

Chapter 7: Marine Transportation, Navigation, and Infrastructure

Table of Contents

List of Figures.....	3
List of Tables	4
700 Introduction.....	5
710 History of Marine Transportation in the Ocean SAMP Area	7
720 Navigation Features in the Ocean SAMP Area.....	11
720.1 Area Overview.....	11
720.2 Shipping Lanes, Traffic Separation Schemes, and Precautionary Areas.....	13
720.3 Recommended Vessel Routes.....	14
720.4 Ferry Routes	14
720.5 Pilot Boarding Areas.....	14
720.6 Anchorages	15
720.7 Navy Restricted Areas	15
720.8 Right Whale Seasonal Management Area	18
730 Marine Transportation in the Ocean SAMP Area	20
730.1 Shipping Activity.....	20
730.2 Cargo Vessels.....	29
730.3 Passenger Ferries	31
730.4 Cruise Ships.....	35
730.5 Naval Vessels	36
730.6 Other Government/Enforcement Vessels	38
730.7 Other Vessels	38
740 Ports and Harbors Adjacent to the Ocean SAMP Area.....	40
740.1 Providence	40
740.2 Quonset/Davisville.....	41
740.3 Fall River	43
740.4 Newport.....	44
740.5 Point Judith	44
740.6 Block Island	45
750 Other Infrastructure in the Ocean SAMP Area	46
750.1 Disposal Sites	46
750.2 Unexploded Ordnance	46
750.3 Underwater Cables	46

760 Economic Impact of Marine Transportation and Navigational Uses within the Ocean SAMP Area.....	49
770 Policies and Standards.....	52
770.1 General Policies.....	52
770.2 Regulatory Standards.....	53
780 Literature Cited	55

List of Figures

Figure 7.1. Select navigation features	12
Figure 7.2. Naval operating areas	17
Figure 7.3. Right whale seasonal management area	19
Figure 7.4. Annual cargo volume processed by Narragansett Bay ports, 1997-2007	23
Figure 7.5. Total number of vessel transits and volume of cargo processed in Providence	24
Figure 7.6. Commercial ship traffic based on AIS data.....	27
Figure 7.7. Commercial ship traffic and navigation areas	28
Figure 7.8. Ferry routes.....	33
Figure 7.9. Underwater cables, unexploded ordnance, and dredge disposal site.....	48

List of Tables

Table 7.1. Vessel transits in and out of Narragansett Bay using federally maintained navigation channels in 2007.....	21
Table 7.2. Volume of cargo transported in 2007	22
Table 7.3. Annual cargo volume processed by Narragansett Bay ports between 1997 and 2007.....	23
Table 7.4. Number and type of barges entering Narragansett Bay in 2007	30
Table 7.5. Ferries operating within the Ocean SAMP area	34
Table 7.6. Passengers carried between 2003 and 2005 aboard ferries operating within the Ocean SAMP area.....	35
Table 7.7. Port of Davisville monthly car carrier visits and vehicle units imported, July 2007 through June 2009.....	42
Table 7.8. Economic impact of the Port of Providence in Fiscal Year 2008.....	50
Table 7.9. Economic impact of the Port of Davisville in 2007.....	50
Table 7.10. Economic impact of the Naval Undersea Warfare Center Division Newport, 2007-2008	51

Section 700. Introduction

1. The Ocean SAMP area is an important and highly valuable marine transportation corridor. The Ocean SAMP area represents a crossroads between multiple heavily used waterways: Narragansett Bay, Long Island Sound, Buzzards Bay, and Vineyard Sound. Vessels pass through the Ocean SAMP area when passing between these waterways en route to commercial ports, harbors, and other facilities. These vessels include cargo ships, such as tankers, bulk carriers, and tug and barge units, passenger ferries, naval vessels, government research, enforcement, and search and rescue vessels, and pilot boats. They carry goods, move people, or provide other functions that are essential to Rhode Island, neighboring states, and the entire nation. The Ocean SAMP area is part of the nation's marine transportation system, which is the network of all navigable waterways, vessels, operators, ports, and intermodal landside connections facilitating the marine transport of people and goods in the United States (Marine Transportation System National Advisory Council, 2009). One of the main goals of the Ocean SAMP is to promote and enhance these and other existing uses. Proposed future uses related to marine transportation and other topics are addressed in Chapter 9, Other Future Uses.
2. This chapter focuses on the commercial, military, government, and support vessels and infrastructure that comprise the Ocean SAMP-area elements of the nation's marine transportation system. Other vessels that operate in the Ocean SAMP area and utilize this infrastructure include fishing and recreational craft. Fishing vessels and activities are discussed in Chapter 5, Commercial and Recreational Fisheries. Recreational vessels and activities are discussed in Chapter 6, Recreation and Tourism.
3. Marine transportation in and through the Ocean SAMP area is supported by a network of navigation features including shipping lanes, traffic separation schemes, navigational aids, and other features that facilitate safe navigation. Marine transportation in the Ocean SAMP area also relies on adjacent land-based infrastructure, such as cargo-handling facilities and storage areas in nearby ports. Marine transportation activity in the Ocean SAMP area is shaped by activity at these facilities, in ports such as Providence and Quonset/Davisville, R.I, and Fall River, Mass. Together, these navigation features and port infrastructure provide for the safe passage and operations of a wide range of vessels that provide Rhode Island with essential goods and services.
4. The Ocean SAMP area also includes other infrastructure that does not support navigation. This infrastructure includes existing undersea cables, unexploded ordnance, and other marine debris noted on National Oceanic and Atmospheric Administration (NOAA) nautical charts, as well as designated dredged material disposal sites.
5. As is illustrated by the Ocean SAMP boundary (see Chapter 1, Introduction), the Ocean SAMP document and policies are focused on the offshore environment, not

adjacent upland areas. This offshore focus is due to the fact that the CRMC already has a regulatory program, including a zoning program, in place for coastal lands and waters out to the 3-nautical mile boundary. Accordingly, this chapter focuses on marine transportation activities and infrastructure in the offshore environment, outside of Narragansett Bay. Discussion of upland areas is focused on the Narragansett Bay ports that make these uses possible, as well as the economic impact of these uses on these ports and the state of Rhode Island.

Section 710. History of Marine Transportation in the Ocean SAMP Area

1. Rhode Island's offshore waters have been used for maritime commerce, exploration, transportation, and military purposes for over 400 years. While none of Rhode Island's cargo ports or naval facilities are within the Ocean SAMP area, cargo ships, support vessels, and military craft traverse the Ocean SAMP area en route to the Rhode Island ports of Providence, Quonset/Davisville, and Newport in Narragansett Bay, and the Massachusetts port of Fall River (which includes Fall River and Somerset) in Mount Hope Bay. Maritime commerce in Rhode Island largely began in the 17th century. Rhode Island-based naval activities have also been taking place since the 17th century, but grew to prominence in the late 19th and 20th centuries. Together, these activities have been essential to Rhode Island's economic growth and vitality, and are central to Rhode Island's history.
2. Much of the maritime activity in the Ocean SAMP area was, and still is, fishing. Prior to European contact, Wampanoag and Narragansett Indians fished from shore as well as from dugout canoes, primarily in coastal waters (Hale 1998). See Chapter 4, Cultural and Historical Resources, for further discussion of the Wampanoag and Narragansett Indian tribes' histories. Early Rhode Islanders observed right whales from shore, and rowed out in longboats to hunt and capture them (Albion et al 1970). While whaling never became a major industry in Rhode Island, commercial fishing dates back to the 17th century (Hall-Arber et al. 2001) and has been a viable industry since then, characterized by a diversity of target species and gear types. For a detailed history of fishing activities in the Ocean SAMP area and adjacent ports, see Chapter 5, Commercial and Recreational Fisheries.
3. Before maritime trade came to dominate offshore waters, early European explorers navigated through the Ocean SAMP area, laying the groundwork for future colonization and commerce. In 1524, Italian explorer Giovanni da Verrazano explored Block Island Sound before venturing into Narragansett Bay, and in 1614 Dutch explorer Adriaen Block followed a similar route—and named the offshore island for himself (Albion et al 1970).
4. Rhode Island's maritime commerce first developed in the 17th century while the state was still an English colony. Newport, with its large, deep, well-protected natural harbor, was the center of this early maritime activity. Newport first engaged in trading agricultural goods with the nearby ports of Salem, Boston, and New Amsterdam (later New York). As a result, by the late 17th century Rhode Island had achieved a favorable balance of trade—unlike neighboring colonies, which imported more than they exported (Kellner and Lemons 2004). In the early 18th century, Newport trading ships ventured through what is now the Ocean SAMP area into the Caribbean, trading with Spanish, French, and Dutch colonies, and later began trading with Africa and England. Some of this commerce was based in privateering, in which Rhode Island ships attacked enemy merchant ships during wartime (such as the French-Indian War, 1754–1763) and seized their cargos (Kellner and Lemons 2004).

5. Whereas 17th century trade had focused on agricultural goods, 18th century trade thrived on the re-export business—exporting products that had been made in Rhode Island using goods that had been imported from other locations. Key products were candles made of spermaceti (a wax-like substance found in sperm whales’ heads) that came from New Bedford and Nantucket, twine and cordage, and rum distilled from molasses that came from the Caribbean (Kellner and Lemons 2004). Newport was known as a center for spermaceti candle-making and rum distillation (Kellner and Lemons 2004). Spermaceti to make the candles came from the nearby whaling ports of New Bedford and Nantucket (Labaree et al 1998), whereas molasses to make rum originated from the Caribbean (Kellner and Lemons 2004).
6. Rhode Island’s early business in distilling and trading rum highlights the state’s connection to the slave trade. Rhode Island distilleries imported molasses from Caribbean ports. While much rum was consumed in Rhode Island itself or shipped to ports in Europe, the Caribbean, and South America, Rhode Island merchants traded some rum in African ports in exchange for slaves (Kellner and Lemons 2004). In the early 17th century, some Newport vessels entered the slave trade, followed by ships from Bristol and Providence. One source indicates that between 1725 and 1807 at least 934 vessels left Rhode Island for African ports, and carried away an estimated 106,000 slaves from the continent (Coughtry, cited in Kellner and Lemons 2004). In the late 18th century, the Brown family of Providence entered the slave trade, which led to the growth of the port of Providence as well as the rise of this prominent merchant family (Kellner and Lemons 2004).
7. Newport was the fifth largest town and one of the leading ports in colonial America through the 1760s. However, the Brown family and other Providence merchants actively pursued maritime commerce in the late 18th and early 19th centuries. Due to these merchants’ activities, coupled with Providence’s geographic advantages and Newport’s travails during the American Revolution, Providence soon eclipsed Newport as Rhode Island’s main port. Providence ships passed through the Ocean SAMP area en route to European and Caribbean ports, and Providence merchants also pursued opportunities in the newer trades with South America, Australia, and Asian ports. Beginning in the late 18th century, the Brown brothers were major leaders in these newer trades. Nicholas Brown was the first Rhode Islander to trade with Brazil, and John Brown was the first Rhode Islander and the second American to begin trading with both China and Australia. Because of these activities, and in particular the Browns’ participation in the highly lucrative trade with China, the port of Providence remained preeminent into the 1820s–1830s (Albion et al 1970; Kellner and Lemons 2004).
8. The height of Rhode Island-based maritime trade lasted only through the 1830s. The whaling activities of nearby ports continued to spur shipbuilding and the spermaceti candle business through the middle of the 19th century, but by mid-century this business also had diminished (Kellner and Lemons 2004). By 1860, Rhode Island’s foreign commerce had declined dramatically, as evidenced by a sharp decrease in the number of ship arrivals recorded by Rhode Island ports (Albion et al 1970). In the

mid- to late-19th century, this trade was gradually replaced by a new coastal trade aboard steamboats, many of which were passenger vessels (Albion et al 1970). Late-19th and early-20th century maritime activity in the Ocean SAMP area was characterized largely by passenger steamboats and other recreational craft; see Chapter 6, Recreation and Tourism, for further discussion of the history of recreation in the Ocean SAMP area.

9. Maritime trade, coupled with the Industrial Revolution of the 19th century, required the industrialization of many waterfront areas. Providence became a modern industrial city port, its shoreline lined with warehouses, wharves, and piers. Later, rail service and cargo hoisting equipment were brought to the industrial waterfront so that cargo could be transported from ship to railcar, and wharves were rebuilt to support the weight of this new equipment. In the 20th century, highway construction created additional truck access to these port facilities (R.I. Coastal Resources Management Council, in review). Throughout the 19th and 20th centuries, similar transformations took place at different scales in Quonset/Davisville, Newport, and other ports throughout the state. Rhode Island's industrialized waterfronts continue to provide critical infrastructure that supports maritime commerce and naval activities.
10. In the early 20th century, during the 14 years known as Prohibition, maritime activity in Rhode Island's offshore waters expanded to include the illegal transport of alcoholic beverages. Rum supply vessels typically lined up offshore beyond federal jurisdiction and supplied "rum-runners," small boats that could outrun Coast Guard enforcement vessels while smuggling alcohol back to shore. One source indicates that rum supply vessels serving Rhode Island communities anchored in the Ocean SAMP area about 15 miles southeast of Block Island, and that rum runners used the three entrances to Narragansett Bay to their advantage in attempting to avoid enforcement vessels (Hale 1998).
11. The U.S. Navy became one of the dominant users of the Ocean SAMP area in the late 19th century, though Rhode Island has a long history of ties with the Navy. The U.S. Navy was created, in part, in Rhode Island a century earlier during the American Revolution—the first ship in the Continental Navy was the sloop *Providence*, and the first admiral was Rhode Island native Esek Hopkins. In the late 19th century, Narragansett Bay's deep, protected harbors attracted the Navy to Rhode Island, and as a result the Navy established the Naval Torpedo Station on Goat Island in 1869, the Naval Training Station in Newport in 1883, and the Naval War College in Newport in 1884. During World War II, a large portion of the Atlantic fleet was based out of Newport for a short time, and naval air bases, training centers, and other facilities were established at Quonset/Davisville, Melville, and other locations throughout the state. The Navy's presence had a tremendous impact on the state's economy, especially throughout World War II, providing employment for Rhode Islanders as well as clientele for businesses in Newport and throughout the state (Kellner and Lemons 2004).

12. The Navy's presence made Rhode Island a possible target for attack during the early 20th century. During World War I, a German U-boat sailed directly into Newport Harbor; the next day, the U-boat sank six unarmed cargo ships off Nantucket (Hale 1998). During World War II, the Navy mined the approaches to Narragansett Bay and set out antisubmarine nets to block the passages into the Bay. In 1945, a German U-boat prowling the East Coast torpedoed and sunk an American coal ship off Point Judith, and in retaliation Naval forces hunted and sunk the U-boat, U-853, off Block Island. This represented the final battle of the Atlantic in World War II. The wreck of the U-853 remains in the charted approach to Narragansett Bay and is a popular dive site, and much unexploded ordnance still exists in the waters of Rhode Island Sound in the approaches to the Bay (Kellner and Lemons 2004). See Chapter 6, Recreation and Tourism, for further information on diving; for further information on unexploded ordnance and other features of the Ocean SAMP area see section 750 of this chapter.
13. The Navy's presence in Rhode Island's waters was operationally diminished in early 1973 with the moving of the active fleet from Newport, accompanied by the closing of the Quonset Point Naval Air Station, a drawdown of facilities at Davisville, and a cutback of personnel and activities (Globalsecurity.org 2009). However, the Navy retains several facilities of strategic importance in Newport, which together comprise Naval Station Newport. Naval Station Newport is home to more than 42 commands and is considered the Navy's primary site for training officers and senior personnel as well as developing undersea warfare systems. Newport naval institutions include the Naval Undersea Warfare Center, Division Newport; the Naval War College; the Naval Academy Prep School; and the Surface Warfare Officers School (U.S. Navy 2009).

Section 720. Navigation Features in the Ocean SAMP Area

720.1. Area Overview

1. The Ocean SAMP area is a 1,467-square-mile area of ocean space that is a crossroads for commercial, military, and government vessels traveling between numerous commercial ports, harbors, and recreational destinations. The Ocean SAMP area is bordered by Narragansett Bay to the north; Long Island Sound to the west; and Buzzards Bay and Vineyard Sound to the east; and the Atlantic Ocean to the south. Commercial, military, and government vessels transit through this area when traveling between locations and ports in Narragansett Bay, Long Island Sound, Buzzards Bay, Vineyard Sound, or more distant ports. This section focuses on navigation features located within the Ocean SAMP area only, and does not include discussion of those features located within Narragansett Bay or adjacent waters.
2. Vessels passing through the Ocean SAMP area to or from Narragansett Bay gain access to the commercial port facilities of Quonset/Davisville and Providence, R.I., and Fall River, Mass., as well as to passenger ferry, cruise ship, and Navy port facilities in Newport and Quonset/Davisville. The three entrances to the Bay are the West Passage (between Point Judith and Beavertail Point), the East Passage (between Beavertail Point and Brenton Point), and the mouth of the Sakonnet River (between Sachuest Point and Sakonnet Point); see Figure 7.1. The East Passage offers access to a channel with a depth of about 60 feet (NOAA National Ocean Service 2009), and is used by all deep draft vessels and most tug-and-barge traffic entering and departing Narragansett Bay. The West Passage is used by some tug-and-barge traffic along with some large commercial fishing vessels (Scanlon pers. comm.). The West Passage also serves as a back-up channel for commercial traffic in the event that the East Passage is un-navigable (e.g., after a coastal hazard or other event) (Blount, pers. comm.). Traffic into the Sakonnet River consists largely of recreational vessel traffic (Weavers Cove Energy LLC 2009) and some cruise ship traffic (American Cruise Lines 2009). It is also used as a shortcut by tugs berthed in Fall River and transiting to and from Buzzards Bay to tow or escort barge traffic through the Bay and the Cape Cod Canal.

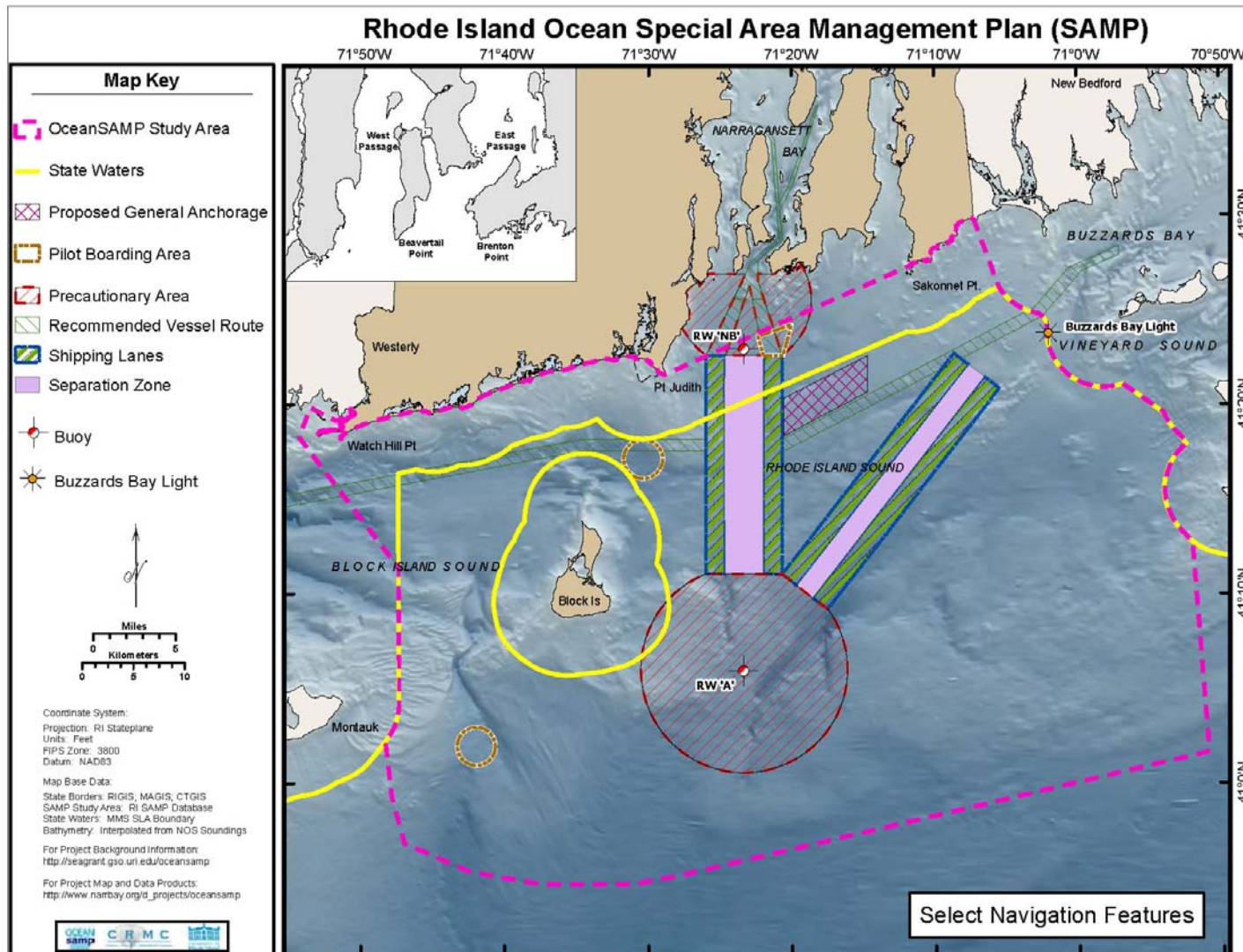


Figure 7.1. Select navigation features.

3. Features described in this section are further detailed on NOAA nautical charts including NOAA Chart No.13205 and Chart No.13218, and in the *U.S. Coast Pilot* Volume 2 (NOAA National Ocean Service 2009); recent updates to these documents may be found in U.S. Coast Guard “Local Notice to Mariners” publications. For further information on navigation within the Ocean SAMP area please consult these documents directly.¹
4. Taken together, the features described in the remainder of this section (e.g., shipping lanes, recommended vessel routes, pilot boarding areas, anchorages, etc.) comprise a traffic management system applicable to and used by virtually all vessels transiting within or through the Ocean SAMP area. Questions regarding this traffic management system may be referred to the U.S. Coast Guard Sector Southeastern New England.

720.2. Shipping Lanes, Traffic Separation Schemes and Precautionary Areas

1. There are two main shipping lanes traversing the Ocean SAMP area: the approach to Narragansett Bay and the approach to Buzzards Bay. A precautionary area in the center of the Ocean SAMP area, centered on 41°06’06”N., 71°23’22”W (marked by a mid-channel buoy, RW “A”), marks the offshore limits of these shipping lanes; see Figure 7.1. These shipping lanes and the precautionary area were designed in accordance with standards and adopted under the auspices of the International Maritime Organization (NOAA National Ocean Service 2009). While designed as a measure of safety to aid commercial shipping entering and exiting Narragansett Bay and Buzzards Bay, use of these lanes and precautionary area are not mandatory. Most prudent mariners will, however, transit within the appropriate traffic lanes when entering or exiting port (LeBlanc, pers. comm.).
2. The approach to Narragansett Bay runs north/south and comprises inbound and outbound traffic lanes, which are separated by a traffic separation zone. The offshore limit of this approach is marked by a precautionary area as described above. The inshore limit of this approach is marked by a precautionary area, centered on 41°25’35” N., 71°23’22”W (marked by a mid-channel buoy, RW “NB”); see Figure 7.1.
3. The approach to Buzzards Bay is also characterized by inbound and outbound traffic lanes that are divided by a traffic separation zone. The offshore limit of this approach is marked by a precautionary area as described above. There is no inshore precautionary area; the next inshore navigational aid is the Buzzards Bay Entrance Light; see Figure 7.1.
4. Ship traffic passing through the approaches to Narragansett Bay and Buzzards Bay are directed by Traffic Separation Schemes. In both cases, the Traffic Separation

¹ For further information on NOAA nautical charts and the U.S. Coast Pilot, please contact the NOAA Office of Coast Survey, Silver Spring, MD. For further information on U.S. Coast Guard Notices to Mariners, please contact the U.S. Coast Guard District 1.

Schemes comprise the above-mentioned traffic lanes, separation zone, and precautionary area, and are a means of preventing collisions. Traffic Separation Schemes are recommended for large commercial ships entering or leaving the respective bays and are not intended for smaller vessels or those engaged in inshore transit; for further information see the *U.S. Coast Pilot* Volume 2 (NOAA National Ocean Service 2009). However it should be noted that under federal navigation rules, vessels engaged in fishing are prohibited from impeding the transit of a vessel following a traffic lane.²

720.3. Recommended Vessel Routes

1. In addition to the official shipping lanes described above, there are two formally designated Recommended Vessel Routes running through the Ocean SAMP area roughly parallel to the mainland. One route runs from The Race at the entrance to Long Island Sound along the Rhode Island coast to Point Judith, and a second route runs from the approach to Narragansett Bay in a northeasterly direction toward Buzzards Bay (see Figure 7.1). Recommended Vessel Routes are established for commercial deep-draft traffic transiting the inshore waters of Block Island and Rhode Island Sounds and are designed to reduce conflicts with recreational boaters and other users of these areas. However, vessels are not required to utilize these routes nor are fishermen required to keep fishing gear outside these routes. Recommended Vessel Routes in the Ocean SAMP area are established by the U.S. Coast Guard in cooperation with the Southeastern Massachusetts and Rhode Island Port Safety and Security Forums. For further information see the *U.S. Coast Pilot* Volume 2 (NOAA National Ocean Service 2009).

720.4. Ferry Routes

1. Ferries operating within the Ocean SAMP area travel relatively consistent routes that do not necessarily align with charted shipping lanes or recommended vessel routes. At the time of this writing, the only Ocean SAMP area ferry route that is noted on NOAA nautical charts is the Block Island Ferry route between Point Judith and Block Island's Old Harbor, though it should be noted that this ferry route may still vary from its charted route; see NOAA Chart 13218 (NOAA Office of Coast Survey 2009) for further information. . See Section 730 for further discussion of ferries and Figure 7.8 for a map of approximate routes for ferries currently operating within the Ocean SAMP area.

720.5. Pilot Boarding Areas

1. Marine pilots board commercial vessels bound for Narragansett Bay or other area ports to provide local knowledge and navigation assistance. Marine pilots board commercial vessels in charted pilot boarding areas in order to guide commercial ships through state waters. Pilotage in the Ocean SAMP area is primarily provided by the Northeast Marine Pilots Association, based in Newport.

² 33 USC 2010 *et. seq.*

2. Currently there are four pilot boarding areas within the Ocean SAMP area: the Point Judith Pilot Station, south of Point Judith, centered at 41°17'N, 071°30.5'W; the Montauk Pilot Boarding Station, southeast of Montauk, N.Y., centered at 41°02'N, 071°42'W; the Brenton Point Pilot Boarding Station, south of Brenton Point, at about 41°23.2' N, 071°21.3' W; and the Buzzards Bay Pilot Station, centered at 41°23'48"N., 71°02'01"W (see Figure 7.1).
3. The Brenton Point Pilot Station is used for entry into Narragansett Bay, , and the Point Judith Pilot Station is used for entry into Long Island Sound. Because of this, vessels requiring a marine pilot frequently travel through the Ocean SAMP area to the Point Judith Pilot Station to board a pilot, even if they are destined for a port within Long Island Sound. The Montauk Pilot Boarding Station is only used by special arrangement due to the less favorable sea conditions that persist at that location (Costabile, pers. comm.).

720.6. Anchorages

1. Vessels bound to or from Narragansett Bay or other area ports may temporarily anchor within or outside of Narragansett Bay. Vessels do this for a variety of reasons including waiting for dock space, waiting for a favorable tide or better weather, waiting for shipping orders, or in order to lighter cargo (transfer cargo from a larger to a smaller vessel). In the vicinity of the Ocean SAMP area, all lightering activity takes place within the Bay where weather conditions are more favorable.
2. At present there are no anchorages charted within the Ocean SAMP area; all anchorages are within Narragansett Bay. However, a general anchorage is proposed for the waters south of Brenton Point in the Brenton Reef area in federal waters (see Figure 7.1). According to the U.S. Coast Guard Sector Southeastern New England, as of late 2010 this proposed anchorage is in the conceptual stage and undergoing development, and a formal proposal and public comment period is expected sometime in 2011. For further information on the status of this proposed general anchorage, please contact the U.S. Coast Guard Sector Southeastern New England (LeBlanc, pers. comm.).

720.7. Navy Restricted Areas

1. There are two Navy restricted areas within the Ocean SAMP area as indicated in the *U.S. Coast Pilot* that are used for military testing: a torpedo range and a practice minefield training area (see Figure 7.2) (NOAA National Ocean Service 2009).
2. The first Navy restricted area is a 2-nautical mile-wide strip that begins within the northern precautionary area of the approach to Narragansett Bay, and extends south for over 11.5 nautical miles, coinciding with the Traffic Separation Zone (see Figure 7.2). During appropriate weather conditions this area is used as a torpedo range under the direction of the Naval Undersea Warfare Center in Newport. Navigation in this

area is prohibited during times of torpedo range use. For further information see the *U.S. Coast Pilot* Volume 2 (NOAA National Ocean Service 2009).

3. The second Navy restricted area is located approximately 4 nautical miles south of Lands End in Newport, and is a 1-nautical mile by 1.5-nautical mile box. Under federal navigation rules, this area is restricted as a naval practice minefield (see Figure 7.2) (33 CFR 334.78). Navigation in this area is prohibited during times of minefield training under the direction of the U.S. Naval Base in Newport. For further information see the *U.S. Coast Pilot* Volume 2 (NOAA National Ocean Service 2009).
4. In addition to these charted areas, the Navy has designated Submarine Transit Lanes for submerged submarine transit. One of these lanes overlaps with the southern border of the Ocean SAMP area. For further discussion of submarine activity and other Naval activities within the Ocean SAMP area, please refer to Section 730.

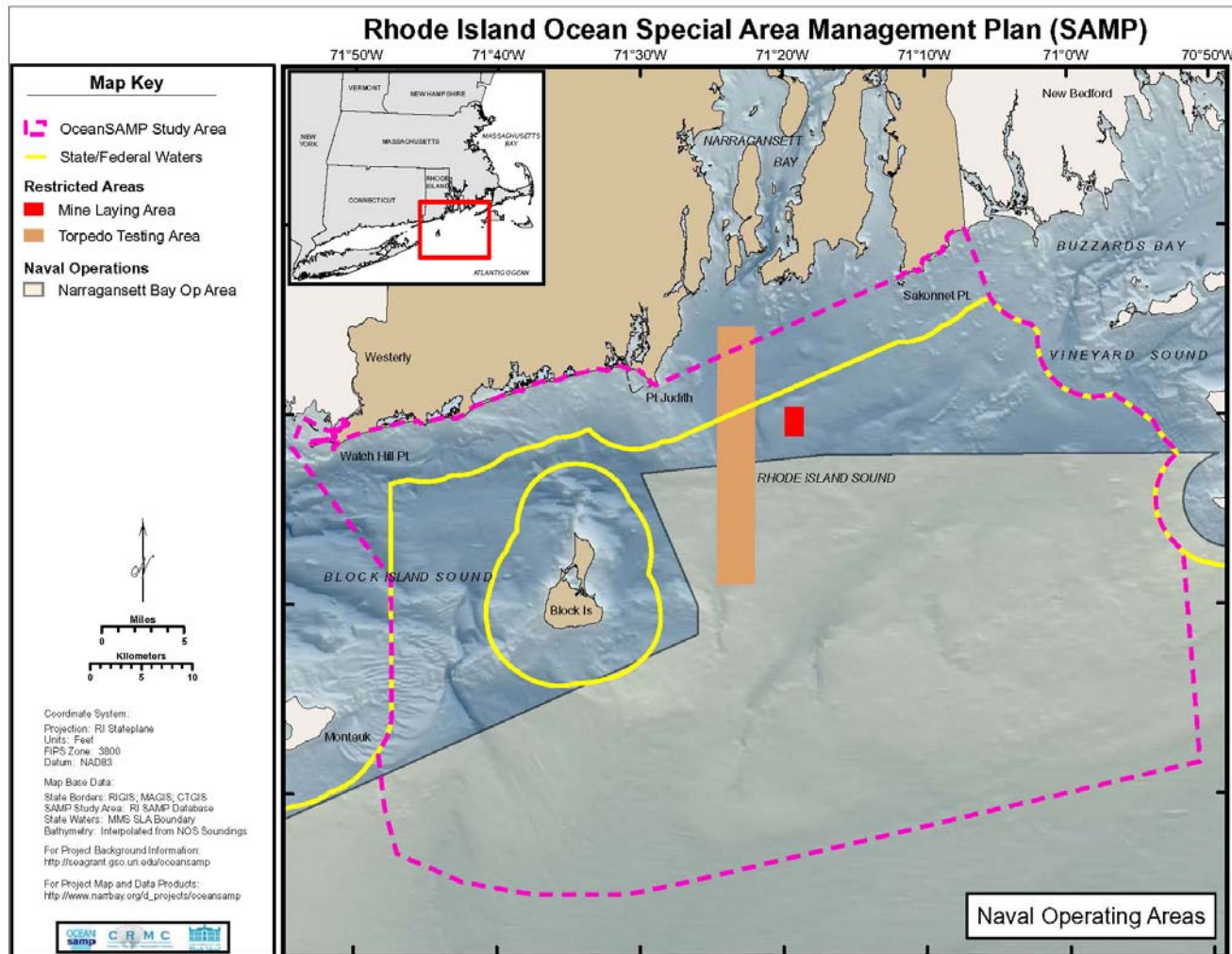


Figure 7.2 Naval operating areas.

720.8. Right Whale Seasonal Management Area

1. In 2008, NOAA National Marine Fisheries Service enacted a Right Whale Ship Strike Reduction Rule (50 CFR 224.105) with the goal of reducing right whale mortality due to ship traffic (National Oceanic and Atmospheric Administration 2008). This rule applies to discrete areas of Atlantic coastal waters during certain times of the year (see Chapter 2, Ecology). The Ocean SAMP area includes part of the Mid-Atlantic Seasonal Management Area (see Figure 7.3), which encompasses right whale migratory routes and calving grounds and is in effect from November 1 through April 30. During these months, all vessels 65 feet or longer and operating in the designated Seasonal Management Area must reduce speed to no more than 10 nautical miles per hour (NOAA National Marine Fisheries Service n.d.).

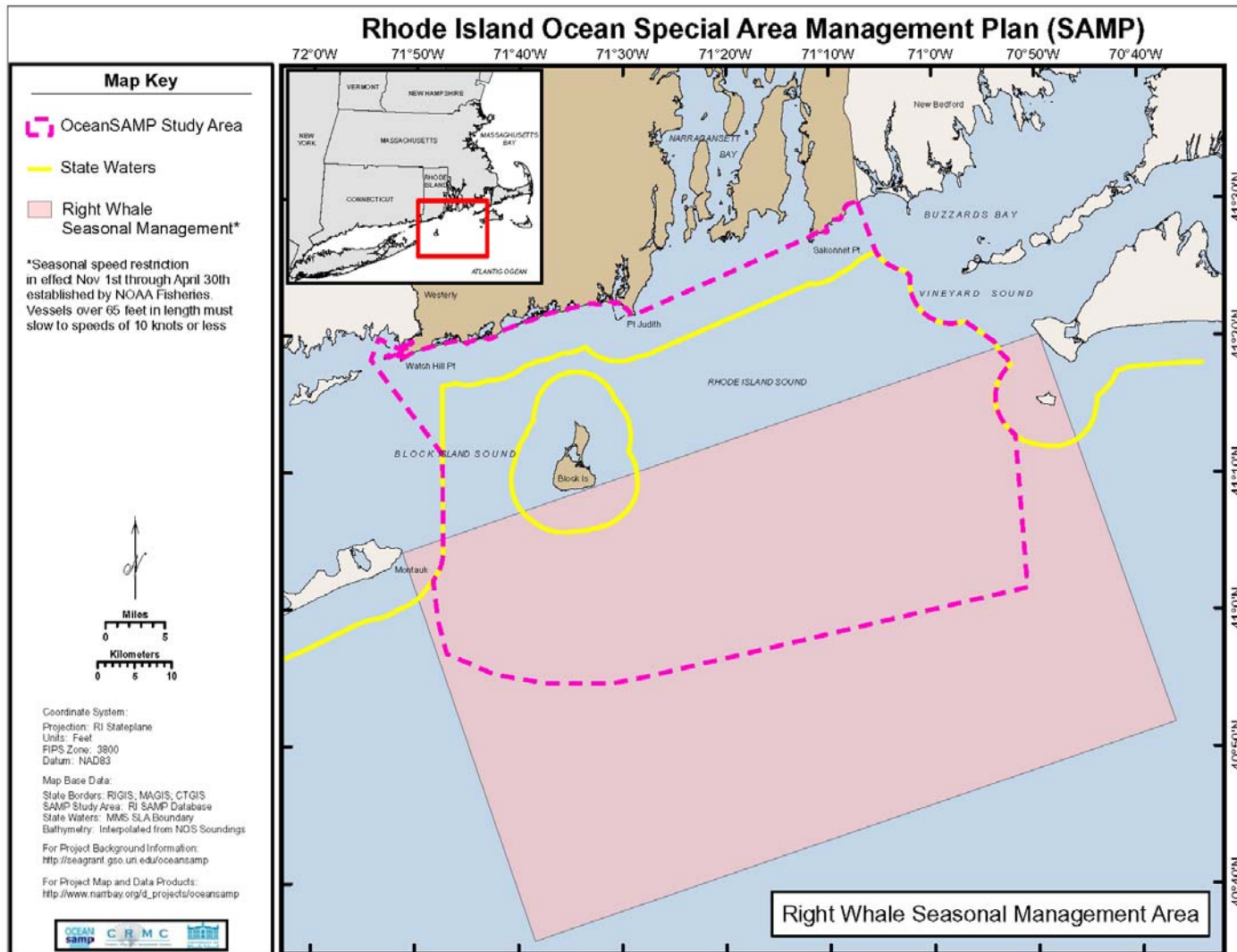


Figure 7.3 Right whale seasonal management area.

Section 730. Marine Transportation in the Ocean SAMP Area

1. Marine transportation in the Ocean SAMP area is characterized by a range of vessel types and activities. Commercial shipping involves the transport of goods such as petroleum products, coal, and cars through this area, while passenger ferries and cruise ships transport people between nearby coastal communities. Pilot boats and government enforcement and search and rescue vessels provide critical support to commercial vessel operations and facilitate safe navigation. Naval vessels engage in training activities in Ocean SAMP area waters, or pass through the area when traveling between ports.
2. Recreational and fishing vessels also operate in this area and utilize the same navigational features. For an extensive discussion of fishing vessels and activity areas, see Chapter 5, Commercial and Recreational Fisheries . For an extensive discussion of recreational vessels and activity areas, see Chapter 6, Recreation and Tourism.

730.1. Shipping Activity

1. Commercial shipping within the Ocean SAMP area includes cargo vessels transiting to or from the Narragansett Bay ports of Providence, Quonset/Davisville, and Fall River.. It also includes ships transiting the Ocean SAMP area between a variety of other ports including the Port of New York and New Jersey, the Port of Boston, and other ports located on the east coast or abroad. While data is available on the number of ships calling at Narragansett Bay ports, it is difficult to quantify the remaining shipping traffic traveling through the Ocean SAMP area because these data are typically collected only for specific ports or harbors.
2. The U.S. Army Corps of Engineers (USACE) collects annual data on freight traffic (tonnage per year), the number of vessel transits, and drafts of vessels utilizing federally-maintained navigation channels.³ Given that the Ocean SAMP area's northern boundary coincides with the three entrances to Narragansett Bay, USACE data collected for Narragansett Bay provide one measure of commercial traffic through this area. The 2007 data for Narragansett Bay (see Table 7.1) illustrate that the majority of traffic entering the Bay is destined for the ports of Providence or Fall River (U.S. Army Corps of Engineers 2007). Of a total of 2,412 vessel transits to and from Narragansett Bay in 2007, 1,762 were headed to and from Providence; of these transits, 23 percent were foreign-flagged vessels. An additional 650 transits were to and from Fall River, 16 percent of which were foreign-flagged vessels. This vessel transit total is conservative in that it does not include transits by car carriers to and

³ The U.S. Army Corps of Engineers Waterborne Commerce statistics only records trips in waterways and channels maintained by the U.S. Army Corps of Engineers. Therefore, the data do not capture Narragansett Bay traffic proceeding to Davisville because this traffic does not pass any channels that are maintained by the U.S. Army Corps of Engineers.

from the Port of Davisville at Quonset/Davisville.⁴ Between 80 and 100 ships call at Davisville each year, resulting in 160 to 200 additional transits in and out of Narragansett Bay (Quonset Development Corporation 2009; see Section 740.2). See Section 740 for further discussion of the ports of Providence, Quonset/Davisville, and Fall River.

Table 7.1. Vessel transits in and out of Narragansett Bay using federally maintained navigation channels in 2007 (U.S. Army Corps of Engineers 2007)⁵.

Type of Vessel	Port of Call	
	Providence	Fall River
Dry Cargo	178	145
Tanker	233	6
Tow or Tug	403	388
Barges	948	111
Total	1,762	650

3. The majority of shipping traffic into Narragansett Bay via the Ocean SAMP area consists of vessels delivering coal and petroleum products. These products are critical in meeting the energy needs of Rhode Island, northeastern Connecticut and southeastern Massachusetts (Energy Information Administration 2009; U.S. Army Corps of Engineers 2001). In 2007, the Army Corps of Engineers Waterborne Commerce Statistics recorded that approximately 4.3 million short tons of coal and 6.2 million short tons of petroleum products entered the Bay headed for Fall River and Providence (see Table 7.2).⁶ Other products including sodium hydroxide, rubber, and gum forest products are imported into Fall River in smaller amounts, and a number of chemical products, stone, aluminum ore, other non-metal minerals, manufactured goods, and equipment are imported into Providence (See Table 7.2). Steel scrap is the primary cargo exported out of Rhode Island through the Port of Providence (U.S. Army Corps of Engineers 2007). In addition, as of 2007, ProvPort, which operates the Port of Providence, has begun exporting used automobiles to the Middle East and West Africa (Curtis, pers. comm., December 21, 2009).

4. Petroleum and other energy products imported into the Port of Providence via the Ocean SAMP area are of great regional value. The market served by the Port of Providence covers approximately 2,000 square miles and provides services for a population conservatively estimated at roughly 1.25 million people (U.S. Army Corps of Engineers 2001). See Section 740.1 for an extensive discussion of the Port of Providence and the regional benefits it provides.

⁴ USACE data do not include traffic to and from Davisville because the navigation channel approaching Davisville is not a USACE-maintained federal channel.

⁵ For more detailed information on vessel transits to Providence and Fall River, including vessel drafts, see the U.S. Army Corps of Engineers, *Waterborne Commerce of the United States*, Part 1 (Atlantic Coast).

⁶ A short ton is equal to 2,000 lbs.

Table 7.2. Volume of cargo transported in 2007 (thousands of short tons) (U.S. Army Corps of Engineers 2007).

Cargo Type	Port of Call		
	Fall River	Providence	Total
Coal	3,521	796	4,317
Petroleum Products	82	6,142	6,224
Chemical and Fertilizers	12	328	340
Gravel, Sand, and Stone	0	18	18
Iron Ore and Steel Scrap	0	632	632
Aluminum Ore	0	67	67
Other Non-metal Minerals	0	234	234
Forest Products	33	0	33
Manufactured Goods	0	890	890
Manufactured Equipment	0	117	117
Unknown	0	1	1
Total	3,648	9,225	12,873

4. In general, the volume of imports into Narragansett Bay remains constant throughout the year. Tankers and barges carrying home heating oil, gasoline, and other petroleum products, which make up the majority of cargo entering the Bay, are evenly spread out throughout the year (Federal Energy Regulatory Committee 2005). An important exception to this pattern is vehicle imports into Davisville, which peak in the late fall, generally October through December (Matthews, pers. comm.).
5. Time series shipping data for Narragansett Bay show that over the past two decades the total cargo tonnage processed by Narragansett Bay ports has remained relatively constant, between 11 and 13 million short tons per year (see Figure 7.4 and Table 7.3). However, the number of cargo vessels used to transport this amount of cargo has declined because vessel capacity is growing. For example, in 1980 there were 5,614 transits to and from Providence (Rhode Island Senate Policy Office 2002). Transits fell to 2,893 in 1997 and 1,762 in 2007 (see Figure 7.5) (U.S. Army Corps of Engineers 1997; U.S. Army Corps of Engineers 2007). Meanwhile, the amount of cargo imported into Providence during this time period increased from 7.5 million short tons in 1980 (Rhode Island Senate Policy Office 2002) to 8.8 million short tons in 1997 and 9.2 million short tons in 2007 (see Figure 7.5) (U.S. Army Corps of Engineers 2007).
6. The 2005 dredging of the Providence River to a controlling (minimum) depth of 40 feet allows for the accommodation of deeper-draft vessels. This channel deepening project is consistent with the abovementioned trend toward larger, deeper-draft cargo vessels.

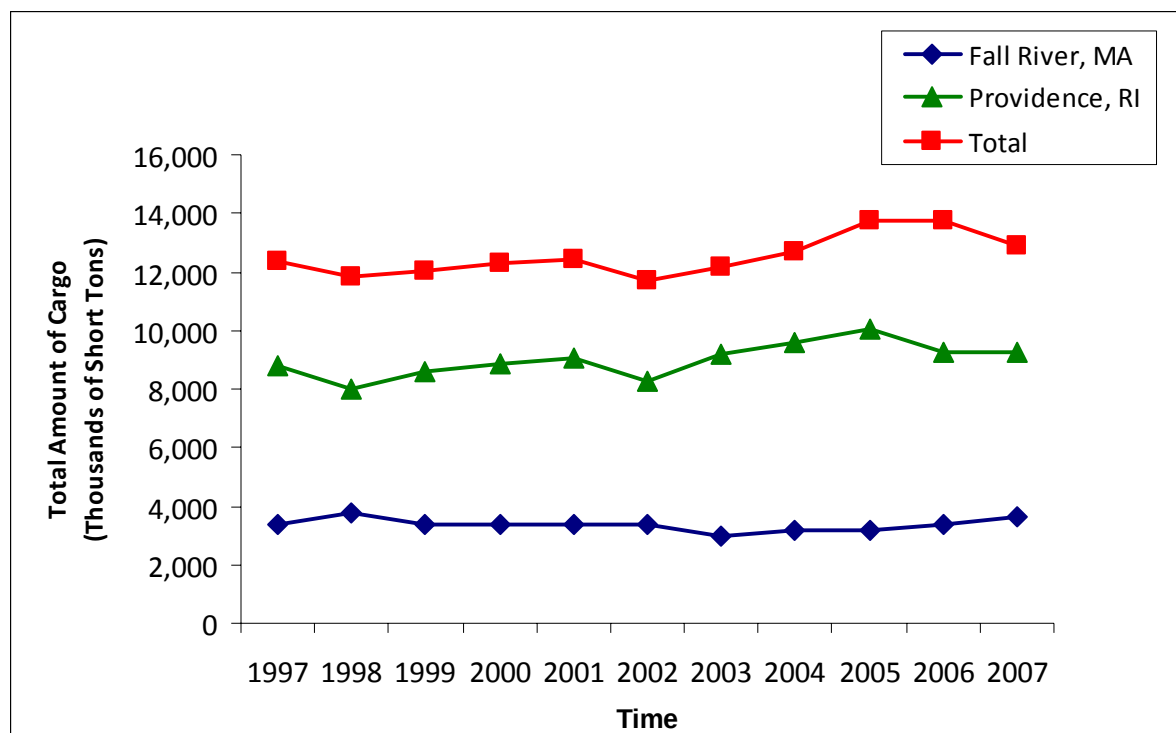


Figure 7.4. Annual cargo volume processed by Narragansett Bay ports, 1997-2007 (U.S. Army Corps of Engineers 2007).

Table 7.3. Annual cargo volume processed by Narragansett Bay ports between 1997 and 2007 (thousands of short tons; U.S. Army Corps Engineers 2007).

Year	Port of Call		
	Fall River	Providence	Total
1997	3,394	8,814	12,362
1998	3,776	8,028	11,848
1999	3,395	8,627	12,063
2000	3,402	8,870	12,272
2001	3,382	9,030	12,414
2002	3,392	8,244	11,729
2003	2,977	9,214	12,192
2004	3,161	9,559	12,722
2005	3,157	10,045	13,742
2006	3,364	9,267	13,724
2007	3,648	9,225	12,873

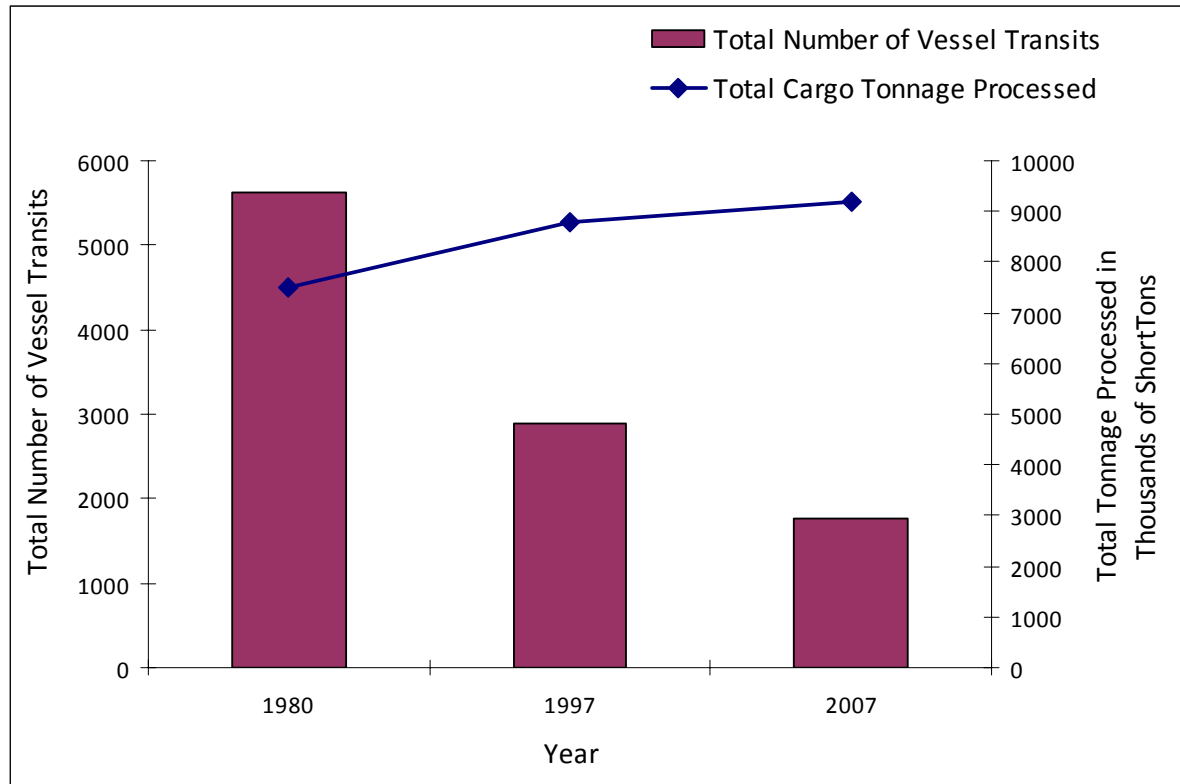


Figure 7.5. Total number of vessel transits and volume of cargo processed in Providence (U.S. Army Corps of Engineers 1980 as cited in R.I. Senate Policy Office 2002; U.S. Army Corps of Engineers 1997; U.S. Army Corps of Engineers 2007).

7. Traffic in and out of Narragansett Bay makes up only part of the commercial traffic moving through the Ocean SAMP area, much of which consists of vessels traveling coastwise. Many of these ships are tug and barge units carrying petroleum products; these vessels originate in the Port of New York and New Jersey or points south and travel to and from Buzzards Bay and the Cape Cod Canal. There are also ships transiting to and from Long Island Sound via Block Island Sound (McVay, pers. comm.). Exact numbers of coastwise transits through the Ocean SAMP area are not available; however, traffic data from Long Island Sound and the Cape Cod Canal provide an approximation of traffic traveling through this area associated with surrounding East Coast ports. In 2006, the U.S. Coast Guard estimated that there may be 2,000,400 transits through Long Island Sound each year; those transits leaving the eastern end of Long Island Sound must pass through the Ocean SAMP area. Furthermore, in 2005, 443 foreign-flagged vessels were recorded traveling through the SAMP area, destined for ports within Long Island Sound (U.S. Coast Guard 2006). And in 2007, 649 foreign vessels were recorded passing through the Cape Cod Canal (U.S. Army Corps of Engineers 2007), thus passing through Buzzards Bay into the Ocean SAMP area.
8. Commercial traffic in the Ocean SAMP area may increase in the future if a short sea shipping industry develops in Rhode Island. Short sea shipping is the movement of

goods (usually containerized) domestically aboard barges, with the goal of reducing truck traffic on congested highways. The corridor between Boston, New York, and Washington, D.C., has been proposed as an attractive region in which to develop short sea shipping routes due to the amount of traffic congestion, the region's population density, and the availability of port facilities (R.I. Economic Monitoring Collaborative 2007). No short sea shipping routes are currently in use in the area, but some sources indicate that if this use were to develop, Rhode Island ports, particularly Providence, could serve as a central hub (R.I. Economic Monitoring Collaborative 2007; National Ports and Waterways Institute, University of New Orleans 2004). If short sea shipping were to develop in Rhode Island, it would greatly increase the number and frequency of vessel transits through the Ocean SAMP area. See Chapter 9, Other Future Uses, for further discussion of this and other future uses of this area.

9. Automatic Identification System (AIS) data, when aggregated and analyzed using Geographic Information System (GIS) tools, provide a fairly reliable means of analyzing commercial ship traffic activity and density within the Ocean SAMP area (see Figure 7.6). AIS is a transponder-based ship identification system that broadcasts vessel data (such as vessel name, type, position, course, speed, navigation status, dimensions, and type of cargo) among ships and with shore-side facilities. Generally, vessels currently required by federal regulation to carry an operational AIS include commercial ships of 65 feet or more in length, all tankers, most commercial towing vessels, and large passenger vessels.⁷ In addition to the vessels listed above, a vessel navigating in an area in which there is a Vessel Traffic Service (VTS), such as the Port of New York and New Jersey, is also required to carry AIS. It is important to note that at the time of this writing, AIS is not required aboard commercial fishing vessels or many ferry boats.⁸ However, required use of AIS may be expanded in the future.⁹ It should also be noted that many vessels—especially large yachts or recreational vessels—carry AIS even though they are not required to do so (McVay, pers. comm.).

⁷ According to 33 CFR §164.46, vessels that must carry AIS include self-propelled vessels of 65 feet or more in length that are used for domestic or international commercial shipping or that are certified to carry fewer than 151 passengers-for-hire; passenger vessels of 150 gross tons or more; all tankers, regardless of tonnage; vessels, other than passenger vessels or tankers, of 300 gross tonnages or more; commercial towing vessels of 26 feet or more in length and more than 600 horsepower, in commercial service; and passenger vessels certified to carry more than 150 passengers-for-hire.

⁸ Although fishing vessels are not required to carry AIS, Vessel Monitoring Systems (VMS) are required on some commercial fishing vessels with federal permits as an enforcement mechanism. For further information, see Chapter 5, Commercial and Recreational Fisheries Resources and Uses.

⁹ In December 2008, the Coast Guard published a Notice of Proposed Rulemaking in which it was proposed that federal regulations requiring the use of AIS be expanded to include some ferries and other vessels. Specifically, under the proposed rule, the use of AIS would be required by self-propelled vessels of 65 feet or more in length, engaged in commercial service; towing vessels of 26 feet or more in length and more than 600 horsepower, engaged in commercial towing; self-propelled vessels carrying 50 or more passengers, engaged in commercial service; vessels carrying more than 12 passengers for hire and capable of speeds in excess of 30 knots; dredges and floating plants operating near channels likely to restrict or affect navigation of other vessels; self-propelled vessels carrying or engaged in the movement of certain dangerous cargos (U.S. Coast Guard 2008). As of the time of this writing, final Coast Guard action on these proposed regulations is still pending.

10. To help visualize commercial ship usage of the Ocean SAMP area, a density plot was developed using AIS point data (from September 2007 to July 2008) and a 1 kilometer (km) by 1 km grid overlay to determine the relative density of commercial ship traffic.¹⁰ See Figure 7.6 for a map of this ship traffic, and see Figure 7.7 for a map showing ship traffic as well as designated navigation areas. On these maps, vessel traffic density per 1 km square is shown. Traffic in squares with fewer than 50 vessel counts is not shown. The darkest squares represent the areas within the Ocean SAMP area that have the most traffic—in this case over 1,000 vessel transits recorded.
11. Figures 7.6 and 7.7 show that there are several heavily trafficked areas within the Ocean SAMP area. One is at the entrance to Narragansett Bay, which corresponds roughly with the northern precautionary area of the approach to Narragansett Bay (see Figure 7.7). A great deal of traffic is also concentrated within the vicinity of the coastwise Recommended Vessel Route, though it should be noted that this traffic pattern is not confined to the narrow Recommended Vessel Route that is delineated on nautical charts (see Figure 7.7). There is also a clear traffic pattern running north/south through the middle of the Ocean SAMP area that corresponds clearly with the charted shipping lanes and Traffic Separation Scheme (see Figure 7.7). Finally, it is important to note the concentration of traffic in the southwest corner of the Ocean SAMP area that represents ships rounding Montauk Point and passing into Long Island Sound; this heavily used area does not correspond to a shipping lane or any other codified transportation area. Conversely, relatively little traffic is shown passing through the charted approach to Buzzards Bay, which runs diagonally through the Ocean SAMP area (see Figure 7.7). See Section 720 for further information on the abovementioned navigation areas.
12. Previous AIS analysis conducted by the U.S. Coast Guard of commercial vessel traffic through Block Island Sound suggests that the majority of commercial vessel traffic within the Ocean SAMP area does not experience significant month to month variation (U.S. Coast Guard, 2006). Monthly AIS data for commercial vessel traffic in Block Island Sound, Montauk Channel, the Race, and Long Island Sound from 2005 were compared and determined by the U.S. Coast Guard to have no “significant month by month variation” (U.S. Coast Guard, 2006).

¹⁰ AIS data used in this analysis were purchased by URI researchers from a private consulting company.

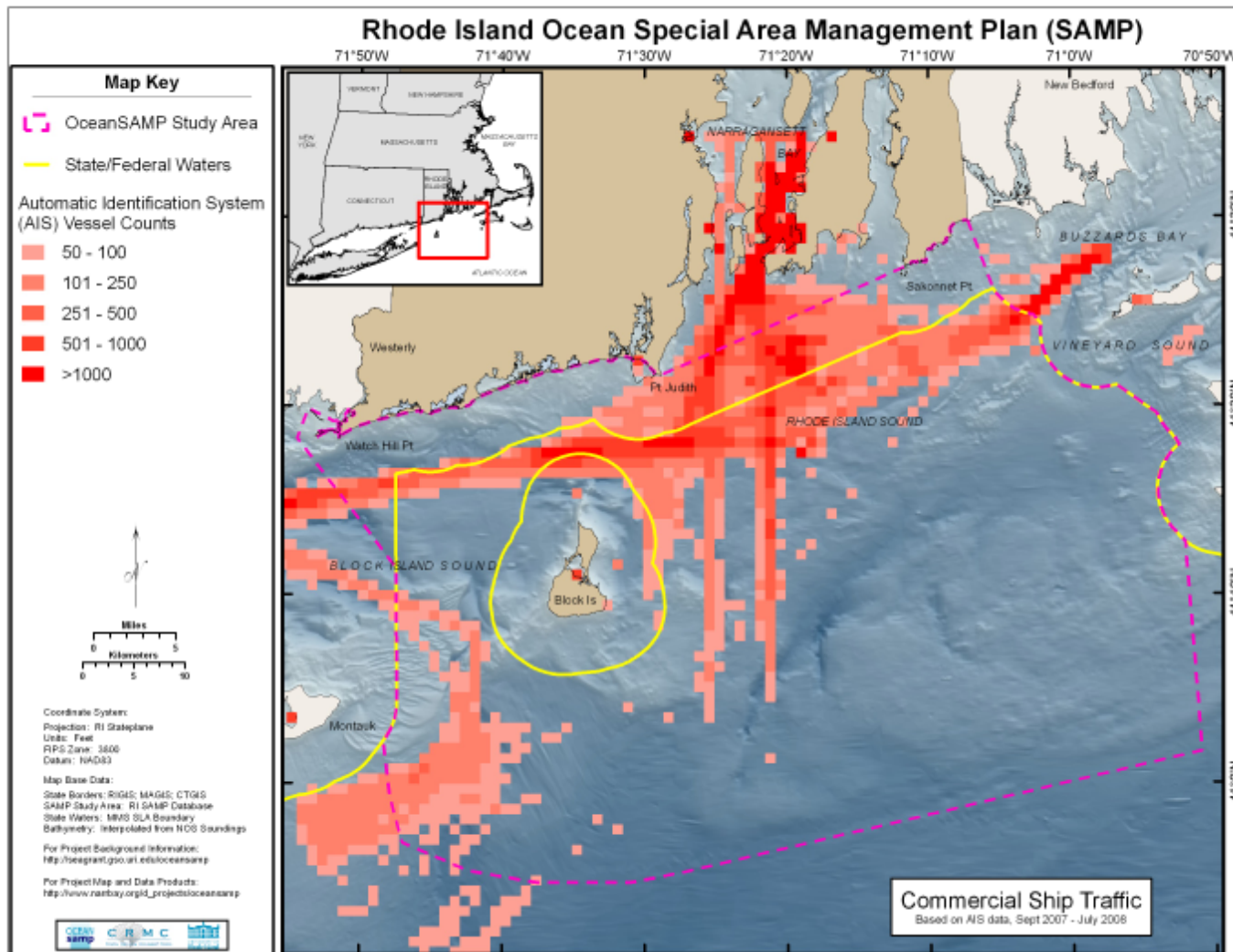


Figure 7.6. Commercial ship traffic based on AIS data.

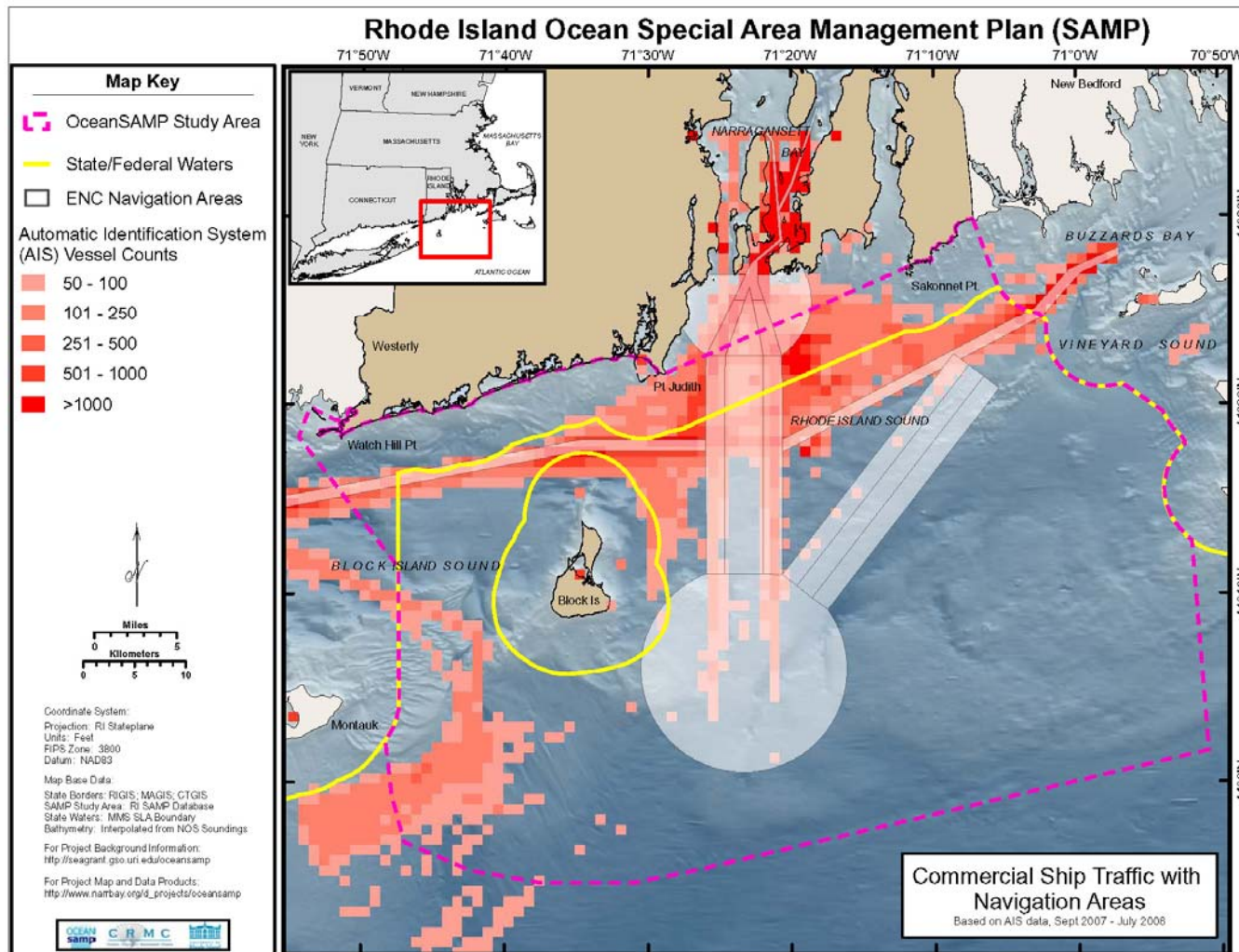


Figure 7.7. Commercial ship traffic and navigation areas.

730.2. Cargo Vessels

1. There are multiple types of commercial vessels transporting cargo through the Ocean SAMP area. These include bulk vessels (merchant ships designed to carry unpackaged, dry, bulk cargo), break bulk carriers (ships designed to carry packaged goods), coal carriers, tankers delivering liquid bulk cargo such as petroleum products, tug and barge units, and car carriers. Pilot boats also operate in the Ocean SAMP area, transporting marine pilots to arriving commercial vessels and taking them off departing vessels.
2. Bulk cargo vessels entering the Bay via the Ocean SAMP area carry coal, chemicals, cement, aggregates, ore, oxide, metals, salt, cobblestone, and limestone (Waterson Terminal Services 2008). Break bulk cargo vessels operating in the area transport forest products, steel, copper, and calcium into Providence (Waterson Terminal Services 2008). A typical bulk carrier transiting through the Ocean SAMP area is over 700 feet long, 106 feet abeam, and roughly 36,000 gross tons (Costabile, pers. comm.).
3. Coal is one of the most common bulk cargos transported by ship into the Bay. Coal carriers entering the Bay are destined for either Providence or Somerset, Mass., across from Fall River. Ships destined for Providence travel directly up the East Passage of the Bay. Larger coal ships destined for Somerset power plants along the Taunton River sometimes need to transfer cargo, through a process known as lightering, onto barges that can navigate the channel's 35-foot controlling depth (Weaver's Cove Energy LLC 2009). These barges usually each carry an average of 20,000 tons of coal to Somerset (Costabile, pers. comm.). Typical coal carriers that head straight for Somerset without lightering onto barges are roughly 750 feet long, 105 feet abeam, and between 38,000 and 43,000 gross tons (Costabile, pers. comm.). Because the two coal-powered facilities located in Somerset can require approximately 10,000 tons of coal per day to operate, a steady inflow of coal is required.¹¹ Therefore, bulk vessels carrying coal enter the Bay at least once a week, sometimes every two to three days (McVay, pers. comm.). In 2008, Northeast Marine Pilots handled 60 coal carriers making round trips to Brayton Point alone, whereas many other coal ships went to Providence or lightered in the Bay (Costabile, pers. comm.). See Chapter 8, Renewable Energy and Other Offshore Development, for further discussion of power sources.
4. Southern New England's demand for petroleum products is met largely by oil tankers and barges that transit through the Ocean SAMP area and into Narragansett Bay via the East Passage. As has been noted by the Energy Information Administration (2009), petroleum products imported into Providence provide nearly all of the

¹¹ In December 2009, the NRG Energy coal-powered facility in Somerset, Mass., closed and ceased operations indefinitely (Dion 2009). As of the time of this writing a determination as to when, if ever, the facility may resume operations has not been made. If this facility is ultimately permanently closed, a significant reduction in coal barge and coal ship deliveries through the SAMP area to Mount Hope Bay can be expected (LeBlanc, pers. comm.).

transportation and home heating fuel used in Rhode Island, northeastern Connecticut, and southeastern Massachusetts. The majority of the petroleum-carrying ships entering Narragansett Bay are domestic tankers, both self- and non-self propelled, carrying petroleum products to Providence and East Providence. Petroleum imports are evenly distributed throughout the year, with vessels transiting day and night. Only a few deeper-draft vessels require tidal lift, requiring the ships' arrival to be coordinated with the occurrence of high tide (Federal Energy Regulatory Committee 2005).

5. In total, 239 tanker transits were recorded within Narragansett Bay during 2007 (six headed to and from Fall River and 233 to and from Providence) (U.S. Army Corps of Engineers 2007). Tanker drafts ranged from 20 to 40 feet, with the deepest draft vessels destined for Providence. A typical tanker transiting the Ocean SAMP area to or from Narragansett Bay is roughly 600 feet long, 90 feet abeam, and over 23,000 gross tons (Costabile, pers. comm.). In addition to traditional petroleum products, liquefied petroleum gas (LPG) ships also transit this area en route to Providence. Typically, 10 to 12 ships per year enter the Bay, primarily in fall and winter, unloading approximately 20,000 to 30,000 metric tons of LPG per visit (Federal Energy Regulatory Committee 2005). These vessels are subject to special U.S. Coast Guard safety and security requirements upon entering the Bay (Federal Energy Regulatory Committee 2005).

6. The majority of traffic entering the Bay via the Ocean SAMP area is non-self propelled barges, carrying petroleum and petroleum products, which are towed by tugboats or moved as part of integrated tug and barge units. In 2007, 592 barges, making over 1,000 transits, entered the Bay, primarily headed for Providence (see Table 7.4) (U.S. Army Corps of Engineers, 2007). While the majority of barges entering Rhode Island are petroleum barges, dry cargo products including asphalt, coal, cement, and road salt destined for Providence are also carried by barges (U.S. Army Corps of Engineers 2006). Fall River receives smaller amounts of dry cargo via barges; products imported to Fall River are mainly coal, chemicals, and other crude materials such as rubber and gum (U.S. Army Corps of Engineers 2006). Barge traffic originates mainly from the Port of New York and New Jersey or points south, and travels northward for ports throughout New England. Tug and barges are more commonly used in coastal shipping because they are less expensive to operate (McVay, pers. comm.).

Table 7.4. Number and type of barges entering Narragansett Bay in 2007 (U.S. Army Corps of Engineers 2007).

Type of Non-Self Propelled Barge	Port of Call	
	Providence	Fall River
Dry Cargo	57	49
Tanker	474	12
Total	531	61

7. Approximately 100 car carrier ships enter the Bay each year, destined for the Port of Davisville (FXM Associates 2008b). Typical car carriers transiting the area are up to 650 feet long and 106 feet abeam, and between 46,000 and 54,000 gross tons (Costabile, pers. comm.). Per trip, these ships import approximately 800 to 1,000 units of VW, Audi, Subaru, and Bentley vehicles that are subsequently distributed throughout the Northeast. Typically, car carriers anchor overnight outside the mouth of Narragansett Bay and transit up the East Passage toward Davisville in the early morning. Car carriers are usually unloaded in a single day, though some stay for two days (Matthews, pers. comm.). Average car carriers headed to Davisville are approximately 590 feet in length and 106 feet abeam (Costabile, pers. comm.). See Section 740.2 for additional information on car carrier traffic into the Port of Davisville.
8. All foreign-flagged vessels, regardless of tonnage, and many U.S.-flagged commercial vessels entering Narragansett Bay must be escorted by a licensed marine pilot.¹² A pilot provides a ship's master with local knowledge on navigation and the safest route to the final destination. In the Ocean SAMP area, marine pilots board Narragansett Bay-bound commercial vessels in designated pilot boarding areas; see Figure 7.1 and Section 720 for further discussion.
9. For ships bound for Narragansett Bay, a marine pilot from the Northeast Marine Pilots Association travels via pilot boat out to meet the inbound ship in order to guide it through state waters. The pilot then boards the vessel, and under the authority of the ship's master, safely navigates the ship through the confined waters of a port, river, or bay to its destination. Two pilot boats operate within the Ocean SAMP area, serving vessels bound for Narragansett Bay, Eastern Long Island Sound, and Buzzards Bay (Northeast Marine Pilots Association 2009). Both vessels are docked in Newport Harbor.

730.3. Passenger Ferries

1. Multiple passenger ferries operate within the Ocean SAMP area, connecting a variety of mainland and island destinations within and adjacent to this area. Some ferries connect Rhode Island destinations such as Block Island, Newport, and Point Judith; others link Connecticut and New York ports with Rhode Island and Massachusetts destinations. Within the Ocean SAMP area, ferries serving Block Island and Martha's Vineyard are the most prominent routes and are of particular importance insofar as they create access to the mainland for island communities. See Table 7.5 for a detailed description of each of the passenger ferry services operating in the Ocean SAMP area.
2. Figure 7.8 illustrates the typical routes of all ferries operating in the Ocean SAMP area. As noted above, many ferries do not carry AIS transponders and so the map of commercial ship traffic (Figure 7.6) does not reflect ferry traffic. Ferries operating in this area typically follow standard routes that do not correspond to shipping lanes or

¹² 46 R.I.G.L. § 46-9 *et. seq.*

other codified transportation areas, though these routes vary occasionally due to weather, traffic, or other conditions.

3. Interstate Navigation, whose ferries connect both Point Judith and Newport with Block Island, provides a critical lifeline to Block Island through its ferry service. It is the only ferry-operating company within the Ocean SAMP area that is regulated under the R.I. Public Utilities Commission. The Division of Public Utilities and Carriers and the Public Utilities Commission hold jurisdiction over intrastate water carriers of passengers and vehicles operating between ports in Rhode Island (R.I. Public Utilities Commission 2009). As a result of this authority, the Public Utilities Commission must approve Interstate Navigation ferry schedules, fares, and routes (Myers, pers. comm.).
4. Passenger counts for all ferries operating within the Ocean SAMP area between 2003 and 2005 indicate that the greatest number of passengers travel from Point Judith to Block Island on Interstate Navigation's Block Island ferry (see Table 7.6). In 2005 alone, Interstate Navigation's traditional ferries carried 244,000 passengers (hi-speed was not yet in operation), 67,700 vehicles, 18,000 bicycles, 1,000 motorcycles and 10,000 tons of freight (Interstate Navigation 2006).

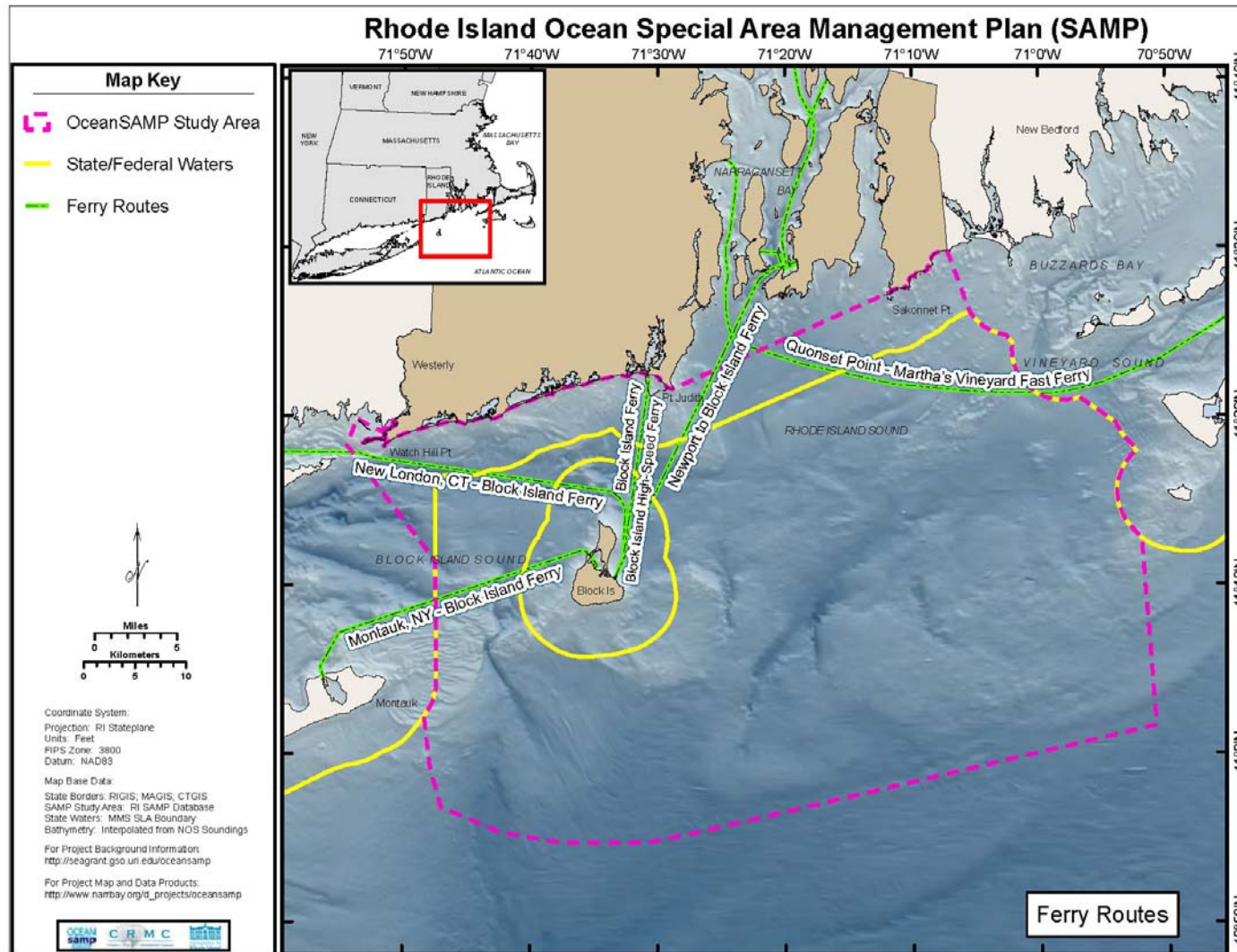


Figure 7.8 Ferry routes.

Table 7.5. Ferries operating within the Ocean SAMP area.

Ferry	Origin/ Destination	Description
Block Island Ferry	Point Judith, R.I. to Old Harbor, Block Island.	Interstate Navigation operates both traditional and high-speed ferries out of Point Judith Harbor in Galilee. The traditional ferry can accommodate 1,200 passengers per trip, along with approximately 30 vehicles. During the peak season, between June and September, the traditional ferry makes 6-10 round trips per day, compared to only 1-3 trips per day during the off-season (Interstate Navigation 2009). Trips out to the island take approximately 55 minutes, with the ferry traveling on average 16 knots). The high-speed ferry only operates May through October, offering 4-6 round trips per day. This ferry operates at 30 knots, with trips out to the island taking 30 minutes (Myers, pers. comm.). Both of these ferries dock at the Old Harbor terminal. ¹³
Newport to Block Island Ferry	Fort Adams, Newport to Old Harbor, Block Island.	Interstate Navigation also operates a traditional ferry out of Newport. This ferry makes one trip per day from Fort Adams State Park to Old Harbor, Block Island, July 1st through Labor Day. Trips on this route take approximately an hour and 45 minutes and can accommodate 800 passengers. The route traveled by the Newport to Block Island ferry is a direct course from the mouth of the East Passage to the Old Harbor ferry terminal (see Figure 7.8). This ferry operates at approximately 12.5 knots through the Ocean SAMP area. At the end of each day, rather than staying in Newport, this ferry transits back to the Point Judith ferry terminal to overnight (Myers, pers. comm.). ¹⁴
Viking Fast Ferry	Montauk Harbor, Montauk, N.Y. to New Harbor, Block Island.	Viking Fleet operates both traditional and high-speed ferry service between Montauk Harbor and New Harbor between late May and mid-October. During the season, this ferry provides one or two daily round trips. Most trips occur on the M/V Viking Superstar, which is 120 feet long and can accommodate 225 passengers (Viking Fleet 2009). Viking Fleet ferries are the only ferries operating within the Ocean SAMP area that dock at New Harbor (see Figure 7.8). ¹⁵

¹³ The high-speed ferry route varies each June when Interstate Navigation offers service from Point Judith to New Harbor during Block Island Race Week.

¹⁴ Service between Point Judith and Newport is offered aboard the ferry during July and August when transiting back and forth at the beginning and end of each day; however, very few passengers utilize this service.

¹⁵ Once a season, usually in August, the Viking Fleet ferry takes a trip from Montauk to Oak Bluffs on Martha's Vineyard.

Block Island Express	New London, Conn., to Old Harbor, Block Island.	High-speed ferry service between New London, and Old Harbor is available aboard the Block Island Express. During July and August, this ferry runs 3-4 round-trips per day, with each leg taking approximately 1 hour and 15 minutes. In May, June, and September, the ferry runs only on weekends. This ferry travels at a speed of 35 knots (Block Island Express 2009).
Vineyard Fast Ferry	Quonset Point to Oak Bluffs, Martha's Vineyard.	Vineyard Fast Ferry operates a high-speed ferry between Quonset Point and Martha's Vineyard from May through October. The 100-foot-long, jet-propelled catamaran can accommodate 400 passengers and reach speeds of 33 knots. Round-trip service is offered 2-4 times per day, with the greatest number of trips occurring on holidays and weekends. The ferry departs the Bay via the East Passage and takes a direct course to Oak Bluffs (Vineyard Fast Ferry 2009) (see Figure 7.8).

Table 7.6. Passengers carried between 2003 and 2005 aboard ferries operating within the Ocean SAMP area (United States Coast Guard 2006).

Ferry	Passengers	Daily Transits	
		Maximum	Minimum
New London to Block Island (High-Speed)	132,500	10	8
Montauk to Block Island	8,700	10	4
Point Judith to Block Island (High-Speed)	66,605	12	6
Point Judith to Block Island (Traditional)	520,000 (plus 64,000 vehicles)	18	2
Newport to Block Island	6,500	2	2

730.4. Cruise Ships

1. Cruise ships frequently travel through the Ocean SAMP area destined for Rhode Island ports of call, which include Newport, Block Island, Bristol, and Providence. Tens of thousands of visitors are transported aboard Rhode Island-bound cruise ships each year. In 2008, over 68,000 cruise ship passengers disembarked in Newport, contributing millions of dollars to the local economy. Cruise ship activity in and adjacent to the Ocean SAMP area is detailed below; see Section 740.4 for a discussion of cruise ship port infrastructure and Chapter 6, Recreation and Tourism, for a description of the tourism activity and economic impact associated with cruise ships.
2. According to the Newport Convention and Visitors Bureau (2009), 58 cruise ships from 11 cruise lines were scheduled to stop in Newport in 2009 between April and November, with the most visits occurring in September and October (see Chapter 6, Recreation and Tourism). Normally, only one cruise ship is in port at any time and

remains at anchor in Newport Harbor for 8 to 10 hours, though occasionally there are two ships scheduled for the same day (Newport Convention and Visitors Bureau 2009). During a cruise ship's port call, a 200-yard U.S. Coast Guard-mandated security zone is maintained around the ship (City of Newport 2009). The security zone is activated at the Brenton Point pilot boarding station as a cruise ship begins its transit to Newport. The security zone remains in effect while the ship is in Newport and during the ship's transit back out of the Bay until the ship reaches the pilot boarding station again (LeBlanc pers. comm.). No vessels are allowed within this security zone without permission of the U.S. Coast Guard Captain of the Port. The majority of cruise ships that visit Newport anchor off Newport Harbor in a general anchorage west of Goat Island and shuttle passengers to Newport's Perrotti Park via ship tenders or local tenders (City of Newport, Department of Economic Development 2009). American Cruise Line ships, which are generally smaller, dock at Newport's Fort Adams rather than anchoring out in the harbor.

3. Most cruise ships transiting the Ocean SAMP area utilize the Recommended Vessel Route through this area (see Section 720) and enter the Bay via the East Passage. However, ships operated by American Cruise Lines, which are more common within the SAMP area, may utilize the Sakonnet River entrance to Narragansett Bay (American Cruise Lines 2009). The larger cruise ships that call in Newport can carry up to 3,000 passengers and are as big as 1,132 feet long, 134 feet abeam, and 528 gross tons (Costabile, pers. comm.). Smaller American Cruise Line ships carry up to 100 passengers and average around 170 feet in length and 40 feet abeam (Costabile, pers. comm.).

730.5. Naval Vessels

1. While naval activity in Rhode Island and adjacent waters has been reduced since the active fleet left in 1972, the Navy still maintains a variety of strategic facilities at Naval Station Newport, including the Newport division of the Naval Undersea Warfare Center, and still conducts various land- and water-based training and testing operations in Newport and in Narragansett Bay, Block Island Sound, and Rhode Island Sounds. In addition, U.S. and foreign naval vessels visit the Newport Naval facilities on a regular basis.
2. Naval ships heading to Naval Station Newport enter Narragansett Bay using the Traffic Separation Scheme (see Section 720) and enter the Bay's East Passage to reach the Naval Station Newport facilities.
3. Northeast Marine Pilots will in most cases provide a pilot for naval ships entering Narragansett Bay. While a commissioned government ship with an officer aboard is not required to use the services of a pilot, most ships choose to do so (Costabile, pers. comm.). See Section 720.5 for further information on pilot boarding areas.
4. Northeast Marine Pilots provided pilots for Navy vessels seven times in 2006, six times in 2007, 10 times in 2008, and five as of November 1 in 2009 (Costabile, pers. comm.).

comm.). This results in an annual average of about seven port visits or 14 total transits.

5. The Navy retains two restricted areas for torpedo testing and mine laying exercises—see Figure 7.2 and Section 720.7 for information on Navy restricted areas. The Navy also maintains a large portion of Rhode Island Sound and the Ocean SAMP area as the Narragansett Bay Operations Area (see Figure 7.2).
6. Naval fleet training exercises are generally carried out in deeper waters, as the Ocean SAMP area is regarded as too shallow (Tompsett, pers. comm.). Surface vessels may take part at times and upon request in submarine training exercises in the Operations Area.
7. Whereas there is little Naval fleet training activity within the Ocean SAMP area, the Naval Undersea Warfare Center, Division Newport (NUWC), routinely performs testing in this area. NUWC is based in Newport in part because it provides access to the Ocean SAMP area, where conditions are appropriate for testing and evaluation. Within the Ocean SAMP area six different test operation types occur: launcher testing, torpedo testing, semi-stationary equipment testing, towed equipment testing, unmanned surface vehicle (USV) testing; and unmanned undersea vehicle (UUV) testing. High speed launcher and torpedo testing are confined to the designated Navy restricted areas (see Section 720.7), while all other activities are allowed to be conducted in waters both inside and outside the restricted areas. These activities have been determined to be consistent with the CRMC's coastal policies; see the 2007 "Coastal Consistency Determination for Test Operations in Rhode Island Waters" for further information (Naval Undersea Warfare Center Division Newport 2007).
8. The number of annual tests performed by NUWC varies each year. Estimates provided by NUWC indicate that there are five days of torpedo testing each year, five days of launcher testing, five days of towed equipment testing, 20 days of USV testing, 10 days of UUV testing, and 20 operations with semi-stationary equipment (these tests may occur over a number of days; e.g., a test item is deployed then recovered a week later). Navy vessels are generally associated with all test operations and can range in size from the smaller USVs to the TWR-841, a 120-foot torpedo weapons retriever (Tompsett, pers. comm.).
9. Submarine traffic originates primarily from New London, Conn. Submarines travel on the surface from New London through the southwest corner of the Ocean SAMP area to reach deepwater Naval Fleet Operations Submarine Lanes. The only part of the SAMP area where submarines might be submerged is in a submarine lane which intersects the southern boundary of the Ocean SAMP area, as submarines generally wait until they reach the 100-fathom depth far offshore (Vincent, pers. comm.).
10. The submarine fleet also uses the Narragansett Bay Operations Area for training exercises and to prepare submarines and their crews for their formal voyages. This training can include the use of surface vessels and/or planes and helicopters. Detailed

information on submarine transits through the SAMP area is unavailable as this information is classified (DeBow, pers. comm., Tompsett, pers. comm.).

730.6. Other Government/Enforcement Vessels

1. There are two main types of enforcement vessels that operate within the Ocean SAMP area, R.I. Department of Environmental Management (DEM) vessels and U.S. Coast Guard vessels.
2. DEM's Division of Law Enforcement operates enforcement vessels around Block Island and along Rhode Island's southern coast within 3 nautical miles of shore, enforcing regulations regarding recreational and commercial fishing, boating safety, and water quality. In addition, DEM also investigates recreational boating accidents, conducts water-based search and rescues as well as state beach and coastal park patrols, and responds to marine animal complaints (R.I. Department of Environmental Management 2009).
3. The U.S. Coast Guard operates a variety of enforcement, search and rescue, and government vessels within the Ocean SAMP area. Coast Guard vessels maintain maritime homeland security and enforce federal maritime law; conduct search and rescue missions, address marine environmental protection goals, and maintain all aids to navigation (United States Coast Guard 2009). The Ocean SAMP area lies within the First District of the U.S. Coast Guard, a district that extends from Maine to New Jersey.
4. Other government vessels operating in the Ocean SAMP area may include survey or research vessels such as those operated by CRMC, NOAA, the Environmental Protection Agency, the U.S. Geological Survey, and other entities. Such vessels collect data on the physical characteristics or biological resources of the area.

730.7. Other Vessels

1. Commercial and recreational fishing vessels use the navigational channels and infrastructure within the Ocean SAMP area when transiting out to fishing grounds or engaging in fishing activities. Fishing vessels use the same navigational infrastructure and some of the same port facilities as the vessel types discussed in this chapter. Fishing vessels and activity areas are discussed at length in Chapter 5, Commercial and Recreational Fisheries.
2. Recreational powerboats and sailboats frequently pass through or engage in recreational activities within the Ocean SAMP area. These vessels use the same navigational infrastructure and some of the same port facilities as the vessel types discussed in this chapter. Recreational boating and cruising routes/activity areas are discussed at length in Chapter 6, Recreation and Tourism.

3. Other vessels that may pass through the Ocean SAMP area include commercial yacht carriers, tall ships, and university or private research vessels.

Section 740. Ports and Harbors Adjacent to the Ocean SAMP Area

1. The transport of goods and passengers by ship through the Ocean SAMP area and into Rhode Island is supported by port infrastructure in Rhode Island and neighboring ports. As described above in section 730, commercial shipping in Narragansett Bay is primarily facilitated by the ports of Providence and Quonset/Davisville as well as Fall River. Passenger ferry vessels utilize port infrastructure on Block Island and in Newport, Point Judith, and Quonset Point, whereas cruise ships rely on port facilities in Newport, Block Island, and Providence.
2. Industrial waterfronts throughout Rhode Island and adjacent states provide critical infrastructure in support of ports and marine transportation activities. Per the R.I. Coastal Resources Management Program (CRMP), coastal waters adjacent to industrial waterfronts are zoned as Type 6 waters (“Industrial Waterfronts and Commercial Navigation Channels”). See Section 200.6 of the CRMP for further information (R.I. Coastal Resources Management Council 2008). According to the draft report of the Rhode Island Ports and Commercial Harbors Inventory (Becker et al. in review), marine commercial waterfront property adjacent to Type 6 waters is quite limited yet valuable insofar as it supports a variety of marine commercial activities. See *Rhode Island’s Ports and Commercial Harbors: A GIS-based Inventory of Current Uses and Infrastructure* (Becker et al., in review) for further information.
3. Fishing vessels rely on fishing-related infrastructure in Point Judith, Newport, Block Island, and other Rhode Island ports. For detailed descriptions of Rhode Island’s fishing ports, see Chapter 5, Commercial and Recreational Fisheries. Recreational vessels take advantage of recreational marinas, boat ramps, and other infrastructure designed specifically for recreational users. For further information on these facilities see Chapter 6, Recreation and Tourism.

740.1. Providence

1. The Port of Providence is Rhode Island’s principal commercial port, handling over 70 percent of the cargo entering Narragansett Bay via federally maintained navigation channels (see Table 3, U.S. Army Corps of Engineers 2007). Services provided by the Port of Providence provide significant benefits to Rhode Island and the entire region. The market served by the Port of Providence covers approximately 2,000 square miles in Rhode Island, northeastern Connecticut, and southeastern Massachusetts (U.S. Army Corps of Engineers 2001). The Port of Providence is an intermodal port that offers interstate highway access as well as rail service that reaches inland to major connections throughout the U.S. Coal imported into Providence is transported as far afield as Merrimack, N.H. (Waterson Terminal Services 2008, as reported in R.I. Coastal Resources Management Council in review), and road salt is distributed from the port over a 100-mile radius throughout all of New England (Sprague Energy 2008,, as reported in R.I. Coastal Resources Management Council in review).

2. The Port of Providence is of particular importance, both locally and regionally, for its role in supplying energy products to southern New England. Providence has been referred to as the “energy lifeline of the state” (U.S. Army Corps of Engineers 1998) due to its critical role in importing home heating oil and other petroleum products. One estimate suggested it would take approximately 140,000 truckloads to transport the equivalent amount of cargo carried by tanker and barges into the state annually (U.S. Army Corps of Engineers 1998). Furthermore, the U.S. Energy Information Administration (2009) recognizes the importance of the Port of Providence as “a key petroleum products hub for the New England area. Almost all of the transportation and heating fuel products consumed in Rhode Island, eastern Connecticut, and parts of Massachusetts are supplied via marine shipments through this port.” The U.S. Department of Homeland Security also recognizes the Port of Providence as a critical port in supplying energy to New England. Homeland Security has allocated in the past, and continues to allocate, port security grant funding to ensure the security of this important energy supply line (U.S. Department of Homeland Security 2008).
3. Shipping operations into the Port of Providence are reliant on port facilities located in both Providence and East Providence. Most of the port’s maritime activity is concentrated in ProvPort (a private port facility located in Providence), though these industries depend on support services provided by tugboat, shipyard, and other services located throughout Providence Harbor. Petroleum import facilities and tank farms are located on both sides of the Harbor in Providence and East Providence. For further information on port facilities in Providence, see the R.I. Metro Bay Special Area Management Plan (R.I. Coastal Resources Management Council in review) and the Rhode Island Ports and Commercial Harbors Inventory (Becker et al. in review).
4. Marine transportation into the Port of Providence is facilitated by a federally maintained navigational channel, which was recently dredged in 2005 to a 40-foot depth, allowing Providence to accommodate larger-draft vessels. The deep draft channel—as well as its intermodal capabilities, connecting water, rail, and land transportation—together make the Port of Providence attractive to both domestic and international vessels (ProvPort 2009). Providence is one of the few New England ports that can accommodate large ocean-going vessels and can offer direct access to interstate highways (I-95 and I-195), making it an attractive port for cargo destined for inland Northeastern cities (FXM Associates 2008a).

740.2. Quonset/Davisville

1. The Quonset Business Park includes the Port of Davisville, which is the second intermodal shipping terminal in Rhode Island; a ferry terminal utilized by Vineyard Fast Ferry; and several other maritime businesses. For further information on maritime facilities in Quonset/Davisville, see the Rhode Island Ports and Commercial Harbors Inventory (Becker et al., in review).
2. The Port of Davisville offers direct access to rail service and major highways from the port facilities. Vehicle imports comprise the majority of the cargo handled by the

port. The Port of Davisville is home to the 12th largest automobile importing, processing, and distribution center in the U.S., with approximately 100 car-carrier ships handled by the port per year (FXM Associates, 2008b). Each vessel imports approximately 800 to 1,000 vehicles per trip, to be later distributed throughout New England and the Northeast. Table 7.7 shows the number of ships and vehicles processed at Davisville for the past two years. In peak months Davisville handles up to 13 vessels and in slower months as few as four vessels (see Table 7.7).

Table 7.7. Port of Davisville monthly car carrier visits and vehicle units imported, July 2007 through June 2009 (Quonset Development Corporation, 2009).

Month	Units	Ship Calls
July 2007	9,535	10
August 2007	7,852	8
September 2007	7,133	7
October 2007	7,831	8
November 2007	5,018	4
December 2007	6,276	6
January 2008	5,030	4
February 2008	7,689	6
March 2008	4,070	6
April 2008	11,611	9
May 2008	6,253	8
June 2008	4,690	5
July 2008	8,828	7
August 2008	7,341	9
September 2008	11,089	9
October 2008	15,314	11
November 2008	10,314	8
December 2008	15,838	13
January 2009	5,088	4
February 2009	8,824	8
March 2009	8,417	9
April 2009	5,858	6
May 2009	4,447	7
June 2009	9,143	10
Total	193,489	182

3. Sea-frozen fish are also imported and exported at the Port of Davisville. Davisville is home to the largest producer of sea-frozen fish on the U.S. East Coast, supplying sea-frozen and land-frozen fish to a worldwide range of markets, including bait products to domestic and international longline fleets (Seafreeze Ltd. 2009).

4. Ships access the Port of Davisville through a shipping channel with a 29-foot controlling depth that is not maintained by the U.S. Army Corps of Engineers. For this reason, the port is exempt from the federal harbor maintenance tax. This means that federal funds are not available for maintaining this channel, but also that it is cheaper for ships to call at Davisville because they are not required to pay the harbor maintenance tax on their cargo (Matthews, pers. comm.). Davisville's tax-exempt status means a savings of \$12.50 per \$10,000 in cargo value (North Atlantic Distribution 2009).
5. The Port of Davisville has several advantages in attracting commercial vessel traffic. These include the lack of a harbor maintenance tax charged on cargo (discussed above) and its designation as a Foreign Trade Zone with U.S. Customs operations (FXM Associates 2008b; Quonset Development Corporation 2009). Together these features help attract foreign vessel traffic to the state.¹⁶
6. Vineyard Fast Ferry, which runs a seasonal fast ferry between Quonset Point and Martha's Vineyard, operates a small ferry terminal in the Quonset Business Park. See Section 730.3 for further information on this and other passenger ferries operating in the Ocean SAMP area.
7. Other current marine transportation-related uses at the Quonset Business Park include businesses such as Senesco Marine, a barge-building company, and General Dynamics Electric Boat, which builds parts of U.S. Navy submarines. In addition, the park is scheduled to become the home port of the new NOAA research ship, R/V *Okeanos Explorer* (Kuffner 2009).

740.3. Fall River

1. The Port of Fall River is the third major commercial port in Narragansett Bay, and is the second most active port in Massachusetts (Donovan 2003). In the Port of Fall River, which for the purposes of this chapter includes both Fall River and Somerset, commercial cargo and fishing vessels are accommodated at the Fall River State Pier. Coal carriers also make berth at power plants in Somerset, across from Fall River. Most commercial traffic transiting through the Ocean SAMP area to Fall River and Somerset consists of coal carriers and barges, as well as chemical cargo, to support nearby power stations and chemical facilities. Coal brought to Somerset via the Ocean SAMP area directly supports the operations of the Brayton Point Power Station (Dominion Power 2009).

¹⁶ U.S. Customs and Border Protection charges a fee of 0.125% of the cargo value on all imported goods admitted into a foreign trade zone via navigable waterways, maintained by the U.S. Army Corps of Engineers. Harbor Maintenance Fees are subsequently deposited into the Harbor Maintenance Trust Fund, which is then made available, to the Army Corps of Engineers for the improvement, dredging and maintenance of U.S. navigational channels, ports, and harbors (Water Resources Development Act of 1986, 33 U.S.C. 2238 §210, Internal Revenue Code of 1986, §9505c).

2. Due to the shallow depth of Mount Hope Bay outside the federally maintained channel approaching the Port of Fall River, many larger commercial vessels lighter within Narragansett Bay in an anchorage near Gould Island before proceeding to port (Weavers Cove Energy LLC 2009).

740.4. Newport

1. Newport Harbor is a major hub of activity for vessels traveling through the Ocean SAMP area. Within Newport Harbor and Brenton Cove, terminals at Fort Adams and Perotti Park are frequently used by visiting cruise ships as well as passenger ferries destined for Block Island (see Section 730.4 and Chapter 6, Recreation and Tourism, for further discussion).
2. Naval vessels associated with the Naval Station Newport and NUWC travel through the Ocean SAMP area and are supported by infrastructure located at these facilities. See Section 730.5 for further discussion of naval operations.
3. Newport is a popular staging area or destination for recreational vessels; a number of privately owned docks, moorings, marinas, yacht clubs, public piers, and other infrastructure support recreational vessels. See Chapter 6, Recreation and Tourism, for further discussion. Newport also has some fisheries-related port infrastructure used by commercial and recreational fishermen. See Chapter 5, Commercial and Recreational Fisheries, for further discussion.

740.5. Point Judith

1. Point Judith Harbor supports both commercial and privately owned vessels that utilize the Ocean SAMP area through privately owned marinas and moorings and the public boat state pier facilities located here. The outer harbor is also designated on NOAA charts as a Harbor of Refuge, offering a protected and sheltered anchorage for vessels transiting this area.
2. Point Judith Harbor is the main port of embarkation for Interstate Navigation's Block Island Ferry (see Section 730.3), which utilizes the state pier facilities.
3. Point Judith is the center of the Rhode Island commercial fishing industry and is the home port for many commercial as well as party/charter boat fishing vessels; see Chapter 5, Commercial and Recreational Fisheries, for further discussion.

740.6. Block Island

1. Block Island's shore-side infrastructure includes two ferry terminals, one each in Old Harbor and New Harbor, as well as a number of public boat ramps and privately owned marinas. Apart from the ferry service and the occasional cruise ship described in Section 730, vessel traffic to and from Block Island is comprised mainly of pleasure craft. For more information on recreational boating associated with Block

Island and the marinas and boat ramps that support these activities see Chapter 6, Recreation and Tourism.

Section 750. Other Infrastructure in the Ocean SAMP Area

750.1. Disposal Site

1. There is one active dredged material disposal site within the Ocean SAMP area, named the Rhode Island Sound Disposal Site. This site was designated in December 2004; before its formal site designation it was used as a disposal site for sediment from the Providence River dredging project (USACE n.d.) This site is managed by the Environmental Protection Agency. It is centered at 41° 13.8' N, 71° 22.8'W, approximately 9.1 nautical miles south-southeast of Point Judith within the traffic separation zone (See Figure 7.9). A second inactive disposal site, labeled on NOAA charts as “Dumping Ground,” is located about 4.5 nautical miles south of Brenton Point (see Figure 7.9).

750.2. Unexploded Ordnance

1. There are seven identified locations of unexploded ordnance within the Ocean SAMP area, all to the east of Block Island (see Figure 7.9). These include unexploded depth charges, unexploded bombs and unexploded general ordnance. There is no evidence that these will be removed, as some date back to the 1940s and '50s. (Battelle 2003). Moving from east to west on Figure 7.9, these include a depth charge (1995); depth charges (1952); bombs (1958); depth charge (1947); general ordnance (1971); depth charge (1957); and general ordnance (1992) See NOAA Chart 13218 (NOAA Office of Coast Survey 2009) for further information.

750.3. Underwater Cables

1. Underwater cables running through the Ocean SAMP area are owned by three companies: AT&T, Verizon, and Reliance Globalcom. They include both in-service and out-of-service telecommunications cables (See Figure 7.9).
2. There are six communications cables running through the Ocean SAMP area. Three are owned by AT&T and one is managed by the company, and they all originate at Green Hill in South Kingstown, R.I. Two of these cables are in active use. One AT&T cable, TAT 12/13 Interlink (in service), runs to the west of Block Island. The other three communications cables (TAT 6 [out of service], TAT 10 [out of service] and TAT 12 [in service]) run to the east of Block Island (Wargo pers. comm.). Another cable, CB-1 (formerly Gemini North), is owned by Verizon, and also originates in Green Hill, and runs to Bermuda (Salley pers. comm.). The last cable, FA-1 North (formerly FLAG Atlantic North) is an international telecommunications cable owned by Reliance Globalcom and is in service, and originates from the north shore of Long Island at Crab Meadow (Tegg pers. comm.). All of these cables exit the southern boundary of the Ocean SAMP area.
3. NOAA nautical charts may list “Cable Areas” but that does not necessarily mean that actual cables reside there. Cables are shown on NOAA charts at the request of a data

provider, such as the U.S. Army Corps of Engineers or other permitting entity, so that mariners do not anchor or drag gear over these areas and damage cables (NOAA 1992).

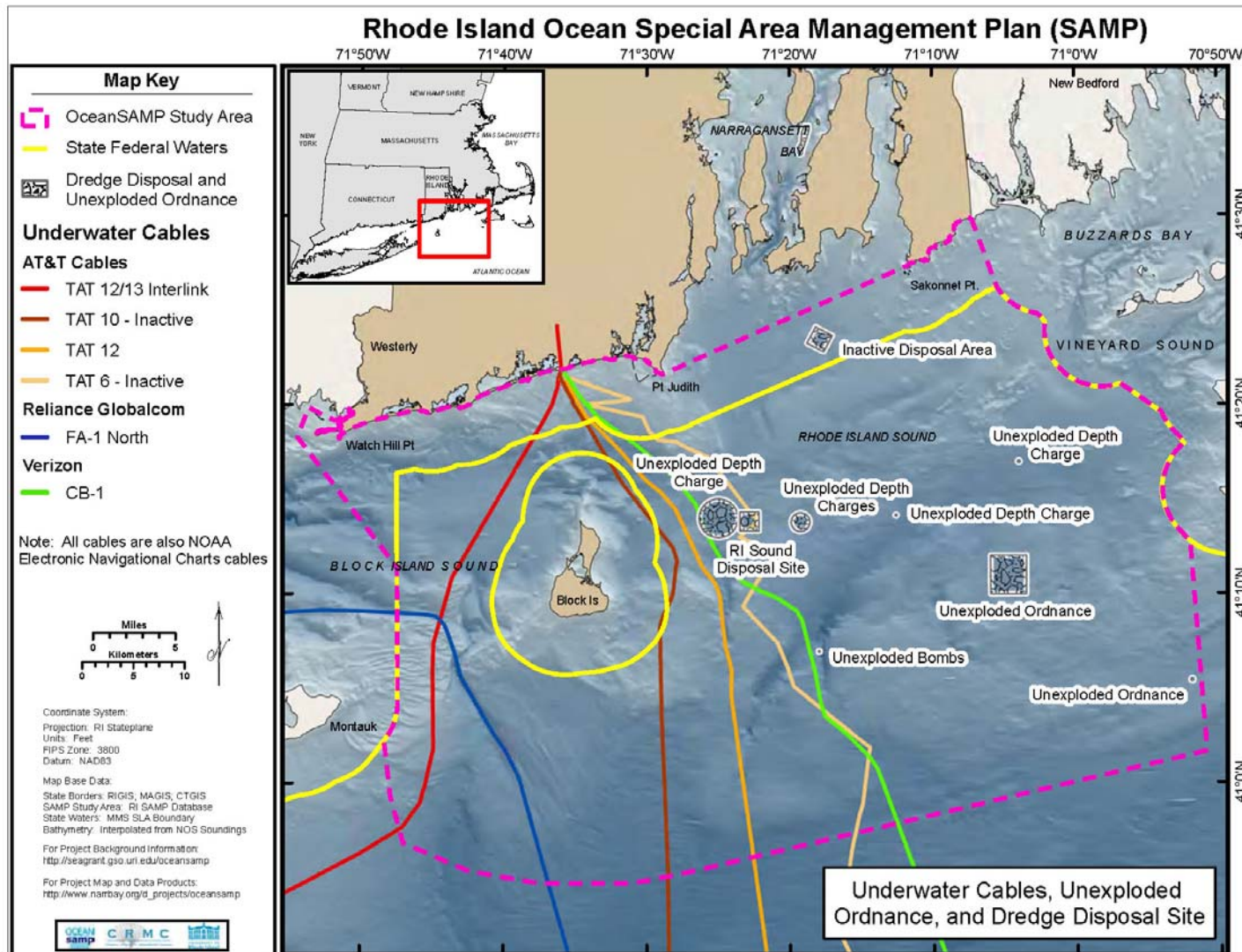


Figure 7.9. Underwater cables, unexploded ordnance, and dredge disposal site.

Section 760. Economic Impact of Marine Transportation and Navigational Uses within the Ocean SAMP Area.

1. Marine transportation and navigational uses of the Ocean SAMP area are economically valuable to Rhode Island and to the entire southern New England region. Imports into the Port of Providence, which pass through this area, provide an “energy lifeline” not only to Rhode Island residents, but also to households and businesses in Massachusetts and Connecticut (U.S. Army Corps of Engineers 1998; U.S. Energy Information Administration 2009). In addition, these uses facilitate commerce through the import of consumer and manufacturing goods, and support marine-related industries throughout the state. These industries in turn create jobs, both on ships and ashore, for Rhode Island residents. Detailed statistics on Rhode Island marine transportation-related jobs and wages are included below.
2. A 2004 economic impact study of Rhode Island’s navigation-dependent industries conducted in connection with the 2002 Rhode Island Region Long-Term Dredged Material Disposal Site Evaluation Project found that “navigation-dependent activity in Rhode Island has a significant impact on the state’s economy as a whole that goes beyond the navigation-dependent sectors” (The Greeley-Polhemus Group, Inc. 2004). This study found that navigation-dependent marine transportation industries as well as recreational and fishing-related industries had an economic impact of \$586 million on the gross state product .If indirect and induced GSP were considered, the economic impact of navigation-dependent activities in Rhode Island totaled \$1.1 billion. This assessment also found that navigation-dependent industries supported 12,265 direct jobs and \$425 million in wages (The Greeley-Polhemus Group, Inc. 2004).
3. The National Ocean Economics Program (2009) found that in 2004, marine transportation-related industries in Rhode Island alone accounted for 1,968 jobs, \$134 million in wages, and \$97 million in gross domestic product. These statistics are based on analysis of Bureau of Labor Statistics data and reflect jobs in freight and passenger transportation, marine transportation-related equipment, and other marine transportation-related businesses.¹⁷
4. Rhode Island’s ports, which rely on ships passing through the Ocean SAMP area, generate a significant amount of economic activity. A 2009 study of the Port of Providence found that in fiscal year 2008, 953 direct jobs were supported by port operations, generating \$42.1 million in personal income, \$21.8 million in local purchases, and \$16.9 million in state and local tax revenue (see Table 7.8; Martin Associates 2009). This does not include the economic impact associated with other Providence businesses that support the port. A 2008 study of the port-related

¹⁷ Marine transportation-related businesses are defined by the National Ocean Economics Program as businesses falling under the following Standard Industrial Classification and North American Industrial Classification System categories: Water Transportation of Freight, Water Transportation of Passengers, Deep Sea Freight Transportation, Marine Passenger Transportation, Marine Transportation Services, Search and Navigation Equipment and Warehousing (Colgan 2007).

businesses on Allens Avenue in Providence, which include a shipyard and a tugboat company, found that these businesses support 372 employees and generate about \$294 million in sales and \$20 million in payroll (FXM Associates, 2008a).

5. In 2007, the economic impact of the Port of Davisville was found to include 1,100 direct jobs, \$42 million in wages, and \$9 million in tax revenue (see Table 7.9; FXM Associates 2008a). The total output of the Port of Davisville was estimated at \$119 million, which included expenditures on materials, labor, interest, rent, as well as income, profit, dividends and depreciation (FXM Associates 2008b).

Table 7.8. Economic impact of the Port of Providence in Fiscal Year 2008 (2008 Dollars; Martin Associates 2009).

Number of Direct Jobs	953
Personal Income	\$42.1 million
Local Purchases	\$21.8 million
Local and State Tax Revenue Generated	\$16.9 million

Table 7.9. Economic impact of the Port of Davisville in 2007 (2007 Dollars; FXM Associates 2008b).

Number of Direct Jobs	1,100
Wages Paid	\$42 million
Total Business Output*	\$119 million
Local and State Tax Revenue Generated	\$9 million

**Total business output is roughly equivalent to GDP and includes expenditures on materials, labor, interest, and rent, as well as income, profit, dividends and depreciation.*

6. Most commercial ships (excluding tug and barge units) passing through the Ocean SAMP area en route to Rhode Island ports are required to carry a licensed marine pilot when navigating state waters. These ships generate state revenue through pilotage fees, which are based on a ship's tonnage (McVay pers. comm.) and are deposited into the State's general revenue account (Rhode Island State Pilotage Commission 2007). In 2007, pilotage fees generated over \$175,000 (Rhode Island State Pilotage Commission 2007).
7. Cruise ship traffic through the Ocean SAMP area contributes revenue to local economies, such as Newport, through the influx of cruise ship passengers during the summer season. For every passenger that disembarks from a cruise ship in Newport, the city collects a \$4 port tax (Smith, pers. comm.). In 2008, this amounted to approximately \$272,000 in city revenue. Cruise ship passengers also have an economic impact through their personal spending; see Chapter 6, Recreation and Tourism, for further discussion.
8. Navy operations in the Ocean SAMP area contribute not only to national security, but also to the local economies in which military facilities are based through expenditures, development, and the creation of jobs. The economic value of naval

uses of this area is difficult to quantify, as much of the military activity occurring in this area is based out of facilities in neighboring states, such as Groton, Conn. However, in 2008 NUWC Division Newport reported over \$531 million in total institutional spending, and over \$240 million in wages for 2,600 employees (see Table 7.9). Moreover, local businesses also benefitted from \$189 million awarded in Navy contracts to Rhode Island-based companies (see Table 7.10).

Table 7.10. Economic impact of the NUWC Division Newport, 2007-2008 (NUWC Division Newport 2008 and 2009).

	2007	2008
Total Number of Employees	2,578	2,602
Total NUWC Spending	\$466 mil	\$531 mil
Wages Paid	\$235 mil	\$246 mil
Contracts Awarded to Rhode Island-Based Companies	\$123 mil	\$189 mil

9. Recreational boaters and commercial and recreational fishing vessels also utilize the Ocean SAMP area for fishing or other recreational uses. These uses support Rhode Island's marine-related industry, as well as coastal economies, through the sale of fuel, supplies, and marina services and are discussed in detail in Chapter 5, Commercial and Recreational Fisheries, and Chapter 6, Recreation and Tourism.
10. The data presented here reflects the economic importance of marine transportation and navigational uses of the Ocean SAMP area to the state as a whole, as well as the coastal communities of the state. Port operations within Rhode Island rely on the waters of this area to transport valuable cargo and facilitate commerce within the region. In addition, the economic activity of cruise ship tourism, recreational boating, and military uses that navigate and operate within the Ocean SAMP area contribute to both state and local economies.

Section 770. Policies and Standards

770.1. General Policies

1. The Council recognizes the importance of designated navigation areas, which include shipping lanes, precautionary areas, recommended vessel routes, pilot boarding areas, anchorages, military testing areas, and submarine transit lanes to marine transportation and navigation activities in the Ocean SAMP area. The Council also recognizes that these and other waters within the Ocean SAMP area are heavily used by numerous existing users who have adapted to each other with regard to their uses of ocean space. Any changes in the spatial use patterns of any one of these users will result in potential impacts to the other users. The Council will carefully consider the potential impacts of such changes on the marine transportation network. Changes to existing designated navigational areas proposed by the Coast Guard, NOAA, the R.I. Port Safety and Security Forums, or other entities could similarly impact existing uses. The Council requests that they be notified by any of these parties if any such changes are to be made to the transportation network so that they may work with those entities to achieve a proper balance among existing uses.
2. The Council recognizes the economic, historic, and cultural value of marine transportation and navigation uses of the Ocean SAMP area to the state of Rhode Island. The Council's goal is to promote uses of the Ocean SAMP area that do not significantly interfere with marine transportation and safe navigation within designated navigation areas, which include shipping lanes, precautionary areas, recommended vessel routes, pilot boarding areas, anchorages, military testing areas, and submarine transit lanes. See section 770.2 for discussion of navigation areas which have been designated as Areas of Particular Concern.
3. The Council will encourage and support uses of the Ocean SAMP area that enhance marine transportation and safe navigation within designated navigation areas, which include shipping lanes, precautionary areas, recommended vessel routes, pilot boarding areas, anchorages, Navy restricted areas, and submarine transit lanes.
4. The Council shall work together with the U.S. Coast Guard, the U.S. Navy, the U.S. Army Corps of Engineers, NOAA, fishermen's organizations, marine pilots, recreational boating organizations, and other marine safety organizations to promote safe navigation around and through offshore structures and developments, and along cable routes, during the construction, operation, and decommissioning phases of such projects. The Council will promote and support the education of all mariners regarding safe navigation around offshore structures and developments and along cable routes.
5. Discussions with the U.S. Coast Guard, the U.S. Department of Interior Bureau of Ocean Energy Management, Regulation, and Enforcement, and the U.S. Army Corps of Engineers have indicated that no vessel access restrictions are planned for the waters around and through offshore structures and developments, or along cable

routes, except for those necessary for navigational safety. Commercial and recreational fishing and boating access around and through offshore structures and developments and along cable routes is a critical means of mitigating the potential adverse impacts of offshore structures on commercial and recreational fisheries and recreational boating. The Council endorses this approach and shall work to ensure that the waters surrounding offshore structures, developments, and cable routes remain open to commercial and recreational fishing, marine transportation, and recreational boating, except for navigational safety restrictions. The Council requests that federal agencies notify the Council as soon as is practicable of any federal action that may affect vessel access around and through offshore structures and developments and along cable routes. The Council will continue to monitor changes to navigational activities around and through offshore developments and along cable routes. Any changes affecting existing navigational activities may be subject to CZMA Federal Consistency review if the federal agency determines its activity will have reasonably foreseeable effects on the uses or resources of Rhode Island's coastal zone.

770.2. Regulatory Standards

1. Navigation, military, and infrastructure areas including: designated shipping lanes, precautionary areas, recommended vessel routes, ferry routes, dredge disposal sites, military testing areas, unexploded ordnance, pilot boarding areas, and anchorages, as shown in Figures 7.1, 7.2, 7.8, and 7.9, have been designated as Areas of Particular Concern. The Council recognizes the importance of these areas to marine transportation, navigation and other activities in the Ocean SAMP area. See Chapter 11, The Policies of the Ocean SAMP, for requirements associated with Areas of Particular Concern.
2. The Council shall consult with the U.S. Coast Guard, the U.S. Navy, marine pilots, the Fishermen's Advisory Board as defined in section 1160.1.6, fishermen's organizations, and recreational boating organizations when scheduling offshore marine construction or dredging activities. Where it is determined that there is a significant conflict with season-limited commercial or recreational fisheries activities, recreational boating activities or scheduled events, or navigation uses, the Council shall modify or deny activities to minimize conflict with these uses.
3. The Council shall require the assent holder to provide for communication with commercial and recreational fishermen, mariners, and recreational boaters regarding offshore marine construction or dredging activities. Communication shall be facilitated through a project website and shall complement standard U.S. Coast Guard procedures such as Notices to Mariners for notifying mariners of obstructions to navigation.
4. Where possible, Offshore Developments should be designed in a configuration to minimize adverse impacts on other user groups, which include but are not limited to: recreational boaters and fishermen, commercial fishermen, commercial ship

operators, or other vessel operators in the project area. Configurations which may minimize adverse impacts on vessel traffic include, but are not limited to, the incorporation of a traffic lane through a development to facilitate safe and direct navigation through, rather than around, an Offshore Development

5. Any assent holder of an approved Offshore Development shall work with the Council when designing the proposed facility to incorporate where possible mooring mechanisms to allow safe public use of the areas surrounding the installed turbine or other structure.
6. The facility shall be designed in a manner that minimizes adverse impacts to navigation. As part of its application package, the project applicant shall submit a navigation risk assessment under the U.S. Coast Guard's Navigation and Vessel Inspection Circular 02-07, "Guidance on the Coast Guard's Roles and Responsibilities for Offshore Renewable Energy Installations."
7. Applications for projects proposed to be sited in state waters pursuant to the Ocean SAMP shall not have a significant impact on marine transportation, navigation, and existing infrastructure. Where the Council, in consultation with the U.S. Coast Guard, the U.S. Navy, NOAA, the U.S. Bureau of Ocean Energy Management, Regulation and Enforcement, the U.S. Army Corps of Engineers, marine pilots, the R.I. Port Safety and Security Forums, or other entities, as applicable, determines that such an impact on marine transportation, navigation, and existing infrastructure is unacceptable, the Council shall require that the applicant modify the proposal or the Council shall deny the proposal. For the purposes of Chapter 7 and policies 770.1.1 to 770.2.7, impacts will be evaluated according to the same criteria used by the U.S. Coast Guard, as follows; these criteria shall not be construed to apply to any other Ocean SAMP chapters or policies:
 - a. Negligible: No measurable impacts.
 - b. Minor: Adverse impacts to the affected activity could be avoided with proper mitigation; or impacts would not disrupt the normal or routine functions of the affected activity or community; or once the impacting agent is eliminated, the affected activity would return to a condition with no measurable effects from the proposed action without any mitigation.
 - c. Moderate: Impacts to the affected activity are unavoidable; and proper mitigation would reduce impacts substantially during the life of the proposed action; or the affected activity would have to adjust somewhat to account for disruptions due to impacts of the proposed action; or once the impacting agent is eliminated, the affected activity would return to a condition with no measurable effects from the proposed action if proper remedial action is taken.
 - d. Major: Impacts to the affected activity are unavoidable; proper mitigation would reduce impacts somewhat during the life of the proposed action; the affected activity would experience unavoidable disruptions to a degree beyond what is normally acceptable; and once the impacting agent is eliminated, the

affected activity may retain measurable effects of the proposed action indefinitely, even if remedial action is taken.

Section 780. Literature Cited

- Albion, R.G., Labaree, B.W., and Baker, W.A.. 1970. *New England and the Sea*. Mystic, CT: Mystic Seaport Press.
- American Cruise Lines. 2009. New England Islands Eight-Day/Seven-Night Cruise. Online at: www.americancruiselines.com. Last accessed December 7, 2009.
- Becker, A., A. Wilson, R. Bannon, J. McCann, C. Damon, D. Goulet, D. Robadue, and S. Kennedy (ed.). In review. *Rhode Island's Ports and Commercial Harbors: A GIS-based Inventory of Current Uses and Infrastructure*
- Block Island Express. 2009. Jessica W. Online at: <https://www.longislandferry.com/bif/home.htm>. Last accessed December 7, 2009.
- Blount, Kevin. U.S. Coast Guard Sector Southeastern New England. Personal communication, July 14, 2009.
- City of Newport, Department of Economic Development. 2009. Cruise Ships. Online at: <http://www.cityofnewport.com/departments/economic-development/harbor/cruise.cfm>. Last accessed June 1, 2010.
- Colgan, C.L. 2007. *A Guide to the Measurement of the Market Data for the Ocean and Coastal Economy in the National Ocean Economics Program*. National Ocean Economics Program, January 2007. Online at: www.oceaneconomics.org. Last accessed November 17, 2009.
- Costabile, Cpt. Paul. 2009. Northeast Marine Pilots Association. Personal communication, August 31, 2009.
- Costabile, Cpt. Paul. 2009. Northeast Marine Pilots Association. Personal communication, November 10, 2009.
- Costabile, Cpt. Paul. 2009. Northeast Marine Pilots Association. Personal communication, November 13, 2009.
- Costabile, Cpt. Paul. 2009. Northeast Marine Pilots Association. Personal communication, December 23, 2009.
- Curtis, Steven. 2009. ProvPort. Personal communication, December 21, 2009.
- DeBow, Sam. 2009. URI Graduate School of Oceanography. Personal communication, July 7, 2009.
- Dion, M. 2009. Somerset's NRG power plant closing down. Fall River, MA:

- Herald News*. November 4, 2009. Online at <http://www.heraldnews.com/business/x1312013989/Somerset's-NG-power-plant-closing-down>.
- Dominion Power. 2009. Brayton Point Power Station. Online at: <http://www.dom.com/about/stations/fossil/brayton-point-power-station.jsp>. Last accessed October 21, 2009.
- Donovan, A. 2003. Beyond Boston Harbor – The Bay State’s ‘Four Ports’. *Coastlines*, 2003 edition. Massachusetts Office of Coastal Zone Management.
- Energy Information Administration. 2009. State Energy Profiles: Rhode Island. Online at: http://tonto.eia.doe.gov/state/state_energy_profiles.cfm?sid=RI#map
- Federal Energy Regulatory Committee. 2005. *Weaver’s Cove LNG Project Final Environmental Impact Statement*. Available online at: <http://www.ferc.gov/industries/lng/enviro/eis/2005/05-20-05-eis.asp>. Last accessed October 16, 2009.
- FXM Associates. 2008a. *Economic Effects of Allens Avenue Businesses*. Prepared for the Providence Working Waterfront Alliance.
- FXM Associates. 2008b. *Economic Effects of the Port of Davisville, RI*. Prepared for the Quonset Development Corporation.
- Global Security. 2009. Military-Newport. Online at: <http://www.globalsecurity.org/military/facility/newport.htm>
Last accessed November 11, 2009.
- Greeley-Polhemus Group, Inc. 2004. *Final Report, Task 15.1: The Economic Significance of the Navigation-Dependent Industries with the Zone of Siting Feasibility*. Rhode Island Region Long-Term Dredged Material Disposal Site Evaluation Project. Report to the U.S. Army Corps of Engineers, Contract Number DACW33-01-D-0004, Delivery Order No. 0002.
- Hale, S.O.. 1998 (updated ed.). *Narragansett Bay: A Friend’s Perspective*. University of Rhode Island Marine Advisory Service NOAA/Sea Grant Marine Bulletin 42.
- Hall-Arber, M., Dyer, C., Poggie, J., McNally, J., Gagne, R. 2001. *New England’s Fishing Communities*. Cambridge (MA): MIT Sea Grant 01-15. Available online at <http://seagrant.mit.edu/cmss/>.
- Interstate Navigation. 2009. Schedule. Online at <http://www.blockislandferry.com>. Last accessed December 7, 2009.
- Interstate Navigation. 2006. Sum of monthly reports, entitled “Vessel Operation Report

Statement of Freight and Passengers Carried (shallow draft traffic),” submitted to the U.S. Army Corps of Engineers in 2005.

- Kellner, G. H. and J. S. Lemons. 2004. *Rhode Island, the Ocean State: An Illustrated History*. Sun Valley, CA: American Historical Press.
- Kuffner, A. 2009. “Quonset lands NOAA research vessel Okeanos Explorer.” Providence, RI: *Providence Journal*, April 22, 2009. Online at http://www.projo.com/business/content/BZ_QUONSET_OKEANOS_04-22-09_MDE3V96_v21.30b12ba.html.
- Labaree, B. W., W. M. Fowler Jr., E. W. Sloan, J. B. Hattendorf, J. J. Safford, and A. W. German. 1998. *America and the Sea: A Maritime History*. Mystic, CT: Mystic Seaport Press.
- LeBlanc, Edward. 2009. U.S. Coast Guard Sector Southeastern New England. Personal communication, November 11, 2009.
- LeBlanc, Edward. 2009. U.S. Coast Guard Sector Southeastern New England. Personal communication, December 16, 2009.
- LeBlanc, Edward. 2010. U.S. Coast Guard Sector Southeastern New England. Personal communication, September 15, 2010.
- Marine Transportation System National Advisory Council. 2009. Marine Transportation System National Advisory Council. Online at www.mtsnac.org. Last accessed December 7, 2009.
- Martin Associates. 2009. *The Local and Regional Economic Impacts of Maritime Activity at PROVPORT*. Prepared for ProvPort. June 5, 2009.
- McVay, Cpt. Howard. 2009. Northeast Marine Pilots Association. Personal communication, August 31, 2009.
- Matthews, Evan. 2009. Quonset Development Corporation. Personal communication, July 27, 2009.
- Minerals Management Service. 2009. *Cape Wind Energy Project Final Environmental Impact Statement*. January 2009.
- Myers, Cpt. Chris. 2009. Interstate Navigation Company. Personal communication, August 7, 2009.
- National Oceans Economics Program. 2009. *Ocean Economy: Rhode Island*. Online at: <http://www.oceaneconomics.org>. Last accessed October 21, 2009.

- National Ports and Waterways Institute, University of New Orleans. 2004. *The Public Benefits of the Short Sea Intermodal Shipping System*. Report prepared for the Short Sea Cooperative Program. Online at: <http://advancedmarimetechology.atcorp.org/short-sea-shipping/Public%20Benefits%20of%20SSS%20-%20UNO.pdf>. Last accessed December 7, 2009.
- Naval Undersea Warfare Center (NUWC) Division Newport. 2009. NUWC Division Newport's economic impact topped half-billion mark in 2008. Press Release, January 29, 2009. Online at: <http://www.navsea.navy.mil/nuwc/newport/pages/pr.aspx>. Last accessed October 21, 2009.
- Naval Undersea Warfare Center (NUWC) Division Newport. 2008. Naval Undersea Warfare Center Newport's economic impact topped \$466 million in 2007. Press Release, January 18, 2008. Online at: <http://www.navsea.navy.mil/nuwc/newport/pressroom/0208-EconomicImpact.pdf>. Last accessed October 21, 2009.
- Naval Undersea Warfare Center (NUWC), Division Newport. 2007. *Coastal Consistency Determination for Test Operations in Rhode Island Water*. October 2007.
- Newport & Bristol Convention and Visitors Bureau. 2009. Cruise Ship Schedule. Online at <http://www.gonewport.com/>. Last accessed December 7, 2009.
- National Oceanic and Atmospheric Administration (NOAA). 2008. Final Rule: Endangered Fish and Wildlife; Final Rule To Implement Speed Restrictions to Reduce the Threat of Ship Collisions With North Atlantic Right Whales. *Federal Register*, October 10, 2008, pg. 60173-60191.
- NOAA. 1992. *Nautical Chart Manual, Volume 1, Part 1*. Seventh (1992) Edition, updated through March 2004.
- NOAA National Marine Fisheries Service. n.d. Reducing Ship Strikes to North Atlantic Right Whales. Online at <http://www.nmfs.noaa.gov/pr/shipstrike/>. Last accessed October 30, 2009.
- NOAA National Ocean Service. 2009. *United States Coast Pilot*. Volume 2, Atlantic Coast: Cape Cod, MA to Sandy Hook, NJ. 38th Edition.
- NOAA Office of Coast Survey. 2009. Chart 13218: Martha's Vineyard to Block Island. Revised through October 2009.
- NOAA Office of Coast Survey. 2007. Chart 13205: Block Island Sound and Approaches. Revised through February 2007.

- North Atlantic Distribution (NORAD). 2009. *Highlights and Points*. Online at: <http://www.noradinc.com>. Last accessed December 7, 2009.
- Northeast Marine Pilots Association. 2009. *The Pilot Boats*. Online at: <http://www.nemarinepilots.com>. Last accessed October 16, 2009.
- ProvPort. 2009. *Facilities*. Online at: <http://www.ProvPort.com/>. Last accessed December 7, 2009.
- Quonset Development Corporation. 2009. Ship Waybill Database. Accessed July 27th, 2009.
- R.I. Coastal Resources Management Council (CRMC). In review. R.I. *Metro Bay Special Area Management Plan (SAMP)*.
- R.I. Coastal Resources Management Council. 2008. *Coastal Resources Management Program*. Amended through December 2008. Online at <http://www.crmc.ri.gov/regulations/RICRMP.pdf>.
- R.I. Department of Environmental Management. 2009. Division of Law Enforcement Marine Unit. Online at <http://www.dem.ri.gov/programs/bnatres/enforce/marine.htm>. Last accessed June 1, 2010.
- R.I. Economic Monitoring Collaborative. 2007. *FY07 Economic Monitoring Report*.
- R.I. Public Utilities Commission. 2009. Ferry Services. Online at <http://www.ripuc.org/utilityinfo/ferryservices.html>. Last accessed December 7, 2009.
- R.I. Senate Policy Office. 2002. *The Marine Cluster: An Investment Agenda for Rhode Island's Marine Related Economy*.
- R.I. State Pilotage Commission. 2007. *Rhode Island State Pilotage Commission Annual Report Fiscal Year 2007*. R.I. Department of Environmental Management, Division of Coastal Resources Management.
- Salley, Frank. 2009. Verizon. Personal communication, November 13, 2009.
- Scanlon, Michael. 2009. R.I. Department of Environmental Management. Personal communication, June 17, 2009.
- Seafreeze Ltd. 2009. Seafreeze, Ltd. Online at <http://www.seafreezeltd.com/>. Last accessed October 20, 2009.
- Smith, Evan. 2009. Newport & Bristol County Convention and Visitors Bureau. Personal communication, July 16, 2009.

- Tegg, Martin. 2009. Reliance Globalcom. Personal communication, November 16, 2009.
- Tompsett, Chris. 2009. Naval Undersea Warfare Center Division Newport. Personal communication, November 10, 2009.
- Tompsett, Chris. 2009. Naval Undersea Warfare Center Division Newport. Personal communication, November 25, 2009.
- U.S. Army Corps of Engineers, 2007. *Waterborne Commerce of the United States: Calendar Year 2007, Part 1– Waterways and Harbors Atlantic Coast*. WR-WCUS-07-1. Online at: <http://www.ndc.iwr.usace.army.mil>. Last accessed October 16, 2009.
- U.S. Army Corps of Engineers. 2006. *Waterborne Commerce of the United States: Calendar Year 2006, Part 1– Waterways and Harbors Atlantic Coast*. WR-WCUS-06-1. Online at: <http://www.ndc.iwr.usace.army.mil>. Last accessed October 16, 2009.
- U.S. Army Corps of Engineers. 2001. *Providence River and Harbor Maintenance Dredging Project Final Environmental Impact Statement*. U.S. Army Corps of Engineers, New England District, August 2001.
- U.S. Army Corps of Engineers. 1998. *Providence River and Harbor Maintenance Dredging Project Draft Environmental Impact Statement*. U.S. Army Corps of Engineers, New England District, October 1998.
- U.S. Army Corps of Engineers. 1997. *Waterborne Commerce of the United States: Calendar Year 1997, Part 1- Waterways and Harbors Atlantic Coast*. Online at <http://www.ndc.iwr.usace.army.mil>. Last accessed October 16, 2009.
- U.S. Army Corps of Engineers. n.d. Rhode Island Sound Disposal Site. Disposal Area Monitoring System (DAMOS)
- U.S. Coast Guard. 2009. About Us. Online at <http://www.uscg.mil/top/about>. Last accessed December 7, 2009.
- U.S. Coast Guard. 2008. *Vessel Requirements for Notices of Arrival and Departure, and Automatic Identification System*. Notice of proposed rulemaking published in the Federal Register, December 16, 2008.
- U.S. Coast Guard. 2006. *U.S. Coast Guard Captain of the Port Long Island Sound Waterways Suitability Report for the Proposed Broadwater Liquefied Natural Gas Facility*.
- U.S. Department of Homeland Security. 2008. FY 2008 Infrastructure Protection Activities. Online at

http://www.dhs.gov/xlibrary/assets/fy2008_infrastructure_protection_activities.pdf.

Last accessed December 23, 2009.

U.S. Navy. 2009. Naval Station Newport: History. Online at <https://www.cnic.navy.mil/Newport/AboutCNIC/GeneralInformation/index.htm>. Last accessed December 2, 2009.

Viking Fleet, 2009. Ferries. Online at www.vikingfleet.com. Last accessed December 7, 2009.

Vincent, Bud. 2009. University of Rhode Island Graduate School of Oceanography. Personal communication, November 12, 2009.

Vineyard Fast Ferry. 2009. About the Martha's Vineyard Fast Ferry. Online at: <http://www.vineyardfastferry.com>. Last accessed December 7, 2009.

Wargo, Robert. 2009. AT&T. Personal communication, November 13, 2009.

Wargo, Robert. 2009. AT&T. Personal communication, November 19, 2009.

Waterson Terminal Services. 2008. Presentation to Providence Waterfront Charrette, June 9, 2008, Providence, Rhode Island. Available online at: www.watersonllc.com. Last accessed October 22, 2009.

Weaver's Cove Energy LLC. 2009. *United States Coast Guard Waterway Suitability Assessment for Weaver's Cove*. Redacted Version.