

Ports and Waterways Safety Assessment Workshop Report

Miami, Florida



**Providing Navigation Safety Information
for America's Waterways Users**

**Released by:
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Executive Summary

The United States Coast Guard (USCG) Sector Miami sponsored a Ports and Waterways Safety Assessment (PAWSA) workshop in Miami, FL, on 10-11 May 2023. Twenty-five participants represented the range of waterway users, stakeholders, joined together with Federal, State, and local safety authorities to collaboratively assess navigation safety on the waterways adjoining the Port of Miami, and Miami River. Ahead of the formal workshop, the USCG Navigation Center (NAVCEN) facilitated an executive-level stakeholder engagement meeting on 07 March 2023 to enhance community outreach and prepare stakeholders for the formal workshop.

The primary goal of a PAWSA workshop is to improve coordination and cooperation between government agencies and the private sector. Workshop stakeholders participate in a facilitated discussion framed by a USCG developed decision tool that numerically represents the participants understanding of relative risks among a standard set of waterway design and use factors subsequently referred herein as “Waterway Risk Factors”. These outputs focus the collective discussions and consensus towards the identification of potential long-term solutions tailored to local circumstances. PAWSA workshops have been held by the Coast Guard since 1999 but the goals of the program have changed significantly in that time. Commissioned by the PAWSA program office, Waterways Management (CG-WWM-1), in 2020 to evaluate the original decision tool’s results against modern programmatic goals, NAVCEN implemented substantive revisions by 2021. While the fundamentals of the PAWSA construct remain unchanged, the risk scoring system and numerical results from this report are not comparable to pre-2021 PAWSA reports.

On the first day of the workshop, participants discussed and scored sixteen risk factors that form the basis of the PAWSA decision tool. Generally, these risk factors rate the quality of vessels and their crews that operate on the waterway; the volume of commercial, non-commercial and recreational small craft vessel traffic using the waterway; navigational and waterway conditions that mariners encounter when transiting the assessment area. Potential consequences as a result of a casualty or incident on the waterway are evaluated with each factor to develop a baseline risk value for each of the sixteen waterway risk factors. In parallel to this baseline assessment, participants assessed risk trends over time, risk tolerances, and the effectiveness of any existing mitigation measures.

On the second day, participants reviewed the survey results and prioritized the risk factors most in need of more effective mitigation measures. The following Waterway Risk Factors were agreed upon as the highest priorities: all four traffic conditions, recreational vessel quality, obstructions, and deep draft vessel quality. Participants discussed and agreed on risk mitigation strategies that involve education, coordination, policy/regulatory improvements, and physical waterway configuration enhancements. Section 4 contains the complete list of mitigation strategies.

The USCG Marine Transportation Systems Directorate (CG-5PW), NAVCEN, and Sector Miami, extend a sincere appreciation to the workshop participants for their contributions to the Miami PAWSA workshop. Their expertise was critical to the success of the workshop and recommendations will meaningfully assist the USCG as it continues to work with all Miami stakeholders to improve safe and efficient navigation within these waterways.

Background and Purpose

The USCG Marine Transportation Systems Directorate (CG-5PW) is responsible for developing and implementing policies and procedures that facilitate commerce, improve safety and efficiency, and inspire dialogue with ports and waterway users with the goal of making waterways as safe, efficient, and commercially viable as possible.

The 1997 Coast Guard Appropriations Act directed the USCG to establish a process to identify minimum user requirements for new Vessel Traffic Service (VTS) systems in consultation with local officials, waterway users and port authorities, and to review private / public partnership opportunities in VTS operations.

The Coast Guard convened a National Dialogue Group (NDG) comprised of maritime and waterway community stakeholders to identify the needs of waterway users with respect to Vessel Traffic Management (VTM) and VTS systems. The NDG was intended to provide the foundation for the development of an approach to VTM that would meet the shared government, industry, and public objectives of ensuring the safety of vessel traffic in U.S. ports and waterways, in a technologically sound and cost-effective way.

The *Ports and Waterways Safety Assessment (PAWSA) Waterway Risk Model* and the *PAWSA workshop process* is a direct output of NDG efforts. PAWSA is a disciplined approach designed to identify major waterway safety hazards, estimate risk levels, evaluate potential mitigation measures, and set the stage for the implementation of selected risk reduction strategies.

The process involves convening a select group of waterway users and stakeholders and facilitating a structured workshop agenda to meet the risk assessment objectives. A successful workshop requires the participation of professional waterway users with local expertise in navigation, waterway conditions, and port safety. Regional stakeholders are also included in the process to ensure that important environmental, public safety, and economic consequences get appropriate attention in the identification and evaluation of risk interventions.

The long-term goals of the PAWSA process are to:

- Provide input during planning for projects that intend to improve the safety of navigation;
- Further the Marine Transportation System (MTS) goals of improved coordination and cooperation between government and the private sector, and involving stakeholders in decisions affecting them;
- Foster development and/or strengthen the roles of Harbor Safety Committees within each port; and,
- Support and reinforce the role of USCG Sector Commanders and Captains of the Port (COTP) in promoting waterway and VTM activities within their geographic areas of responsibility.

PAWSA Waterway Risk Model

The PAWSA Waterway Risk Model includes variables associated with causes of waterway casualties and their consequences. The Waterway Risk Model measures risk as defined as a function of the probability of a casualty and its consequences. The diagram below shows the four general risk categories and their corresponding risk factors that make up the Waterway Risk Model.

Navigation	Vessel Quality & Operation	Traffic	Waterway
Winds	Large Commercial Vessels	Volume of Commercial Traffic	Dimensions
Currents/Tides	Small Commercial Vessels	Volume of Recreational Traffic	Obstructions
Visibility Restrictions	Commercial Fishing Vessels	Waterway Use	Visibility Impediments
Bottom Type	Recreational Vessels	Congestion	Configuration

- **Navigational Conditions** – The environmental conditions that vessels must deal with in a waterway.
- **Vessel Quality and Operation Conditions** – The quality of vessels and their crews that operate on a waterway.
- **Traffic Conditions** – The number of vessels that use a waterway and how they interact with each other.
- **Waterway Conditions** – The physical properties of the waterway that affect vessel maneuverability.

In addition to the four general risk categories, the model utilizes two categories of consequences: immediate consequences and subsequent consequences. The table below shows the breakdown of the consequences in the two categories.

Immediate Consequences	Subsequent Consequences
Personnel Injury	Public Health and Safety
Petroleum Discharge	Environmental Damage
Hazardous Materials Release	Aquatic Resources
Port Mobility	Economic

Workshop Process

Workshop activities include a series of discussions about the port and waterway attributes and the vessels that use the waterway. Following dialogue with each risk factor, the participants are surveyed to establish a relative risk baseline. Using predefined qualitative risk descriptions for predefined risk factors, the baseline survey establishes a numerical value. The risk characterization survey segment then evaluates risk tolerance, current risk level trends, effectiveness of existing mitigation efforts, and collects preliminary comments in conversation and survey free-text entry. Additionally, participants were able to add geo-referenced comments to a gridded nautical chart around Miami (Appendix C). On the second day, participants review the aggregated survey results as the basis for determining which factors to discuss for additional risk mitigation strategies. With consensus on those priorities, generally where the assessed risk is high or existing mitigations are ineffective, the facilitated dialogue then aims to identify impactful mitigation strategies.

Miami PAWSA Workshop

A PAWSA workshop to assess navigation safety within the Port of Miami and contiguous waters was held in Miami, FL on 10-11 May 2023. Twenty-five participants represented the range of waterway users, stakeholders, and Federal, State, and local regulatory authorities to collaboratively assess navigational safety in the Miami assessment area. The USCG Navigation Center (NAVCEN) facilitated the PAWSA workshop, preceded by a community stakeholder engagement meeting held on 07 March 2023 to enhance community outreach.

Participants discussed the quality of vessels and their crews that operate on the waterway; the volume of commercial, non-commercial, and recreational small craft vessel traffic using the waterway, navigational and waterway conditions that mariners encounter when transiting the assessment area, and the potential environmental impacts that could result from a marine casualty or incident on the waterway.

Over the two-day workshop, the participants discussed and then numerically evaluated 16 risk factors in the PAWSA Model.

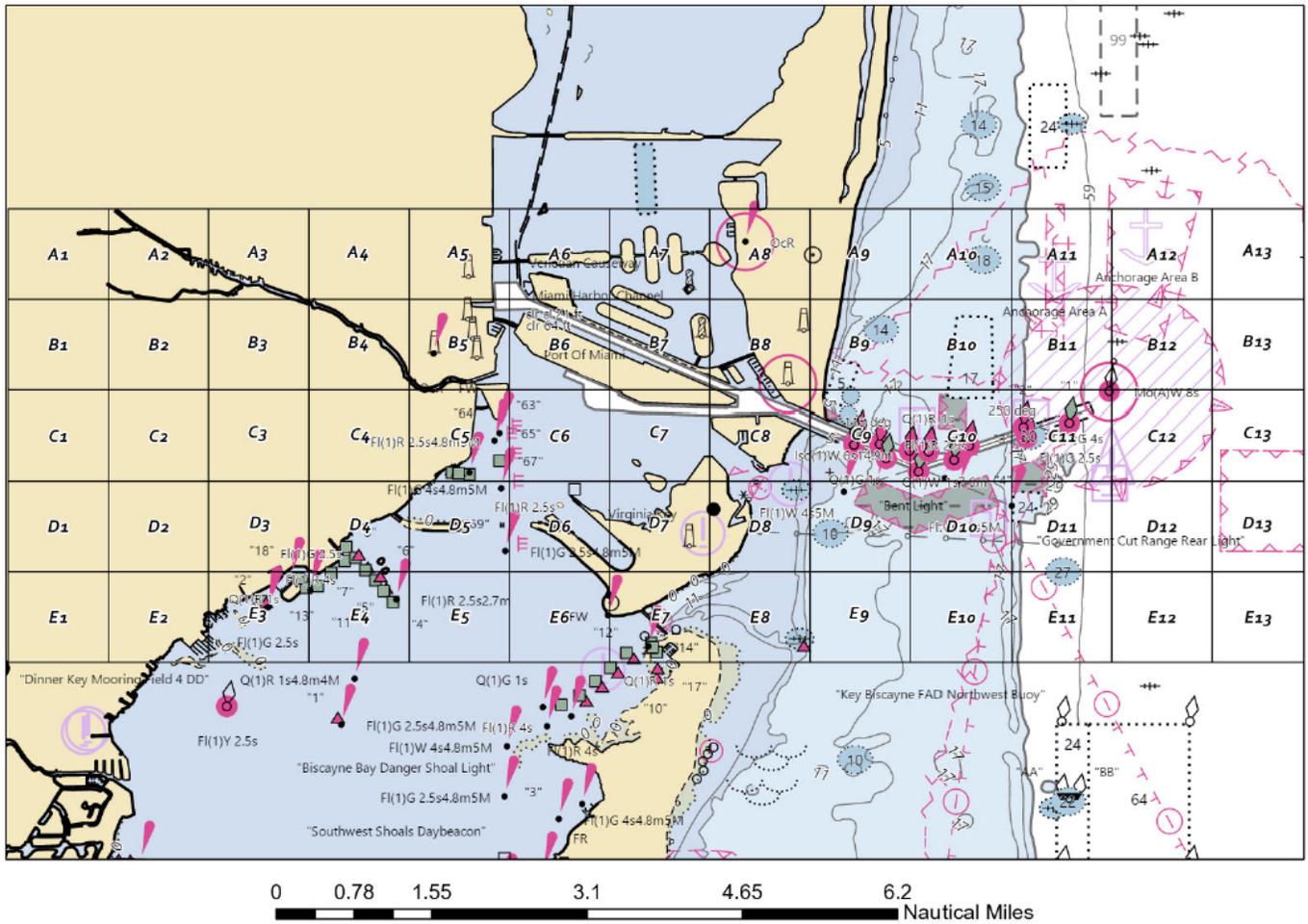
Baseline risk levels were first evaluated using pre-defined qualitative risk descriptions for each risk factor. Participants then characterized risk mitigation strategies by evaluating cost and effectiveness of existing mitigation strategies followed by an assessment of risk trends over time. For the highest rated risk factors, the participants engaged in further discussion to identify additional mitigation strategies to reduce the risk. The results of the baseline-risk-level survey, risk characterization, additional risk intervention strategies, and participant comments and observations are outlined in this report.

The primary goal of a PAWSA workshop is to improve coordination and cooperation between government agencies and the private sector. A PAWSA workshop engages stakeholders in decisions affecting them and provides the Coast Guard and members of the waterway community with an effective tool to evaluate risk and work towards long-term solutions tailored to local circumstances.

In support of these goals, this report is a starting point for continued dialogue within the Miami maritime community. The USCG may use this PAWSA report, together with other information, to determine whether, and to what extent, regulatory or other actions are necessary to address navigation safety risk. Any rulemaking efforts will follow Coast Guard public notice and comment rulemaking procedures to allow for public participation in the process.

Section 1: Miami PAWSA Assessment Area

The geographic area for the Miami PAWSA includes the harbor and Miami River as depicted.



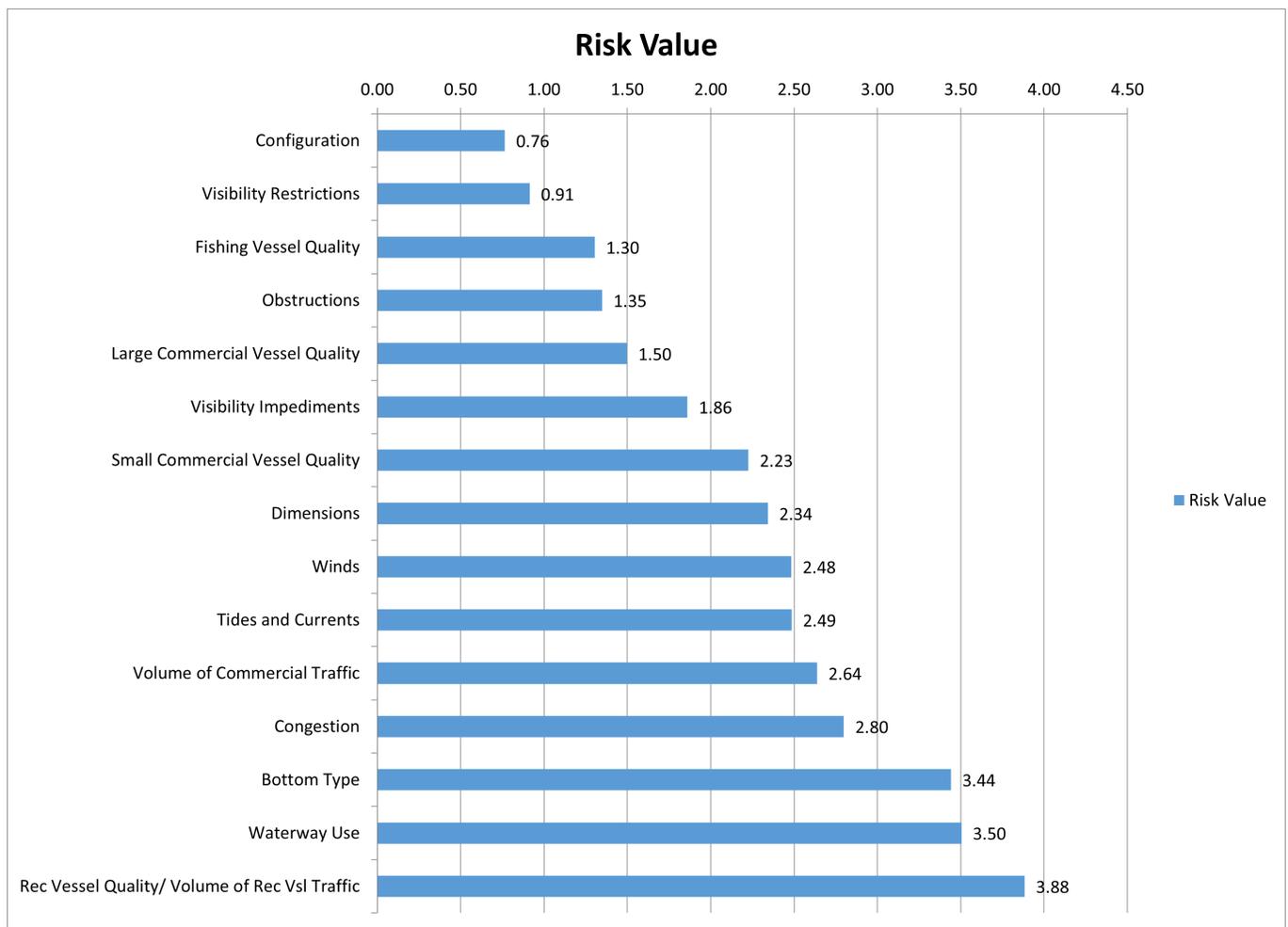
Section 2: Baseline Risk Levels

The first step in the workshop was the completion of a baseline survey to determine a baseline risk level value and trend characterization for each risk factor in the Waterway Risk Model. To establish the baseline risk levels, participants discussed each of the 16 applicable factors in the Waterway Risk Model and filled out the baseline survey based on quantitative descriptions of the risk level and the severity of consequences associated with those risks. These risk levels are converted to a numerical value between 1 and 4 based on the severity of the risk. The consequences are given a value of 0, 0.5, or 1 based on the level selected by the participant. For each risk factor, the baseline is determined by multiplying the risk (1-4) by the average immediate consequence plus the average subsequent consequence using the below formula.

$$\text{Risk Value} = (\text{risk level}) \times \left(\frac{\sum \text{Immediate Consequences}}{4} + \frac{\sum \text{Subsequent Consequences}}{4} \right)$$

The results of the risk value are on a scale between 0 and 8. On that scale, 0.0 represents low risk (best case) and 8.0 represents high risk (worst case), with 4.0 being the mid-risk value.

The graph below shows the baseline risk-level values for all risk factors evaluated by the Miami PAWSA workshop participants.



Section 3: Risk Characterization

Concurrently within the survey, risk characterization questions determine if the current risk for each category is acceptable, the current trends in the risk level, and if current mitigations were effective. The survey also collects initial comments from the participants on the risk and mitigations for each risk factor (Appendix B). The results are generated based on what a plurality of the participants selected for each risk factor. The baseline risk value and risk characterization results were combined and reviewed with the participants to begin the second day.

The resulting baseline values and risk characterizations from the Miami PAWSA workshop surveys were assessed on the second day. Facilitators reviewed these results with the participants to determine which risk factors to focus on in developing potential mitigation measures. Based on the risk values and risk characterization trends, participants could discuss, reorder, and/or choose to focus on risk factors that were not necessarily the highest initial risk value from the baseline survey. Mitigation strategies or interventions were developed for the highlighted categories.

Participants generally assessed that the risk factors with an “increasing” trend were the highest priority. Therefore, the collective Traffic conditions (i.e., volumes, waterway use, and congestion) were grouped at the top. Participants also validated Bottom Type as a top risk but chose to focus discussion on other factors due to its unchanging nature. In totality, the group chose to identify mitigation strategies for five distinct categories: Recreational Vessel Quality and Operation, Volume of Recreational Vessel Traffic, Vessel Congestion, and Commercial Traffic Volume.

Risk Factor	Risk Value	Current Risk Level	The Current Risk Trend	The Current Mitigations are
Configuration	0.76	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Visibility Restrictions	0.91	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Fishing Vessel Quality	1.30	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Obstructions	1.35	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Large Commercial Vessel Quality	1.50	The level of risk is acceptable, keep the status quo	Increasing	Acceptable
Visibility Impediments	1.86	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Small Commercial Vessel Quality	2.23	The level of risk is acceptable, keep the status quo	Increasing	Acceptable
Dimensions	2.34	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Winds	2.48	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Tides and Currents	2.49	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Volume of Commercial Traffic	2.64	The level of risk is acceptable, keep the status quo	Increasing	Acceptable but Tenuous
Congestion	2.80	The level of risk is acceptable, keep the status quo	Increasing	Unacceptable, we need more/better mitigations
Bottom Type	3.44	The level of risk is acceptable, keep the status quo	Staying The Same	Acceptable
Waterway Use	3.50	unacceptably high risk	Increasing	Unacceptable, we need more/better mitigations
Rec Vessel Quality/ Volume of Rec Vsl Traffic	3.88	unacceptably high risk	Increasing	Unacceptable, we need more/better mitigations

Section 4: Risk Mitigation Strategies

The workshop's final step focused participant efforts on specific risk factors, risk level evidence collection, and identifying potential mitigation measures. Using a team facilitated discussion format, participants employed handwritten sticky notes to then group and consolidate ideas. Resulting major themes/ideas were then presented to the participants to further distill action items. From this bank of action items, participants were encouraged to create specific, measurable, actionable, realistic, and timebound (SMART) goals.

Workshop participants identified, discussed, and evaluated additional risk intervention strategies through education, coordination, policy/regulatory improvements, and/or physical waterway configuration enhancements. These recommended additional risk intervention strategies, recorded below, were agreed upon by consensus of the PAWSA workshop participants and should not be construed to represent the views of the USCG.

Recreational Vessel Quality & Operation:

Mitigation Strategy 1: Increased recreational boater education.

- Implement multi-pronged boater training, education, and awareness to address unsafe operations and poor seamanship practices in congested waterways, achieved by improved community outreach and advertisement of boating safety education resources by partnering with local marinas, boat ramps, and boat clubs.
- Increase public awareness of available training resources including CGAUX, Power Squadron, and other community-facing outlets to increase recreational boater awareness of deep draft maneuvering and visibility limitations to improve interplay between recreational boater operation and commercial vessel traffic.

Mitigation Strategy 2: Expand waterside enforcement capabilities.

- Install video surveillance checkpoints to capture hazardous vessel activity and document safety/security incidents. Leverage collected video documentation of recent casualties as evidence to support the implementation of a "Slow Speed" or "No-Wake Zone" in the vicinity of grid #15 where wakes caused by recreational vessels pose risks to environmental damage and personnel injury.
- Through the Harbor Safety Committee, clarify jurisdictional parameters regarding hazardous boating operations. Expand law enforcement agencies' abilities to work across jurisdictions to include enforcement of existing security zones.
- Cooperate with federal, state, and local law enforcement resources to cite and investigate hazardous vessel operation, supported by increased law enforcement assets. Leverage law enforcement resources by strategically positioning assets at marinas to generate constructive presence and contribute to an atmosphere of regulatory compliance.

Mitigation Strategy 3: Implement new regulations or incentives to reinforce boater education requirements.

- Support enforcement of state boater education requirements by local marinas and rental companies by requiring state boater safety card checks.
- Consider implementing mandatory boating safety inspections for recreational vessels.

Vessel Congestion:

Mitigation Strategy 1: Increase traffic deconfliction between vessels, including bridge operations.

- Consider standing up a Coast Guard-operated Vessel Traffic Service to serve as a seasonal or collaborative system supported by recreational vessel movement. Such a service would provide more accurate ETAs/ETDs for commercial traffic from shipping agents, supported by better communication of vessel updates to more effectively anticipate and deconflict large vessel movements.
- Revise bridge closure practices during heavy weather events to alleviate congestion in the Miami River. Examine bridge tender training, responsibilities, and ability to more safely accommodate vessel traffic.
- Examine challenges to bridge night operations to accommodate vessel traffic more safely; consider adding visual traffic notifications on bridges and increase use of verbal/VHF communication with bridge operators to mitigate traffic conflicts and provide mariners with advanced notices of vessel meetings.

Mitigation Strategy 2: Increase community coordination regarding marine spatial planning to support growing demands on port by shared waterway users.

- To reduce resulting congestion of three new cruise terminals slated to come online, widen the offshore and inshore channels on the south side, in addition to the Fisher Island turning basin, to enable two-way traffic for medium sized commercial vessels. (Large grid: C6-11, B-6)
- Continue close coordination between Coast Guard and construction/special events permits across the marine industry. Opportunity exists for a future Harbor Safety Committee to serve as a conduit for continued communication and coordination.
- Along the landside project development fielding docks, specifically along the lower and middle Miami River, high-rise development is taking place which involves vessels and construction equipment rafting on both sides of the river, significantly restricting the navigable waterway. Because this consequence was not previously considered during the permitting process, consider and discuss vessel congestion impacts of simultaneous construction projects on both sides of the river.

Commercial Traffic Volume:

Mitigation Strategy 1: Evolve local operating procedures to most efficiently support increased traffic throughput.

- To adapt to increasing commerce growth and demands on infrastructure, arrival times will need to be coordinated so that different vessels or lines may be required to adjust to earlier arrival times. The available vessel arrival window, specifically, will need to increase to accommodate more vessels to minimize commercial impacts.
- Continued close coordination with CBP agents will be required by cruise ships. Technological advancements, such as Traveler Verification Service (TVS), have the potential to alleviate additional burdens placed on CBP resources by leveraging facial recognition and biometric technologies during cruise ship passenger disembarkation.

Mitigation Strategy 2: Increase coordination between waterway users.

- There is a recognized need for increased coordination of efforts between all stakeholders involved in facilities, customs and immigration, traffic deconfliction, pilotage and tugs to meet operational demands as determined by commerce and industry.
- A global-scale examination of cruise ship patterns, cargo vessels, riverboats, and other waterway users is appropriate to manage projected increased commercial traffic volume and facilitate the most efficient use of limited navigational space.

Appendix A

Workshop Participants

Participant	Organization
Richard Dubin	Ameriship
Zachary Reed	Ballyhoo Boats
D. Martin	Betty K Agencies
Geoffrey Pool	Biscayne Bay Pilots
Xiomara Llizo	Celebrity Cruises
Shawn Durgin	Fisher Island Ferries
Marieke Van Peer	Island Garden Marina
John Kennedy	Kirby Corporation
Steve Detwiler	Miami-Dade Emergency Operations Center
Andres Machado	Miami-Dade Fire Rescue
Patience Cohn	Marine Industries Association of South Florida
Charles Ernst	Marine Industries Association of South Florida
Oriel Tameron	Miami-Dade Police Department
Michael Barrios	Miami-Dade Police Department Marine Patrol
Virlon Adams	Miami Harbor Patrol
John Michael Cornell	Miami River Boatyard
Mark Bailey	Miami River Group
Jamie Scott	Moran Towing Corporation
Nicolas Alvarado	National Oceanic and Atmospheric Administration
Robert Bijur	Passenger Vessel Association
Frederick Wong	Port Miami

Franklin Roig	Port Miami
Luiz De Almeida Jr.	Thriller Miami Speed Boat Adventures
Brooke Bartenfelder	United Island & Yacht
Debora Ratke	United Island & Yacht
CAPT Christopher Cederholm	U.S. Coast Guard
CDR Nicholas Seniuk	U.S. Coast Guard
LCDR Kimberly Glore	U.S. Coast Guard
LT Ben Adrien	U.S. Coast Guard
CWO Erik Watson	U.S. Coast Guard
Juan Duque	U.S. Coast Guard
Alvaro Ferrando	U.S. Coast Guard Auxiliary
William Prado	U.S. Customs and Border Protection

Appendix B

Participant Observations - Trends in the Port and Existing Risk Mitigations

Workshop participants are local subject matter experts, waterway users, and regional stakeholders. These comments capture their observations, opinions, and analyses to provide a general sense of the ideas discussed during the workshop. Participants were asked to identify risks, trends, and any existing or potential mitigation strategies. References to existing regulations and standards may be included for additional context. Participant comments provide various perspectives representative of varying interests and do not reflect the views of or statements by the United States Coast Guard.

The following participant comments are structured by risk condition/factor as follows:

1. Participant observations of risks, issues, and/or trends

- Existing mitigations
 - Potential mitigation strategies

Risk Condition: Navigation

Risk Factor: Winds

1. Port Miami is an incredibly challenging port to navigate due to strong, variable, and unpredictable winds which occur during summer squalls, winter frontal systems, and tropical systems during the summer.
2. Wind is a significant factor for the private taught sector, particularly the catamaran industry which heavily relies upon accurate weather reports and predictions.
 - When significant weather is anticipated, the collective catamaran fleet simultaneously migrates to safe water near the Bahamas/Nassau and returns after the weather has passed, secondarily resulting in increased congestion.
3. Usable weather data is limited for vessels that split their time between Miami and Fort Lauderdale, where the weather may be significantly different from one another.
 - The only available source of offshore wind data from the Port of Miami was Station VAKF1 – 8723214 – Virginia Key, FL, owned and maintained by NOAA. Additional data sensors would further equip mariners with current observations and aid in determining weather predictions.
 - Increased data from combined ports to depict an average may be more useful to select mariners as a cross-representation of ports along their voyage plan.

Risk Factor: Tides/Currents

1. The narrow and bending Miami River includes strong tidal/current conditions. These conditions can be a challenge for cargo vessels under dead tow.
2. The Gulf Stream currents at the Miami Lighted Buoy M safe water mark are challenging and variable. In the vicinity of this buoy, the current can exceed 7 knots and often changes direction from North to South and velocity.
3. The current inside the port can exceed 3.5 knots at the head of the jetties.

Risk Factor: Visibility Restrictions

1. The shared waterway includes all types of watercrafts. Personal watercraft, for example, can be difficult to visually identify and anticipate their movement. Increasing vessel congestion also adds to visibility challenges and, consequently, creates navigation concerns.

Risk Factor: Bottom Type

1. The bottom is hard limestone substrate and coral rock. It is unforgiving. Any interaction between a vessel and the channel bottom, toe, slope, or shoulder would result in a significant event with severe hull damage and subsequent economic and environmental consequences.
 - The Port of Miami receives an updated survey from USACE approximately once per year, but the limestone substrate/coral rock is consistent throughout offshore to inshore.
2. A superficial bottom type within the Miami River consists of silt and mud of an approximate 5-foot depth at high tide. Silt buildup varies since last its last dredging operation was completed in 2008. Areas of concern were identified to be between 7th Avenue bridge and 2nd Avenue bridge where the depth shallows due to buildup.

Risk Condition: Vessel Quality & Operation

Risk Factor: Large Commercial Vessels

1. No significant observations or trends noted through discussion.

Risk Factor: Small Commercial Vessels

1. Conflicts exist between towing vessels and pleasure boats on the Miami River, amplified by visibility impediments and limited room to maneuver.
 - Implement and enforce speed restrictions on the Miami River, particularly around river bends where maneuvering space is limited.
 - Employ commercial escort vessels proceeding in advance of tows to deconflict vessel traffic.

Risk Factor: Commercial Fishing Vessels

1. The Port of Miami does not host a large fleet of commercial fishing vessels. Fleet presence is seasonal and consists of small shrimp boats during winter months. While a language barrier may sometimes exist, crews are generally proficient in English communication.
 - Commercial fisheries are not located in Miami due to local environmental and marine fisheries protections.

Risk Factor: Recreational Vessels

1. High incidence of hazardous recreational boating practices.
 - The south channel is identified as the primary geographic area where most egregious hazardous boating practices, including the creation of large wakes, are observed and enforcement resources are most lacking.

- Improve community outreach and advertisement of boating safety education resources by partnering with local marinas, boat ramps, and boat clubs to increase public awareness.
 - Additional federal, state, and local law enforcement resources strategically positioned at partner marinas to generate constructive presence and contribute to atmosphere of regulatory compliance.
 - Additional federal, state, and local resources commensurate to activity levels to cite and investigate hazardous vessel operation.
 - Enforcement of Florida state boater education requirements by local marinas and rental companies.
 - Consider mandatory boating inspections for recreational vessels.
 - Implement “Slow Speed” or “No-Wake Zone” in the vicinity of Government Cut, along the eastern side of Fisher Island in the vicinity of #15. Wakes in this area pose risks to the environment with the potential to damage or break loose barges, topple equipment onboard commercial vessels, or result in injury to pier-side personnel near fenders. Consider tasking Harbor Safety Committee to overcome Florida Department of Transportation barriers to new regulation, supported by documentation of near-misses, personnel injuries, and vessel damages.
 - Increase video surveillance across waterway partners to capture hazardous vessel activity and document safety or security incidents.
 - Through Harbor Safety Committee, clarify jurisdictional parameters regarding hazardous boating operations. Clear delineation could limit observers' sense of futility. Regular engagement would improve reports to cognizant authorities and enable targeted enforcement operations.
 - Expand law enforcement agencies’ abilities to work across jurisdictions to include enforcement of existing security zones.
 - Increase community outreach through U.S. Coast Guard Auxiliary, Power Squadron, and other educational organizations and outlets to increase recreational boater awareness of deep draft maneuvering limitations and lack of visibility.
- Boating clubs have independently established rental requirements (including a five-day boater safety class, state boarder safety card requirement, limited rental distances, minimum length of membership to rent specific vessel types), however, those requirements do not extend to jet ski rental companies.
 - Foreign flagged vessels with a draft of 7 feet or greater require pilotage, increasingly required, and leveraged by insurance compliance should a mishap occur.

2. Miami River and area waterways are increasing in vessel traffic. Illegal/unsafe barefoot charters have grown significantly.

- Increased public awareness, public reporting, and law enforcement resources, including local, state, and federal, are needed.

Risk Condition: Traffic

Risk Factor: Volume of Commercial Traffic

1. Seasonal commercial traffic for the Port of Miami is at its highest between November and May. During this time, cruise ship traffic nearly triples. Commercial yachting traffic follows a similar pattern as vessels migrate from Europe to the Caribbean. Container ship traffic similarly increases during timeframes associated with increased commerce including Black Friday and U.S. holidays. Increased commercial traffic during these timeframes heavily burdens Customs and Border Patrol (CBP) resources spread across recreational vessels, cruise ships, and cargo vessels. It is expected that the Port of Miami will experience changing levels of LNG traffic, bigger container ships, more numerous and larger cruise ships with the current construction of two additional cruise ship berths and plans for a third, which will place increasingly high demands on existing staffing and infrastructure.
 - To adapt to increasing commerce growth and demands on infrastructure, arrival times will need to be coordinated so that different vessels or lines may be required to adjust to earlier arrival times. The available arrival window will need to increase to accommodate more vessels to minimize commercial impacts.
 - Continued close coordination with CBP agents will be required by cruise ships. Technological advancements, such as Traveler Verification Service (TVS), have the potential to alleviate additional burdens placed on CBP resources by leveraging facial recognition and biometric technologies during cruise ship passenger disembarkation.
 - With the Port of Miami advancing towards becoming a 24-hour facility, there is a recognized need for coordination of efforts between all stakeholders involved in facilities, customs and immigration, traffic deconfliction, pilotage, tugs, and operational demands as determined by commerce and industry.
 - A global-scale examination of cruise ship patterns, cargo vessels, riverboats, and other waterway users is appropriate to facilitate cooperation and most efficient use of limited navigational space.

Risk Factor: Volume of Recreational Vessel Traffic

1. Heavy weather and/or hurricane presence multiple times per year effects recreational vessel traffic in the Miami River, leading to in increased congestion with the presence of vessel rafting. The increased traffic results in navigational impediments and restrictions between closed drawbridges.
 - The established hurricane plan shuts down normal recreational boating operation when in effect. This sometimes results in vessels congregating in the Miami River for safe harbor from increasing

distances across the Miami Dade area. Most insurance companies require vessels, especially larger vessels, to have a hurricane plan. While a starting point, there has historically been minimal advanced warning (less than 24 hours) before a hurricane watch might mature to a hurricane warning and prompt the Coast Guard to initiate bridge closures. This provides minimal lead-time for recreational vessels to relocate to a safe location and be removed from the water. Conflicting storm track, or low confidence ellipses, can further delay evacuation of recreational vessels as refuge locations may drastically change.

2. The continuously increasing volume of recreational traffic necessitates a combination of marine spatial planning and regulatory considerations to address evolving traffic considerations.
 - Consider widening and deepening the channel and/or turning basin as described in Vessel Congestion mitigation section above, as well as the channel to the anchorage. (Large grid: C6-11, B-6)
 - Consider instituting additional “No-Wake Zones”, as described in Recreational Vessel Quality & Operation mitigation section above, to slow fast-moving recreational vessels and allow deep draft and commercial traffic more time for communication and deconfliction.
 - Restart/formally establish a harbor safety committee to bring port partners together, including the commercial shipping fleet, to enhance communication/coordination between various waterways stakeholders.

Risk Factor: Waterway Use

1. A possible incongruity was identified as existing between current the current National Vessel Movement Center (NVMC) electronic Notice of Arrival and Departure (eNOAD) requirement for vessels coming into the U.S. from the Bahamas (24-hours) and all other countries (96-hours). This requirement was perceived in contrast to the advanced notice requirement to access a secure waterway in the Port of Miami by the NVMC which is 96 hours.
 - In examination of the Notice of Arrival (NOA) protocol outlined by 33 CFR Part 160.212 (4) When to submit an NOA. If a vessel’s voyage time is 96 hours or more, one must submit an NOA at least 96 hours before arriving at the port or place of destination. Additionally, if a vessel’s voyage time is less than 96 hours, one must submit an NOA before departure but at least 24 hours before arriving at the port or place of destination. Vessels transiting from the Bahamas to the U.S. whose voyage time is less than 96 hours, therefore, are included in the second scenario.
 - Participants noted that requests are processed quickly, typically in approximately 1-2 hours, and that the separate requirements do not pose a significant challenge in practice.
2. Some ambiguity was identified by stakeholders concerning foreign yachts carrying, launching, or embarking helicopters or drones on vessels, specifically regarding registry with the seaport. In discussion, helicopters brought into the port on vessels were identified as cargo of the vessel, while vessels flown in were identified as subject to other Federal Aviation Administration and U.S. Customs and Border Protection reporting requirements.

Risk Factor: Congestion

1. Traffic is steadily increasing, and support resources, such as slips for vessels with drafts over 8 feet, are diminishing due to an increase in occupancy rates and numbers of vessels. Commercial and

recreational traffic combines to further exacerbate vessel congestion.

2. Congestion of relative vessel density in lower and middle Miami River areas is largely seasonal, peaking during weekends, barefoot charter season, and sometimes determined by hurricane refuge traffic. Limited widths, such in the “Federal Channels” (Outer Bar Cut, Bar Cut, Government Cut Channel, Miami Main Channel, Fisherman’s Channel, and Miami River), exacerbate the impact of vessel congestion without effective resources to direct recreational boaters. New waterside developments further limit channel width and impose additional limitations to already narrow navigational chokepoints.
 - Permitting processes for new waterside developments involve city, state and USACE evaluation to approve and oversee an increasing number of permit applications to allow vessels to tie up along the waterway. USACE may engage the Coast Guard requesting navigation safety risk assessment support. These reviews inform USACE’s permit decisions. Permit requests for new construction, however, continue to increase.
 - Provide more accurate ETAs/ETDs for commercial traffic from shipping agents, supported by better communication of vessel updates to more effectively anticipate and deconflict large vessel movements.
 - Consider widening the Fisher Island turning basin. Three new cruise terminals are slated to come online. To reduce congestion, there is a desire to widen offshore and inshore channels on the south side to enable two-way traffic for medium-sized commercial vessels.
 - Consider establishing a Vessel Traffic Service to act as a seasonal or collaborative system supported by recreational vessel movement data to inform enforcement oversight.
 - Continue close coordination between Coast Guard and special events and construction permit applications within the marine industry. Opportunity exists for a future Harbor Safety Committee to serve as a conduit for continued communication and coordination.
 - Landside high-rise development project development specifically along the lower and middle Miami river, is taking place which involves vessels and construction equipment to raft on both sides of the river. This compounds navigable waterway restrictions. These consequences were not previously considered during permitting processes. It is important to consider and discuss concurrent construction projects on both sides of the river.

Risk Condition: Waterway

Risk Factor: Dimensions

1. Industry continues to construct large vessels that challenge the port’s dimensions. To keep pace with industry, the port needs to widen and deepen its channels and turning basins.
 - USACE completed deepening operations which were completed around 2015. USACE has subsequently began a new Miami Harbor improvement study in 2018. The design reached was a tentative plan that arrived in 2020 with high resource demands which resulted in the project being delayed and recently reopened.
 - In April, USACE led a kickoff meeting with the Pilots Association and the Port of Miami to discuss minimizing environmental impacts of a proposed widening and deepening of the navigable waterway. The combined goal is to have a new tentatively selected plan by October 2024 and to

have a new draft report published in 2025 for public and resource comment, leading to a Chief of Engineer's report to be completed in 2026.

- Between now and 2023, USACE is working with the Pilots Association to establish the depth and width requirement of the new channel and how to reduce environmental impacts to the existing coral and hard bottom.

Risk Factor: Obstructions

1. Obstructions, other than marine wildlife (including dolphins, manatees, etc.) were not identified as a primary concern by the waterway stakeholders, but there was discussion of whose responsibility it is to remove adrift or derelict vessels, should they be encountered. Such obstructions were identified as having the potential to block the navigable channel and hinder the flow of traffic, including larger vessels. The processes of determining ownership, what agency is appropriate to remove it, and identifying resources to clear the blockage were identified as considerably time consuming.
2. Increasingly, landside development along the Miami River waterfront restricts the navigable waterway. Rafting of vessels in the lower and middle river impacts safe vessel passage in bending and narrow sections, highlighted in the Congestion risk factor above.

Risk Factor: Visibility Impediments

1. At night, navigational aids are very well lit. For those who are less familiar with the port, the presence of background lighting between buildings and recreational vessels can be visually disorienting.
 - Local area knowledge plays a critical role in positively identifying aids to navigation.
2. Due to the winding nature of the Miami river, meetings between towing vessels sometimes occur without prior communication until they are in visual sight of one another.
 - An opportunity exists to install a system of visual communication in the form of lighting installed on bridges to communicate that another bridge vendor may be opening a bridge, alerting other boats to the incoming traffic, and providing additional time for vessels to maneuver out of their path.

Risk Factor: Configuration

1. The presence of ATON was addressed as sufficient, noting specific cases of lantern outages that have been communicated to the Coast Guard for repair, such as in the downtown turning basin. Other ATON, such as Miami Main Channel Buoy 12 (LLNR 10535) on the north side of the jetty, were addressed as requiring replacement due to its long swing radius during flood currents.

Overarching Mitigation: Port of Miami Harbor Safety Committee

2. The Port of Miami currently benefits from an informal Harbor Safety Committee led by the U.S. Coast Guard to develop and disseminate hurricane plans. However, mature, or formal HSCs in similar ports convene with greater frequency, are led by the maritime community stakeholders, and generally consist of comprehensive proceedings and subcommittees to examine and publicly address current and emerging challenges.
 - Establish/renew Harbor Safety Committee for Port of Miami to provide a recurring forum to discuss, examine, and maintain advocacy through designated subcommittees for navigational

safety, port coordination issues, and other factors affecting the Maritime Transportation System. Provide regular opportunities for in-person engagement with clear direction and agendas provided to stakeholders to maximize value of involvement for participants. A set of initial goals for the Harbor Safety Committee, as identified by the PAWSA stakeholders, were as follows:

- Establish healthy Port of Miami Harbor Safety Committee within one (1) year.
- Identify positional chair.
- Share recent incidents and concerns, examining how they were addressed and sharing lessons learned.
- Identify what sub-committees are needed to address the concerns of the maritime community.
- Establish regular frequency of meetings. (For example, once every 2-3 months or as otherwise determined by the Harbor Safety Committee.)
- Push for regulations of slow-speed/no-wake zones within the channel.
- Identify strategic partnerships, including those beyond the maritime domain, that can effect necessary changes.
- Promote safety and projects that affect the port.
- Advocate for dredging of channel to support vessels with deeper drafts. Achieve community/stakeholder support of feasibility studies to support USACE long-term planning and operations.
- Continue to discuss recreational traffic on the river and consider updating regulations as appropriate.
- Discuss hurricane readiness with an eye toward recreational traffic and port security. Conduct a review of the previous year's hurricane plan including lessons learned.

Appendix C

Geospatial Participant Observations

During the workshop participants recorded the location of significant observations on comment cards which were then transferred to an ArcGIS online web-application. Those comments are tabulated in this appendix following maps of the locations for each risk category. For GIS layers contact the navigation center at TIS-DC-NAVCEN-Waterways@uscg.mil

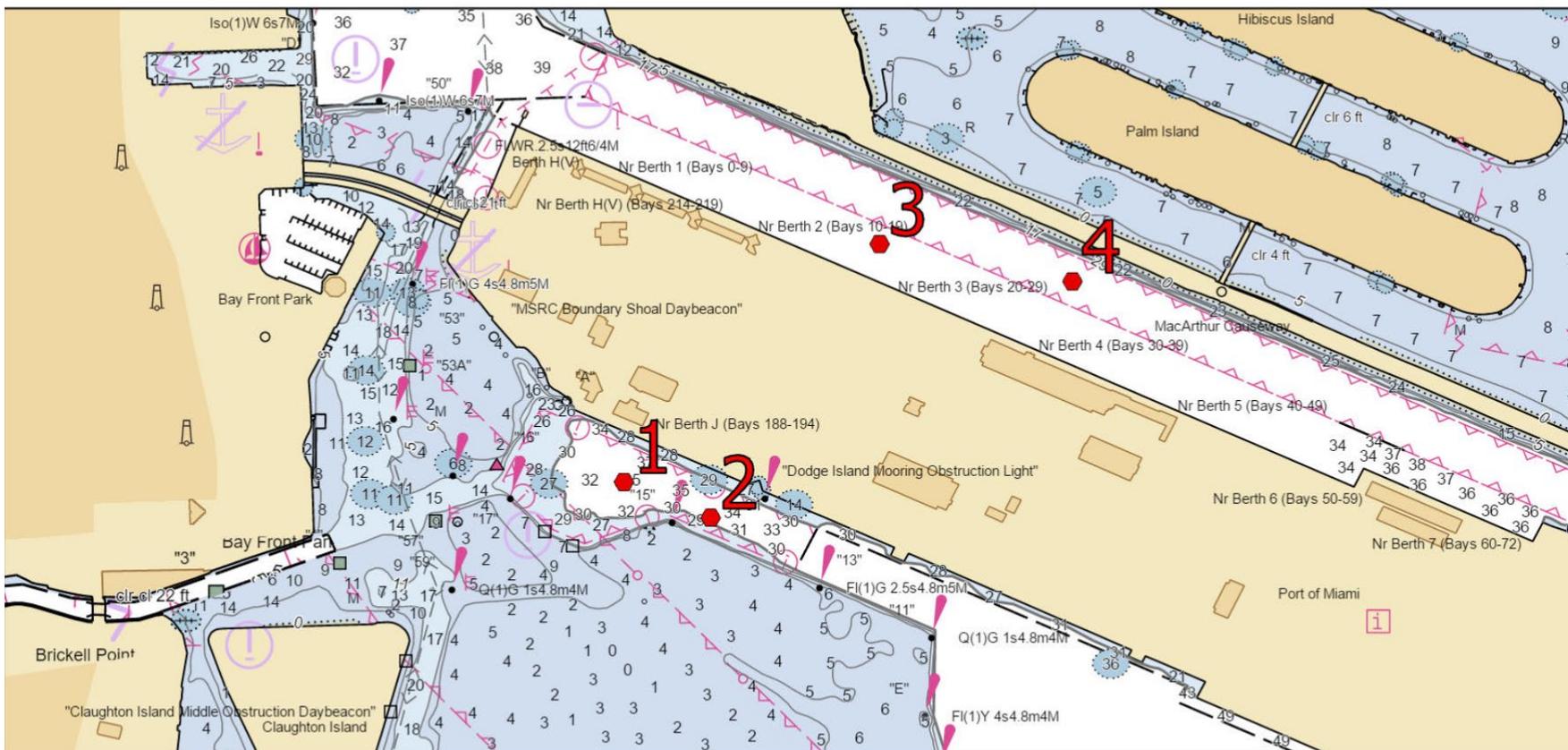
Vessel Conditions.....	C-2
Traffic Conditions.....	C-4
Navigational Conditions.....	C-8
Waterway Conditions.....	C-11



PAWSA Participant Comments: Vessel Conditions. Page 1 of 1.

Legend

Participant Comment



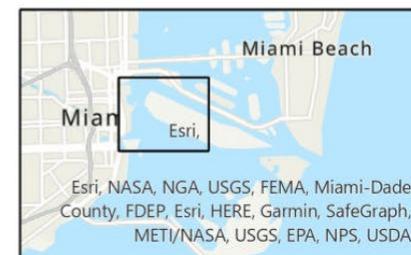
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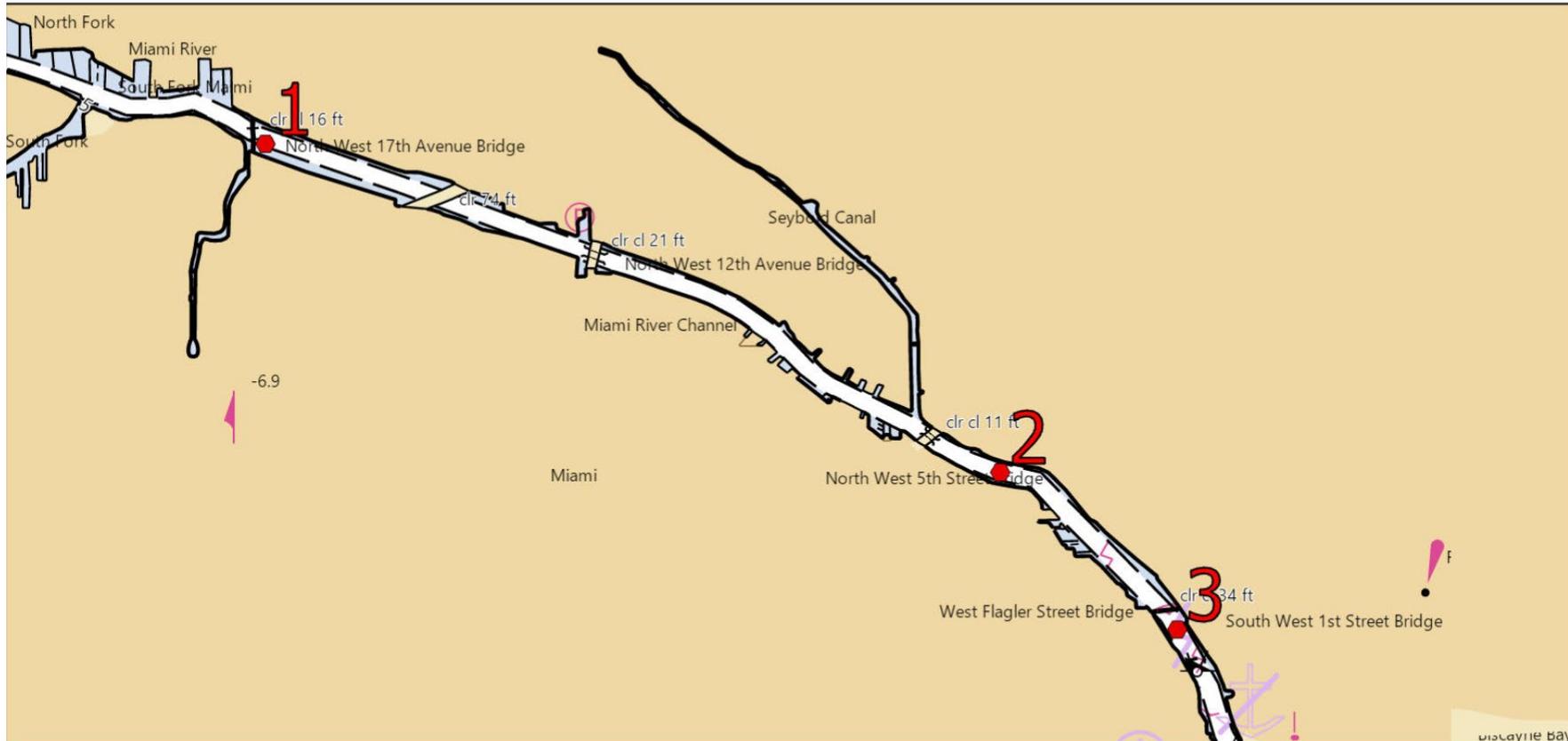
Point	Comment
1	Rules regarding submarines and helicopters arriving on foreign flagged vessels. Process of clearance/entrance.
2	Shrimp Vessels are tenuous, recreational traffic is untenable.
3	Recreational sports fisherman excessive wake cause injuries and damage to equipment.
4	Bareboat Charter awareness on restrictions and definition. Who becomes owner under Bareboat Charter or the Captain? Is responsibility shared?



PAWSA Participant Comments: Traffic Conditions. Page 1 of 3.

Legend

Participant Comment



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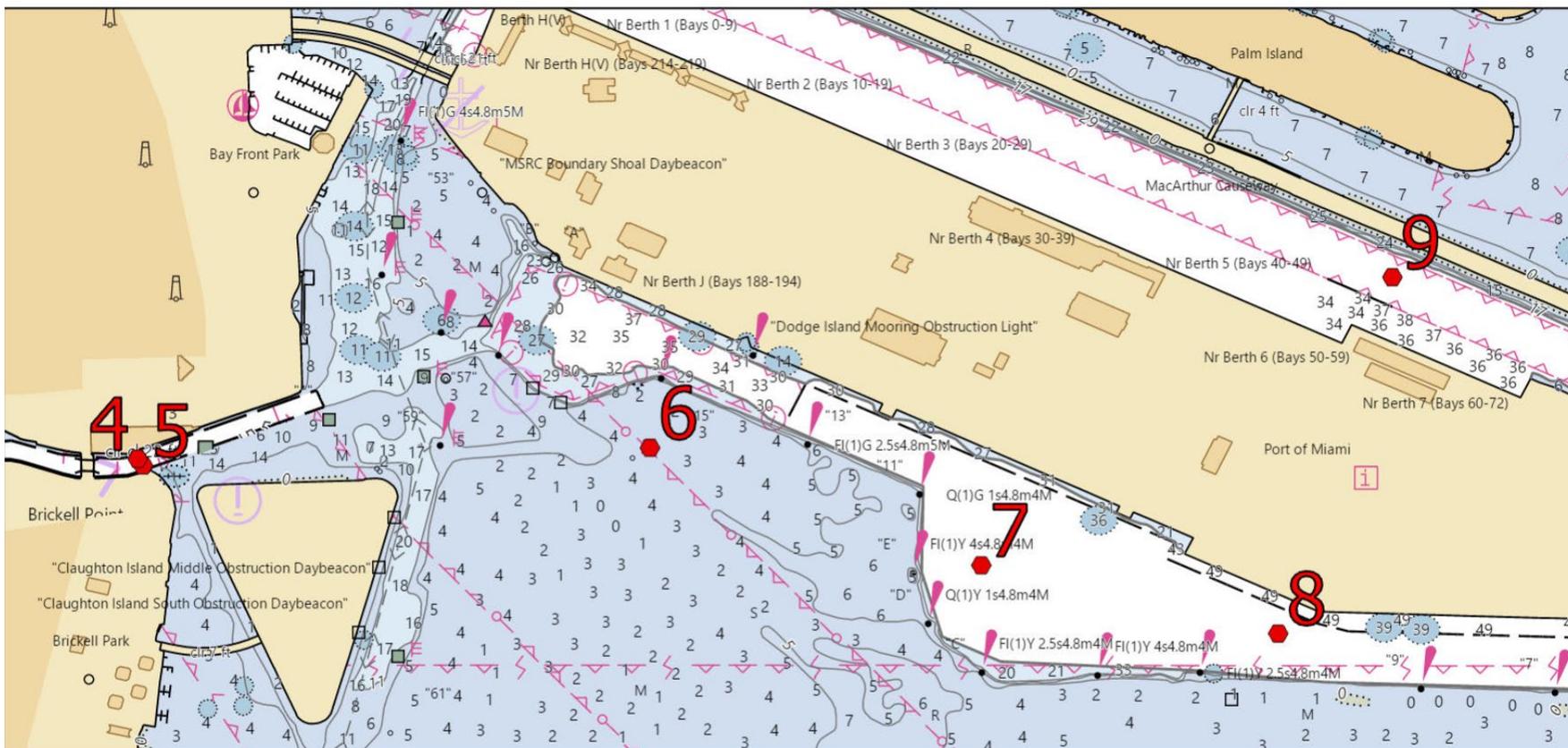
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PAWSA Participant Comments: Traffic Conditions. Page 2 of 3.

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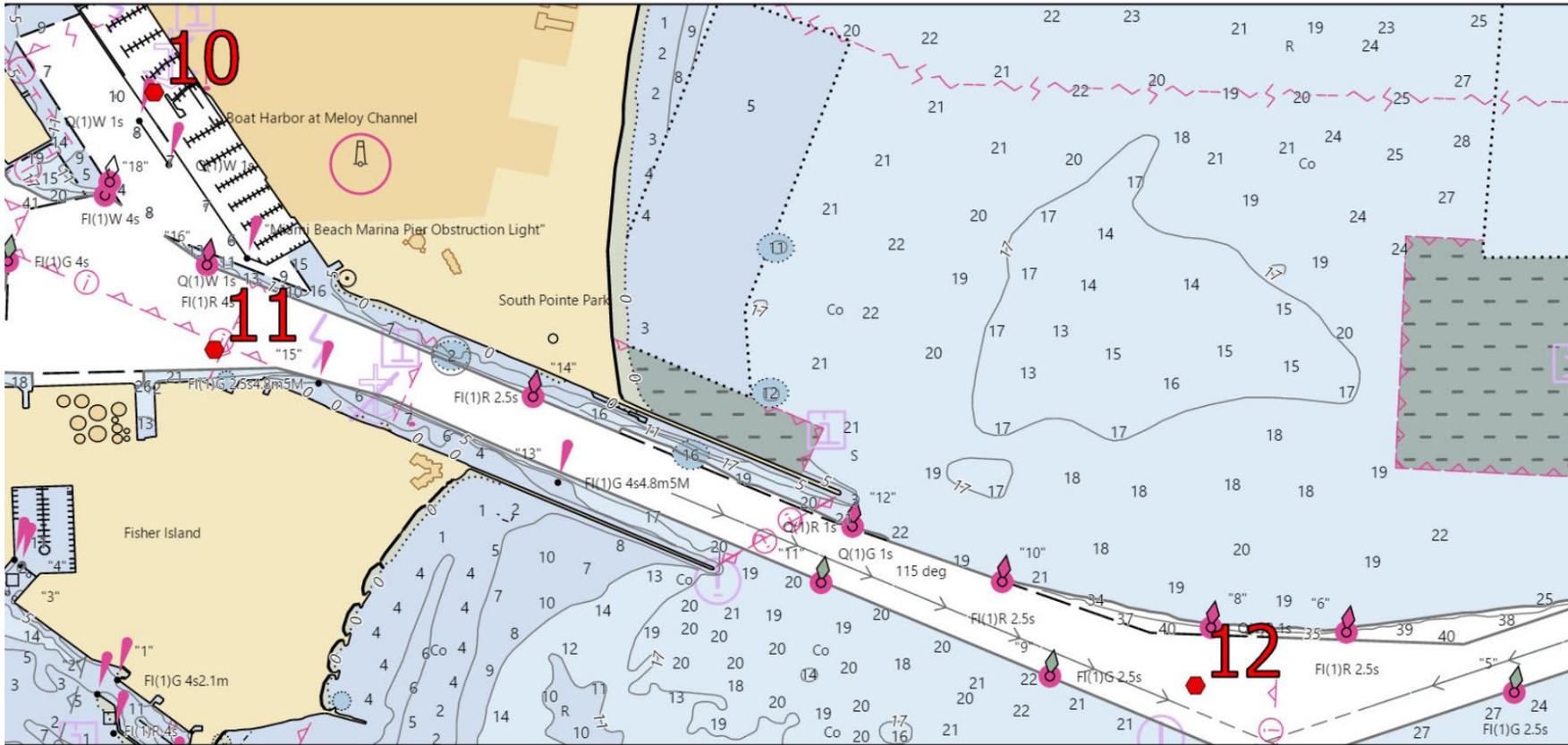


PAWSA Participant Comments: Traffic Conditions. Page 3 of 3.



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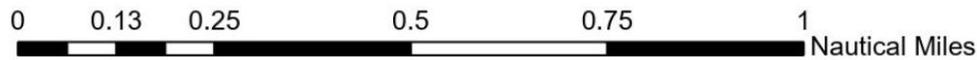
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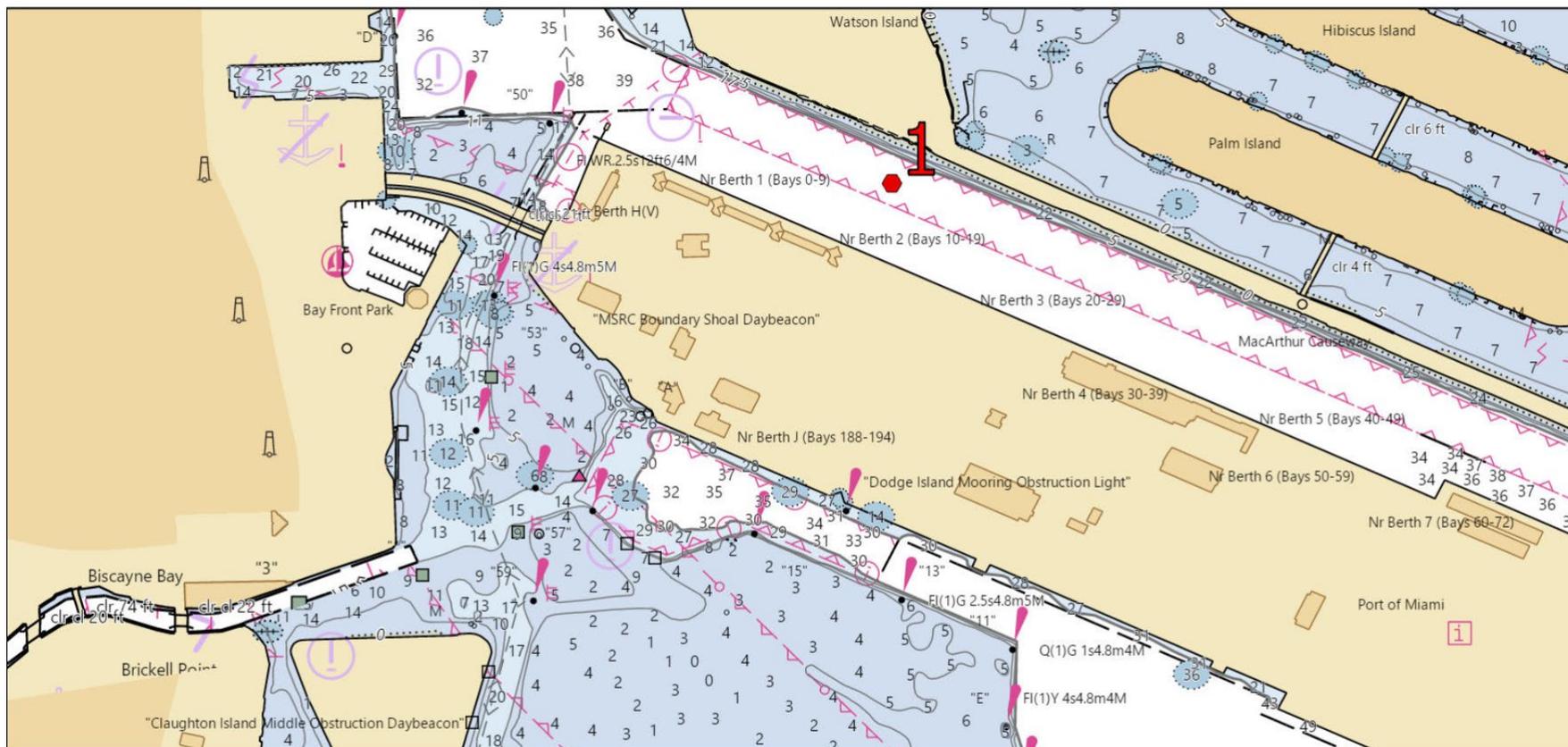
Point	Comment
1	Vessel congestion with approaching storms. Cargo vessels are departing while recreational vessels are inbound for safe harbor.
2	Vessel traffic during severe weather events. Recreational vessels entering Miami river for safe harbor and commercial vessels leaving. We need better predictability from NOAA to organize traffic.
3	Throughout the entire Miami River, landside special events impact safe vessel traffic and navigation.
4	On Miami river we could use some type of notice/warning when a vessel under tow was moving.
5	Coast Guard / law enforcement entity should provide traffic control services in times of severe weather traffic build up in Miami River area.
6	More inspections on illegal bareboat charters to reduce traffic.
7	Congested areas during events and weekends: A1, B1, B2, and Miami river.
8	Slow speed no wake zone. Recreational traffic operates at excessive and dangerous speeds in these areas. It is hazardous to all commercial traffic operating in this area. A slow speed no wake zone in this area would greatly mitigate the risk.
9	Congestion areas all around Miami Stadium Marina, Monument Island and Nixon Beach Sandbar.
10	During potential named storms private vessel traffic is more than the capacity for the Miami River that is being used as a safe harbor. Increase in weather predictability would be beneficial.
11	Fisher Island operating ferries to transport resources, guests, and employees. The cruise industry is increasing and can impede foreign transit. Fisher Island ferries are regulated with licensed captains. Fishers island ferries should be excluded from security zones and provided right of way passage in coordination with Bay Pilots
12	Increased waterway congestion. No-wake zone enforcement is inconsistent.



PAWSA Participant Comments: Navigation Conditions. Page 1 of 2.

Legend

● Participant Comment



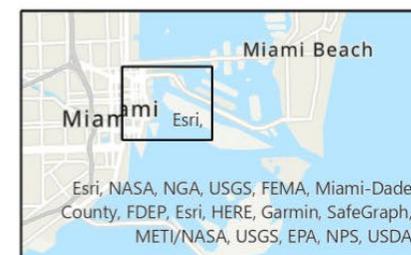
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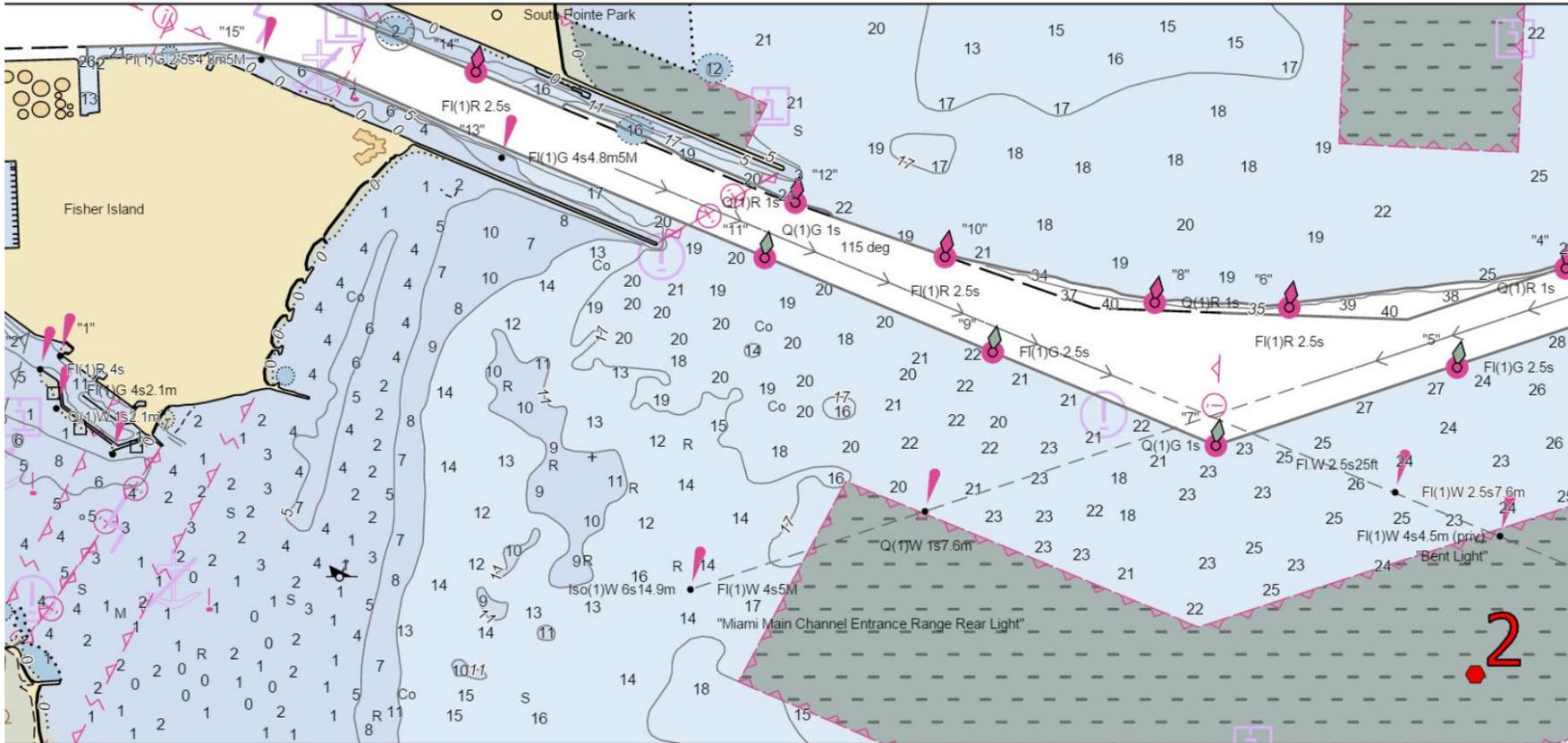




PAWSA Participant Comments: Navigation Conditions. Page 2 of 2.

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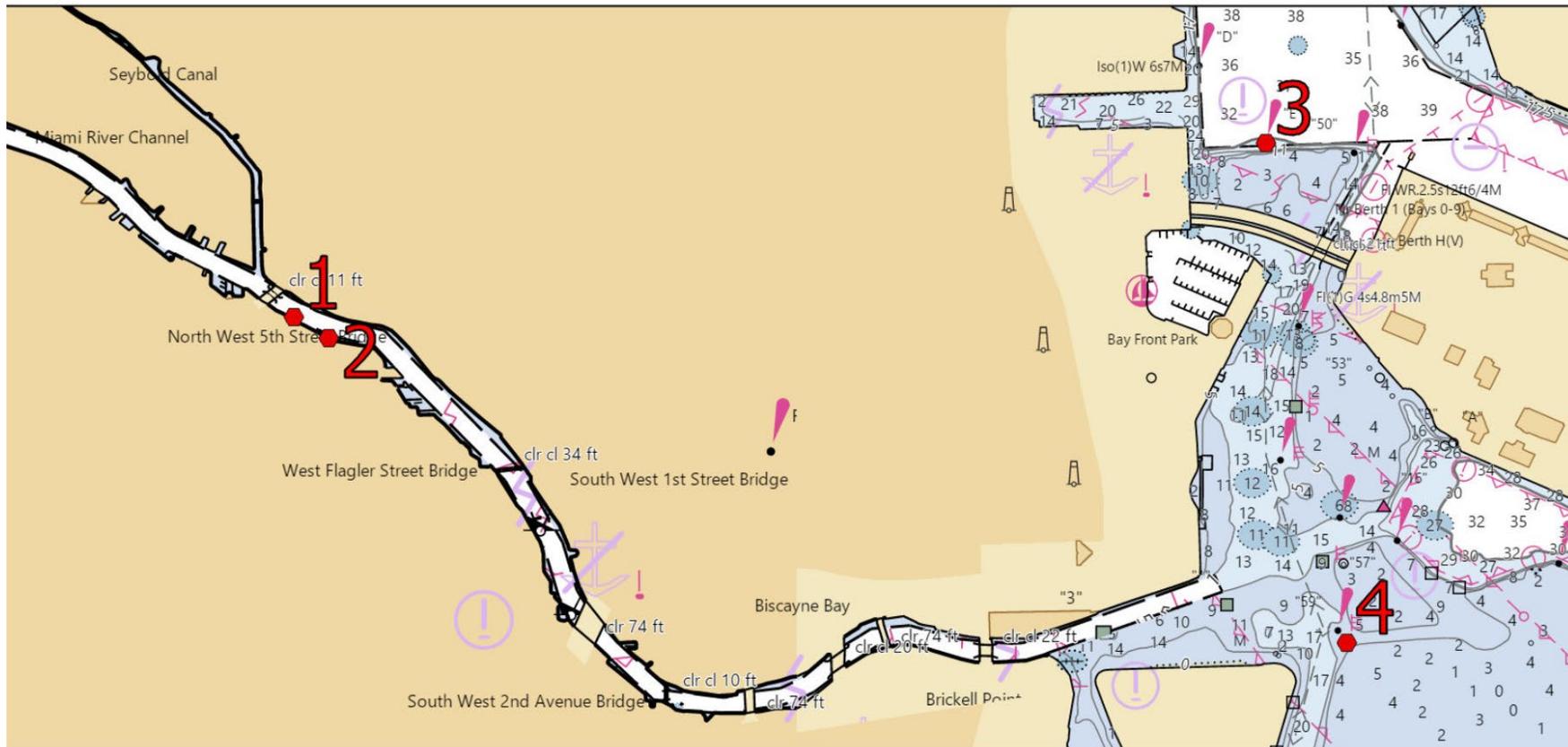
Point	Comment
1	Derelict vessel under rake of barge, no agency local or federal or Port of Miami to assume responsibility.
2	With Fowey Rocks down, would be helpful for an additional weather station at outer range Port of Miami.



PAWSA Participant Comments: Waterway Conditions. Page 1 of 2.

Legend

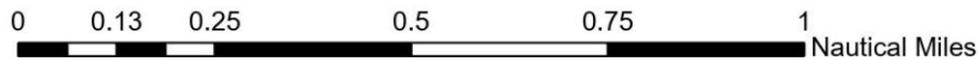
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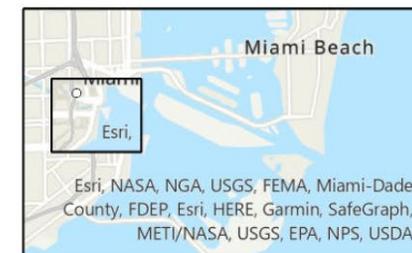
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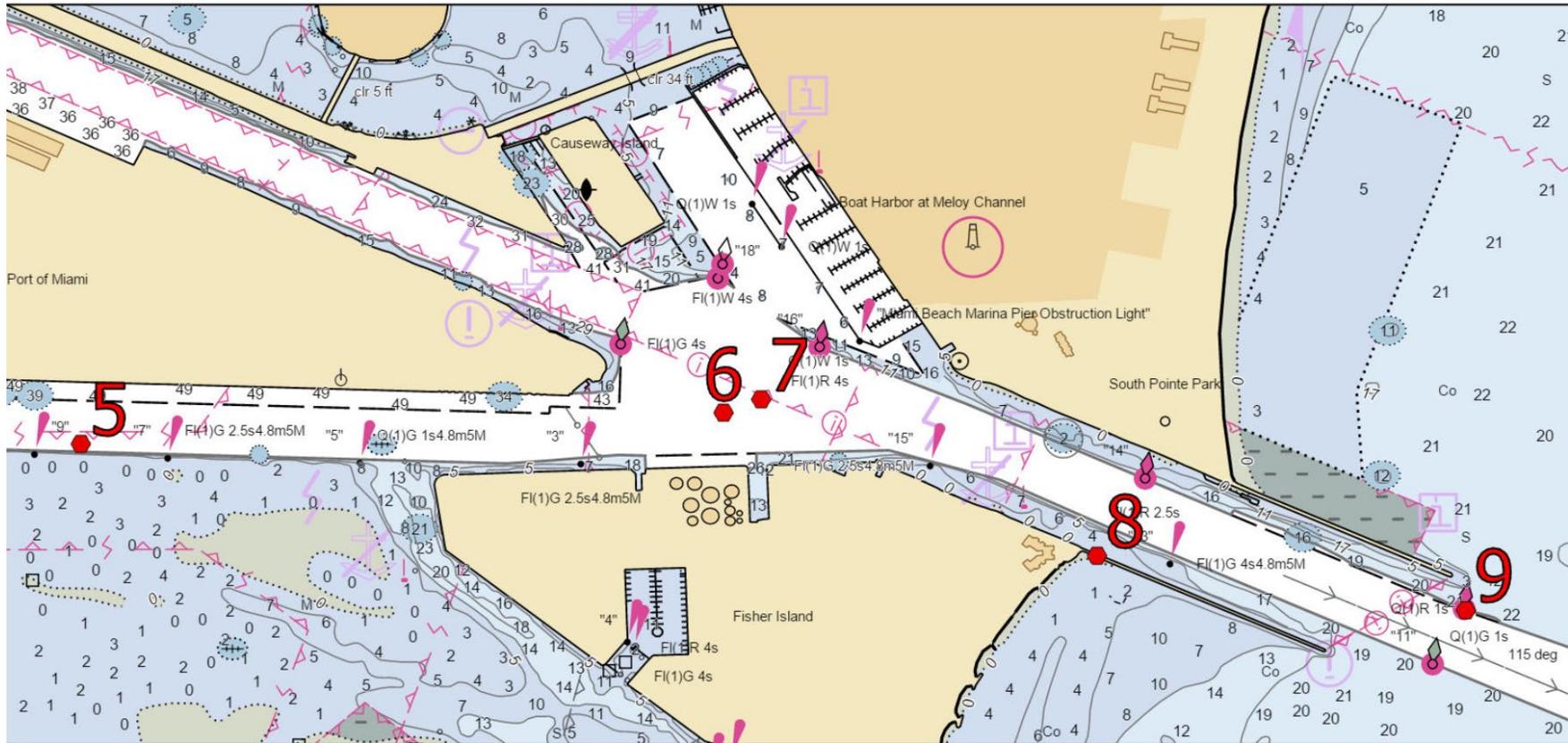




PAWSA Participant Comments: Waterway Conditions. Page 2 of 2.

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Point	Comment
1	Channel widening/dredging needed to account for larger vessels wishing to call the port.
2	Channel shoaling at marker 15 and buoy 12 by north jetty. Maintenance dredging.
3	Fix articulated beacon 'E' n downtown turning basin. Currently there is no physical aids to navigation to mark southern limit of downtown turning basin.
4	Due to the high levels of recreation vessels in the area there needs to be additional resources through the entire area to manage safety of waterways.
5	Areas to be widened and deepened, especially C8 by #15, and C7-8 for turning. C6 turning basin also needs attention.
6	No wake zones needed in areas along with stricter enforcement from law enforcement.
7	Permission to access secured waterway requires 96 hours notice. If arriving from Bahamas eNOA only needs 24 hours notice. Can permission to access secured waterway be 24 hours if arriving from the Bahamas?
8	Hard shoaling extends into the channel at #15.
9	Move Buoy 12 50 feet to the north. Buoy moves into channel on flood tide and presents a hazard to navigation.

Appendix D

References

Environmental Protection Agency

<https://www.epa.gov/regulations-emissions-vehicles-and-engines/domestic-regulations-emissions-marine-compression>

International Convention of Standards of Training, Certification and Watchkeeping (STCW)

[http://www.imo.org/en/About/conventions/listofconventions/pages/international-convention-on-standards-of-training,-certification-and-watchkeeping-for-seafarers-\(stcw\).aspx](http://www.imo.org/en/About/conventions/listofconventions/pages/international-convention-on-standards-of-training,-certification-and-watchkeeping-for-seafarers-(stcw).aspx)

International Marine Contracting Association (IMCA) Standards

<https://www.imca-int.com/>

International Tanker Owners Pollution Federation (ITOP)

<http://www.itopf.com/>

Life Lines Brochure - Safety Tips That Could Save Your Life

http://www.americanwaterways.com/commitment_safety/lifelines.pdf

National Oceanic and Atmospheric Administration, National Ocean Service

<https://oceanservice.noaa.gov/>

Offshore Vessel Inspection Database (OVID)

<https://www.ocimf-ovid.org/>

PORTS

<https://tidesandcurrents.noaa.gov/ports.html>

Recreational Boating Safety - Accident Statistics

http://www.uscgboating.org/statistics/accident_statistics.php

Ship Inspection Report Program (SIRE)

<https://www.ocimf.org/sire/>

State Specific Boating Safety Requirements

<http://www.americasboatingcourse.com/lawsbystate.cfm>

U.S. Army Corps of Engineers - Regulatory Policies

<http://www.usace.army.mil/Missions/>

U.S. Army Corps of Engineers - Vessel Transit Statics

<http://www.navigationdatacenter.us/>

U.S. Coast Guard - Navigation Rules and Regulations

[Amalgamated International & U.S. Inland Navigation Rules | Navigation Center \(uscg.gov\)](#)

USCG PSC regulations

<https://www.dco.uscg.mil/Our-Organization/Assistant-Commandant-for-Prevention-Policy-CG-5P/Inspections-Compliance-CG-5PC-/Commercial-Vessel-Compliance/Foreign-Offshore-Compliance-Division>

U.S. Coast Guard - Vessel Inspection Regulations

<http://www.ecfr.gov/cgi-bin/ECFR?page=browse>

U.S. Coast Guard - Vessel Traffic Services

<https://www.navcen.uscg.gov/?pageName=vtsLocations>

U.S. Coast Guard Auxiliary Requirements for Recreational Boats

<http://www.cgaux.org/boatinged/classes/2011/bss.php>

Appendix E

Abbreviations and Acronyms

ACP	Area Contingency Plan
AIS	Automatic Identification System
ANPRM	Advance Notice of Proposed Rulemaking
ATON	Aids to Navigation
BWI	Boating While Intoxicated
BNM	Broadcast Notice to Mariners
COTP	Captain of the Port
EPA	Environmental Protection Agency
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
MARAD	Maritime Administration
MTS	Marine Transportation System
MTSRU	Marine Transportation System Recovery Unit
NDG	National Dialogue Group
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Organization
ORSO	Oil Spill Response Organization
PAWSA	Ports and Waterways Safety Assessment

PFD	Personal Flotation Device
PSC	Port State Control
PORTS	Physical Oceanographic Real-Time System
RNA	Regulated Navigation Areas
STCW	Standards of Training Certification of Watchkeeping
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
VHF	Very High Frequency
VRMS	Vessel Movement Reporting System
VTM	Vessel Traffic Management
VTS	Vessel Traffic Service