MILITARY OCEAN TERMINAL SUNNY POINT JOINT LAND USE STUDY

PUBLIC MEETING
DECEMBER 4, 2018

JLUS OVERVIEW

WHAT IS A JOINT LAND USE STUDY?

A study funded by the DoD's Office of Economic Adjustment to help communities and military installations work together in achieving compatible growth and long-term sustainment of the military training mission.

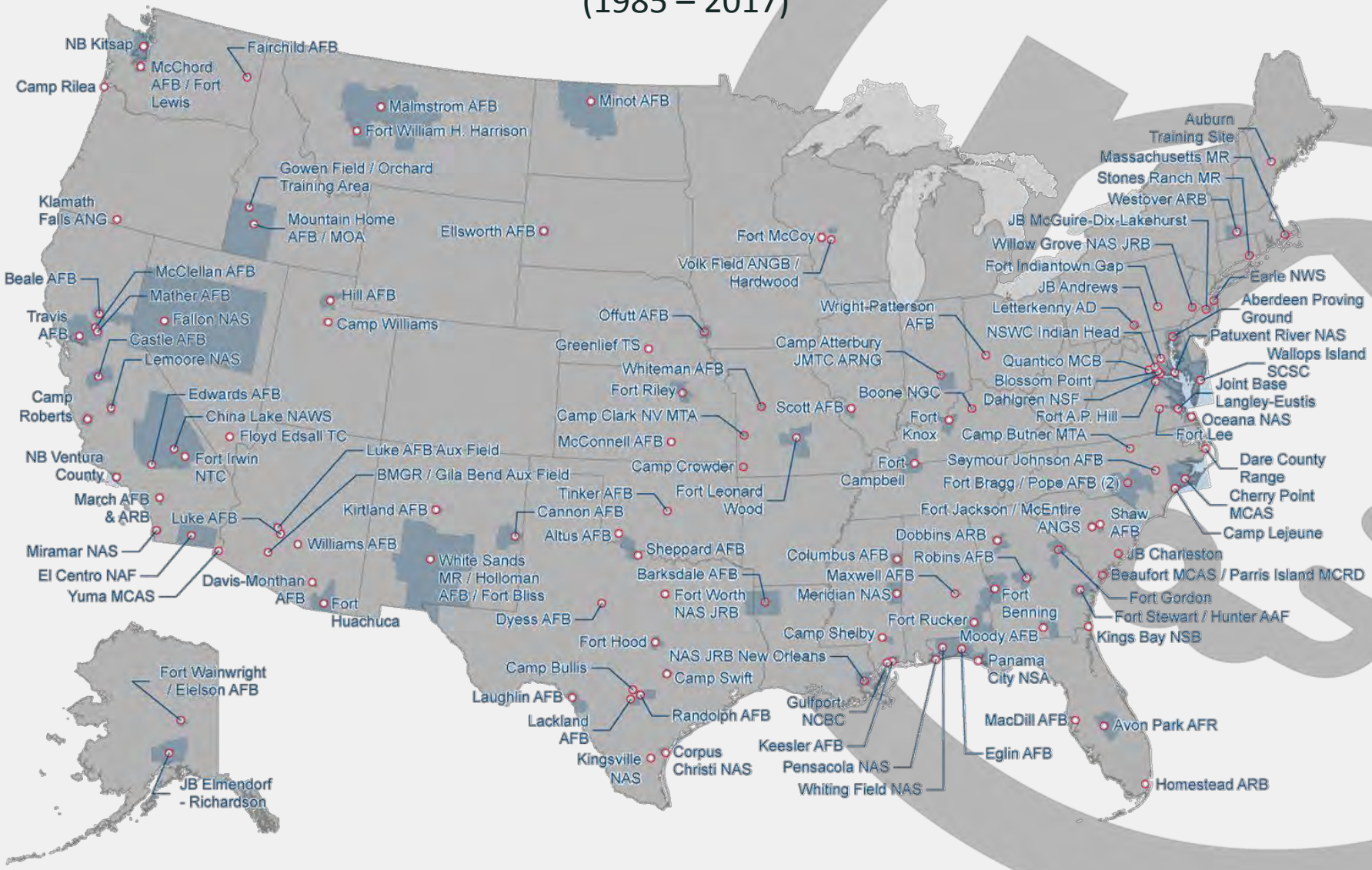
JLUS PURPOSE / GOALS

- Identify and mitigate barriers to the long term sustainability of the installation's mission.
- Promote compatibility between civilian land use and military operational requirements.
- Strengthen coordination and communication between local governments and the installation.
- Raise public awareness and understanding of compatible growth issues.

Completed Joint Land Use Studies

143 Completed as of December 2017

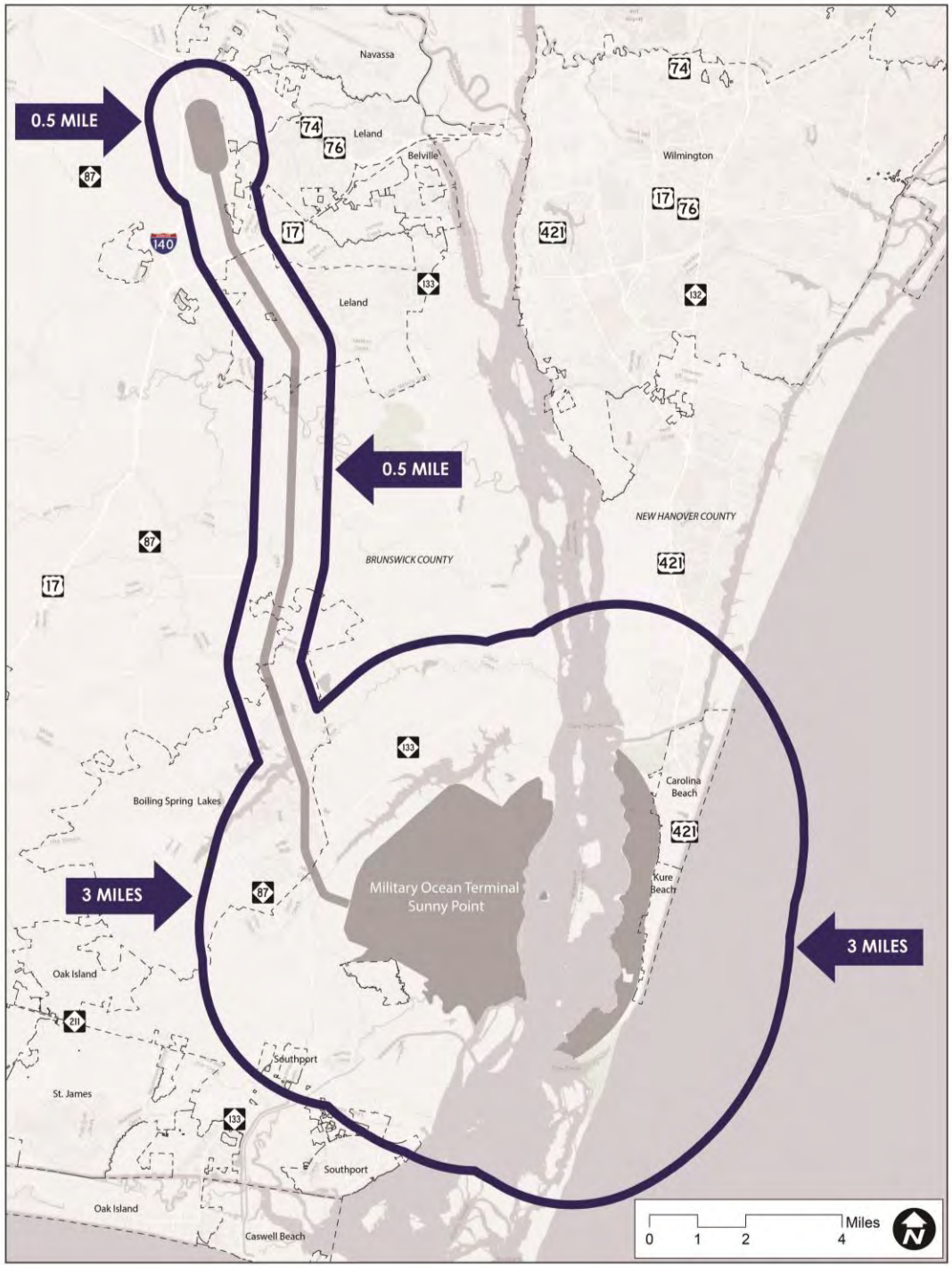
(1985 – 2017)



SUNNY POINT JLUS PARTNERS

- Military Ocean Terminal Sunny Point
- Cape Fear Council of Governments
- Brunswick County
- New Hanover County
- City of Boiling Spring Lakes
- Town of Carolina Beach
- City of Southport
- Town of Kure Beach
- Town of Leland

JLUS STUDY AREA



PROJECT SCHEDULE

Date	Meeting
	2018
February 23	Project Team Meeting
April 11	Project Kickoff, Installation Tour & Committee Meetings
May 21-24	Stakeholder Interviews
June 26	Advisory Committee Meeting – Review Background Research
July 30	Public Meeting – Overview & Research - 1 Day (2 locations)
August 28	Advisory Committee Meeting – Review Compatibility Analysis
October 16	Advisory Committee Meeting - Review Conflict Resolution Strategies
November 19	Policy Committee Meeting
December 4	Public Meetings – Interim Findings - 1 Day (2 locations)
December 4	Advisory Committee Meeting – Draft Recommendations
	2019
January	Policy Committee Meeting
February	Advisory Committee Meeting – Present Draft Study Documents
March	Advisory & Policy Committee Meetings – Finalize Study Documents
April/May	Public Meetings – Final Presentation - 1 Day (2 locations)

JULY 30 PUBLIC MEETINGS

- Meetings held in Southport and Carolina Beach
- CFCOG advertised in accordance with the Public Participation Plan
- Strong attendance at both meetings.
- Meetings focused on introducing MOTSU and the JLUS to the community

STAKEHOLDER INTERVIEW SUMMARY

STAKEHOLDER INTERVIEWS

- MOTSU (x3)
- Brunswick County
- New Hanover County
- Carolina Beach
- Southport
- Kure Beach
- Leland
- Boiling Spring Lakes
- H2GO
- NCDNCR
- Cape Fear Regional Jetport
- Wilmington MPO
- NCDOT Division 3
- Orton Plantation
- NC State Port
- NCDEQ
- Corps of Engineers
- SDDC
- Atlantic Commercial Properties

INTERVIEW THEMES

- Local governments and state agencies are eager to be good partners with MOTSU.
- Desire to establish more formal relationships, particularly between elected officials / executive staff and key military / civilian leadership on the post.
- Numerous examples of partnerships already exist; primarily focused on public safety and infrastructure. These tend to be staff-driven.

INTERVIEW THEMES

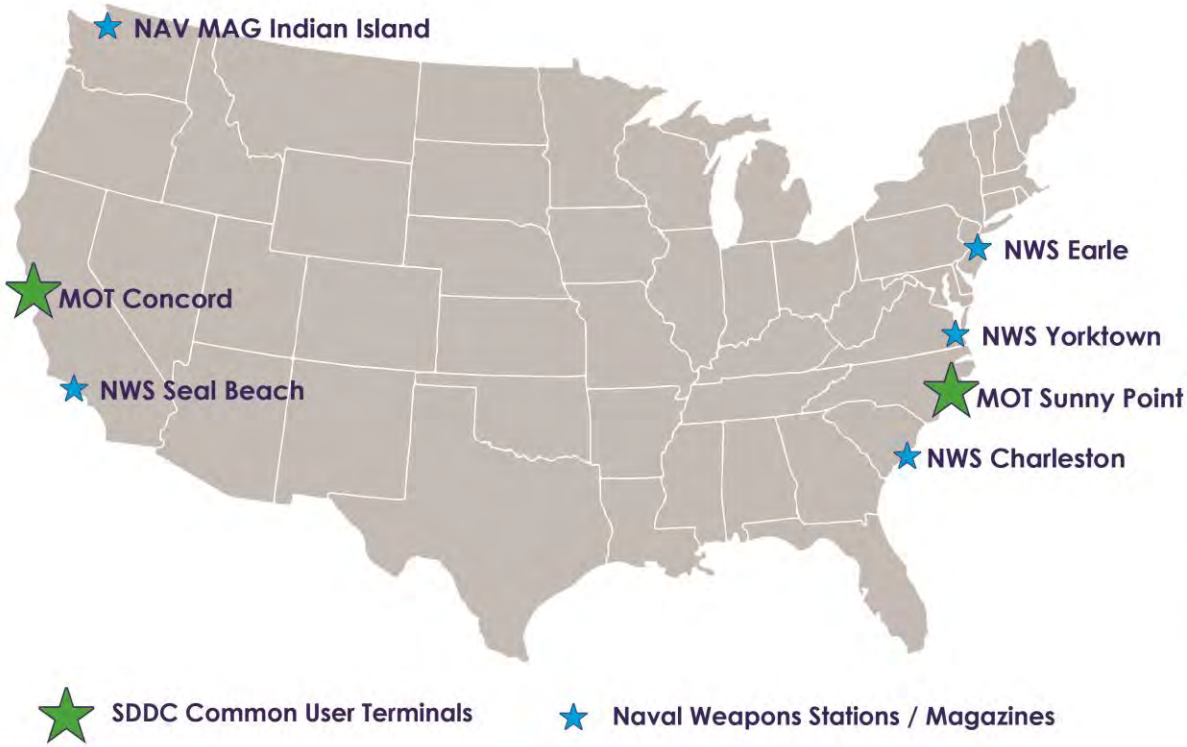
- MOTSU has a reciprocal desire to be a good neighbor and partner with host communities.
- Need for ongoing / regular engagement opportunities with elected officials to build relationships and understand MOTSU's mission.
- Peer to peer staff relationships are generally good, and longstanding, but subject to personnel changes.

INTERVIEW THEMES

- Perception of a lack of a single point of contact on MOTSU to distribute communications to appropriate department.
- Inconsistent application of statutory requirement for land use notice + lack of acknowledgment of receipt – few comments.
- Confusion on process / authority for granting licenses + clear rules for use of MOTSU land – stemming from recent enforcement actions.

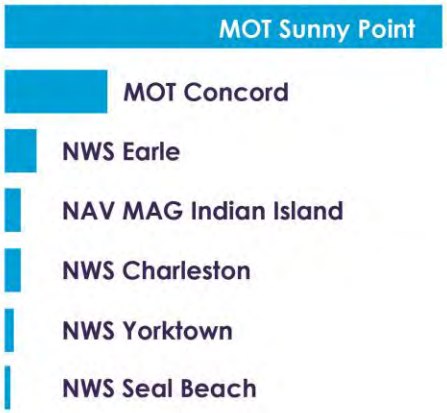
MOTSU MISSION FOOTPRINT

SERVICE SURFACE AMMO CAPABILITY



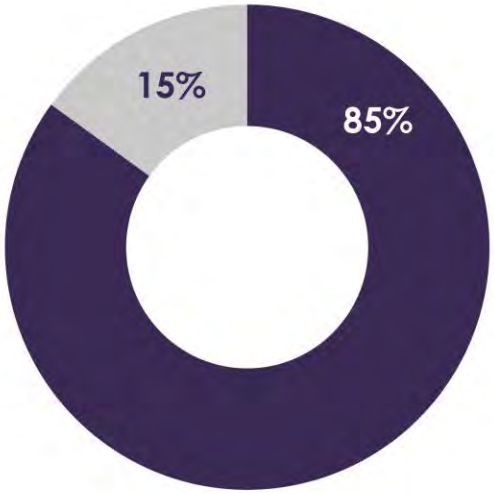
CAPACITY COMPARISON

[MILLIONS OF LBS NET EXPLOSIVE WEIGHT]

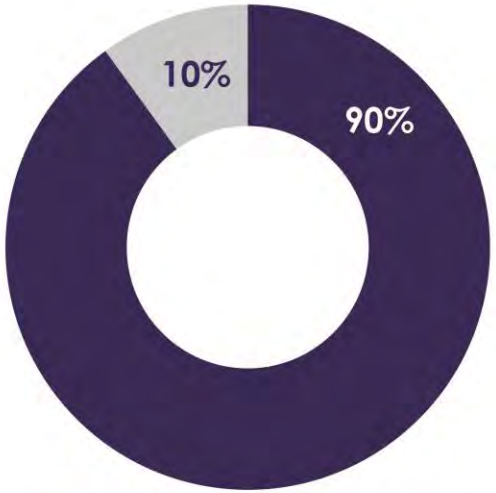


MOTSU CONTRIBUTIONS

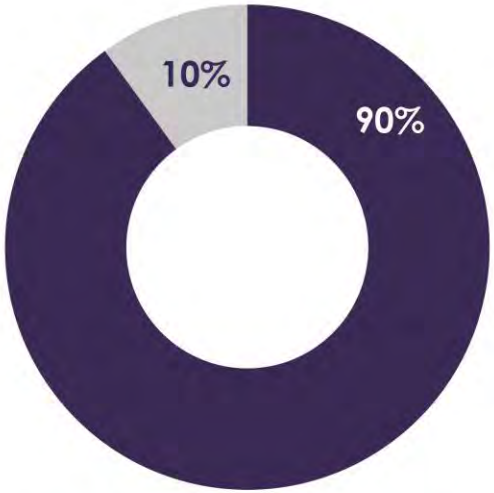
WARTIME RESUPPLY MUNITIONS



VIETNAM



OPERATION DESERT SHIELD/
OPERATION DESERT STORM

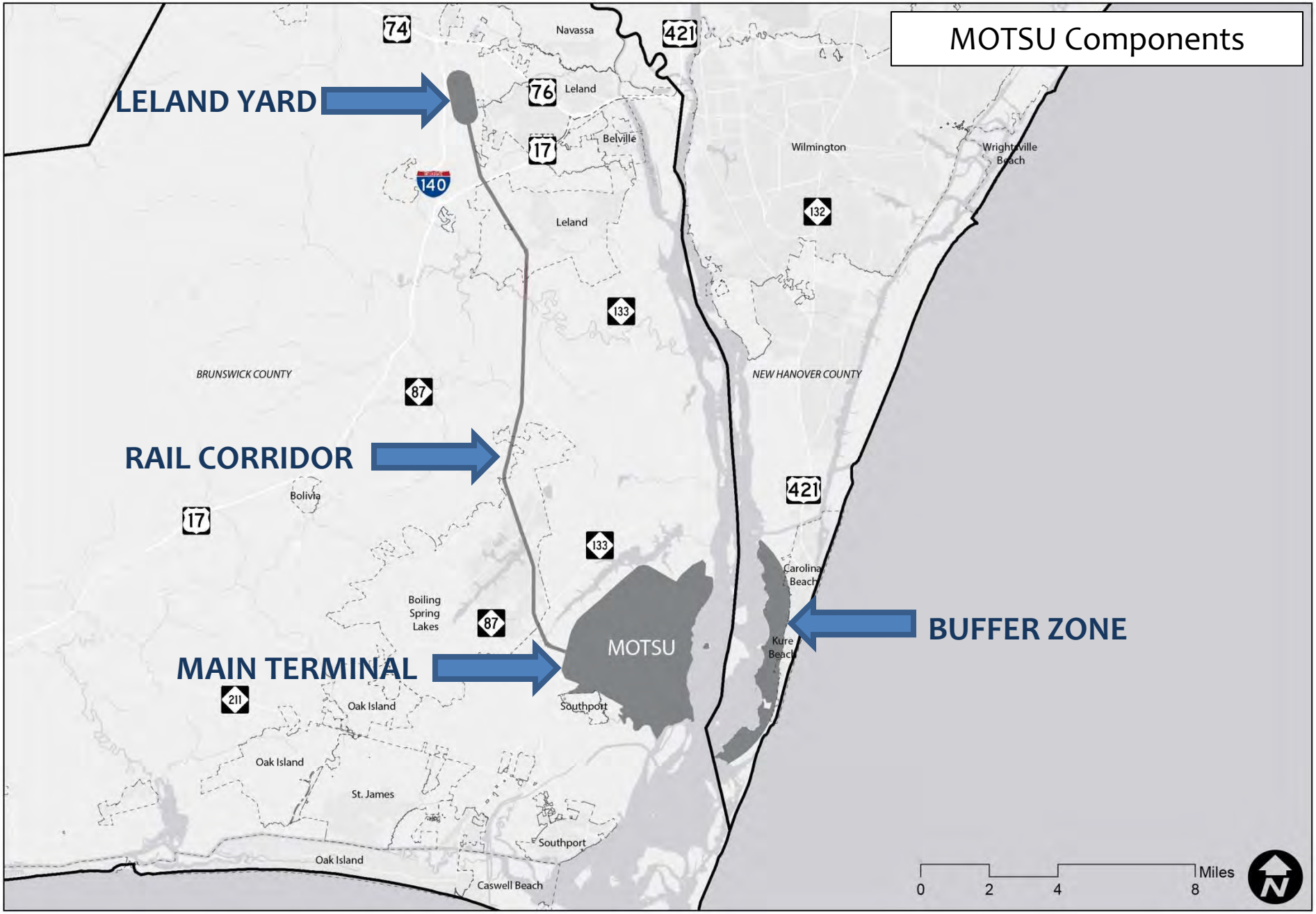


OPERATION IRAQI FREEDOM /
OPERATION ENDURING FREEDOM

MOTSU OTHER SOURCES

INSTALLATION CHARACTERISTICS

- Purpose-built ammunition transshipment terminal – **DESIGNED FOR SAFETY**
- Ammunition is staged *temporarily* at the terminal, while waiting to be shipped.
- Composed of three geographically separate areas:
  - Main Terminal: 8,600 acres
  - Pleasure Island Buffer Zone: 2,200 acres
  - Leland Interchange Yard: 650 acres
- Main Terminal linked to Leland Interchange by a 16 mile rail line (on easements vs. government property).


MOTSU Components
LELAND YARD
RAIL CORRIDOR
MAIN TERMINAL
BUFFER ZONE
MOTSU
Navassa
Leland
Belville
Wilmington
Wrightsville Beach
Leland
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
Carolina Beach
Kure Beach
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
74
421
76
17
140
132
133
87
421
17
133
87
211
Miles
0
2
4
8

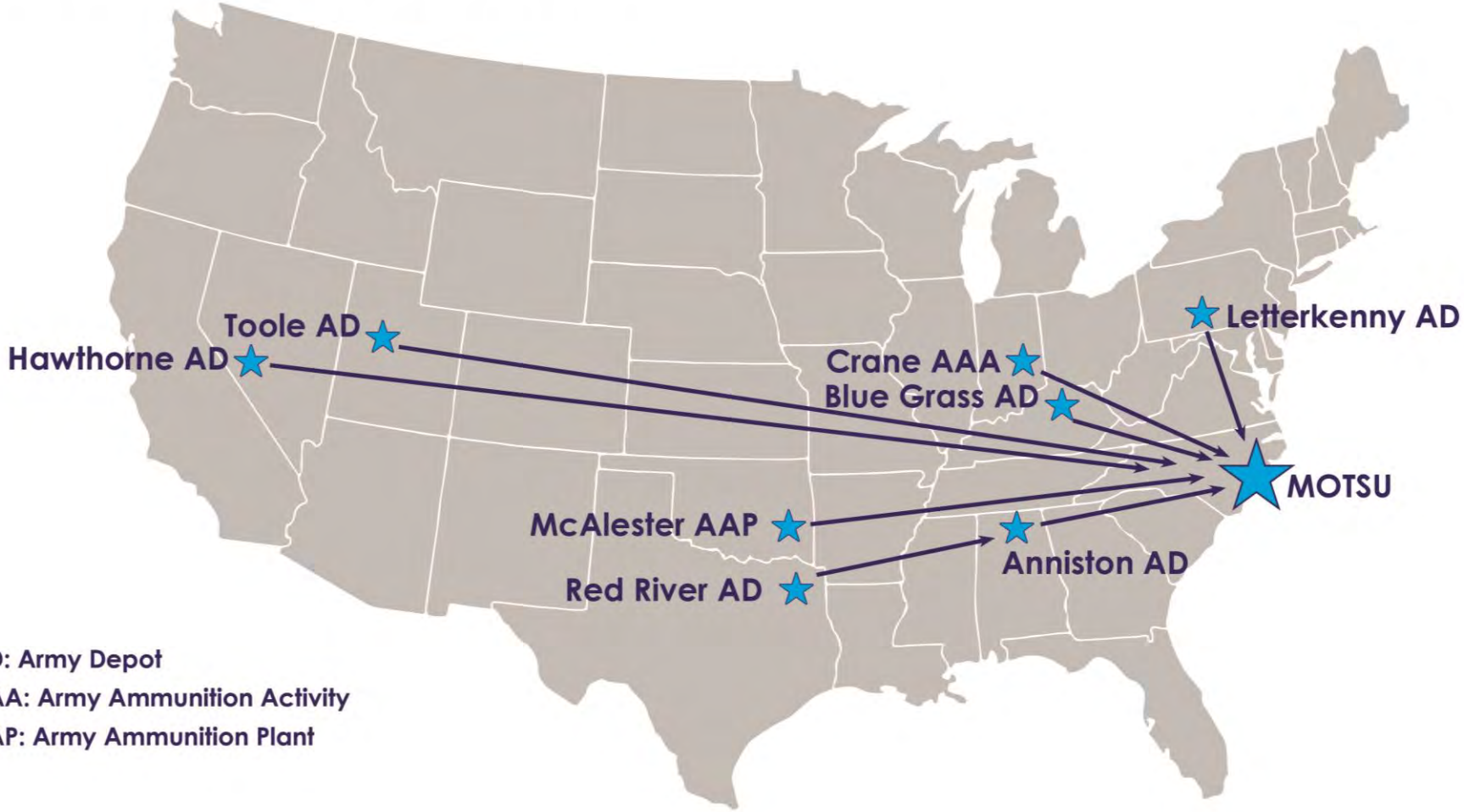
MISSION COMPATIBILITY

- Primary points of potential compatibility concern:
  - Maintaining use of the full extent of ESQD for temporary staging, as well as loading and unloading vessels, during munitions transshipment operations.
  - Maintaining safe and efficient transportation access:
    - Highway
    - Rail
    - Marine
  - Maintaining minimal levels of environmental constraint.

TRANSPORTATION

- Inbound shipments to the Terminal are typically:
  - 80% rail
  - 20% truck
- Inbound trains entering the Leland Yard are typically switched to Army locomotives and brought to the Terminal immediately.
- In the case of a rail outage, all shipments will come in by truck. Local highway infrastructure will have to support the traffic volume.

AMMO SHIPPERS

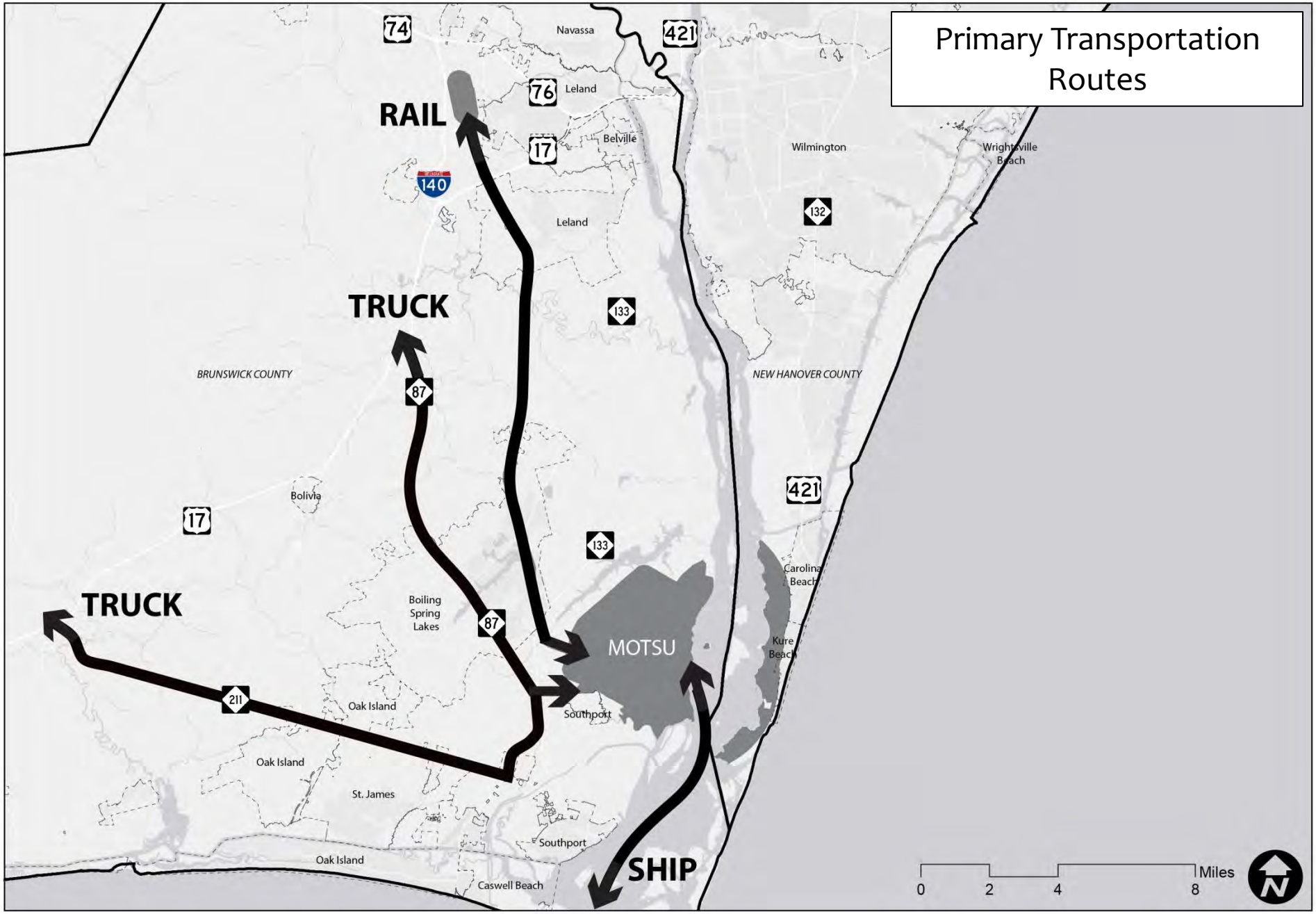


AD: Army Depot

AAA: Army Ammunition Activity

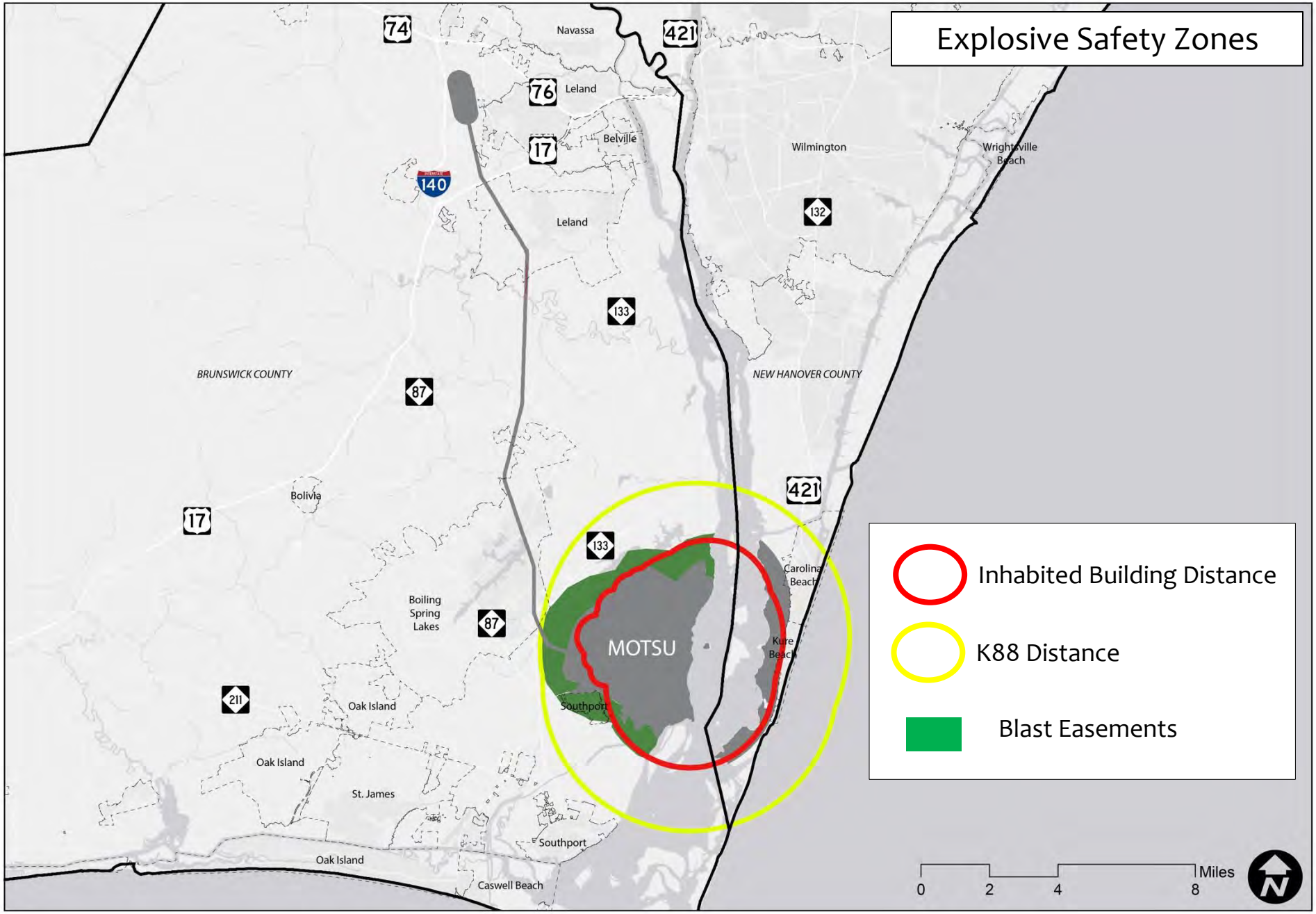
AAP: Army Ammunition Plant

Primary Transportation Routes



EXPLOSIVES SAFETY ZONES

- ESQD = Explosive Safety Quantity Distance
- K Factor = Assumed degree of risk used in calculating ESQD.
- Example ESQD Arcs:
  - Public Traffic Route (PTRD) (K24/30)
  - Inhabited Building (IBD) (K40/50)
  - K88: Glass Fragmentation Hazard (Roughly 2x IBD)
  - Absolute Safe Distance = K328
- ESQD Formula: $D=KW^{1/3}$
  - D = Distance (ft)
  - W = Net Explosive Weight (lbs)


Explosive Safety Zones
Navassa
Leland
Belville
Leland
Wilmington
Wrightsville Beach
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
Oak Island
Oak Island
St. James
Southport
Oak Island
Caswell Beach
Carolina Beach
Kure Beach
MOTSU
Southport
74
421
76
17
140
132
133
87
421
133
17
87
211
Inhabited Building Distance
K88 Distance
Blast Easements
0
2
4
8
Miles

EXPLOSIVES SAFETY ZONES

- Example ESQD Calculations for IBD Arc:

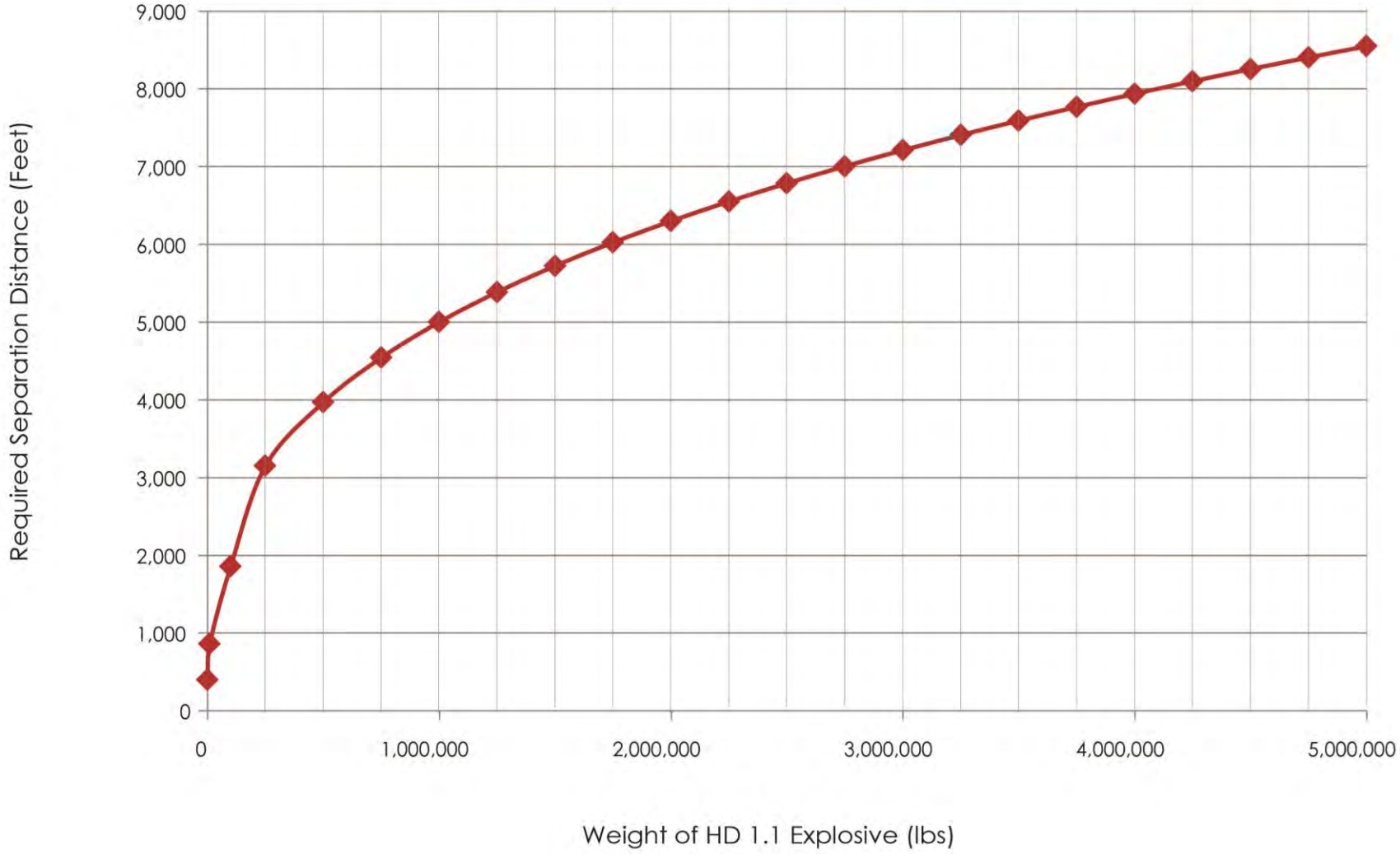
Net Explosive Weight: **1,000,000 lbs.**

- Inhabited Building Distance K Factor: 50
  - Distance = $50*1{,}000{,}000^{1/3}$
  - Inhabited Building Distance Arc = **5,000 ft.**

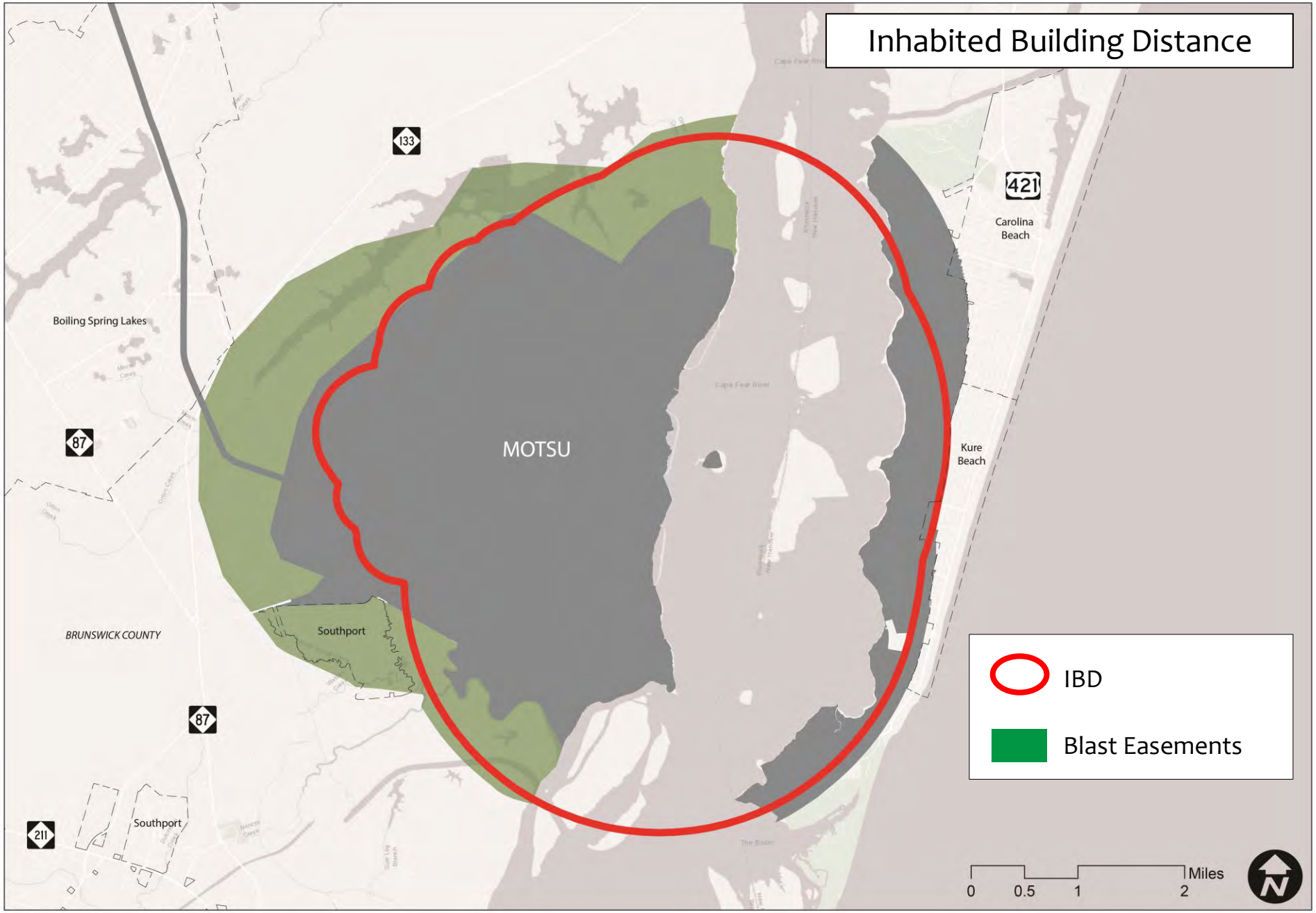
Net Explosive Weight: **5,000,000 lbs.**

- Inhabited Building Distance K Factor: 50
  - Distance = $50*5{,}000{,}000^{1/3}$
  - Inhabited Building Distance Arc = **8,550 ft.**

IBD WEIGHT/DISTANCE CHART



Inhabited Building Distance



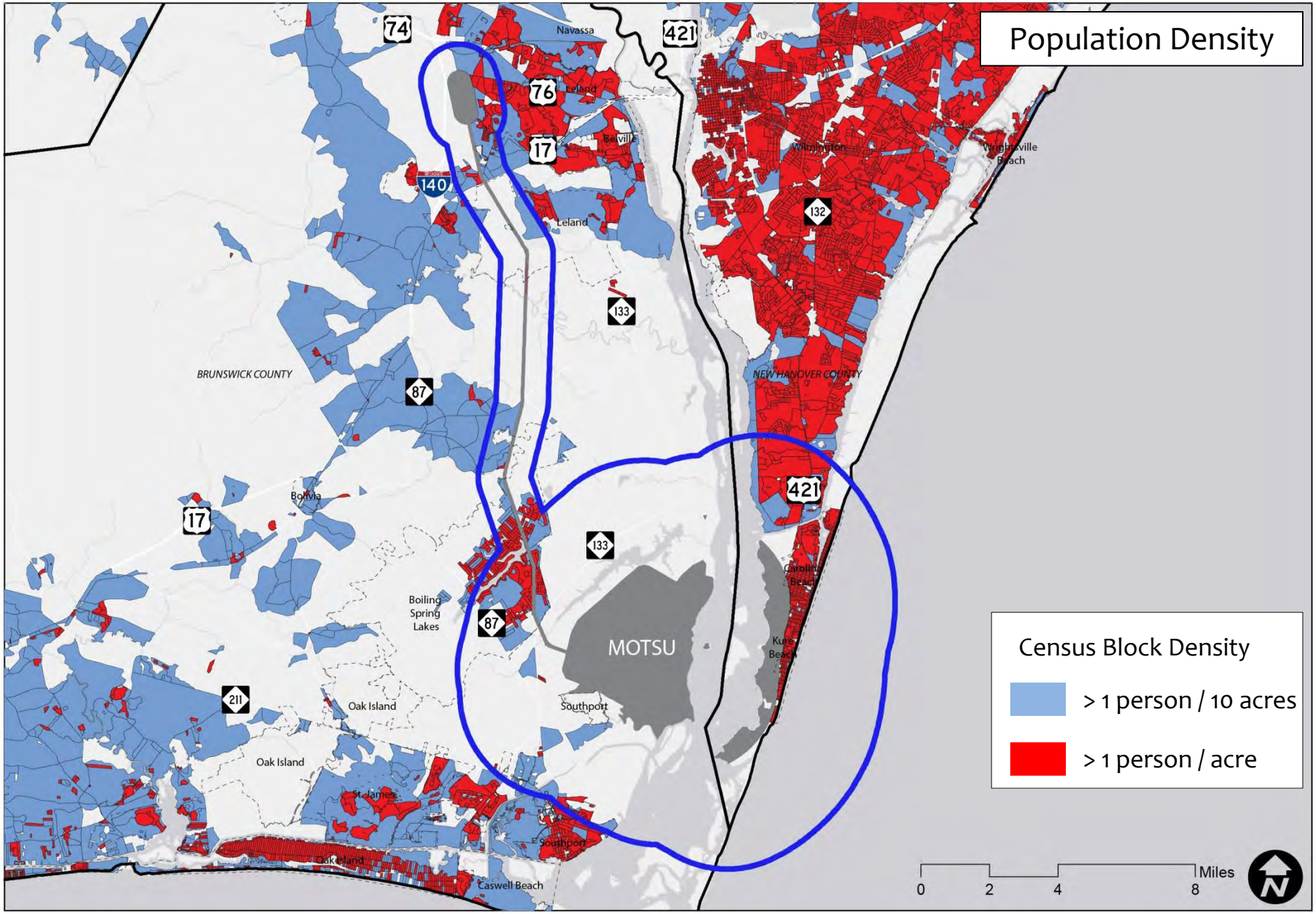
EXPLOSIVES SAFETY ZONES

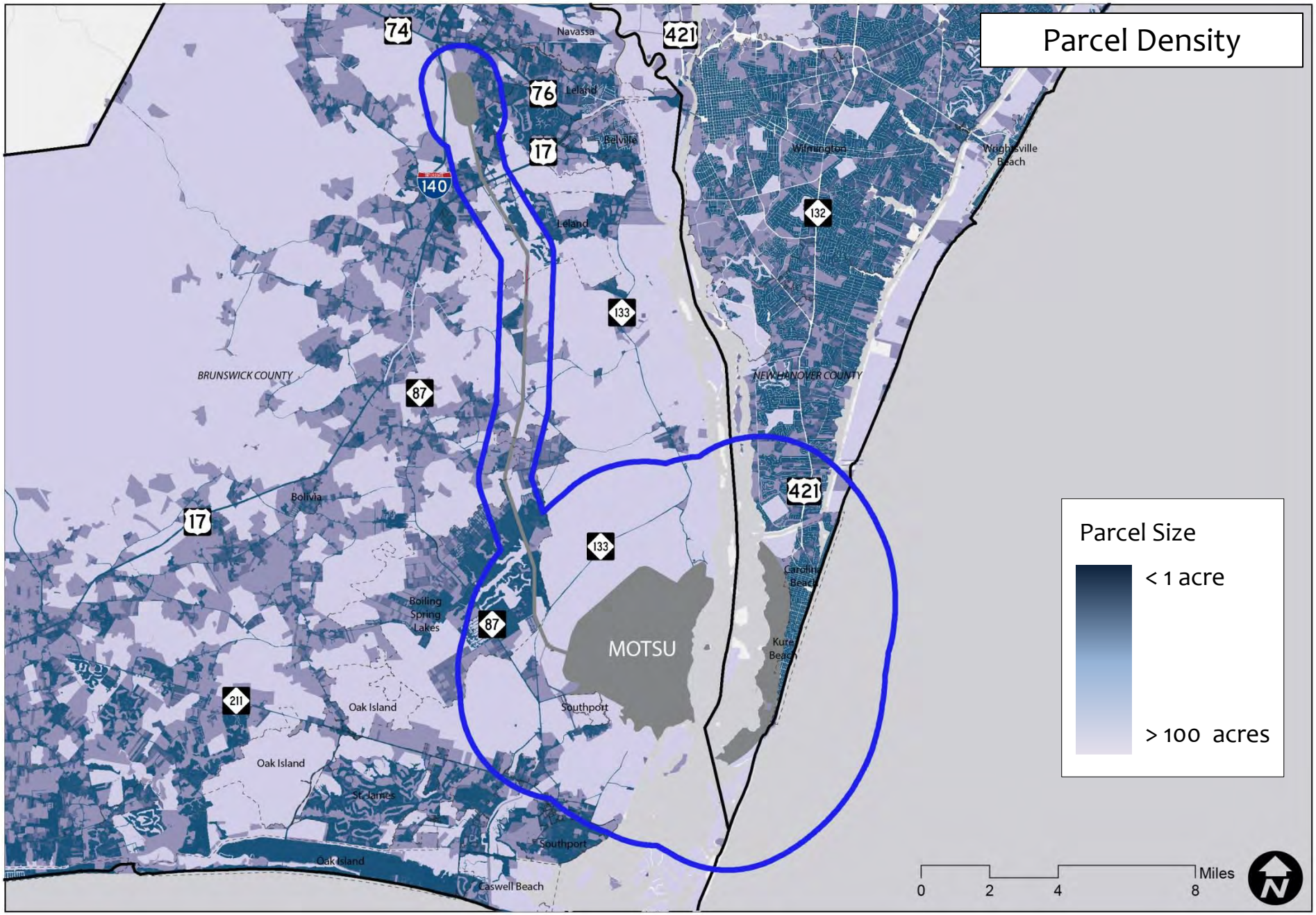
- ESQD Zones are not applicable to munitions during their transportation:
  - Truck traffic on local highways
  - Rail traffic, including in the Leland Yard and on the Army railroad
  - Ship traffic in the Cape Fear River
- Once on the Terminal, ammunition is *temporarily* staged per the license and applicable ESQD arcs for each holding area.
- ESQD zones expand and contract as munitions are temporarily staged and then shipped out.

LAND USE AND GROWTH TRENDS

POPULATION GROWTH

Jurisdiction	% Change 1990-2000	% Change 2000-10	% Change 2010-17	% Change 1990-2017
Brunswick County	43.5%	46.9%	21.8%	156.7%
Boiling Spring Lakes	80.1%	80.8%	12.2%	265.3%
Leland	7.6%	598.0%	47.7%	1,009.2%
Southport	(0.8%)	20.5%	31.5%	57.2%
New Hanover County	33.3%	26.4%	12.1%	88.9%
Carolina Beach	29.5%	21.4%	9.9%	72.7%
Kure Beach	143.5%	33.5%	4.6%	240.1%


Population Density
Navassa
Leland
Belville
Wilmington
Wrightsville Beach
Leland
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
MOTSU
Southport
Oak Island
Oak Island
St James
E Southport
Oak Island
Caswell Beach
Carolina Beach
Kure Beach
74
421
76
17
140
132
133
87
421
133
17
87
211
Census Block Density
> 1 person / 10 acres
> 1 person / acre
0
2
4
8
Miles


Parcel Density
Parcel Size
< 1 acre
> 100 acres
Navassa
Leland
Belville
Wilmington
Wrightsville Beach
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
MOTSU
Oak Island
Southport
St. James
Caswell Beach
Carolina Beach
Kure Beach
74
76
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421
132
133
87
211
Miles
0
2
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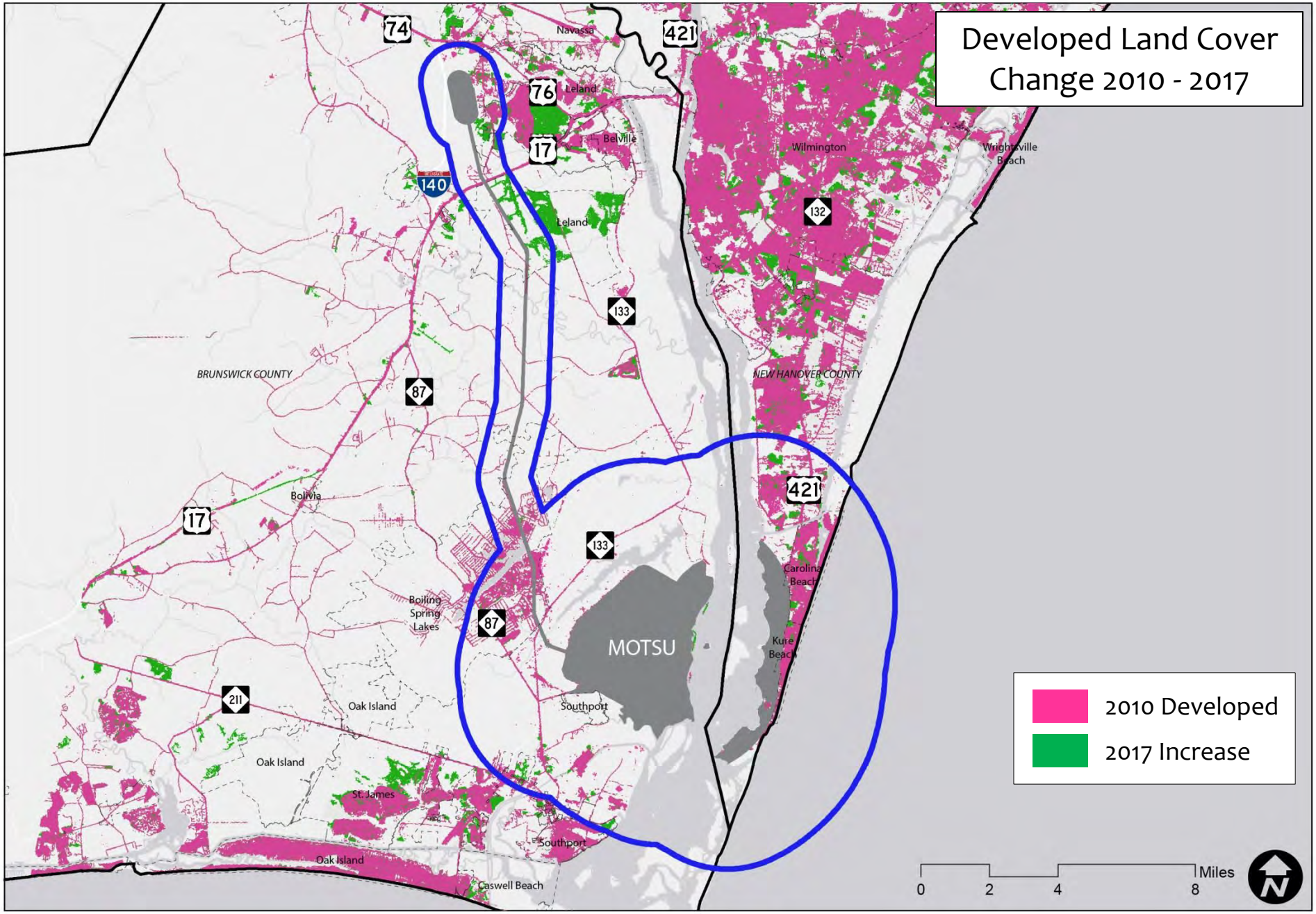
8


Developed Land Cover Change 2010 - 2017
74
Navassa
421
76
Leland
17
Belville
140
Leland
Wilmington
Wrightsville Beach
132
133
BRUNSWICK COUNTY
87
NEW HANOVER COUNTY
421
Bolivia
17
133
Carolina Beach
Boiling Spring Lakes
87
MOTSU
Kure Beach
211
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
2010 Developed
2017 Increase
0
2
4
8
Miles

ENVIRONMENTAL CONSIDERATIONS

ENVIRONMENTAL MANAGEMENT

ENDANGERED & THREATEND SPECIES

RED-COCKADED WOODPECKER

AMERICAN ALLIGATOR

VENUS FLYTRAP

ROUGH-LEAF LOOSESTRIFE

- 11,564 acres of managed coastal forests and wetlands
- Multiple endangered & threatened species; both Federal & NC State listed
- Extremely unique flora & fauna with multiple species potentially only known location in NC
- 1,900 acres of wetlands (8 types)
- Integrated Natural Resources Management Plan
- Active prescribed fire program

ENVIRONMENTAL CONSIDERATIONS

Overall opinion that MOTSU is a good neighbor and land steward:

- Water resources
- Protected species
- Controlled burns/ land management
- Wildlife management
- NEPA documentation for proposed actions
- Environmental compliance

ENVIRONMENTAL CONSIDERATIONS

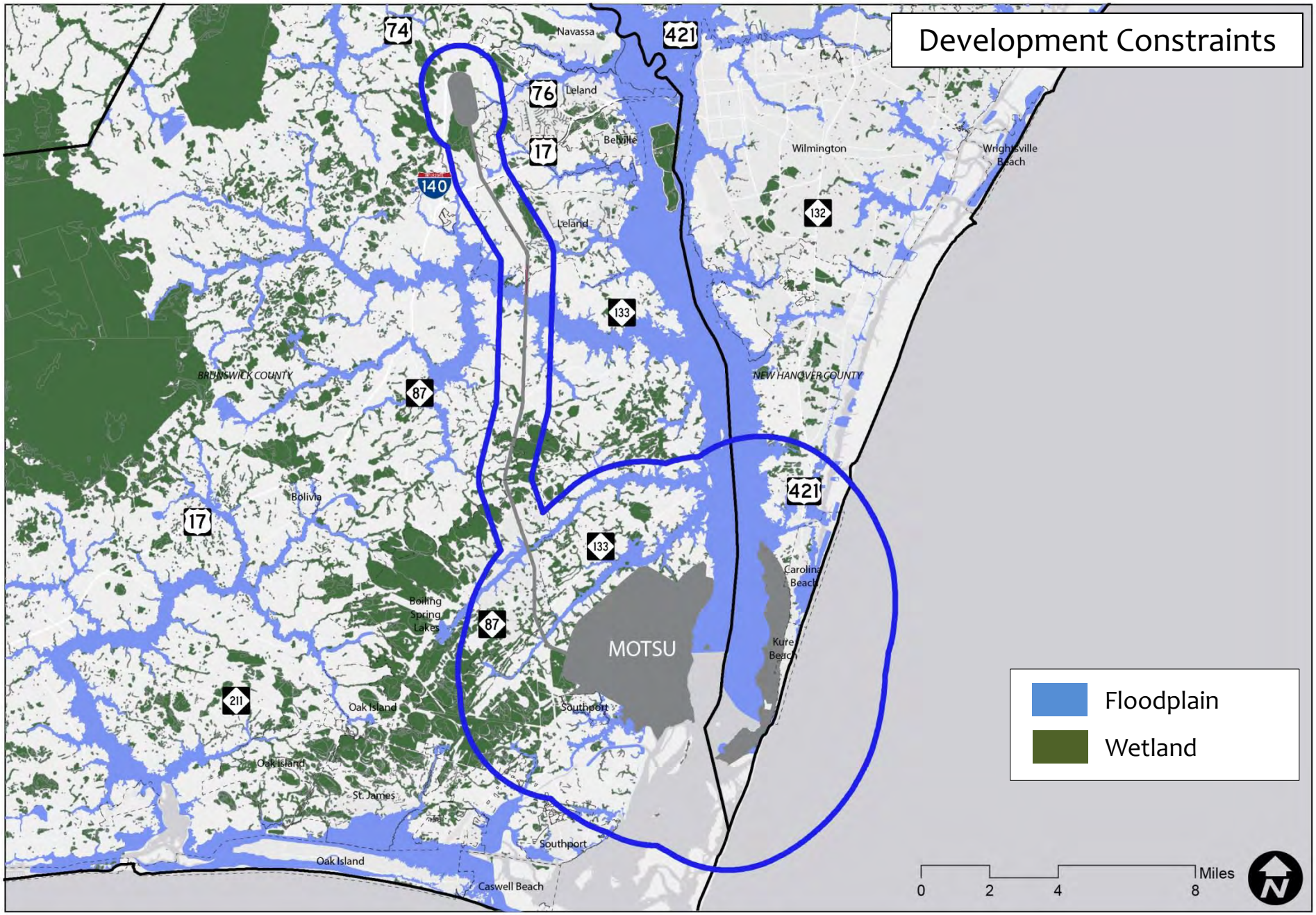
Relationship with Corps of Engineers

- Positive and close relationship with MOTSU
- Provides environmental, planning, AE design, real estate and construction support
- Provides and maintains navigable depths at berths
- Compliant with federal permits and regulations

ENVIRONMENTAL CONSIDERATIONS

Relationship with NCDEQ - Division of Coastal Management (CAMA)

- In full compliance with existing permits and regulations
- Work actively with MOTSU on permits and CZM consistency reviews
- Primary nursery areas and coastal reserve within buffer zone
- Land management and stormwater management activities in compliance


Development Constraints
Navassa
Leland
Belville
Wilmington
Wrightsville Beach
Leland
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
MOTSU
Carolina Beach
Kure Beach
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
74
421
76
17
140
132
133
87
17
133
421
87
211
Floodplain
Wetland
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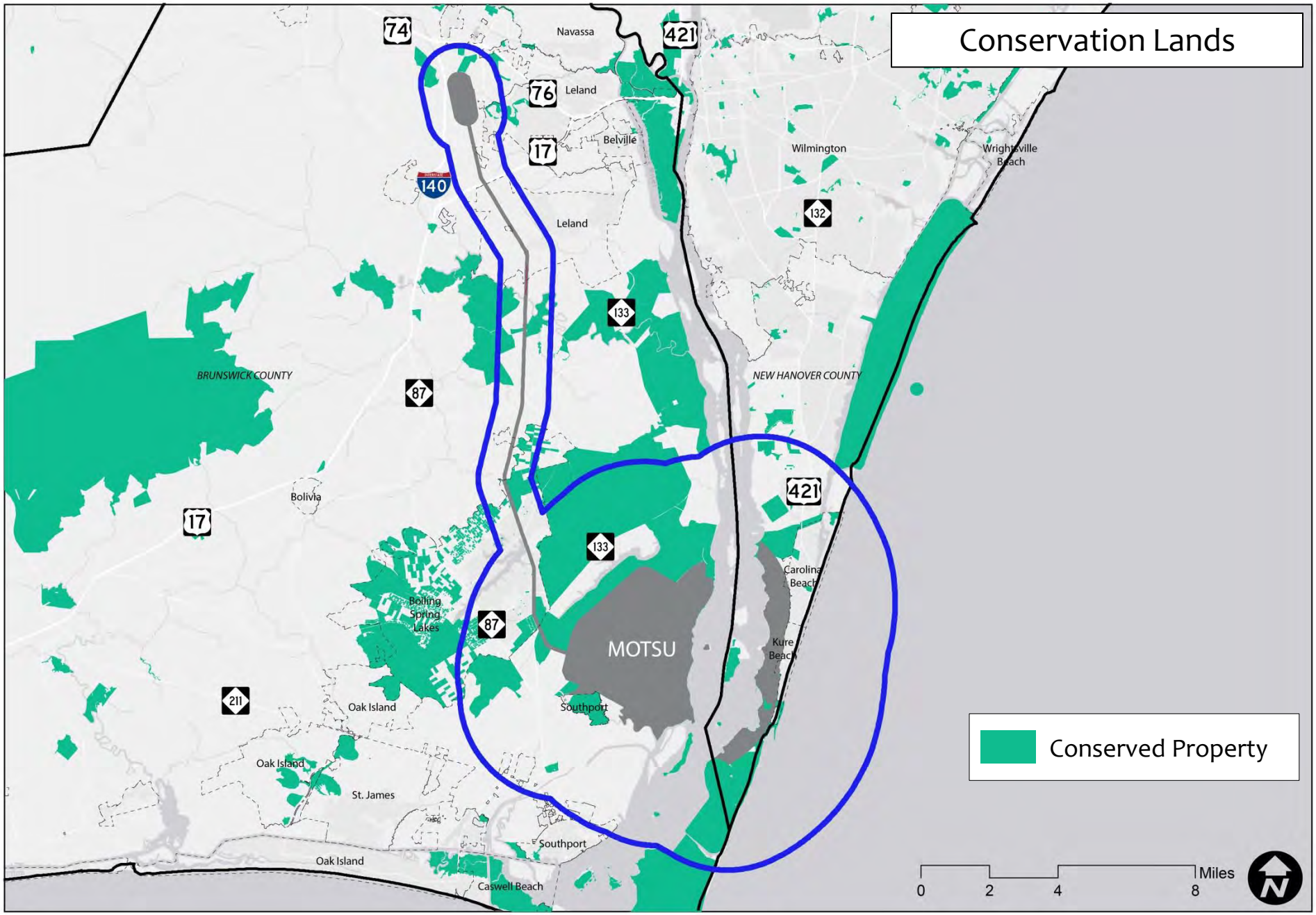
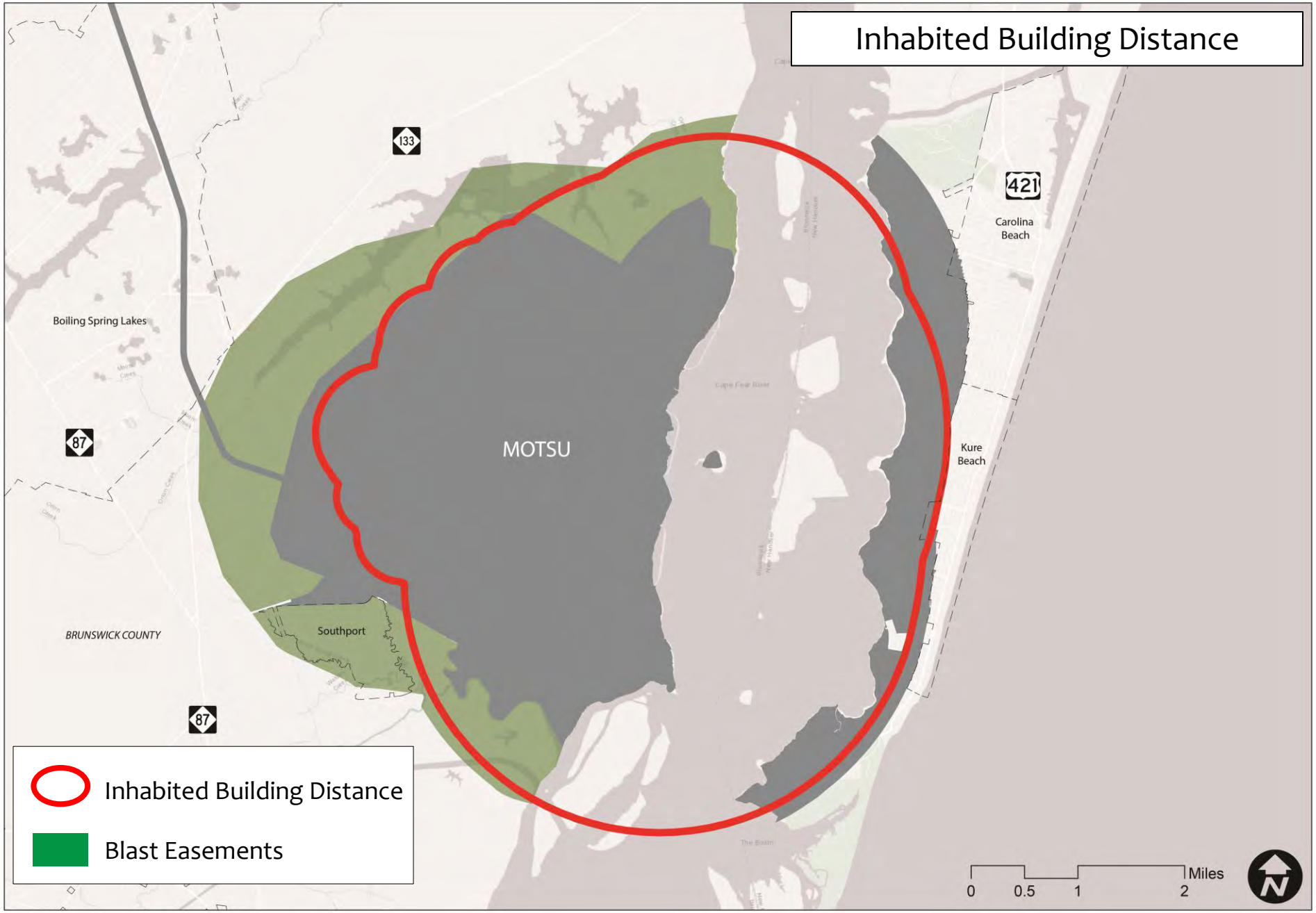
2
4
8
Miles


Conservation Lands
Navassa
Leland
Belville
Leland
Wilmington
Wrightsville Beach
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
MOTSU
Carolina Beach
Kure Beach
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
74
421
76
17
140
132
133
87
17
133
421
87
211
Conserved Property
0
2
4
8
Miles

COMPATIBILITY ANALYSIS

Inhabited Building Distance



IBD COMPATIBILITY

- DoD Manual 6055.09 / DA Pamphlet 385-64 establish siting criteria for certain uses within the Inhabited Building Distance (as well as other safety zones).
- Primarily focused on uses typically found on a military installation / ammunition facility.
- Best guidance available, and can be translated to apply to civilian uses.

DA PAM 385-64 USE TABLES

Table 8–5
Type of exposed sites and safe separation distance required—Continued

Type of structure/activity	Safe separation distance required	Notes
Loading docks serving operating buildings	ILD	Separate loading docks will be sited on the basis of use.
POV Parking Lots for administrative areas	PTRD	Minimum fragment distances apply.
POV Parking Lots serving multiple PESs	ILD	Access for emergency vehicles must be provided.
POV Parking Lots serving a single potential explosion site	ILD	1. May be separated at less than ILD only from its associated facility but no less than 100 feet is required to the associated facility to protect it from vehicle fires. 2. Access for emergency vehicles must be provided.
Rail holding yards	Aboveground magazine	Rail holding yards will be laid out on a unit car-group basis with each car-group separated by the applicable aboveground magazine distance. Separate from other facilities by applicable QD criteria.
Rail holding yards -Christmas tree	Aboveground magazine	1. Separated by the applicable aboveground magazine distance for the net quantity of HE in the cars on the spurs. 2. Will be separated from other facilities by the applicable QD criteria. 3. Arrangement consisting of a ladder track with diagonal dead-end spurs projecting from each side at alternate intervals.
Rail yards two parallel ladder tracks connected by diagonal spurs	Aboveground magazine	1. Separated by applicable aboveground magazine distance for the unit-group quantities of HE. 2. Will be separated from other facilities by the applicable QD criteria.
Railcar holding yards	QD separations are not required	May be used to interchange truck trailers or railcars between the commercial carrier and the Army activity and to conduct visual inspections.
Railcar inspection stations	QD separations are not required	1. They should be as remote as practical from hazardous or populated areas. 2. Activities that may be performed at the inspection station after railcars containing ammunition and explosives are received from the delivering carrier and before further routing within the garrison or installation are as follows: External visual inspection of the railcars. 3. Visual inspection of the external condition of the cargo packaging in vehicles (such as, trailers, railcars) that have passed the external inspection indicated above. 4. Interchange of railcars or MILVANS between the common carrier and the Army activity.
Railcar Interchange yards	Applicable QD tables apply unless meets remarks.	1. Railcar interchange yards are not subject to QD regulations when they are used exclusively— a. For the interchange of railcars containing ammunition and explosives between the commercial carrier and Army activities. b. To conduct external inspection of the railcars, or MILVANs containing ammunition and explosives. c. To conduct visual inspection of the external condition of the cargo
Recreational facilities - open air - no structures	Sited at not less than PTRD and preferably as near IBD as practical.	Open areas between explosive storage and handling sites and between these sites and non-explosive buildings and structures shall be controlled carefully regarding use for recreation or training facilities. As a general rule, the fragment hazard will be severe from the explosion site out to approximately the PTRD. For an exception, see table 8–16 and paragraph 8–15b.
Recreational facilities - structures, *including bleachers*	Sited at not less than IBD.	Open areas between explosive storage and handling sites and between these sites and non-explosive buildings and structures shall be controlled carefully regarding use for recreation or training facilities. As a general rule, the fragment hazard will be severe from the explosion site out to approximately the PTRD. For an exception, see table 8–16 and paragraph 8–15b.

Table 8–5
Type of exposed sites and safe separation distance required—Continued

Type of structure/activity	Safe separation distance required	Notes
Roll-on or roll-off operations (not involving lifting)	QD criteria apply to all roll-on or roll-off operations.	Site plans will be submitted in accordance with DA Pam 385–65. When QD requirements cannot be met the following mitigation factors should be considered: 1. Total NEWQD present shall not exceed 50,000 lbs. 2. Conducted on garrisons or installations under U.S. control, when possible, to limit exposures to the public. 3. All ammunition and explosives present (such as, in trailers, railcars, barges, ships) must be associated only with the RORO operation being conducted. 4. Roll-on or roll-off operations shall not exceed 24 hours following arrival of ammunition and explosives, including ammunition and explosives staged at a transshipment point. 5. Roll-on or roll-off operations shall be located as remote as practicable from populated areas, in order to minimize exposure of unrelated personnel. 6. Off-installation military vans/International Standardization Organization (MILVAN/ISO) container inter- or intra-modal transfers (involving highway and rail modes only) where containers are not stored or other operations performed.
Secure explosives holding area.	Aboveground magazine	1. Will be laid out on a unit truck-group basis with each group separated by the applicable aboveground magazine distances. 2. Will be separated from other facilities by the applicable QD criteria. 3. An area designated for the temporary parking of commercial carriers' motor vehicles transporting DOD-owned Arms, Ammunition, and Explosives (AAE), classified (SECRET or CONFIDENTIAL) materials, and controlled cryptographic item (CCI). There are two types of secure holding areas. (Note: Although the intent of such areas is to provide a secure storage location for commercial carriers while in-transit, or during emergencies or other circumstances that are beyond a carrier's control, this Standard imposes no requirement for garrisons or installations to have such areas. The term Secure Holding Area is applicable to areas (CONUS, Hawaii, Alaska, and Puerto Rico) governed by Part 205 of Defense Transportation Regulation (DTR) 4500.9–R, Part II Cargo Movement.
Secure Non-explosives Holding Area	The holding of HD 1.4S materials, without regard to QD, is permitted at this location	No siting required if located outside all QD arcs. If located within a QD arc, provide appropriate safe separation distance.
Security posts and similar locations	Prudent fire protection	May be at explosives operations servicing only one building or operation.
Service tanks - Unprotected	May be sited in accordance with table 8–7 provided the conditions in the notes are met-	1. Unprotected service tanks which support aboveground explosives storage or operating complexes, but not inhabited buildings (such as those in administrative, supply, industrial, and housing areas). 2. The Command must accept the possible loss of the tanks and any collateral damage that a fire might cause if the tanks were punctured by fragments. 3. A dike system must be installed meeting the requirements of NFPA, part 30 to provide spill containment. 4. If the tank is supplied by a pipe system as opposed to a tank truck, then the supply pipe must be protected from blast and fragments to prevent a spill larger than the contents of the tank. If the supply pipe is underground, it will be located from PESs in accordance with be-
Storage tanks for water	-QD does not apply if the loss of the water tank is acceptable -IBD applies if the loss of the water tank is unacceptable -Buried tanks and associated components of like value shall meet the siting requirements below for underground tanks	1. A key QD consideration is whether loss of the water tank is acceptable. If a water tank is used for firefighting and no adequate alternate water supplies exist, the tank is essential and its loss is unacceptable. If adequate alternate water supplies do exist, loss of the tank may be acceptable. However, consider other factors, such as the replacement cost of the tank and the effect of its loss on the garrison or installation mission, before making a final determination. 2. The Command shall designate the approval authority level for the siting of aboveground water tanks within IBD of PESs, and for buried tanks or pipelines sited at less than the distances required see "Underground pipelines".

DA PAM 385-64 USE TABLE EXAMPLES

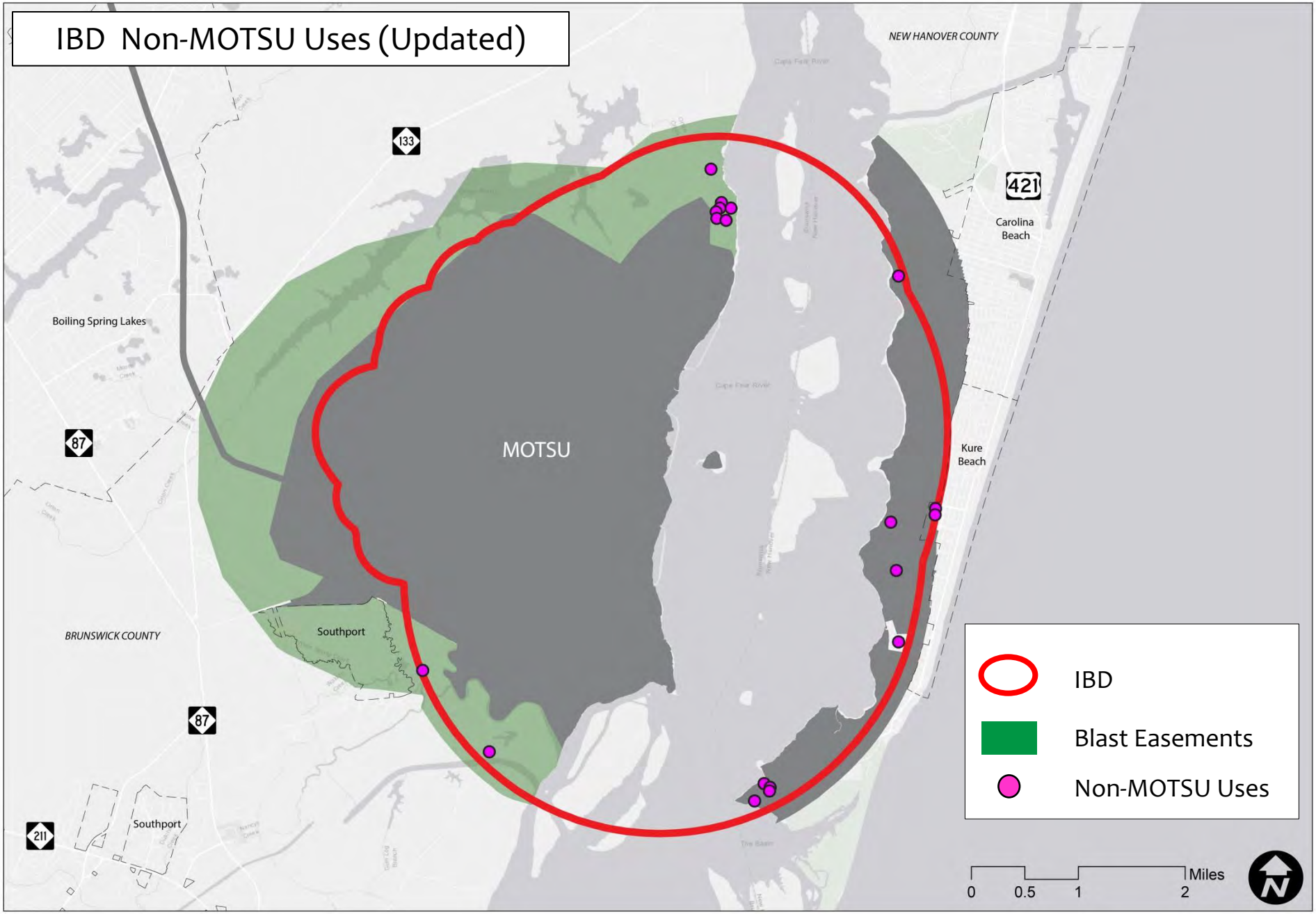
RECREATION USES

Recreational facilities - open air - no structures	Sited at not less than PTRD and preferably as near IBD as practical.	Open areas between explosive storage and handling sites and between these sites and non-explosive buildings and structures shall be controlled carefully regarding use for recreation or training facilities. As a general rule, the fragment hazard will be severe from the explosion site out to approximately the PTRD. For an exception, see table 8–16 and paragraph 8–15b.
Recreational facilities - structures, *including bleachers*	Sited at not less than IBD.	Open areas between explosive storage and handling sites and between these sites and non-explosive buildings and structures shall be controlled carefully regarding use for recreation or training facilities. As a general rule, the fragment hazard will be severe from the explosion site out to approximately the PTRD. For an exception, see table 8–16 and paragraph 8–15b.

WATER STORAGE TANKS

Storage tanks for water	-QD does not apply if the loss of the water tank is acceptable -IBD applies if the loss of the water tank is unacceptable -Buried tanks and associated components of like value shall meet the siting requirements below for underground tanks	1. A key QD consideration is whether loss of the water tank is acceptable. If a water tank is used for firefighting and no adequate alternate water supplies exist, the tank is essential and its loss is unacceptable. If adequate alternate water supplies do exist, loss of the tank may be acceptable. However, consider other factors, such as the replacement cost of the tank and the effect of its loss on the garrison or installation mission, before making a final determination. 2. The Command shall designate the approval authority level for the siting of aboveground water tanks within IBD of PESs, and for buried tanks or pipelines sited at less than the distances required see "Underground pipelines".

IBD Non-MOTSU Uses (Updated)



IBD USE CHARACTERISTICS

- Identified 19 sites / uses / structures within the Inhabited Building Distance ESQD arc.
  - 17 public / 2 private
  - 9 on MOTSU land (excludes USAF Rec. Area)
  - USAF recreation area is on US Government (not MOTSU land) and is subject to a separate compatible use agreement
  - 9 within compatible use easements
  - Uses on MOTSU land subject to licenses granted by the Department of the Army

IBD USE CHARACTERISTICS

- Public works facilities (water / wastewater)
- Public park in Kure Beach
- USAF Recreation Area – not part of MOTSU
- FAA Joint Surveillance System Radar Facility
- Fort Fisher Ferry – landing, admin building, parking area, etc.
- NCWRC Boat Ramp
- Brunswick Town / Fort Anderson – historic sites and structures, visitors center, support bldgs.
- Duke Energy firing range

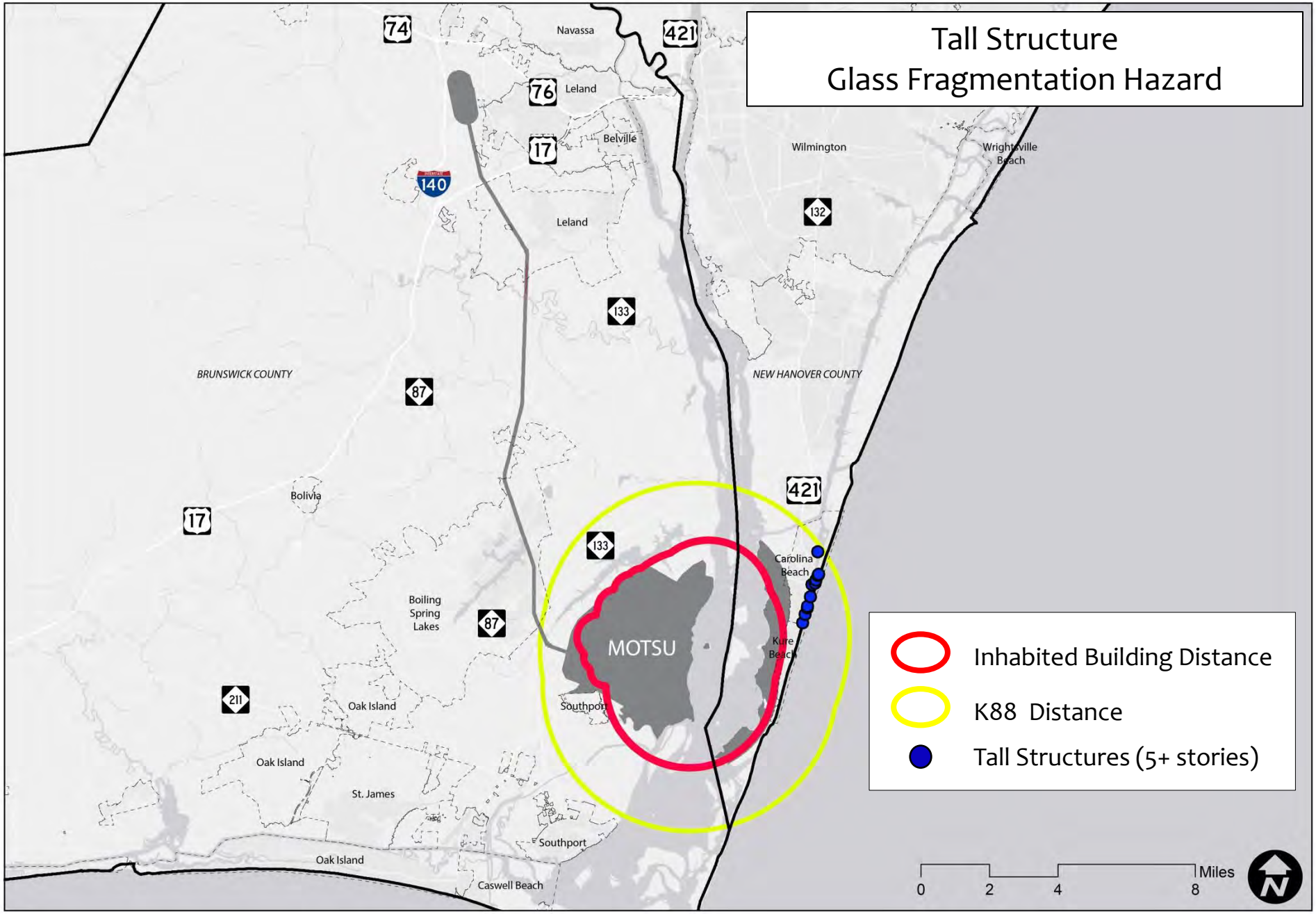
GLASS FRAGMENTATION HAZARDS

DoD Manual 6055.09 Extract

Table V1.E8.T3. Probability of Window Breakage from Incident Pressure

K-Factor ($ft/lb^{1/3}$)	Incident Pressure (psi)	Probability of Breakage (%) for Windows Facing PES		
K_m-Factor [$m/kg^{1/3}$]	Incident Pressure [kPa]	Window 1[a]	Window 2[b]	Window 3[c]
40	1.2	85	100	100
15.87	8.3			
50	0.9	60	100	100
19.84	6.2			
60	0.7	41	100	100
23.80	4.8			
70	0.6	26	100	100
27.77	4.1			
80	0.5	16	94	100
31.74	3.4			
90	0.4	10	76	100
35.70	2.8			
100	0.3	6	55	100
39.67	2.1			
150	0.2	1	8	49
59.51	1.4			
328	0.0655	0	0.1	0.8
130.12	0.45			

a	12 inches x 24 inches x 0.088 inches float annealed (area = 2 ft^2)
	30.5 centimeters (cm) x 61 cm x 0.223 cm float annealed (area = 0.186 square meters (m^2))
b	24 inches x 24 inches x 0.088 inches float annealed (area = 4 ft^2)
	61 cm x 61 cm x 0.223 cm float annealed (area = 0.372 m^2)
c	42 inches x 36 inches x 0.12 inches float annealed (area = 10.5 ft^2)
	106.7 cm x 91.4 cm x 0.305 cm float annealed (area = 0.975 m^2)


Tall Structure
Glass Fragmentation Hazard
Navassa
Leland
Belville
Wilmington
Wrightsville Beach
Leland
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
Oak Island
Oak Island
St. James
Southport
Oak Island
Caswell Beach
Carolina Beach
Kure Beach
MOTSU
Southport
74
421
76
17
140
132
133
87
17
133
421
87
211
Inhabited Building Distance
K88 Distance
Tall Structures (5+ stories)
0
2
4
8
Miles

EMERGENCY EVACUATION CRITERIA

- DoD Manual 6055.09 / DA Pamphlet 385-64 establish identical "Emergency Withdrawal Distances for Nonessential Personnel"
- Distances are intended for initial response to an incident involving ammunition/explosives.
- Substitute guidance in the absence of ESQD arcs for the rail line.
- Applies to both transportation and facilities

EVACUATION DISTANCES

- Railcar incident evacuation distance when over 500 lbs: 5,000 ft.
- Facility incident evacuation distance when over 55,285 lbs: $D=105W^{1/3}$

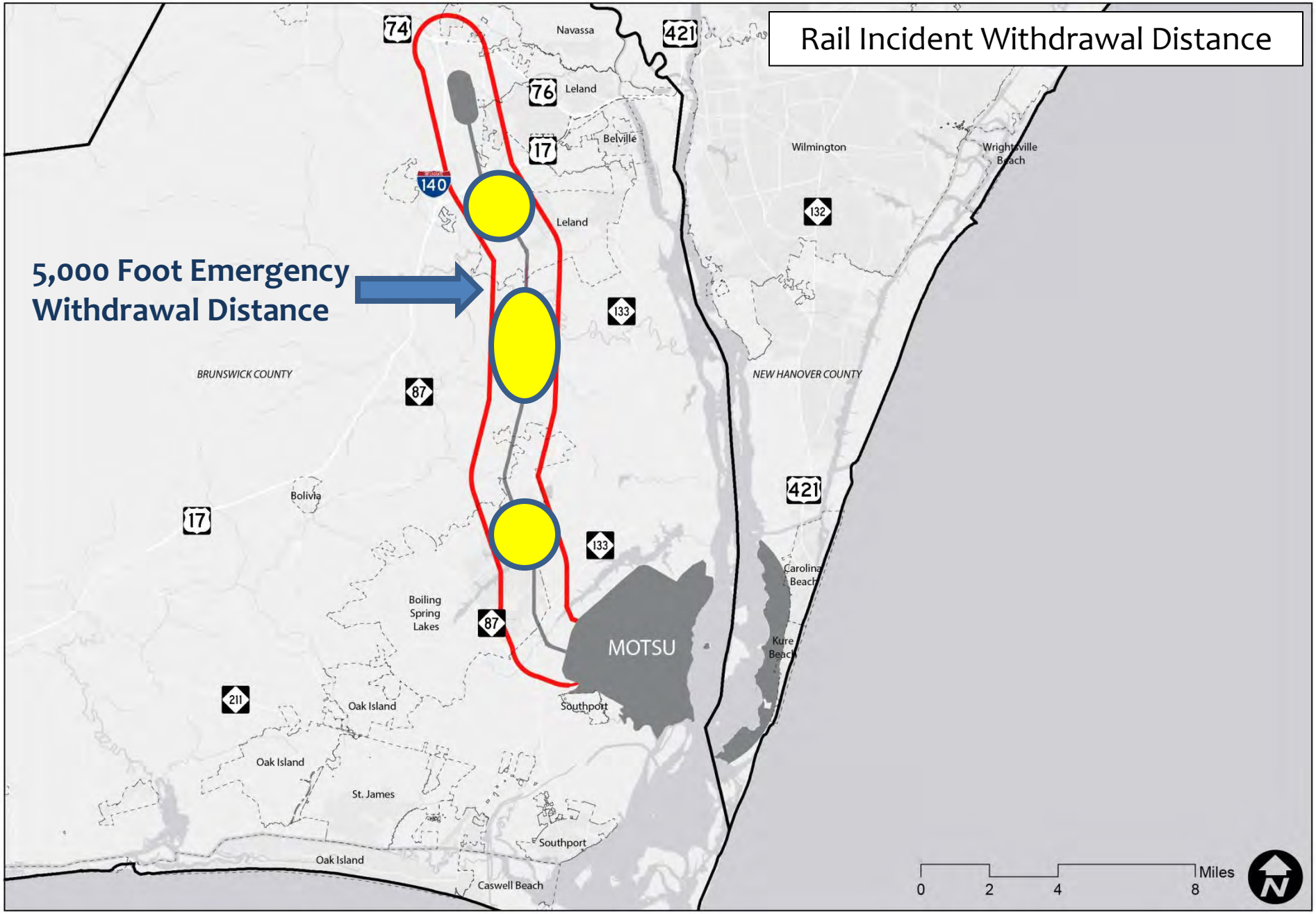
Table V1.E10.T10. Emergency Withdrawal Distances for Nonessential Personnel[a]

HD	Unknown Quantity (ft) [m]	Known Quantity (ft) [m]
Unknown, located in facility, truck, or tractor trailer	4,000 [1,219]	4,000 [1,219]
Unknown, located in railcar	5,000 [1,524]	5,000 [1,524]
1.1[b] and 1.5	Same as unknown facility, truck, trailer, or railcar as appropriate	For Transportation: NEWQD ≤ 500 lbs: D = 2,500 ft NEWQD ≤ 226.8 kg: D = 762 m NEWQD > 500 lbs: D = 5,000 ft for railcars D = 4,000 ft for other modes NEWQD > 226.8 kg: D = 1,524 m for railcars D =1,219 m for other modes For bombs and projectiles with caliber 5 inch [127 mm] or greater: D = 4,000 ft D = 1,219 m
		For Facilities: NEWQD ≤ 15,000 lbs: D = 2,500 ft NEWQD ≤ 6,804 kg: D = 762 m 15,000 lbs < NEWQD ≤ 55,285 lbs: D = 4,000 ft 6,804 kg < NEWQD ≤ 25,077 kg: D = 1,219 m NEWQD > 55,285 lbs: $D = 105W^{1/3}$ NEWQD > 25,077 kg: $D = 41.65Q^{1/3}$
1.2[b] and 1.6	2,500 [762]	2,500 [762]
1.3	600 [183]	Twice IBD with a 600 ft [183 m] minimum (V3.E3.T13)
1.4	300 [91.5]	300 [91.5]

a Emergency withdrawal distances do not consider the potential flight range of propulsion units.

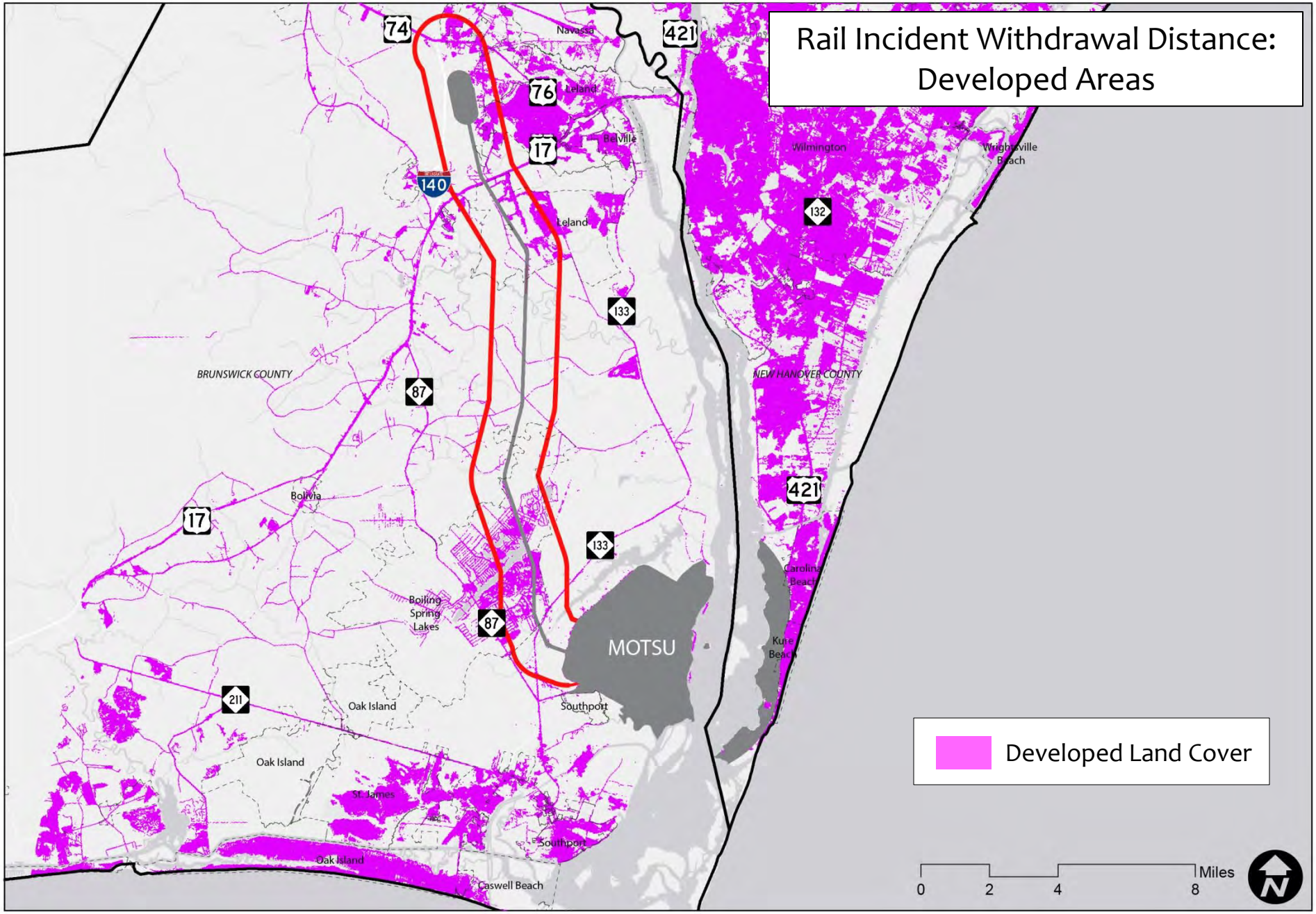
b For HD 1.1 and HD 1.2 AE, if known, the maximum range that fragments and debris will be thrown (including the interaction effects of stacks of items, but excluding lugs, strongbacks, and/or nose and tail plates) may be used to replace the distances given.

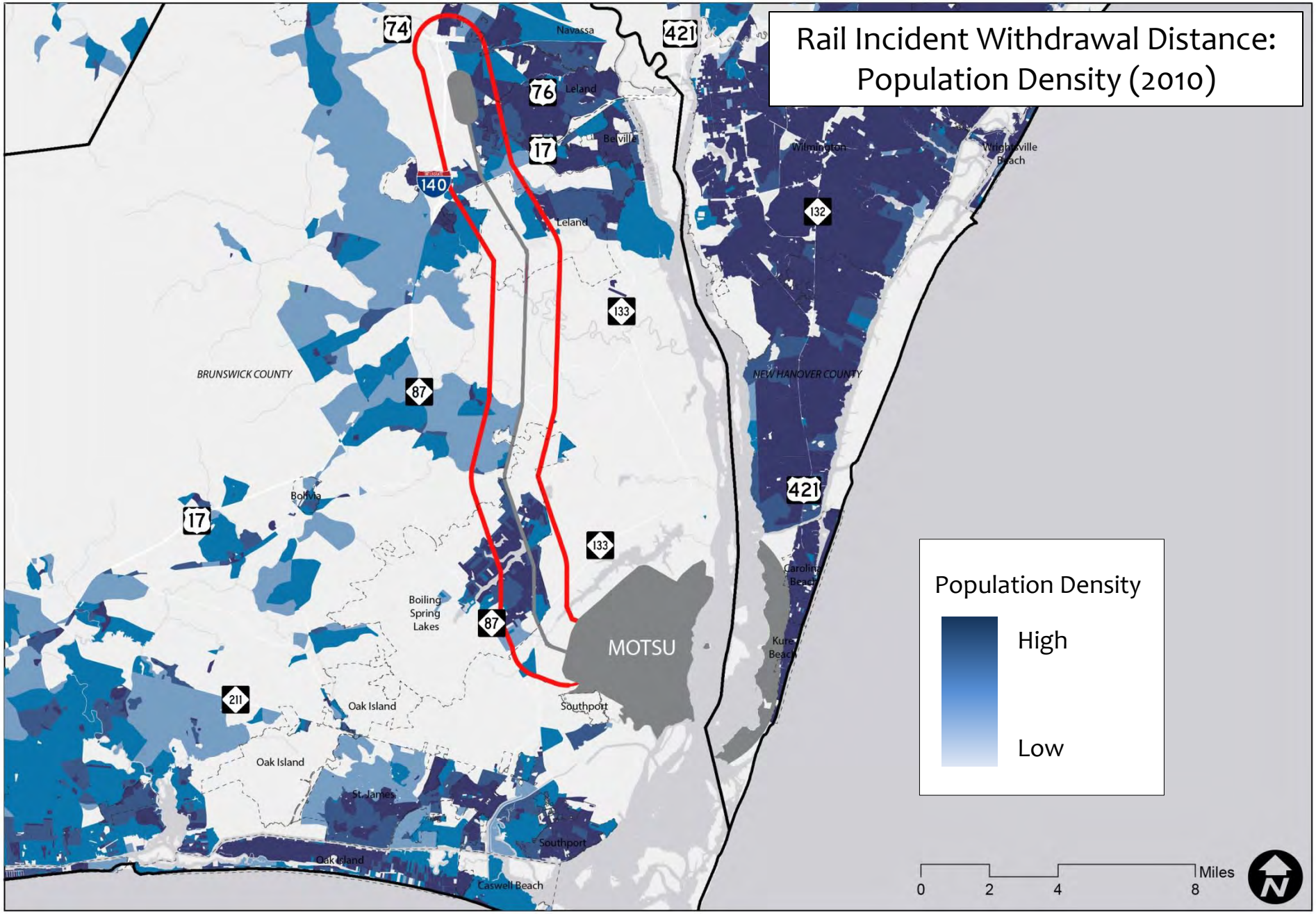
Rail Incident Withdrawal Distance



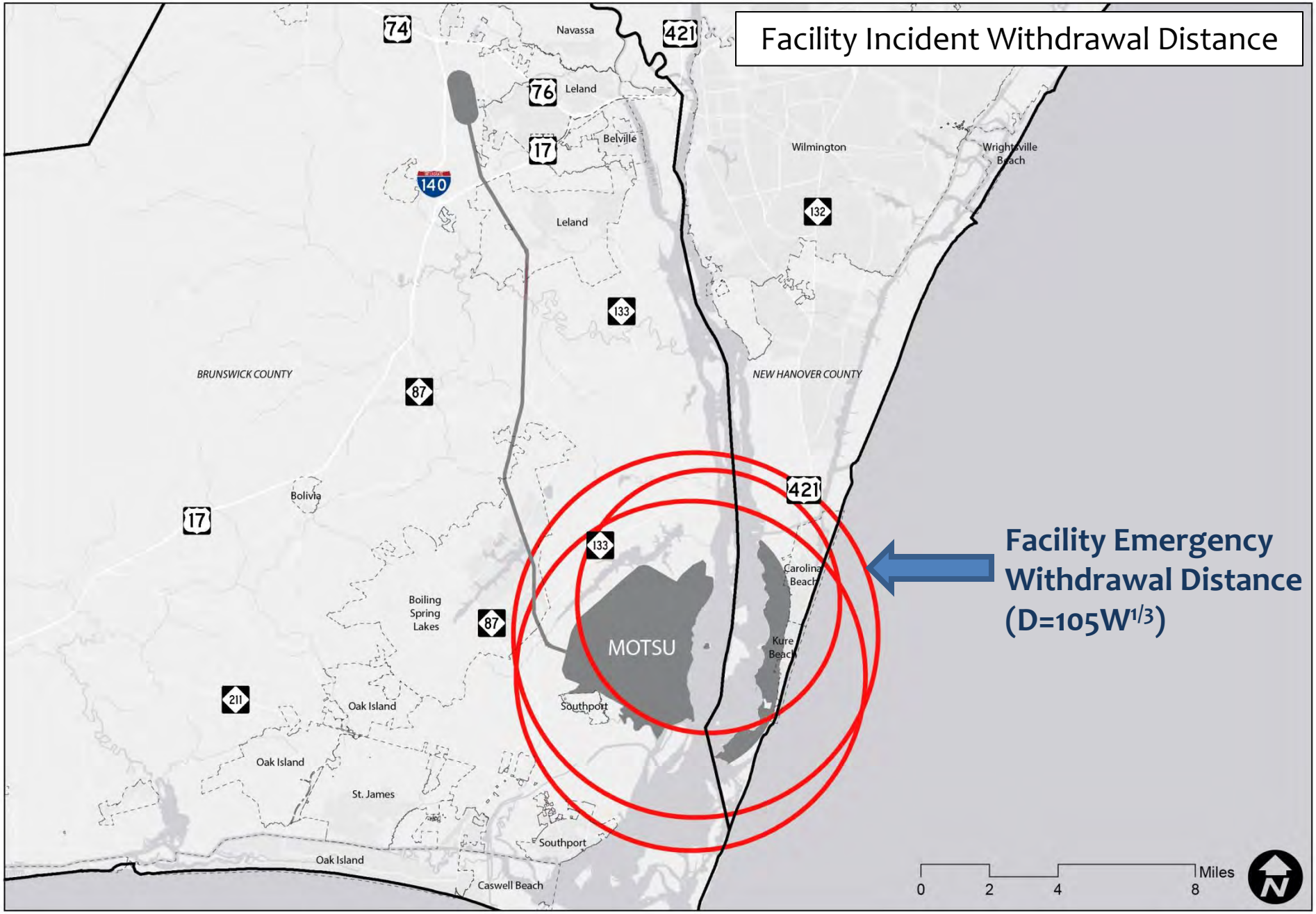
RAIL INCIDENT WITHDRAWAL AREA

- Distance applies to any given point on the line where an incident occurs, not the entire line.
- Withdrawal distance may be increased based on the specific situation.
- Area Characteristics:
  - 2010 Population: +/- 11,200
  - 2010 Dwelling Units: +/- 5,200
- Concerns:
  - South Brunswick School Campus
  - Northwest District Park
  - US 17 Commercial Area
  - US 74/76 Industrial Area


Rail Incident Withdrawal Distance:
Developed Areas
74
Navassa
421
76
Leland
17
Belville
140
Leland
Wilmington
Wrightsville Beach
132
133
BRUNSWICK COUNTY
87
NEW HANOVER COUNTY
Bolivia
17
421
133
Caroline Beach
Boiling Spring Lakes
87
MOTSU
Kure Beach
211
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
Developed Land Cover
0
2
4
8
Miles


Rail Incident Withdrawal Distance:
Population Density (2010)
Navassa
Leland
Bevill
Wilmington
Wrightsville Beach
Leland
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
MOTSU
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
Carolina Beach
Kure Beach
74
421
76
17
140
132
133
87
17
133
421
87
211
Population Density
High
Low
0
2
4
8
Miles

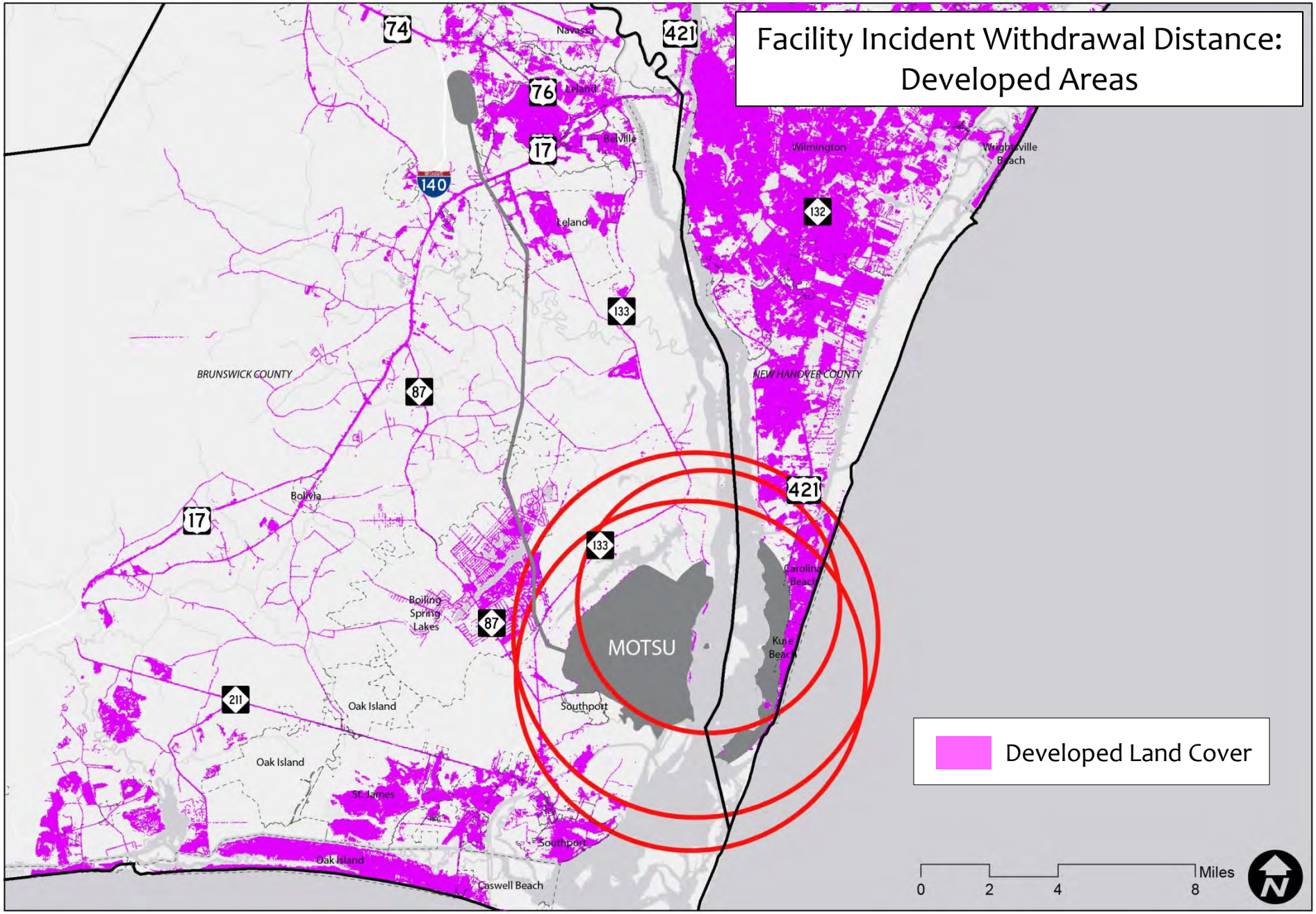
Facility Incident Withdrawal Distance

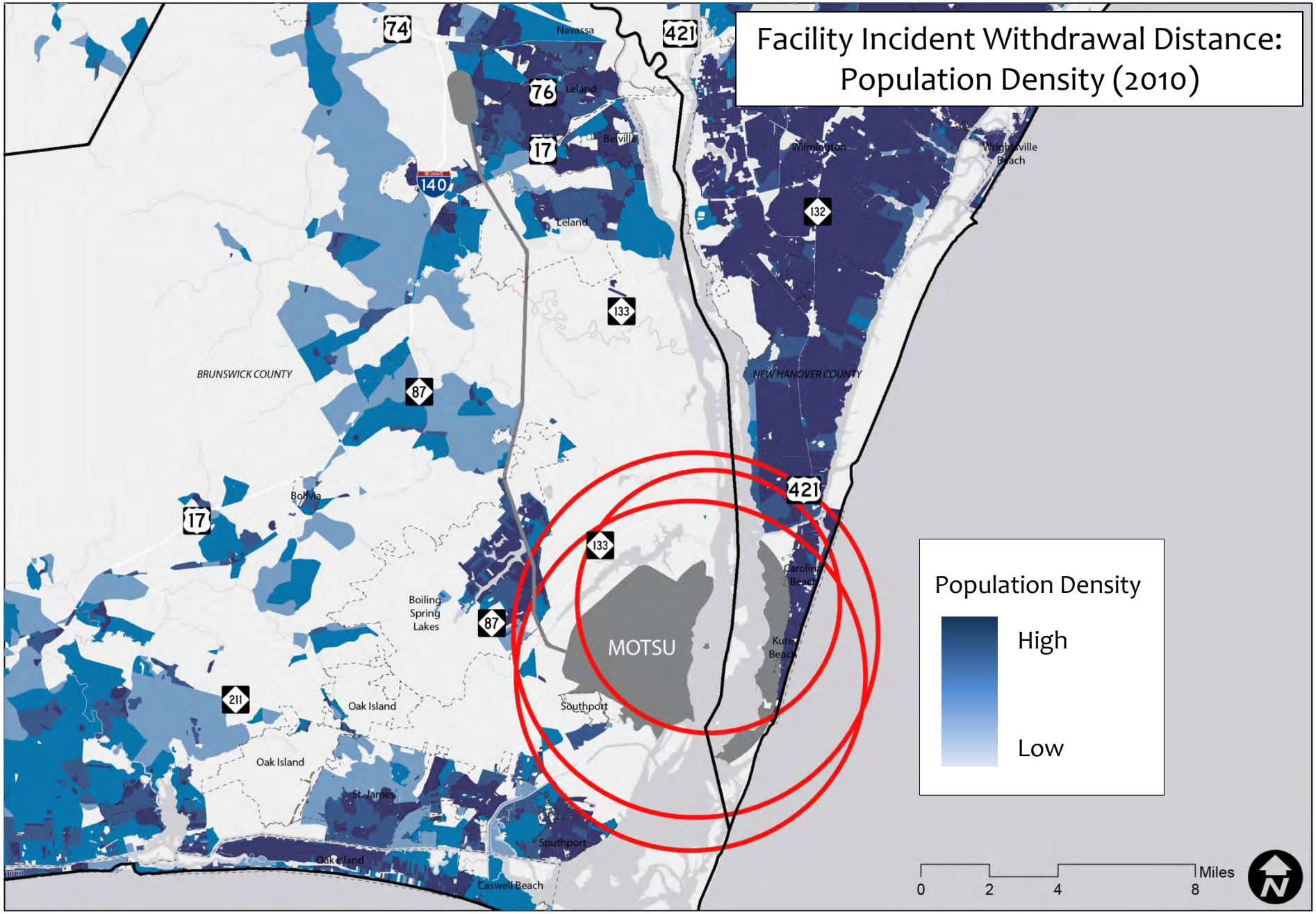


Facility Emergency Withdrawal Distance ($D=105W^{1/3}$)

FACILITY INCIDENT WITHDRAWAL AREA

- Distance applies to any given facility – docks were used as an example.
- Withdrawal distance may be increased based on the specific situation.
- Area Characteristics:
  - 2010 Population: +/- 14,300 (excludes seasonal)
  - 2010 Dwelling Units: +/- 10,850
- Concerns
  - Brunswick Nuclear Station
  - Pleasure Island Evacuation Route
  - South Brunswick High School Campus


Facility Incident Withdrawal Distance: Developed Areas
74
Navassa
421
76
Leland
17
Belville
140
Wilmington
Wrightsville Beach
132
Leland
133
BRUNSWICK COUNTY
87
NEW HANOVER COUNTY
Bolivia
421
17
133
Carolina Beach
Boiling Spring Lakes
87
MOTSU
Kure Beach
211
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
Developed Land Cover
0
2
4
8
Miles


Facility Incident Withdrawal Distance:
Population Density (2010)
Navassa
Leland
Belville
Wilmington
Wrightsville Beach
Leland
BRUNSWICK COUNTY
NEW HANOVER COUNTY
Bolivia
Boiling Spring Lakes
MOTSU
Carolina Beach
Kure Beach
Oak Island
Southport
Oak Island
St. James
Southport
Oak Island
Caswell Beach
74
421
76
17
140
132
133
87
17
133
421
87
211
Population Density
High
Low
0
2
4
8
Miles

EXAMPLES OF OTHER AREAS OF POTENTIAL COMPATIBILITY CONCERN

- Cape Fear main shipping channel and ICWW channel from Snows Cut (pass-by traffic) within safety zones.
- Regional traffic congestion concerns
- Flooding – maintaining road and rail access
- Grade crossings on the rail line to Leland
- Brunswick Nuclear Station

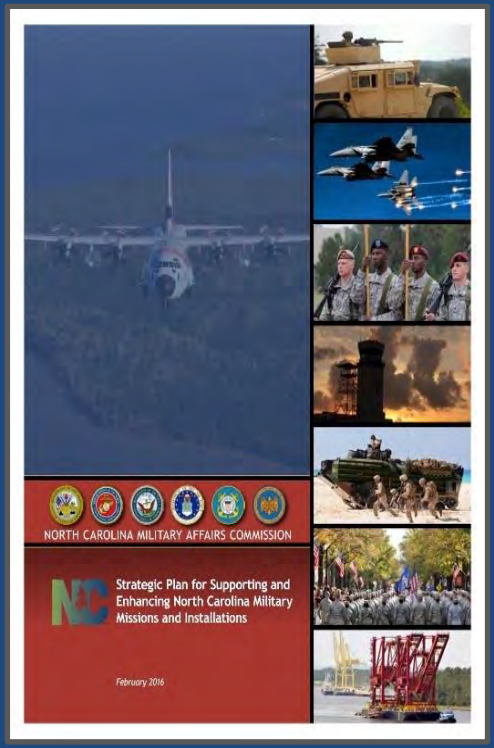
PLANNING AND DEVELOPMENT REGULATION REVIEW

PLANNING AND DEVELOPMENT REGULATION REVIEW

- Summary of relevant NC land use and military-related statutes
- Overview of existing plans and ordinances for local governments within the JLUS Study Area
  - Two (2) counties
  - Five (5) municipalities

- Planning & Regulation of Development
  - Counties: N.C.G.S. §§ 153A-320 thru -390
  - Cities: N.C.G.S. §§ 160A-360 thru -459.1
  - CAMA: N.C.G.S. §§ 113A-106 thru -112

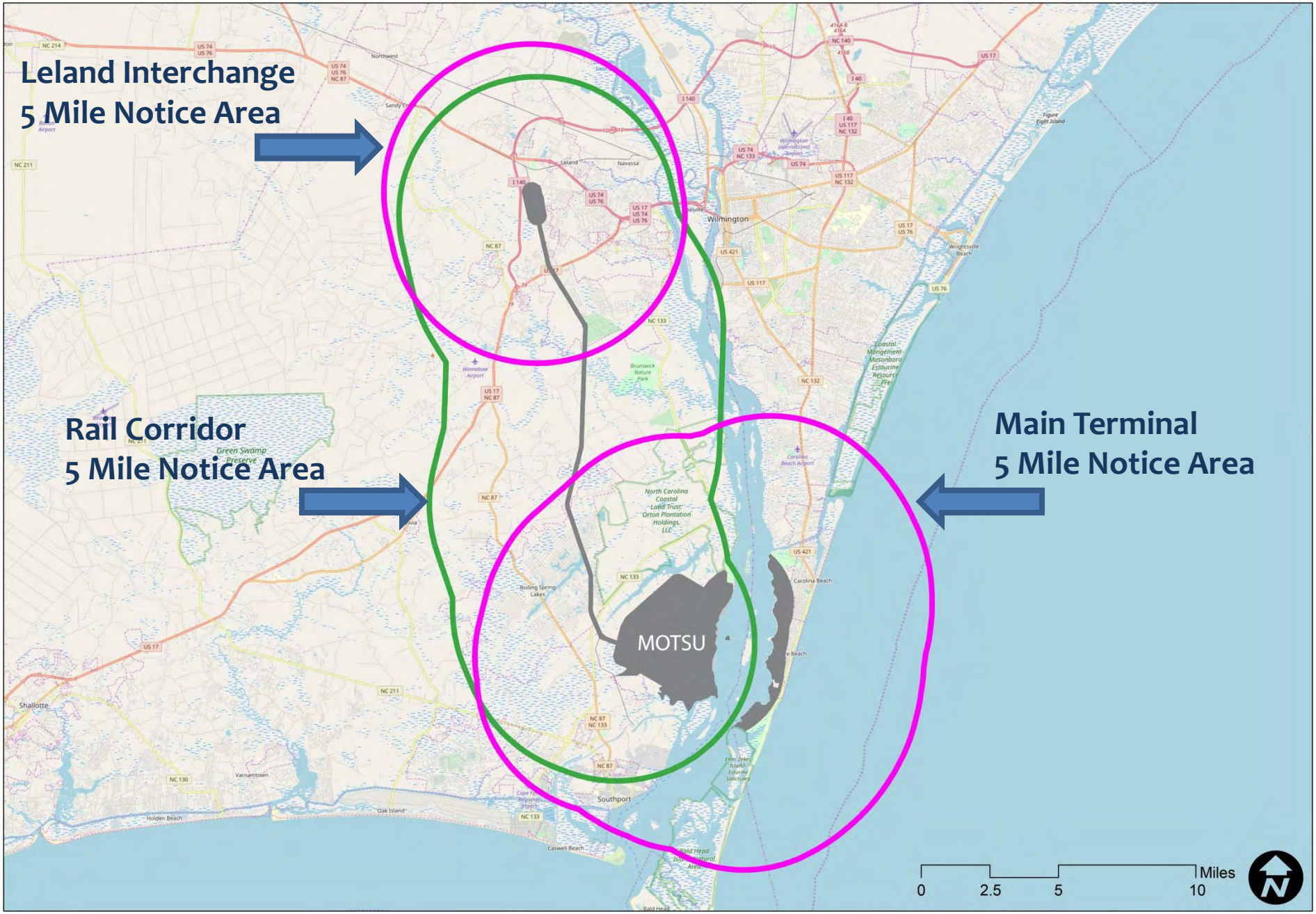
- Military Affairs Commission
  - N.C.G.S. §§ 143B-1310 thru -1314
  - Strategic Plan updated every 4 years (next is 2020)
  - Annual Report made to General Assembly



Military Coordination & Notice

- N.C.G.S. § 153A-323 [counties]
- N.C.G.S. § 160A-364 [cities]

- Within five (5) miles of boundary of military base, jurisdictions must notify commander of proposed changes:
  - To the zoning map;
  - Affecting permitted uses of land;
  - Related to telecom towers or windmills; or
  - To proposed new major subdivision preliminary plats;
  - Or >50% increases in approved subdivision size.


Leland Interchange
5 Mile Notice Area
Rail Corridor
5 Mile Notice Area
Main Terminal
5 Mile Notice Area
MOTSU
Wilmington
Leland
Navassa
Southport
Carolina Beach
Shallotte
Holden Beach
Oak Island
Caswell Beach
Varnamtown
Wrightsville Beach
Figure Eight Island
Brunswick Nature Park
Green Swamp Preserve
Winnabow Airport
Wilmington International Airport
Carolina Beach Airport
Boiling Spring Lakes
North Carolina Coastal Land Trust Orton Plantation Holdings, LLC
Coastal Mangement-Masonboro Estuarine Resource Ple
Elm Zeke Islands Estuarine Sanctuary
Bald Head Island Natural Area
Northwest
Sandy Cr
NC 214
US 74 US 76
US 74 US 76 NC 87
NC 211
I 140
US 74 US 76
US 17 US 74 US 76
NC 87
US 17
NC 133
US 17 NC 87
US 421
US 117
NC 132
US 76
US 17
NC 130
NC 87 NC 133
US 74 NC 133
US 74
US 117 NC 132
I 140 US 117 NC 132
NC 140
US 17 US 76
0
2.5
5
10
Miles

NORTH CAROLINA STATUTES

Military Lands Protection Act of 2013

- N.C.G.S. §§ 143-151.70 to -151.77
- Prohibits construction of a "tall building or structure" (200' or greater) within 5 miles without approval of State Construction Office

- Exempts wind energy facilities (due to extensive siting requirements per N.C.G.S. § 215.115 *et seq.*)

NORTH CAROLINA STATUTES

Military Presence Stabilization Fund

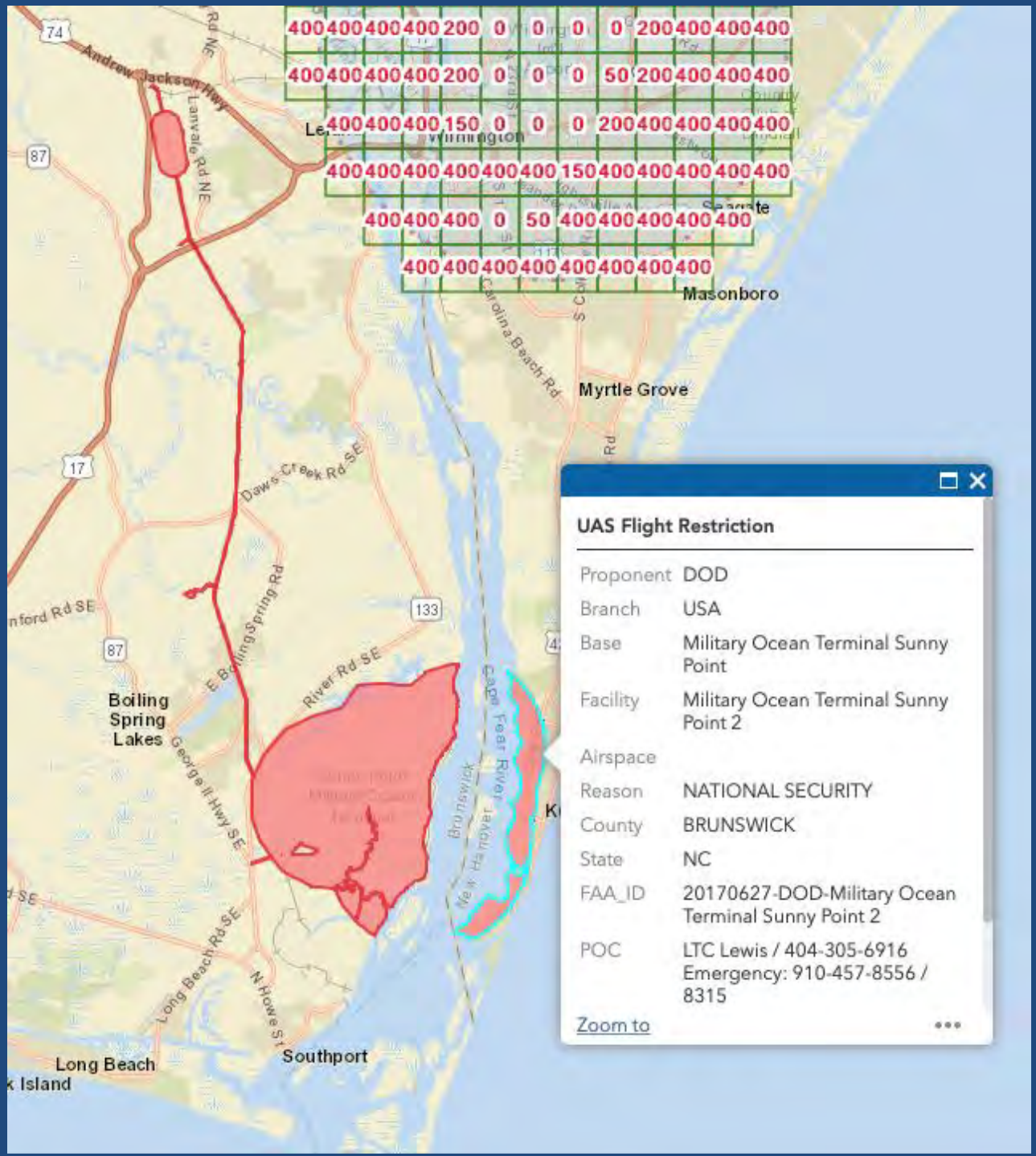
- N.C.G.S. §§ 143B-1217
- NC Military Affairs Commission approves use of Fund for actions designed to make the State less vulnerable to BRAC and related initiatives
- The Fund can be used for:
  - Grants to local communities or military installations
  - Public-public/public-private initiatives
  - Identification and implementation of innovative measures to increase the military value of installations

FAA RULES FOR UAS

- FAA, under 14 CFR § 99.7 — Special Security Instructions (SSI), prohibit all UAS flight operations within the lateral boundaries of sensitive facilities
  - Specific locations depicted on an interactive online map

- Restrictions:
  - Extend from ground up to 400 feet AGL;
  - Apply to all types & purposes of UAS flight; and
  - Remain in effect 24/7

FAA ONLINE MAPS FOR UAS

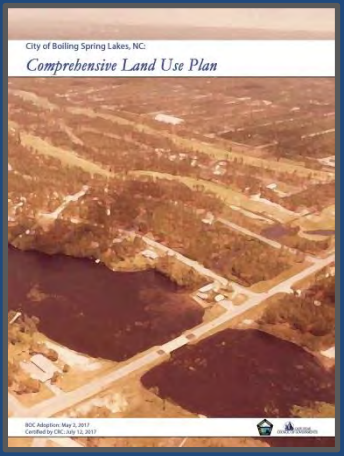


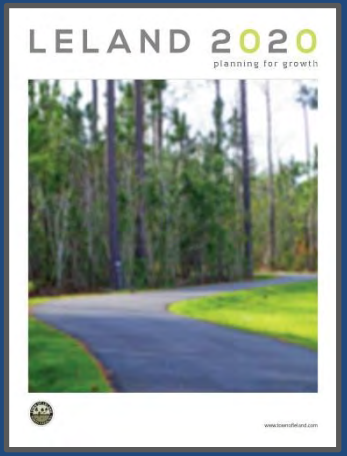
STUDY AREA JURISDICTIONS

- 3 municipalities exercise ETJ
- No military overlay zoning districts, land use limitations, or subdivision regulations
  - Brunswick County has a "Military Installation" special base zoning district
- Most jurisdictions require plat notices re: certain property characteristics

STUDY AREA JURISDICTIONS

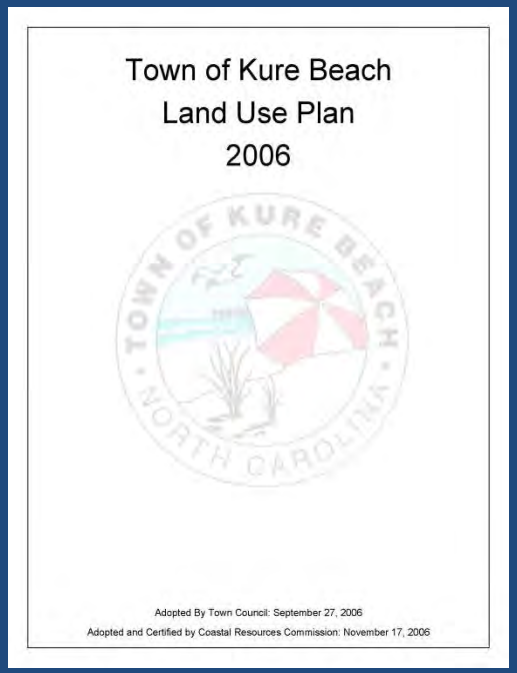
- All jurisdictions have a comprehensive land use plan
- Most provide at least background information on MOTSU
- 1 jurisdiction (Kure Beach) provides specific land use limitation policies to address compatibility with military operations





STUDY AREA JURISDICTIONS

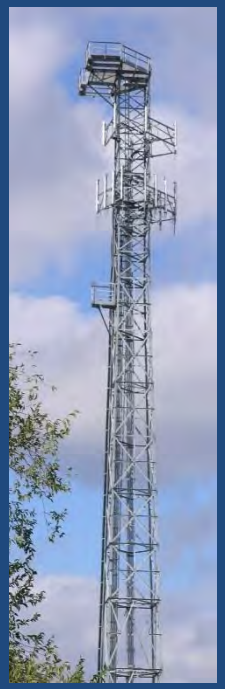
- **Kure Beach Land Use Plan 2006**
  - Explicitly expresses desire of the Town for the MOTSU buffer zone to remain in a natural state with the Town Public Works activities (including water, sewer, or stormwater) being the only allowable use.


Town of Kure Beach
Land Use Plan
2006

Adopted By Town Council: September 27, 2006
Adopted and Certified by Coastal Resources Commission: November 17, 2006

STUDY AREA JURISDICTIONS

- **Military Notice Requirements per N.C.G.S.**
  - Some jurisdictions are informally coordinating
  - 2 have incorporated the statutory requirement into their Codes, to one degree or another (Brunswick County and Carolina Beach)
- **Tall Structure Notice Requirements per N.C.G.S.**
  - No jurisdictions have adopted
- **Wind Energy Facility Requirements per N.C.G.S.**
  - No jurisdictions have adopted



CONFLICT RESOLUTION STRATEGIES

CONFLICT RESOLUTION STRATEGIES

MANDATORY	BLENDED	VOLUNTARY
Zoning Ordinances	Comprehensive / Land Use Plans	Development Guidelines
Legal Agreements	Interagency Coordination	MOUs
Land Acquisition	Easement Purchases	Advocacy Groups
State / Fed. Statutes	Joint Planning	Promotional Activities

EXAMPLE 1

- **Issue:** Local governments do not currently restrict use, density, or intensity of development based on proximity to the MOTSU rail corridor.
- **Strategy:** Zoning regulations could be implemented that exclude certain uses (schools, daycares, multi-family, etc.) and limit development density for potentially compatible uses (e.g. large lot single family residential).

EXAMPLE 2

- **Issue:** The federally restricted portion of the Cape Fear River related to MOTSU does not extend the entire width of the river, creating safety / security concerns.
- **Strategy:** Local governments could lend support to MOTSU seeking modification to the Code of Federal Regulations that govern the extent of the restricted maritime area in the river.

EXAMPLE 3

- **Issue:** Plantation Road (NCDOT maintained) provides public access to MOTSU's back gate, Brunswick Town, and Orton Plantation property.
- **Strategy:** NCDOT, MOTSU and NCDNCR could work together with Orton to identify access control / road ownership changes that would enhance security and access concerns for each entity.

EXAMPLE 4

- **Issue:** Windows in tall structures may be more susceptible to glass breakage from blast overpressure.
- **Strategy:** While the NC Building Code does not allow for local modification, additional standards could be developed and made available for implementation on a voluntary basis. Alternatively, such standards could be made part of a Special Use Permit process.

RECOMMENDATIONS

RECOMMENDATIONS

- The study will conclude with a set of recommendations for the study partners to consider implementing.
- JLUS recommendations are non-binding on the study partners.
- Recommendations dealing with land use and other local matters are subject to the discretion of local governing boards.
- If desired, the study partners may seek funding from OEA and/or the state to move forward with certain recommendations.

RECOMMENDATIONS

- Draft recommendations are in the development stages.

- Currently divided into 5 categories:
  - Coordination
  - Land Use / Zoning
  - Public Safety
  - Transportation
  - MOTSU Buffer Zone

QUESTIONS

MILITARY OCEAN TERMINAL SUNNY POINT JOINT LAND USE STUDY

POLICY COMMITTEE MEETING
NOVEMBER 19, 2018