Ports and Waterways Safety Assessment Workshop Report

Brownsville, Texas

Providing Navigation Safety Information for America's Waterways Users

Released by:
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Executive Summary

The United States Coast Guard (USCG) Sector Corpus Christi sponsored a Ports and Waterways Safety Assessment (PAWSA) workshop in Brownsville, TX, on 22-23 February 2023. Twenty participants represented the range of waterway users, stakeholders, and Federal, State, and local regulatory and public safety authorities to collaboratively assess navigational safety on the waterways adjoining Brownsville and Harlingen and proximate offshore regions. Ahead of the formal workshop, the USCG Navigation Center (NAVCEN) facilitated an executive-level stakeholder engagement meeting on 14 November 2022 to enhance community outreach and prime the subsequent two-day 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 resulting from 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: fishing vessel quality and operation, winds/tides and currents, traffic mix, deep draft vessel quality and operation, and dimensions. 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, MSD Brownsville, and Sector Corpus Christi, extend a sincere appreciation to the workshop participants for their contributions to the Brownsville PAWSA workshop. Their expertise was critical to the success of the workshop and their recommendations will meaningfully assist the USCG as it continues to work with all South Texas 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	Deep Draft Commercial Vessels	Volume of Commercial Traffic	Dimensions
Currents/Tides	Shallow Draft Commercial Vessels	Volume of Recreational Traffic	Obstructions
Visibility Restrictions	Commercial Fishing Vessels	Traffic Mix	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 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 georeferenced comments to a gridded nautical chart around Brownsville (Appendix C). On the second day, participants are briefed on and review the aggregated survey results. This serves as the basis for determining which factors to discuss for additional risk mitigation strategies. Group discussion and consensus then affirms the priority risk factors, which are generally where the assessed risk is high and/or existing mitigations are ineffective. A facilitated dialogue then identifies potential mitigation strategies for these prioritized risks (Section 4).

Brownsville PAWSA Workshop

A PAWSA workshop to assess navigation safety within Brownsville, including the GIWW from Brownsville to the Port of Harlingen, was held in Brownsville, TX on 22-23 February 2023. Twenty-four participants represented the range of waterway users, stakeholders, and Federal, State, and local regulatory authorities to collaboratively assess navigational safety in this Brownsville assessment area. The USCG Navigation Center (NAVCEN) facilitated the PAWSA workshop.

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 the PAWSA model's 16 waterway risk factors.

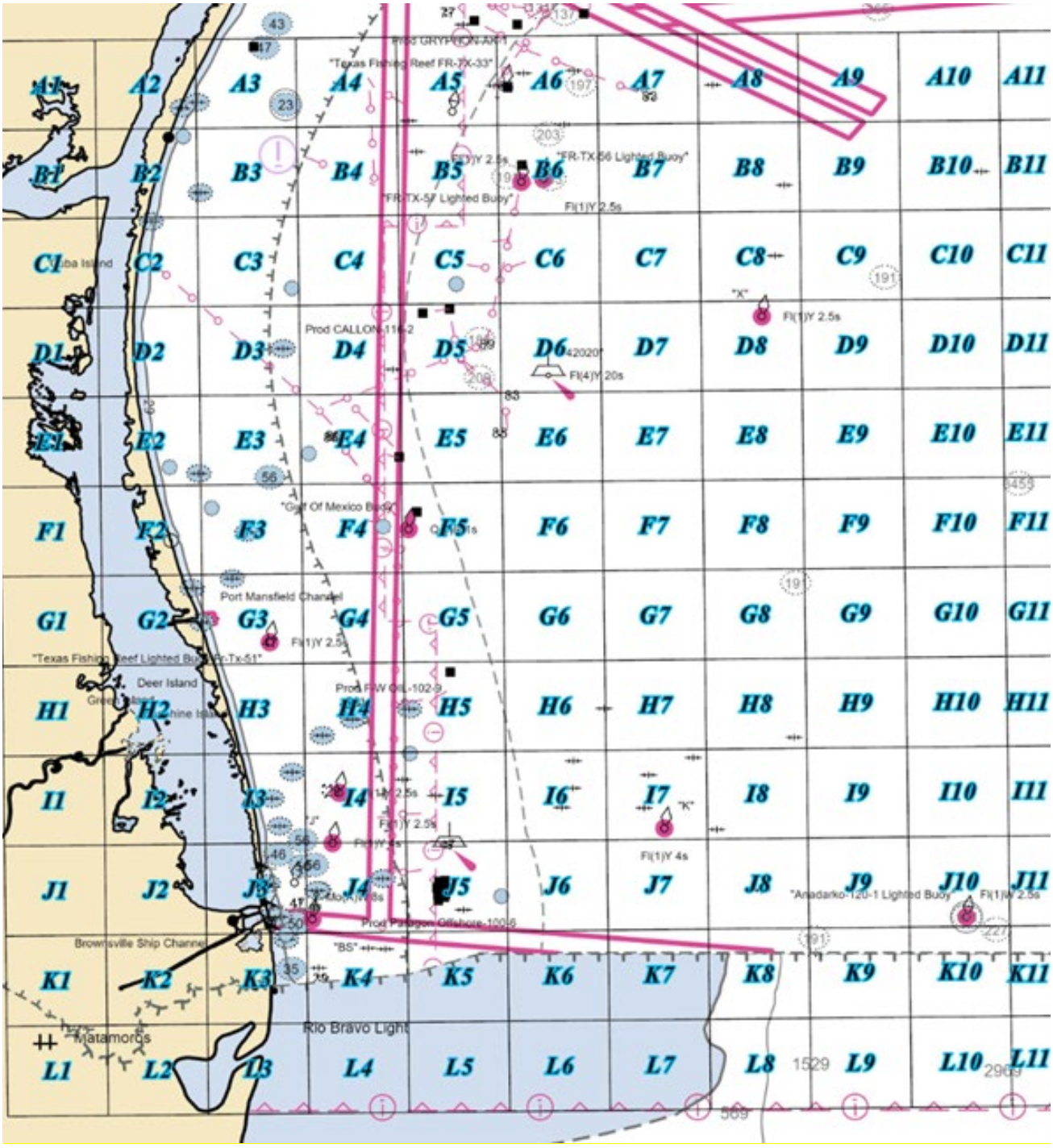
Baseline risk levels were first evaluated using pre-defined qualitative risk descriptions for each risk factor. Participants then characterized risk mitigation strategies by evaluating cost and effectiveness of existing mitigation strategies followed by an assessment of risk trends over time. For the 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 Brownsville 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: Brownsville PAWSA Assessment Area

The geographic area for the Brownsville PAWSA includes the contiguous inland waterways and near coastal region as depicted.



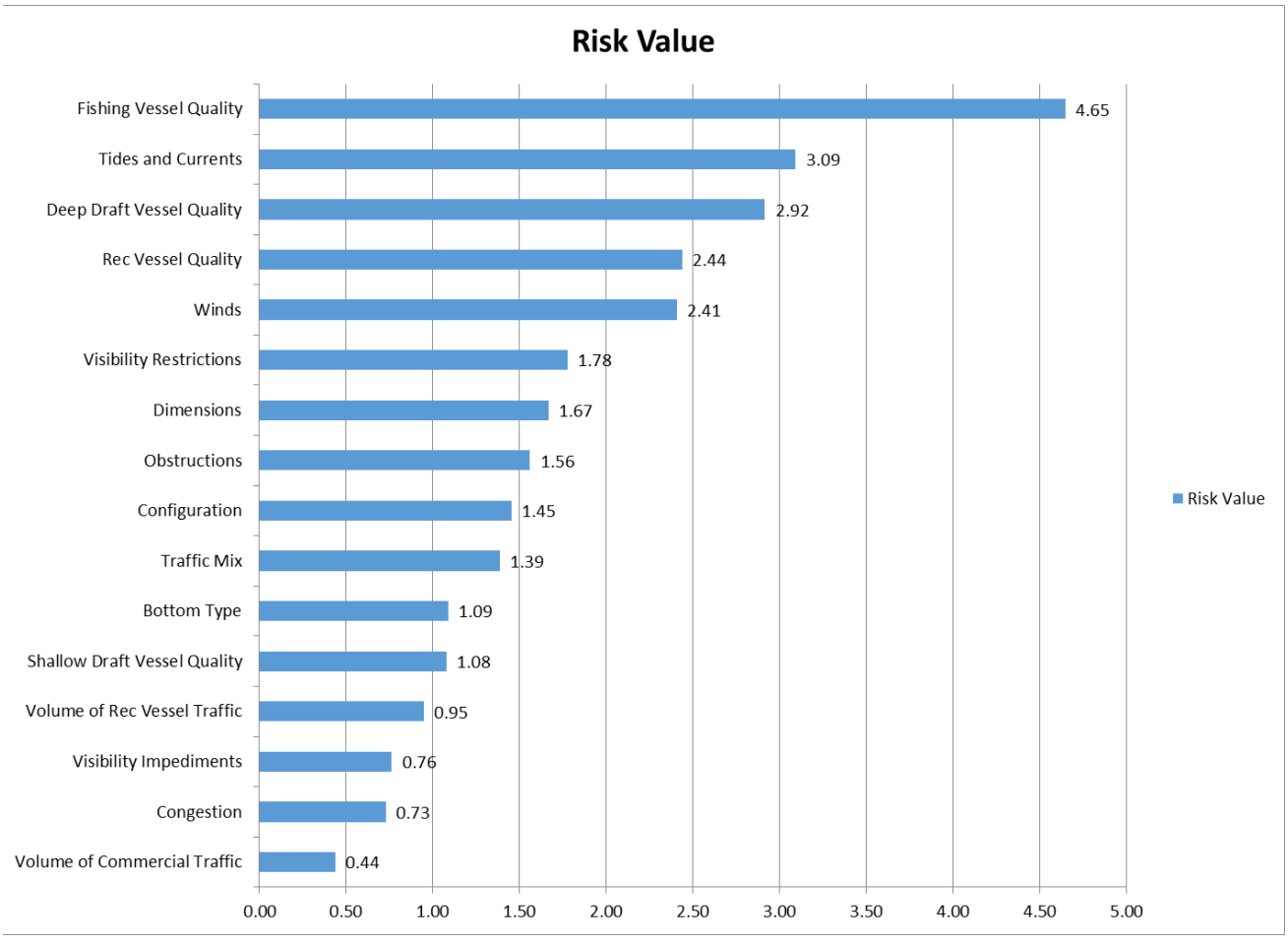
Section 2: Baseline Risk Levels

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.

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

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 Brownsville 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 Brownsville 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. The participants decided that the most pressing issues relating to fishing vessel quality were due to operators not being required to have a license or formal training to operate, which had a crossover with recreational vessel quality, therefore they were grouped together in the top spot. It was also determined that the issues/mitigations for winds and tides and currents were similar, and those factors were grouped at number 2. In totality, the group chose to identify mitigation strategies for: Fishing/Recreational Vessel Quality, Tides and Currents/Winds, Deep Draft Vessel Quality, Traffic Mix, and Dimensions.

1	Fishing Vessel Quality	4.65	unacceptably high risk	Increasing	Unacceptable, we need more/better mitigatio
1*	Rec Vessel Quality	2.44	unacceptably high risk	Increasing	Unacceptable, we need more/better mitigatio
2	Tides and Currents	3.09	unacceptably high risk	Staying The Same	Unacceptable, we need more/better mitigatio
2	Winds	2.41	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable but Tenuous
3	Deep Draft Vessel Quality	2.92	The level of risk is acceptable, keep the status q	Increasing	Unacceptable, we need more/better mitigatio
4	Dimensions	1.67	The level of risk is acceptable, keep the status q	Increasing	Acceptable but Tenuous
5	Traffic Mix	1.39	The level of risk is acceptable, keep the status q	Increasing	Acceptable but Tenuous
5	Volume of Commercial Traff	0.44	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable
5	Volume of Rec Vessel Traffic	0.95	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable
6	Visibility Restrictions	1.78	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable but Tenuous
7	Obstructions	1.56	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable but Tenuous
8	Configuration	1.45	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable but Tenuous
9	Bottom Type	1.09	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable
10	Shallow Draft Vessel Quality	1.08	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable
11	Visibility Impediments	0.76	The level of risk is acceptable, keep the status q	Staying The Same	Acceptable
12	Congestion	0.73	The level of risk is acceptable, keep the status q	Increasing	Acceptable but Tenuous

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.

Fishing/Recreational Vessel Quality and Operation

1. Multi-pronged boater training, education, and awareness to address unsafe operations and poor seamanship practices in congested waterways.

    a. Add signage to main ship channel alerting fishing vessels of traffic/right of way. Stating rule 9

    b. Utilize Coast Guard Auxiliary, CG, pilots to train fishing vessel owner/operators on the rules of the road.

    c. Engage with the owners of commercial fishing boats and commercial fishing organizations (their meetings, blessing of the fleet, etc.) to train them on the regulations & safety that affect their fleet.

    d. Restart/formally establish a harbor safety committee to bring port partners together, including the commercial fishing fleet, to enhance communication/coordination between various waterways stakeholders.

2. Change/increase requirements or regulations to properly address issues with fishing and recreational vessels in the waterway.

    a. Observe, report, and enforce civil penalties to commercial fishing vessel owners/operators who are operating negligently or not in accordance with the rules of the road.

    b. Require all commercial fishing vessel operators/masters to have a merchant mariner credential.

    c. Utilize port to require vessels operating to have insurance and work with insurance companies to offer discounts/incentives for vessels with licensed captains.

    d. Require/incentivize rental companies/owners to ensure the people renting from them are proficient and meet all requirements to operate the equipment. Work through liability insurance companies.

3. Create regulations to improve the safety of the shrimping vessels.

    a. Inspect shrimp/fishing vessels annually instead of biennially.

    b. Create mandatory inspection scheme through legislation.

    c. Increase USCG personnel to have an additional Commercial Fishing Vessel Examiner and Coast Guard Station Personnel for more enforcement.

Winds/Tides and Currents

1. Establish additional weather and fog stations: place an observation buoy at the jetty, Laguna Madre, Long Island Swing Bridge area, and Queen Isabella Bridge to display real time information on the conditions to mariners.

2. Replace the mooring buoys at the mouth of the Arroyo to provide shelter for vessels during high winds.

3. Widen the channel to 250 ft section to allow for two-way traffic and to allow room for vessels to operate with a crab angle due to environmental conditions. Also widen the ICW.

4. Have Army Corps of Engineers maintain depth in accordance with charted depth. (Present channel width and depth does not fall within Army Crops guidelines.)

5. Coordinate a review of Port of Brownsville information in the Coast Pilot and update the unnecessary speed restriction.

Traffic Mix

1. Improve planning and coordination between port partners.

    a. Establish Port Coordination Team to open dialogue between SpaceX and Port Partners.

    b. Set up group email/distro group to keep everyone in the loop as updates are put out between SpaceX and the maritime community.

    c. Add LNG facilities/operators to the group as they begin operating in the port.

2. Update Coast Pilot designated specific anchorages out of the launch zone for SpaceX.

3. Text alert for upcoming space launches to alert maritime public. Wireless Emergency Alerts (WEA) is a public safety notification system that enables authorized agencies to send text-like messages to consumers with capable wireless devices to alert them of emergencies in their area.

4. Expand E-AToN coverage. Nothing in the Brownsville area. Closest E-AToN is Corpus Christi Sea Buoy.

5. Have personal water-craft rental companies inform consumers on dangers of operating in the main ship channel due to large vessels inbound or outbound. Or don't allow their rentals in the main ship channel.

Deep Draft Vessel Quality and Operation

1. Improve documentation and reporting of inadequate and unsafe pilot embarkation/debarkation accommodation ladder rigging to enforcement authorities. Correct discrepancies

2. Concerns with change of pilot ladder standard configuration to hand-tied knots versus shackles, proficiency of mariners onboard foreign flagged vessels, or lack of adherence to IMO's Pilot Transfer Arrangements with respect to approved, maintained, and properly rigged pilot ladders. Pilots should continue to report issues to USCG, address vessel master, and cognizant trade associations (e.g., American Pilots Association).

3. Conflict between IMO & EPA (emissions) vessel (i.e., newer, and heavier bulk carriers) design standards and near/in-shore maneuvering condition requirements. Propulsion torque limitations, RPM, and speed delays inhibit safe navigation. Champion issue and changes through IMO representation, trade associations, and federal representatives.

Dimensions

1. Conduct a survey of the entire Brownsville ship channel, ICW, Port of Harlingen and Arroyo Colorado.

2. Integrate e-hydro (USACE), official NOAA charts, and commercial chart products with complete survey data to enable the full use of the navigable water on the margins of the ship channel.

3. Increase the Brownsville ship channel and ICW project dimensions to accommodate contemporary tug and barge traffic.

4. Recommend the US Army Corps expand the channel framework for the Brownsville ship channel to stretch bank to bank.

5. Identify strategic locations in the ICW to increase channel width to facilitate tug/barge meeting/passing (i.e., mouth of Arroyo Colorado and intersection of port Mansfield/ICW).

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Appendix A

Workshop Participants

Participant	Organization
Romeo Enston Rice	Genesis
James Calhoun	Lac Fleet
James Leonard	Enterprise Marine
Paul Dittman	Gulf Intercoastal Canal Association (GICA)
Tracy Cheramie	Florida Marine
Brian Miller	NWS Brownsville
Kirk Caceras	NWS Brownsville
Carl Webster	SpaceX
Rachita Puri	FAA
Kris Lamb	Kirby
Gonzalo Pena	Texas General Land Office
Mike Janskowski	Texas General Land Office
Jerry Schafer	NextDecade- Rio Grande LNG
Chris Jones	NextDecade- Rio Grande LNG
Quentin Stubbs	NOAA
Kevin Garcia	TransMontaigne
Creighton Chong	USCG CG-5PW-WWM-1
Eric Uhr	USCG Ant South Padre Island
Jonathan Wright	Brazos Santiago Pilots
Chris Dowdy	Texas Ports and Wildlife

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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. Wind data for the area was inconsistent with the local observations, possibly due to a lack of sensors in the area. Weather forecasting alerts and commercial apps (e.g., Windy) are not always correct which causes issues with customers relying on the data against what the master is observing in the wheelhouse.
    - There are specific areas in the ICW between Brownsville and the Port of Harlingen where light load/empty transits are done only during the day.

Risk Factor: Tides/Currents

1. There are no current predictions in the Brownsville ship channel and the tide tables are often incorrect.
    - Mariners apply their own experience and knowledge to the tide tables and use them to predict how strong the currents are going to be.
        - Implement a system, similar to the Houston Ship Channel, where there are points that use both tide meters and predicted tides for more real time data. Brownsville is scheduled to have one installed at the jetties.

Risk Factor: Visibility Restrictions

1. Sea fog has the possibility to impact the ICW for multiple days at a time. Fog, coming from the land, usually dissipates shortly after or during sunrise. However, deep draft vessels transiting the port are not overly affected by the fog.
    - Mariners use their discretion to not move vessels in the GIWW during heavy fog events.

Risk Factor: Bottom Type

1. In general, the prevailing bottom type is soft mud. It is forgiving in the sense that should a vessel ground or “bump bottom” it is unlikely to result in hull or environmental damage. However, the navigable channels are thus prone to significant silting.
    - Limited maintenance dredging.
        - Adequate maintenance dredging would better enable safe navigation in availing fully navigable channels.

Risk Condition: Vessel Quality & Operation

Risk Factor: Deep Draft Vessels

1. There has been a significant decrease in seamanship proficiency on deep draft vessels. There is an increase in deficiencies in the rigging/quality of pilot ladders (around 30 % are unsatisfactory) and in basic navigation practices. Vessels are using non-IMO certified pilot ladders and are using longer accommodation ladders.
    - It is currently up to the pilots to accept the risk, correct the deficiencies, or turn the vessels away.
        - Improve the documentation and reporting of unsafe pilot embarkation/debarkation accommodation ladder rigging to enforcement authorities and trade associations, and correct discrepancies on the spot.
2. Modern vessels shift to low-sulfur fuels while at-sea when entering the North American Emissions Control Area in adherence to MARPOL Annex VI and federal requirements. Typically, this results in reduced vessel propulsion and maneuvering capability in the port and near-shore environment. This presents added navigational risk during adverse weather conditions, such as high crosswinds and crosscurrents, when transiting through confined areas (e.g., thru jetties).

Risk Factor: Shallow Draft Vessels

1. No significant observations or trends noted through discussion.

Risk Factor: Commercial Fishing Vessels

1. Most commercial fishing vessels in the area have exceeded the desired service-life and been transferred multiple times down the coast from other northern Gulf of Mexico fishing fleets.
    - The USCG regional fishing vessel examiner works extensively with the local fleet to ensure these older vessels meet lifesaving equipment, emergency procedure, navigation, and other standards. Dockside safety examinations are required at least every five years for vessels operating greater than 3 nautical miles offshore.
2. Many fishing vessel crewmembers are not proficient English speakers and lack formal maritime training or a merchant mariner credential. Given vessel size and type of operation, formal training and licensing is generally not required.
    - Additional information on USCG Fishing Vessel Safety Programs and regional examiner contact information is available at: Fishing Vessel Safety CG-CVC-3 (uscg.mil)
    - In addition to the required inspection interval, voluntary inspections by the USCG commercial fishing vessel examiner are available. The regional examiner aims to inspect shrimp boats every 2 years for seaworthiness.
    - The regional fishing vessel examiner has coordinated with Alaska Marine fisheries to obtain training simulators in Brownsville to work with the operators of the fishing vessels to aid in they are proficient in the international and inland navigation rules.
        - Impose federal or state civil penalties against the owner or operator of negligent fishing vessels creating hazardous situations and not in acting in accordance with the navigation rules.
        - Increase Coast Guard station boat patrols of main ship channel and proximate waterways for constructive presence, assess vessel operating proficiency, and at-sea boardings.

- Hold a port meeting between deep draft vessel operators and the owners of the commercial fishing vessels. Identify and discuss additional safety mitigations such as radio communications proficiency, outrigger operations, etc.

Risk Factor: Recreational Vessels

1. ICW tug/barge traffic has issues with recreational vessels stopped in or near the channel to fish.
    - Add signage warning recreational boaters of the ship channel and dangers of being too close to a larger and encumbered passing vessel.

Risk Condition: Traffic

Risk Factor: Volume of Commercial Traffic

1. No significant observations or trends noted through discussion.

Risk Factor: Volume of Recreational Vessel Traffic

1. No significant observations or trends noted through discussion.

Risk Factor: Traffic Mix

1. Current commercial space operations launch safety areas, as may be complemented by USCG imposed safety or security zones, (e.g., encroach upon the main Brownsville ship channel and offshore approaches.
    - Regional commercial space operator is continuously assessing and honing launch safety zones as their technology and operations matures. The effects of launch safety areas and safety zones are expected to decreased impacts on marine traffic as space transportation operations evolve. an
    - Current impact to ship traffic is minimal as ships transit through a limited area of the typical commercial space operations related safety zone for several minutes. Ongoing coordination between the port authorities and commercial space operators sufficiently addresses potential traffic conflicts.
2. There are issues with personal watercraft rentals operating in the main ship channel which causes problems for larger vessels transiting.
    - Watercraft rental companies should warn customers of the dangers of operating in the channel or don't allow the rentals to operate in the channel.

Risk Factor: Congestion

1. No significant observations or trends noted through discussion.

Risk Condition: Waterway

Risk Factor: Dimensions

1. Brownsville Ship Channel width is insufficient and imposes undue hazards to large vessels crabbing to compensate for wind and/or current. This also inhibits two-way traffic or vessels meeting. These risks increase with impending large LNG vessel traffic slated to call on the Port of Brownsville.
    - Private turning basins are planned for dredging to accommodate additional and larger LNG vessels.
    - The current transit distance is short enough that ships that vessels sufficiently able to arrange passing.
        - Deepen the channel, based on the feasibility study done with USACE, to expand the channel to 52 feet deep by 250 feet wide with a 3-to-1 slope.

2. There are areas in the ICW, such as the mouth of the Arroyo Colorado and the intersection between the ICW and Mansfield, where it is narrow and difficult for tugs and barges to meet or pass.
    - Identify and widen strategic areas along the ICW to facilitate safe tug/barge meeting and passing.

Risk Factor: Obstructions

1. The Coast Pilot 5, chapter 11 cites a speed restriction of 8 knots in the Brownsville ship channel which is unnecessary and makes it difficult to operate ships with a crab angle.
    - Remove the speed restriction from the Coast Pilot
2. The Arroyo bridge is small and is difficult to get barges through.
3. There is an issue with the charted shoaling on the south jetty. The chart says there is shoal, but it does not exist. There are also issues with the charted depths of the channel.

- Currently the pilots use their knowledge of the port to safely navigate the vessels.
    - Use the latest survey from USACE to make the corrections to the charts.

Risk Factor: Visibility Impediments

1. No significant observations or trends noted through discussion.

Risk Factor: Configuration

1. The aids to navigation day boards in the ICW are missing from 570 to 585.
2. The current AtoN on the ICW, particularly near Laguna Madre are not marking the channel correctly. The old buoys that were marking the channel were replaced with beacons to save money and were placed 40-50 feet outside the channel.
3. There is no AIS ATON broadcast coverage in Brownsville, the closest is the Corpus Christi Sea Buoy.
    - Expand AIS ATON broadcast coverage to include Brownsville.

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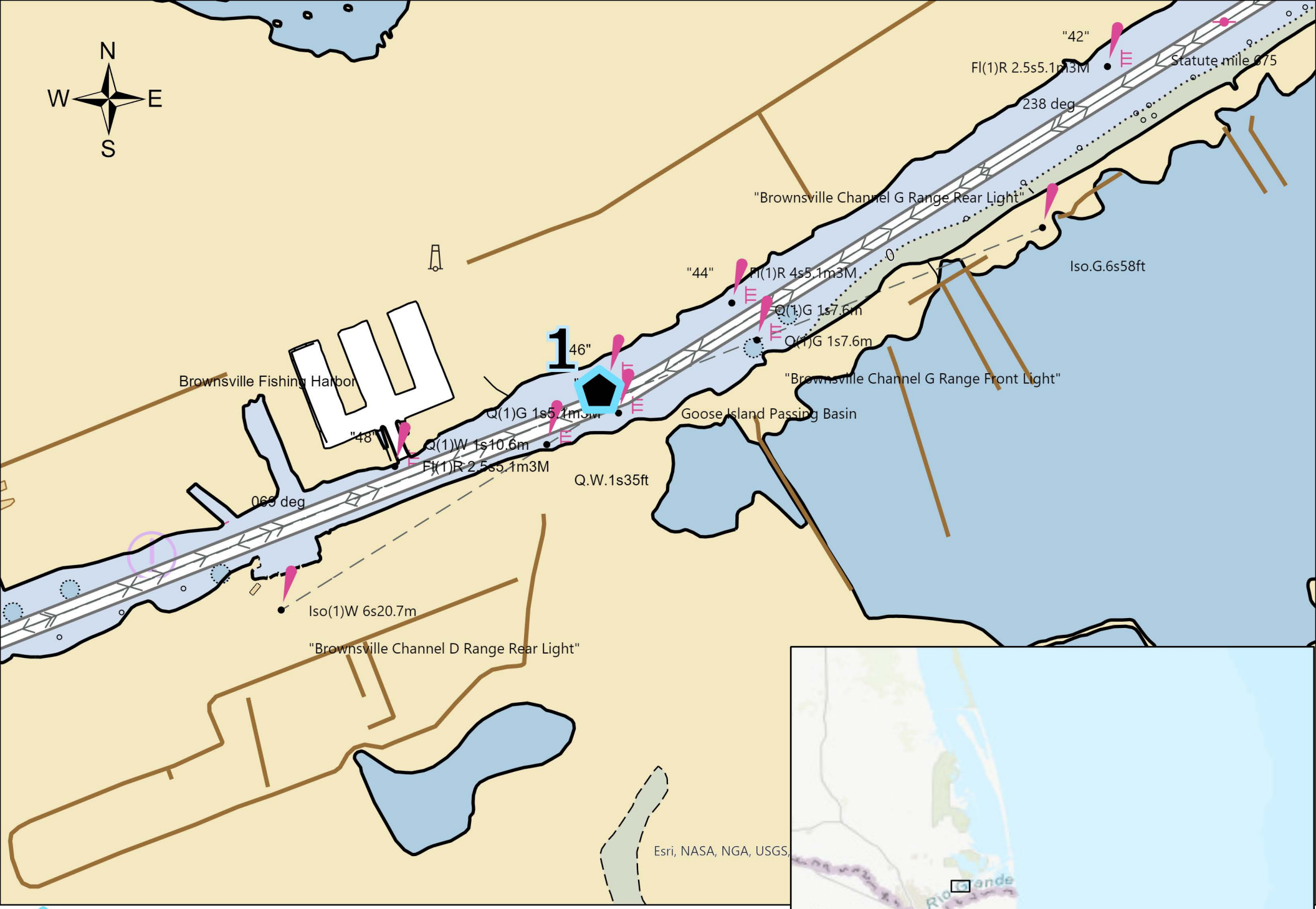
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Participant Comments
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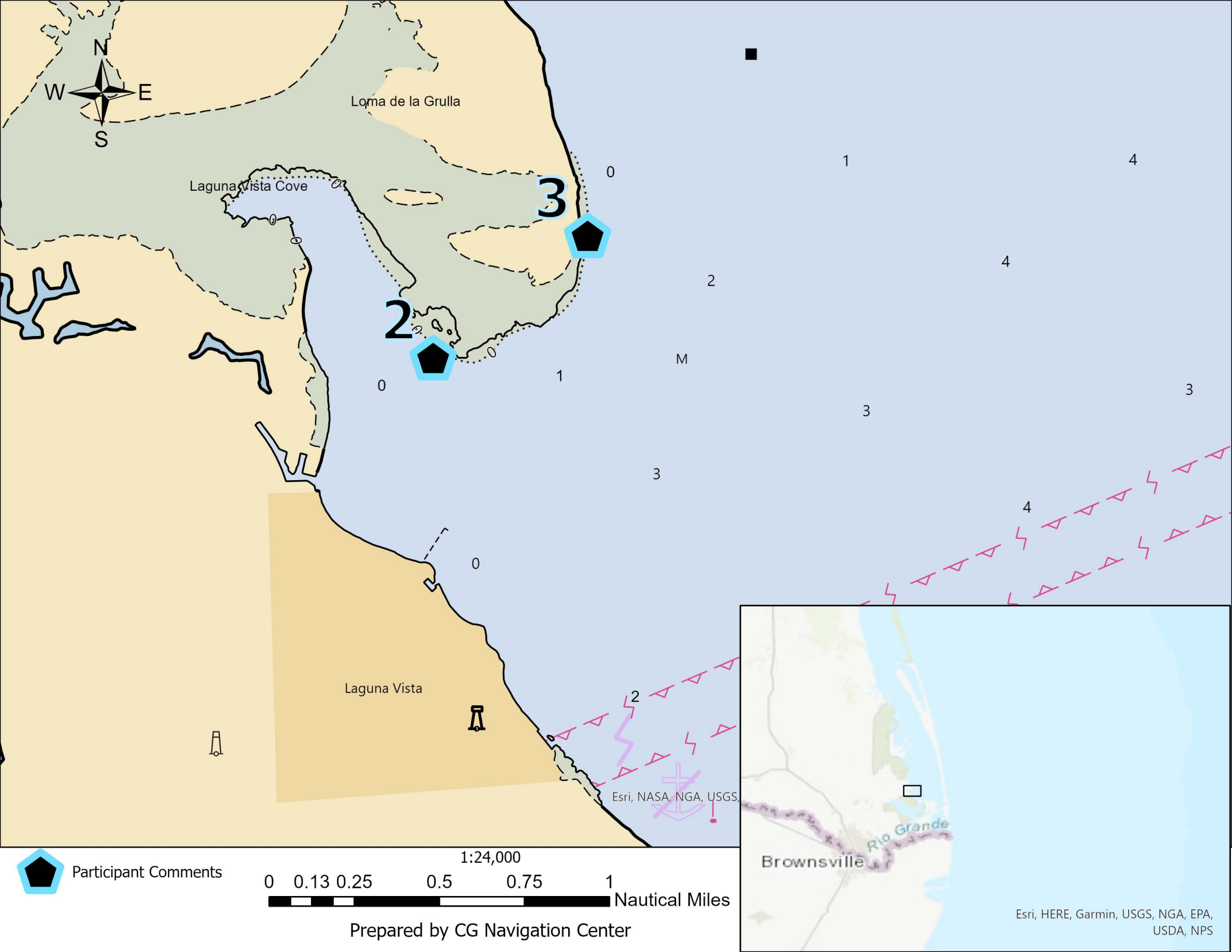
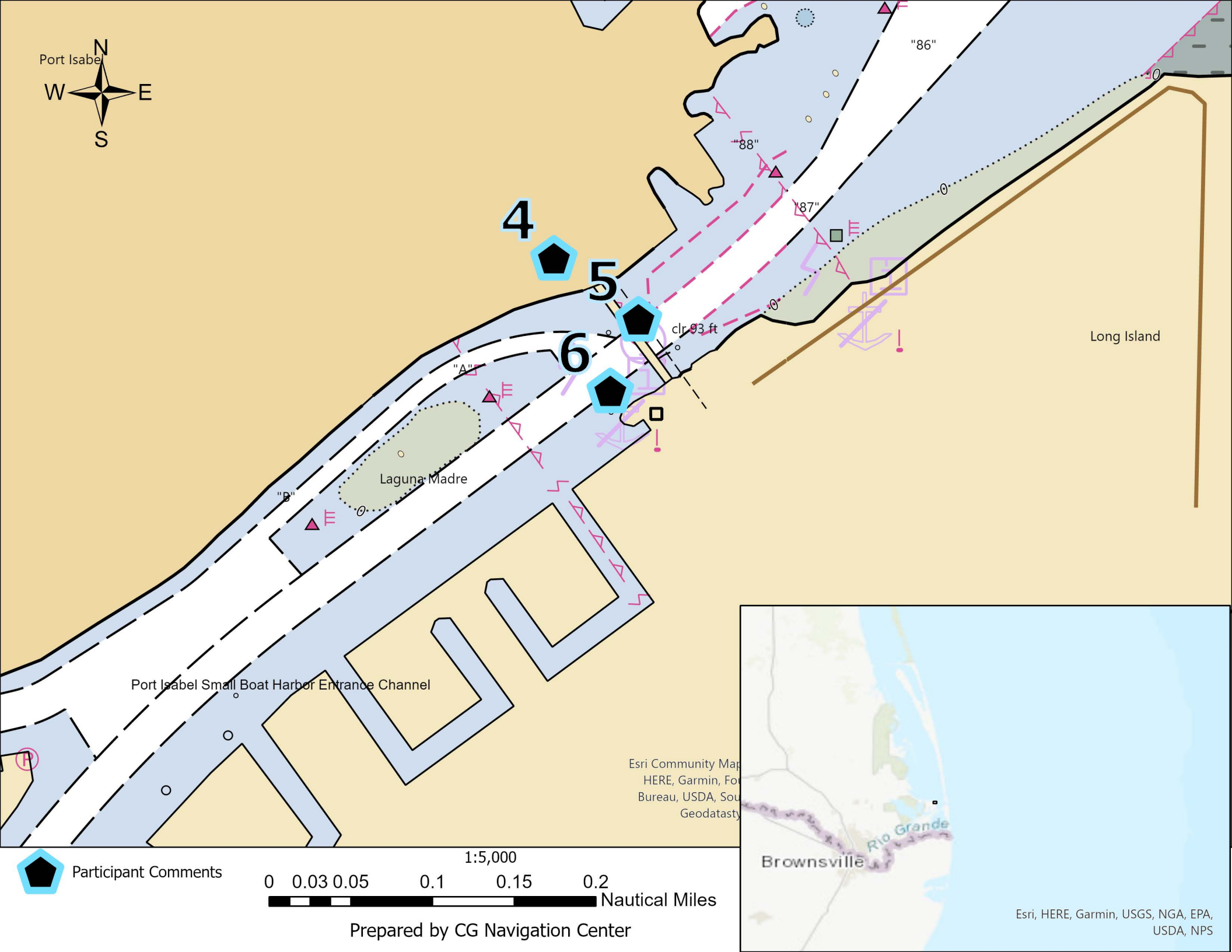
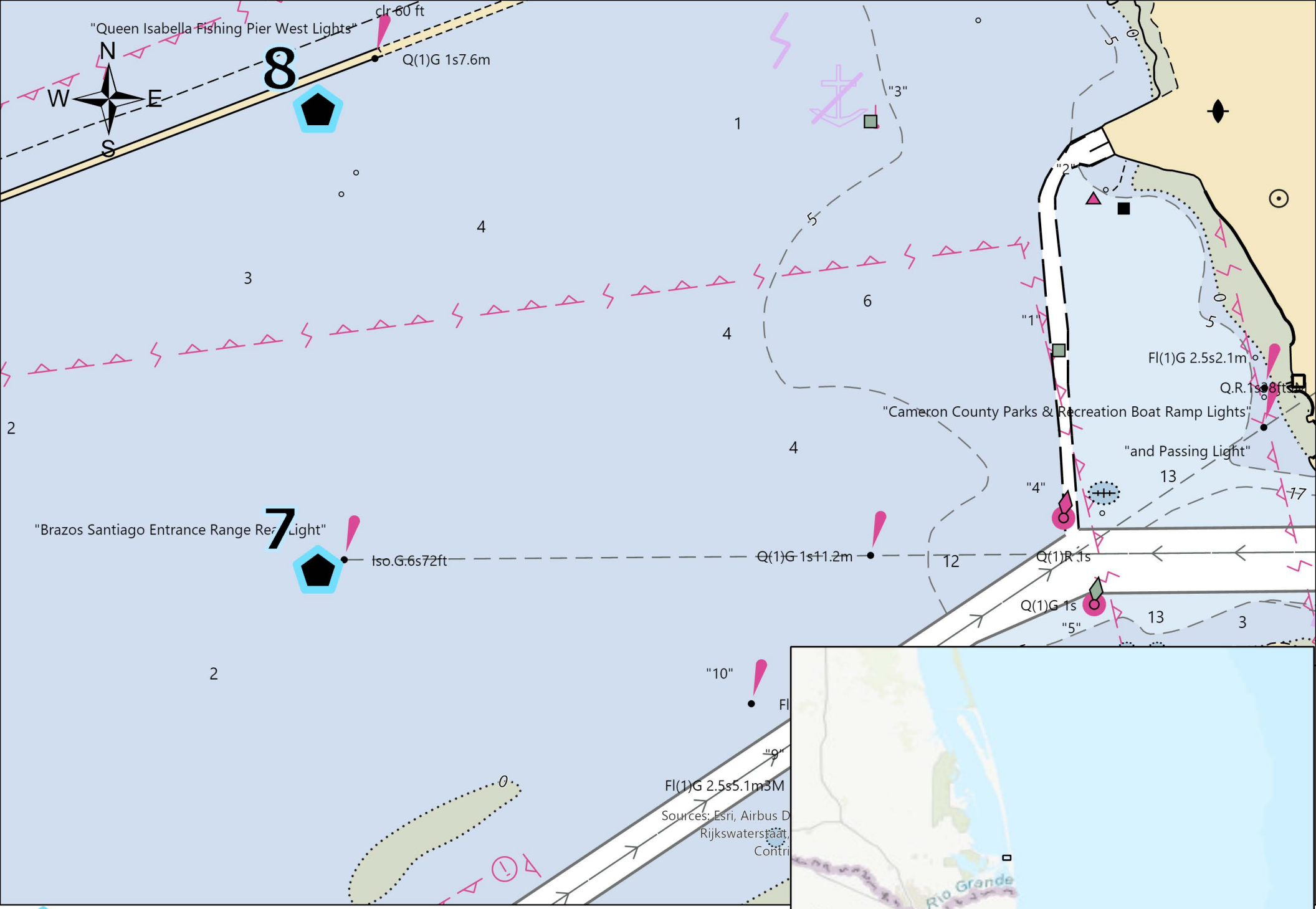
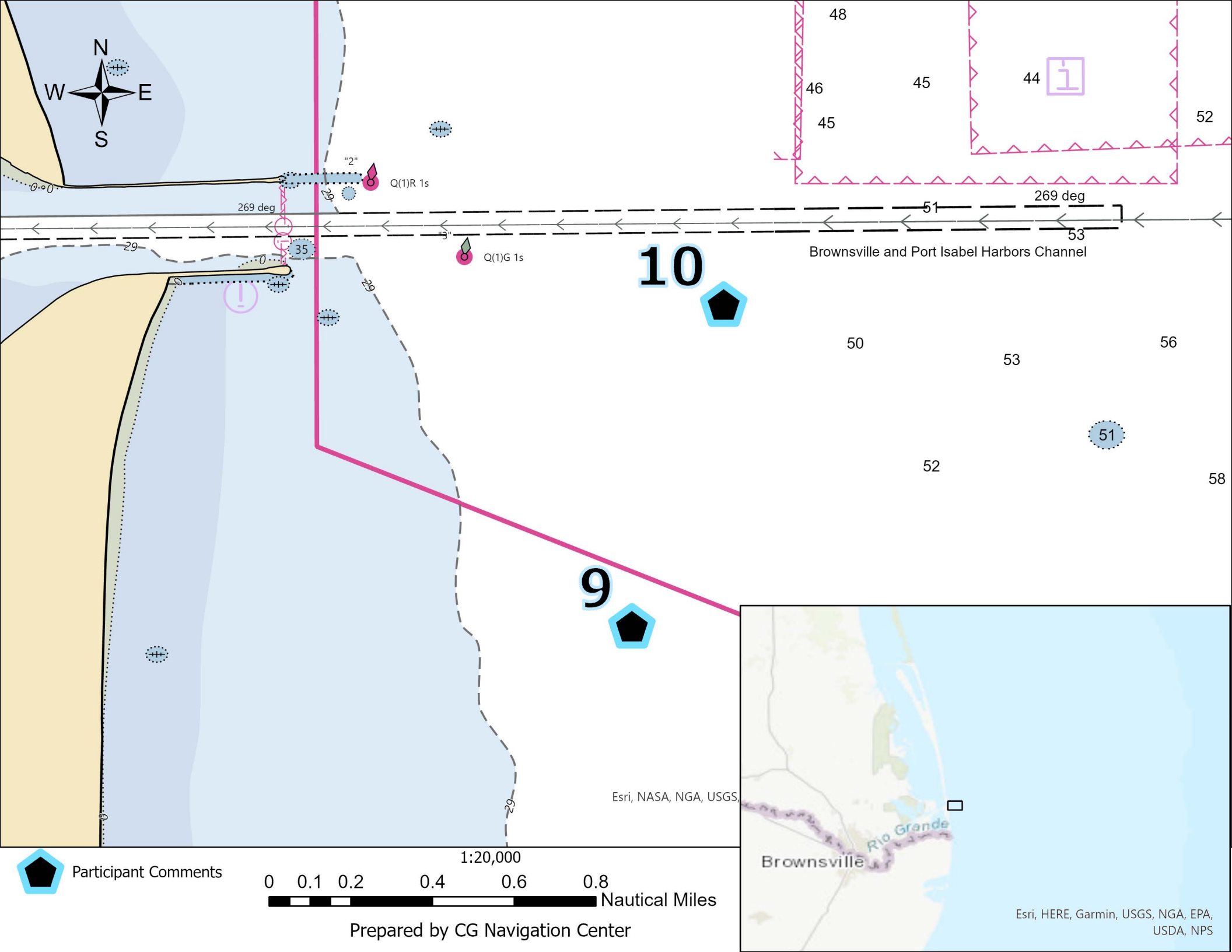
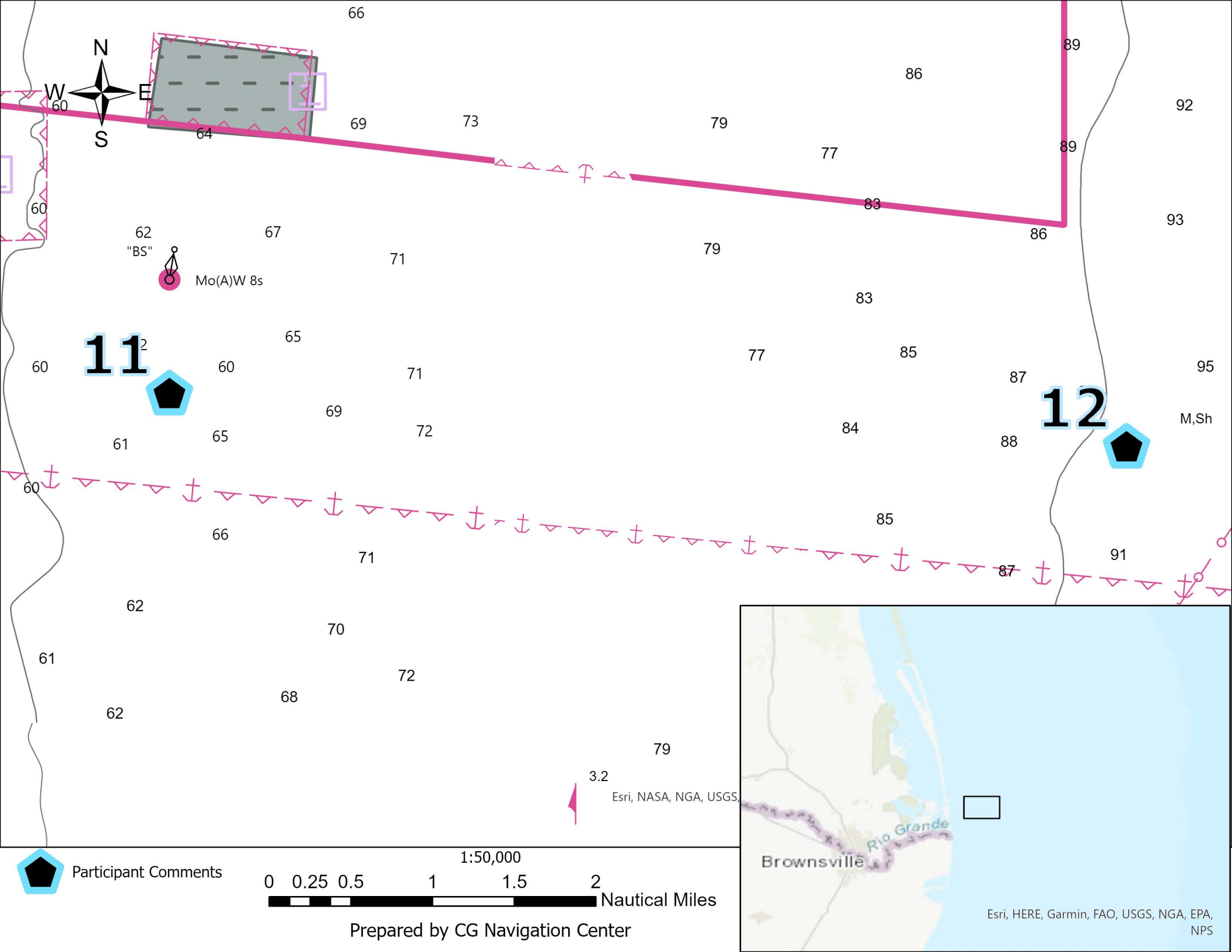
Nautical Miles
Prepared by CG Navigation Center

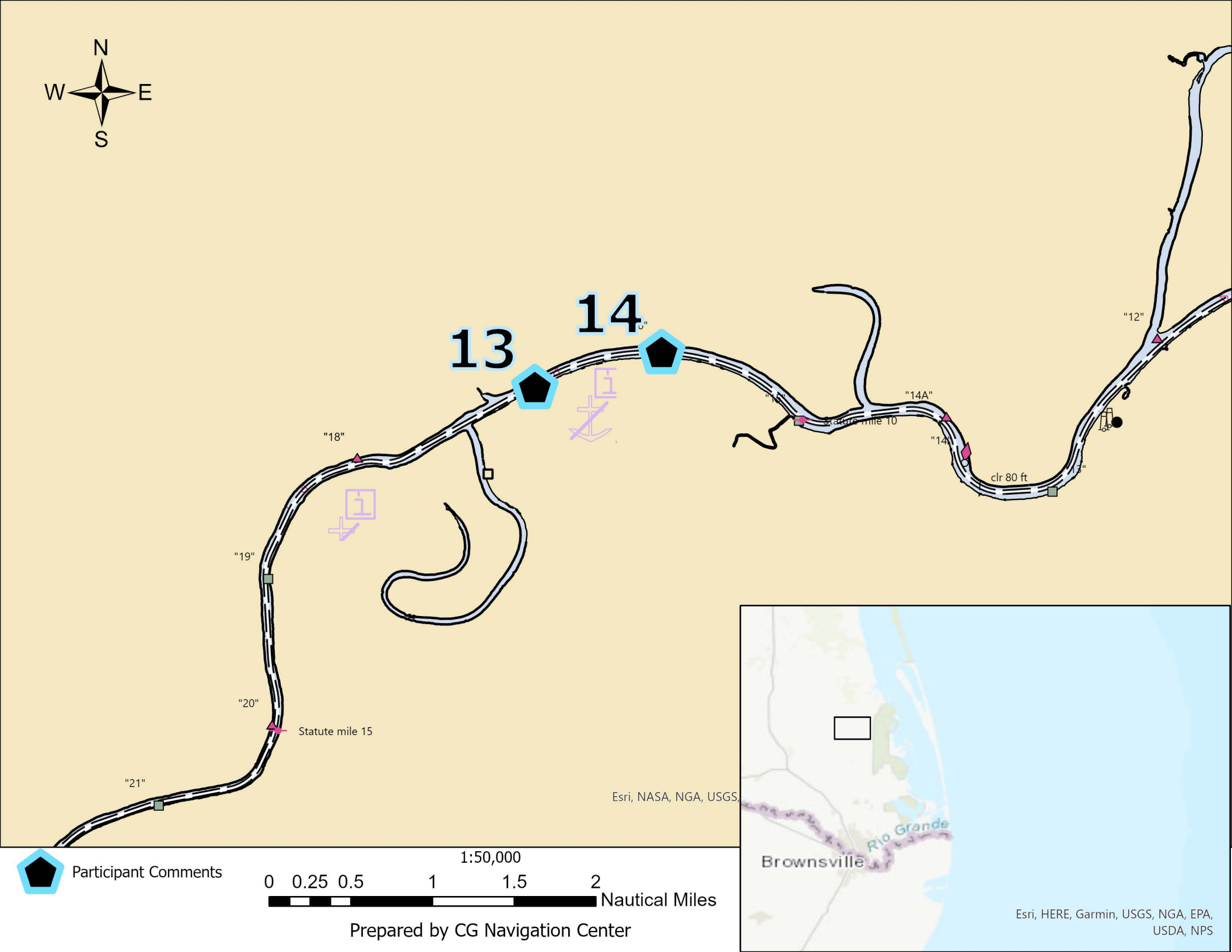

N
W
E
S
Loma de la Grulla
Laguna Vista Cove
3
2
Laguna Vista
Esri, NASA, NGA, USGS
Brownsville
Rio Grande
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS
Participant Comments
1:24,000
0 0.13 0.25 0.5 0.75 1
Nautical Miles
Prepared by CG Navigation Center

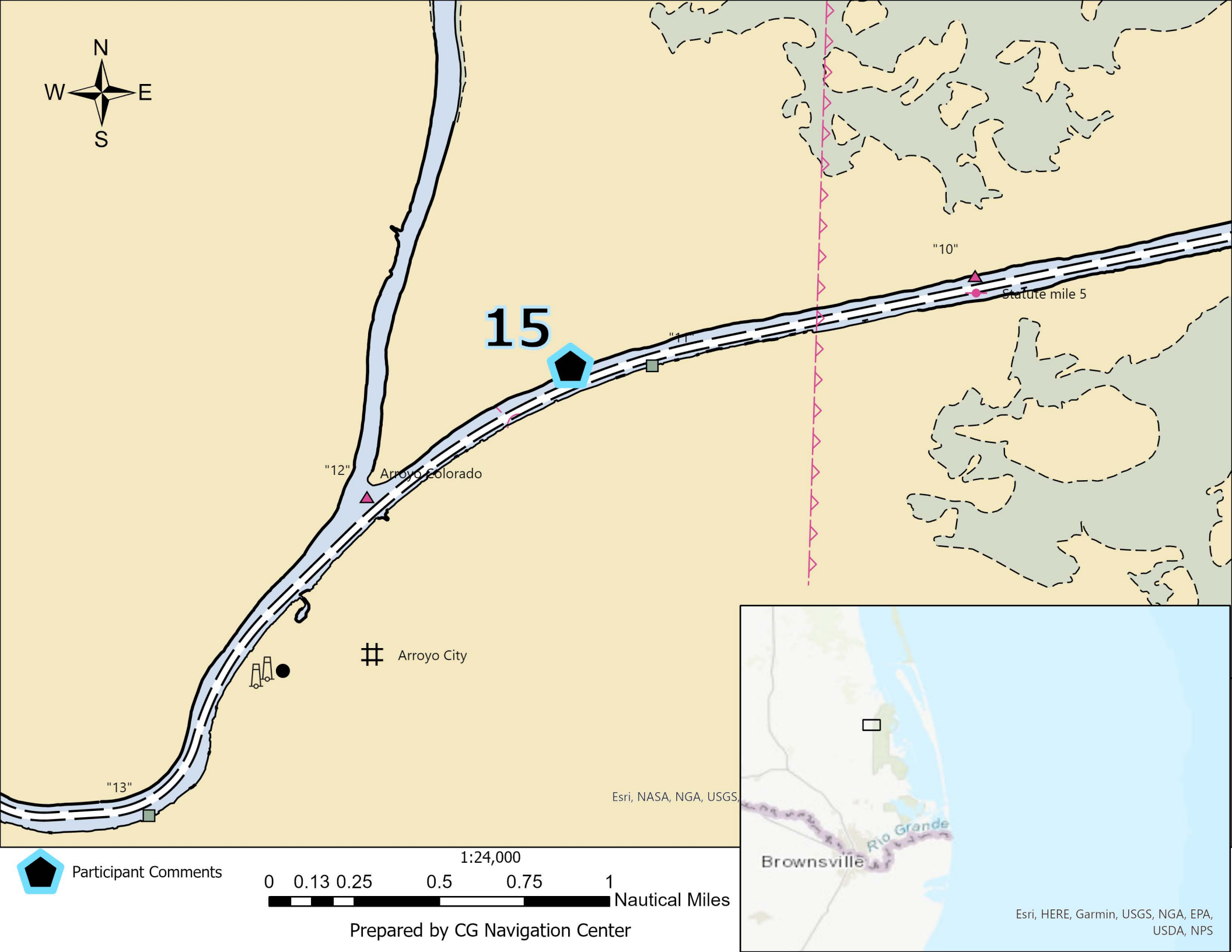

Port Isabel
N
W
E
S
4
5
6
"86"
"88"
"87"
"A"
"B"
clr 93 ft
Long Island
Laguna Madre
Port Isabel Small Boat Harbor Entrance Channel
Esri Community Map
HERE, Garmin, Fo
Bureau, USDA, Sou
Geodatasty
Participant Comments
1:5,000
0 0.03 0.05 0.1 0.15 0.2
Nautical Miles
Prepared by CG Navigation Center
Rio Grande
Brownsville
Esri, HERE, Garmin, USGS, NGA, EPA,
USDA, NPS

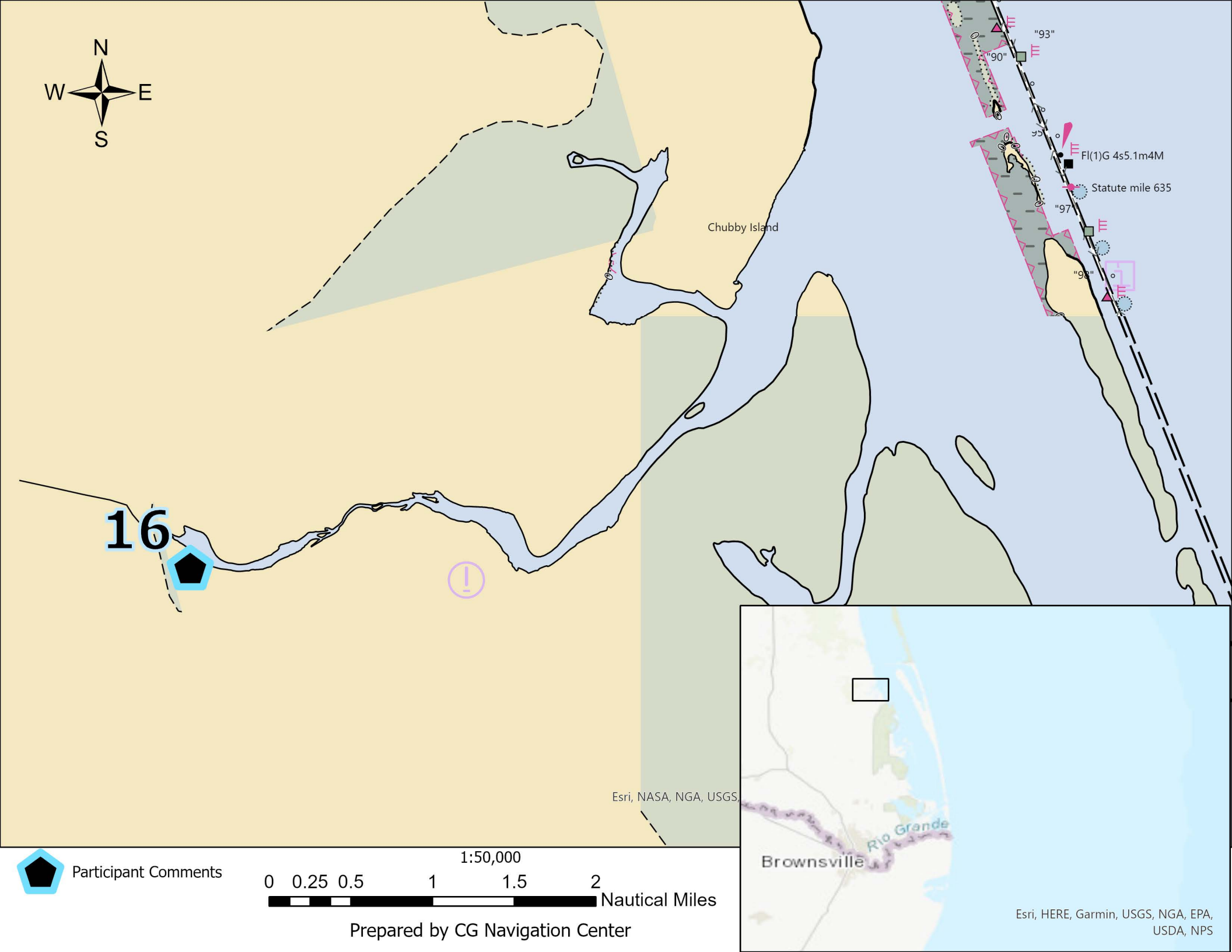

"Queen Isabella Fishing Pier West Lights"
clr 60 ft
Q(1)G 1s7.6m
8
N
W
E
S
"3"
1
"2"
4
3
6
"1"
5
0
Fl(1)G 2.5s2.1m
Q.R.1s38ftSW
"Cameron County Parks & Recreation Boat Ramp Lights"
"and Passing Light"
13
17
"4"
2
4
"Brazos Santiago Entrance Range Rear Light"
7
Iso.G.6s72ft
Q(1)G 1s11.2m
12
Q(1)R 1s
Q(1)G 1s
"5"
13
3
2
"10"
Fl
"9"
Fl(1)G 2.5s5.1m3M
Sources: Esri, Airbus D
Rijkswaterstaat,
Contri
0
1:10,000
0 0.05 0.1 0.2 0.3 0.4
Nautical Miles
Participant Comments
Prepared by CG Navigation Center
Brownsville
Rio Grande
Esri, HERE, Garmin, USGS, NGA, EPA,
USDA, NPS


N
W
E
S
48
46
45
45
44
52
"2"
Q(1)R 1s
269 deg
29
51
269 deg
53
"3"
Q(1)G 1s
Brownsville and Port Isabel Harbors Channel
29
35
0
10
29
50
56
53
51
52
58
9
Esri, NASA, NGA, USGS,
Rio Grande
Brownsville
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS
Participant Comments
1:20,000
0 0.1 0.2 0.4 0.6 0.8
Nautical Miles
Prepared by CG Navigation Center


N
W
E
S
66
89
86
92
60
64
69
73
79
77
89
83
93
62
"BS"
67
71
79
86
Mo(A)W 8s
83
11
65
60
60
71
77
85
87
95
12
69
M,Sh
61
65
72
84
88
60
85
66
71
91
87
62
70
61
72
68
62
79
3.2
Esri, NASA, NGA, USGS,
Participant Comments
1:50,000
0 0.25 0.5 1 1.5 2
Nautical Miles
Prepared by CG Navigation Center
Rio Grande
Brownsville
Esri, HERE, Garmin, FAO, USGS, NGA, EPA, NPS


N
W
E
S
13
14
"12"
"14A"
"18"
"19"
"20"
"21"
Statute mile 15
clr 80 ft
Esri, NASA, NGA, USGS,
Participant Comments
1:50,000
0 0.25 0.5 1 1.5 2
Nautical Miles
Prepared by CG Navigation Center
Brownsville
Rio Grande
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS


N
W
E
S
15
"10"
Statute mile 5
"11"
"12"
Arroyo Colorado
Arroyo City
"13"
Esri, NASA, NGA, USGS,
Participant Comments
1:24,000
0 0.13 0.25 0.5 0.75 1
Nautical Miles
Prepared by CG Navigation Center
Rio Grande
Brownsville
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS


N
W
E
S
"93"
"90"
Fl(1)G 4s5.1m4M
Statute mile 635
"97"
"98"
Chubby Island
16
Esri, NASA, NGA, USGS,
Rio Grande
Brownsville
Esri, HERE, Garmin, USGS, NGA, EPA, USDA, NPS
Participant Comments
1:50,000
0 0.25 0.5 1 1.5 2
Nautical Miles
Prepared by CG Navigation Center

PAWSA Participant Comments

Point	Comment	Condition
1	Add another sensor approximately halfway down the channel between the turning basin and entrance near Long Island Bridge.	Navigation
2	The port of Brownsville will install a current meter on the GLO sentinel within the next 3 months. It will record and provide live data of currents inside the jetties and map water movement within 300' of meter.	Navigation
3	Add another sensor East of Laguna Vista	Navigation
4	Cannot transit Long Island Swing Bridge with 15 mph winds or more with empty barges	Navigation
5	Long Island Swing Bridge: Cannot see bridge gates and fender works from wheelhouse. Lookouts are placed on both sides of the tow.	Waterway
6	Currents in vicinity of Long Island Swing Bridge are ripping.	Currents
7	Correct meter and anemometer in the Long Island area to allow for better voyage planning.	Navigation
8	Long Island Bridge has problems getting the bridge operator. Tows are committed when they transit the area.	Navigation
9	The NOAA chart or BA charts show shoaling that does not exist at the entrance that extends into the channel. Captains become very nervous passing over and it is located at a critical point where the pilot needs to concentrate on safe vessel navigation.	Waterway
10	Vessel quality of operations condition: pilots have noticed a drastic decrease in general seamanship from ship crews, specifically pilot ladder riggings.	Vessels
11	Strong current exists through the bay that affect vessel traffic in the proximity of Buoy 405. There is a lack of predictions data or current meters.	Navigation
12	Deep draft propulsion standards are found to be inadequate and reflect a lack of available power. The critical RPM is identified to be Dead Slow to Slow. Override by engineers with too many fail-safes, designed to operate at sea and not in-port.	Vessels
13	Baffin Bay mile marker 577-586: there are reports of boulders/sandy deposits that could potentially cause rudder/wheel damage.	Waterway
14	Day boards are missing from mile marker 570-585	Waterway
15	Moorings on Arroyo Colorado are missing or in disrepair. Need to replace existing ones and consider installing additional due to the increase of traffic into port of Harlingen	Waterway
16	Lights on fishing camps hard to see at night. (G1, H1, F1)	Waterway

Appendix D

References

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

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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
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http://www.itopf.com/

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

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Recreational Boating Safety - Accident Statistics
http://www.uscgboating.org/statistics/accident_statistics.php

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

State Specific Boating Safety Requirements
http://www.americasboatingcourse.com/lawsbystate.cfm

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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
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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

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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
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 Administration
OSRO	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

VMRS	Vessel Movement Reporting System
VTM	Vessel Traffic Management
VTS	Vessel Traffic Service

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