

Ports and Waterways Safety Assessment Workshop

Facilitated by the U.S. Coast Guard Navigation Center

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. In addition, stakeholders are included in the process to ensure that important environmental, public safety, and economic consequences get appropriate attention as risk interventions are identified and evaluated.

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

- 1) Provide input during planning for projects that intend to improve the safety of navigation;
- 2) 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;
- 3) Foster development and/or strengthen the roles of Harbor Safety Committees within each port; and,
- 4) 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 Workshop Objectives

A PAWSA aims to improve coordination and cooperation between government agencies and the private sector. Thirty participants representing your waterway users, stakeholders, environmental interest groups, and Federal, State, and local regulatory authorities join to collaboratively assess navigation safety. Workshop stakeholders participate in facilitated discussion that utilizes a decision tool developed by the USCG to numerically represent relative risk and identify long-term solutions tailored to local circumstances. In 2020, the PAWSA program office [CG Waterways Management (CG-WWM-1)] commissioned the U.S. Coast Guard Navigation Center (NAVCEN) to revise the original PAWSA decision tool framework to align results to modern programmatic goals. NAVCEN completed the revision in 2021. While the fundamentals of the PAWSA framework remain unchanged, the risk scoring system is updated and the numerical results from your report will not be comparable to previous PAWSA reports.

Participants discuss and score sixteen risk factors that are the basis for the PAWSA decision tool. In general, the 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, and the potential consequences that could result from a marine casualty or incident on the waterway. Participants also identify and characterize risk tolerance and how the risk of those factors are expected to change over time.

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

- **Navigation Conditions** – The environmental conditions that vessels must encounter within a waterway.
- **Vessel Quality and Operations Conditions** – Physical quality of vessels and their mariner’s proficiency.
- **Traffic Conditions** – Number of vessels that use a waterway and how they interact with each other.
- **Waterway Conditions** – Physical properties of the waterway that affects vessel maneuverability.

Priority risk factors for your PAWSA will be identified and discussed to then develop potential mitigation strategies (e.g., public/private partnerships, education, coordination, policy/regulatory improvements, and physical waterway configuration enhancements).

Workshop Participants

Workshop participants actively deliberate issues during the workshop and jointly develop non-binding risk mitigation measures. Participants consist of stakeholders and waterways users that represent a broad cross-section of the waterway community. Waterway users are those involved in the movement of vessels in the waterway being assessed, such as vessel masters, pilots, and officers of operating companies. Stakeholders represent those whose livelihood and/or quality of life are affected by waterway activities.

Participants speak as reliable and respected representatives of others engaged in similar work or having similar interests. Limited to 15 two-person teams, selected participants balance: a) navigation and traffic management expertise, and b) representation of all significant stakeholder groups within the affected waterway community. The group must include expertise and current knowledge in the following areas: pilotage, ship handling, aids to navigation, maritime law enforcement, vessel traffic management, protection of natural resources, marine casualty response and investigation, and waterway community planning and economics. Participants should be currently working in direct support of waterway-related activities, preferably for an extended period.

The workshop sponsor may host a stakeholder engagement meeting in advance of the formal workshop to prime dialogue and enhance community representation for the two-day event.

Risk Condition & Factor Definitions

A. **Navigation** – environmental conditions vessels encounter within a waterway.

- **Winds** – movement of the air, especially in the form of a current of air blowing from a particular direction.
- **Tides and Currents** – periodic motion of water. Also consider storm-surge, flooding, etc. effects.
- **Visibility Restrictions** – natural phenomena hindering sight of aids to navigation and other vessels.
- **Bottom Type** – nature of the seafloor (e.g., mud/silt vs. rock/hard coral).

B. **Vessel Quality and Operations** – physical quality of vessels and their mariner's proficiency.

- **Deep Draft Commercial Vessels** – Oil tankers, container ships, break bulk carriers, cruise liners or other large, ocean-going like ships generally engaged in international trade and subject to the SOLAS convention or some 46 CFR Subchapters H, I, or D vessels
- **Shallow Draft Commercial Vessels** – Operating in the coastal or inland trade, such as towboats, offshore supply vessels, dinner cruise and similar excursion vessels, and most other vessels inspected under 46 CFR Subchapters T and K, or uninspected commercial vessels excluding fishing vessels.
- **Commercial Fishing Vessels** – commercial fishing vessels of any kind, most domestic fishing vessels are not required to be inspected and mariner credentialing is minimal.
- **Recreational Vessels** - all manner of pleasure craft (e.g., personal vessels/watercraft, yacht club regattas, recreational fishermen, and human-powered craft like paddle boards, sea kayaks, and canoes)

C. **Traffic** – number of vessels utilizing a waterway and how they interact with each other.

- **Volume of Commercial Traffic** – Consider various maneuvering, tonnage, cargo, passengers, staffing, and other factors of commercial traffic.
- **Volume of Recreational Traffic** – All noncommercial vessels utilizing the waterway.
- **Traffic Mix** – The extent to which multiple vessel types or other entities use, occupy, constrain, or affect the waterway.
- **Traffic Congestion** – vessels constrained within a geographic area or number of vessels relative to navigable waterway.

D. **Waterway** – physical properties of the waterway that affects vessel maneuverability.

- **Visibility Impediments** – artificial objects hindering sight of aids to navigation and other vessels.
- **Dimensions** – available waterway for vessels to maneuver/meet/pass/overtake.
- **Obstructions** – objects that may hazard vessels: sunken craft, dredge gear, abutments, seawalls, etc.
- **Configuration** – includes the number and direction of bends, converging channels, and conflicts to the prevailing flow from perpendicular crossing.

Risk Mitigation Strategies

Coordination / Planning - Improve long-range and/or contingency planning and better coordinate activities / improve dialogue between waterway stakeholders

Voluntary Training - Establish / use voluntary programs (Coast Guard Auxiliary, Power Squadron, other state / local programs) to educate waterway users in topics related to waterway safety (Rules of the Road, ship / boat handling, etc.)

Rules & Procedures - Establish / refine rules, regulations, policies, or procedures (navigation rules, pilot rules, standard operating procedures, licensing, required training and education, Regulated Navigation Areas, etc.)

Enforcement - More actively enforce existing rules / policies (navigation rules, vessel inspection regulations, standards of care, etc.)

Nav / Hydro Info - Improve navigation and hydrographic information (the Physical Oceanographic Real- Time System (PORTS), Broadcast Notices to Mariners, charts, coast pilots, Automatic Identification System (AIS), tides and current tables, etc.)

Radio Communications - Improve the ability to communicate bridge-to-bridge or ship-to-shore (radio reception coverage, signal strength, reduce interference & congestion, etc.)

Active Traffic Management - Establish / improve a Vessel Traffic Service (information, advice and control) or Vessel Traffic Information Service (information and advice only)

Waterway Changes - Widen / deepen / straighten the channel and/or improve the aids to navigation (buoys, ranges, lights, LORAN C, Differential Global Positioning System (DGPS), etc.)

Other Actions Risk - Mitigation measures that do NOT fall under any of the above intervention strategy categories

Risk Consequence Descriptions

A waterway casualty event may result in immediate and/or subsequent consequences. People can be seriously injured or killed, petroleum and hazardous materials spills may affect the environment, response resources may be required, and the marine transportation system can be disrupted. Subsequent effects of waterway casualties may be felt hours, days, months, or years afterwards, such as shore side facility shut-downs, loss of employment, destruction of fishing areas, decrease or extinction of species, degradation of subsistence living uses, and contamination of drinking or cooling water supplies.

- **Personnel Injury** – the nature and number of people that may be affected impacted or involved. Consider types of vessels on the water that carry passengers, number of passengers, and number and size of marine events.
- **Petroleum Discharge and Hazardous Materials Release** – a severity dependent on the quantity and toxicity of substances concerned with the potential for long and short-term consequences. Consider the types, carriage method, and quantity of cargoes in the waterway.
- **Port Mobility** – the impacts of port or waterway closure to critical infrastructure access, supply chains, military sea lift, etc. Consider the vulnerability of docks, highways, bridges, railroads, etc. that are used to move cargo to/from ships in a port.
- **Public Health & Safety** – the potential consequences to the community that lives around a waterway and the vulnerability of people living or working near the waterway.
- **Environmental Sensitivity** – the risks to wetlands and endangered species and public sensitivity to environmental quality .
- **Aquatic Resources** – impacts of a marine incident to the ability to extract food from a waterway. This typically includes fish, and shellfish, but can also include sponges, mollusks, and seaweed/algae.
- **Economic** – how the economy at a local, state, and national level may be affected by port closure or restriction.