	38	905,296	1,784,425
ALMS-248	REGIONAL		100%	95%	90%	85%		80%	75%	70%	60%		95%	90%	90%		85%	80%	80%		90%	85%	75%	39	916,192	1,805,130
ALMS-249	COUNTYWIDE		70%																					8.0	16,658	36,943
ALMS-250	COUNTYWIDE		70%	65%																				12.0	35,172	73,526
ALMS-251	COUNTYWIDE		70%	65%	55%																			17.0	65,596	127,838
ALMS-252	COUNTYWIDE		70%	65%	55%	40%																		20.0	75,060	145,829
ALMS-253	COUNTYWIDE							60%																7.0	17,227	33,225
ALMS-254	COUNTYWIDE							60%	55%															14.0	47,782	92,516
ALMS-255	COUNTYWIDE							60%	55%	50%														27.0	100,008	193,908
ALMS-256	COUNTYWIDE							60%	55%	50%	30%													28.0	110,209	214,133
ALMS-257	COUNTYWIDE												95%											8.0	9,509	15,290
ALMS-258	COUNTYWIDE												95%	90%										8.0	19,442	31,033
ALMS-259	COUNTYWIDE												95%	90%	90%									8.0	22,193	35,378
ALMS-260	COUNTYWIDE																85%							8.0	15,348	34,911
ALMS-261	COUNTYWIDE																85%	80%						8.0	28,176	63,121
ALMS-262	COUNTYWIDE																85%	80%	80%					12.0	69,401	142,413
ALMS-263	COUNTYWIDE																				85%			9.0	25,566	46,548
ALMS-264	COUNTYWIDE																				85%	80%		21.0	48,396	88,355
ALMS-265	COUNTYWIDE																				85%	80%	65%	22.0	53,318	97,521