

Question 23 – Hurricane Preparedness

- A. 1. Identify any residential development proposed within the hurricane vulnerability zone delineated in the applicable regional hurricane evacuation study, regional public hurricane shelter study or adopted county peacetime emergency plan. If so, delineate the proposed development's location on the appropriate county and/or regional hurricane evacuation map and respond to questions B.(1) and B.(2) below. Proposed mobile home and park trailer developments should answer question B.(1), regardless of location, or answer questions B.(1) and B.(2) below, if proposed within the hurricane vulnerability zone or the high hazard hurricane evacuation area.**

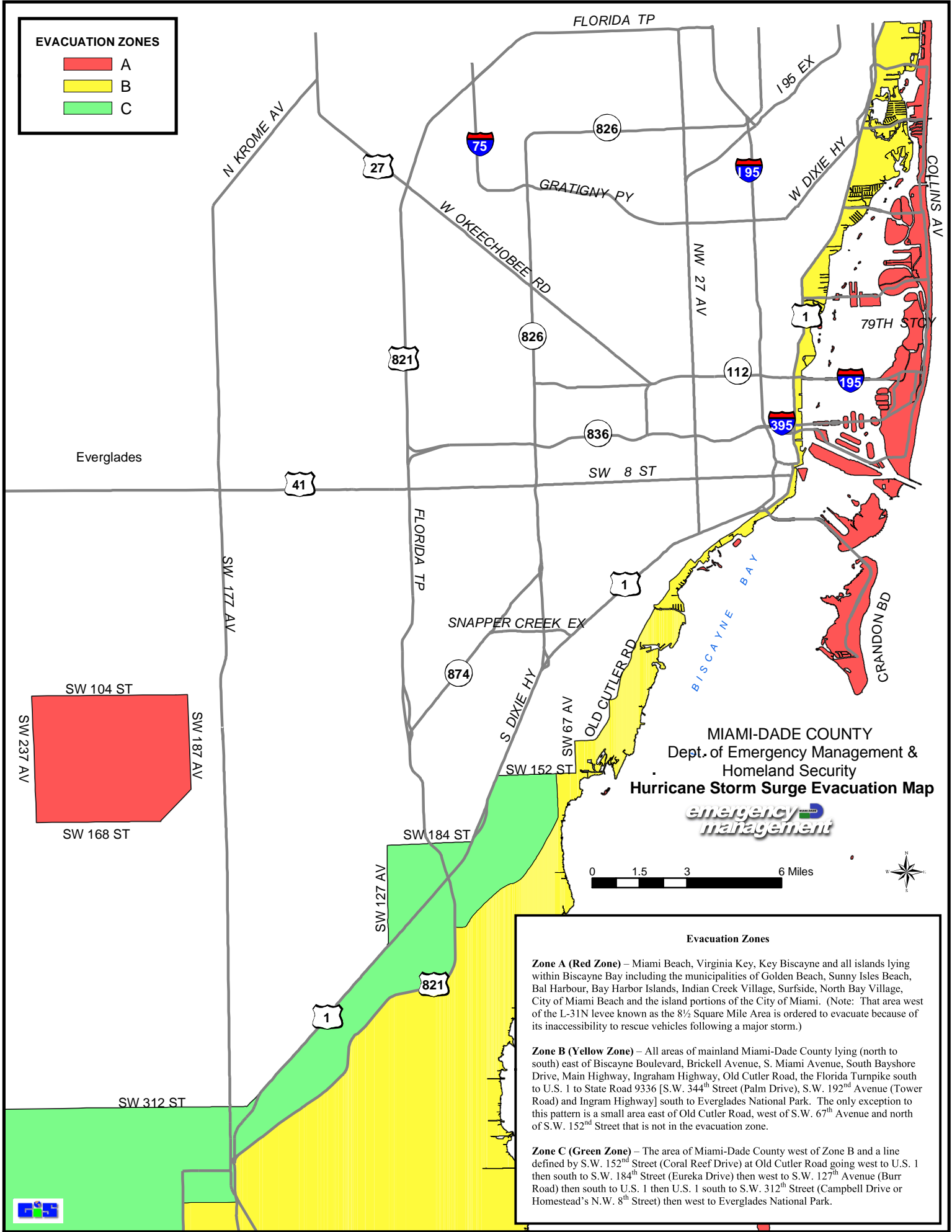
Pursuant to the Miami-Dade County Department of Emergency Management & Homeland Security Hurricane Storm Surge Evacuation Map which is attached herein as **Exhibit 23-1**, no portion of the SEOPW DRI project area is located within the Miami-Dade County Office of Emergency Management Hurricane Storm Surge Evacuation Zones. The SEOPW DRI project area lies westward of Biscayne Boulevard, which is the western boundary of Evacuation Zone B (the yellow zone) on the Hurricane Storm Surge Evacuation Map.

Using the Storm Tide Zone Map for the SEOPW DRI (see **Exhibit 23-2**) which has been obtained from the Statewide Regional Evacuation Studies Program, the majority of the land located within the SEOPW DRI falls outside the storm surge estimates based upon projected water levels for Category 1 through 5 storms. The ground elevation points of reference in **Exhibit 23-2** indicate that the land within the SEOPW DRI varies from a high of 13.2' and 12.3' in the center of the DRI, to a low of 6.095', 7.614' and 8.392' along NE 2 Avenue at the Metromover Stations. At the southern edge of the DRI boundary along NW/NE 5 Street, the ground elevations measure 10.495' and 10.22'. All of the measurements above 9.0' (for this general area) fall outside of the storm tide levels for Category 1 to 5 storms. Pursuant **Exhibit 23-3** showing the DRI boundary and TAZ boundaries superimposed upon the Storm Tide Map, the area between Biscayne Boulevard and NE 2 Avenue may experience storm tides during Category 3 to 5 storms however most of this area is already developed with high rise dwelling units that were built as part of Increments I and II of the SEOPW DRI (see **Exhibit 23-4**). In the southwest corner of the DRI boundary between NW 3 Avenue and NW 1 Court, the land area may experience storm tides during the Category 5 storms, where several government offices currently exist and where the remainder of this area has received a MUSP approval that was entitled as part of Increment II of the SEOPW DRI.

The majority of the Increment III development program is located outside of the areas delineated by the Storm Tide Zones. For the purpose of this analysis however, 400 dwelling units were estimated for location in TAZ 3213 / Project Zone 4171, which is located to the west of NE 2 Avenue, south of I-395, located in the area that is the closest to rising tides for a Category 3 or 4 storm (see **Exhibits 23-3 and 23-4**).

EVACUATION ZONES

- A
- B
- C



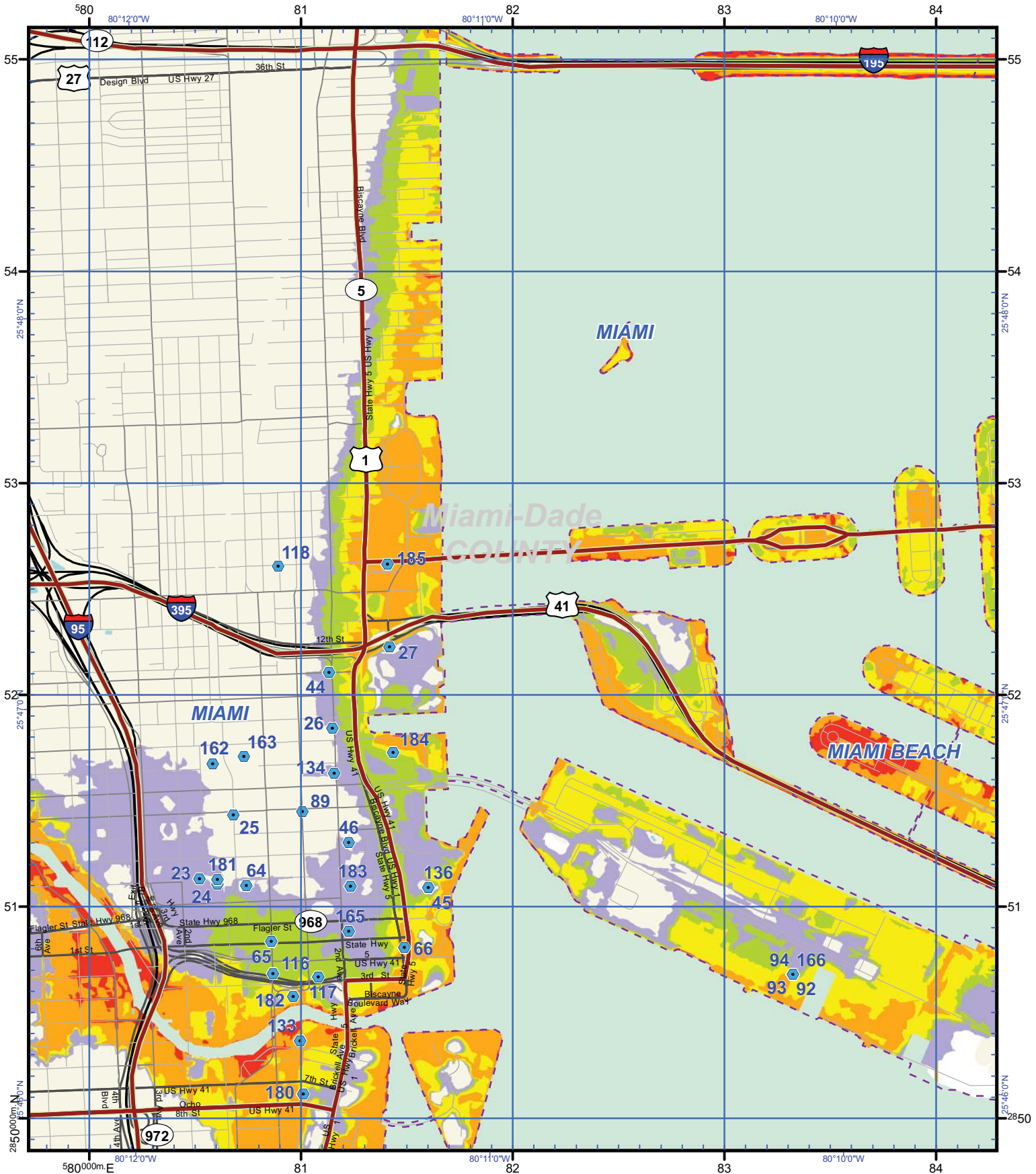
MIAMI-DADE COUNTY
 Dept. of Emergency Management &
 Homeland Security
Hurricane Storm Surge Evacuation Map
emergency management

Evacuation Zones

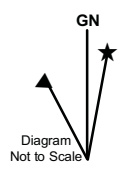
Zone A (Red Zone) – Miami Beach, Virginia Key, Key Biscayne and all islands lying within Biscayne Bay including the municipalities of Golden Beach, Sunny Isles Beach, Bal Harbour, Bay Harbor Islands, Indian Creek Village, Surfside, North Bay Village, City of Miami Beach and the island portions of the City of Miami. (Note: That area west of the L-31N levee known as the 8½ Square Mile Area is ordered to evacuate because of its inaccessibility to rescue vehicles following a major storm.)

Zone B (Yellow Zone) – All areas of mainland Miami-Dade County lying (north to south) east of Biscayne Boulevard, Brickell Avenue, S. Miami Avenue, South Bayshore Drive, Main Highway, Ingraham Highway, Old Cutler Road, the Florida Turnpike south to U.S. 1 to State Road 9336 [S.W. 344th Street (Palm Drive), S.W. 192nd Avenue (Tower Road) and Ingram Highway] south to Everglades National Park. The only exception to this pattern is a small area east of Old Cutler Road, west of S.W. 67th Avenue and north of S.W. 152nd Street that is not in the evacuation zone.

Zone C (Green Zone) – The area of Miami-Dade County west of Zone B and a line defined by S.W. 152nd Street (Coral Reef Drive) at Old Cutler Road going west to U.S. 1 then south to S.W. 184th Street (Eureka Drive) then west to S.W. 127th Avenue (Burr Road) then south to U.S. 1 then U.S. 1 south to S.W. 312th Street (Campbell Drive or Homestead's N.W. 8th Street) then west to Everglades National Park.



US National Grid
 100,000-m Square ID
NJ
 Grid Zone Designation
17R
 Datum = NAD 1983, 1,000-m USNG



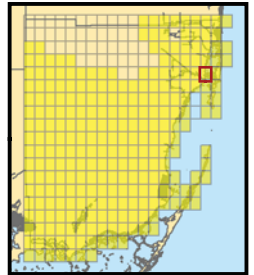
Notes:
 1. Surge limits are based on still water storm tide height elevation above NAVD88 at high tide with no wave setup.
 2. Total Storm Tide limits were derived from Maximum of Maximums surge heights over LIDAR based digital elevation.
 3. The Points of Reference are locations determined to be relevant to emergency management officials.

ATLAS LEGEND

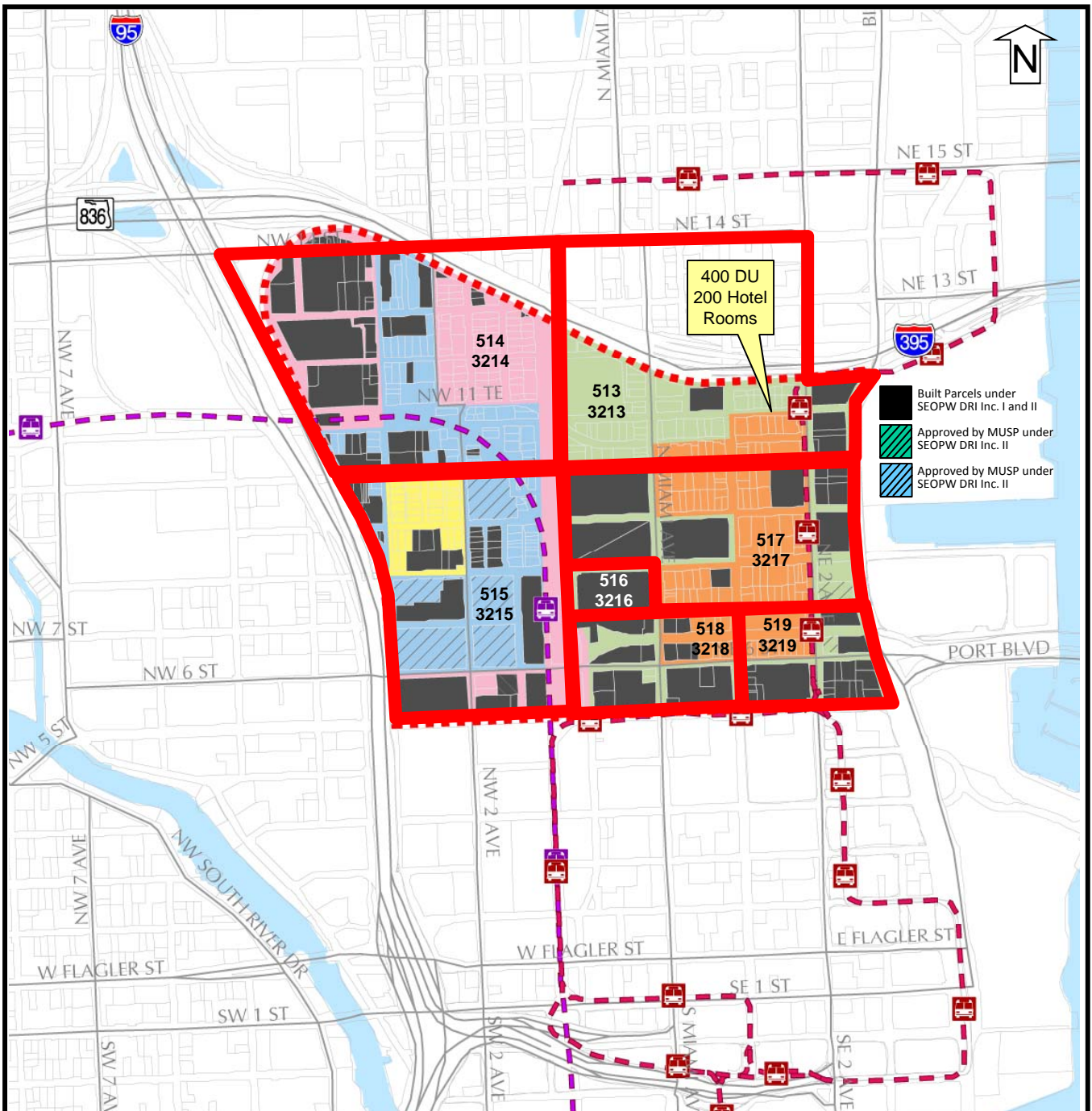
HOSPITAL	Cat
Points of Reference	1
Evacuation Route	2
City Limits	3
NHD Lakes	4
NHD Major Water	5

Storm Tide Zones
 Miami-Dade County, 2010
 Scale - 1:24,000

 USNG Page **17R NJ 80 50**
 Map Plate **231**



This map is for reference & planning purposes only. Hurricane evacuation decision-making and growth management implementation are local responsibilities. Please consult with local authorities.



Proposed Increment III Development Program			Folklife Village	Folklife District	Other SE Overtown	Miami World Center	Other Park West
Use	Scale	Units					
Residential	4,000	DU	600	1,000	400	2,000	0
Retail	1,250,000	SF	75,000	250,000	75,000	720,000	130,000
Office	2,300,000	SF	50,000	100,000	100,000	1,800,000	250,000
Conference	200,000	SF	0	0	0	200,000	0
Hotel	2,100	Rooms	0	100	0	1,800	200

 SEOPW DRI Boundaries


519 MPO TAZ Number
 3219 SERPM LRTP TAZ Number
 400 DU 200 Hotel Rooms
 Increment III DU and Hotel Rooms closest to the Category 3 and 4 Storm Tide Zones

Exhibit 23-4
 Development Program and Project Zones
 SEOPW DRI – Increment III

- A. 2. Identify any hotel/motel or recreational vehicle/travel trailer development proposed within the high hazard hurricane evacuation area delineated in the applicable regional hurricane evacuation study, regional public hurricane shelter study, or adopted county peacetime emergency plan. If present, delineate the proposed development's location on the appropriate county or regional hurricane evacuation map and answer questions B.(1) and B.(2) below.**

Pursuant to the Miami-Dade County Department of Emergency Management & Homeland Security Hurricane Storm Surge Evacuation Map which is attached herein as **Exhibit 23-1**, no portion of the SEOPW DRI project area is located within the Miami-Dade County Office of Emergency Management Hurricane Storm Surge Evacuation Zones. The SEOPW DRI project area lies westward of Biscayne Boulevard, which is the western boundary of Evacuation Zone B (the yellow zone) on the Hurricane Storm Surge Evacuation Map.

Pursuant to the discussion provided above in response to Question 23.A.1., the majority of the Increment III development program is located outside of the areas delineated by the Storm Tide Zones. For the purpose of this analysis however, 200 hotel rooms were estimated for location in TAZ 3213 / Project Zone 4171, which is located to the west of NE 2 Avenue, south of I-395, in the area that is the closest to rising tides for a Category 3 or 4 storm (see **Exhibits 23-3 and 23-4**).

- A. 3. Identify whether the proposed development is location in a designated special hurricane preparedness district.**

The SEOPW DRI is not located in a designated special hurricane preparedness district.

- B. 1. For each phase of the development, determine the development's public hurricane shelter space requirements based on the behavioral assumptions identified in the applicable regional study or county plan. Identify the existing public hurricane shelter space capacity during the one hundred year or category three hurricane event within the county where the development is being proposed and indicate whether the county has a deficit or surplus of public hurricane shelter space during the one hundred year or category three hurricane event.**

Pursuant to the Miami-Dade County Department of Emergency Management & Homeland Security Hurricane Storm Surge Evacuation Map which is attached herein as **Exhibit 23-1**, no portion of the SEOPW DRI project area is located within the Miami-Dade County Office of Emergency Management Hurricane Storm Surge Evacuation Zones. Notwithstanding this fact, a response is provided for Question B.1 to identify public hurricane shelter space capacity.

Based upon the FY 2009-2010 Preparedness Report from the Miami-Dade County Department of Emergency Management, the hurricane evacuation center capacity for Miami-Dade County consists of **94,408** public shelter spaces located in 66 Evacuation Center Facilities county-wide.

Pursuant to the data and analysis provided in the *Florida Statewide Regional Evacuation Studies Program* and the technical reports produced in December of 2010, the estimated public shelter demand for hurricane evacuation in Miami-Dade County, under the worst case base and operational scenarios analyzed for the Year 2015, indicates an estimated shelter demand of **30,116** under Evacuation Level C and **64,247** under Evacuation Level E. Miami-Dade County has a **64,292** public shelter space surplus under Evacuation Level C and a **30,161** public shelter space surplus under Evacuation Level E.

Using the updated data and analysis provided in the *Florida Statewide Regional Evacuation Studies Program* and the technical reports produced in December of 2010, the Applicant has estimated public shelter demand for 400 dwelling units and 200 hotel rooms as presented in **Table 23-1**. The analysis demonstrates a demand for **253** shelter spaces. The Applicant has utilized the updated participation rates for Category 3 Storms, the updated persons per dwelling unit, the updated percent of evacuees to local public shelters, the updated persons per hotel room, the updated seasonal occupancy of hotel rooms during hurricane season and the updated persons per hotel room to develop the estimate of shelter demand.

Given the results in **Table 23-1**, and with the demand for **253** shelter spaces from the 400 dwelling units and 200 hotel rooms in the SEOPW DRI Increment III, Miami-Dade County will have a **64,039** public shelter space surplus under Evacuation Level C and a **29,908** public shelter space surplus under Evacuation Level E.

- B. 2. For each phase of the development, determine the number of evacuating vehicles the development would generate during a hurricane evacuation event based on the transportation and behavioral assumptions identified in the applicable regional study or county plan. Identify the nearest designated hurricane evacuation route and determine what percentage of level of service E hourly directional and maximum service volume the project will utilize.**

Pursuant to the Miami-Dade County Department of Emergency Management & Homeland Security Hurricane Storm Surge Evacuation Map which is attached herein as **Exhibit 23-1**, no portion of the SEOPW DRI project area is located within the Miami-Dade County Hurricane Storm Surge Evacuation Zones, therefore a response to B.2. is not required.

Pursuant to the discussions provided above however in response to Questions 23.A.1. and 23.A.2, the majority of the Increment III development program is located outside of the areas delineated by the Storm Tide Zones. For the purpose of this analysis however, 400 dwelling units and 200 hotel rooms were estimated for location in TAZ 3213 / Project Zone 4171, which is located to the west of NE 2 Avenue, south of I-395, in the area that is the closest to rising tides for a Category 3 or 4 storm (see **Exhibits 23-3 and 23-4**).

Pursuant to Figure 7 from the Transportation Element of the Miami-Dade County CDMP (see **Exhibit 23-5**), designated evacuation routes (or route linkages) in the vicinity of the SEOPW DRI consist of SR 836, I-395, I-95, SW/SE 8 Street, Biscayne Boulevard and MacArthur Causeway.

Given the location of the DRI outside any of the designated storm surge hurricane evacuation zones, the project's participation in hurricane evacuation was evaluated assuming that 60% of the residential units would evacuate consistent with Miami-Dade County evacuation rates for a Category 3 storm under a Category 3 Surge Evacuation Zone (pursuant to *Table IIIB-1, Volume 1-11 from the Statewide Regional Evacuation Studies Program*). 100% of the occupied hotel rooms were assumed to evacuate. Projected traffic distribution percentages to the designated hurricane evacuation routes are provided on the attached **Exhibit 23-6**. The percentage of project traffic estimated to use these designated evacuation routes at project buildout is provided in **Table 23-1**. Also provided are the calculations of evacuation project traffic as a percent of the level of service E hourly directional maximum service volumes, which are illustrated on **Exhibit 23-7**.

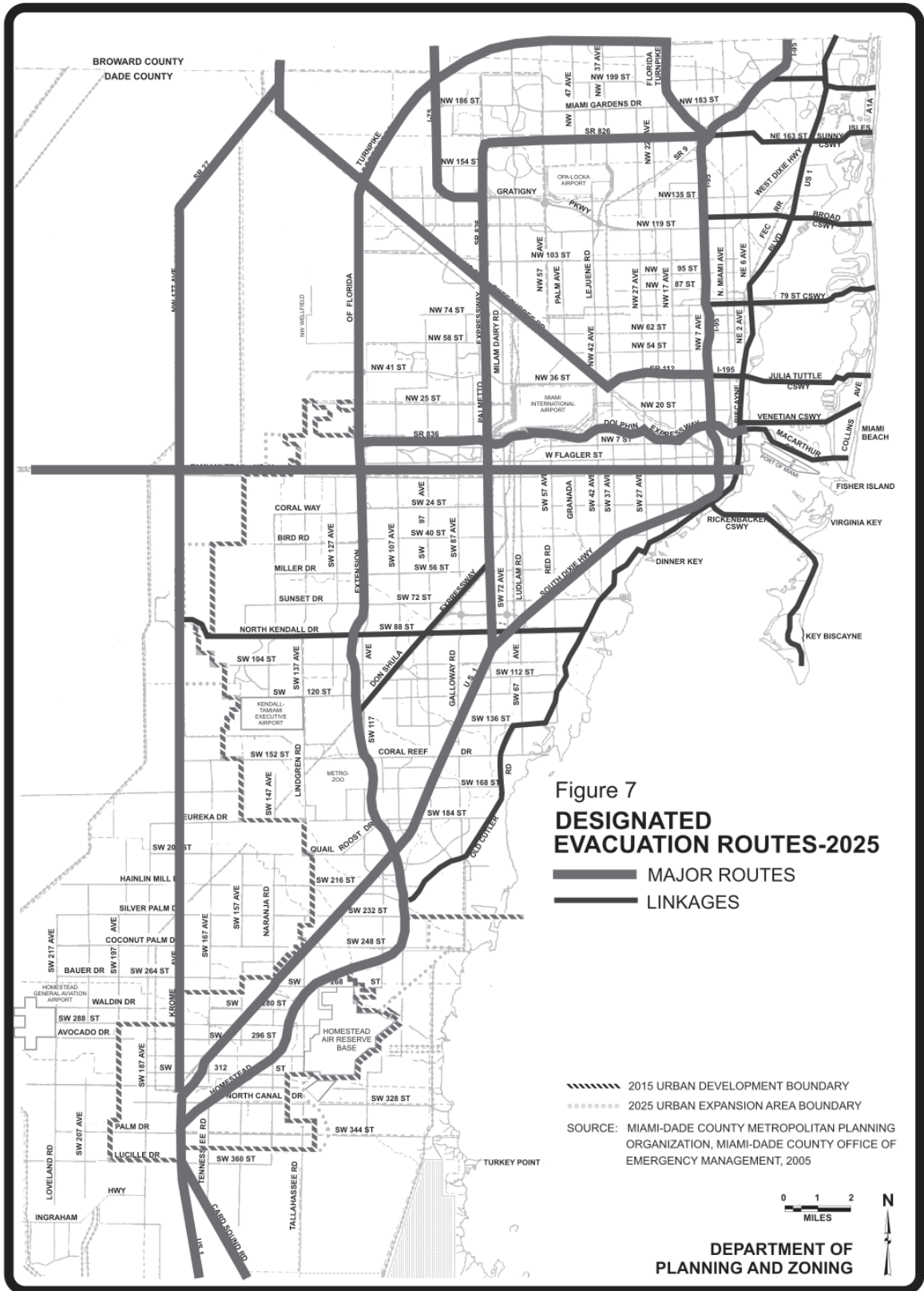


TABLE 23-1
SEOPW DRI - INCREMENT III
HURRICANE EVACUATION TRAFFIC ANALYSIS - 400 DU and 200 Hotel Rooms for Category 3 Analysis

Evacuation Vehicles Generated by Project								
Dwelling Units	400	residential du's						
Hotel Units	200	hotel rooms						
Evacuation Participation Rate for Category 3	60%	of units	<i>Source : Table IIIB-1, Volume 1-11 South Florida, Appendix IIIB - Miami-Dade County Planning Assumptions</i>					
Out of County Evacuation Rates	50%	of units	<i>Source : Table IIIB-2, Volume 1-11 South Florida, Appendix IIIB - Miami-Dade County Planning Assumptions</i>					
Vehicles per Dwelling Unit	1.65	vehicles per permanent unit	<i>Source : Table MDTAZ, Volume 1-11 South Florida</i>					
Vehicles per Hotel Unit	1.05	vehicles per occupied seasonal unit	<i>Source : Table MDTAZ, Volume 1-11 South Florida</i>					
Evacuation Vehicle Usage Rate	70%	of permanent unit vehicles	<i>Source : Table IIIB-3, Volume 1-11 South Florida, Appendix IIIB - Miami-Dade County Planning Assumptions</i>					
	100%	of seasonal unit vehicles						
Seasonal Unit Occupancy Levels	75%	occupancy during Hurricane Season	<i>Source : Table MDTAZ, Volume 1-11 South Florida</i>					
		Category 3						
Evacuation Vehicles Generated by Project		435	Evac Vehicles	[DU*60%*1.65 veh/du*70% veh usage] + [Rooms*1.05 veh/rm*100% veh usage*75% seasonal occupany]				
Public Shelter Demand Generated by Project								
People per Unit	2.86	people per permanent unit	<i>Source : Table MDTAZ, Volume 1-11 South Florida</i>					
	1.46	people per occupied seasonal unit	<i>Source : Table MDTAZ, Volume 1-11 South Florida</i>					
Percent of Evacuees to Local Public Shelter	5%	of permanent resident evacuees	<i>Source : Table IIIB-4, Volume 1-11 South Florida, Appendix IIIB - Miami-Dade County Planning Assumptions</i>					
Percent of Evacuees to Friend/Relative Refuge	65%	to local homes of friends/relatives	<i>Source : Table IIIB-5, Volume 1-11 South Florida, Appendix IIIB - Miami-Dade County Planning Assumptions</i>					
Percent of Evacuees to Hotel-Motels	20%	to hotel-motels	<i>Source : Table IIIB-6, Volume 1-11 South Florida, Appendix IIIB - Miami-Dade County Planning Assumptions</i>					
		Category 3						
Public Shelter Demand Generated by Project		253	Shelter Demand	[DU*60%*2.86 per/du*5% to shelter] + [Rooms*75% season occupancy*1.46 per/rm]				
Evacuation Vehicles as Percent of LOS E Directional Service Volume under Category 3								
Designated Evacuation Routes								
	8L FWY I-95 S. of SR 836	12L FWY I-95 N. of SR 836	8L FWY SR 836	10L FWY I-395	3LOW SE/SW 7-8 Street	4LD Biscayne Blvd	6L FWY MacArthur Cswy	
Percent of Evacuation Traffic Using Adjacent Evacuation Road Network	40.00%	40.00%	40.00%	40.00%	10.00%	10.00%	0.00%	0.00%
Evacuation Vehicles by Route	174 vehicles	174 vehicles	174 vehicles	174 vehicles	43 vehicles	43 vehicles	0 vehicles	0 vehicles
Highest Hourly Contribution of Evacuation Traffic as a % of Total Evacuation Traffic Based on Medium Behavioral Response Curve	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	30.00%	0.00%
Highest Hourly Contribution of Evacuation Traffic by Route from Project	52 vehicles	52 vehicles	52 vehicles	52 vehicles	13 vehicles	13 vehicles	0 vehicles	0 vehicles
Maximum Directional LOS E Service Volume per Evacuation Route	8400 veh per hour	12780 veh per hour	8400 veh per hour	10580 veh per hour	3090 veh per hour	1700 veh per hour	6200 veh per hour	1860 veh per hour
Maximum Hourly Evacuation Vehicles as a % of LOS E Hourly Directional Service Volume	0.62%	0.41%	0.62%	0.49%	0.42%	0.77%	0.00%	0.00%

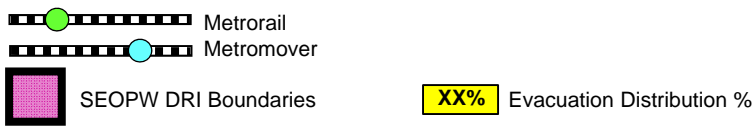
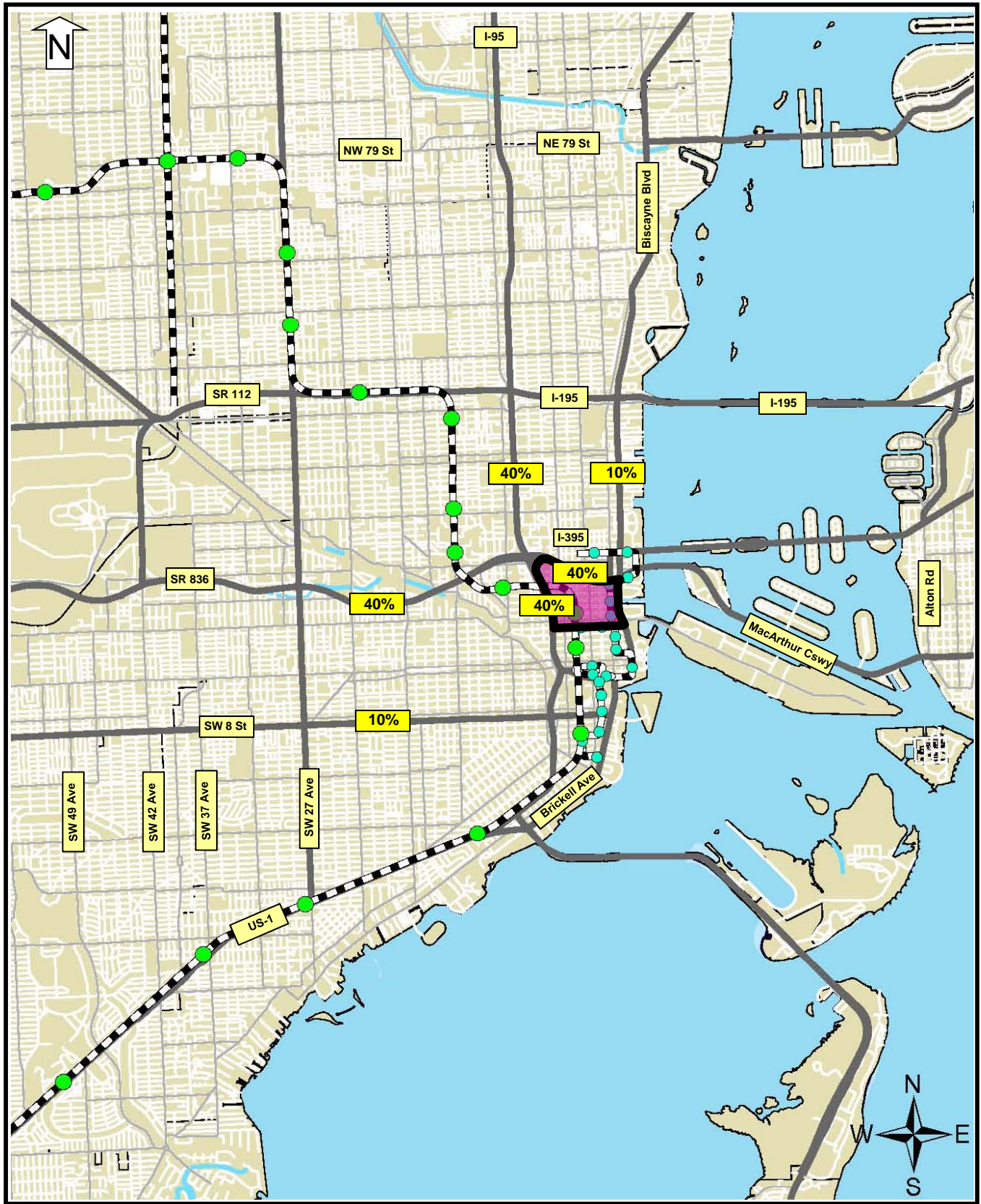
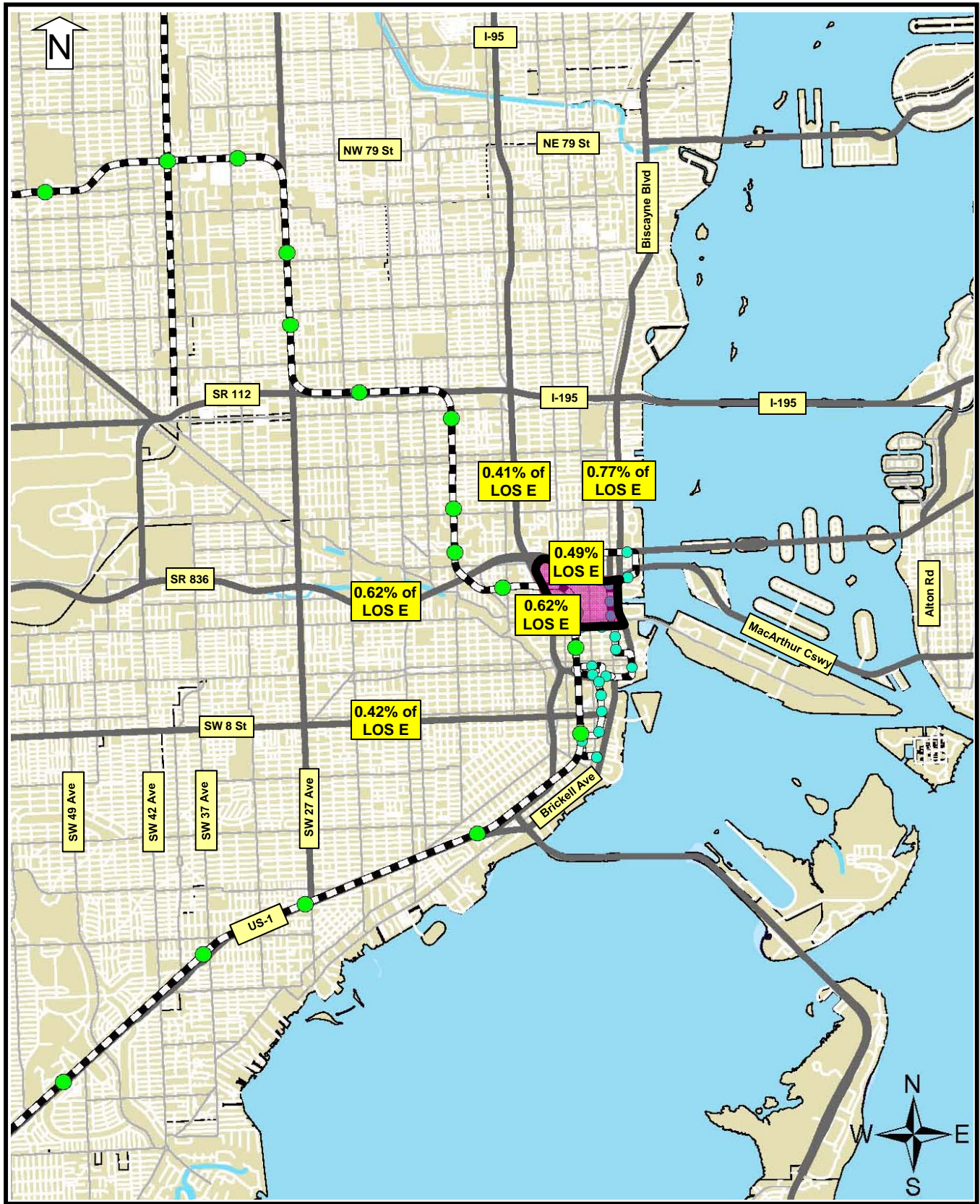


Exhibit 23-6
Hurricane Evacuation Distribution for DRI Traffic
SEOPW DRI – Increment III

Source: Cathy Sweetapple & Associates



X.X% of LOS E Evacuation Trips as a % of Directional LOS E

Exhibit 23-7
Hurricane Evacuation Distribution as a Percent of LOS E
SEOPW DRI – Increment III

Using the updated socioeconomic and behavioral assumptions from the Statewide Regional Evacuation Study Program, the proposed development at build out (with a 60% Evacuation Participation Rate for dwelling units and a 100% participate for hotel rooms) will add a total of **435** evacuating vehicles to the adjacent roadway network under Evacuation Level C. The Applicant has utilized the updated participation rates for Category 3 Storms, the updated vehicles per dwelling unit, the updated vehicle usage rate for dwelling units during hurricanes, the updated vehicles per hotel room and the updated seasonal occupancy of hotel rooms during hurricane season to develop the estimate of evacuation vehicles.

To calculate the development's maximum *hourly* contribution to the evacuation network, the Applicant used 30% as the highest hourly percentage of evacuees loading the roadway network based upon the behavioral assumptions from the prior hurricane study for Miami-Dade County. Using the highest hourly percentage of 30% and the assumptions set forth in **Table 23-1**, the proposed development's maximum hourly contribution of evacuation traffic for each designated evacuation route or route linkage is provided in **Table 23-1** and is illustrated on **Exhibit 23-7**.

Those roadways designated as official evacuation routes (pursuant to Figure 7 of the Transportation Element in the adopted CDMP) were analyzed to determine if the proposed development's evacuation traffic would utilize 25 percent or more of the evacuation route's LOS E hourly directional maximum service volume and would thus have a material adverse effect on the local area's evacuation network. **Table 23-1** provides the calculations to show the maximum hourly evacuation vehicles as a % of the LOS E hourly directional service volume. The evacuation traffic from the SEOPW DRI does not even exceed 1 percent of the evacuation route's LOS E hourly directional maximum service volume.

- Evacuation vehicles assigned to SR 836 = 0.62% of the LOS E MSV;
- Evacuation vehicles assigned to I-95 south of SR 836 = 0.62% of the LOS E MSV;
- Evacuation vehicles assigned to I-95 north of SR 836 = 0.41% of the LOS E MSV;
- Evacuation vehicles assigned to SE/SW 8 St = 0.42% of the LOS E MSV;
- Evacuation vehicles assigned to I-395 = 0.49% of the LOS E MSV;
- Evacuation vehicles assigned to Biscayne Blvd = 0.77% of the LOS E MSV;

The evacuation traffic assignments from the DRI are not anticipated to impact clearance times for Miami-Dade County road segments in the north and northeast part of the county. These segments will control the overall evacuation clearance times on which the county bases its evacuation decision making. The proposed DRI will have little to no impact on the bottlenecks in the other parts of the county.

C. Identify and describe any action(s) or provisions that will be undertaken to mitigate impacts on hurricane preparedness.

Pursuant to the Miami-Dade County Department of Emergency Management & Homeland Security Hurricane Storm Surge Evacuation Map which is attached herein as **Exhibit 23-1**, no portion of the SEOPW DRI Increment III project area is located within the Miami-Dade County Hurricane Storm Surge Evacuation Zones. Based upon the analyses contained herein, there is a public shelter space surplus after the evacuation traffic from this project, and there are no negative impacts to designated evacuation routes. Therefore no mitigation is required.