

Northeast Florida Regional Council
Military Installation Readiness Review



Vulnerability Assessment and Risk to Mission Analysis

MARCH 2026



Executive Summary

The Northeast Florida (NEFL) Military Installation Readiness Review (MIRR) identifies outside the fence line risks to the mission of the military installations located within Duval and Clay Counties: Camp Blanding Joint Training Facility (JTF), Naval Air Station Jacksonville (NAS JAX), Naval Station (NS) Mayport, and Marine Corps Support Facility (MCSF) Blount Island. The MIRR project team analyzed asset vulnerability to natural hazards, including rainfall flooding, sea level rise (SLR), storm surge, extreme heat, extreme wind, erosion, and wildfire. Assets were analyzed for their exposure and sensitivity to the selected natural hazards, providing an understanding of asset vulnerability to each natural hazard as well as composite vulnerability.

Based off the quantitative VA and the qualitative risk to mission review conducted by the MIRR project team, there is no immediate risk to mission other than select single points of failure at each installation. This allows community service providers the ability to begin integrating risk reduction and resilience planning and incremental adaptation over time through the capital planning and budget process. At the installation scale, the results of the VA indicate the following severe critical assets and/or issues that pose moderate to high risk to mission:

- **NS Mayport:** A1A and shorelines, Mayport Road, the Mayport substation, and various regional roadways, the Northside Fuel Depot, and the Timucuan Preserve
- **MCSF Blount Island:** the installation's shorelines, Heckscher Drive, railways, electrical supply, and JAXPORT Blount Island Terminal
- **NAS JAX:** Roosevelt Boulevard, NAS JAX substation, the installation's wastewater system and a lack of redundancy, regional development pressures
- **Camp Blanding JTF:** Railways, electric substation, lack of buffering conservation lands, and the installation's wastewater system and a lack of redundancy

Additional regional stresses include the lack of affordable housing for installation personnel, lack of available childcare services, and regulatory and development pressures at the local and state level.

The results found in this document provide the foundation for adaptation planning, in which the MIRR project team will begin developing adaptation strategies to reduce risk and promote mission assurance. Adaptation strategies will consist of the initial strategies to mitigate risks to mission, with additional emphasis placed on co-benefits that align with the themes of Resilient First Coast. The MIRR project team will, with input from the Technical Advisory Committee (TAC), develop criteria for project prioritization. Proposed adaptation projects will be reviewed with the TAC and Steering Committee prior to finalization and development of implementation strategies.



Table ES-1. Critical Assets and Associated Risks to Mission

Asset Type	Assets	Shocks/Stresses	Risk to Mission	Level of Urgency
Roadways/Bridges and Approaches	A1A, Heckscher Drive, Roosevelt Blvd. (US-17)	Storm surge, aging infrastructure	Moderate to High	Immediate to Mid-term
Railways	Railways at/near Camp Blanding and Blount Island	Extreme heat, storm surge, lack of redundancy	Moderate	Near-term
Electric Production and Supply Facilities	NAS JAX substation, Camp Blanding JTF substation, MCSF Blount Island electrical supply	Rainfall flooding, storm surge, SLR, wildfire, lack of redundancy	Moderate to High	Immediate
Wastewater Systems	Camp Blanding JTF, NAS JAX	Lack of redundancy, regulatory requirements	Moderate	Near-term
Shorelines	MCSF Blount Island shorelines, shorelines around A1A and east of Mayport	Erosion, storm surge, SLR	Moderate to High	Immediate to near-term
Roadways/Bridges and Approaches	A1A, Heckscher Drive, Roosevelt Blvd (US-17)	Storm surge, aging infrastructure	Moderate to High	Immediate to Mid-term
Conservation Lands	Camp Blanding JTF, NAS JAX	Lack of conservation lands/buffer lands, development pressures	High	Immediate to long-term



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Acronyms and Abbreviations

APZ	Accident Potential Zone
FDOT	Florida Department of Transportation
FPL	Florida Power & Light
MCSF	Marine Corps Support Facility
NAS	Naval Air Station
NS	Naval Station
JTF	Joint Training Facility
MCSF	Marine Corps Support Facility
MHHW	mean higher high water
MIRR	Military Installation Readiness Review
NEFRC	Northeast Florida Regional Council
NOLF	Naval outlying landing field
SC	Steering Committee
SLR	sea level rise
TAC	Technical Advisory Committee
WRF	water reclamation facility
WTP	water treatment plant



1 Introduction

This Vulnerability Assessment and Risk to Mission Analysis provides the results of the quantitative vulnerability assessment and risk to mission analysis as well as the qualitative risk to mission analysis for the Northeast Florida Military Installation Readiness Review (MIRR). The results of the quantitative and qualitative assessments have identified the assets and systems with moderate and high risk to mission.

The vulnerability analysis and risk to mission analysis documented in this report builds on the NEFL MIRR asset framework (described in TM #3 Priority Sector Analysis) and the hazards TM #4 Shocks and Stressors. The analyses focused on the mission-critical assets and relevant shocks and stressors that can affect those assets and can potentially impede the ability of the installations to execute their missions. This report concludes the vulnerability assessment (VA) task (Task 4 of the MIRR) and lays the foundation for adaptation planning.



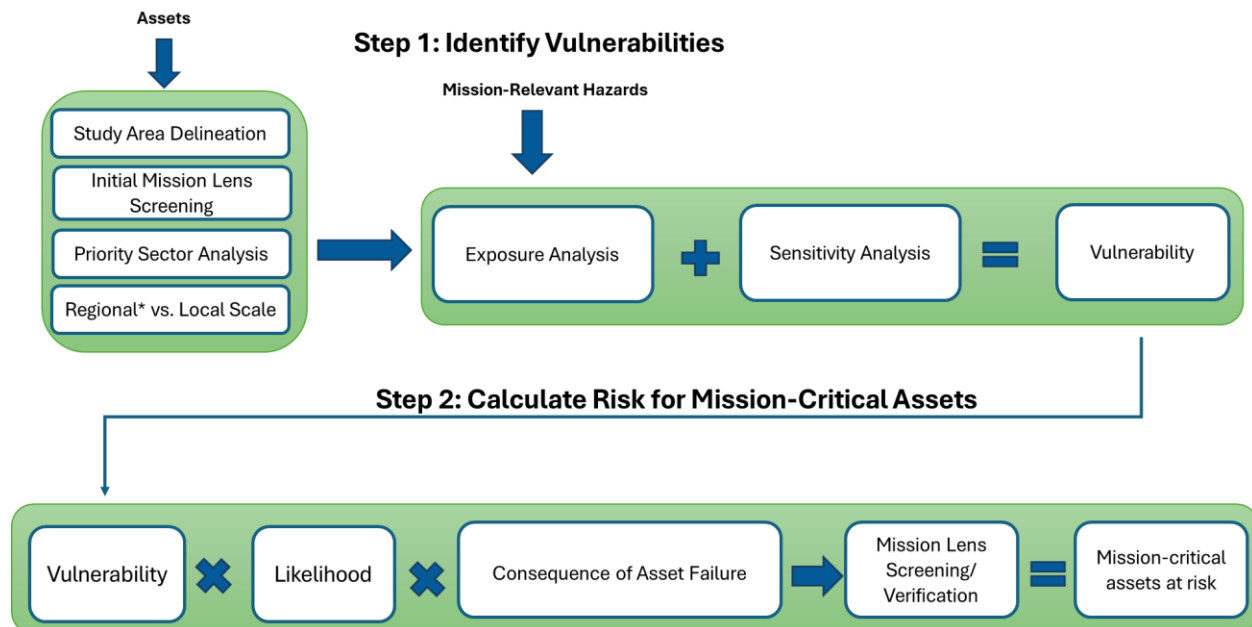
2 Methodology

The diversity of assets and shocks/stresses necessitated a methodology for a regional resilience assessment. The methodology for assessing the vulnerability of mission-critical and mission supportive assets is documented in TM #5 Unified Resilience Assessment Standard (Jacobs 2025b). The project team received both qualitative (for example, numerical/geospatial) and quantitative (for example, stakeholder feedback) data throughout the process. To analyze/review these data, the team developed targeted methodologies for assessing vulnerability and analyzing risk to mission. The methodologies consist of a quantitative methodology for vulnerability assessment and risk analysis and a qualitative review process for risk to mission review, described further in Sections 2.1 and 2.2, respectively.

2.1 Quantitative Vulnerability Assessment and Risk to Mission Analysis

The quantitative methodology for vulnerability assessment and risk to mission analysis was developed to analyze geospatial and asset data for natural hazards. The methodology, shown in Figure 2-1, provides a framework for analyzing how natural hazards affect mission-critical assets.

Figure 2-1. Framework for Quantitative Assessment of Asset Vulnerability and Risk to Mission



*where applicable

The broad process for quantitative vulnerability assessment and risk to mission analysis consists of multiple steps of initial screening, the VA, and the risk to mission analysis, documented in the following subsections.



2.1.1 Initial Screening

2.1.1.1 Study Area Delineation

Throughout the data collection process, the project team evaluated potential options for study area delineation, including individual study areas for each installation. At the end of the process, the team opted to draw the study area boundaries as those of Clay and Duval Counties. Only critical assets within the counties were evaluated in the assessment. In addition, assets within the installations' boundaries were not evaluated as the MIRR focuses on outside-the-fence assets.

2.1.1.2 Mission Lens

Mission-criticality ratings were assigned to asset types on an installation-by-installation basis. Assets were categorized as primary mission-critical, secondary mission-critical, mission-supportive, or mission-adjacent. Assets located within the installation fence line and assets deemed mission-adjacent were not analyzed further. The mission-criticality ratings were initially assigned by the project team and reviewed by the Technical Advisory Committee (TAC) and Steering Committee (SC).

2.1.1.3 Priority Sectors

The project team evaluated installation-supporting systems and assets through the priority sector analysis. Only assets that were carried forward in that portion of the analysis were analyzed; additional detail can be found in TM #3 Priority Asset Analysis (Jacobs 2025a).

2.1.2 Vulnerability Assessment

Asset vulnerability is the combination of exposure and sensitivity that provides an understanding of whether an asset will be affected by a hazard and to what degree. The VA consists of an exposure analysis, sensitivity analysis, and vulnerability analysis.

2.1.2.1 Exposure Analysis

Asset exposure is defined as the proximity of an asset to a hazard. Exposure was identified by geospatial layering in which hazard layers were overlayed on asset points. Criteria for exposure varied, depending on the hazard. For most hazards, exposure was designated according to the asset's proximity to the hazard. For example, assets within a given floodplain were accordingly exposed to the respective flood hazard. This was the case for rainfall flooding, SLR, storm surge, wildfire, and extreme heat. All assets were assumed to be exposed to wind, with the exposure score varying based on the location, where coastal assets were assumed to be exposed to greater wind speeds than more inland assets.

2.1.2.2 Sensitivity Analysis

Sensitivity is defined as the degree to which an asset type can be affected by a hazard. Asset sensitivity was modeled differently for flood hazards and other hazards. Flood hazard sensitivity was modeled based on the flood depth at the asset. Sensitivity for wildfire, high winds, and extreme heat was analyzed on a zero to five scale, where zero represents the asset not being sensitive and a five represents the asset being highly sensitive to the hazard. Appendix A provides the complete sensitivity table.



2.1.2.3 Vulnerability Analysis

Asset vulnerability to hazards was calculated by summing exposure and sensitivity scores for each asset, yielding individual hazard vulnerability scores as well as a composite vulnerability scores for all natural hazards. Asset composite vulnerability was later scored and normalized on a 1 to 5 scale, as shown in Table 2-1.

Table 2-1. Vulnerability Score Criteria

Score	Rank	Description
0	None (Very Low)	Hazard will have no or negligible effects on asset.
1	Low	Hazard will have negligible effects on the asset.
2	Moderately Low	Hazard is a temporary nuisance.
3	Moderate	Hazard will have some effect on the asset.
4	Moderately High	Hazard may damage the asset.
5	High	Damage to the asset is likely.

2.1.3 Risk Analysis

The risk analysis consisted of three distinct components: the VA (conducted previously and described in Section 2.1.2.), a consequence analysis, and the likelihood analysis.

2.1.3.1 Consequence Analysis

The consequence analysis was comprised of three distinct analyses: impact to mission, impacts to infrastructure, and impacts to the community. This process incorporates how asset failure impacts the installations and the community. The consequence analysis tables can be found in Appendix B and C.

Impact to Mission

The risk to mission analysis analyzes how asset failure can impact the ability of each installation to execute its mission. Impact to mission was divided over a short-term (less than 1 week) and long-term (more than 1 week) duration, with an impact score for each duration assigned to each asset type. The impact to mission table can be found in Appendix B.

Infrastructure Impacts

The infrastructure impact analysis analyzed the impact of each natural hazard on each infrastructure asset type. Each asset was scored on a scale of zero (not applicable), one, three, or five. Infrastructure impact ratings can be found in Appendix C.

Community Impacts

Three other factors, reflecting the themes of the Northeast Florida Regional Resilience Action Plan, were incorporated into the consequence analysis: the impact on the environment, impact on economy, and impact on quality of life (NEFRC 2025). Similarly to the infrastructure impacts analysis, criteria were scored on a scale of zero, one, three, or five. Community impact rankings are located in Appendix C.



2.1.3.2 Likelihood Analysis

Hazard likelihoods were derived from various federal and state sources, as applicable. Selected hazards contain multiple planning horizons, including extreme heat, rainfall, and sea level rise (SLR). Table 2-2 describes the likelihoods assigned to each hazard.

Table 2-2. Hazard Likelihoods

Hazard/Scenario	Annual Likelihood	Hazard Description	Data Source
Compound Flooding	1%	100-year flood event	Fernleaf and Water Institute (2023)
Extreme Heat: Present Day	Clay County: 7.1% Duval County: 6.0%	Number of days with heat index greater than 100°F	U.S. Climate Resilience Toolbox (n.d.)
Extreme Heat: 2080	Clay County: 36.2% Duval County: 24.7%	Number of days with heat index greater than 100°F	U.S. Climate Toolbox (n.d.)
High Wind	2.5%	Return period for major hurricane	National Hurricane Center (n.d.)
Rainfall: 2040	1%	Projected 100-year return period rainfall event in 2040	
Rainfall: 2070	1%	Projected 100-year return period rainfall event in 2070	
SLR – 2050 Intermediate Low	50% (present day annual flood probability)	Height of high tide condition expected to occur multiple times annually (intermediate low = 1.05 feet above MHHW, rounded to 1.1 feet), corresponding to 50% likelihood	NOAA (n.d.)
SLR – 2050 Intermediate	50% (present day annual flood probability)	Height of high tide condition expected to occur multiple times annually (intermediate = 1.18 feet above MHHW, rounded to 1.2 feet), corresponding to 50% likelihood	NOAA (n.d.)
SLR – 2080 Intermediate Low	25% (present day annual flood probability)	Height of flood (intermediate low = 1.71 feet above MHHW, rounded to 1.7 feet), corresponding to 25% likelihood	NOAA (n.d.)
SLR – 2080 Intermediate	1.1% (present day annual flood probability)	Height of flood (intermediate = 2.52 feet above MHHW, rounded to 2.5 feet), corresponding to 1.1% likelihood	NOAA (n.d.)



Table 2-2. Hazard Likelihoods

Hazard/Scenario	Annual Likelihood	Hazard Description	Data Source
Wildfire	Variable	Wildfire likelihood obtained from wildfire hazard potential dataset	Dillon (2023)
Storm Surge	2.5%	Return period for major hurricane landfall (Category 3 or higher) ^a	National Hurricane Center (n.d.)

^a Storm surge can occur under a variety of conditions including high winds, tropical storms or category 1 & 2 hurricanes; however, a major hurricane probability is used here to reflect storm surge events that are likely to cause significant coastal flooding.

MHHW = mean higher high water

2.1.3.3 Risk Results

Risk was calculated for each individual hazard across a single planning horizon (for example, SLR in 2050 and SLR in 2080) and for a combination of all hazards resulting in a total risk score. The numerical risk scores were then translated into an associated risk ranking, as described in Table 2-3.

Table 2-3. Risk to Mission Rankings

Risk Rank	Description
Low	Asset failure/disruption has no or little potential to inhibit installation mission.
Moderate	Asset disruption/failure can potentially inhibit installation mission.
High	Asset failure/disruption has high potential to impact/fully prevent execution of mission.

In addition to the risk scores, a level of urgency was assigned to each asset's risk rank to describe how soon the risk must be addressed. Urgency criteria were developed with the intention of aligning with a community's 5-year Capital Improvement Program to support project planning and implementation. Urgency categories are given in Table 2-4.

Table 2-4. Level of Urgency Categories

Category	Duration	Project Planning Horizon
Immediate	Present Day (0 to 5 years)	2026–2030
Near-Term	5 to 10 years	2030–2035
Mid-Term	10 to 25 years	2035–2050
Long-Term	25+ years	2050 and beyond

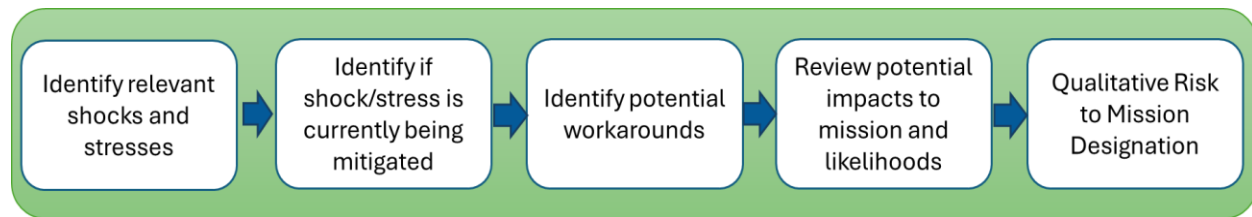
2.2 Qualitative Risk Review

While some natural hazards are well suited to quantitative geospatial analyses, other shocks and stresses, such as infrastructure stresses and encroachment threats, cannot necessarily be analyzed geospatially in a manner that is consistent with common natural hazards. The project team developed a methodology for qualitative risk review that provides consistent scoring across the



shocks and stresses that cannot be analyzed geospatially. Figure 2-2 shows the process for the qualitative risk review.

Figure 2-2. Framework for Qualitative Review of Risk to Mission



Shocks and stresses reviewed as part of this process include:

- **Aging infrastructure.** Select assets were noted by stakeholders as being beyond or near the end of their service life, including the electrical substation at Marine Corps Support Facility (MCSF) Blount Island and Dave Rawls Boulevard.
- **Encroachment** (land use, light pollution, and threatened and endangered species).
- **Lack of redundancy.** Throughout the data collection process, both stakeholders and the project team identified critical assets with single points of failure (without backup or redundant systems).
- **Transportation Congestion.** The project team utilized present and 2050 average annual daily traffic data from the North Florida Transportation Planning Organization. Additional details and figures for this data can be found in TM #4 Shocks and Stresses (Jacobs 2026).
- **Regulatory Pressures.** As discussed in TM #4, regulatory pressures include Florida Senate Bill 64, the Live Local Act, the “Blue Ribbon Bill”, and current legislation attempting to remove property taxes.

Appendix D contains the detailed qualitative risk review.

2.3 Results Review

Prior to finalizing results, multiple layers of review were held within the project team and with project stakeholders:

1. The Jacobs team reviewed qualitative and quantitative vulnerability and risk to mission results internally prior to bringing them to the broader MIRR project team. This reviewed also included quality control of the VA tool and process.
2. The MIRR project team reviewed all results as a group. Feedback from NEFRC was incorporated prior to presenting results to project stakeholders.
3. Project stakeholders in both the TAC and SC reviewed results during scheduled meetings in January 2026. Feedback from both groups was incorporated into the final results, which are presented herein.



2.4 Data Gaps

Throughout the data collection process, the project team endeavored to obtain relevant datasets and associated information. However, some data sets were unavailable. Table 2-5 documents identified data gaps, their relevance, and assumptions made.

Table 2-5. Data Gaps

Data Item	Relevance	Notes
Small-diameter natural gas lines	Mission-critical for Naval Air Station Jacksonville's (NAS JAX's) aircraft maintenance/repair activities and the Naval Hospital	Large-diameter natural gas transmission lines were evaluated.
Local horizontal communications lines	Mission-critical for MCSF Blount Island	Representatives from MCSF Blount Island were working to provide data as of 2/27/2026.
Detailed Florida Power & Light (FPL) electrical system data (including capacity)	Important for mission activities at Camp Blanding Joint Training Facility (JTF)	Used regional data from U.S. Department of Energy and Resilient Florida database. System capacity was assumed to not be an issue.



3 Vulnerability Assessment Results

This section focuses on the results of the VA for mission-critical assets that support the installations. Details for mission-supportive assets can be found in the GIS database deliverables. The following subsections describe the vulnerabilities for each mission-critical asset type. The asset vulnerability analysis yielded results that indicate assets' vulnerability to individual natural hazards as well as composite vulnerability for all natural hazards analyzed in the assessment. The broad results for critical asset categories are given in Table 3-1.

Table 3-1. VA Results by Asset Type

Asset Type	Overall Vulnerability	Description/Notes
Critical Community and Emergency Facilities		
Airports	Low – Moderate	Select airports are vulnerable to flooding from future rainfall events.
Fire Stations	Low – Moderate	Select facilities are vulnerable to multiple coastal flood hazards.
Law Enforcement Facilities	Low – Moderate	
Hospitals	Low – Moderate	
Critical Infrastructure		
Electric Generation Facilities, and Distribution and Service	Low – Moderately High	Varying flood and wildfire vulnerability. Lack of service redundancy for distribution facilities (substations) is a key stressor.
Natural Gas	Low – Moderately Low	Minimal vulnerability for large-diameter natural gas transmission lines.
Stormwater Systems	Low – Moderately Low	Flood vulnerability varies by location. Some stormwater systems will be highly vulnerable to future changes in rainfall.
Potable Water Systems	Low – Moderately Low	Flood vulnerability varies by location.
Wastewater Systems	Low – Moderately Low	Flood vulnerability varies by location.
Transportation and Evacuation Routes		
Bridges	Low – Moderate	Select bridge approaches demonstrate vulnerability to extreme rain, storm surge, and/or SLR.
Roads	Low – High	Roadways are vulnerable to a combination of flood hazards, as well as erosion. Transportation congestion and lack of redundancy are also significant stressors.
Maritime Support Facilities	Low – Moderately High	These facilities are vulnerable to coastal hazards (flooding and erosion).
Railways	Moderately Low – High	Railways are vulnerable to flooding, extreme heat, and fire. Select railways are also old and/or lack redundancy.



Table 3-1. VA Results by Asset Type

Asset Type	Overall Vulnerability	Description/Notes
Natural Resources		
Conservation Lands	Moderately Low – Moderately High	Conservation lands are vulnerable to flooding and fire.
Shorelines	Moderately Low – Moderately High	While they may have moderately low composite vulnerability, many shorelines are vulnerable to erosion resulting from SLR and storm surge.
Wetlands	Low – Moderately Low	Coastal wetlands are vulnerable to SLR, which degrades vegetation because of higher water levels.

3.1 How to Read the Vulnerability Profiles

The following subsections detail VA results for critical community and emergency facilities, critical infrastructure, transportation and evacuation routes, and natural resources. Each asset type has its own vulnerability profile, which includes a table containing selected relevant results for the various assets as well as a map showing the composite hazard. Additional items to note include:

- **Vulnerability scoring.** Vulnerability scoring functions as a numerical approximation of the degree to which an asset may be affected by a hazard. Typical of VAs, hazards with a vulnerability score of “none” may still experience some degree of exposure and/or sensitivity to a hazard. For example, flooding may still occur at an asset, even if it is not located within a mapped floodplain. The vulnerability scoring is based on the dataset that was used. Localized hazard impacts may still occur at an asset. As a result, the “no vulnerability” score should be interpreted as being very low, but not zero.
- **All identified hazards were analyzed for each asset but not all hazard vulnerabilities are presented in the tables and maps.** Individual hazard vulnerabilities can be viewed within the geodatabase deliverable that will accompany the final MIRR deliverables.
- **Composite vulnerability vs. individual hazard vulnerability.** Each map shows the composite vulnerability for assets. The composite vulnerabilities summarize the total vulnerability based on all individual hazard vulnerability scores for a given asset. Some assets may have high vulnerability to one or two hazards but still overall moderate or low vulnerability. Individual asset vulnerabilities will be addressed as part of the adaptation phase.

3.2 Critical Community and Emergency Facilities

3.2.1 Airports

Five airports were analyzed as part of this study: four in Duval County and one in Clay County. Of those five, three are mission-critical or mission-supportive: Cecil Airfield (for NAS JAX), Jacksonville International Airport (for all installations), and Keystone Heights Airport (for Camp Blanding). Table 3-2 documents the vulnerabilities for these mission-critical airports.



Table 3-2. Mission-Critical Airport Vulnerability Summary

Airport Name	Vulnerability				
	Rainfall Flooding	Compound Flood	Extreme Heat	Wildfire	Composite
Cecil Airport	None	None	High	None	Moderately Low
Jacksonville International Airport	Moderate/2050s	High	Moderately Low	Low	Moderate
Keystone Heights Airport	None	None	None	None	Low
Naval outlying landing field (NOLF) Whitehouse	Low	Low	None	Moderate	Moderately Low

Overall, airports within the study area have vulnerability scores that range from low to moderate because of rainfall flooding, compound flooding, and extreme heat. Figure 3-1 shows airport vulnerability scores.

3.2.2 Hospitals

Of the 11 hospitals analyzed, the majority (seven) had moderately low vulnerability to natural hazards. Table 3-3 lists the other four hospitals with higher vulnerability.

Table 3-3. Mission-Critical Hospital Vulnerability Summary

Hospital Name	Vulnerability to Hazards					Composite Vulnerability
	Rainfall	Storm Surge	SLR	Compound Flood	Wildfire	
UF Health North	Moderately High	None	None	High	Low	Moderate
UF Health Jacksonville	Moderately High	High	None	High	Low	Moderately High
Baptist Medical Center Jacksonville	Moderately High	High	High	High	Low	High
Ascension St. Vincent's	Moderately High	High	High	High	None	Moderately High

Vulnerable hospitals are concentrated along the coast in downtown Jacksonville, including UF Health North, Baptist Medical Center Jacksonville, and Ascension St. Vincent's, demonstrate vulnerability to rainfall-induced flooding and storm surge. Flooding can inhibit access to the facilities via inundation of the parking lots; in worst-case scenarios, it can enter the facilities themselves. If these facilities become flooded, they would be unable to support NAS Jacksonville's secondary mission or personnel throughout the broader region. Figure 3-2 shows hospital vulnerability scores.



Figure 3-1. Airport Vulnerability

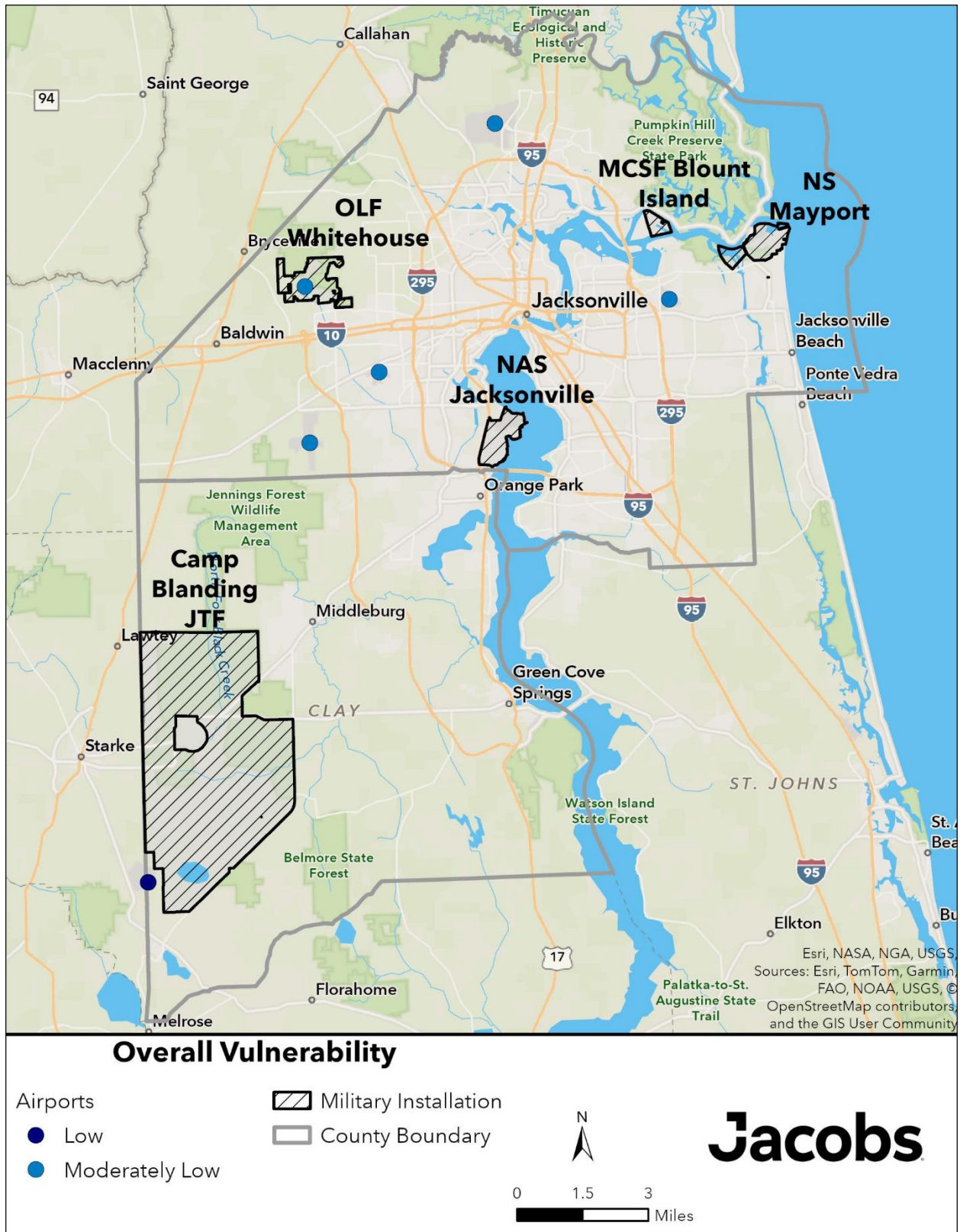
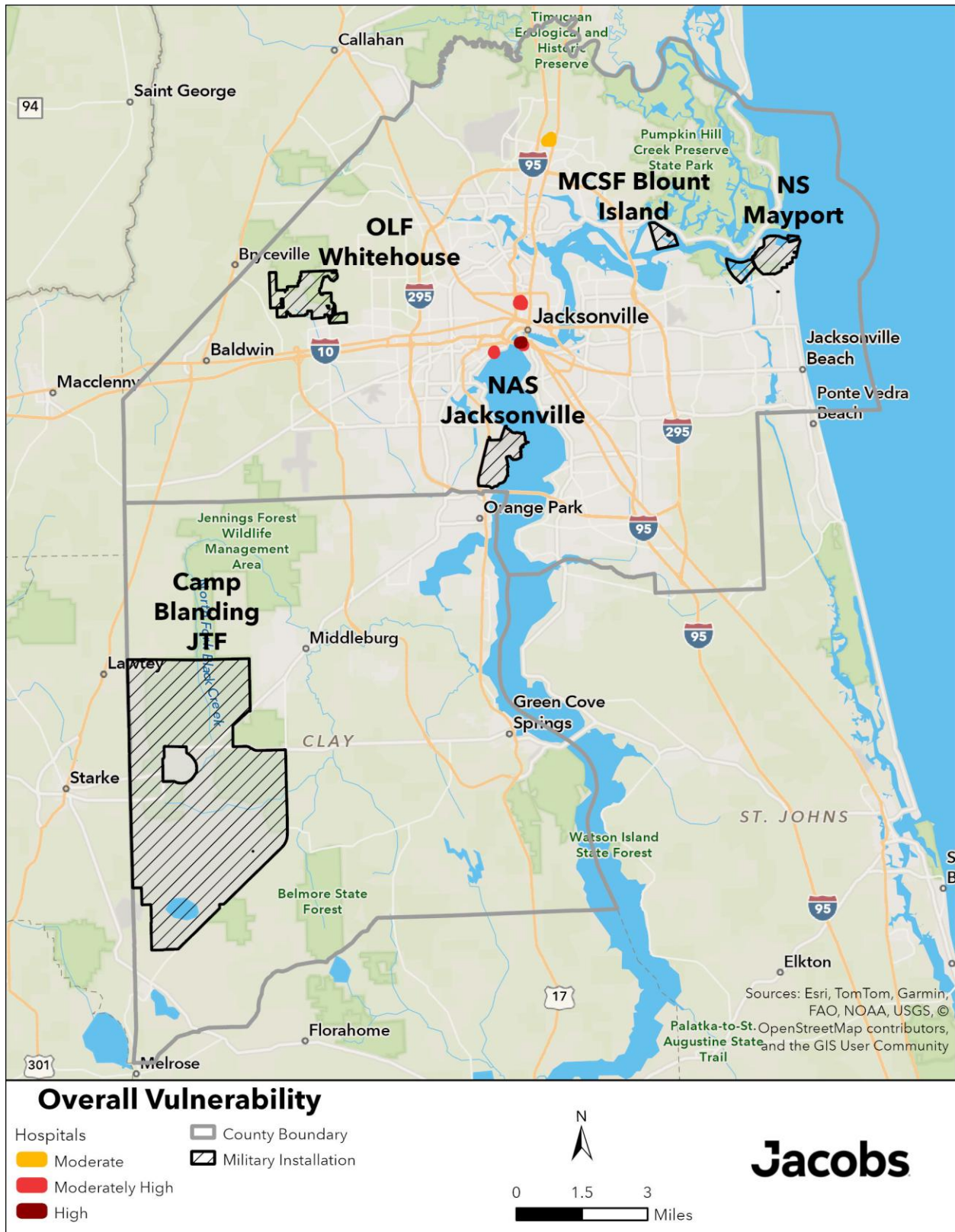


Figure 3-2. Hospital Vulnerability



3.2.3 Fire Stations

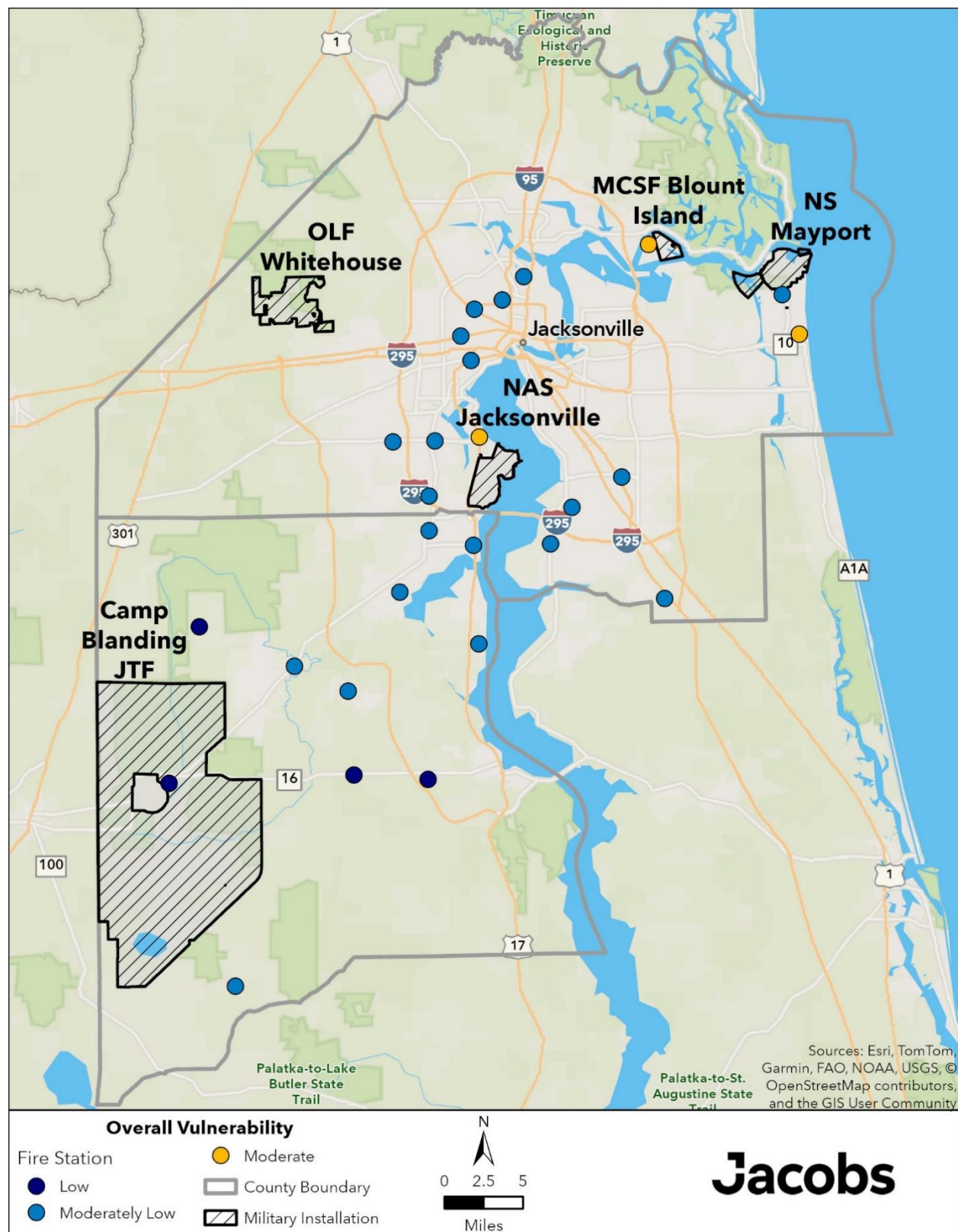
Fire stations support installation emergency response for structural and wildfires, HAZMAT events, and other emergencies. Table 3-4 lists fire station vulnerability and Figure 3-3 shows fire station vulnerability scores.

Table 3-4. Mission-Critical Fire Station Vulnerability Summary

Fire Station	Storm Surge Vulnerability	Wildfire Vulnerability	Composite Vulnerability
CC FD ST HQ	None	None	Low
CC FD ST 13	None	None	Low
CC FD ST 14	None	None	Moderately Low
CC FD ST 15	None	None	Moderately Low
CC FD ST 17	None	None	Moderately Low
CC FD ST 18	None	None	Moderately Low
CC FD ST 19	None	None	Moderately Low
CC FD ST 22	High	None	Moderately Low
CC FD ST 23	None	Moderate	Moderately Low
CC FD ST 25	None	None	Low
JFRD ST 7	None	None	Moderately Low
JFRD ST 10	None	None	Moderately Low
JFRD ST 15	Moderate	None	Moderately Low
JFRD ST 17	None	None	Moderately Low
JFRD ST 18	None	None	Moderately Low
JFRD ST 23	High	None	Moderate
JFRD ST 25	None	None	Moderately Low
JFRD ST 31	None	High	Moderately Low
JFRD ST 41	High	None	Moderately Low
JFRD ST 42	Moderately Low	None	Moderately Low
JFRD ST 44	None	None	Moderately Low
JFRD ST 48	High	None	Moderate
JFRD ST 51	None	None	Moderately Low
JFRD ST 52	Moderately Low	None	Moderately Low
JFRD ST 55	High	None	Moderate
JFRD ST 62	Moderate	None	Moderately Low



Figure 3-3. Fire Stations Composite Vulnerability



Fire station vulnerability ranges from low to moderate, with most facilities having moderately low overall vulnerability. No fire stations are vulnerable to rainfall flooding or SLR, so they are not included in Table 3-4. The mission-supportive fire station outside of MCSF Blount Island (JFRD Station 48) has moderate vulnerability overall because of storm surge and compound flooding. Flooding of this facility could inhibit or delay emergency response support for MCSF Blount Island.

3.2.4 Law Enforcement Facilities

Local law enforcement plays a mission-supportive role with the installations, resolving domestic issues and providing additional security and support during major events. The majority of mission-relevant law enforcement facilities have moderately low composite vulnerability. The two primary local law enforcement agencies are the Clay County Sheriff's Department (CCSD) and the Jacksonville Sheriff's Department (JSD). Table 3-5 lists law enforcement facility vulnerability.

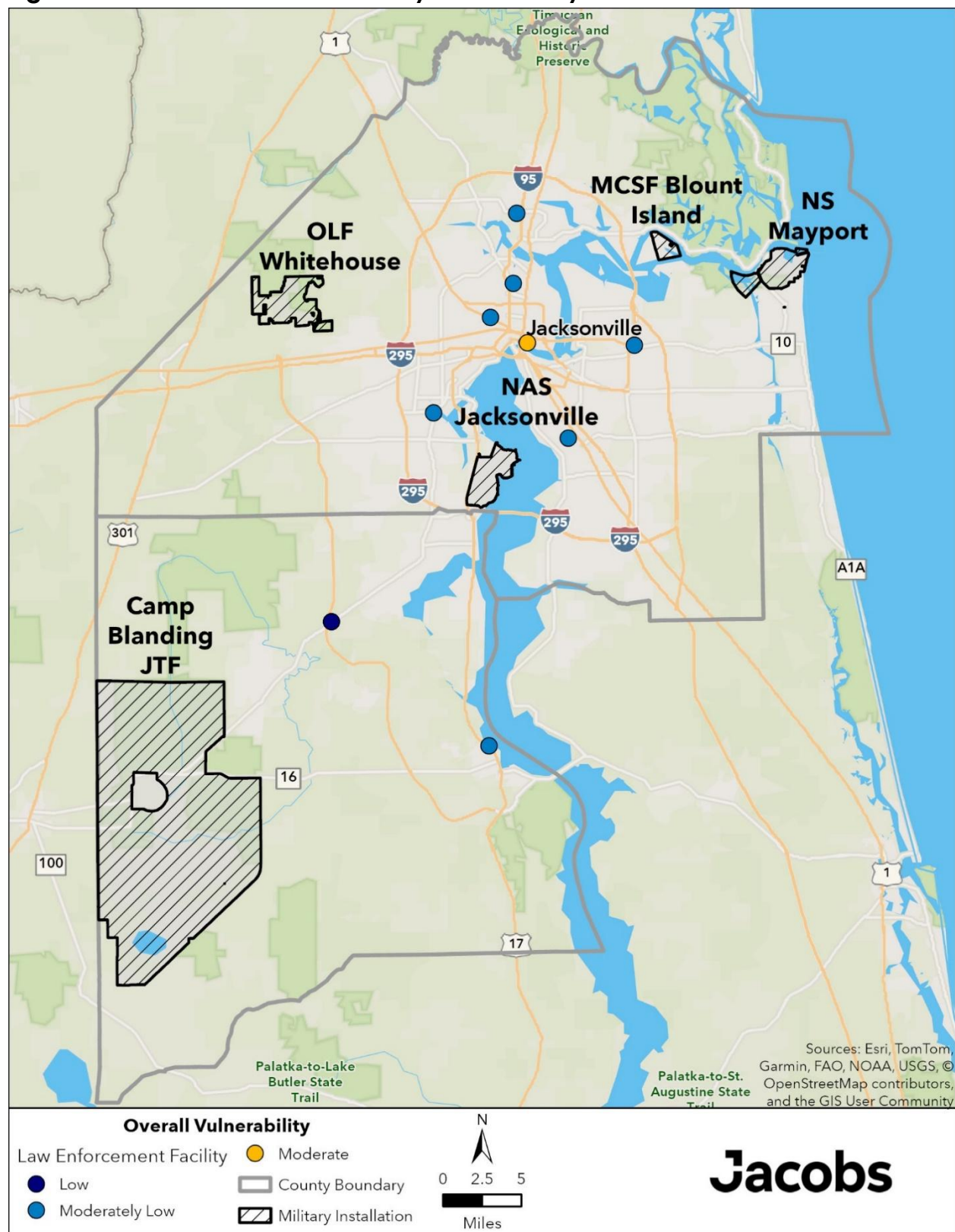
Table 3-5. Mission-Critical Law Enforcement Facility Vulnerability Summary

Law Enforcement Facility	Storm Surge Vulnerability	Extreme Heat Vulnerability	Composite Vulnerability
CCSD (South Sector)			
CCSD (East Sector)	Moderate		
JSD Zone 1			
JSD Zone 2			
JSD Zone 3			
JSD Zone 4	Moderate		
JSD Zone 5			
JSD Zone 6			
JSD Zone Headquarters			

Figure 3-4 shows law enforcement facility vulnerability scores.



Figure 3-4. Law Enforcement Facility Vulnerability



3.3 Critical Infrastructure

3.3.1 Electrical Generation and Supply Facilities

Electrical production and supply systems are comprised of the power generation facilities, transmission infrastructure, substations, and distribution systems that create and supply power to the installations and the wider community. Electrical power is supplied by JEA and FPL for the installations in Duval and Clay County, respectively.

Generation facilities typically demonstrate moderately low composite vulnerability.

The majority of generation station vulnerability is related to storm surge associated with major hurricanes, particularly at the Northside Generating Station, Kennedy Generating Station, and the St. Johns River Power Park.

Transmission and distribution lines have no to moderately low vulnerability to hazards.

Pole hardening, flood proofing, and upgrade programs have helped reduce vulnerability to extreme wind and flood hazards. Wildfire is the greatest point of vulnerability for transmission and distribution infrastructure; direct exposure to fire as well as smoke can incapacitate power delivery systems. Transmission lines are typically less vulnerable to wildfire than distribution lines because of the pole materials and/or broad, maintained corridors/easements these lines are located in. However, these lines can still be vulnerable to wildfire heat and smoke, which can trip circuits or cause electrical arcing (conduction of electricity between lines on the circuit or a line and the ground). It is likely that the proximity of these lines to vegetation can increase the probability of starting wildfires, which can then increase exposure of more electrical assets to wildfire. Naval Station (NS) Mayport has redundancy in supply while Camp Blanding JTF, NAS JAX, and MCSF Blount Island lack redundant electrical supply.

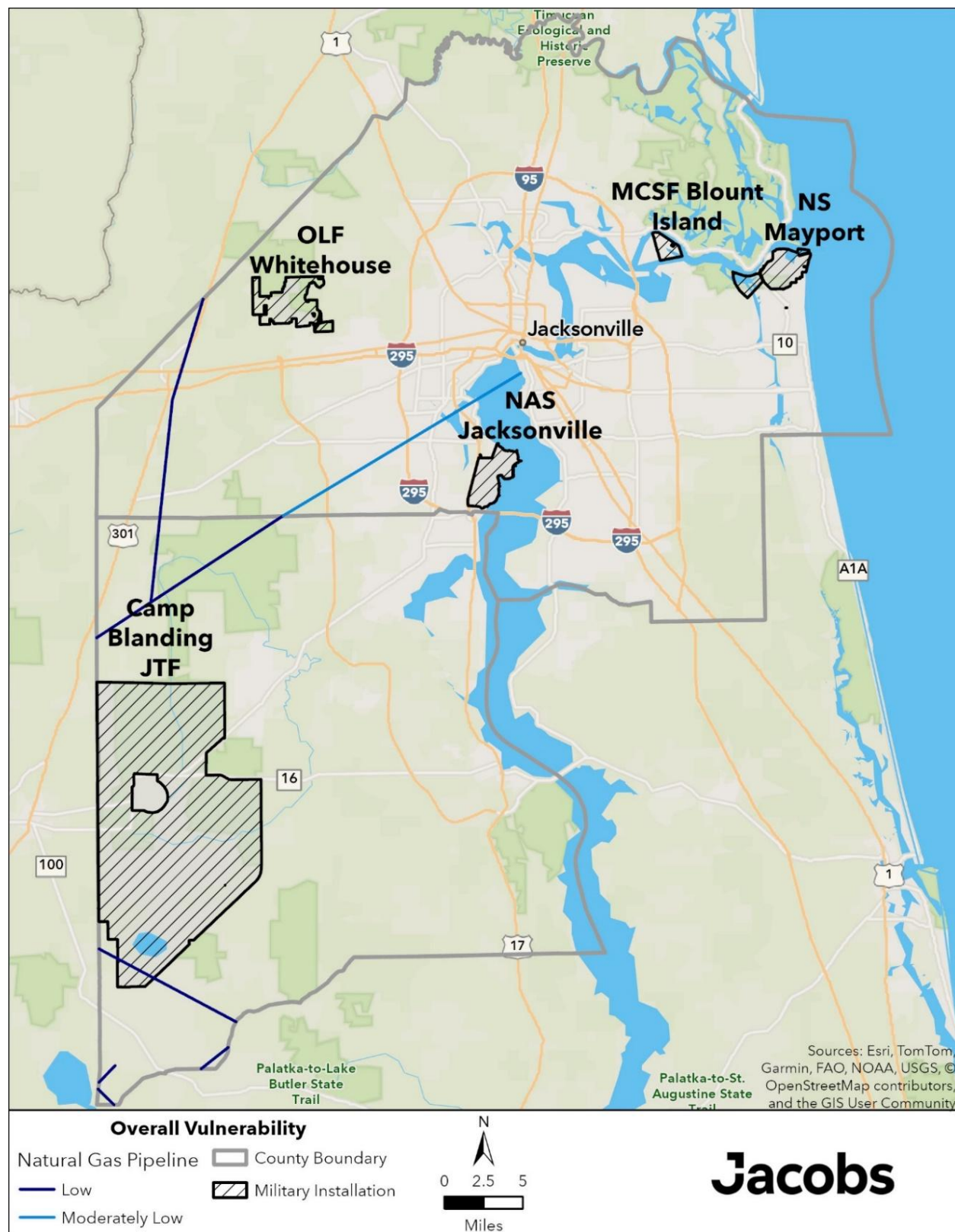
Substations have varying levels of vulnerability to fire and flood hazards, depending on the asset's location. The Mayport substation is vulnerable to storm surge associated with major hurricanes, experiencing modeled flood depths between 12 and 21 feet. The substation at NAS JAX does not display vulnerability to any of the analyzed hazards. However, a residual risk remains because the electrical substation supplying the installation is a single point of failure.

3.3.2 Natural Gas

Large-diameter natural gas transmission lines are crucial for conveying natural gas to NAS Jacksonville, where it is used to support the Naval Hospital and aircraft maintenance and repair activities at Fleet Readiness Center Southeast. Natural gas supply systems also support painting activities at MCSF Blount Island. These transmission lines had vulnerability ranging from moderately low to low (Figure 3-5).



Figure 3-5. Natural Gas Transmission Line Vulnerability



3.3.3 Stormwater Management Systems

Stormwater management systems consist of the inlets, pipes, culverts, ponds, outlets, and other elements that treat and convey stormwater. They remove water during rainfall events and support public health by treating stormwater and removing pollutants. They can be overloaded by large-magnitude storm events (such as 100-year events), which exceed the design storm (typically a 5-, 10-, 25- or 50-year storm, depending on the system age and its location). These systems will demonstrate vulnerability to extreme storm events, where failure is defined not as damage to the system itself but rather failure of the system to process and adequately convey stormwater. Failure of these systems to convey stormwater can cause localized flooding, potentially inhibiting access to an installation or, depending on the severity, damaging critical supporting equipment. As a result, Figure 3-6 shows stormwater systems' vulnerability to rainfall flood events instead of composite vulnerability to show areas where the mapped rainfall events may exceed stormwater system capacity.

3.3.4 Potable Water Treatment Plants

JEA provides potable water for the four-county region. Potable water treatment plants serve a key function of supplying installations with primary or redundant water service while also supplying the community with potable water. Of the installations analyzed in this study, only MCSF Blount Island uses an off-base potable water treatment plant (WTP), the Highlands WTP. Table 3-6 describes the composite vulnerability and select vulnerability scores of potable WTPs.

Table 3-6. Potable Water Treatment Plant Vulnerability Summary

WTP	Rainfall Vulnerability	Storm Surge Vulnerability	Extreme Heat	Composite Vulnerability
Highlands WTP	None	Moderate	Moderately High	Moderately Low
Lakeshore WTP	None	High	Moderately High	Moderately Low
McDuff WTP	None	None	Moderately High	Moderately Low
Southwest WTP	None	None	Moderately High	Moderately Low

All WTPs analyzed had moderately low vulnerability to natural hazards, with most vulnerability resulting from storm surge and extreme heat. Only half of the WTPs were exposed to the storm surge hazard.



Figure 3-6. Stormwater Systems (inlets) Rainfall Flooding Vulnerability

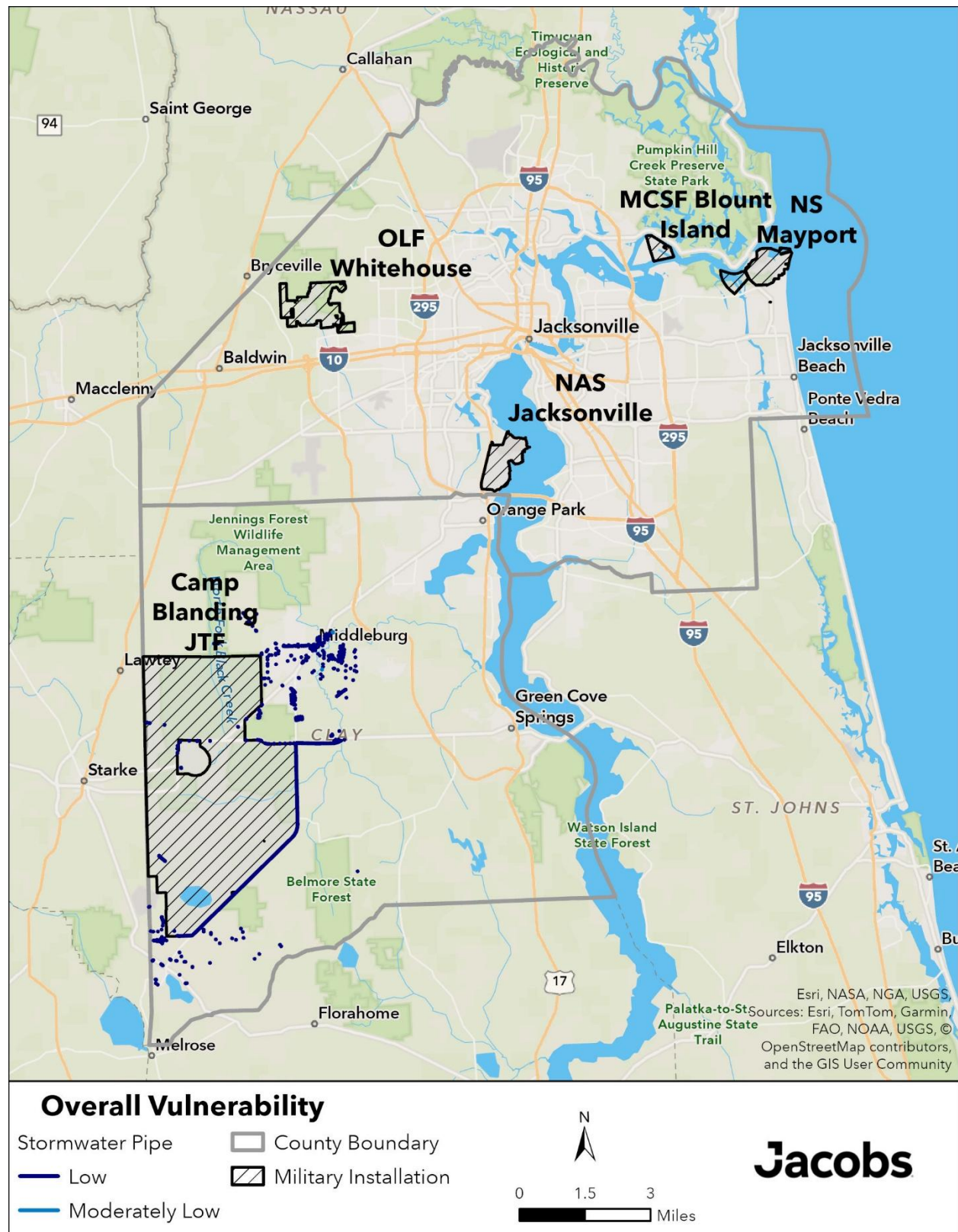
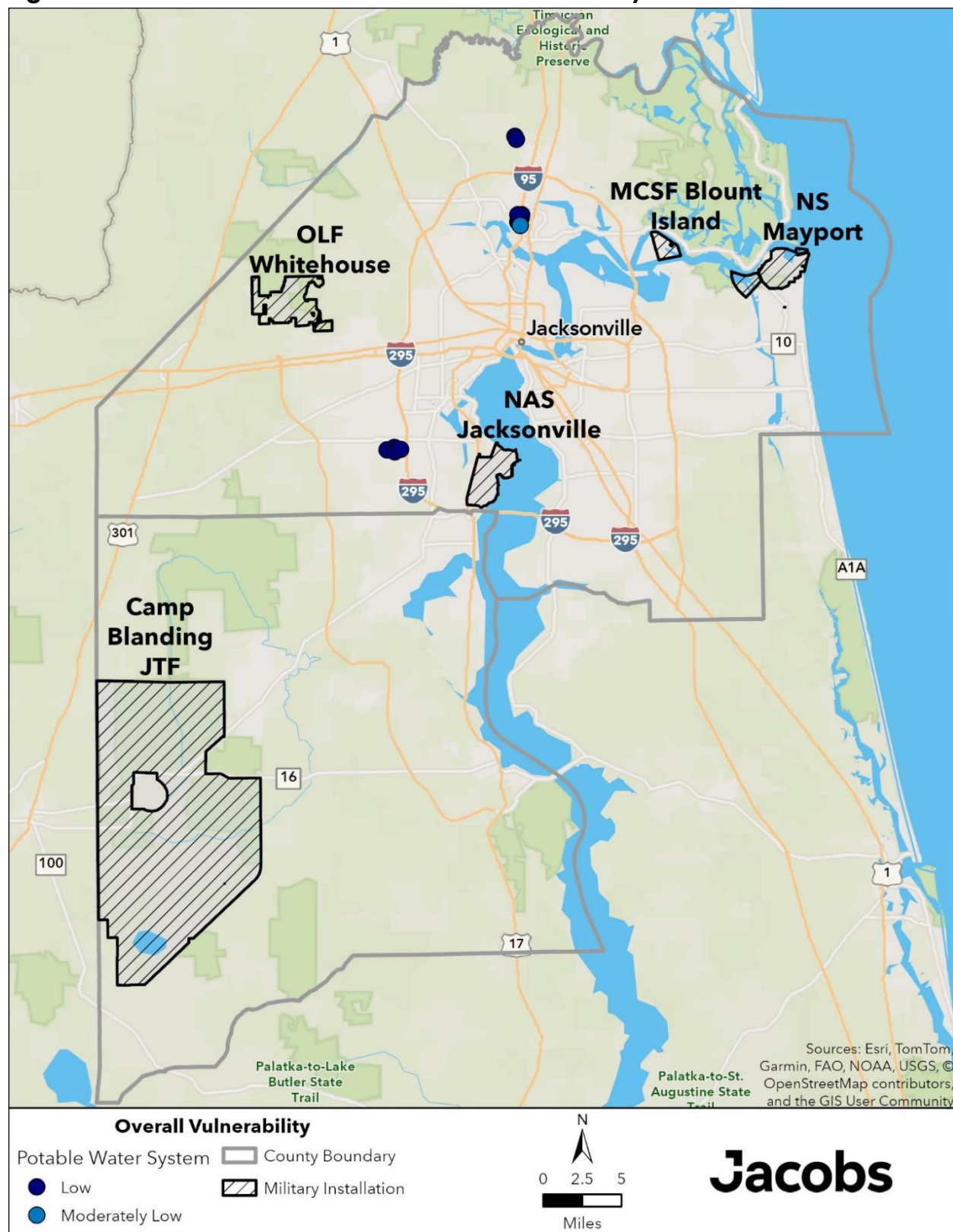


Figure 3-7. Potable Water Treatment Plant Vulnerability



3.3.5 Wastewater Treatment Facilities

Of the installations analyzed in this study, only MCSF Blount Island uses an off-base wastewater treatment system (owned by JEA). All other installations have on-base wastewater systems that were not analyzed for natural hazard vulnerability. Regional wastewater treatment plants were analyzed to better understand regional wastewater system vulnerability, as shown in Table 3-7.

Table 3-7. Wastewater Treatment Plant Vulnerability Summary

Wastewater Facility	Rainfall Vulnerability	Wildfire Vulnerability	Extreme Heat Vulnerability	Composite Vulnerability
District 2 Water Reclamation Facility (WRF)	None	None	High	Moderately Low
Buckman WRF	None	None	None	Low
Mid-Clay Regional WWTF	None	None	High	Moderately Low
Arlington East WWTF	None	None	High	Moderately Low
CCUA Combined WWTF	None	None	High	Moderately Low

Overall, regional wastewater treatment plant vulnerability to natural hazards is moderately low (Figure 3-8). Section 4 provides a discussion of additional stressors related to wastewater systems.

3.4 Transportation and Evacuation Routes

3.4.1 Bridges

Bridges are critical for helping to convey personnel around the region, as well as for connecting the installations to the region at large and other states.

Bridge vulnerability generally stems from flood hazards, particularly at the bridge approaches. Figure 3-9 depicts select bridge vulnerability to flooding.

3.4.2 Ports and Maritime Support Facilities

Two maritime port facilities and five maritime support facilities were identified by stakeholders as being critical for supporting operations at NS Mayport and MCSF Blount Island. The two port facilities are JAXPort's Dames Point and Blount Island Terminals, both of which support MCSF Blount Island operations and also provide safe harbor for NS Mayport's vessels during storms. In addition, the 841st Transportation Battalion has a facility located within the Blount Island Terminal. The mission-critical maritime support facilities include Pilot Boarding Area Bravo, the Northside Fuel Depot, and the helicopter refueling facility and fuel farm (both located on-base at NS Mayport). Table 3-8 describes the facilities' natural-hazard-related vulnerabilities.



Figure 3-8. Wastewater Treatment Plant Vulnerability

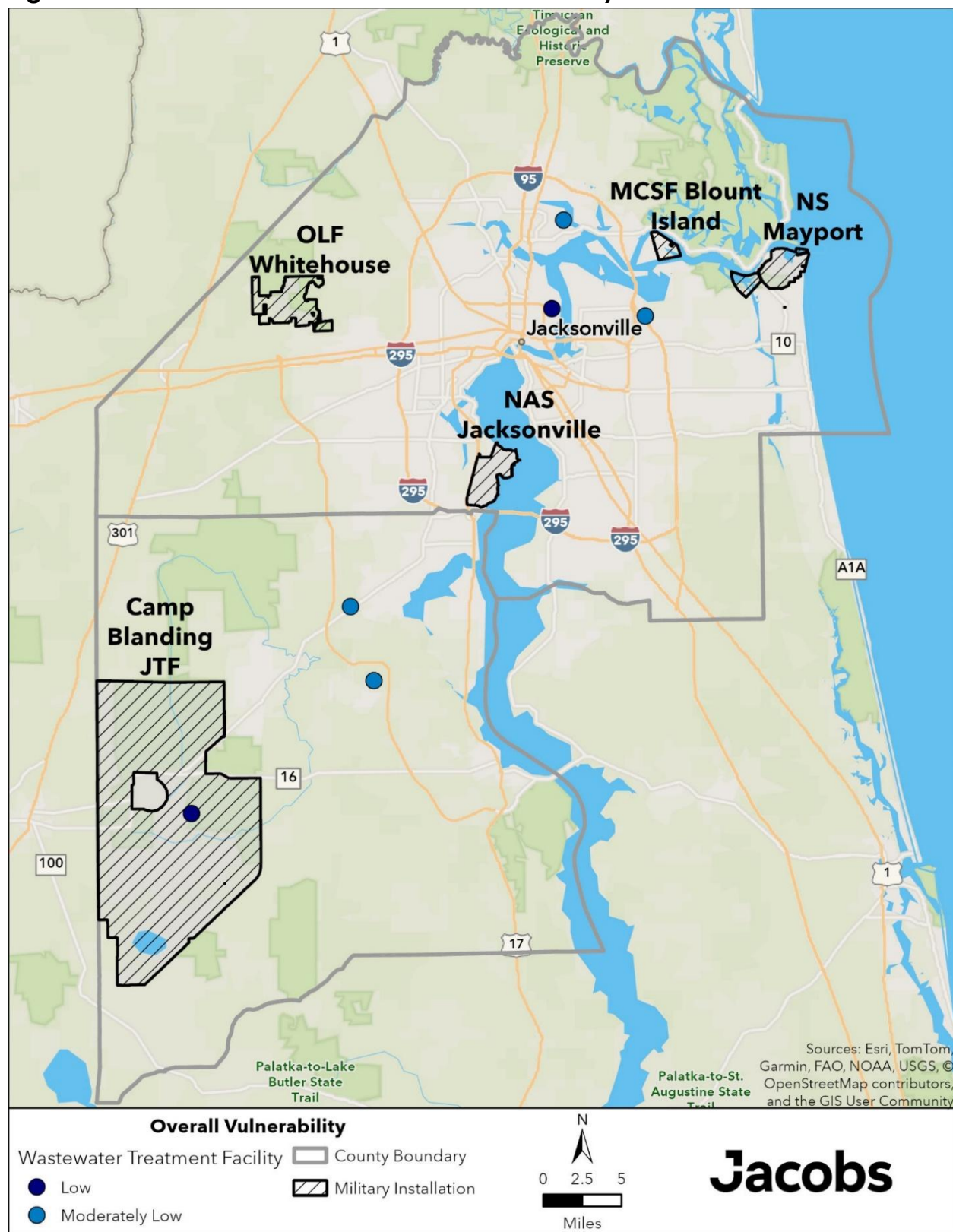


Figure 3-9. Bridge Vulnerability

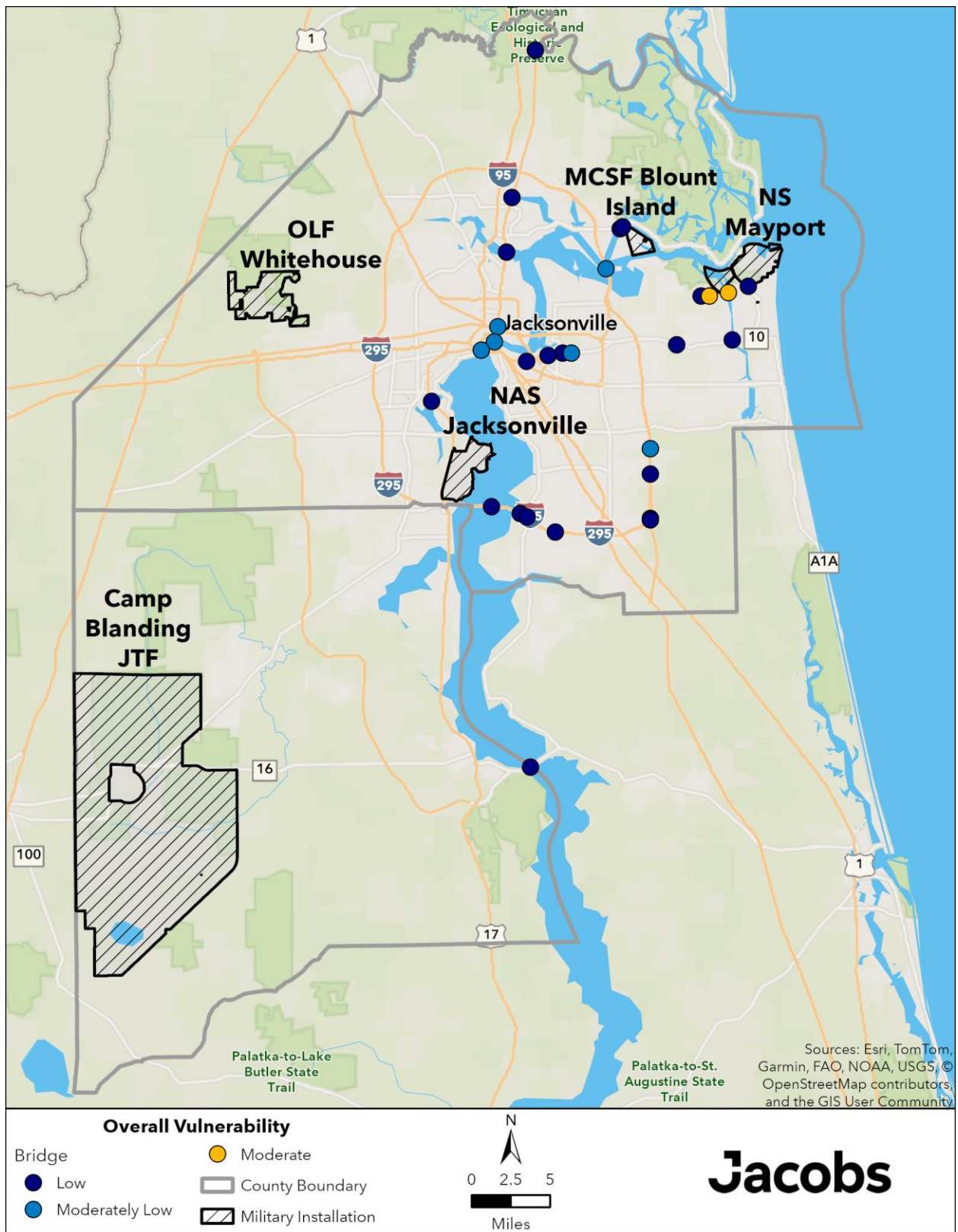


Table 3-8. Ports and Maritime Support Facility Vulnerability Summary

Asset Type	Facility	SLR	Rainfall	Storm Surge	Composite Vulnerability
Port	Dames Point Terminal	High	Moderate	High	Moderately High
Port	Blount Island Terminal	High	Moderate	High	Moderately High
Maritime Support Facility	Pilot Boarding Area Bravo	None	None	High	Moderately Low
Maritime Support Facility	Northside Fuel Depot	None	Moderate	High	Moderately Low
Maritime Support Facilities	US Coast Guard Station Mayport				

The helicopter refueling facility and the fuel farm, while on-base at NS Mayport, are vulnerable to storm surge, emphasizing the need for strong off-installation shoreline protection that can mitigate wave impacts.

3.4.3 Railroads

Railways are crucial for Camp Blanding JTF and MCSF Blount Island. These installations require reliable cargo transport capabilities to execute their missions. Regional railroads demonstrate vulnerabilities to multiple natural hazards, including extreme rainfall, storm surge, wildfire, and extreme heat. Regional railroad vulnerability ranges from moderately low to high, with coastal railroads generally having higher vulnerability (Figure 3-10).

3.4.4 Roads

Roadways are critical for access to the installations; they function as the physical connection between installation, personnel, their local communities, and the surrounding region. Roadways throughout the region demonstrate vulnerability to flood hazards (rainfall, SLR, storm surge, and compound flooding) and extreme heat. Table 3-9 lists specific roadway vulnerabilities.



Figure 3-10. Railroad Vulnerability

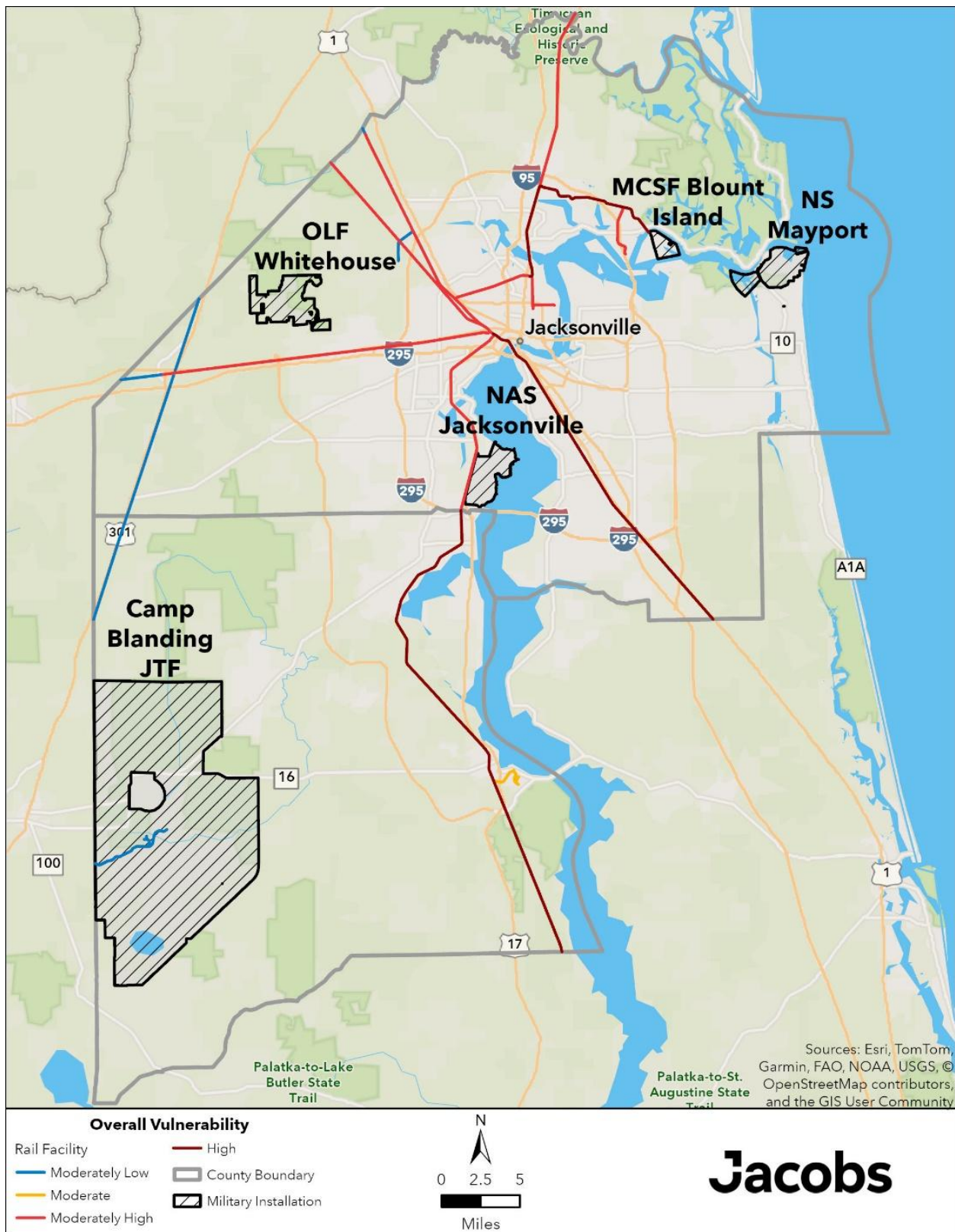


Table 3-9. Roadway Vulnerability Summary

Road	Extreme Rainfall Vulnerability	SLR Vulnerability	Storm Surge Vulnerability	Composite Vulnerability
A1A	Moderate	High	High	Moderately High
Atlantic Blvd.	Moderate	High	High	Moderate
Halsema Rd.	None	None	None	Low
Heckscher Dr.	None	None	High	Moderately Low
Mayport Rd.	Moderately High	None	High	Moderate
Roosevelt Blvd.	Moderate	None	None	Moderately Low
SR-16	Low-High	None	None	Low-Moderately Low

Roadway composite vulnerability is concentrated primarily in coastal areas along the Atlantic Ocean and along the St. Johns River near downtown Jacksonville (Figure 3-11). Though not shown here, select roadways are also vulnerable to erosion and congestion; these stressors are addressed in Section 4.

3.5 Natural Resources

3.5.1 Conservation Lands

Conservation lands around the installations function as buffers, protecting the installations from encroachment (incompatible development) and natural hazards such as flooding or SLR. Figure 3-12 shows conservation land vulnerability.

The Timucuan Preserve comprises the conservation lands west of NS Mayport and northeast of MCSF Blount Island. These lands are exposed to, and subsequently are highly vulnerable to, SLR. This exposure can manifest as a long-term stressor for coastal ecosystems, causing marsh migration and a weakening of the systems that buffer the installations from wave action.

The lands in western Duval County and northwestern Clay County have moderate vulnerability, stemming from the high wildfire hazard potential within their borders. Wildfire can impact training activities at OLF Whitehouse, with fire potentially creating conditions that require suspension of training. Fire potential north of Camp Blanding JTF poses a threat to the installation through its proximity; fire from nearby areas can potentially move toward and onto the installation. This fire vulnerability indicates a need for proactive wildfire management from not only the installations and agencies, but also private landowners and other entities adjacent to the installation.



Figure 3-11. Roadway Overall Vulnerability

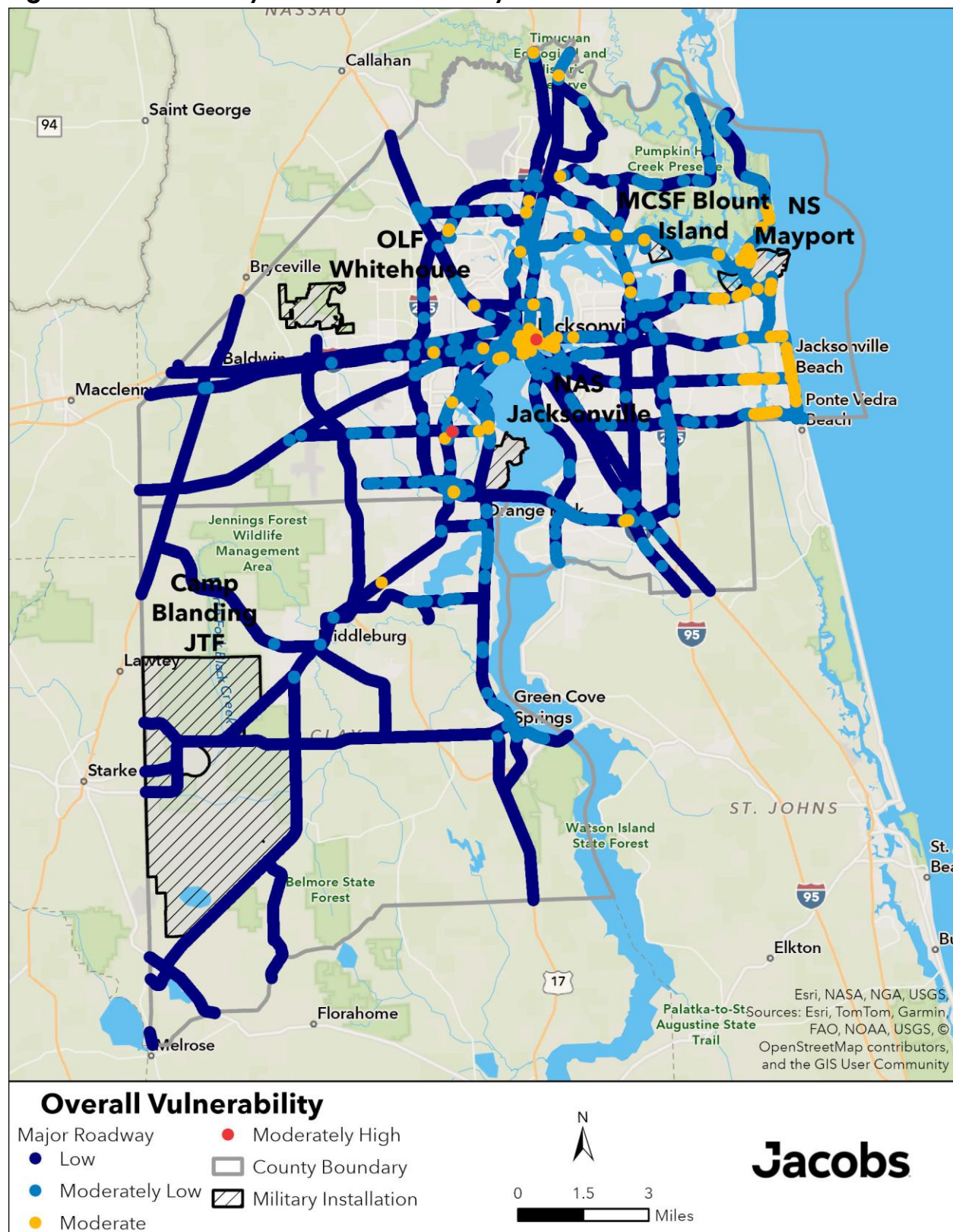
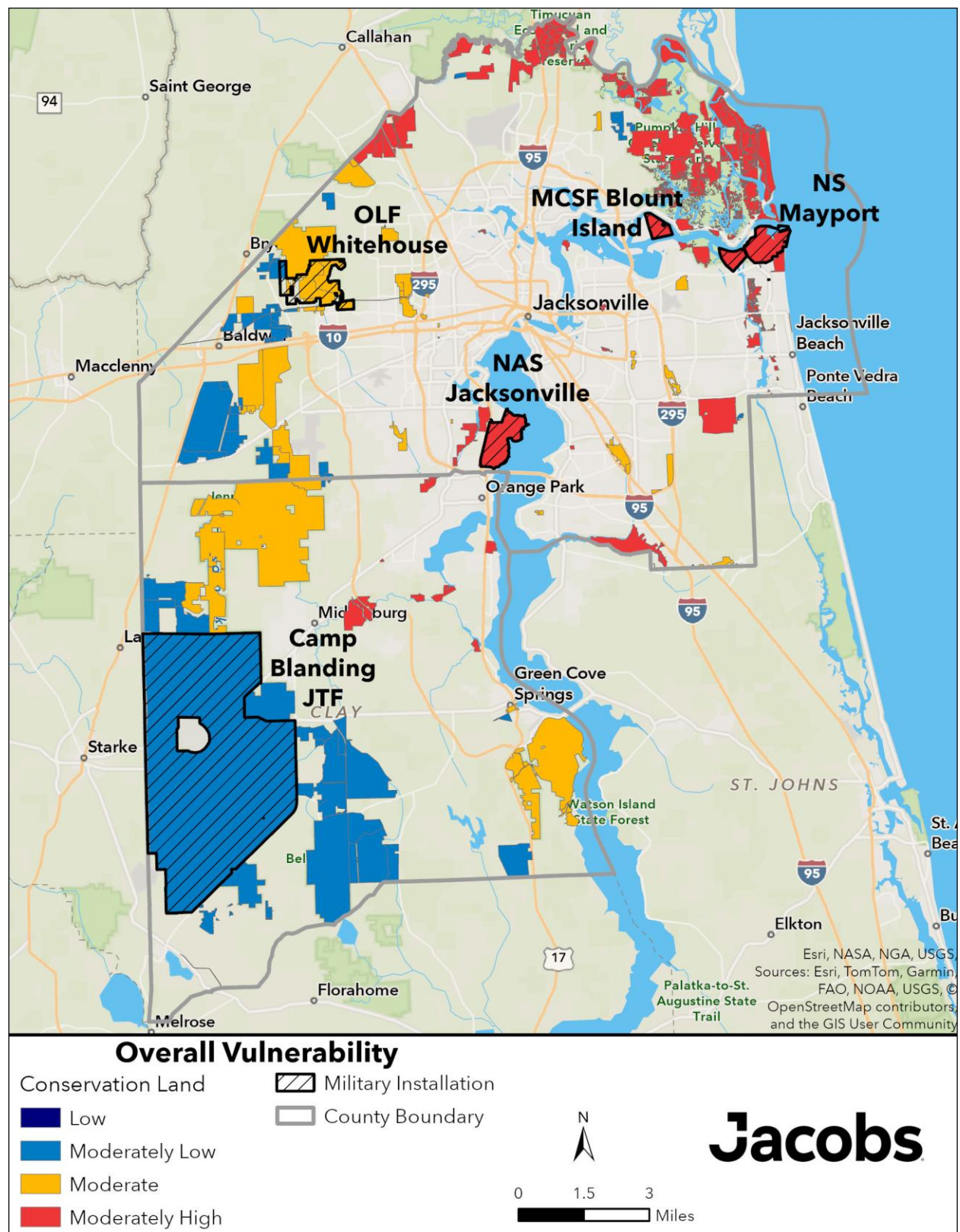


Figure 3-12. Conservation Land Overall Vulnerability



3.5.2 Shorelines

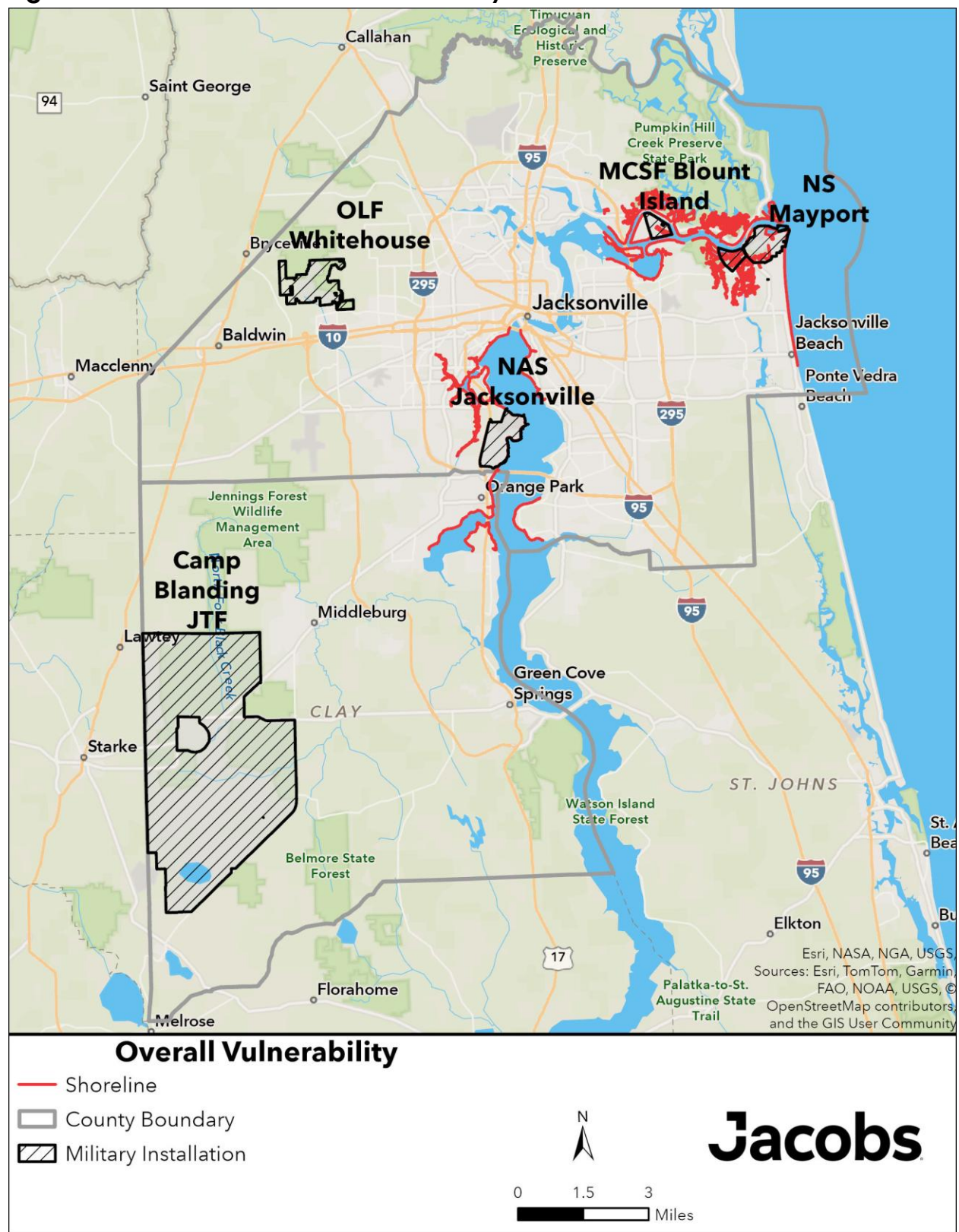
Shorelines are mission-critical at NS Mayport, MCSF Blount Island, and NAS Jacksonville. They buffer the installations from coastal hazards (storm surge and erosion). Shoreline erosion is driven by wave action caused by higher water levels, tidal fluctuations, vessel traffic, and storm surge (Dix et al. 2025). Figure 3-13 shows shoreline vulnerability.

Projected water-level increases indicate that shoreline vulnerability across Northeast Florida military installations is governed primarily by localized low-elevation shoreline segments and connected flow paths, rather than uniform flooding across entire installations. At NS Mayport, inundation is expected to initiate along the canal adjacent to Perimeter Road and move inland through existing drainage corridors, with additional expansion likely beneath Mayport Road as water levels rise toward mid-century thresholds. Shorelines protecting facilities north of Access Road and along Massey Avenue and Macon Street are projected to experience more frequent overtopping, while later-century conditions may extend flooding toward airfield -adjacent areas and influence the stability of inlet-adjacent infrastructure. At Blount Island, vulnerability is concentrated along the northwest armored shoreline and lower dock elevations, where overtopping can directly affect port operations, as well as along the central canal, which functions as a primary conduit distributing water across the interior of the island; longer-term scenarios suggest that access reliability may also be affected where bridge elevations approach projected water levels. For NAS Jacksonville, projected flooding is more localized but still operationally significant, with overtopping risk along the southeastern seawall, shoreline instability near the Bluff Road marina, and potential access concerns associated with scour and shoreline loss near the Roosevelt Boulevard bridge. Collectively, these findings indicate that flooding risk at these installations is driven less by broad shoreline retreat than by specific hydraulic entry points and connectivity pathways, underscoring the importance of targeted interventions at canals, crossings, and low shoreline crests to limit inland inundation and protect mission-critical infrastructure.

More detailed shoreline and erosion information can be found in *Playing the Long Ball: A Preparation Strategy for Future Erosion Impacts* (APTIM 2026).



Figure 3-13. Shoreline Overall Vulnerability



3.5.3 Wetlands

Wetlands provide multiple services to the installations: they absorb flood waters and wave energy, recharge aquifers (to support water supply), and protect the installations from encroachment. They also maintain water quality and, in the case of coastal wetlands, support healthy fisheries.

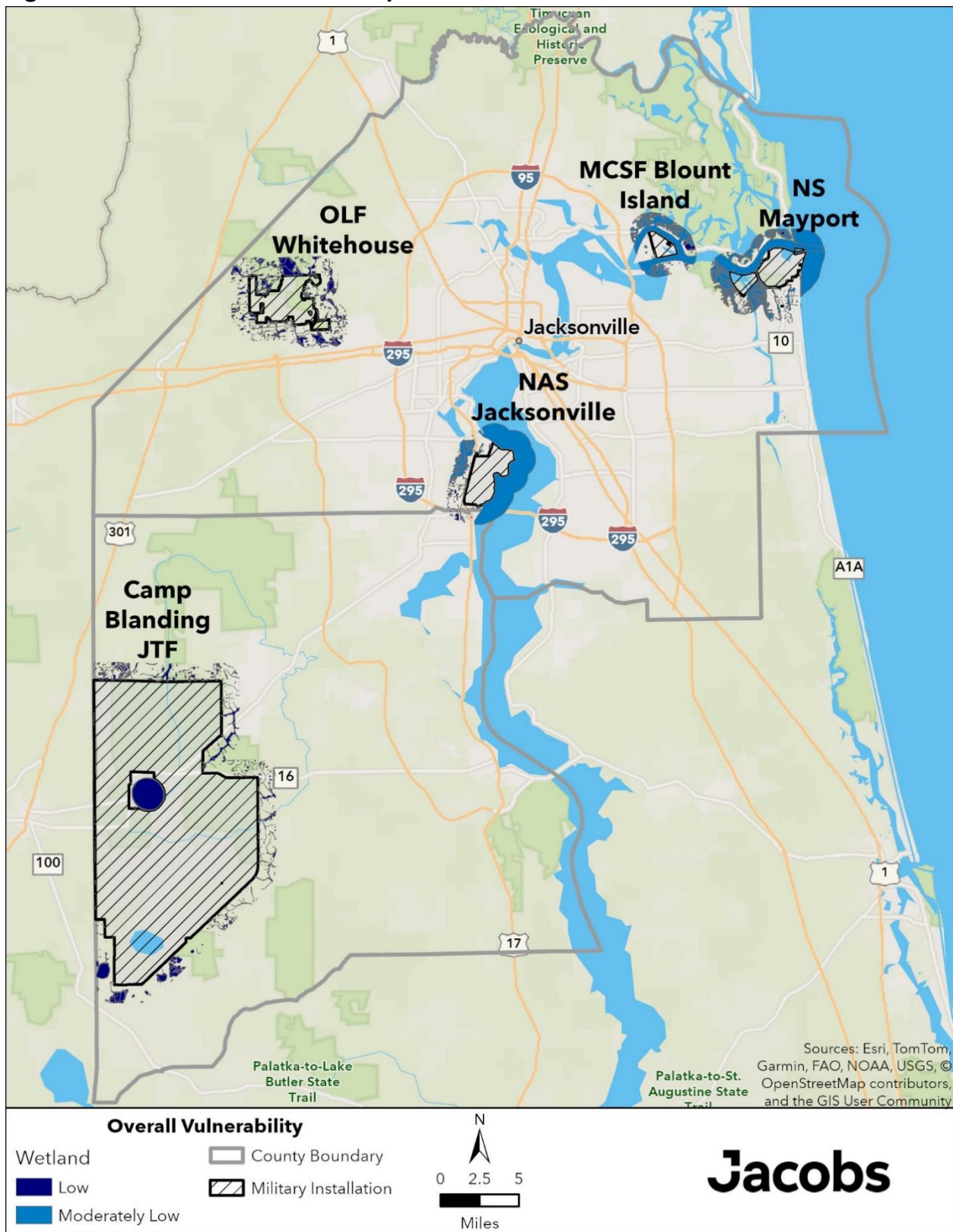
Wetlands have low vulnerability to the hazards analyzed in this MIRR study; however, they do have high vulnerability to SLR. Rising water levels and salinity concentrations can alter the character and location of wetlands, causing migration. If these wetlands lack suitable areas for relocation, they will drown under rising waters and will not be replaced.

Salt and brackish marshes are the predominant wetlands around NS Mayport and Blount Island. Salt marsh lines MCSF Blount Island's southern boundary and also exist north and east of Blount Island. Salt marsh lines the western and southwestern boundaries of NS Mayport. These wetlands are highly vulnerable to SLR, which can permanently inundate these wetlands.

Figure 3-14 shows wetland vulnerability.



Figure 3-14. Wetland Vulnerability



4 Risk to Mission Analysis Results

4.1 Camp Blanding JTF

To support the live weapons and ground maneuver training activities and exercises, as well as the various federal, state, and international entities that use the installation's grounds, Camp Blanding JTF relies on a variety of infrastructure systems to execute its missions. These assets have risks to mission ranging from high to low, as described in Table 4-1.

Table 4-1. Camp Blanding JTF Risk to Mission Summary

Asset Name	Asset Owner	Location/Extent	Mission-Criticality	Relevant Shocks/Stresses	Risk to Mission	Level of Urgency
Electric Substation	FPL	North of base	Primary	Wildfire, Lack of redundancy	High	Immediate
Railways	CSX	Around base	Primary	Rainfall flooding, extreme heat, aging infrastructure	High	Near-term
State Road 16	FDOT		Primary	Rainfall flooding, lack of redundancy	Medium	Near-term
Stormwater Systems	Various	Around base	Primary	Rainfall flooding	Medium	Near-term
Conservation Lands/Parcels around installation boundary	Various	Installation boundary	Primary	Encroachment (development pressures), wildfire, regulatory pressures	High	Immediate to mid-term
Wastewater system	N/A	N/A	Secondary	Lack of redundancy, regulatory pressures	Medium	Near-term

FDOT = Florida Department of Transportation

N/A = not applicable

Camp Blanding's highest risks to mission exist within the power systems, transportation systems and accompanying stormwater management infrastructure, and the lack of buffer around the installation. It is important to note that the conservation lands themselves do not pose a risk to the installation. Rather, it is the lack of conservation lands that can undermine the ability to provide an adequate buffer for the installation against encroachment hazards. Installation personnel have previously described their goal of creating a 3-mile buffer around the installation to prevent incompatible development from encroaching on the installation.

4.2 MCSF Blount Island

Because of its location as an island, MCSF Blount Island faces multiple risks stemming from lack of redundancy and flood hazards. These shocks and stressors threaten the ability of the installation to support marine prepositioning (Table 4-2).



Table 4-2. MCSF Blount Island Risk to Mission Summary

Asset Name	Asset Owner	Location/Extent	Mission-Criticality	Relevant Shocks/Stresses	Risk to Mission	Level of Urgency
Shorelines	Various	Around installation	Primary	Erosion, SLR, storm surge	High	Immediate
Communication Lines	AT&T	Installation to mainland	Primary	Lack of redundancy	High	Immediate
Heckscher Drive	FDOT	I-295 to Blount Island Blvd.	Primary	Lack of redundancy, SLR, storm surge, transportation congestion	High	Near-term
Dave Rawls Blvd.	JAXPORT	Heckscher Drive to Blount Island Blvd.	Primary	Aging infrastructure, storm surge	High	Near-term
Blount Island Blvd.	JAXPORT	Heckscher Dr. to Blount Island Blvd.	Primary	Storm surge	Moderate	Mid-term
Railways	JAXPORT	From mainland to installation	Primary	Lack of redundancy	High	Near-term
Potable Water Supply	JEA	Water supply from mainland to base	Secondary	Lack of Redundancy	Medium	Near-term

Lack of redundancy is the primary stressor for MCSF Blount Island, threatening communications systems, transportation and access, cargo transport, and the installation's water supply. Flood and erosion hazards are affecting shorelines around the installation while transportation congestion and storm surge impact critical access roads.

4.3 NAS Jacksonville

The risks to mission for NAS JAX are related to land development, transportation congestion, and lack of redundancy for critical infrastructure systems. Table 4-3 describes the risks to mission as they relate to various mission-critical assets.



Table 4-3. NAS Jacksonville Risk to Mission Summary

Asset Name	Asset Owner	Location/ Extent	Mission-Criticality	Relevant Shocks/Stresses	Risk to Mission	Level of Urgency
NOLF Whitehouse	NAS JAX	Installation boundary and surrounding areas	Primary	Encroachment (development pressures, light pollution)	High	Immediate
Undeveloped lands in APZs	Various	Areas near/within APZs	Primary	Encroachment (development pressures)	High	Immediate
Electric Substation	JEA	On-base	Primary	Lack of redundancy	High	Immediate
Roosevelt Blvd.	FDOT	West of base	Primary	Transportation congestion, lack of redundancy	High	Immediate
Buckman Bridge and 295 Interchange	FDOT	South of base	Primary	Transportation congestion	Medium	Near-term
Wastewater System	N/A	N/A	Secondary	Lack of redundancy, regulatory pressures	Medium	Near-term
103 rd Street/ Timuquana Road	Various	TBD	Primary	Rainfall flooding, SLR	Medium	Near-term
Regional Hospitals ¹	Various	Regionwide	Secondary	Rainfall flooding, storm surge, compound flooding, wildfire	Medium – Low	Near-term to long-term
Halsema Road	Duval County	NOLF Whitehouse to 103 rd St	Primary	N/A	Low	N/A
Natural Gas Transmission Lines	Florida Gas, Southern Natural Gas	Regional	Primary	N/A	Low	N/A

APZ = Accident Potential Zone

Encroachment from incoming development is a significant concern at NOLF Whitehouse and around the APZs of the installation; potential development can create risks for the installation and the public. Transportation congestion across the regional transportation system is also a significant concern at Roosevelt Blvd. and the Buckman Bridge.



4.4 NS Mayport

NS Mayport's location at the mouth of the St. Johns River is critical for its primary mission of housing and supporting the ship fleet. This same location also results in multiple risks to mission stemming from coastal hazards, as shown in Table 4-4.

Table 4-4. NS Mayport Risk to Mission Summary

Asset Name	Asset Owner	Location/ Extent	Mission-Criticality	Relevant Shocks/Stresses	Risk to Mission	Level of Urgency
A1A	FDOT	Wonderwood Dr. to Village of Mayport	Primary	Erosion, SLR, storm surge	High	Immediate
Mayport Substation	JEA	South of base	Primary	Rainfall flooding, storm surge	High	Immediate
Shorelines	Various	East of installation, Atlantic side	Primary	Erosion, SLR, storm surge	High	Immediate
Mayport Road	FDOT/ Atlantic Beach	Wonderwood Dr. to installation front gate	Primary	Rainfall flooding	Medium	Near-term
Regional Roadways	Various	SR 10, Atlantic Blvd, US-90, JT Butler Blvd, 3 rd St. South, Beach Blvd., Dune Ave.	Primary	Compound flooding, rainfall flooding, SLR, storm surge	Medium	Near to mid-term
Northside Fuel Depot	Naval Supply Logistics Command	West of installation	Primary	Compound flooding, rainfall, storm surge	Medium	Near-term
Timucuan Preserve	Dept. of Interior	West of installation	Primary	SLR	Medium	Mid-term

Multiple roadways and accompanying shorelines are affected by coastal hazards. A1A, which serves as a critical access road to the installation, the Village of Mayport, and USCG Mayport, poses high risk to mission because of current impacts from erosion and SLR. Mayport Road is projected to be affected by rainfall flooding in the 2040s while other regional roadways have various segments that are or will be affected by SLR, storm surge, rainfall, and/or compound flooding. The salt marshes of the Timucuan Preserve, which provide a buffer on the installation's east side, are already experiencing SLR impacts while the Northside Fuel Depot is projected to be impacted by major flood events.



4.5 Regional Risks to Mission

In addition to the installation-specific risks to mission identified herein, multiple regional risks to mission threaten most or all of the installations in varying capacities:

- **Lack of affordable housing.** Finding affordable housing poses a challenge for both civilian and military personnel in an installation. Stakeholders noted that finding affordable housing is not the only concern; rather, affordable housing in proximity to the installations is crucial for personnel. Longer commutes places greater stress on personnel, the transportation systems they utilize, and the installations.
- **Lack of childcare.** Stakeholders from multiple installations repeatedly stated that personnel experience difficulty finding childcare service for young children. Inaccessible childcare services can place significant stress on personnel and their families, rendering them unable to focus on their responsibilities on-base.
- **Regulatory/Policy Pressures.** Various regulatory pressures function as direct or indirect stressors for the installations and their surrounding communities:
 - FL Statute 403.064 and 403.892 (commonly known as SB 64): this legislation requires that wastewater utilities decrease the amount of treated wastewater being discharged to surface waters; the goal is to promote alternative water uses. This legislation impacts the wastewater systems on base at Camp Blanding JTF, NAS Jacksonville, and NS Mayport.
 - FL Statutes 125.01055 and 166.04151 (“Live Local Act”): this act overrides local zoning codes if affordable housing is present in development. This prevents communities, and by extension the installations, from controlling development around installation boundaries.
 - FL H0299 (“Blue Ribbon Bill”): this bill would allow for “blue ribbon” projects in which development can occur on large parcels without the approval of elected officials. This can result in encroachment risks, particularly around Camp Blanding JTF, NOLF Whitehouse, and NAS JAX.
 - Proposed property tax abolition: an initiative is being advanced through the FL legislature to add a proposal onto the 2026 ballot to abolish property taxes. This proposed abolition would significantly reduce funding for counties and municipalities, reducing the capabilities of these entities to support the installations.



5 Conclusion and Next Steps

This VA document describes the risks to mission for the military installations located within Duval and Clay Counties. Based off the quantitative vulnerability assessment and the qualitative risk to mission review conducted by the MIRR project team, there is no immediate risk to mission other than select single points of failure at each installation. This allows community service providers the ability to begin integrating risk reduction and resilience planning and incremental adaptation over time through the capital planning and budget process. At the installation scale, the results of the VA indicate severe critical assets and/or issues that pose moderate to high risk to mission:

- **NS Mayport:** A1A and shorelines, Mayport Road, the Mayport substation, and various regional roadways, the Northside Fuel Depot, and the Timucuan Preserve
- **MCSF Blount Island:** the installation's shorelines, Heckscher Drive, railways, electrical supply, and JAXPORT Blount Island Terminal
- **NAS JAX:** Roosevelt Boulevard, NAS JAX substation, the installation's wastewater system and lack of redundancy, regional development pressures
- **Camp Blanding JTF:** Railways, electric substation, lack of buffering conservation lands, and the installation's wastewater system and lack of redundancy

The results provided in this TM provide the foundation for adaptation planning, in which the MIRR project team will begin developing adaptation strategies to reduce risk and promote mission assurance. Adaptation strategies consist of the initial strategies to mitigate risks to mission, with additional emphasis placed on co-benefits that align with the themes of Resilient First Coast. The MIRR project team will, with input from the TAC, develop criteria for project prioritization. Proposed adaptation projects will be reviewed with the TAC and SC prior to finalization and development of implementation strategies.



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Glossary

Assets: an infrastructure component, that combined with other assets make up a system.

Consequence: impacts to assets resulting from hazard exposure.

Exposure: proximity of an asset to a hazard.

Facility: a collection of assets at a single location.

Likelihood: the probability of a hazard occurring.

Risk: The potential for an asset to be impacted by a hazard and associated consequences and likelihoods of impacts.

Risk to mission: The potential for mission impacts based on the effect of one or more hazards on an asset.

Sensitivity: the degree of responsiveness of an asset to hazard exposure.

Vulnerability: the combination of exposure and sensitivity.



Appendix A. Sensitivity Criteria



Asset Sensitivity Scoring Criteria																									
Asset Type	Asset Subtype	Rainfall Flooding					Storm Surge					SLR					Compound Flooding					Flood Hazards	Wildfire	Extreme Heat	Extreme Wind
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5				
Critical Community and Emergency Facilities																									
Emergency Operations Centers	Emergency Operations Centers	0-1 feet	1-2 feet	2-3 feet	3-4 feet	>4 feet	0 feet	0.1-2 feet	2.1-4 feet	4.1-6 feet	>6 feet	0-1 feet	1-2 feet	2-3 feet	3-4 feet	>4 feet	0-1 feet	1-2 feet	2-3 feet	3-4 feet	>4 feet	5	5	5	5
Fire Stations	Fire Stations	Above criteria will be applied to all asset types below					Above criteria will be applied to all asset types below					Above criteria will be applied to all asset types below					Above criteria will be applied to all asset types below					5	5	5	5
Hospitals	Hospitals																					5	5	5	5
Law Enforcement Facilities	Law Enforcement Facilities																					5	5	5	5
Local Government Facilities	Local Government Facilities																					5	5	5	5
Schools	Schools																					5	5	5	5
Transportation and Evacuation Routes																									
Airports	Airports																					5	5	5	5
Bridges	Bridges																					0	0	0	5
Maritime Support Facilities	Maritime Support Facilities																					5	5	0	0
Major Roadways	Evacuation Routes																					5	0	5	0
Ports	Ports																					5	5	0	5
Railroads	Railroads																					5	5	5	5
Railroads	Passenger																					5	5	5	5
Railroads	Freight																					5	5	5	5
Critical Infrastructure																									
Communication Facilities	Tower																					5	5	5	5
Electric Production and Supply Facilities	Generation Facilities																					5	5	5	5
Electric Production and Supply Facilities	Substations																					5	5	5	5
Electric Production and Supply Facilities	Transmission Structures																					0	5	5	5
Electric Production and Supply Facilities	Overhead Transmission Lines																					0	5	5	5
Potable Water Systems	Well																					5	5	5	0
Potable Water Systems	WTP																					5	5	5	5
Solid and Hazardous Waste Facilities	Landfills																					5	5	0	0
Solid and Hazardous Waste Facilities	Transfer Stations																					5	5	0	5
Stormwater Treatment Facilities and Pump Stations	Earthen dam																					5	0	0	0
Stormwater Treatment Facilities and Pump Stations	Cross Drain																					5	0	0	0
Stormwater Treatment Facilities and Pump Stations	Side Drain																					5	0	0	0
Stormwater Treatment Facilities and Pump Stations	Stormwater Inlets																					5	0	0	0
Stormwater Treatment Facilities and Pump Stations	Stormwater Valves																					5	0	0	0
Stormwater Treatment Facilities and Pump Stations	Stormwater Pumps																					5	5	5	0
Stormwater Treatment Facilities and Pump Stations	Stormwater Pipe																					5	0	0	0
Wastewater Treatment Facilities and Lift Stations	WWTP																					5	5	5	5
Natural Gas	Pipeline																					0	5	0	0
Natural Resources																									
Conservation Lands	Conservation Lands																					5	5	0	5
Shorelines	Shorelines																					5	5	0	0
Wetlands	Wetlands																					5	0	0	0

Appendix B. Risk to Mission Criteria



Impact to Mission Scores - MCSF Blount Island

Impact to Mission	What is the impact to the mission of the installation in the event of asset failure?	Rank	Score	Criteria
		None	0	Asset is not applicable to installation.
		Low	1	Asset failure has negligible impact on installation operations/mission
		Medium	10	Asset failure has moderate impact on installation operations/mission, necessitating workarounds
		High	20	Asset failure has severe impact on installation operations/mission, compromising readiness and preventing installation from executing mission

Asset Group	Asset Type	Asset Subtype	MCSF Blount Island	
			Short-Term Disruption	Long-Term Disruption
Critical Community and Emergency Facilities	Emergency Operations Centers	Emergency Operations Centers	1	10
	Fire Stations	Fire Stations	10	10
	Hospitals	Hospitals	1	1
	Law Enforcement Facilities	Law Enforcement Facilities	1	10
	Local Government Facilities	Local Government Facilities	1	10
	Schools	Schools	1	10
Transportation and Evacuation Routes	Airports	Airports	1	10
	Bridges	Bridges	20	20
	Maritime Support Facilities	Maritime Support Facilities	10	10
	Major Roadways	Evacuation Routes	20	20
	Ports	Ports	20	20
	Railroads	Railroads	20	20
	Railroads	Passenger	1	1
	Railroads	Freight	20	20
Critical Infrastructure	Communication Facilities	Tower/Underground pathways	10	20
	Electric Production and Supply Facilities	Generation Facilities	20	20
	Electric Production and Supply Facilities	Substations	20	20
	Electric Production and Supply Facilities	Transmission Structures	20	20
	Potable Water Systems	Well	10	20
	Potable Water Systems	WTP	10	20
	Solid and Hazardous Waste Facilities	Landfills	1	10
	Solid and Hazardous Waste Facilities	Transfer Stations	1	10
	Stormwater Treatment Facilities and Pump Stations	Earthen Dams	10	10
	Stormwater Treatment Facilities and Pump Stations	Stormwater Management Infrastructure (inlets, culverts, pipes, etc.)	1	10
	Wastewater Treatment Facilities and Lift Stations	WWTP	10	20
	Wastewater Treatment Facilities and Lift Stations	LS (Lift Station)	10	20
	Natural Gas	Pipeline	10	20
Natural Resources	Conservation Lands	Conservation Lands	0	0
	Shorelines	Shorelines	20	20
	Wetlands	Wetlands	1	10

Impact to Mission Scores - Camp Blanding JTF

Impact to Mission	What is the impact to the mission of the installation in the event of asset failure?	Rank	Score	Criteria
		None	0	Asset is not applicable to installation.
		Low	1	Asset failure has negligible impact on installation operations/mission
		Medium	10	Asset failure has moderate impact on installation operations/mission, necessitating workarounds
		High	20	Asset failure has severe impact on installation operations/mission, compromising readiness and preventing installation from executing mission

Asset Group	Asset Type	Asset Subtype	Camp Blanding JTF	
			Short-Term Disruption	Long-Term Disruption
Critical Community and Emergency Facilities	Emergency Operations Centers	Emergency Operations Centers	1	20
	Fire Stations	Fire Stations	10	10
	Hospitals	Hospitals	1	1
	Law Enforcement Facilities	Law Enforcement Facilities	1	10
	Local Government Facilities	Local Government Facilities	1	1
	Schools	Schools	1	1
Transportation and Evacuation Routes	Airports	Airports	1	20
	Bridges	Bridges	10	20
	Maritime Support Facilities	Maritime Support Facilities	0	0
	Major Roadways	Evacuation Routes	10	20
	Ports	Ports	0	0
	Railroads	Railroads	10	20
	Railroads	Passenger	10	20
	Railroads	Freight	10	20
Critical Infrastructure	Communication Facilities	Tower	20	20
	Electric Production and Supply Facilities	Generation Facilities	20	20
	Electric Production and Supply Facilities	Substations	20	20
	Electric Production and Supply Facilities	Transmission Structures	20	20
	Potable Water Systems	Well	20	20
	Potable Water Systems	WTP	20	20
	Solid and Hazardous Waste Facilities	Landfills	1	10
	Solid and Hazardous Waste Facilities	Transfer Stations	1	10
	Stormwater Treatment Facilities and Pump Station	Earthen Dams	1	1
	Stormwater Treatment Facilities and Pump Station	Stormwater Management Infrastructure (inlets, culverts, pipes, etc.)	1	10
	Wastewater Treatment Facilities and Lift Stations	WWTP	20	20
	Wastewater Treatment Facilities and Lift Stations	LS	20	20
	Natural Gas	Pipeline	0	0
	Conservation Lands	Conservation Lands	20	20
Natural Resources	Shorelines	Shorelines	0	0
	Wetlands	Wetlands	1	20

Impact to Mission Scores - NAS JAX

Impact to Mission	What is the impact to the mission of the installation in the event of asset failure?	Rank	Score	Criteria
		None	0	Asset is not applicable to installation.
		Low	1	Asset failure has negligible impact on installation operations/mission
		Medium	10	Asset failure has moderate impact on installation operations/mission, necessitating workarounds
		High	20	Asset failure has severe impact on installation operations/mission, compromising readiness and preventing installation from executing mission

Asset Group	Asset Type	Asset Subtype	NAS JAX	
			Short-Term Disruption	Long-Term Disruption
Critical Community and Emergency Facilities	Emergency Operations Centers	Emergency Operations Centers	1	10
	Fire Stations	Fire Stations	10	10
	Hospitals	Hospitals	10	10
	Law Enforcement Facilities	Law Enforcement Facilities	1	10
	Local Government Facilities	Local Government Facilities	1	10
	Schools	Schools	10	20
Transportation and Evacuation Routes	Airports	Airports	1	10
	Bridges	Bridges	10	20
	Maritime Support Facilities	Maritime Support Facilities	0	0
	Major Roadways	Evacuation Routes	20	20
	Ports	Ports	1	10
	Railroads	Railroads	0	0
	Railroads	Passenger	0	0
	Railroads	Freight	0	0
Critical Infrastructure	Communication Facilities	Tower	1	10
	Electric Production and Supply Facilities	Generation Facilities	20	20
	Electric Production and Supply Facilities	Substations	20	20
	Electric Production and Supply Facilities	Transmission Structures	20	20
	Potable Water Systems	Well	20	20
	Potable Water Systems	WTP	10	10
	Solid and Hazardous Waste Facilities	Landfills	10	10
	Solid and Hazardous Waste Facilities	Transfer Stations	1	10
	Stormwater Treatment Facilities and Pump Station	Earthen Dams	1	10
	Stormwater Treatment Facilities and Pump Station	Stormwater Management Infrastructure (inlets, culverts, pipes, etc.)	0	0
	Wastewater Treatment Facilities and Lift Stations	WWTP	1	10
	Wastewater Treatment Facilities and Lift Stations	LS	1	10
	Natural Gas	Pipeline	10	20
	Conservation Lands	Conservation Lands	10	20
Natural Resources	Shorelines	Shorelines	20	20
	Wetlands	Wetlands	10	10

Impact to Mission Scores - NS Mayport

Impact to Mission	What is the impact to the mission of the installation in the event of asset failure?	Rank	Score	Criteria
		None	0	Asset is not applicable to installation.
		Low	1	Asset failure has negligible impact on installation operations/mission
		Medium	10	Asset failure has moderate impact on installation operations/mission, necessitating workarounds
		High	20	Asset failure has severe impact on installation operations/mission, compromising readiness and preventing installation from executing mission

Asset Group	Asset Type	Asset Subtype	NS Mayport	
			Short-Term Disruption	Long-Term Disruption
Critical Community and Emergency Facilities	Emergency Operations Centers	Emergency Operations Centers	1	10
	Fire Stations	Fire Stations	10	10
	Hospitals	Hospitals	1	1
	Law Enforcement Facilities	Law Enforcement Facilities	1	10
	Local Government Facilities	Local Government Facilities	1	10
	Schools	Schools	10	20
Transportation and Evacuation Routes	Airports	Airports	1	10
	Bridges	Bridges	20	20
	Maritime Support Facilities	Maritime Support Facilities	20	20
	Major Roadways	Evacuation Routes	20	20
	Ports	Ports	1	10
	Railroads	Railroads	0	0
	Railroads	Passenger	0	0
	Railroads	Freight	0	0
Critical Infrastructure	Communication Facilities	Tower	1	10
	Electric Production and Supply Facilities	Generation Facilities	20	20
	Electric Production and Supply Facilities	Substations	20	20
	Electric Production and Supply Facilities	Transmission Structures	20	20
	Potable Water Systems	Well	20	20
	Potable Water Systems	WTP	20	20
	Solid and Hazardous Waste Facilities	Landfills	1	10
	Solid and Hazardous Waste Facilities	Transfer Stations	1	10
	Stormwater Treatment Facilities and Pump Stations	Earthen Dams	0	0
	Stormwater Treatment Facilities and Pump Stations	Stormwater Management Infrastructure (inlets, culverts, pipes, etc.)	1	10
	Wastewater Treatment Facilities and Lift Stations	WWTP	10	20
	Wastewater Treatment Facilities and Lift Stations	LS	1	10
	Natural Gas	Pipeline	1	10
Natural Resources	Conservation Lands	Conservation Lands	10	20
	Shorelines	Shorelines	20	20
	Wetlands	Wetlands	10	20

Appendix C. Other Impacts Criteria



Asset Class	Asset Type	Asset Subtype	Infrastructure						Environment	Economy	Quality of Life
			Rainfall Flooding	Storm Surge	SLR	Wildfire	Extreme Heat	High Wind			
Critical Community and Emergency Facilities	Emergency Operations Centers	Emergency Operations Centers	3	5	3	5	3	5	1	1	3
	Fire Stations	Fire Stations	3	5	3	5	3	5	1	3	5
	Hospitals	Hospitals	3	5	3	5	3	5	1	5	5
	Law Enforcement Facilities	Law Enforcement Facilities	3	5	3	5	3	5	1	5	5
	Local Government Facilities	Local Government Facilities	3	5	3	5	3	5	1	5	5
	Schools	Schools	3	5	3	5	3	5	1	1	5
Transportation and Evacuation Routes	Airports	Airports	3	5	5	5	3	5	1	5	5
	Bridges	Bridges	1	5	1	5	3	5	1	5	5
	Maritime Support Facilities	Maritime Support Facilities	3	5	5	5	3	5	1	1	1
	Major Roadways	Evacuation Routes	3	5	5	5	5	1	1	5	5
	Ports	Ports	3	5	5	5	3	3	1	5	1
	Railroads	Railroads	3	5	5	5	5	1	1	5	1
	Railroads	Passenger	3	5	5	5	5	1	1	5	1
	Railroads	Freight	3	5	5	5	5	1	1	5	1
Critical Infrastructure	Communication Facilities	Tower	3	5	5	5	3	5	1	5	5
	Electric Production and Supply Facilities	Generation Facilities	3	5	5	5	3	5	5	5	5
	Electric Production and Supply Facilities	Substations	3	5	5	5	3	3	3	5	5
	Electric Production and Supply Facilities	Transmission Structures	3	5	5	5	3	1	1	5	5
	Potable Water Systems	Well	3	5	5	5	3	1	3	5	5
	Potable Water Systems	WTP	3	5	5	5	3	3	3	5	5
	Solid and Hazardous Waste Facilities	Landfills	3	5	5	5	3	1	3	3	5
	Solid and Hazardous Waste Facilities	Transfer Stations	3	5	5	5	3	1	5	3	5
	Stormwater Treatment Facilities and Pump Stations	Earthen dam	3	5	5	1	1	1	5	1	5
	Stormwater Treatment Facilities and Pump Stations	Cross Drain	3	5	5	1	1	1	5	1	5
	Stormwater Treatment Facilities and Pump Stations	Side Drain	3	5	5	1	1	1	5	1	5
	Stormwater Treatment Facilities and Pump Stations	Stormwater Inlets	3	5	5	1	1	1	5	1	5
	Stormwater Treatment Facilities and Pump Stations	Stormwater Valves	3	5	5	1	1	1	5	1	5
	Stormwater Treatment Facilities and Pump Stations	Stormwater Pumps	3	5	5	1	1	1	5	1	5
	Stormwater Treatment Facilities and Pump Stations	Stormwater Pipe	3	5	5	1	1	1	5	1	5
	Wastewater Treatment Facilities and Lift Stations	WWTP	3	5	5	5	3	1	5	5	5
	Wastewater Treatment Facilities and Lift Stations	LS	3	5	5	5	3	1	5	5	5
	Natural Gas	Pipeline	3	5	5	5	1	1	5	5	5
Natural Resources	Conservation Lands	Conservation Lands	3	5	5	5	3	1	5	1	3
	Shorelines	Shorelines	3	5	5	5	1	1	5	3	3
	Wetlands	Wetlands	1	5	5	5	3	1	5	1	3

Note: Scoring criteria are given on page 2.

Scoring Criteria				
		Rank	Num. Score	Criteria
Impact to Infrastructure	Anticipated level of damage to asset itself (if manmade infrastructure)	Low	1	Minimal damage
		Medium	3	Repairs required
		High	5	Complete replacement required
Impact to Environment	Impact of asset failure on environment/natural resources	Low	1	Minimal environmental impact
		Medium	3	Moderate environmental impact (temporary loss of ecosystem services)
		High	5	Severe environmental impact (permanent loss of ecosystem services)
Impact to Economy	How does asset failure impact the economy?	Low	1	Minimal economic impact
		Medium	3	Moderate/temporary economic impact
		High	5	Severe/permanent economic impact
Impact to Quality of Life	How does asset failure impact quality of life?	Low	1	no or little disruption in service or function
		Medium	3	disruption in service or function that does not threaten personnel health & safety (non-critical)
		High	5	disruption of service and/or function that threatens personnel health & safety (critical)

Appendix D. Qualitative Risk Review



Qualitative Risk to Mission Review																		
Installation	Asset/Issue	Shock or Stress	Does or will shock or stress affect installation/operations?	Relevance score	Is an entity currently managing the issue?	Management Score	Management Description	Are there workarounds?	Workaround Score	Workaround Description	Potential Impact to Mission	Impact to Mission Score	Impact to Mission Description	Likelihood	Likelihood Score	Likelihood Description	Total Score	Risk to Mission
Blount Island	Heckscher Drive	Single Point of Failure	Yes	3	No	3		No	3	Heckscher Drive is currently only way on/off base.	High	3	Personnel can't access installation.	Possible	2	Traffic accidents or other incidents are possible.	54	High
Blount Island	Heckscher Drive	Congestion	Yes	3	No	3	Traffic occurs regularly on the roadway. North Florida TPO has recently conducted a corridor study (North Florida TPO 2025).	No	3	Heckscher Drive is currently only way on/off base.	High	3	Personnel can't access installation.	Likely	3	Significant traffic and congestion regularly occurs, with major incidents having occurred historically.	81	High
Blount Island	Substation	Single Point of Failure	Yes	3	No	3	Installation does have backup power generation but there is currently no redundant off-base power supply.	No	3	No workarounds currently available.	High	3	Electric power is mission-critical for operations.	Possible	2	Failure of decades-old substation is possible.	54	High
Blount Island	Substation	Aging Infrastructure	Yes	3	No	3	Currently no redundant power supply.	No	3	No workarounds currently available.	High	3	Electric power is mission-critical for operations.	Possible	2	Failure of decades-old substation is possible.	54	High
Blount Island	Communication Lines	Single Point of Failure	Yes	3	No	3	Installation and AT&T are currently looking at a redundant comm line but no actions have yet occurred.	No	3	Currently only one line onto base.	High	3	Communications systems are crucial for the installations' operations (including logistics).	Possible	2	Asset failure is possible due to accidental outage (either system outage or physical damage to cable).	54	High

Qualitative Risk to Mission Review																		
Installation	Asset/Issue	Shock or Stress	Does or will shock or stress affect installation/operations?	Relevance score	Is an entity currently managing the issue?	Management Score	Management Description	Are there workarounds?	Workaround Score	Workaround Description	Potential Impact to Mission	Impact to Mission Score	Impact to Mission Description	Likelihood	Likelihood Score	Likelihood Description	Total Score	Risk to Mission
Camp Blanding	Installation Boundary	Encroachment	Yes	3	No	3	Installation has identified a desired 3-mile buffer however development is occurring.	No	3	Incompatible adjacent uses can impact installation operations.	High	3	Encroachment on installation boundaries can inhibit training missions.	Likely	3	Installation already faces encroachme	81	High
Camp Blanding	T&E Species	T&E Species	Yes	3	Yes	1	Installation actively manages T&E species on base.	Yes	1	Installation has plans in place for handling T&E species and associated disruptions.	High	3	Presence of T&E species stops training activities.	Unlikely	1	While presence of T&E species can disrupt training activities, this appears to be managed risk.	15	Low
Camp Blanding	Wastewater Treatment System	Regulatory Pressure	Yes	3	No	3	Installation has indicated it is looking at options but no actions have yet been made.	Yes	1	Installation has time to fix and find a solution.	Moderate	2	Installation would continue to function; however, there may be fines or other penalties.	Possible	2	Due to time required to plan, design, permit, and construct alternative solutions, it is possible that solution	28	Moderate

Qualitative Risk to Mission Review																		
Installation	Asset/Issue	Shock or Stress	Does or will shock or stress affect installation/operations?	Relevance score	Is an entity currently managing the issue?	Management Score	Management Description	Are there workarounds?	Workaround Score	Workaround Description	Potential Impact to Mission	Impact to Mission Score	Impact to Mission Description	Likelihood	Likelihood Score	Likelihood Description	Total Score	Risk to Mission
NAS JAX	OLF Whitehouse	Light Pollution	Yes	3	Yes	1	Installation has worked with Duval County on appropriate zoning and has a light pollution overlay in the land use maps.	No	3	If there's light pollution, they can't use the OLF for training.	High	3	Direct inhibition of training mission.	Likely	3	Light pollution has been documented by the installation as already occurring.	63	High
NAS JAX	Roosevelt Blvd	Congestion	Yes	3	No	3	Roosevelt Blvd, coupled with surrounding roads, has significant traffic congestion issues.	Yes	1	Roosevelt Blvd is only point of access to base.	High	3	In event something happens, people can't access the base.	Likely	3	Traffic occurs regularly.	63	High
NAS JAX	Substation	Single Point of Failure	Yes	3	No	3	Currently no plans for a redundant substation.	No	3	Currently no workarounds exist.	High	3	Failure of substation shuts down power on base.	Possible	2	Installation described two prior instances of substation failure (animal intrusion). This scoring takes into account prior incidents and the fact that any sort of incident (power/equipment failure, malevolent threat, etc.) can occur.	54	High
NAS JAX	Wastewater Treatment System	Regulatory Pressure	Yes	3	No	3	Installation has indicated it is looking at options but no actions have yet been made.	Yes	1	Installation has time to fix and find a solution.	Moderate	2	Installation would continue to function; however, there may be fines or other penalties.	Possible	2	Due to time required to plan, design, permit, and construct alternative solutions, it is possible that solution will not be ready by 2032.	28	Moderate

Qualitative Risk to Mission Review																		
Installation	Asset/Issue	Shock or Stress	Does or will shock or stress affect installation/operations?	Relevance score	Is an entity currently managing the issue?	Management Score	Management Description	Are there workarounds?	Workaround Score	Workaround Description	Potential Impact to Mission	Impact to Mission Score	Impact to Mission Description	Likelihood	Likelihood Score	Likelihood Description	Total Score	Risk to Mission
NS Mayport	A1A and Shorelines	Erosion	Yes	3	No	3	While there are plans in place for shoreline hardening (including FDOT, installation, and University of Georgia projects) no construction has begun to mitigate risk.	No	3	A1A is only means of accessing Gate 5 (from outside the installation) and Village of Mayport.	Moderate	2	Installation loses an access point but can still execute its mission.	Likely	3	Erosion is already occurring.	54	High
NS Mayport	Substation	Single Point of Failure	Yes	3	No	3	Currently no plans for a redundant substation.	Yes	1	On-base power generation exists, however, there is limited generation capacity.	High	3	Loss of power affects and inhibits all aspects of primary mission.	Possible	2	Asset failure is possible due to accidental outage (either system outage or physical damage to facility from natural or proximity hazard).	42	Moderate