



VI.

Strategic Areas of Action

The strategic areas of action provide direction for public and private MTS stakeholders to consider to evolve the current U.S. marine transportation system into the MTS desired in 2020. Recommended actions have been developed for seven strategic areas:

- *Coordination;*
- *Funding the MTS;*
- *MTS competitiveness and mobility;*
- *Improving awareness of the MTS;*
- *Information management and infrastructure;*
- *Security; and*
- *Safety and environmental protection.*

The strategic areas include potential mechanisms and recommendations for action.

Based on the development of the Critical Issues in Chapter IV, and the previous work of the Regional Listening Sessions and National MTS Conference, the Task Force members developed a set of strategic actions to address these issues. The lead entity, public or private, in most cases, has been identified to take responsibility for leading efforts to address the issue. This report provides a course for addressing the critical issues facing the MTS to meet the challenges posed by the demands of trade, security, safety, and environmental protection.

COORDINATION

Coordination has been a recurring theme throughout the identification and discussion of the critical issues facing the U.S. marine transportation system. Improved coordination — among and through the public and private MTS stakeholders at the local, regional, and national levels — is a key element of the MTS envisioned for 2020. Greater Federal coordination will better inform policy makers on legislation, investment strategies, resource allocations, and regulations, without duplicating or overlapping existing decision-making processes.

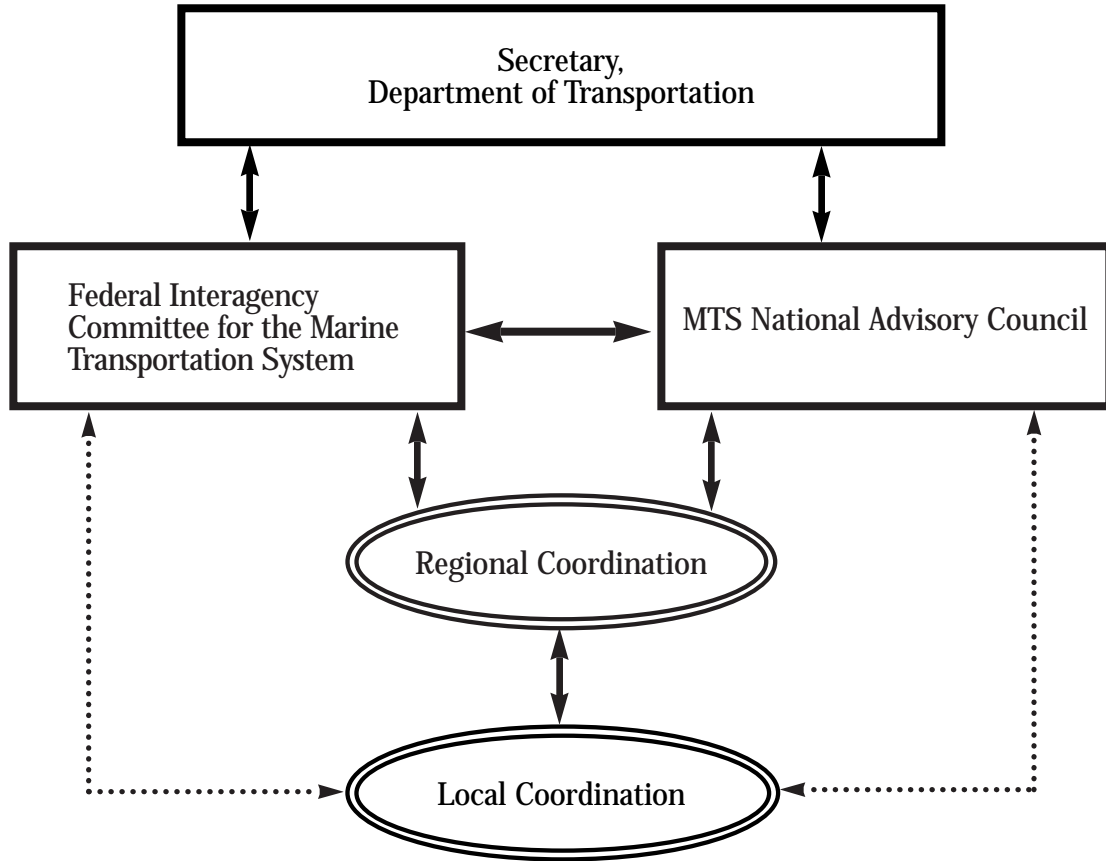
Coordination among and through the MTS stakeholders at individual ports, within regions, or at the national level increases the flow of ideas and communication. It should encourage effective interaction and coordination among these users of, and stakeholders in, the MTS. It expands the level of understanding of user and provider activities and the inherent limitations of each. It encourages partnership formation, especially to implement shared goals and objectives. It supports information sharing. It can streamline and improve the effectiveness of the regulatory processes. It can also facilitate nonregulatory solutions to vexing problems. Finally, coordination can increase public awareness of the importance of the U.S. marine transportation system.

Recommendations:

The Task Force recommends a series of actions to achieve the desired state of coordination for the MTS:

- Create a National Advisory Council, comprised of non-Federal members, that advises on MTS matters.
- Improve the coordination among Federal agencies by creating a new Federal Interagency Committee for the Marine Transportation System (ICMTS) through the expansion of the existing Interagency Committee on Waterways Management (ICWWM).
- Encourage the creation of Harbor Committees and regional organizations, where appropriate, to address local concerns.
- Develop policies, strategies, and goals consistent with Administration policies and the general public and stakeholder needs.
- Establish a mechanism to cross-check the 2020 vision with current and future initiatives.
- Conduct a coordinated review of regulatory system processes at the national, State, and local levels.
- Encourage non-Federal stakeholders to raise the visibility of the MTS as a vital part of the U.S. transportation system and as a major resource of the Nation.
- Establish communication channels among private MTS users, stakeholders, and public sector agencies to foster interaction and improve decision making.
- Facilitate establishment of an applied research forum involving academic and other private and public sector stakeholders.

Figure VI-1: *Marine Transportation System Coordinating Structure.*



Notes:

- 1) Double-lined ovals contain groups with parallel functions and communication channels.
- 2) Dotted lines indicate alternate channels of communication.

Coordinating Framework

Figure VI-1 depicts a framework to achieve and support the level and types of coordination necessary at the local, regional, and national levels to achieve the MTS vision. Coordination and communication are the keystones to achieve the MTS desired state in 2020. The structure consists of local, regional (where appropriate), and national level coordination.

National-Level Coordination. Coordination at the national level consists of a new Federal ICMTS, created through the expansion of the existing ICWWM, and a Marine Transportation System National Advisory Council (MTSNAC) composed of non-Federal members.

Interagency Committee for the Marine Transportation System: Participants in the Regional Listening Sessions and the National MTS Conference in November 1998, expressed the need for greater coordination, information sharing, and consistent regulatory and policy application among Federal agencies. The ICMTS will be the national coordinating body where Federal agencies with responsibility for one or more aspects of the MTS come together and discuss strategies to minimize duplicated efforts and coordinate overlapping functions. The MTSNAC provides advice to the ICMTS

and the Secretary on MTS matters. Federal agencies, through the ICMTS, will consider this input in developing Administration policy, budget requests, legislative proposals, and in their day-to-day program management. Therefore, the ICMTS may coordinate and/or implement the recommendations developed by the MTSNAC, and adopted by the Administration. The ICMTS will:

- Identify, evaluate, develop, and promote the implementation of Federal policies and resource utilization to ensure effective public funding decisions, support services, and management of the MTS. This might include the coordinated development of budget submissions to communicate the interdependency of the system and its components to financial decision makers.
- Identify and eliminate barriers to interagency cooperation and review the regulatory system process, as recommended at the National MTS Conference. This should include a review of Federal, State, and local regulatory regimes and jurisdictional overlaps and gaps. A primary goal of the ICMTS is to improve government cohesiveness.
- Consider the advice and recommendations of the MTS National Advisory Council.

Open communication is important in the development of MTS strategy and goals. The ICMTS will provide a centralized location for non-Federal MTS stakeholders to raise issues that may require Federal attention. The broad Federal participation in the ICMTS will guarantee that the issue is brought to the attention of the appropriate agencies and dealt with in a coordinated manner. The ICMTS will also not encroach upon local or private decision making by non-Federal stakeholders, and it feeds into, but does not duplicate existing Administration policy-making processes.

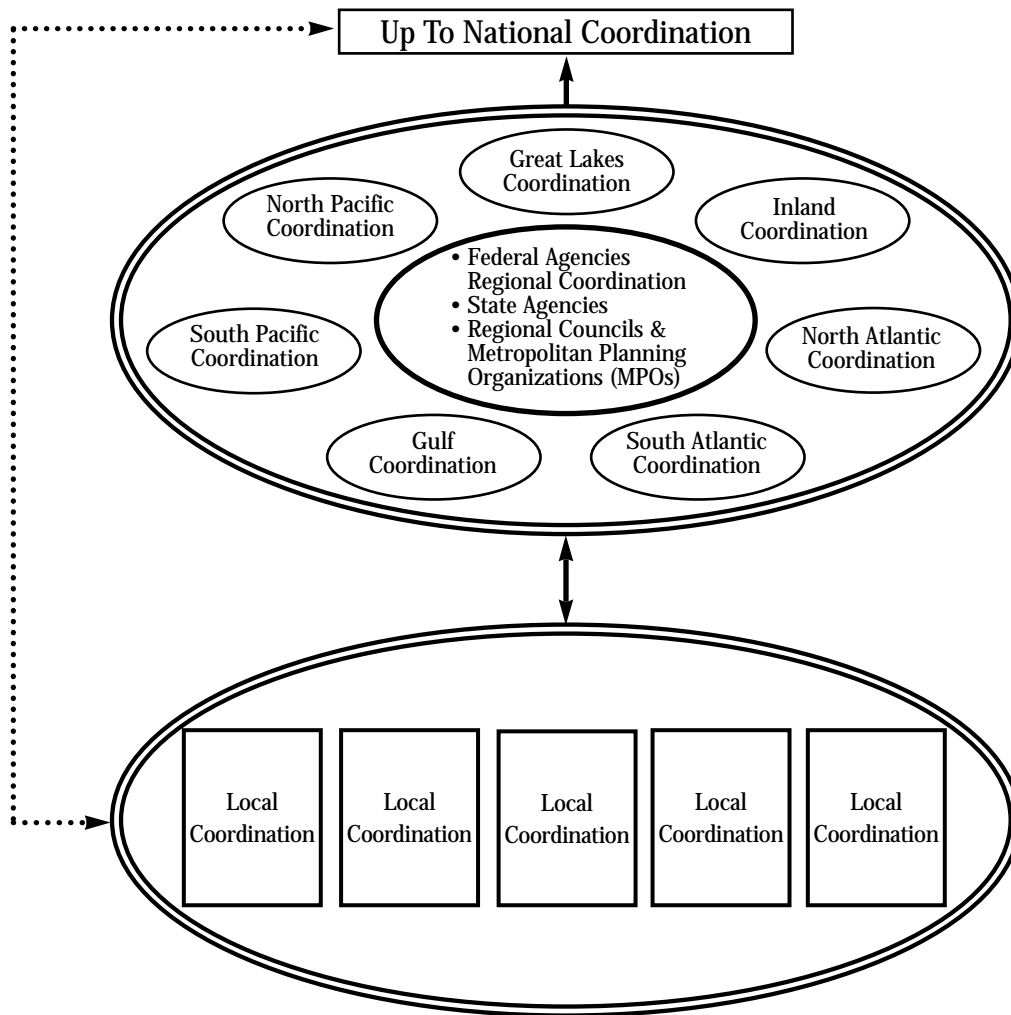
MTS National Advisory Council. The MTSNAC, a key element of the coordination framework, will provide a structured approach for non-Federal stakeholders to provide input on national-level issues. The Council should be chartered by the Secretary of the U.S. Department of Transportation and governed by the Federal Advisory Committee Act (FACA) (Pub.Law 92-463; 5 U.S.C. App.2). The MTSNAC will be composed of senior-level representatives from non-Federal organizations. The Council will advise the Secretary on MTS matters such as:

- Waterway, port, and intermodal infrastructure and services;
- National strategy, policy, and goals in the areas of safety, environment, mobility, competitiveness, and security;
- International maritime standards and policies; and
- Status and needs of the MTS.

The MTS National Advisory Council should establish, as needed, ad hoc committees comprised of non-Council members, to address issues, assess MTS research and development needs, advise on the effect of existing or proposed laws and regulations or needed reforms, and participate in outreach activities. The primary function of these committees is to advise the Council, which in turn advises the ICMTS and the Secretary. Council recommendations, which may reflect broad-based consensus, could provide support to advance Administration goals, such as seeking a legislative change to address a specific problem or improve the MTS.

Regional-Level Coordination. Regional transportation coordination mechanisms already exist in some parts of the country and should be considered, where applicable. Where established, regional coordinating bodies should be flexible to account for individual regional characteristics and needs. Therefore, the organization and membership of regional coordinating bodies may vary from area to area. For instance, some bodies may need to be divided into local forums representing different

Figure VI-2: *Marine Transportation System Coordinating Structure: Regional and Local Levels.*



Notes:

- 1) Double-lined ovals contain groups with parallel functions and communication channels.
- 2) Dotted lines indicate alternate channels of communication.

parts of the same region, depending on the issue area. Participants in regional MTS coordination bodies can include State agencies, regional councils, MPOs, public interest groups, and regional offices of Federal agencies.

Figure VI-2, for example, depicts regional areas that represent major trade areas. Whatever the format and definition, regional coordination bodies should allow the concerns and interests of all MTS users and stakeholders to be addressed.

Although their structures may be different, regional coordinating bodies should have a common set of functions. They should:

- Provide a direct communication vehicle for Federal regional offices, State agencies, regional councils, MPOs, and local forums.
- Identify overlapping authorities and advise on streamlining and improving the effectiveness of regulations, and identify opportunities for improved environmental protection and enhancement.

- Evaluate policy and strategy options that often depend on legislative or other enforcement measures.
- Act as a vehicle for technical assistance and public outreach that stresses the interdependence of the MTS, particularly as it relates to national security, competitiveness, and the environment.

The recently established Great Lakes Regional Waterways Management Forum is one example of a regional coordinating body. The purpose of this forum is to identify and resolve waterways management issues that involve the Great Lakes Region. It will specifically review issues that cross multiple jurisdictional zones and involve international issues. The forum will focus on developing operational solutions that improve the use and effectiveness of the Great Lakes for all. There are eight local port committees that may bring issues forward to the regional forum when they cannot be resolved at the local level. The forum operates on three principles:

- Flexibility;
- Decision making at the local level, when possible; and
- A willingness to develop a consensus for the Great Lake Region.

Local-Level Coordination. Elements of local and regional coordination are well defined through existing statutes for surface and air transportation. For example, TEA-21 outlines an extensive framework for surface transportation planning. A similar framework exists for aviation. However, no formal structure exists to coordinate and consider MTS projects.

All MTS stakeholders and users need to be actively involved in coordinating and considering the various aspects of the system. Equitable representation and participation promote collaborative problem solving and information sharing.

Raising public awareness of the MTS should also begin at the local level. Local committees can conduct public outreach to educate people about the value of our waterways, ports and their intermodal connections, the issues and challenges facing them, and their importance to our Nation's overall transportation system. Local committees should encourage partnerships between individual members and groups outside the committee.

Three examples of local forums are the Mariner's Advisory Committee for the Bay and River Delaware, the Harbor Safety, Navigation, and Operations Committee for the Port of New York/New Jersey, and the Prince William Sound/Valdez (Alaska) Marine Safety Committee. The latter committee attributes its success to a set of mutually accepted operating elements:

- Information sharing and awareness;
- A shared sense of responsibility for safety;
- Open and frank discussion;
- Cooperation and respect;
- A willingness to recognize committee recommendations as the de facto standard of care;
- The effectiveness of nonregulatory solutions; and
- The high value of expert local input to regulatory solutions.

The Alaska committee's formal mission is to provide a proactive forum for planning, assessing, communicating, and implementing operational measures that promote safe and efficient use of Prince William Sound and the Port of Valdez.

Local and regional committees should coordinate discussion and resolution of local and regional issues. The objective is to create a local coordinating body that can enhance communication and cooperation between localities and their encompassing regions. Such local and regional bodies can also provide a mechanism to coordinate decisions beyond jurisdictional boundaries on issues that affect broader regional areas and matters of national significance.

FUNDING THE MARINE TRANSPORTATION SYSTEM

Funding is at the core of many issues relating to the MTS, but it was one on which the Task Force could not reach consensus. It is a divisive topic because of the broad range of MTS users and stakeholders, all of whom have their own concerns and motivations and funding concepts. It is divisive because the funding of the MTS involves a complex relationship among the Federal government, State, and local port authorities, State and local governments, and private companies and stakeholders. It is difficult to find agreement on funding approaches that will satisfy all system users and stakeholders.

Currently, ownership of the MTS varies widely, including public, private, and public-private arrangements. The MTS intermodal partners are privately supported (for example, Class I railroads and pipelines), supported by a combination of Federally collected user fee programs (such as highways, transit, and aviation), and supported through other sources, including general revenues at the Federal, State, and local levels.

Recommendations:

The Task Force recommends four actions:

- Coordinate Federal funding processes;
- Define MTS funding mechanisms;
- Forecast demands on the MTS; and
- Explore innovative funding mechanisms.

Coordinate Federal Funding Processes: The MTS is a complex system with a variety of stakeholders, components, and needs. Public funding at the Federal, State, and local levels come from many different sources and programs. There is a need to better coordinate Federal resource allocations from a systems perspective versus a mode-by-mode or activity-by-activity basis. For example, navigation information is a key component of the MTS that is supported by several different Federal agencies. The call for integrated traffic management and control, communications, charts, and real-time tide, current, and weather information should be coordinated in the USCG, NOAA, and USACE budget planning cycle. Coordinating navigation information as a system in multiple agency budgets will allow resource decision makers to determine appropriate funding levels based on a comprehensive view of the navigation aid system and understand the effects of budget decisions on other agencies and the MTS. This recommendation is not meant to change the normal budget submission and review process of the Federal government, but to provide a more complete budget picture to decision makers.

Quantitatively Define MTS Funding Mechanisms: This recommendation focuses on defining current revenue and funding sources in the MTS — waterways, ports, and intermodal connections. Public funding, at all levels, and private investments will be examined and defined to the best extent possible based on currently available information. There are already a number of sources for this information in the public record, including reports by the General Accounting Office and MARAD that primarily focus on Federal aspects. Collecting this information from State and local governments and the private sector is also essential to gain a complete picture of the MTS funding mechanisms.

A quantitative definition of funding mechanisms as they currently exist will provide MTS stakeholders with a better understanding of public and private funding sources.

Forecast Demands on the MTS: U.S. competitiveness depends on infrastructure adequate to move people and goods efficiently. This has been proven throughout the development and expansion of the United States. Understanding projected demands and recognizing investment needs for that infrastructure have been part of the solution. Based on the projected increase in trade and current state of the Nation's aging MTS infrastructure, the system will need improvements and investments. Coordination of anticipated infrastructure needs, as determined at the Federal, State, and local levels, would greatly increase the efficient use of limited resources and avoid duplication of efforts.

Explore Innovative Funding Mechanisms: The MTS should reduce its reliance on a single strategy for funding transportation infrastructure requirements. The objective of this effort is to maximize the ability of stakeholders to leverage limited fiscal resources and to make more effective use of existing funds. Examples and ways to expand funds for investments include using credit enhancements to lower the cost of capital when issuing bonds and other debt instruments, and taking advantage of increased flexibility in the types of funds or assets that can be used to match available funds. The coordinating mechanism and the National Advisory Council can provide forums to share lessons learned and best practices.

MTS COMPETITIVENESS AND MOBILITY

Competitiveness and mobility are key aspects that influence America's place in global markets; they are also essential elements of national security. To compete successfully for American business in domestic and international markets, ports and other MTS operators must have the ability to move people and cargo efficiently, reliably, and at a reasonable cost, without infrastructure impediments or congestion delays.

For exporters and importers, as well as domestic movers of cargo, mobility and competitiveness translate into a demand for intermodal services that provide speedy movement through the waterways, ports, and terminal transfer facilities to landside transportation. Mobility and competitiveness also translate into a demand for ready access to the transportation information that is needed by all parties to the various transactions involved in trade. Additionally, it translates into the needed capability to move military personnel, equipment, and supplies in support of national security needs.

Waterways, terminal facilities, and inland connections must:

- Have adequate throughput capacity;
- Accommodate the full range of vessel sizes, types, and speeds necessary to support the projected future traffic; and
- Integrate the prevailing transport and information technologies.

Infrastructure that may have served well in the recent past, or is currently serving adequately, may become inadequate in the near future and cause unacceptable delays and costs. The ability to make informed decisions to support coordinated research, planning, and development (among the operators, managers, regulators, and investors of the interfacing water, highway and rail transport modes, and environmental interests) can ensure that the intermodal system will perform satisfactorily in 2020.

Task Force members recommend a series of actions to develop the fundamental knowledge and support tools required for informed decisions on the part of all the private sector and public sector parties responsible for the several elements of the total intermodal MTS. The proposed product of each of these recommendations may be characterized as decision support tools required to ensure the orderly development and smooth operations of all the components of the MTS essential to mobility and competitiveness. The recommendations include:

- Establish a vessel clearance information exchange and one-stop shopping;
- Facilitate landside access to ports;
- Create a National Cooperative MTS research program; and
- Develop systemwide MTS traffic forecasts.

Vessel Clearance Information Exchange and One-Stop Shopping

Vessels involved in international trade and calling on the U.S. must report to and/or be inspected by several Federal agencies. These include USCG, U.S. Customs Service, the Immigration and Naturalization Service (INS), and the U.S. Department of Agriculture (USDA). When a vessel makes several port calls along the coast, it is often required to submit to duplicate reporting requirements and inspections in a short period of time. The vessel, crew, and cargo manifest information collected by one agency is seldom shared with another agency within the same port, or even within the same agency's offices in other ports. Reporting redundant information is labor intensive, costly, and leads to inefficiency and unnecessary hindrance to the mobility and competitiveness of the MTS.

Recommendation:

The Task Force recommends that Federal agencies establish one-stop shopping for inspection and reporting requirements. Where appropriate, partnerships should be developed among Federal agencies and State and local governments. This recommendation includes coordinating and streamlining of multiple agency inspections and procedures.

To proceed with this recommendation, a working group comprised of non-Federal organizations and all Federal agencies with inspection and data collection responsibilities for waterborne trade should examine and develop approaches for coordinating and streamlining reporting activities. Under the structure recommended earlier in the report, this group could be a committee under the MTSNAC. After the Administration adopts the committee's recommendations, the ICMTS should lead the development of an implementation plan.

Another committee could be established for the sole purpose of developing the functional software and hardware requirements, the conceptual design, and the user interfaces. This system must be designed in consultation with representatives of all potential data sources and data users. The committee should explore alternative approaches toward shared direction of operations and funding of the proposed system, and propose an implementation plan for Administration consideration.

Landside Access to Ports

Highway connectors and rail lines provide essential access between the maritime terminals and the interior markets of the United States. The major ports of the Nation are predominantly located in or near densely populated metropolitan areas. Among the landside infrastructure inadequacies faced by these ports, two stand out:

- At least half of all ports, and nearly two-thirds of container ports, have growing traffic congestion on the truck routes that serve the port terminals.
- Many ports report that rail lines serving their facilities have at-grade crossings on local streets, which pose a safety hazard, impede the efficient access of trains to port terminals, and tie up traffic on local streets. Planners believe that grade separations and coordinated traffic control systems are essential to alleviating these inadequacies.

Expanding population and growing waterborne trade promise to increase landside access problems dramatically. Swelling port throughput requirements could escalate congestion on highway connectors, and trains could become longer and more frequent. Improving port access will require new investment in highway/street capacities for truck traffic and for closing crossings or construction of grade separations along rail lines through port cities (construction of grade separations are a highway responsibility under present arrangements). Passage of the Intermodal Surface Transportation Act (ISTEA) in 1991 largely shifted responsibility for local highway planning and project selection to MPOs. TEA-21 continued this arrangement. While the ISTEA and TEA-21 require particular attention to the access needs of ports and freight intermodal terminals, port access projects, particularly those involving railroads, are reported to receive low priority in current planning. Public/private partnerships of port users are needed to present a stronger case for their needs to MPOs.

Another issue for stakeholders is landside access for MTS activities, not just the intermodal connections. There is limited space for activities and increased competition and encroachment by nonmaritime interests. Regional, State, and local planners should consider the Nation's transportation system when planning development at their level. Alternatives for reducing congestion and competition for limited waterside access should be investigated to improve mobility and reduce safety and environmental concerns. In addition, improvements in terminal operating procedures could increase terminal efficiency and reduce peak-period congestion on highway and rail access routes.

Recommendations:

The Task Force recommends these actions:

- Encourage a concerted effort of the port interests along a coastal range, primarily terminal operators, to focus attention on these issues. Maritime terminal operators have antitrust immunity to meet and coordinate activities and service prices. A united position on these efficiency improvements would ensure that making such improvements would not significantly change the respective competitive positions of the ports. The proposed regional and local coordinating bodies can provide the forums to bring the ports, shippers, vessel operators, the landside transport modes, and governments together to address this issue.
- Encourage regional, State, and local planners to consider the benefits of an MTS that is an integral part of the local, State, and regional transportation system. This effort

should consider reducing congestion by developing a smart transportation system, and encourage effective facility placement. Planners should maximize the participation of the private sector in the decision-making process through a number of mechanisms including MPO boards and economic or environmental councils.

- Investigate the feasibility and effectiveness of a port-oriented, intermodal program of ITS projects for addressing MTS capacity issues, in coordination with longer range investment strategies focused on traditional capacity enhancements. A general consensus exists that coordinated electronic data interchange systems built around intermodal ITS technologies could relieve some of the throughput pressure in ports. ITS applications could coordinate arrival and departure times for trains and trucks to meet ship schedules and facilitate the regulatory and customs functions of port-based public agencies. DOT should lead this effort through demonstration projects at participating ports.
- Continue the implementation of the DOT strategic actions to address the safety issue of at-grade crossings.

National Cooperative MTS Research Program

The Nation's transportation system has realized significant productivity increases through a combination of technological innovation and deregulation; however, there continues to be a modal orientation to transportation research and technology development. Some MTS stakeholders believe that the water transportation component, especially the land/water connection, has not received the attention or research necessary to meet projected needs. Because virtually any movement of cargo or passengers on water involves an associated landside movement, research focused on port access and the water/land intermodal connections is critical.

Precedent exists to establish national cooperative transportation research programs, including the Transit Cooperative Research Program (TCRP); the Strategic Highway Research Program (SHRP); and the Environmental Cooperative Research Program in the recent TEA-21 legislation. These programs, together with the National Cooperative Highway Research Program (NCHRP), are administered by the National Research Council. They provide ample evidence of the significant payoffs of cooperative research programs, particularly in terms of leveraging scarce research dollars, obtaining and maintaining end-user support, and producing essential results.

Recommendation:

Establish a National Cooperative MTS Research Program to:

- Coordinate current and planned MTS-related research by government agencies, and educational institutions, and the private sector;
- Foster research to assess and address mobility, safety, environmental protection, and security issues related to the MTS; and
- Ensure, through research and technology development, that the MTS has adequate capability to accommodate the projected cargo and passenger traffic patterns.

Following the TCRP model, the ICMTS would provide the policy guidance and communications linkages with the MTS users and stakeholders. A subcommittee established under this committee would:

- Identify the research needs;
- Define the specific projects;
- Identify experts to serve on specific oversight panels; and
- Arrange for dissemination of the research results in cooperation with the relevant Federal agencies and the National Research Council.

Systemwide Traffic Forecasts

Planning and development of port infrastructure must be based on realistic forecasts of growth trends, along with the changing patterns of both inbound and outbound traffic. Underestimating the future requirements for infrastructure will lead to inadequacies, unacceptable service quality, and increased operating costs caused by congestion. As previously noted, congestion constrains regional mobility and detracts from the competitiveness of the port and the firms using the port. Conversely, overestimating the future requirements will lead to excess capacity and underutilization, which may offer acceptable service quality but yields low rates of return on the infrastructure investments. Both situations represent a potential negative impact on the local, regional, and national economies, as well as the mobility and competitiveness of the MTS at the national level.

Reliable national trade and fleet forecasts, jointly funded by all stakeholders, are necessary tools for all planners — national, regional and local. Admittedly, precise traffic forecasting is an uncertain art. Often the sum of a set of independently prepared local port traffic forecasts is far greater than could reasonably be expected for the U.S. as a whole. Further, forecasts should consider a systems perspective. A systematic approach, which is carefully reviewed and validated, can benefit local and regional MTS planning and operation.

Recommendation:

The Task Force recommends the formation of a planning information cooperative for the joint development of national and regional traffic forecasts for planners at all levels that:

- Incorporates alternative scenarios of U.S. and world market trends, energy sources, and internal U.S. demographic and economic regional shifts; and
- Involves periodic reviews by representatives of individual industries and ports, shippers, regional, and national interests to track actual performance, validate input assumptions, and update incorporating new information.

IMPROVING AWARENESS OF THE MTS

State, local, and private MTS stakeholders repeatedly urged the Task Force to make the public and key decision makers in government more aware of the significant contributions our waterways, ports, and their intermodal connections make to America's economy, national security, and environment. This message was clearly stated by the participants in the DOT-led Regional Listening Sessions and at the MTS National Conference.

Building awareness of the MTS starts with creating an understanding of the entire MTS. This facet was observed in the Regional Listening Sessions as participants gained an understanding and appreciation for other parts of the MTS that they themselves did not normally observe. Recreational

boaters who understand the demands of cargo vessels, and safety managers garnering greater knowledge of the environmental consequences of dredging, are a few such examples. Based on this broader understanding, participants were more willing to display some compromise and develop collective consensus-based recommendations to address the pressing issues within the system.

Recommendations:

State, local, and private sector MTS stakeholders should give priority to promoting the overall value of the MTS through their existing trade associations and other outreach efforts. These stakeholders are encouraged to coordinate their efforts and message. In conjunction with national MTS stakeholders, these groups should also:

- Promote the Nation's maritime heritage and the value of career development in the MTS through outreach designed to:
 - Attract, train, continuously develop, and retain highly skilled personnel for the MTS;
 - Promote pursuit of long-term careers in the diverse programs and opportunities afforded in the MTS; and
 - Broadcast messages seeking to fill existing and future personnel shortages in the MTS and the organizations that rely on it.
- Employ new technology and develop effective communication tools designed to share best practices, personnel training, and collective approaches among the maritime user community and across government agencies.
- Inform the public and MTS users of the fragile nature of the MTS environment and suggest proactive steps that all stakeholders can use to continue enhancement and protection of the MTS. Also, increase awareness of the benefits of waterborne transportation.
- Develop programs and outreach efforts to promote the responsibility of the boater, mariner, and maritime professionals to improve MTS environmental soundness.

INFORMATION MANAGEMENT AND INFRASTRUCTURE

The MTS supports international and domestic trade and recreation. The MTS encompasses a large and rich part of our natural environment and is a vital component of our national security system. The quality of the information systems within the MTS is a key determinant in the safety, security, environmental soundness, and mobility of the system. Current and future changes in the nature of the MTS combine to make Information Management and Infrastructure a principle area for strategic action to meet the desired state of the MTS in 2020. These changes in the nature of the MTS include the expansion of JIT cargoes; transportation of hazardous materials; increased number of vessels; their size and related maneuverability constraints; threats of terrorist activity; and increasing criminal activity (cargo theft and smuggling).

The collective public and private vision of the MTS includes a system where:

- Compliance with regulations and clearance processes is both universal and uncomplicated;
- There is timely access to pertinent navigation information;

- A full intelligence picture for incident response, emergency management, and security is available to responsible organizations; and
- Data flow promotes seamless intermodal transportation.

The principal characteristics that lead to these attributes are superior information management systems and infrastructure.

Coordinated information management systems will benefit both the waterways and port users. Focusing on helping U.S. ports and transportation and shipping industries to operate safely and without conflict will lead to improved efficiency by reducing disruption costs. This improves competitiveness, safety, security, and environmental protection. Reliable, accurate, and real-time information will provide a one-stop shopping feature to MTS users. It will also enhance the services provided by the government, which will translate to greater effectiveness while potentially lowering management and operational costs. These will be realized through the coordinated collection, packaging, and dissemination of current and planned information systems related to navigation, the environment, and MTS operations.

Likewise, there is a desire by all MTS users and stakeholders to minimize the burden of regulatory compliance and to work closely together to design compliance processes that achieve the desired results with least cost and disruption to the system. Interagency cooperation and coordination, as they relate to the development of their information systems, are key factors to achieving success.

Therefore, the recommendations presented in this section and those presented in the MTS Mobility and Competitiveness strategic area of action should be viewed holistically to achieve superior information management systems and information infrastructure for the MTS. The Task Force identified three strategic areas for action:

- Hydrographic and weather information;
- Tracking of cargo, passengers and vessels; and
- Waterways traffic management information.

Hydrographic and Weather Information

The greatest safety concern voiced at the Regional Listening Sessions and the November 1998 MTS National Conference related to the availability of timely, accurate, and reliable navigation information. Current shortfalls in the collection and dissemination of navigation information increase safety and environmental risks, as well as impede mobility.

Recommendations:

Providing timely hydrographic data is crucial to the future performance of the MTS and the safety of vessels, passengers, and the environment. It is recommended that:

- The proposed National Advisory Council develop detailed recommendations to establish an integrated base of navigation information systems in waterways and ports to provide real-time delivery and display of current and forecast oceanographic and meteorological conditions, positioning data, navigation aid information, and vessel traffic information. The USCG, NOAA, NIMA, and the USACE, which have primary responsibility for safe navigation and navigation information, respectively, must incorporate local stakeholders into the planning, design, and implementation of improved systems.

- NOAA, in conjunction with the USCG and USACE, should work in partnership with local and regional stakeholders to design, develop, and install appropriate PORTS technology. Identify potential private and public sources of funds for long-term maintenance and operations for this technology by identifying public funding and private investment opportunities.
- NOAA and USACE should explore: (1) expanding the ENC coverage to support MTS users; (2) incorporating the latest hydrographic and shoreline survey information; and (3) enhancing the ENC with high-resolution depth information and very-large-scale source data, such as docking charts. Additionally, nautical charting agencies should support the use of very accurate positioning technology to acquire data on waterways facilities for large-scale charts to allow ships to navigate safely using electronic charts.
- NOAA should accelerate the current timetable of approximately 15 to 20 years to reduce the current survey backlog.⁽²⁴⁾ The backlog prevents NOAA from making progress on surveys and charts for the rest of the exclusive economic zone (EEZ).
- NOAA periodically review and refine its ranking of critical areas to ensure that priority areas are identified in order to provide mariners with timely, accurate, and reliable hydrographic information. Ranking should be through regular communication with user communities to ensure that the most critical areas are surveyed.
- NOAA and USACE incorporate state-of-the-art technology into hydrographic surveying to improve the accuracy and efficiency of data collection (such as GPS), remote-sensing technology, and multibeam and sidescan sonar equipped with DGPS. Full deployment of advanced technologies will promote safe navigation and influence decisions about dredging and habitat restoration — the latter by providing detailed information about sediment quantities and characteristics.

Tracking Cargo, Passengers, and Vessels

Pertinent information is needed to facilitate the efforts associated with incident response, emergency management, and with security activities to detect, intercept, and prevent terrorism and criminal activity. Current information about cargo, passengers, and vessels movement through all sectors of the MTS is not integrated or real-time, and existing information is not always available to responsible organizations. The ability to more effectively monitor cargo, passengers, and vessels would support the vision of MTS safety, security, and environmental soundness.

Recommendations:

The recommendations are to provide the total intelligence operational picture for safety and security activities and to develop a tool for resource allocation by safety and security agencies. These Task Force recommendations should be considered concurrently with the recommendations detailed in the Vessel Clearance Information Exchange, One-Stop Shopping, and Landside Access to Ports sections addressed under the Mobility and Competitiveness strategic action area.

There are legitimate concerns with regard to these recommendations about the protection of civil liberties and proprietary information received from private sector activities. Implementation of these recommendations should be accomplished with full private sector input and participation so that a win-win consensus can be the foundation for improving the competitiveness, safety, environmental soundness, and security of our MTS.

- MARAD, USCG, and the Customs Service should work with the maritime community and other government entities, including INS, DOD, DOE, EPA, NOAA and USDA, to explore the use of tagging and tracking systems to improve the efficiency and productivity of their operations for security, incident response (especially for hazardous materials), and customs activity. This should include developing an international standard for tagging the world container fleet, as well as a defense-related project to manage military cargo in support of deployment of U.S. armed forces. Some of the issues that must be addressed include standardizing technologies, data flows, and procedures. This recommendation should build on identified initiatives from the 1998 Intermodal Freight Identification Technology Workshop. This includes the ongoing effort by the Intermodal Working Group to optimize information exchange.
- Private sector organizations involved in the transfer of cargo to and from the water mode or to and from trucks should evaluate the use of identification and validation systems to process drivers through a gate to a container yard or secured area. Tags or similar cards can be used to verify a driver's identification via biometrics or other applications to gain access to the terminal yard. This type of system can be integrated with closed-circuit television systems to provide enhanced verification for access to and control of cargo. This would improve the mobility of the MTS by reducing congestion and delays while improving security from cargo theft and terrorism threats. Development of an industry-wide standard would improve efficiency and is recommended. This activity should be designed to ensure broad private sector participation and any public stakeholder involvement needed.
- While incident response, security concerns, and traffic management require information on individual movements of cargo, passengers, and vessels, the trade forecasts and network analysis recommended earlier in this report require data aggregated over time and geography on both overseas and domestic transportation of international trade. The statistical organizations of Federal transportation agencies should be given access to the relevant U.S. Census Bureau detailed files to reconcile, aggregate, and publish the required data with appropriate confidentiality protections.

Waterways Traffic Management Information

With projected increases in waterway traffic, both commercial and recreational, congestion will continue to be a major concern in navigating the Nation's ports and waterways. Future needs may not align with current practices and the technology being applied today. Current vessel traffic management, for the most part, has not been fully integrated into the overall operations of the port. Additionally, ship-to-ship and ship-to-shore voice communication is becoming increasingly difficult in the more urban areas because of frequency interference and congestion.

Recommendations:

Navigation safety depends on ensuring that traffic controls and navigation assistance are adequate to provide order and predictability into traffic flows while simultaneously maximizing system capacity for safe vessel movement. In addition to establishing appropriate controls, navigation safety depends on ensuring mariners have access to timely and accurate information on all matters pertaining to the waterway, the activity within the waterway, and the vessels, cargo, and crews of vessels transiting the waterways. Under its Port and Waterways Safety Assessment (PAWSA) projects and its Waterways Management Programs, it recommended that the USCG:

- Conduct port-specific assessments to determine the appropriate traffic management regime and related information needs in each port. The port assessment should be conducted with the participation of all local port users and sources of relevant traffic management information.
- Determine the cost-effectiveness of alternative technologies for collecting and disseminating the needed information to users, while protecting proprietary rights of information sources.
- In collaboration with port stakeholders, investigate potential solutions to the voice communications problems. Consult with the Federal Communications Commission (FCC) on matters related to radio frequency.
- Continue to explore voiceless modes of communication and transfer of needed navigation, traffic management, and other safety-related information (e.g., automatic identification systems and DGPS).
- Explore the need and cost-effectiveness of alternative structures for vessel traffic management in each port, for normal operations and for crisis management.
- Continue to recommend upgraded information systems, with stakeholder participation.
- Continue to implement appropriate traffic management measures such as Traffic Separation Schemes, Regulated Navigation Areas, anchorage establishment and management, and vessel movement coordination mechanisms.
- Develop a plan for fostering and supporting navigation safety-related information systems that conform to a national standard. Work to make this standard compatible for international users of the MTS.
- Develop and implement an objective method of benchmarking the current waterway traffic management performance of each port/waterway and periodic measurement of progress.
- Explore linking waterways traffic management information with landside intelligent transportation systems.

SECURITY

Security issues pertaining to the marine transportation system include the need to support national security programs; keep the flow of traffic moving; and safeguard the Nation's waterways, ports, facilities, vessels, individuals, and property in the vicinity of the port from accidental or intentional damage, destruction, loss, or injury. Key concerns of MTS security relate to the growing threat of organized crime (cargo theft and smuggling), terrorism threats, and the dependence on the MTS to meet U.S. military deployment requirements.

Both the public and private sectors should be mindful of the availability, adequacy, and security of the MTS to support national security and economic security mobility requirements. In addition to illegal activity, national, personal, and economic security efforts require quick and efficient response to disruptions caused by natural disasters and man-made events. The rising demands for efficient and uninterrupted commercial operations to service growth in international commerce must be balanced with our need to invoke safeguards and inspections to protect against the array of security threats. Agencies of the Departments of Transportation and Treasury participate as Task Force members and serve as Co-chairs with the Department of Justice on the President's recently established Commission on Crime and Seaport Security. As such, the critical issues raised by Task Force members related to cargo and other seaport crime, smuggling, and terrorism will be considered by the Presidential Commission. The Task Force identified five strategic areas for action related to MTS security:

- Improve security awareness;
- Improve transparency;
- Ensure qualified operators;
- Forge stronger public/private partnerships; and
- Strengthen international cooperation.

Improve Security Awareness

Much of the investment in security infrastructure and protection of port facilities is the responsibility of State or private sector port facility managers. Current policies prevent sharing intelligence information related to security threats and vulnerabilities with these entities. Appropriate mechanisms, similar to those of MARAD and USCG, for sharing information with ship operators need to be identified for port operators. These mechanisms could allow for the timely sharing of threat and vulnerability information with State and local law enforcement agencies, as well as appropriate nongovernmental entities, without compromising methods and sources, and while reinforcing two-way communication.

Recommendations:

The Presidential Commission will consider the following Task Force recommendations for improving security awareness:

- Support the Presidential Interagency Commission on Crime and Security in U.S. Seaports to heighten national awareness for the need for collective action and to develop a coordinated interagency approach to MTS ports and waterways security.
- Develop national exercises that measure U.S. ability to prevent and respond to terrorist

attacks; include scenarios where attacks are directed at military mobilization or critical infrastructure within U.S. ports and waterways. DOT, DOD, and the Federal Bureau of Investigation (FBI) should assume responsibility for this recommendation and coordinate with other agencies and public and private sector stakeholders.

Identify Vulnerabilities and Improve Transparency

As governments remove barriers to trade and travel, greater knowledge of the cross-border flows of people and goods in the maritime sector is required to discover criminal and terrorist activity. With a growth in congestion and activity within the MTS there is increased opportunity for those with ill intent to hide in the shadows and go undetected. Most governments and non-State actors will avoid force-on-force confrontation with U.S. military. However, they may attempt to target the MTS to disrupt commercial carriers serving to mobilize military cargo and assets or attack U.S. critical infrastructure. There is a lack of sophisticated communications systems and integrated intelligence systems to support real-time monitoring of vessels, people, and cargo movements within MTS. As such, MTS remains vulnerable to criminal and terrorist activities, and both the efficiency and effectiveness of law enforcement actions are limited. Current law enforcement and security actions will often result in increased disruption and delay costs.

Recommendations:

The Presidential Commission will consider the following Task Force recommendations for improving transparency:

- Conduct baseline and periodic reviews of the strategic ports and waterways of the National Port Readiness Network to identify vulnerabilities and determine the readiness of public and private resources to meet military mobilization requirements.
- Conduct readiness exercises that test the ability to support continued waterside security and uninterrupted military mobilization operations while responding to:
 - (1) Terrorist threats and acts and
 - (2) Nontraditional asymmetrical attacks on the MTS.
- Develop and integrate real-time intelligent systems for tracking cargo, personnel, and vessel operations throughout the MTS. This recommendation and considerations with regard to its execution were previously described in the Information Management and Infrastructure section.

In addition, the Task Force made the following recommendation, which falls outside the Presidential Commission's purview, to improve transparency:

- Develop real-time, dynamic modeling of MTS disruptions — cargo congestion, man-made or natural disasters, terrorist activity, etc. DOT and DOD should partner to conduct this action. This recommendation could be facilitated through the proposed MTS National Advisory Council and/or the National MTS Research Program.

Ensure Qualified Operators

As the U.S. relies more on commercial transportation activities to support national security objectives during contingencies, there is vital need to attract and retain a qualified MTS personnel work force. This work force is needed to support all levels of U.S. military mobilization requirements including ship crews, shipyard support for government surge activations, and cargo loading personnel.

Recommendation:

The Task Force made the following recommendation which also falls outside the Presidential Commission's purview to ensure qualified operators:

- Evaluate existing programs or encourage new programs, where needed, to provide qualified, well-trained personnel to operate ships, towboats, and barges, ports, terminals, ship-repair facilities, waterways, and intermodal connectors now and in the future. A well-trained peacetime work force is necessary to support the MTS infrastructure and operations that are called upon in times of military operations and deployment. DOT and associated labor and modal organizations should create a partnership to address this issue and develop a detailed plan of action to attract, train and employ a skilled MTS work force. Such a skilled workforce would support safety and environmental goals.

Forge Stronger Public/Private Partnerships

Stronger interagency and public/private sector partnerships are needed to support national defense and port security, military mobilization planning, and port training exercises. The U.S. must be able to detect, intercept, and respond to threats to the MTS as far offshore as possible. The U.S. must be able to implement the collective public and private efforts required to sustain the Nation's capacity for uninterrupted rapid deployment of U.S. forces. This includes assurance of the shipbuilding and repair infrastructure needed to maintain the U.S. fleet of combatant and commercial vessels needed. Contingency planning must be an ongoing process involving responsible Federal agencies, the private sector, State, and local law enforcement and emergency service providers.

Recommendations:

The Presidential Commission will consider the following Task Force recommendations in this strategic area:

- Advocate and oversee integration of public/private sector national security strategy, policy, and goals to support DOD mobility plans. It is recommended that DOD be designated as this advocate and work with DOT and the Department of Justice.
- Develop public/private sector MTS partnerships to establish security guidelines for onshore facilities, offshore facilities, and vessels and implement incentive-based mechanisms to address MTS security vulnerabilities. The ICMTS and regional and local coordinating bodies should be engaged on this issue. Participants should include USCG, DOD, MARAD, the Customs Service, private sector organizations, State and local authorities, and labor organizations.
- Develop public/private sector partnerships to support sustained and uninterrupted

rapid deployment of U.S. forces. For example, DOT and DOD — in partnership with commercial ship owners, U.S. shipyards, port authorities, and terminal operators — should develop an executable plan to recapitalize and expand the commercial and DOD auxiliary fleets and strategic ports necessary to meet and support national mobility requirements.

Strengthen International Cooperation

The origin of much of the cargo that moves through the MTS lies well beyond America's borders. More effective international cooperation to establish and police security standards at overseas ports that serve as a primary entry point in the system for U.S.-bound cargoes and people will reduce the risk that contraband or terrorists will find their way into the U.S.

Recommendations:

The Task Force recommendations to strengthen international cooperation are to:

- Develop a strategy and process for advancing U.S. operating guidelines and minimum security standards on an international basis; and
- Provide intelligence and training to improve international oversight of the global maritime infrastructure.

This should be incorporated into several ongoing interagency and public/private sector efforts such as The Interdiction Committee, the Customs Service Carrier Initiative Program, Americas Counter Smuggling Initiative, and the Business Anti-Smuggling Coalition.

SAFETY AND ENVIRONMENTAL PROTECTION

Two primary goals of the MTS are to ensure the safety of people and property and protect the environment. These areas are of paramount importance to all MTS users and stakeholders. Safety and environmental protection issues, as previously discussed, include ship channel configuration, port and terminal development and operations, interaction of vessel traffic including ice navigation, terminal operations and cargo handling, pollution sources, nonindigenous species invasions, and recreational boating.

Many factors influence the risk of accidents (with their associated consequences of fatalities, injuries, property losses, and traffic disruptions) as well as the risk of environmental degradation. The Regional Listening Sessions and the November 1998 National MTS Conference identified a long list of these issues and recommended a number of actions to improve MTS safety and environmental protection.

The breadth and depth of safety and environmental issues requires a systematic approach, as well as specific actions, to achieve the desired MTS in 2020. This recommendation is focused on development and application of structured analyses of MTS safety and environmental impacts. This will facilitate appropriate evaluation of the scope and impact of the perceived deficiencies as well as proposed remedies.

The specific areas of action presented here focus on the critical issues of safety and the environment, which are current challenges that will become increasingly important with the projected increase in MTS traffic. These areas, which represent a consensus of what the Task Force considered to be the most important issues, include:

- Ship-terminal interface;
- Vessel operation and the human element;
- Shore reception facilities;
- Nonindigenous species; and
- Dredging and channel design.

Systematic Approach to MTS Safety and Environmental Protection

The Task Force recommends a systematic approach for identifying and addressing safety and environmental protection risks. While such an approach should be conducted to the lowest appropriate level of the MTS, it requires active participation by both private sector and public sector stakeholders. Managers, operators, and users of the waterways, port facilities, the landside transportation system, environmental interests and the public are all stakeholders who must be involved via local committees or planning groups.

One example of a systematic approach that is used internationally — and that may provide a broad framework to recognize safety and environmental responsibilities and clearly define the various MTS stakeholders interests — is an integrated Safety, Quality and Environment (SQE) Management System.

A systematic approach is recommended that links MTS with protection of watershed and airshed. Because the MTS is downstream of homes, industries, farms, communities, and rivers, the health of the MTS environment is inextricably linked to the health of the entire ecosystem. Identifying and reducing sources of pollution in upstream watersheds will help maintain and improve the health of the MTS environment. Cooperative efforts and partnerships that address environmental concerns are an increasingly effective trend at all levels of government. It is important to note that there are significant challenges to reducing point and nonpoint source pollution that enters the waterways from non-MTS-related activities. MTS users are becoming more active in the local/regional watershed planning and management process, and incentives should be developed to encourage and expand these efforts.

Local area or watershed application of these assessment practices provides stakeholders with the information they need for better local planning and development. Communication of best management practices between system stakeholders should be encouraged.

A Safety and Environment Management System can become a point of reference for planning and decision making. For example, MTS stakeholders can use risk assessment driven analysis to:

1. Identify how inherent hazards associated with MTS operations/facilities potentially affect safety and the environment;
2. Produce risk profiles for MTS operations/facilities;
3. Characterize the risk of the potential safety and environmental impacts;
4. Assess the measures to effectively manage the identified risks;
5. Develop recommendations for preventing and reducing safety and environment-related risks; and

6. Propose issues of potential national significance that regional or national forums should address.

This approach will also help to identify common regional- and national-level risks and best management practices.

Establishing a systematic approach would provide a viable political environment for dealing with both national strategic issues and specific local tactical issues that may constrain development of improved safety and environmental protection in marine transportation. In some cases, this systematic approach may be easily achieved by extending or enhancing existing programs, or by linking complimentary efforts currently conducted in selected areas or by different organizations.

In many cases, these effects could take advantage of existing local committees, such as the local Harbor Safety Committees (HSCs). Where HSCs are used, their scope and membership must be expanded to incorporate the broader mission.

Specific Strategic Areas of Action

In the interim period required to develop and implement the recommended systematic approach to safety and environmental protection, several actions should be initiated. As previously discussed, the Task Force has developed recommendations in five areas: Ship-Terminal Interface; Vessel Operation and the Human Element; Vessel Discharges and Shore Reception Facilities; Nonindigenous Species; and Dredging and Channel Design.

Ship-Terminal Interface and Port Development and Terminal Operations: There are safety and environmental risks posed by some marine terminals for both liquid and dry cargo. Risk factors include terminals that are too small for the ships served, poorly located, have inadequately trained ship-based and shore-based manning, operate under inadequate procedures, have inadequate or poorly maintained cargo handling equipment, or a combination of these factors. The USCG already has the authority to enforce existing regulations, and the oil and hazardous liquid cargo shipping and terminal industries have comprehensive design, equipment, and procedural codes covering mooring, cargo transfer, safety, fire fighting, and training at the ship-terminal interface. Port and terminal operations pose potential multiple media environmental risks, such as from storm water runoff, port expansion, vessel support activities, cargo handling, chemical storage and handling, motor carrier and rail activities, and public access and recreation.

Recommendation:

It is recommended that marine terminal and vessel operators, in cooperation with the USCG, MARAD, and port authorities, initiate assessments, where needed, including:

- Safety and environmental protection systems;
- Operational procedure codes and personnel training and safety inspections;
- Accident and fire drills;
- Prioritized action lists of recommended upgrades and improvements; and
- Public and private responsibilities for actions to improve safety and environmental protection.
- Ports should continue to work closely as environmental stewards with Federal, State,

and local governments, as well as other stakeholders, to conduct operations and development in an environmentally responsible manner.

Local harbor safety committees or similar local stakeholder groups should lead this recommended action, with input from all involved stakeholders. The USCG should act as the coordinator of Federal input to these ship-terminal interface assessments. Recommendations for improvements should be forwarded through the proposed MTS National Advisory Council to facilitate lessons learned and best practices, as well as to identify the need for any regional and national level coordination.

Vessel Operation and the Human Element: Marine transportation is a complex and difficult process that introduces risk to personnel, property, and the environment. One of the key areas requiring attention is managing the human element in MTS operations. Specifically, working in the area of vessel navigation, recreational boating, and accidental discharges promise the greatest risk reduction return on investment. Marine pilots and USCG personnel represent the initial points of contact when a vessel approaches a port, and their communications and interaction with vessel officers and crew constitute a critical element in the safety and environmental protection system. Addressing the human element in cargo transfers and vessel operation will assist in reducing accidental discharges of harmful substances into the environment.

Recommendations:

The Task Force recommends that:

- Ship operators and marine pilots continue their current partnership efforts on pilot/master exchange.
- The USCG maintain active dialogue with, and participate in seeking ways to improve the safe navigation of vessels, including all pilot organizations, commercial and recreational users of the waterways, and port facilities using such organizations as HSCs.
- HSCs, pilotage organizations, and the USCG develop, in cooperation with tug/barge and ferry operators, Transit Advisories for each local area and publish these in *Notice to Mariners*.
- HSCs and the USCG encourage waterway users who are not subject to the ISM Codes to adopt appropriate quality assurance measures comparable to ISO 9000/9002.
- HSCs, pilot organizations, ship owners and operators, seafaring organizations, and the USCG foster training programs for all waterway users to raise the level of competence consistent with the traffic in each port and the availability of new navigation and communication technologies and to increase the awareness of environmentally protective requirements and practices.
- HSCs, local commercial and recreational users, and the USCG should investigate ways to reduce the safety risks associated with mixed waterway use. This might include such actions as developing local regulated navigation areas, traffic separation schemes, and prohibited zones.
- Private sector organizations that are involved in modal operations develop outreach programs, in partnership with the USCG, that focus on the human element to help

reduce accidental vessel discharges during cargo transfers and operations — including those from commercial fishing and recreational vessels. Explore methods of extending this approach to foreign flag vessels.

- States and recreational boating organizations should develop mandatory boating safety training and education.

Vessel Discharges and Shore Reception Facilities: Almost all ships generate oily water mixtures from normal engine room and bunkering operations, cargo residues, sewage, and solid waste such as refuse. Tank washing and ballasting procedures of petroleum and chemical tankers can generate relatively large volumes of contaminated mixtures in certain trades. Untreated sewage discharges can cause human health risks by contaminating shellfish and shoreline.

A vessel can legally deal with these pollutants by using either shipboard techniques or by transferring wastes to a Shore Reception Facility (SRF). New shipboard techniques for environmentally sound handling of shipborne-generated wastes have moderated demand for SRFs; however, a need for SRFs still exists. The United States has fulfilled its obligations under the 1973 International Convention for the Prevention of Pollution from Ships to provide SRFs for wastes of ocean-going vessels, but there are no regulations governing the quality, pricing, or customer service aspects of these reception facilities.

Recommendations:

The Task Force recommends that the ports, in partnership with the shipping industries, the terminal operators, and Federal agencies, when needed:

- Evaluate their current and projected needs for oily and chemical waste discharge, cargo residues, sewage, and solid waste, and assess the current capacity of existing SRFs; and
- Implement a plan to upgrade facilities to accommodate the projected demand.
- In addition, the Task Force recommends that the USCG conduct research and employ technology to reduce pollution, vessel discharges, and air emissions. Actions addressing SRFs should be coordinated through local committees and the ICMTS.

Nonindigenous Species: The introduction and spread of exotic or nonindigenous species into an area continues to cause adverse economic, ecological, and human health impacts. This occurs when nonnative species become established in their new environments, and upset the native ecological balances. This often greatly reduces the biodiversity of their new habitats. The movement of these species to and throughout the U.S. occurs in ballast water, cargo, and on vessel hull surfaces.

Recommendations:

The Task Force recommends that:

- Federal agencies continue to use their statutory authorities, as well as working through the Aquatic Nuisance Species Task Force (ANSTF) and Invasive Species Council, to minimize the introduction and spread of invasive species. Coordination among Federal agencies is needed. The DOT should take a leadership role in the transportation-related issues.

- USCG maintain its leadership role in the ballast water management area with the Voluntary National Guidelines program (mandated by the National Invasive Species Act of 1996).
- Federal agencies work with State governments, academic institutions, and the maritime industries to conduct ballast water management research and develop management technologies.
- The Ballast Water and Shipping Committee of the ANSTF develop a protocol for testing and approving alternative technologies for ballast water management.
- The U.S. delegation to the IMO, with MTS stakeholder cooperation, foster development of a legally binding international instrument for ballast water management. Any instrument should be reconciled with the diverse range of Federal and State requirements.
- The U.S. should work through international standard organizations and societies to foster the development of industry standards related to ballast water management and technology.

MTS users and stakeholders can become involved in carrying out these recommendations through participation in the proposed MTS National Advisory Council.

Dredging and Channel Design: Channel design and dredging, as previously discussed, is a complex undertaking that affects the national MTS goals involving safety, environment, and mobility. Channel dredging costs and environmental impacts, including the capacity to dispose of dredged material in an environmentally responsible manner, are significant concerns to MTS stakeholders.

Appropriate future dredging decisions require holistic planning with broad stakeholder input early in the process. Comprehensive channel design efforts must incorporate the best available information on present and future ships' dimensional characteristics and hydrodynamic and maneuvering characteristics. It is imperative that channel design account for the dynamic effects and response of ships as well as the hydrology and the geography of the area and the prevailing wind and weather conditions. Dredged material management should be considered in the context of overall sediment management within the watershed.

Rather than recommending a single solution, the Task Force endorses applying a systematic approach and maintaining continuity with previous work in this area. Stakeholders are looking to the Federal government for leadership in building consensus and ensuring economic competitiveness and environmental protection.

Recommendations:

The Task Force recommends the following actions:

- Continue to implement short-term recommendations from the December 1994 report, *The Dredging Process in the United States: An Action Plan for Improvement*. Agencies and stakeholders should encourage increased activity by the NDT and by RDTs. RDTs should be created where they do not currently exist. The MTS National Advisory Council should also provide recommendations to the NDT. Among the actions that the NDT should implement fully are:

- Assist the RDTs to implement dredged material management planning guidance;
 - Promote the use of scientifically sound dredged material evaluation tools;
 - Continue to develop public outreach and education programs to facilitate stakeholder understanding and involvement;
 - Promote the beneficial use of dredged material;
 - Assist RDTs to identify and resolve issues with local stakeholders on dredged material management related issues; and
 - Pursue clarification of the roles and coordination mechanisms among the USACE, EPA and other Federal stakeholders.
- Apply hydrodynamic and maneuvering criteria to new channels and some existing channels and vessels to determine acceptable ship sizes and no-passing and no-meeting zones. Analyze the trade-off between vessel and channel criterion with the participation of all stakeholders. Current and projected vessel characteristics and handling capabilities must be balanced against channel design constraints inherent in the proposed ports of call of each vessel type. Nonconforming vessels may require tug escorts, access restrictions, or traffic control, and other elements. The USACE, in partnership with the USCG, should lead this effort to work with local stakeholders through HSCs.
 - The USACE should complete the National Dredging Needs Study of Ports and Harbors to assess the needs of the national system of ports, harbors, and waterways of the United States. This study is necessary for the development of long-term planning, requirements, and investment strategies.
 - Conduct research on improved navigation system efficiency and safety. Prepare and publish guidance on design of waterway approach channels, including channel width and depth for mixed deep and shallow-draft vessel traffic; guidance for addressing waterway use and allocation conflicts; ice mitigation measures for navigable rivers; and guidance for control of icing at locks and dams. The USACE, in partnership with the USCG, should lead this effort to work with local stakeholders through HSCs, in consultation with pilots, operators, and naval architects who can contribute vessel-maneuvering expertise.
 - Conduct research on effective sediment management, including the effects of bendway weirs on navigation, numerical model evaluation of riverine training structures, and multidimensional hydraulic and sedimentation modeling. Conduct research into improved dredging techniques to reduce current concerns such as release of bottom contaminants. The USACE, EPA, and MARAD should lead this effort.
 - Incorporate into all channel development projects provisions for protection and/or improvement of permanent and seasonal wetlands and other aquatic habitats. The USACE and EPA should lead this effort.
 - Shift the focus from dredging and disposal to overall sediment management, which includes the need for holistic watershed and local/regional planning efforts.

- Under the auspices of the NDT, and to ensure an adequate ability to dispose of dredged material in an environmentally responsible manner:
 - Increase education of, and outreach to, system stakeholders, government agencies, the public, and policy decision makers on the nature of dredged material and beneficial uses. MARAD and USACE should partner and lead this effort.
 - Address questions regarding benefits and costs of dredging activities, such as material disposal and beneficial uses. See the earlier recommendation of an assessment of MTS needs and dialog on mechanisms to meet those needs. USACE and MARAD should partner and lead this effort.
 - Review existing processes for dredging planning and execution, and disposal of dredged material to encourage and guide agencies and stakeholders in using a watershed approach in these activities. Ecosystem considerations are most often larger in scope than individual dredging projects. Integrate dredged material management planning into local/regional watershed planning. EPA, USACE, and MARAD should partner and lead this effort.
 - Encourage innovative approaches to designing and financing beneficial uses and sediment management. EPA, USACE, and MARAD should partner and lead this effort.