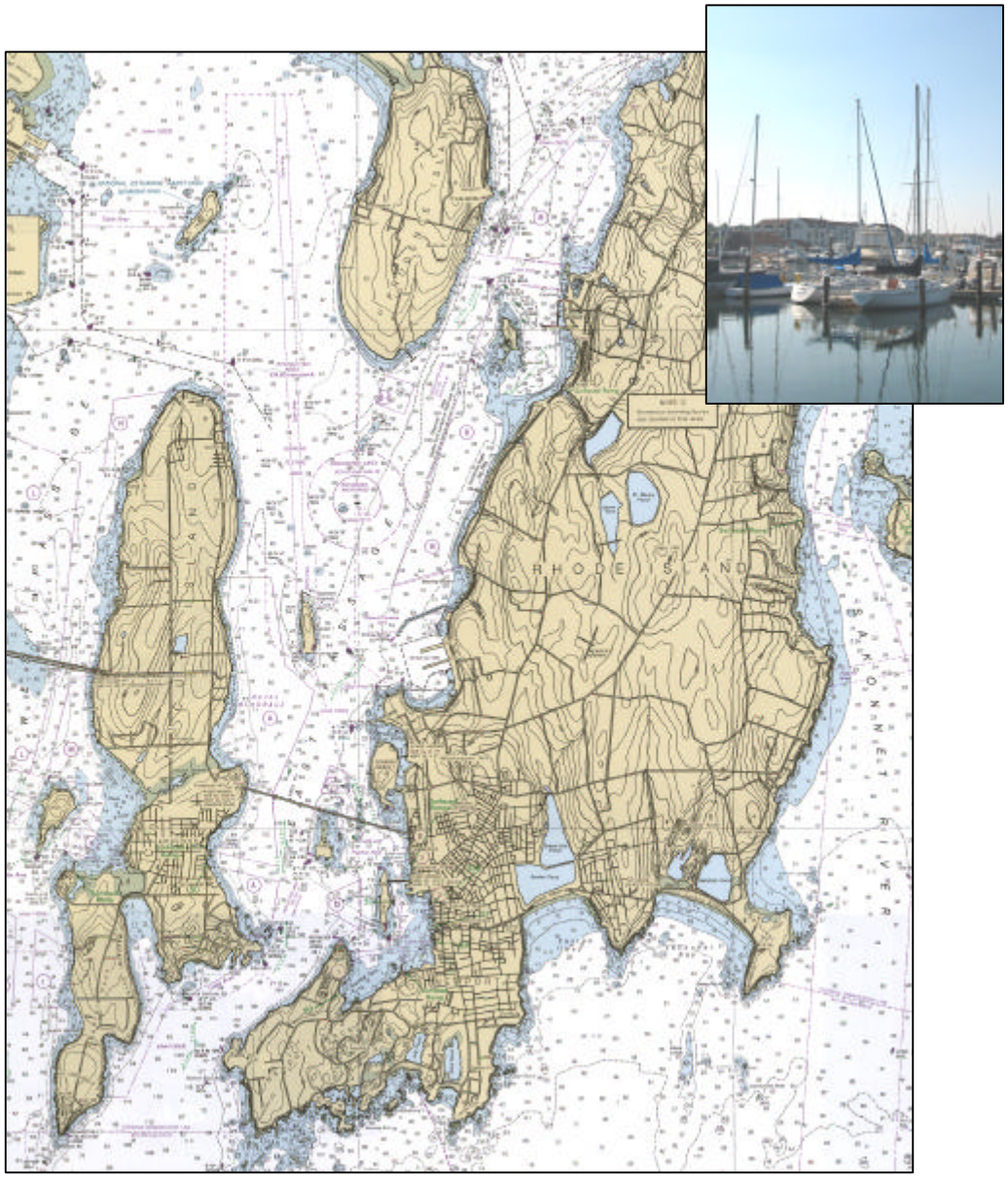
LNG TANKER IMPACTS TO MARINE NAVIGATION

AQUIDNECK ISLAND

Newport, Middletown and Portsmouth, Rhode Island



Aquidneck Island Planning Commission

AUGUST 2005

Liquefied Natural Gas Tanker Traffic Impacts to Marine Navigation

Aquidneck Island
Newport, Middletown, and Portsmouth RI

August 16, 2005

Aquidneck Island Planning Commission
321 East Main Road
Portsmouth RI 02871

Prepared by:

Pare Engineering Corp.
8 Blackstone Valley Place
Lincoln RI 02865

Table of Contents — Page Number

Section 1 **1**
EXECUTIVE SUMMARY

Section 2 **7**
LNG SAFETY AND SECURITY ZONES
LNG Tanker Transit 8
Northeast Marine Pilots Association 9
Critical Issues of Concern 9
Castle Hill, Newport-Beavertail Light, Jamestown to Gould Island 10
Prudence Island to Mount Hope Bridge 13
Mount Hope Bay 16
Nighttime Transit Issues 19

Section 3 **21**
EXISTING MARINE USE
Recreational Boating 21
Marinas and Yacht Clubs 21
Boat Counts 23
Regattas and Sailing Events 24
Public Boat Ramps 25
Permitted Marinas 25
US Coast Guard 25
Commercial Marine Use 27
Fishing Fleet 27
Ferry Service 27
Fishing and Cruising Charters 28
Newport Events 28
Cruise Ships/Goat Island Anchorage 28
Emergency Access 29
Museums and Organizations 29
Naval Underwater Warfare Center (NUWC) 30

Section 4 **31**
ECONOMIC CONSIDERATIONS AND IMPACTS TO RECREATIONAL AND COMMERCIAL BOATING
Bay Tourism and the State and Local Economy 31
Tourism and the State Economy 31
Tourism and Local Economy 32
LNG Economic Impact 33
Impacts to Tax Base and Life-style Residential Development 33
Impacts to Recreational Boating 34
Impacts to Regattas and Sailing Events 35
Impacts to Fishing Fleet 36

Table of Contents

Page Number

Impacts to Ferry Operations 36
Impacts to Charters and other Seasonal Tourism-based Businesses 37
Impacts to Cruise Ships 38
Impacts to Emergency Access 39
Impacts to Museums and Organizations 39
Impacts to Naval and Undersea Warfare Center (NUWC) 39
Fuel Costs 40

Sources **43**
Telephone Interviews 43
E-mail Contacts 44
References 45

Appendices

Appendix 1: KEY LNG TANKER TRANSIT FINDINGS: Final Environmental Impact Statements 49
LNG Transit 47
Moving Safety and Security Zone 52
Narragansett Bay Navigation 54

Appendix 2: East Passage Boat Counts 57

List of Figures

Figure 1 Safety and Security Zone – Castle Hill, East Passage 11
Figure 2 Safety and Security Zone – Newport, East Passage 12
Figure 3 Safety and Security Zone – Melville, East Passage 14
Figure 4 Safety and Security Zone – Mount Hope Bridge 15
Figure 5 Safety and Security Zone – Mount Hope Bay 17
Figure 6 Safety and Security Zone – Homestead 18

List of Tables

Table 1 LNG Inbound Transit Delay, East Passage Ports 3
Table 2 New York Yacht Club Major Events, 2005 22
Table 3 Ida Lewis Yacht Club Events, 2005 22
Table 4 Newport, Jamestown, and Portsmouth Marinas 22

Table of Contents **Page Number**

Table 5	Sail Newport Events, 2005	24
Table 6	US Coast Guard Permits, Castle Hill Station, 2004-2005	26
Table 7	Newport Cruise Ship Arrivals, 2005	29
Table 8	NUWC Exercises	30
Table 9	Cost of Fuel for Safety and Security Zone Delay (18 minutes	41
Table A-1.2	Transit Time to Weaver's Cove Energy	48
Table A-1.2	Transit Time to Weaver's Cove Energy	44
Table A-2.1	Boat Counts, June 24 and 25, 2005	56

Exhibits

Exhibit 1: East Passage Boat Counts 59

Section 1
Executive Summary

The Aquidneck Island Planning Commission has contracted for the following assessment of the impacts of proposed liquefied natural gas (LNG) tanker traffic on recreational and commercial boating on Narragansett and Mount Hope Bay waters off Aquidneck Island. The Aquidneck Island Planning Commission's goal is to provide information on potential impacts for its constituent communities on the bay: Newport, Middletown and Portsmouth.

The study addresses the proposed LNG tanker safety and security zone and its impact on access through local waters, compiles information on existing use of these waters, and demonstrates the importance of recreational and commercial boating to the economy of Island communities. This study does not address the safety concerns related to LNG tanker traffic, nor does it address vehicular traffic impacts, which are the subject of a separate Aquidneck Island Planning Commission study. Although the following analysis addresses selected economic impacts resulting from LNG tanker traffic, it is not intended to be a comprehensive analysis of each and every economic engine on Aquidneck Island.

Two LNG import terminal facilities have been considered for new or upgraded service in areas that could have a substantial impact on users of Narragansett and Mount Hope Bay:

- **Weaver's Cove Energy, L.L.C.** proposes new construction of an import terminal and natural gas pipeline facilities at Weaver's Cove, Fall River, MA. Federal Energy Regulatory Commission (FERC) approved this proposal on June 30, 2005. The applicant has prepared a Final Environmental Impact Statement (FEIS) / Environmental Impact Report in accordance with National Environmental Policy Act (NEPA)/ Massachusetts Environmental Policy Act requirements.

- **KeySpan LNG, L.P.** proposed upgrade of the existing terminal at Fields Point in Providence. This proposal was rejected by FERC on June 30, 2005, following the NEPA FEIS review process. Although this project was rejected, it has been included in the analysis pending any appeals.

Introduction of LNG tanker traffic to Narragansett Bay will impact the local economy and the way of life for Aquidneck Island residents and visitors alike. This activity will directly affect recreational and competitive sailing, tourism, high-end life style second home development, and the Naval Undersea Warfare Center (NUWC). These effects on the marine-dependent local economy will be felt throughout the state economy as well. The following list of LNG tanker transit operation requirements and considerations will assist the reader to better understand the scope of impacts to recreational and commercial boating:

- According to Weaver's Cove Energy, LNG tanker transit arrivals would not be routinely scheduled. Transit through the East Passage would not be announced prior to departure of the tanker from the Pilot Station in Rhode Island Sound. Recreational boaters have limited access to the US Coast Guard's Notice to Mariners and may not be tuned to VHF radio channels for information on LNG tanker transit. With one hour or less advance notice, it is not likely that many recreational boaters would be aware of a transit three or four miles to the south.

- According to Weaver's Cove Energy, LNG tankers bound for Fall River, MA would enter the East Passage of Narragansett Bay during any daylight hours, three hours before high tide. The outbound trip would also be planned to coincide with high tide in Fall River. Due to recent dredging of the Providence River channel, KeySpan LNG transit would not be tide-dependent and therefore would have less inconvenience to recreational boating with arrival and departure routinely scheduled at "first light."

- According to the Weaver's Cove Energy FEIS, the anticipated headway of an LNG tanker would be 10 knots south of Sandy Point, Prudence Island (west of Melville), and 5 knots north of Sandy Point through Mount Hope Bay. Transit time for an LNG tanker from the East Passage entrance to the Pell Bridge would be 23 minutes; between the Pell Bridge and Sandy Point transit would be 38 minutes; and between Sandy Point and the Braga Bridge, transit time would be an additional 103 minutes.

- LNG tanker safety and security zones extend two miles ahead, one mile behind, and 1,000 yards (3,000 feet) on either side of the ship. For a 920-foot tanker with a 150-foot width, this zone would encompass a water (and adjacent land) area 3.2 miles in length by 1.2 miles in width. Recreational and commercial boats would be prohibited from this zone without the permission of the US Coast Guard Captain of Port, Providence. This safety and security zone is in accordance with 33CFR 165.121 as specifically mandated for high-interest vessels (including LNG tankers) in Narragansett Bay and is NOT the reduced-width zone reported in the FEISs.

- As indicated in the FEISs prepared for both LNG projects, the safety and security zone would be enforced for both inbound and outbound LNG tankers. The Weaver's Cove Energy FEIS indicates that 50 to 70 LNG tankers are proposed annually initially; at least two transits would be made weekly, inbound and outbound. KeySpan has proposed 50 to 60 inbound tankers per year or one inbound and one outbound tanker transit every six to seven days.

- The US Coast Guard routinely coordinates shipping schedules to assure movement of commerce. The Captain of the Port coordinates with

shipping companies, ferry operators, cruise ship agents, regatta organizers, and the Northeast Marine Pilots Association to adjust schedules and avoid conflicts. Increased coordination would be required with proposed "high interest" LNG tankers. According to the US Coast Guard, LNG tankers so not have priority over other traffic.

Narragansett Bay is one of Rhode Island's primary economic assets. Its value to marine recreation, tourism and events, fisheries and aquaculture, boatbuilding, boating-related businesses, shipbuilding, marine transportation, military and marine research, technology and education have been well documented. The State of Rhode Island has advanced several recent initiatives to capitalize on the importance of the bay, not just on a quality of life basis for its residents, but also as a major economic driver. According to the *Narragansett Bay Summit 2000 Marine Recreation and Tourism White Paper*, the total annual value of Bay-related outdoor recreation activities is $2.0 billion.

Waters off Newport in the East Passage represent some of the most important recreational resources of Narragansett Bay. Although the East Passage represents a relatively small portion of the bay itself, prime sailing conditions and a protected harbor with full services and landside amenities have demonstrated that Newport is the focus of boating activity. According to the US Coast Guard Castle Hill Station, over two thirds of events on Narragansett Bay are scheduled in the waters off Newport.

Newport is recognized nationally and internationally as a world-class yachting center. The irregular and unannounced schedule of LNG tanker transit, together with delays to boating associated with passage of the LNG tanker safety and security zone, may affect the ability of Newport to retain a world-class image. Pleasure cruising, children's sailing lessons, the local Jamestown-Newport Ferry, tourist cruises, trips to Rose Island Light, and lifeline ferry service and emergency runs to Prudence and Hog Islands are among the many activities that could be delayed, especially during the peak summer boating season. With 30,000 registered boats in Rhode Island, 2,500 boats moored or at slips in the East Passage, and over 1,400 slips permitted but not yet constructed (see Section 3), potential conflicts on the waterways can be expected.

Imposed LNG tanker safety and security zones will dominate much of the East Passage, temporarily blocking recreational and commercial marine traffic from the entrance to the East Passage at Castle Hill to north of the Pell Bridge and then from Prudence Island north through the Mount Hope Bridge to Mount Hope Bay (see Figures 1 through 6). Minimum anticipated delays for inbound LNG tanker transit are presented in Table 1; similar delays would be anticipated for outbound LNG transit.

Table 1: LNG Inbound Transit Delay, East Passage Ports

Port	Destination	Minimum Delay
Newport	RI Sound, South	33 minutes
Newport	East Passage, North	18 minutes, then at 10 knots to rear of safety and security zone
Melville	RI Sound, South	Skirt to east shore
Melville	South of Prudence Island	25 minutes

Port	Destination	Minimum Delay
Melville	East Passage, North	18 minutes, then at 5 knots to rear of safety and security zone
Willow Lane (Proposed marina)	East Passage, South	36 minutes
Willow Lane	North to Mount Hope Bay	36 minutes then at 5 knots to rear of safety and security zone
Willow Lane	North of Prudence Island	36 minutes
Brewers Sakonnet Marina	West through Mount Hope Bridge	67 minute minimum

The LNG tanker safety and security zone would extend into Jamestown Harbor, an area where 400 boats are moored or at slips. Newport Harbor with over 900 boats moored or at slips, could be blocked for at least 20 minutes, the time it would take an inbound tanker safety and security zone to reach Fort Adams and clear Rose Island. This time period would increase depending on the number of boats blocked in the harbor, especially during peak recreational boating hours when boats from the East Passage would be diverted to Newport Harbor. This bottleneck would increase marine congestion within the harbor and lead to decreased safety, especially for less experienced boaters or those with non-motorized craft.

The only areas available for boaters to skirt the zone would be in the waters north of Gould Island between Jamestown and Prudence Island on the west or in waters south of Melville on the east shore. Waters on the west are currently restricted for use by Naval Undersea Warfare Center (NUWC) as a test range for experimental vessels. Restricted waters are also located in the vicinity of Coasters Harbor Island and Coddington Cove on the east. With the safety and security zone for proposed LNG tanker transit, what previously had been considered expansive waters of Narragansett Bay may now be significantly reduced for recreational mariners several times weekly during the boating season. As a result, the East Passage may be less attractive for recreation, with a new preference given to waters west of Jamestown and Prudence Island.

Of great economic impact would be the potential loss of Newport's ability to retain major regattas and events such as the Tall Ships that attract local, national and international participation. The effect of these events is significant not only to the local but to the state economy. For example, major regattas scheduled in Newport in 2005 include NYYC's 100th Annual Regatta, the Rolex Swan American Regatta, Grey Goose ISAF Team Racing World Championships, Black Duck Rum Classic Regatta, Farr 40 East Coast Championships, 26th Annual Classic Yacht Regatta, and the 12 Meter World Championships. With LNG tanker traffic and the limits it imposes, Newport may undergo a subtle shift in image from a sailing capital to a city on a busy commercial waterway.

LNG tanker transit may affect Newport's reputation as a tourist destination. The cruise ship industry could find Newport less attractive as unannounced LNG tanker safety and security zones may preclude use of the cruise ship mooring area west of Goat Island. Any inconvenience or negative experience with LNG tanker safety and security zones may lead cruise lines to abandon Newport in favor of other ports as destinations with more predictable access. With an average of 600 passengers per ship and 31 ships annually, the City of Newport collects approximately $75,000 in

landing fees. According to Evan Smith, CEO of the Newport County Convention and Visitors Bureau, the average cruise ship passenger spends $105 in Newport. Any diminution of the cruise ship trade would have a small but important impact on the local economy and the city budget.

According to *Rhode Island's Marine Tourism Economy* (draft, 2004) the Newport tourism industry generates $89.89 million in annual wages with $262.91 million in output (revenue). In Middletown the tourism industry generates $25.18 million in annual wages with $109.81 million in output. Any impact that reduces the attraction of Newport as a tourist destination would have a ripple effect in the island economy. Especially vulnerable is the high-end market with options on where to moor a boat, buy a second (or third) home, or spend a vacation. This market may choose other vacation destinations if Newport's sailing image is overshadowed by LNG tankers.

The impact of LNG tanker transit is important in Portsmouth where proposed high-end life-style residential development promises to yield $4 million annually in local property taxes (East Bay Newspapers, July 21, 2005). LNG tanker transit safety and security zones and delays associated with the commercial shipping holding area for the one-way pattern located off the shores of Carnegie Abbey could affect the full build-out potential of the O'Neill Properties Group $750 million developments proposed at Carnegie Abbey and at the 1,400-slip marina permitted at Portsmouth's Weaver Cove in Melville. Waters off Melville and Sandy Point on Prudence Island, extending north to the Mount Hope Bridge, will be especially congested as the LNG tanker slows to tether tug boats and maneuver to pass between piers of the Mount Hope Bridge. Delays for some boaters in this area could be double or more the FEIS-projected 36-minute delay based on the width of the zone and tanker speed. Delays and detours could adversely affect the ability of the Melville yachting center to attract and retain megayachts and other high-end sailboats.

LNG tanker transit through the East Passage could be in conflict with NUWC's ability to fulfill its mission to develop, test, and deliver viable undersea warfare weapon systems to the US Navy. Nearly 1.7 square miles of NUWC's exercise range (Restricted Area 334.80) is located within the proposed LNG tanker safety and security zone. NUWC estimates that five to seven events will be scheduled weekly on the range in 2006 and 2007 and that LNG tanker passage through the range would effectively halt any tests planned or in process. According to Donald Aker, NUWC Technical Manager, cancellation of a single event could result in a loss in excess of $50,000. NUWC and Naval Station Newport are major economic engines in the state. Any action that threatens the viability of NUWC to fulfill its mission could have far reaching implications not only to the local but also to the state and regional economy.

As evidenced by the data in the following report, the effect of unannounced LNG tanker transit, with its 3.2-mile long by 1.2-mile wide safety and security zone, will be of substantive impact on the economy of Newport, Aquidneck Island, and the state of Rhode Island. When combined with vehicular traffic impacts resulting from bridge closures and with the general anxiety associated with safety, LNG tanker transport has the potential to also affect the marine oriented way of life for residents of Aquidneck Island communities.

Section 2
LNG Tanker Safety and Security Zones

Following the events of September 11, 2001, the Code of Federal Regulations specifically established the dimensions of safety and security zones in Rhode Island waters. 33 CFR 165.121, Safety and Security Zones: High Interest Vessels, Narragansett Bay, Rhode Island, specifies that the zone applies to all high interest vessels transiting waters of Rhode Island Sound, Narragansett Bay, and the Providence and Taunton Rivers *two miles ahead and one mile astern, and extending 1,000 yards (3,000 feet) on either side.* The zone also applies within a half-mile radius of high interest vessels anchored in the Narragansett Bay Precautionary Area, located south of the entrance to the East Passage in Rhode Island Sound. High interest vessels operating within the Captain of the Port, Providence zone include the following: barges or ships carrying liquefied petroleum gas (LPG), liquefied natural gas (LNG), chlorine, anhydrous ammonia, or any other cargo deemed to be of high interest by the Captain of the Port, Providence. Entry into or movement within these zones, including below the surface of the water, during times in which high interest vessels are present and the zones are enforced, is prohibited unless authorized by the Captain of the Port, Providence or authorized representative. All persons and vessels shall comply with the instructions of the Captain of the Port and the designated on-site US Coast Guard personnel. On-scene Coast Guard patrol personnel include commissioned, warrant, and petty officers of the Coast Guard on board Coast Guard, Coast Guard Auxiliary, local, state and federal law enforcement vessels. (33 CFR 165.121)

Both the Weaver's Cove Energy and KeySpan LNG FEISs specify a safety and security zone that is two miles ahead, one mile behind, *but only 1,500 feet on either side of the LNG tanker*. This is not in compliance with 33 CFR 165.121 as cited above. The Weaver's Cove FEIS indicates the following: "Additionally it is important to note that the requirements of 33 CFR 165.121 were designed to apply to any high-interest vessel transiting Narragansett Bay and does not give consideration to safety or security measures that may be applied to mitigate risk. Considering the robust security plan that was devised during the Coast Guard-sponsored workshops, it is *likely* that LNG-specific security zone regulations will be promulgated." (WC FEIS 4-270, emphasis added). "A detailed security plan describing the resources and prevention/mitigation strategies *has been provided* to the FERC. The plan includes an offshore security sweep by a Coast Guard boarding team, aerial surveillance, and an escort to the dock by armed security boats to enforce a safety and security zone." (WC FEIS 4-269, emphasis added) Note that no change has been promulgated to date for the safety and security zone. In response to questions posed at an August 3, 2005 Newport City Council presentation, representatives of Weaver's Cove Energy did not present strategies, citing the need for security.

It is important to note the fact that the FEISs for both LNG facilities **consistently cite a safety and security zone that does not meet current federal regulation**. With a reduced safety and security zone width, the impact to recreational boating and navigation is significantly reduced compared to the federal regulation that mandates a 6,150-foot or 1.2-mile wide zone for a 150-foot wide tanker. The zone

indicated in the FEISs, for a maximum 142-foot wide tanker, would extend 3,142 feet, or 0.6 miles in width. By reducing this zone in half, the safety of boaters, residents, and visitors is potentially reduced. This is a critical point in the heavily plied waters off Newport between Castle Hill and the Pell Bridge where East Passage widths are less than the width of the federally mandated safety and security zone.

LNG tanker safety and security zones would dominate much of the East Passage, temporarily blocking recreational and commercial marine traffic from the entrance to the East Passage to the Pell Bridge and then from Prudence Island north through the Mount Hope Bridge to Mount Hope Bay. The only areas available to skirt the zone would be in the waters north and west of Gould Island between Jamestown and Prudence Island. These waters, however, may be restricted for use by the Naval Undersea Warfare Center (NUWC) as a test range for experimental vessels. Restricted waters are also located in the vicinity of Coasters Harbor Island and Coddington Cove. With the safety and security zone for proposed LNG tanker transit, what previously had been considered expansive waters of Narragansett Bay may now be significantly reduced for recreational mariners several times weekly. The East Passage may be avoided for recreation with a preference given to waters west of Jamestown and Prudence Island.

The length of the safety and security zone for a 930-foot LNG tanker is 3.2 miles (2.8 nautical miles). At 10 knots or 10 nautical miles per hour (estimated LNG tanker speed south of Sandy Point for Weaver's Cove Energy or through the East Passage for KeySpan), the LNG tanker safety and security zone would pass within 18 minutes. For an LNG tanker in transit at 5 knots (Sandy Point, Mount Hope Bridge, Mount Hope Bay bound for Weaver's Cove Energy), the safety and security zone would pass in 36 minutes. These minimum delays are cited in the FEISs. (WC FEIS 4-273) Actual delay would be longer, however, especially in areas where waters are less than 1.2 miles across.

LNG Tanker Transit

Weaver's Cove Energy, L.L.C. proposes new construction of an import terminal and natural gas pipeline facilities at Weaver's Cove, Fall River, MA. Based on key FEIS findings, presented in Appendix 1, between 50 and 70 LNG tankers would arrive at the Weaver's Cove Energy facility annually. It is assumed that during summer months the average arrival rate would be once every 7 days with winter deliveries once every 5 days. Safety and security zones could be required for both inbound **and** outbound LNG transit. Summer transit would therefore be twice per seven days with winter transit twice per five days (inbound and outbound trips). Inbound **and** outbound trips would be limited to rising tides (timed to minimize current effects in the area of the Brightman Street Bridge in Fall River/Somerset) during daylight hours, especially in initial operation. With shorter daylight hours in the winter and increased LNG trips, commercial fishermen and other commercial shipping would experience more disruptions than recreational boaters.

KeySpan LNG, L.P. proposes an upgrade of the existing terminal at Fields Point in Providence. Between 50 and 60 KeySpan deliveries were proposed annually (dropped from further consideration by FERC on June 30, 2005 but under appeal by

KeySpan). It is assumed that during summer months the average arrival rate would be once every seven days with winter deliveries once every six days. Transit to KeySpan in Providence would not be limited by tides. It is anticipated that the impact to recreational boating would be less than that anticipated for Weaver's Cove Energy since LNG transit would generally be scheduled at first light to avoid impacting local boating and other users of the bay.

Northeast Marine Pilots Association

The Northeast Marine Pilots Association (NMPA) provides pilots for most commercial vessels in Narragansett Bay. The pilots have not yet determined under what conditions the proposed LNG tankers could safely transit the bay. (H. McVay, 7/1/05) Before they will pilot a new LNG tanker (i.e., one which they have not previously piloted) through Narragansett Bay and to its port, numerous training simulations will be run for the particular ship involved and for many different weather, tide and power conditions. If pilots believe transit is unsafe for a particular ship or under certain conditions, the LNG tanker will not enter the bay.

The NMPA reports that ten or eleven LPG (liquefied petroleum gas) tankers are piloted annually through the bay to Providence. As a "high interest" vessel, the safety and security zone for LPG tankers is similar to one anticipated for LNG tanker transit, as determined by the US Coast Guard Captain of the Port. The pilots are not aware of negative impacts due to LPG tanker traffic. Prior to an LPG "gas ship" arrival, the US Coast Guard issues a Notice to Mariners to provide notification of the expected schedule. Commercial shipping and fishing operations adjust their schedules and locations accordingly, or move out of the way of the security zone when the ship comes through. Sail racing associations and yacht clubs generally call the NMPA for accurate estimated time of arrival for LPG tankers, and then schedule their events to avoid the ship passage, which is usually just a few minutes. The NMPA reports that there is far more tug and barge traffic (not piloted by the NMPA, or requiring security zones) that adversely affects sail racing/training and recreational boating than large tanker traffic.

Prior to entering US waters, the US Coast Guard inspects incoming tankers. Due to new legislation, prior to entering the bay an LNG tanker must have an LNG Certified American Master Mariner on board to inspect its cargo and safety systems. Following inspection, a Pilot would navigate the tanker into the bay and to its port. If, in the Pilot's judgment, conditions are not suitable for safe passage (e.g. severe weather), he/she will not take the LNG tanker in (this applies to any piloted ship, not just LNG tankers). The ship's Master can then decide whether to stay at sea, or to request to anchor at a designated anchorage in the bay.

Critical Issues of Concern

Several issues are critical to recreational boaters, especially with the tide-dependent schedule of Weaver's Cove Energy LNG tankers. Recreational boaters have limited access to the US Coast Guard's Notice to Mariners with information on LNG tanker transit. With one hour or less advance notice, it is not likely that many recreational boaters would be aware of a transit three or four miles to the south. Many recreational boaters do not routinely monitor marine band radios, especially the

channels the US Coast Guard will use for notification. As a result, they may be caught unaware of the moving picket and patrol boats. Patrol boats will be equipped with loudspeakers or bullhorns to announce the arrival of safety and security zone closure areas. (J. Duffy, 7/5/05) Joseph L. Duffy, Lieutenant Commander, US Coast Guard, retired has indicated, "The introduction of LNG supertankers into Narragansett Bay, particularly as accompanied by the required safety and security zone, will only further increase the congestion and heighten the considerable risk that already exists." (J. Duffy, 6/24/05)

In some areas of the East Passage and Mount Hope Bay, recreational boats, shallow draft fishing boats and ferries may skirt the safety and security zone by bypassing through shallower waters. It may be challenging, however, for sailboats without motors to skirt the security zone. Security zones will especially inconvenience these boats since mobility is limited by available wind.

Several sections of the East Passage and entrance to Mount Hope Bay are narrower than the 6,150-foot width of the safety and security zone. Marine commercial and recreational traffic would be halted in these areas, potentially creating congested waters. Figures 1 through 6 outline the LNG tanker route as it transits the East Passage and Mount Hope Bay for access to either Weaver's Cove Energy in Fall River or KeySpan in Providence. Typical safety and security zones are identified in a red hatch on each figure (two miles ahead, one mile behind and 3,000 feet off the port and starboard). This is a moving zone; the areas north and south of this zone are identified in a gray hatch. The graphic is based on a 930-foot tanker, 150-feet wide. The following describes critical areas where the 6,150-foot wide safety and security zone specified in 33 CFR 165.121 would affect local navigation.

Castle Hill, Newport - Beavertail Light, Jamestown to Gould Island

As indicated in Figures 1 and 2, the LNG tanker safety and security zone would effectively block access to the East Passage from Lion Head on the west to Castle Hill on the east. A boater returning to the East Passage from Rhode Island Sound would not be able to skirt an inbound LNG tanker safety and security zone between Lion Head and a point north of the Pell Bridge, a distance of 3.1 nautical miles. Note that rough waters south of Castle Hill are especially dangerous for small vessels. During this time a boater would be restricted to passage at 10 knots at the rear of the zone. Although many sailboats cruise below this speed, large powerboats routinely exceed this speed and would be constrained.

Southbound boaters on the East Passage could seek refuge from the inbound LNG tanker safety and security zone in Newport Harbor (east of Fort Adams and Rose Island) or in Potter Cove, north of the Pell Bridge off Jamestown. The LNG tanker safety and security zone would extend into Jamestown Harbor, an area where the Jamestown harbormaster reports that 400 boats are moored or at slips. A minimum delay of 33 minutes would be anticipated to clear the zone between Castle Hill and Fort Adams.

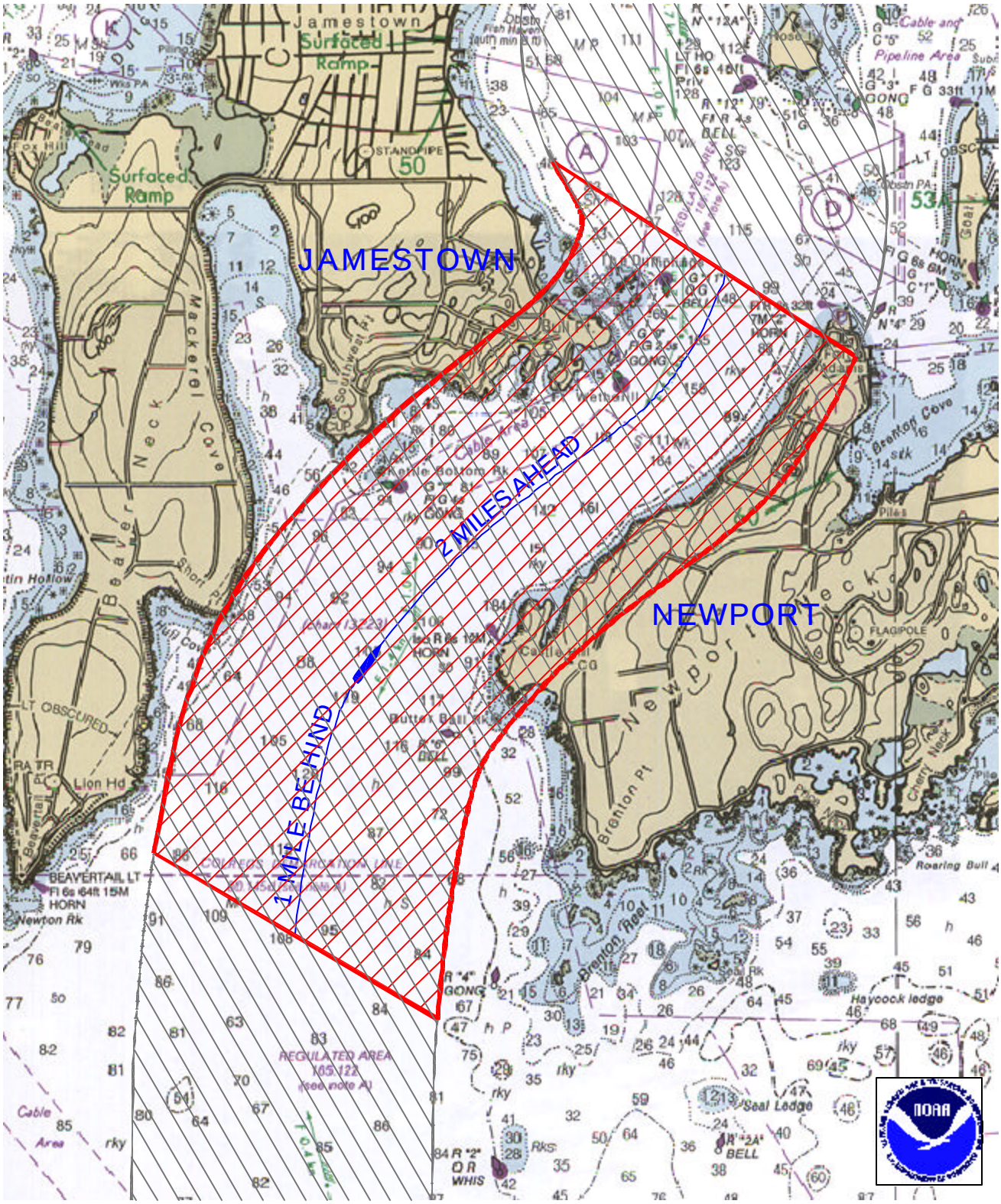


FIGURE 1 - CASTLE HILL
LNG TANKER SAFETY & SECURITY ZONE

WEAVER'S COVE ENERGY, LLC & KEYSPAN LNG TANKER ROUTE

LNG MARINE IMPACTS - AQUIDNECK ISLAND

SCALE: 1"=3000'

DATE: AUGUST 2005

LEGEND

- LNG TRANSIT ROUTE
- TYPICAL LNG TANKER SAFETY & SECURITY ZONE
- LNG TANKER

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

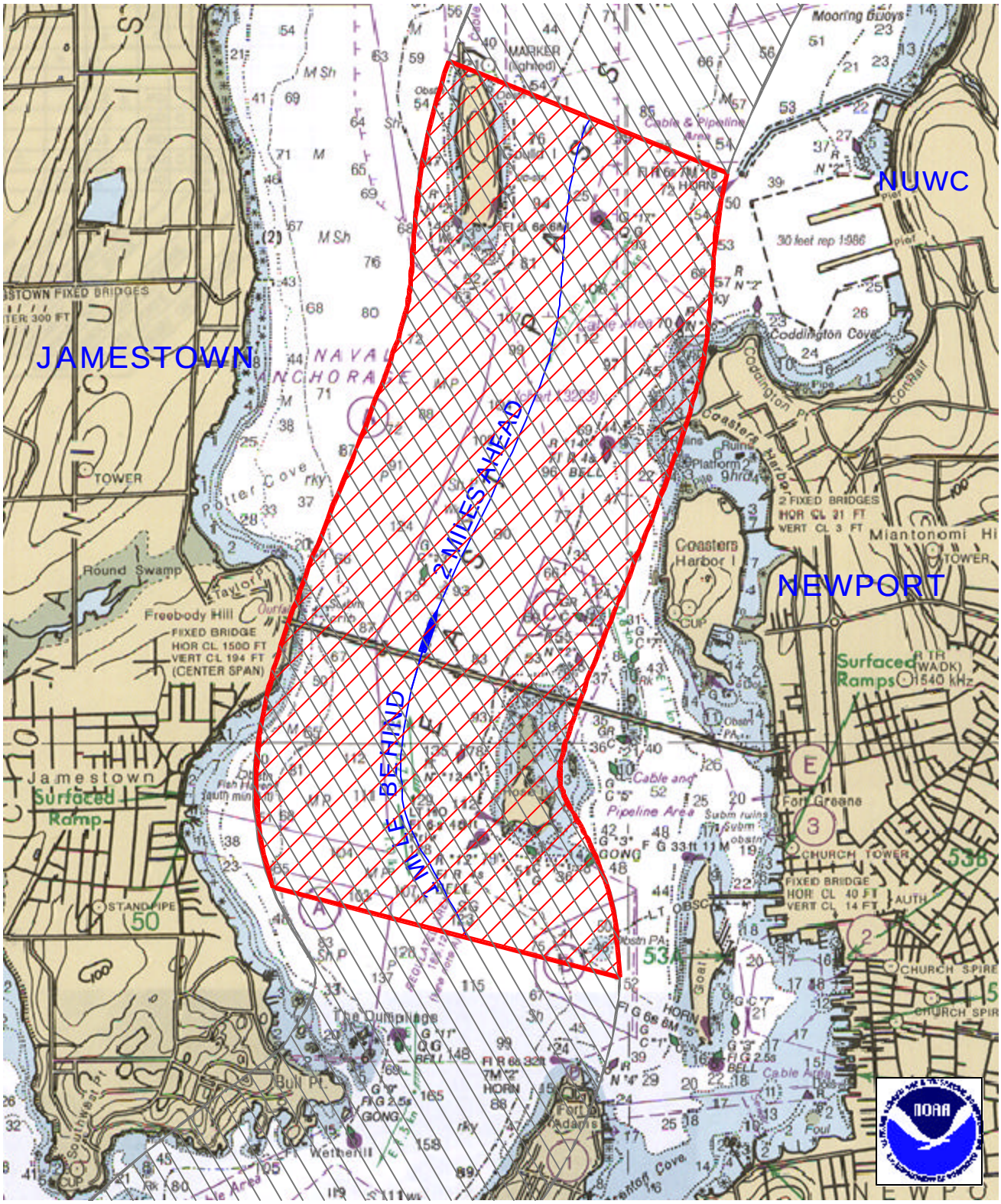


FIGURE 2 - NEWPORT
LNG TANKER SAFETY & SECURITY ZONE

WEAVER'S COVE ENERGY, LLC & KEYSPAN LNG TANKER ROUTE

LNG MARINE IMPACTS - AQUIDNECK ISLAND

SCALE: 1"=3000'

DATE: AUGUST 2005

LEGEND

- LNG TRANSIT ROUTE
- TYPICAL LNG TANKER SAFETY & SECURITY ZONE
- LNG TANKER

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

Newport Harbor with over 900 boats reported by the Newport harbormaster to be moored or at slips, could be completely blocked for at least 20 minutes, the time it would take an inbound tanker safety and security zone to reach Fort Adams and clear Rose Island. This time period would increase depending on the number of boats blocked in the harbor. The delay would likely be longer, especially during peak recreational boating hours. This bottleneck would increase marine congestion within the harbor and lead to decreased safety, especially for less experienced boaters or those with non-motorized craft.

The commercial mooring area north of the Pell Bridge along the Jamestown shore (identified on the NOAA chart as Naval Anchorage A) is currently used to off-load oil tankers to smaller vessels. This mooring area is partially located within the LNG tanker safety and security zone, as indicated in Figure 2. Upon completion of the US Army Corps of Engineers Providence River Dredge Project in 2005 off-loading may be required less frequently. The Corps has indicated, however, that it may not be able to achieve full project dimensions throughout the river due to ledge that was encountered during dredge operations. The Corps is now working on a project to remove these obstructions. The US Coast Guard and Pilots may determine that mooring or off-loading is still required, depending on draft of the vessel and determinations of safe passage. (S. DiLorenzo, 8/9/05) The US Coast Guard would likely prohibit use of this mooring area to off-load oil tankers during LNG transit, thereby eliminating the potential for conflicts between recreational boaters and off-loading tankers as boaters skirt the zone.

Once the safety and security zone passes north of Rose Island, Newport Harbor boaters would have access southward to Rhode Island Sound and offshore destinations. For boaters with destinations north via the East Passage, however, speed would be restricted to 10 knots between Newport Harbor and Green Can "13," north of the Pell Bridge. From this point, boats would have access to waters west of Gould Island (assuming the NUWC is not conducting exercises). It is noted that boaters are prohibited from entering waters around Coasters Harbor Island on the east shore due to Naval Station Newport security restrictions.

Prudence Island to Mount Hope Bridge

As indicated in Figures 3 and 4, the LNG tanker safety and security zone favors the Prudence Island shore, prohibiting movement to or from the Town of Portsmouth pier at Sandy Point and private docks and moorings along the Island's east shore. Waters to the east of Dyer Island, off Melville, would be available to skirt the LNG tanker safety and security zone. Melville is the boating center of northern Aquidneck Island and includes the 100-boat Hinkley Yacht Center, 500-boat East Passage Yachting Center, and other marine industries. Many of the largest sailboats on the East Passage have slips in this area. In addition, a 1,400-boat marina is permitted in Portsmouth's Weaver Cove, immediately south of Melville. Any diversion of East Passage boating traffic to the waters off Melville would create congestion and lead to decreased marine safety.

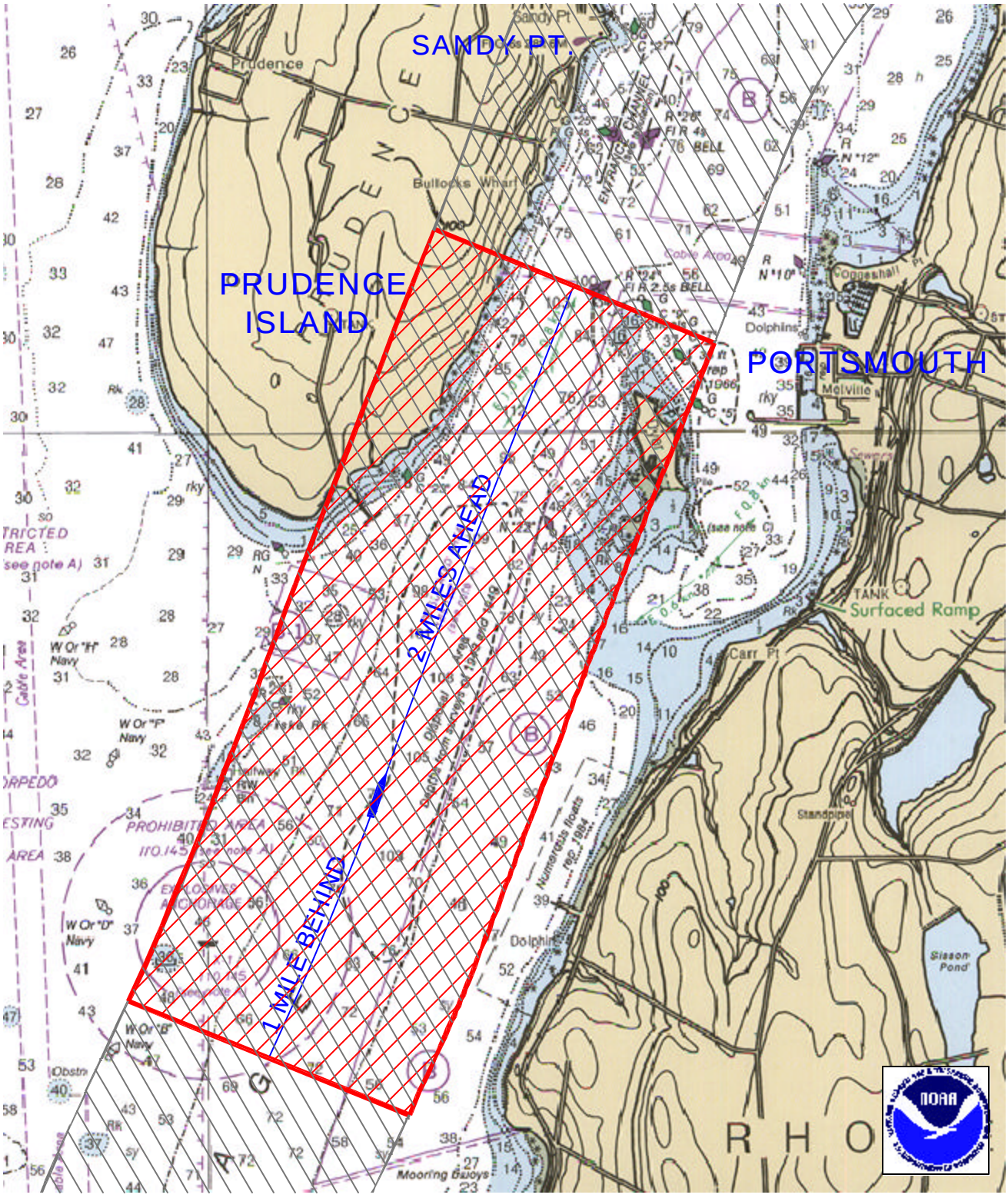


FIGURE 3 - MELVILLE

LNG TANKER SAFETY & SECURITY ZONE

WEAVER'S COVE ENERGY, LLC & KEYSPAN LNG TANKER ROUTE

LNG MARINE IMPACTS - AQUIDNECK ISLAND

SCALE: 1"=3000'

DATE: AUGUST 2005

LEGEND

- LNG TRANSIT ROUTE
- TYPICAL LNG TANKER SAFETY & SECURITY ZONE
- LNG TANKER

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

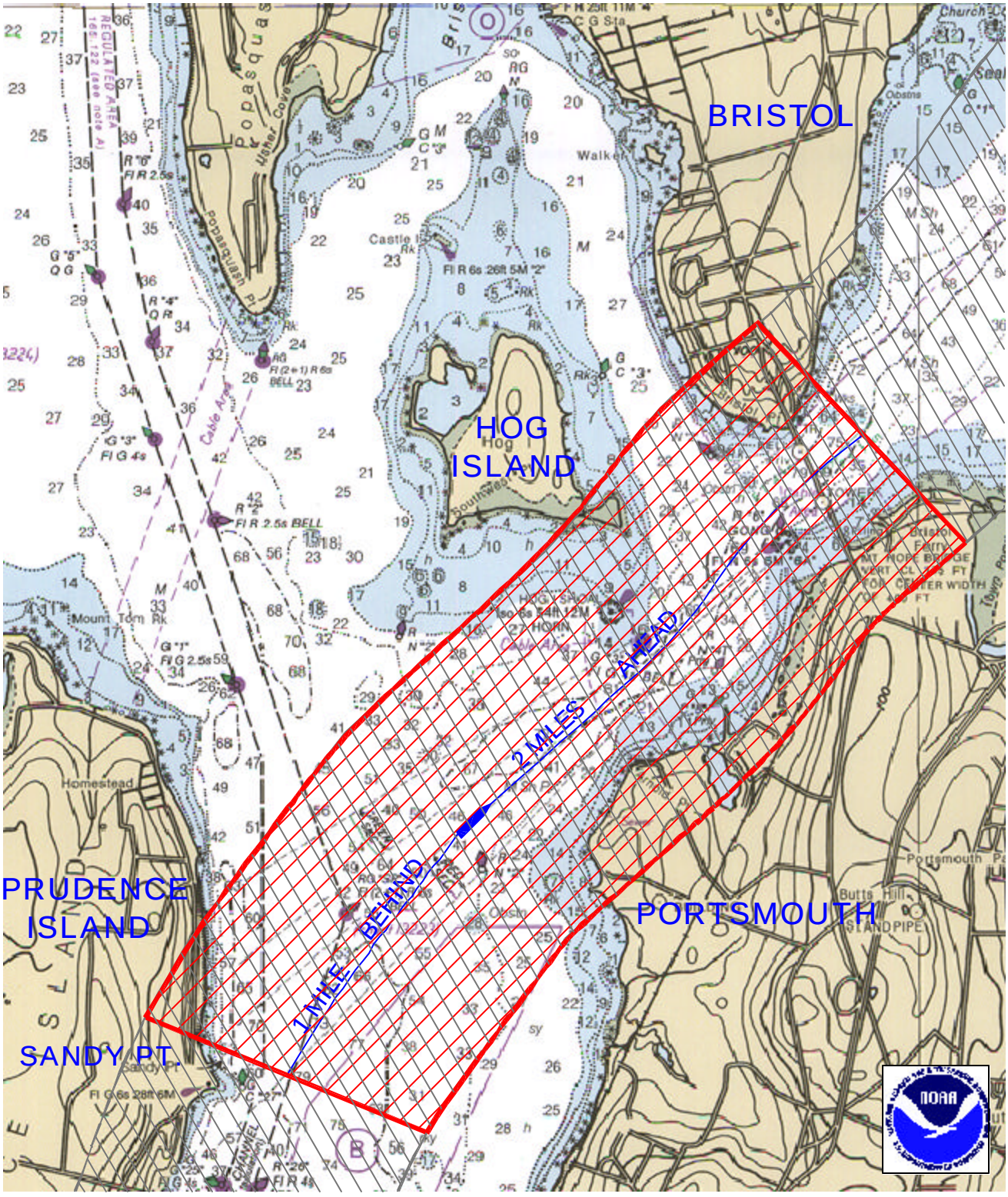


FIGURE 4 - MT. HOPE BRIDGE

LNG TANKER SAFETY & SECURITY ZONE

WEAVER'S COVE ENERGY, LLC

LNG MARINE IMPACTS - AQUIDNECK ISLAND

LEGEND

- LNG TRANSIT ROUTE
- TYPICAL LNG TANKER SAFETY & SECURITY ZONE
- LNG TANKER

SCALE: 1"=3000'

DATE: AUGUST 2005

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

Many Melville and Weaver Cove boats would be able to skirt the safety zone along the east side of the East Passage. Boats bound for waters south and west of Prudence Island would be delayed a minimum of 25 minutes as the LNG tanker safety and security zone enters a point between Halfway Rock south of Prudence Island and the former Navy Midway Pier near Greene Lane in Middletown and clears Melville. LNG tankers bound for either Providence or Fall River would slow off Sandy Point to accept tethers from tug boats. Fall River-bound LNG tankers would slow to 5 knots to navigate the channel between Hog Island and Portsmouth and pass between the piers on the Mount Hope Bridge. All northbound boating traffic would be limited to 5 knots in the area north of Sandy Point as the Weaver's Cove Energy LNG tanker safety and security zone extends from shore to shore. Northbound KeySpan LNG tanker traffic would proceed at 10 knots on a northwestward course, as indicated in Figure 6.

The area north of Sandy Point and west of the Mount Hope Bridge would serve as a holding area for the one-way commercial traffic patterns that the US Coast Guard would impose on the Federal Channels to Providence and Fall River (see Appendix 1). Northbound commercial traffic (including oil tankers and coal barges) would be held in this area during outbound LNG transit from the Federal Channels. LNG tankers could also be held in these waters while other commercial cargo vessels are outbound from Providence or Fall River. Although not specified in 33 CFR 165.121, the safety and security zone would likely extend from a moored LNG tanker between 1,000 feet (as specified for a mooring at a waterfront facility) and a half-mile (as specified for a mooring in the Narragansett Precautionary Area in Rhode Island Sound).

As indicated in Figure 4, the LNG tanker safety and security zone for tankers bound for Weaver's Cove Energy extends into the area proposed for the 65-slip Carnegie Marina at the end of Willow Lane in Portsmouth. No movement would be permitted for the 36 minute minimum time it would take the reduced speed LNG tanker safety and security zone to clear this point and enable access south on the East Passage, west to waters between Prudence and Hog Islands or north to Mount Hope Bridge. Transit beneath the bridge would be limited to 5 knots at the rear of the safety and security zone. A similar delay would be anticipated for commercial shipping at the Mount Hope Marine Terminal in Portsmouth. Passage east and west of Hog Island from the south could be blocked at the same time by the Weaver's Cove LNG tanker safety and security zone.

Mount Hope Bay

Access from Mount Hope Bay (including boats from Brewer's Sakonnet Marina) to the East Passage could be restricted over an hour (67 minute minimum) as the LNG tanker safety and security zone passes northward from the Mount Hope Bridge to a point between Hope Point in Bristol and Common Fence Point in Portsmouth. See Figure 5. As the safety and security zone progresses northward through Mount Hope Bay, pleasure boats would be diverted to the north and south.

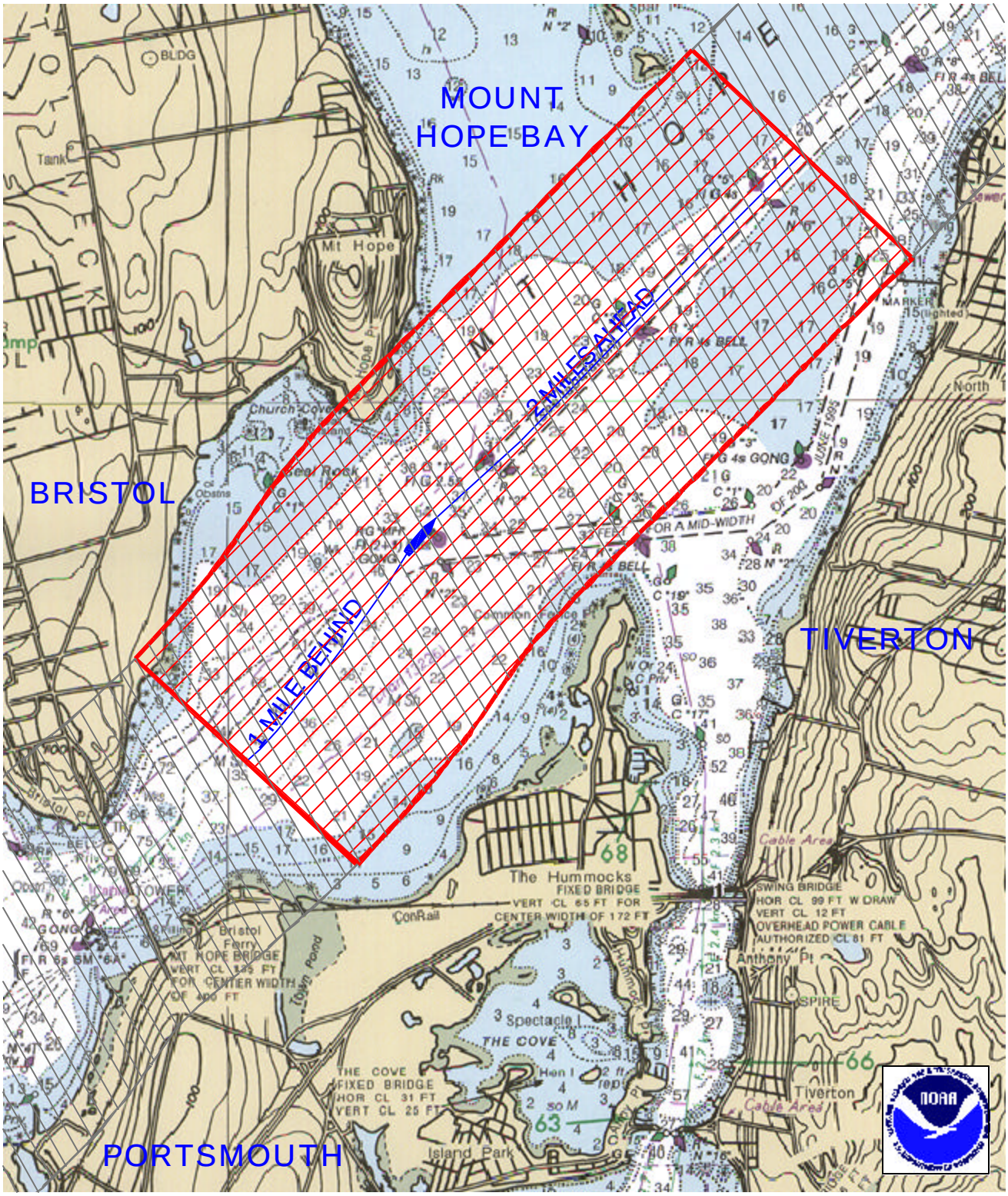


FIGURE 5 - MT. HOPE BAY
LNG TANKER SAFETY & SECURITY ZONE

WEAVER'S COVE ENERGY, LLC TANKER ROUTE
LNG MARINE IMPACTS - AQUIDNECK ISLAND

LEGEND
- LNG TRANSIT ROUTE
- TYPICAL LNG TANKER SAFETY & SECURITY ZONE
- LNG TANKER

SCALE: 1"=3000'
DATE: AUGUST 2005

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

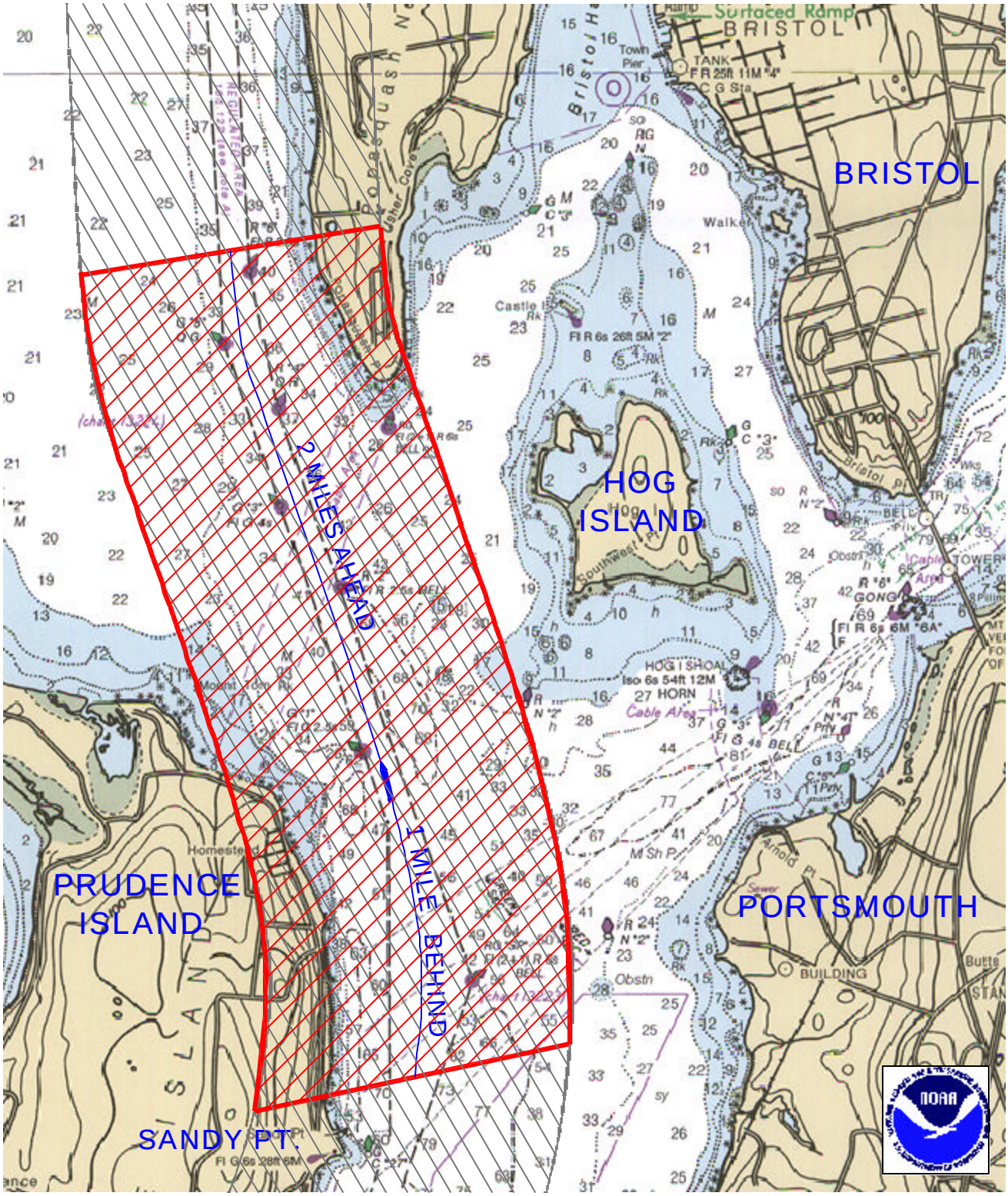


FIGURE 6 - HOMESTEAD

LNG TANKER SAFETY & SECURITY ZONE

KEYSPAN LNG TANKER ROUTE

LNG MARINE IMPACTS - AQUIDNECK ISLAND

SCALE: 1"=3000'

DATE: AUGUST 2005

LEGEND

- LNG TRANSIT ROUTE
- TYPICAL LNG TANKER SAFETY & SECURITY ZONE
- LNG TANKER

PARE ENGINEERING CORPORATION
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401 - 334 - 4100

Many boaters would use the Sakonnet River to bypass the closure area and gain access to open waters of Rhode Island Sound. The Sakonnet River, especially the confined "basin" between the Sakonnet River Bridge and the old stone bridge, is known for its tidal currents that are especially strong in the hours preceding and following high and low tide. It is likely that boats would be diverted to the Sakonnet River in the hour preceding high tide, a time when tidal currents in the river are challenging (based on LNG tanker arrival in the Taunton River at high tide).

Weaver's Cove Energy has projected operation by mid-2009. The Rhode Island Department of Transportation's upcoming replacement of the Sakonnet River Bridge may be underway concurrently with LNG tanker transit. Transport of construction materials by barge could be subject to similar delays of over an hour when transiting the Mount Hope Bridge to Common Fence Point area. Increased boating volume in the Sakonnet "basin," especially with access restrictions required for bridge construction, could adversely affect boater safety in this narrow river channel.

Similar delays to those outlined above for inbound LNG tanker transit would be expected for outbound transit from Weaver's Cove Energy since departures would be tidally influenced and be conducted during daylight hours (and not necessarily at "first light."). Recreational and commercial boating will therefore be subject to the same delays and detours at least twice weekly.

Nighttime Transit Issues

The Weaver's Cove Energy LNG FEIS indicates that nighttime transit of LNG tankers may be considered in the future to avoid impacts to recreational boaters. Nighttime transit of "high interest" vessels is currently prohibited by the US Coast Guard based on restricted visibility (E. LeBlanc, 8/12/05). Nighttime transit could raise additional security concerns for Aquidneck Island residents.

Section 3
Existing Marine Use

Section 3 presents information on current recreational and commercial use of the East Passage of Narragansett Bay. Impacts to marine use are presented in Section 4. This assessment does not include commercial traffic such as tankers, coal ships, LPG tankers, car carriers, passenger/cruise ships, and general cargo destined for ports in Providence, Quonset or Fall River. Impact to commercial traffic bound for those ports is addressed in the FEISs prepared for the two LNG facilities.

The documentation of existing marine use is limited to recreational boating, commercial marine use based in or operating to Newport, and operations at the Naval Underwater Warfare Center (NUWC). This section documents marine-related use in Newport and Portsmouth, from the East Passage entrance of Narragansett Bay at Brenton Point in Newport, northward along the Newport, Middletown, and Portsmouth shorelines to Mount Hope Bay. Note that Middletown, although it has shoreline along the East Passage of Narragansett Bay, does not have public shoreline access.

Recreational Boating

Marinas and Yacht Clubs

Newport Harbor is one of the most popular centers for recreational boating in Narragansett Bay. Recreational boating facilities include moorings and slips at private yacht clubs and marinas, transient moorings, and boat ramps. Landside support facilities provide fuel, service, pump outs, related locker rooms / laundry, and other services. Recreational boaters also support the local economy by purchasing supplies and patronizing local shops and restaurants.

Although the LNG Tanker Safety and Security Zone would not extend into Newport Harbor (see Figure 2), the 938 boats at slips and moorings routinely utilize the East Passage for access to Rhode Island Sound and Narragansett Bay destinations (T. Mills, 6/20/05). Approximately one third of the moorings are transient, available on a short term basis for those sailing, yachting, or cruising from other locations. Newport is a popular East Coast destination, world renowned for steady breezes, open water, local destinations, and yachting camaraderie and support. Oldport Marine reports that between 500 and 1000 boats can come and go on a busy summer day in Newport Harbor. (B. Hoffman, 7/14/05)

Yacht clubs located in Newport Harbor include the Ida Lewis Yacht Club (ILYC), the New York Yacht Club (NYYC), and the Newport Yacht Club. Coasters Harbor Yacht Club, located at Naval Station Newport, provides sailing programs and events north of the Pell Bridge. NYYC and ILYC 2005 events are listed in Tables 2 and 3. As indicated, international competitors are anticipated at these events.

Table 2: New York Yacht Club Major Events, 2005

Event	Date
NYYC's 100th Annual Regatta	July 12 103 Yachts
Rolex Swan American Regatta	July 25-29 Over 50 Swan Yachts, from 35 to 80 ft, Newport Shipyard
Morgan Cup	August 6 to 7
Grey Goose ISAF Team Racing World Championships	Sep 24-Oct 1 20 Teams from 12 countries, team = 3 boats

Source: http://nyyc.org

Table 3: Ida Lewis Yacht Club Events, 2005

Event	Date
Shields Wednesday Night Racing Begins	May 11
J24 Thursday Night Racing Begins	May 12
110 Friday Night Racing Series	May 20–September 2
10th Annual US Jr. Women's Dbl-Handed Championship	July 8-10
Conanicut Gull Cup, J22	July 23
Farr 40 Racing	September 10-11

Marinas listed by www.rimarinas.com include those listed in Table 4. In addition to the 938 moorings and slips reported by the harbormaster for Newport Harbor, over 1000 slips and moorings are identified in Portsmouth and nearly 400 are reported by the Jamestown harbormaster in Jamestown Harbor.

Table 4: Newport, Jamestown, and Portsmouth Marinas

Marina Name	Description
Newport	
Bannister's Wharf	24 boat slips for transients, gas, diesel, showers. Located in center of Newport.
Brown & Howard Wharf Marina	Ch 9.
Casey's Marina & Boat Hauling Service	Seasonal and transient dockage available.
Christy's Restaurant & Marina	40 transient boat slips.
Coasters Harbor Navy Yacht Club	
Goat Island Marina	200 boat slips and 10 transient slips, pool and showers. Ch 9.
Goat Island Yacht Club	
Ida Lewis Yacht Club	
Long Wharf Charters	
NETC Navy Marina	160 boat slips and 27 moorings available. A full facility yacht club.
Newport Harbor Hotel & Marina	70 transient slips, pool, showers, sauna. Popular boating location. Ch 9.
Newport Marina	45 slips, pool, showers, laundry and gas grill.
Newport Mooring Service	10 slips.
Newport Yachting Center	200 boat slips and a 2500 ft. dock, gas and diesel and laundry. Ch 9.

Marina Name	Description
Newport Yacht Club	
Newport Shipyard	Deep water dockage is available. Ch 9.
New York Yacht Club	
On-Shore Marina	
West Wind Marina	75 boat slips, a laundry and a restaurant.
Wellington Marina	
Wellington Yacht & Racquet	
Portsmouth	
Hinkley Yacht Services - Melville	100 deep water boat slips, 10 moorings, showers, gas, diesel and full services.
East Passage Yachting Center -Melville	500 boat slips, gas, diesel, pool, showers, playground, pump-out, full services. Ch 9.
Brewer's Sakonnet Marina N & S – Sakonnet River	330 boat slips, gas, diesel, pool, showers and full services. Ch 9.
Pirate Cove Marina – Sakonnet River	82 boat slips, 41 moorings, diesel fuel, ship's store, no launch, full services. Usually can find space for transient boaters. Ch 9.
Stone Bridge Marina – Sakonnet River	
Jamestown	
Conanicut Marina	Full services including a ship's store are available as well as 100 boat slips and 205 moorings with 6 slips reserved for transient boaters. Ch 71.
Conanicut Yacht Club	
Jamestown Boat Yard	Full services and marina including 6 boat slips, 1 reserved for transients, 57 moorings with 6 reserved for transients with launch services. Great location for fast in/out. Ch 72.
Jamestown Yacht Club	

Source: www.rimarinas.com. See the website for information on yacht clubs and other marine facilities not listed above.

Sailing programs are conducted by Sail Newport, J World, and Newport Off Shore. Sailing lessons are for all ages and abilities. See Table 5, below, for listing of Sail Newport sailing programs.

Boat Counts

Boat counts were conducted during a weekday and weekend period to document use of the East Passage for recreational and commercial boating. Weekday counts were scheduled to observe commercial fishing boats and general recreational use. Weekend counts were scheduled to observe typical summer recreational use. Counts were conducted at Fort Adams, Pell Bridge, and Melville to document use along the length of Aquidneck Island. Both the weekday and weekend counts were conducted during hot and clear early summer weather. A total of 129 boats were observed during the weekday count conducted between 5:45 AM to 1:45 PM on Friday, June 24, 2005. A total of 565 boats were observed on Saturday, June 25, 2005 between 10:00 AM and 5:15 PM. See Appendix 2 for more detail.

Regattas and Sailing Events

Many local, national, and international competitive events are held on the East Passage and Rhode Island Sound waters off Newport. Sail Newport, one of the primary organizers of boating events in the area, has indicated that events are planned every weekend and every weeknight from June 1 through September 15. Many events require crossing the deepest portion of the East Passage (although not designated as the federal channel, waters with the deepest depths are routinely utilized for shipping). Weekday night events may have as few as 30 boats to as many as 120. Larger weekend events attract approximately 350 to 400 boats daily. (B. Reed, 6/27/05) A listing of 2005 Sail Newport events is presented in Table 5.

Table 5: Sail Newport Events, 2005

Event	Date
OPTI Spring Series	Saturdays and Sundays, May 14 – June
Match Race Series	Every Monday starting May 9, Championship Weekend Oct. 8-9, 12 teams max
Memorial Day Regatta	May 28
One Week Keelboat Sessions	Weekly through summer Mon-Fri, ages 12-17
C420 Race Program	Tues, Wed, Thurs
Optimistic Race Program	Tues, Wed, Thurs, June 21 to August 11
2 Week Dinghy Sessions	Monday-Fri throughout summer minimum age-7
Jimmy Fund Regatta	June 4-5 35 yachts competed on the first day
OPTI Challenge	June 11-12 60 sailors competed in four races each day International and local competitors
Little Guppies Session	Aug 15-19, ages 5-7
Brooke Gonzalez Advanced Racing Clinic	June 17-19 18 Laser Radial's, 31 420's, 14 Laser Full Rig's
Black Duck Rum Classic Regatta	June 25-26 Event for classic Yacht owners, designed built before 1965, race and party
Newport Cup Around the Island	July 2
10th Annual US Jr. Women's Dbl-Handed Championship	July 8-10
Wall St. Corporate Challenge	July 8-9 6 Vintage America's Cup 12 Meter Yachts
Volkswagen Newport Regatta	July 16-17 Largest event in regatta history, over 300 boats, 14 states & 4 countries
N.E. Solo Twin Championship	July 29-30
Buzzards Bay Regatta	Aug 5-7
NBYA Jr. Race Week and Jr. Olympic Sailing Festival	Aug 16-18
C. Thomas Clagett, Jr. Memorial Clinic and Regatta	Aug 18-21
Sail Newport Blind National Championships	Aug 25-26
Farr 40 East Coast Championships	Aug 26-28

Event	Date
2005 Annual Unlimited Regatta	Aug 27-28
26th Annual Classic Yacht Regatta and Parade	Sept 2-4
CYC Around the Island Race	Sept 4
12 Meter World Championship	Sep 15-18
ISAF Team Race Worlds	Sep 24- Oct 1
Sail for Hope	Oct 1 73 boats, 400 sailors from 5 states, $25,000 raised

Public Boat Ramps

Three public boat ramps provide access to Newport Harbor for day use. Fort Adams State Park offers paved boat ramps and adjacent paved parking for trailers. This facility is well used and well known. The City of Newport boat ramp at King's Park, on Wellington Avenue has shallow draft and limited parking. Public access to the water is also available at Elm Street in the Point neighborhood. Only on-road residential sticker parking is available.

The Town of Porstmouth owns the Weaver Cove boat ramp south of Melville. This paved ramp, located on Burma Road, includes a floating pier and adjacent parking.

Permitted Marinas

A 1,400-slip marina has been permitted by CRMC immediately south of Melville, at Portsmouth's Weaver Cove. This marina is proposed to be constructed by the O'Neill Properties Group as part of a mixed-use upscale development.

CRMC and the US Army Corps of Engineers are currently reviewing permit applications for O'Neill Properties Group's 65-slip inland marina proposed on Willow Lane in Portsmouth. Carnegie Harbor Village Marina will include a 16-foot wide concrete public boat launch and a public parking area with 27 spaces (including eight for trailers). Public access paths are also proposed. This marina will serve high-end seasonal residential units under construction, including 80 units at Carnegie Tower and 21 separate village cottages.

US Coast Guard

Any event that will, by its nature, introduce extra or unusual hazards to the safety of life on the navigable waters of the U.S. must obtain a permit from the US Coast Guard Marine Safety Office in accordance with 33 CFR 100. Table 6 lists 2004 and 2005 marine events for which the US Coast Guard issued a permit through the Castle Hill Station. Although this list includes events throughout Narragansett Bay, it is interesting to note that approximately two thirds of all bay events are associated with Newport and adjacent waters.

Table 6: US Coast Guard Permits, Castle Hill Station, 2004 - 2005

Event	Date
2004	
Newport Memorial Day Regatta	**29-30 May**
Optimist Youth Sail Challenge, Newport	**5-6 June**
Gaspee Days Fireworks, Warwick	11 June
NYYC 150th Annual Regatta	**11-13 June**
Newport-Bermuda Race	**18 June**
RI National Guard Air Show	18-20 June
UBS America's Cup Trial, Newport	**18-26 June**
Blue Parrot Yacht Club Blessing of the Fleet	27 June
Cardi Family Cookout Fireworks *	3 July
Warwick 4 July Fireworks *	3 July (5 July rain date)
N. Kingstown 4th of July Fireworks *	4 July
Annual Newport Regatta	**9-11 July**
Outerlimits Annual Regatta	10 July
Toyota/Sea Doo U.S. Regional Championships	**10-11 July**
Tall Ships Rhode Island	**15-20 July**
Tall Ships/Black Ships Fireworks *	**18 July**
NYYC Race Week	**16-25 July**
Newport Bucket Regatta	**24-25 July**
Save the Bay Swim, Newport	**24 July**
NYYC Annual Cruise	**31 July to 07 Aug**
National Night Out Fireworks, Warwick*	3 Aug
Opti New England Championship, Newport	**10-12 Aug**
Fall River Celebrates America Fireworks *	07 Aug
Telesmanick Regatta	14-15 Aug
NBYA Junior Race Week	16-18 Aug
Sail Newport Blind National Championship	**19-20 Aug**
Ensign National Championship, Newport	**23-26 Aug**
Newport Salute to Summer Fireworks *	**3 Sep**
25th Annual Classic Yacht Regatta	**4-5 Sep**
Hospice Regatta	11 Sep
Int'l Twelve Meter Class Champs	**16-19 Sep**
Int'l C Class Catamaran Champs.	15-26 Sep
Sail For Hope Regatta	**2 Oct**
2005	
Newport Memorial Day Regatta	**28 May**
Jimmy Fund Regatta	**4-5 June**
Wickford Y.C. Summer Race Series	8 June – 31 Aug (Wednesdays)
Annapolis to Newport Race	**10 June**
Gaspee Fireworks *	10 June
NYYC Annual Regatta	**10-12 June**
Optimist Youth Sail Challenge, Newport	**11-12 June**
RI ANG Air Show	17-19 June
NBYA Macadamia Nut Cup	18 June
NAVSTA Newport Fireworks *	**1 July**
Newport Fireworks *	**3 July**
Cardi Family Private Fireworks *	3 July
Warwick Fireworks *	3 July
Newport Bucket Regatta	**15-17 July**
Annual Newport Regatta	**15-17 July**

Event	Date
Toyota / Sea Doo Regional Championship	**16-17 July**
NYYC 100th Anniversary Vintage Regatta	**16-17 July**
NBYA Ice Cream Cone Cup	23 July
Rolex Swan American Regatta	**23-29 July**
Save the Bay Swim, Newport	**30 July**
OPTI New England Championships	**2-4 August**
Laser Regatta	**6-13 August**
Fall River Celebrates America Fireworks *	13 August
NBYA Junior Race Week	16-18 August
Blind National Championships	**25-26 August**
Farr 40 East Coast Championships	26-28 August
NBYA Herreshoff Regatta	27-28 August
NYYC 12 Meter Worlds	**14-18 September**
NYYC Grey Goose Champs	**24 Sep – 1 Oct**
Sail For Hope Regatta	**1 October**

Bold *denotes location in East Passage*
** Fireworks launched from a waterborne platform or barge requires a permit.*
Source: US Coast Guard MSO Providence

Commercial Marine Use

Fishing Fleet

State Pier 9 in Newport is home to 50 commercial fishing boats, both inshore lobster boats and offshore draggers. This is the only state-owned commercial pier in the Newport area. The finfish and lobster industry in Rhode Island - from both Newport and Galilee - is about $70 million a year, according to 1997 and 1998 figures from the National Marine Fisheries Service.

Ferry Service

Several ferries provide seasonal service to Newport Harbor destinations. RIPTA's Providence to Newport high-speed ferry service docks at Long Wharf at Perrotti Park in Newport. The ferry makes six round trips to Providence daily. Any delay in schedule for any trip would affect the schedule throughout the day as only one vessel is in service on this route.

The Jamestown-Newport Ferry leaves Jamestown, with a travel circuit that includes Rose Island, Fort Adams, Bowen's Wharf, Perrotti Park, and Goat Island. The schedule includes seven weekday trips, with one additional trip on weekends.

The Prudence Island Ferry provides lifeline service from Church Street wharf in Bristol to Homestead Dock at the north end of Prudence Island. This ferry operates year-round and averages 40 to 50 persons per trip during the peak season. Four round trips daily are scheduled with additional evening trips on weekends. The ferry is the only means of access (other than private boat) to this Portsmouth island.

Fishing and Cruising Charters

The Rhode Island Charterboat Association reports that they are part of the Coast Guard Auxiliary based out of Warwick and East Greenwich and teach environmental safety in the harbor.

The fishing charter fleet operating out of Newport Harbor and Castle Hill includes 15 boats. Most have two trips daily during the eight-week season. Destinations include inshore and Narragansett Bay waters. (J. Flaherty, 8/11/05)

SightSailing of Newport currently has three boats going out daily (5 trips per day on average). The operating manager reports that approximately 10,000 passengers cruise on his boats annually. (SightSailing, 7/11/05) The *Aurora* sails twice daily from May to October with anywhere between two and 80 passengers. The *Amazing Grace* with capacity for 80 passengers, sails seven times daily.

Newport Events

Newport hosts a wide range of social and cultural events every year. These events have helped to secure the local economy and make Newport the national and international destination that it is today. These activities include sports events, music events, and "mansion-oriented" programs. The Newport County Convention and Visitors Bureau maintains a robust roster of tourism-related activities. The Newport Music Festival, the Dunkin Donuts Folk Festival, and JVC-Jazz Festival Newport are scheduled during the summer months. Sports events include Newport International Polo Series, the Wooden Boat Show, Campbell's Hall of Fame Tennis Championships, Museum of Yachting 12 Meter Regatta, and the Newport International Boat Show. Additional events include the Newport International Film Festival, Newport Flower Show, Newport Gulls Baseball Club, Old Colony Scenic Railroad, and the Tall Ships, scheduled for 2007.

Cruise Ships/Goat Island Anchorage

Cruise ship arrivals represent a small but important component of the local economy. As indicated in Table 7, 31 cruise ships are scheduled to call in Newport in 2005. September and October are popular months for cruise ship arrivals, sometimes with two or three per day. (E. Smith, 7/8/05)

Table 7: Newport Cruise Ship Arrivals, 2005

Date	Line	Ship
May 5		*Staad Amsterdam*
July 11	Holland America	*Maasdam*
August 22	Holland America	*Maasdam*
September 9	Princess	*Golden Princess*
September 9		*Saga Ruby*
September 12	Cunard	*Queen Elizabeth 2*
September 13	NCL	*Norwegian Jewel*
September 14	Seabourn	*Seabourn Pride*
September 16	Crystal	*Crystal Symphony*
September 16	Princess	*Golden Princess*
September 18	Crystal	*Crystal Symphony*
September 23	Princess	*Golden Princess*
September 25	Princess	*Sea Princess*
September 30	Princess	*Golden Princess*
October 1	Seabourn	*Seabourn Pride*
October 7	Cunard	*Queen Mary 2*
October 7	Princess	*Golden Princess*
October 8	Crystal	*Crystal Symphony*
October 9	Silver Sea	*Silver Whisper*
October 13	Princess	*Sea Princess*
October 14	Princess	*Golden Princess*
October 15	Princess	*Sea Princess*
October 15	Seabourn	*Seabourn Pride*
October 15	Crystal	*Crystal Symphony*
October 16	Princess	*Golden Princess*
October 17	Crystal	*Crystal Symphony*
October 17	Seabourn	*Seabourn Pride*
October 24	Holland America	*Maasdam*
October 26		*The World*
October 30	Princess	*Sea Princess*
November 1	Crystal	*Crystal Symphony*

Source: Newport County Convention and Visitors Bureau

Emergency Access

The Town of Portsmouth provides emergency service from the pier at Sandy Point on Prudence Island to Melville. Approximately 50 emergency runs are provided annually. Emergency service is also provided to Hog Island. The Portsmouth Fire Department provides this service. (Portsmouth Fire Department, 7/11/05)

Museums and Organizations

The Rose Island Lighthouse's function is to maintain navigational safety in the East Passage, and as such, it is critical to the safety of LNG transit as well as recreational and other commercial use of the bay. The lighthouse is open to the public as a museum by day in the summertime. About 5,000 visitors come to Rose Island annually, many via the Jamestown-Newport Ferry. The other months of the year, transportation for overnighters is provided aboard the Rose Island Lighthouse Foundation's boat *Starfish* with a route from Goat Island to Rose Island. (C. Johnson, 7/22/05) At night, lodging is available year-round in one of two keeper's

bedrooms. Newport Harbor Seal Watches benefit Save the Bay and the Rose Island Lighthouse Foundation. Two departures daily are scheduled aboard the *M/V Alletta*.

Representatives of the International Yacht Restoration School stressed that the most important part of southern Rhode Island's economic well-being is based on tourism and related trades occurring in and around the Narragansett Bay. (T. Nathan, 7/12/05)

Naval Underwater Warfare Center (NUWC)

NUWC conducts tests of or with unmanned undersea vehicles, unmanned surface vehicles, torpedoes, and other surface and undersea self propelled and/or towed vehicles on the Navy's range in Narragansett Bay several times per week. From fiscal year 2003 to present, the frequency of this test activity has been on the order of three to four test events per week, with the preponderance of the tests occurring within the confines of the range as defined on NOAA nautical charts as follows: northeast of Jamestown and southwest of Prudence Island, including waters around Gould Island as Restricted Area 334.80 and in the East Passage of Narragansett Bay adjacent to Restricted Area 334.80. NUWC's estimated projection of test events and range utilization in fiscal years 2006 and 2007 indicate that these figures will increase to five to seven events per week. As indicated in Table 8, the majority of NUWC exercises are conducted in the East Passage.

Table 8: NUWC Exercises

Fiscal Year	Total Number of Runs	Total Runs in East Passage
2003	206	196
2004	147	140
2005	199	189
2006	281	267
2007	381	362

Source: NUWC, draft August 4, 2005 correspondence

Section 4
Economic Considerations and Impacts to Recreational and Commercial Boating

Bay Tourism and the State and Local Economy

Narragansett Bay is one of Rhode Island's primary economic assets. Its value to marine recreation, tourism and events, fisheries and aquaculture, boatbuilding, boating-related businesses, shipbuilding, marine transportation, military and marine research, technology and education have been well documented. The State of Rhode Island has advanced several recent initiatives to capitalize on the importance of the bay, not just on a quality of life basis for its residents, but also as a major economic driver. The Governor's Narragansett Bay Summit 2000, followed by the Marine Cluster report, prepared by the Rhode Island Senate Policy Office in 2002, and more recent economic analyses conducted by the University of Rhode Island Department of Environmental and Natural Resources Economics, all document the value of the Bay to the state and local economy.

Waters off Newport in the East Passage represent some of the most important recreational resources of Narragansett Bay. Although the East Passage represents a relatively small portion of the bay itself, the steady breezes, dramatic shoreline, extensive water areas and navigational challenges, together with a protected harbor with full services and landside amenities have demonstrated that Newport is the focus. Newport's reputation is widely known nationally and internationally. As Jay Gowell, founder and director of the Rhode Island Sailing Foundation indicates, "Yachtsmen worldwide may not know where Rhode Island is but they know Newport."

Consider the following statistics supporting the importance of Narragansett Bay and the waters off Newport to the local and state economy:

Tourism and the State Economy

- The economic value of Narragansett Bay exceeds several billion dollars per years, regardless of the approach used to estimate it. The economic value of five marine-related sectors of the Rhode Island economy totaled $426 million in 1997:
    - Tourism and recreation - $140 million
    - Government activity - $118 million
    - Fisheries - $103 million
    - Transportation - $58 million
    - Construction - $6 million (Narragansett Bay Journal, 2003)

- The total annual value of all outdoor recreation activities in the state is $6.7 billion (Narragansett Bay Summit 2000, Marine Recreation and Tourism White Paper):
    - The total annual value of all outdoor recreation activities associated

with the marine aquatic and shoreline environments is $4.3 billion.
  - The total annual value of Bay-related outdoor recreation activities is $2.0 billion.

- The demand for marine recreational opportunities will likely grow substantially in the coming decades. Travel and tourism could become Rhode Island's largest employer by 2015. (Narragansett Bay Summit 2000, Marine Recreation and Tourism White Paper)

- According to "The Economic Importance of Narragansett Bay" (Tyrell, Devitt and Smith), 30 percent of tourism revenues were attributable to Bay-related uses and attractions. In 1999 dollars, it is estimated that $800 million in annual revenues are generated as a direct consequence of Bay-related uses and attractions. (Narragansett Bay Summit 2000, Marine Recreation and Tourism White Paper)

- Rhode Island's travel and tourist industries contribute approximately 5 percent of its Gross State Product. (Tyrrell, 2004)

- In 1998 travel and tourism accounted for 8.5 percent (390,000) of the state's private sector jobs. In 1998, about 14.2 million travelers visited Rhode Island for business, conventions or leisure. (Narragansett Bay Summit 2000, Marine Recreation and Tourism White Paper)

- 36 percent of state residents participate in ocean-related activities annually. (Tyrrell, 2004)

Tourism and the Local Economy

- The impact of marine recreation and tourism on local communities is significant. The three Aquidneck Island communities account for 15.0 percent of the state tourism industry wages and 10.9 percent of output or revenue. (Tyrrell, 2004)
  - In Newport, the tourism industry generates $89.89 million in annual wages with $262.91 million in output. In the state, these figures are only surpassed by Providence and Warwick.
  - In Middletown, the tourism industry generates $25.18 million in annual wages with $109.81 million in output. Although Middletown lacks public access to the East Passage, many of the goods and services required by Newport tourists are found in Middletown, and many tourism-related employees live in this town.
  - In Portsmouth, the tourism industry generates $9.74 million in annual wages with $37.35 million in output.

- At least 30 percent of Rhode Island's tourist industry revenue depends on marine resources. Newport, Middletown and Portsmouth have high dependence on marine resources, based on the number of boat ramps, slips, beachfront, and access points with parking. (Tyrrell, 2004)

LNG Economic Impact

The following subsections describe the impact of LNG tanker transit on recreational boating, commercial boating, emergency response, museums and NUWC as it pertains to Aquidneck Island communities. The preliminary investigation of the relative economic impact of LNG tanker transit is based on discussions with those who live or work on Aquidneck Island or sail off Island waters. LNG transit may be expected to affect the local economy of Aquidneck Island communities in the following ways:

- Actual costs would result from fuel expenditures during delays, lost time for commercial fishermen, ferry, fishing charter, tour boats, and cruise ships and revenue lost if schedules are cancelled.

- Asset utilization costs would result if fishing, tourism, recreational and other resources are not fully realized due to delays and loss of access. Loss of access to lobster traps and fishing grounds would result in an asset utilization cost for fishing. Delay and detours would result in asset utilization costs for recreational use of the bay for pleasure or competition. Detours and delays for land-based tourism attractions and Newport events would result in reduced attendance that could decrease use of these assets in the future. Potential conflicts between NUWC exercises and LNG tanker transit could also result in asset utilization costs to the Navy.

- Opportunity costs are opportunities lost or precluded in the future. Any impact that would result in less than fully planned development of O'Neill Properties Group at Carnegie Abbey, including Carnegie Village and Marina and the 1,400-slip marina permitted at Portsmouth's Weaver Cove, would represent a critical opportunity cost to the Town of Portsmouth.

Impacts to Tax Base and Life-style Residential Development

Communities on the East Passage are defined by their waterfront and the recreational use offshore. It is important to the City of Newport and Towns of Portsmouth and Jamestown that the value of waterfront property be maintained and continues to appreciate into the future. Existing and proposed seasonal properties are a component of the tax base that requires few municipal services.

Jay Gowell, a founder and director of the RI Sailing Foundation, has indicated that the reputation of Newport could be significantly affected by a hard to quantify "fear factor" of people not wanting to be anywhere near something so big and potentially devastating as an LNG tanker. This perception may have an intangible "chilling effect" on the value of the Bay as a recreational and economic resource. LNG tanker transit safety and security zones with picket boats, bullhorns, and potential traffic delays could adversely affect the psyche of the rest-seeking tourist and therefore the continued ability of Newport to attract vacationers. (J. Gowell, 7/28/05)

Lifestyle residential development of second and third homes has increased in recent years, especially in Portsmouth. The O'Neill Properties Group has made an initial

investment of $250 million in construction of Carnegie Tower, Carnegie Village, and Carnegie Marina (proposed). Full build-out of these developments with construction of Portsmouth's Weaver Cove marina (permitted) and associated high-end residential development could be approximately $750 million (K. Hively, 8/12/05). Potential investors may choose not to be inconvenienced by views of tankers, tug boats, and increased commercial traffic associated with one-way traffic patterns. Picket boats with loudspeakers and aerial surveillance could increase noise levels and reduce privacy as the safety and security zone approaches. Access from the proposed marina at Willow Lane would be prohibited during the 36-minute period that it would take an LNG tanker safety and security zone bound for Weaver's Cove Energy to pass. (Access to and from this proposed marina would not be blocked by KeySpan LNG transit). As a result of Weaver's Cove LNG tanker transit, O'Neill's development in the Carnegie Abbey area may become less attractive to the high-end market, one that has options regarding where it will spend its money. Any loss of full development would have implications to the Town of Portsmouth that could anticipate annual receipt of $4 million in tax revenue with full buildout (East Bay Newspapers, 7/21/05).

Other shoreline areas of Portsmouth include the neighborhood at Common Fence Point with views of Mount Hope Bay. This area will also be subject to safety and security zone closures with LNG tanker transport to Fall River. Residents will be inconvenienced by minimum delays of 67 minutes for access by water to the East Passage when LNG tanker transport occurs.

Impacts to Recreational Boating

Of leisure/vacation visitors to the state, boaters average expenditures per day were $97.98 in 2001. (Tyrrell, 2004)

There is the perception among those interviewed that LNG transit, especially to Weaver's Cove Energy in Fall River, will adversely affect the appeal of Newport and East Passage waters along Middletown and Portsmouth for recreational boating. In addition to safety concerns that were expressed by many interviewed during the course of the study, marina operators, marine service providers, yacht club representatives, and others indicated that the uncertainty of the LNG delivery schedule, the lack of advance notice, and anticipated delays will definitely affect marine businesses.

Michael Keyworth from Brewer's Cove Haven Marina pointed out that boats are much different from homes. If you are unhappy with conditions where you cruise, you can move your boat to a different, unaffected marina. (M. Keyworth, 7/18/05). Although there will be sailing enthusiasts who will never leave Newport Harbor, there are others who will be much more intolerant of changing conditions. As these people relocate their boats, the local marine and landside economy will suffer. As the volume of LNG transport increases in the future, the impact to the boating community would continue to acerbate.

The peak recreational boating season is short, extending 120 days between June and October. Any situation or event that reduces boaters' ability to fully utilize this resource results in an underutilization of assets. An 18 minute delay has been cited

in the FEISs for passage of the LNG tanker safety and security zone. For a boater coming into Narragansett Bay from off-shore with a destination such as Brewer's Sakonnet Marina in the Sakonnet River near Mount Hope Bay, transit time could actually extend to nearly three hours as the boat trails behind the security zone at 10 knots and then at 5 knots northward from Sandy Point. For a boat that typically cruises above 10 knots, this constraint would significantly affect boaters' perspectives regarding use of Narragansett Bay. In the future this would lead to a diminished utilization of the bay as a recreational asset. (K. Hively, 7/22/05)

Waters west of Gould Island (east of Jamestown) and on the Sakonnet River would become more popular for sailing and cruising as these areas are not restricted by the safety zone.

Impacts to Regattas and Sailing Events

Special events and regattas play a prominent position in the local economy of Aquidneck Island. As indicated in Section 3, five or six major regattas are scheduled in Newport annually. The following is an indication of the importance of these competitions and other major events to the local economy:

- The Newport to Bermuda race generated an estimated $6.5 million gross economic impact in Rhode Island in 1992 (adjusted to 2005 dollars: $9 million). Direct expenditures from hotel rooms to boat supplies, were estimated at more than $31,000 per boat in 1992 (adjusted to 2005 dollars: $43,000). In 2002 the fleet for this race was the largest ever, with almost 200 yachts. (Newport Bay Journal, Spring 2002)

- The Around Alone race, a single-handed around-the world race with origins in Newport, re-established its ties to Newport for the event's 20th anniversary in 2002. With many race budgets in excess of $1 million, the 20-plus fleet made a significant economic impact on the local and state economy. (Newport Bay Journal, Spring 2002)

- Local "megayacht" (power yachts of 100 feet or more) events include the Megayacht Challenge and the Newport Bucket. Robin Wallace of the State Yachting Committee reports that boats this size can have an enormous economic impact. A 1998 Florida study estimated that megayachts contributed $500 million per year to the economy of three south Florida counties. (Newport Bay Journal, Spring 2002)

- The 1989 International Boat show had a $9 million gross economic impact. (The Marine Cluster, 2002)

The Aquidneck Island economy is integrally dependent upon high-end recreational boating and tourism as indicated in Section 3 and as demonstrated in the statistics

above. The State of Rhode Island, through the Rhode Island Sailing Foundation, Senate Policy Office, and other groups, has actively marketed the Newport area to attract major regattas, Tall Ships, and various sailing competitions and events in recognition not only of Newport's America's Cup heritage, but with an understanding of the significant positive impact these venues have on the state and local economy. Newport faces stiff competition from other communities both in the US and abroad for many of these events. An intangible risk or fear associated with LNG transit may impact planning for these events.

Disruption of sailing events strikes at the very heart of the Newport economy. Any disruption of a regatta or other major event with an LNG transport would have significant consequences to the ability of Newport to retain the event in the future or to attract other events. Although the US Coast Guard and the Northeast Marine Pilots Association make every effort to adjust schedules to accommodate both commercial and recreational users of the bay, any inconvenience to race participants is not easily forgotten. (J. Gowell, 7/8/05) With limited one-hour or less notification of an LNG tanker transit, it is very difficult to assure that regattas will not be disrupted. This is an especial concern of the Ida Lewis Yacht Club. (ILYC, 6/27/05) The suddenness and unannounced nature of the LNG tanker movements are also of major concern insofar as they would inevitably disrupt and delay sailboat racing events that are highly scheduled and operate on a very tight timeframe. (J. Gowell, 7/28/05)

Impacts to the Fishing Fleet

Rhode Island's commercial fishery landings are valued at $75 million annually, of which about $10 million is harvested from Narragansett Bay. The value of Rhode Island's seafood industry, as a whole, is estimated at $750 million per year. The state's aquaculture industry produces more than $200,000 worth of shellfish per year. (Narragansett Bay Summit 2000 Report)

Any situation that would reduce a fisherman's ability to access traps or lines would result in a diminished utilization of fishing resources. Prime lobster beds east of Prudence Island (see Figure 3), would not be as well tended, with a lower resultant yield. Access to aquaculture leases off Burma Road in Middletown would be less accessible with imposition of LNG tanker safety and security zones. Delays associated with waiting for the passage of the LNG tanker safety and security zone are addressed below, in Fuel Costs.

Impacts to Ferry Operations

The Jamestown-Newport Ferry reports that there is no question that LNG transit, especially to Weaver's Cove Energy, would adversely affect their service, schedule and route. Connections between Jamestown and Newport would be subject to more than 18 minute delays in travel from Jamestown, south to Newport Harbor, especially with any congestion that might result east and west of the safety and security zone. (B. Munger, 7/18/05)

Transit of an LNG tanker to Weaver's Cove Energy would not affect the Prudence Island ferry from Bristol to Homestead Dock. KeySpan LNG tankers, however,

could delay the Prudence Island ferry for a minimum of 18 minutes.

Michael Glasfeld, President of New England Fast Ferry, operators of RIPTA's Newport to Providence ferry, sees no negative impact to ferry service from LNG tanker traffic in the bay, even if there are two or three tankers per week during his scheduled service. He said his ferries have shallow draft and can generally avoid the security zone around the ships. He runs ferry services in Boston Harbor when the LNG tankers come through. He thinks there may be some delays to his service for the first few large tanker trips, but believes the US Coast Guard and commercial boating interests will make adjustments which will limit the effect to his regular service. Due to his schedule being pre-programmed, the US Coast Guard will know when his ferries are coming through, and may be able to adjust the security zone to allow him passage. He said his customers are mostly tourists who enjoy seeing the big ships while underway. (M. Glasfeld, 7/1/05)

Impacts to Charters and other Seasonal Tourism-based Businesses

Newport is the home of many tourist-based businesses on Newport Harbor. Fishing charters, cruises, ferry service, tender service, boatyards, and other services are components of the marine economy. Many operators have indicated that since LNG transit will not be routinely scheduled (for security purposes one hour or less notice may be given as a Notice to Mariners), their tour schedules could easily be disrupted. Although some routes could be adjusted, the delay involved could adversely affect the ability of small operators to attract the customer base that is critical to their viability. Many tourism-based workers live in Newport and Middletown and any loss of employment would adversely affect other areas of the economy in these communities.

Although there is generally a shortage of available slips and moorings in Newport Harbor, the operator of Conanicut Marine Services has indicated his concern that with LNG the area will no longer be considered a destination location or a prime location to moor your boat. He was adamant that LNG transit would impact the economic viability of the bay and surrounding waters. (B. Munger, 7/18/05)

The average direct expenditures by all anglers (in-state and out-of-water) have been estimated by others to be about $54.01 per saltwater fishing trip. This does not include related expenditures such as investments in boating equipment and travel expenditures. (Narragansett Bay Summit 2000, Marine Recreation and Tourism White Paper) Fishing charter operators have indicated a similar concern to many interviewed regarding the effect of safety and security zones, estimated time delays, and schedule disruption. (J. Flaherty, 8/11/05) Any decrease in participation in this sport would affect the local economy.

SightSailing of Newport reports that LNG proposals are detrimental to the safety of Newport Harbor's people, businesses, events, and environment. (SightSailing, 7/11/05) A representative of the *Aurora* has indicated that they would not be able to charter the Aurora if an LNG tanker transit is scheduled. (*Aurora*, 7/13/05)

A representative of *Amazing Grace* Harbor Tours has indicated that LNG transit would make it difficult to schedule mooring work, repair work and towing. Tour

boats go out seven times per day with 80 passengers. It would be impossible to schedule around tankers, especially if one cannot know in advance when they are coming. The entire day's schedule of departures could be disrupted at least two days a week. This is totally unacceptable to this operator who wonders, "Why would someone go to Newport when there are so many other places not dealing with LNG?" (Oldport Marine, 7/13/05)

Impacts to Cruise Ships

Transport of LNG through waters off Newport Harbor could have a major impact on cruise-ship tourism. The majority of cruise ships (27 of 31 in 2005) call in Newport in September and October, as indicated in Table 6. LNG tanker transports would be increasing during these months, especially October, as the heating season increases demand on energy. Potential conflicts could arise more often than twice per week with inbound and outbound LNG tanker transit. The LNG tanker safety and security zone encompasses all of Anchorage D as indicated in Figure 2, the designated area for cruise ship mooring on the west side of Goat Island. With a cruise ship at the mooring, it would not be possible to secure a safety and security zone for LNG tanker transit. Based on the unannounced schedule of LNG tanker transits, the US Coast Guard may not be able to adequately schedule both LNG tanker transit and cruise ship arrivals and departures. Newport's reputation as a cruise ship destination could therefore diminish as cruise lines seek other more reliable ports of call.

Each cruise ship passenger spends an average of $105 in port. Each cruise therefore generates $60,000 for the local economy or $6.5 million per year. Cruise lines pay a landing fee of $4 per passenger to the City of Newport. With an average of 600 passengers per ship for 31 arrivals in 2005, the City of Newport stands to collect nearly $75,000 this year in landing fees. The loss of cruise ships would therefore affect the municipal budget as well. (E. Smith, 7/7/05, E. Lavalle, 8/3/05)

Impacts to Emergency Access

Both Prudence and Hog Islands are part of the Town of Portsmouth. The town provides emergency response to the Sandy Point town dock on Prudence Island and to the ferry dock at Hog Island via the municipal boat docked at Melville. This boat is used to transport patients from the islands to an ambulance for transport to local hospitals. Although it would be hoped that the US Coast Guard Captain of the Port would permit emergency response vessels within the safety and security zone, a passing LNG tanker safety and security zone could delay response to or from these islands between 18 and 36 minutes for this lifeline service. Any security zones established around an LNG tanker moored while awaiting clearance for an outbound commercial ship could also affect emergency response to the islands. Since emergency response may be required at any time of the day or night, year-round, outbound LNG tanker safety and security zones could delay this service as well. These conflicts could increase in the winter as LNG fuel delivery increases.

Impacts to Museums and Organizations

Terry Nathan of the International Yacht Restoration School reports, "The most important part of southern Rhode Island's economic well being is based on tourism and related trades. In my personal view, nothing is more antithetical to this than the proposed use of the Bay for transporting highly hazardous materials, especially when such transports require a disruption to the natural flow of activities---even if such transports are at ebb hours. The attractiveness of our precious water resources is based not just on protecting them and the people who live and visit nearby, but on the perception that the public has about safety and desirability. Currently, we share these resources with industry. There is an important balance that works. I believe that if LNG is allowed to use these same waters to transport the proposed new materials, the balance will be tipped. I am against this undue risk." (T. Nathan, 7/18/05)

As indicated in Figure 2, the LNG tanker safety and security zone includes Rose Island. If the Jamestown-Newport Ferry cross-bay schedule is affected by LNG transit it will definitely impact the Rose Island Lighthouse Foundation's ability to attract visitors to the lighthouse. Another question raised by the Rose Island Lighthouse Foundation is whether having visitors on the island would pose a security risk to LNG transit. The foundation is concerned that they could be required to conduct security checks of visitors, or be asked to vacate the island or limit activities in any way when the LNG tankers are passing. (C. Johnson, 7/22/05) These would all have impacts on the viability of the Rose Island Lighthouse Foundation's efforts to fund preservation efforts.

Impacts to Naval Undersea Warfare Center (NUWC)

NUWC's range generally extends northeast of Jamestown and southwest of Prudence Island, including waters around Gould Island and in the East Passage of Narragansett Bay (identified on NOAA nautical charts as Restricted Area 334.80). Nearly 1.7 square miles of Restricted Area 334.80 is located within the proposed LNG tanker safety and security zone.

Donald Aker, NUWC Technical Manager, reports that the proposed LNG safety and security zones, the proposed frequency of LNG transit through the Narragansett Bay range, and the lack of firm and available scheduled LNG tanker passage through this area, could significantly impact NUWC exercises in the short term. LNG tanker passage through the range (see Section 3) would effectively halt any tests planned or in process and, depending on the timing, could result in the cancellation of the test and financial losses for the Navy in terms of non-recoverable sunk costs associated with planning and staging these complex test events. The biggest impact will be lack of notice of LNG passage as a result of needing to maintain security. If DIVNPT were given significant notice of greater than two weeks of the LNG passages in Narragansett Bay it would allow options to plan around their presence. Without this notice a cancellation of a single event could result in a loss in excess of $50,000. The long-term impact of continued passage through the Navy's range and the resultant interruption and/or cancellation of tests has the potential to impact

NUWC's mission, namely the ability to develop, test, and deliver viable undersea warfare weapon systems to the US Navy. (NUWC, draft 8/4/05 correspondence)

The continued viability of NUWC and Naval Station Newport is critical to the economy of the State of Rhode Island (its value to the state is reported to be between $4 and $5 billion). Any activity such as LNG transit, which could adversely affect the ability of NUWC to undertake its mission, would adversely affect the entire state.

Fuel Costs

The cost of fuel associated with delay for safety and security zones has been calculated, based on the methodology used in RIDOT's Sakonnet River Bridge EIS Marine Navigation Study (RIDOT, 2000). The following is based on boat counts conducted at Fort Adams, Pell Bridge and Melville on Friday, June 24, and Saturday, June 25, 2005, as presented in Appendix 2. The following assumptions have been made to calculate costs:

- Time of delay is 18 minutes or .3 hours on the East Passage. Figures should be increased proportionately for minimum delays outlined in Table 1 (36 minutes between Sandy Point and Mount Hope Bridge and 67 minutes between Mount Hope Bridge and Common Fence Point in Mount Hope Bay).
- Diesel is consumed at the rate of 1 gallon per hour per 20 horsepower.
- Gasoline is consumed at the rate of 1 gallon per hour per 15 horsepower.
- Both diesel and gasoline consumption rates are based on operating at 75 percent power (although this was appropriate for navigational detours for Sakonnet River Bridge construction, this figure could be high for LNG delays).
- Assumed price per gallon of diesel and gasoline to be averages of prices at Brewer's Sakonnet Marina and Goat Island Marina on July 12, 2005.
- Boats do not turn off engines while waiting for the security zone to pass.
- The distribution of diesel and gas power is similar to the Sakonnet River (based on DEM boat registration information gathered for the Sakonnet River Bridge EIS Marine Navigation Study).
- Average motorboat is powered by a 200 horsepower motor; the average sailboat has a 25 horsepower motor; the average large yacht or commercial boat has a 500 horsepower engine.

The following is a sample calculation for gasoline-powered motorboats for the weekday count conducted from 6:45 to 7:45 AM:

> *# of boats (average HP per boat) (% of Boats with diesel engines)(.3 hours delay)(gallons/hour*horsepower)(price per gallon of fuel) = cost in fuel of delay*
>
> *8 Boats (200 HP per boat) (.74 percent diesel boats) (.3 hours) (1 gallon/ hour /15 HP) ($3.09 price per gallon) = $73.41*

Table 9 presents costs per delay period for motorboats, sailboats, commercial boats (including large yachts), and total fuel cost for an 18-minute delay within a two-hour period, based on boat counts conducted at the location and time periods indicated. This information is presented to provide a guide for what the fuel cost only would be for a typical 18-minute delay during a peak summer weekday or

weekend period. As indicated, the price of delay in fuel consumption only, would range from $124 to $1,055 per delay.

Table 9: Cost of Fuel for Safety and Security Zone Delay (18 minutes)

Date	**Friday, June 24, 2005**						**Sat. June 25, 2005**					
Location	**Fort Adams**		**Pell Bridge**		**Melville**		**Fort Adams**		**Pell Bridge**		**Melville**	
Time	6:45 to 7:45 AM		9:30-10: 30 AM		12:45-1:45 PM		Noon - 1:00 PM		1:30-2:30 PM		4:25 –5:15 PM	
	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas	Diesel	Gas
Motorboats	$11.23	$73.41	$32.29	$211.05	$15.44	$100.94	$101.09	$660.67	$129.17	$844.19	$47.74	$311.98
Sailboats	$1.84	$1.61	$3.67	$3.22	$1.38	$1.21	$17.90	$15.72	$34.43	$30.23	$5.97	$5.24
Commercial and Large Yachts	$20.25	$15.50	$20.25	$15.50	$20.25	$15.50	$91.13	$69.75	$10.13	$7.75	$40.50	$31.00
TOTAL	$123.84		$285.99		$154.72		$956.25		$1,055.89		$442.43	

For areas north of Sandy Point where the LNG tanker would transit at 5 knots, the costs would double (at a minimum, but more likely be three or more times higher in Mount Hope Bay).

Costs per 18-minute delay per boat range from $1.40 to $9 for motorboats to $8 to $10 for a large yacht or 500-horsepower commercial boat. With a 67-minute delay costs would range up to $34 for a gasoline-powered motorboat to between $29 and $38 for a diesel or gasoline powered commercial boat or yacht.

As evidenced by the data above, the effect of unannounced LNG tanker transit, with its 3.2-mile long by 1.2-mile wide safety and security zone, will have a substantive impact on the economy of Newport, Aquidneck Island, and the State of Rhode Island. When combined with vehicular traffic impacts resulting from bridge closures and with the general anxiety associated with safety, LNG tanker transport has the potential to also affect the marine-oriented way of life for residents of Aquidneck Island communities.

Sources

Telephone Interviews

Aurora Charter Services. Interviewed by A. Cabral, Pare Engineering Corp./July 13, 2005.

Bowen's Wharf Company Newport. Interviewed by A. Cabral, Pare Engineering Corp./June 27, 2005.

Brewer's Sakonnet Marina. Interviewed by A. Cabral, Pare Engineering Corp./July 12, 2005.

Brewer's Cove Haven Marine. Interviewed by C. Pereira, Pare Engineering Corp./July 18, 2005.

City of Newport. Ed Lavalle, Acting City Manger. Interviewed by P. Sherrill, Pare Engineering Corp./ August 3, 2005.

City of Newport. Tim Mills, Harbormaster: Interviewed by P. Sherrill, Pare Engineering Corp./June 20, 2005.

Coasters Harbor Navy Yacht Club. Ed Noll: Interviewed by A. Cabral, Pare Engineering Corp./July 14, 2005.

Duffy, Joseph L., LCDR, US Coast Guard (Ret). Interviewed by P. Sherrill, Pare Engineering Corp./July 5, 2005.

Flaherty Charters. Capt. Jim Flaherty. Interviewed by P. Sherrill, Pare Engineering Corp./August 11, 2005.

Goat Island Marina. Interviewed by A. Cabral, Pare Engineering Corp./July 12, 2005.

Hively, Kevin. Interviewed by P. Sherrill, Pare Engineering Corp./July 22, 2005.

Ida Lewis Yacht Club. Interviewed by A. Cabral, Pare Engineering Corp./June 27, 2005.

Jamestown/Newport Ferry and Conanicut Marine Services, Inc. Bill Munger. Interviewed by C. Pereira, Pare Engineering Corp./July 18, 2005.

Naval Underwater Warfare Center. Donald Aker, Technical Manager; Russ Racette, Facilities Manager: Interviewed by P. Sherrill, Pare Engineering Corp./July19, 2005.

New England Fast Ferry. Michael Glasfeld, President: Interviewed by E. Rabideau, Pare Engineering Corp./ July 1, 2005.

Newport County Chamber of Commerce. Keith Stokes, Executive Director: Interviewed by P. Sherrill, Pare Engineering Corp./ June 21, July 8, 2005.

Newport County Convention and Visitors Bureau. Evan Smith, President/CEO: Interviewed by P. Sherrill, Pare Engineering Corp./July 8, 2005.

Newport Mooring Service. Neil Grey: Interviewed by A. Cabral, Pare Engineering Corp./June 27, 2005.

Northeast Marine Pilots Association. Howard McVay Jr., Captain: Interviewed by E. Rabideau, Pare Engineering Corp./July 1, 2005.

Oldport Marine Services. Interviewed by A. Cabral, Pare Engineering Corp./July 13, 2005

Oldport Marine Services. Burt Hoffman: Interviewed by A.Cabral, Pare Engineering Corp./July 14, 2005.

Portsmouth Fire Department. Robert Church, Deputy Chief: Interviewed by C. Pereira, Pare Engineering Corp./July 11, 2005.

Prudence Island Ferry Service. Interviewed by C. Pereira, Pare Engineering Corp./July 11, 2005.

Rhode Island Attorney General's Office. Paul Roberti, Assistant Attorney General: Interviewed by P. Sherrill, Pare Engineering Corp./June 20, 2005.

Rhode Island Charter Boat Association. Rosilyn Green: Interviewed by C. Pereira, Pare Engineering Corp./July 11, 2005.

Rhode Island Sailing Foundation. Jay Gowell – Director: Interviewed by P. Sherrill, Pare Engineering Corp./July 8, 2005.

Sail Newport. Brad Reed: Interviewed by A. Cabral, Pare Engineering Corp./June 27, 2005.

Sail Newport Race Committee. Richard Allphin – Committee Member: Interviewed by C. Pereira, Pare Engineering Corp./July 11, 2005.

Sight Sailing of Newport. Interviewed by C. Pereira, Pare Engineering Corp./July 11, 2005.

Town of Portsmouth. Bob Gilstein – Town Planner: Interviewed by P. Sherrill, Pare Engineering Corp./July 8, 2005.

Town of Jamestown. Harbormaster. Interviewed by P. Sherrill, Pare Engineering Corp./July 29, 2005.

United States Coast Guard - Marine Safety Office, Providence. Commander Patrick Little: Interviewed by P. Sherrill, Pare Engineering Corp./June 19, 2005.

United States Coast Guard - Marine Safety Office, Providence. Commander Ray Nash: Interviewed by P. Sherrill, Pare Engineering Corp./August 4, 2005.

United States Coast Guard - Marine Safety Office, Providence. Commander Edward LeBlanc: Interviewed by P. Sherrill, Pare Engineering Corp./August 12, 2005.

Email Contacts

International Yacht Restoration School (IYRS). Terry Nathan: Contacted by A. Cabral, Pare Engineering Corp./ July 12 and 18, 2005.

Rose Island Lighthouse. Charlotte Johnson – Executive Director: Contacted by A. Cabral, Pare Engineering Corp. / July 22, 2005.

United States Army Corps of Engineers. Stephen DiLorenzo, Senior Project Manager: Contacted by P. Sherrill, Pare Engineering Corp./ August 9, 2005.

United States Coast Guard. Commander Edward LeBlanc: Contacted by P. Sherrill, Pare Engineering Corp./ July 8, 2005.

United States Coast Guard Group Woods Hole. LT Michael Russell: Reply to P. Sherrill, Pare Engineering Corp./ July 8, 2005.

References

Ardito, T. April 24/25, 2000. *Narragansett Bay Summit 2000 Report*.

33 CFR 165.21, Safety and Security Zones: High Interest Vessels, Narragansett Bay, Rhode Island.

Colt, Ames. April 11, 2000. *Marine Recreation and Tourism in Narragansett Bay: Critical Values and Concerns*, Narragansett Bay Summit 2000 White Paper.

Dobrot, Gabriela, Timothy Tyrrell and Elissia Wahl, Elissia. Draft December 17, 2004. *Rhode Island's Marine Tourism Economy*, RI Department of Environmental and Natural Resource Economics.

Duffy, Joseph L., LCDR, USCG (ret.). June 24, 2005. Pre-filed testimony in support of the joint motion of the City of Providence, City of East Providence, and the State of Rhode Island, by and through the Office of the Attorney General (Ferrucci Russo P.C.).

East Bay Newspapers. July 21, 2005. *Property values, development, tax base swell.* http://eastbayri.com/print/313303180210427.php

Federal Energy Regulatory Commission Office of Energy Projects. Weaver's Cove

Energy LLC Final Environmental Impact Statement. Docket Nos. CP04-36-000, CP04-41-000.www.public.referenceroom@ferc.gov.

Federal Energy Regulatory Commission Office of Energy Projects. KeySpan Energy LLC Final Environmental Impact Statement. Docket No. CP01-223-000, CP04-293-000, CP04-359-000. www.public.referenceroom@ferc.gov.

Goddard, Townsend. Summer 2002. *Sailing Industry*, Narragansett Bay Journal.

Governor's Narragansett Bay and Watershed Planning Commission. March 3, 2004. Economic Development Panel Report.

Harrison, J and Tyrrel, T. December 2000. *Assessing the Economic Value of Rhode Island's Natural Resources*, University of Rhode Island Department of Environmental and Natural Resource Economics.

Moffatt & Nichol International. *Letter of Intent to Operate a Newly Constructed Waterfront Facility.*

Narragansett Bay Journal. Summer 2002. *The Bottom Line: 2002 Sailing Events.*

Narragansett Bay Summit 2000 White Paper. April 11, 2000. *Marine Recreation and Tourism in Narragansett Bay: Critical Values and Concerns*.

Narragansett Bay Summit 2000 White Paper. April 13, 2000. *Commercial Marine Transportation on Narragansett Bay: Status, Trends & Issues*.

Narragansett Bay Summit 2000 Report. April 24-25, 2000. *Environment, Economy, Community.*

Naval Undersea Warfare Center, Draft August 4, 2005 correspondence to the Rhode Island Office of the Attorney General from Donald A. Aker, Technical Operations Manager.

Pacheco, Andrada, and Timothy Tyrrell. Fall 2003. *What's the Bay Worth? Estimating Economic Value,* Narragansett Bay Journal Number 6.

Ports and Waterways Safety Assessment (PAWSA) Workshop Report, Narragansett Bay. September 7-8, 2004.

Rhode Island Department of Environmental Management. October 17/20, 2002. *DEM, Local Officials to Cut Ribbon on Pier 9 Improvement Project.* Press Release.

Rhode Island Department of Transportation. November 30, 2000. *Sakonnet River Bridge Marine/Navigation* Study (conducted for the Sakonnet River Bridge Environmental Impact Statement). Prepared by Edwards and Kelcey.

RIGISNCC-NOAA. September 19, 1998. *Digital NOAA nautical charts for*

Narragansett Bay and Rhode Island Coastal Waters. NOAA Chart Index No. 13221, Narragansett Bay

Rhode Island Senate Policy Office – The Marine Cluster. July 2002. *An Investment Agenda for Rhode Island's Marine Related Economy*.

Tyrrell, Timothy and J. Harrison. December 2000. *Assessing the Economic Value of Rhode Island's Natural Resources.*

Tyrrell, Timothy J. and Andrada I. Pacheco. Fall 2003:Volume 6. *What's the Bay Worth? Estimating Economic Value.* Narragansett Bay Journal.

Appendix 1
Key LNG Tanker Transit Findings:
Final Environmental Impact Statements

Two Liquid Natural Gas (LNG) import terminal facilities have been proposed for new or upgraded service in areas that could have a profound impact on users of the bay:

- **Weaver's Cove Energy, L.L.C.** proposes new construction of an import terminal and natural gas pipeline facilities at Weaver's Cove, Fall River, MA. The Federal Energy Regulatory Commission (FERC) approved this proposal on June 30, 2005. The applicant has prepared a Final Environmental Impact Statement (FEIS) / Environmental Impact Report in accordance with National Environmental Policy Act / Massachusetts Environmental Policy Act requirements. Docket Nos. CP04-36-000, CP04-41-000.

- **KeySpan LNG, L.P.** proposed upgrade of the existing terminal at Fields Point in Providence. This proposal was rejected by FERC on June 30, 2005, following the NEPA Final EIS review process. Although this project was rejected, it has been included in the analysis pending any appeals. Docket No. CP01-223-000, CP04-293-000, CP04-359-000.

The following are key findings as LNG transit affects marine navigation on the East Passage of Narragansett Bay. These findings are based on the Final EISs for the two LNG projects, the Letter of Intent to Operate a Newly Constructed Waterfront Facility for KeySpan LNG, L.P. (prepared by Moffat & Nichol International), and information presented by Weaver's Cove Energy, L.L.C. at an August 3, 2005 presentation to the Newport City Council. Many findings are similar for both facilities, as indicated. It is also noted that the safety and security zone (exclusion zone) referenced within this appendix is not based on 33 CFR 165.121, Safety and Security Zones: High Interest Vessels, Narragansett Bay, Rhode Island calculation of the safety and security zone. Page references to documents are included (WC is the Weaver's Cove Energy FEIS; K is the KeySpan FEIS; MNI is the Moffat & Nichol Letter of Intent).

LNG Transit

Tanker Size

- LNG will be delivered to the terminal in LNG tankers having capacities from 70,000 to 145,000 cubic meters of LNG (MNI 5 of 26). Typical dimensions of LNG tankers that will call at the KeySpan facility are indicated in Table A-1.1. As indicated by a representative of Weaver's Cove Energy at the August 3, 2005 Newport City Council meeting, Weaver's Cove Energy LNG tankers may be larger: 930 feet in length and 150 feet in width with 37 feet of loaded draft.

Frequency of Shipments

- Weaver's Cove Energy – 50 to 70 inbound LNG tankers per year or one every five to seven days (more frequent when energy demand is highest, in the winter).
- KeySpan – 50 to 60 inbound LNG tankers per year or one every six to seven days (more frequent when energy demand is highest, in the winter).

Table A-1.1: Detail of LNG Carriers

Capacity of vessel	145,000 Cubic meters	88,000 Cubic meters	71,600 Cubic meters
Example Vessel	*Energy Frontier*	*Hoegh Galleon*	*Newbuild*
Overall Length	909 feet	818 feet	721.6 feet
Beam	142 feet	131 feet	114.8 feet`
Loaded Draft	37.4 feet	34.8 feet	32.1 feet

Source: LOI to Operate a Newly Constructed Water Facility, KLNG Terminal, Providence, RI (MNI 5 of 26)

Waterway Channels Used

- Weaver's Cove Energy
  - From the mouth of Narragansett Bay, the LNG tankers would proceed up the East Passage to Sandy Point (east side of Prudence Island). At Sandy Point, the LNG tankers would turn east and follow the Federal Navigation Channel through Mount Hope Bay and up the Taunton River to the LNG terminal site.
  - At least initially, LNG tankers in this segment may be restricted to one-way traffic and daylight only transit. The Federal Navigation Channel has an authorized depth of 35 feet and a minimum width of 400 feet. The channel was originally dredged in 1920 and was last maintained in the 1970s. Weaver's Cove Energy proposes to conduct maintenance and improvement dredging of the federal navigation channel to accommodate deeper draft LNG tankers.
  - A tractor tug would escort the LNG tankers up Narragansett Bay to Sandy Point where two additional tractor tugs would join the escort up the Federal Navigation Channel. (WC 4-254)
- KeySpan
  - From the mouth of Narragansett Bay, the LNG tankers would proceed up the East Passage of Narragansett Bay, Federal Channel, through upper Narragansett Bay to Providence. One-way operation would be in effect (see Moving Safety and Security Zones, below).
  - A tractor tug would escort the LNG tankers to Providence. Transit to KeySpan would NOT be subject to rising tide restrictions required for transit to Weaver's Cove Energy.

Tidal Restrictions and Vessel Travel Time

- As the LNG tanker bound for either LNG facility arrives at the Pilot Station off the coast, the pilot and the US Coast Guard will determine the best time to bring the LNG tanker to port with due consideration given to security concerns, the impact on users in the Bay, and environmental data for the projected period of the port call.
- Weaver's Cove Energy
  - 4 hours for a 21- nautical mile transit from RI Sound to the terminal (WC 4-170, WC 4-270). The outbound trip is slightly faster as a result of increases in the average speed. Table A-1.2 presents information on distance, average speed, and estimated time of travel.
  - "LNG tankers would enter the channel *(Federal Channel north of Mount Hope Bridge)* during a rising tide to ensure sufficient water depth for safe passage." (WC 4-254, clarification added) "Channel transits would be undertaken on a rising tide and timed to minimize current effects in the area of the Brightman Street Bridge." (WC 4-265).

Table A-1.2: Transit Time to Weaver's Cove Energy

Direction	Begin	End	Distance nautical miles	Average Speed knots	Estimated Time (1) minutes
Inbound	Entry of Narragansett Bay (2)	Pell Bridge	3.9	10	23
	Pell Bridge	Sandy Point	6.4	10	38
	Sandy Point	Braga Bridge	8.6	5	103
	Braga Bridge	Turning Basin	2.0	3	40
Outbound	Turning Basin	Braga Bridge	2.0	3	40
	Braga Bridge	Sandy Point	8.6	6	86
	Sandy Point	Pell Bridge	6.4	10	43
	Pell Bridge	Entry of Narragansett Bay (2)	3.9	12	20

(1) Estimates based on a 145,000 cubic meter LNG tanker
(2) Crossing line between Beavertail Point and Breton Point
Source: WC 4-188

- "Weaver's Cove Energy has indicated that it would be willing to consider limiting LNG tanker transits during peak weekend hours and using early morning periods, *subject to tidal conditions.* With the agreement of the Coast Guard and pilots, Weaver's Cove Energy would also explore the possibility of eventually using nighttime transits for the LNG tankers to minimize impacts on recreational boating." (WC 4-170, emphasis added)
- "The LNG tanker would normally transit Narragansett Bay during daylight hours." (WC 4-254) "Existing practice is for deep draft vessels to transit the channel only during daylight hours." (WC 4-265)

- KeySpan
  - LNG tankers may proceed regardless of tide (due to deepening of the channel) or light conditions, based on discussion with the Coast Guard. However, LNG tankers must wait at the bay's entrance for acceptable visibility (greater than 2 miles). (MNI LOI 16 of 37).
  - Transit time to Keyspan: 3 hours for a 29-nautical mile trip inbound. It has been proposed that the transit times of the LNG tankers will be scheduled in the early morning or at night, outside the normal peak periods of usage of the waterway by recreational boaters.
    - A typical transit schedule to and from the KeySpan terminal in Providence may be as follows (K 4-138):
    - LNG tanker arrives at dawn at the Pilot Station south of Newport, picks up the pilot and heads in around 0600
    - LNG tanker passes Newport during early morning hours around 0700 to minimize the impact of the Safety and Security Zone to recreational boating in the Newport area
    - LNG tanker berths at KLNG Terminal (KeySpan, Providence) between 0830-0900
    - LNG tanker commences cargo discharge operations around 1200
    - LNG tanker completes cargo discharge operations – around 0100 next morning
    - LNG tanker departs the berth and heads down river around 0430 – night time transit most of the way
    - LNG tanker transits Narragansett Bay and passes Newport area prior to 0630 to minimize the impact on recreational boating in the Newport area in summer time
    - LNG tanker drops off pilot and takes departure around 0700
- LNG tankers, after unloading, can transit from berth irrespective of tide or daylight. (MNI LOI 17 of 37)

Moving Safety and Security Zone

Safety and security zones apply to both the Weaver's Cove Energy and KeySpan LNG facilities, for both inbound *and outbound transit*, at the discretion of the US Coast Guard (USCG) Captain of the Port:

- Two miles ahead of the vessel, one mile behind, and 1,500 feet on either side for inbound traffic. (WC 4-270). This area is indicated in Figure 1 as a moving "exclusion zone" which proceeds along the East Passage, to the Federal Channels to Providence and Fall River.
- Currently, a moving safety and security zone is utilized for Liquefied Petroleum Gas (LPG) shipments. An average of 10 to 12 ships per year typically unload 20,000 to 30,000 metric tons of LPG per visit at Providence, with most visits occurring from fall to late winter. All transits entering from Narragansett Bay at Breton Point are subject to special safety and security measures imposed by the Coast Guard. (WC 4-263).
- "A detailed security plan describing the resources and prevention/mitigation strategies has been provided to the FERC. The plan includes an offshore security sweep by a Coast Guard boarding team, aerial surveillance, and an

escort to the dock by armed security boats to enforce a safety and security zone." (WC 4-269)

Safety Zone Notification

- "To mitigate the impacts of security zones, the Coast Guard would routinely provide Notice to Mariners prior to the arrival and departure of LNG tankers as the Coast Guard currently does for LPG vessels and/or other activities such as the Tall Ship parades. The notification system employed for safety and security zones consists of broadcasts on radio frequencies used by mariners. This notification may be given from minutes to more than 1 hour before the security zone is enforced. Broadcasts are intentionally not made further in advance for security reasons. *(Note: Notices to Mariners are generally read by pilots of commercial vessels but not readily available to recreational boaters.)* Picket boats would also precede the LNG tanker to inform vessels of the approaching security zones." (WC 4-272)
- "The notification system includes broadcasts on radio frequencies used by mariners and loudspeaker announcements from USCG, police or other agency picket boats that precede the ship." (WC 4-310)

Safety and Security Zone Delay

- "Operation of the LNG terminal could also affect recreational boating and fishing during the weekly transit and unloading of the LNG ships. In many areas, the waterway that would be traveled by the LNG ships is sufficiently wide to allow recreational craft, which generally are not confined to the Federal Channel, to navigate around the LNG ships without significant delay. To estimate what kind of delay might result from a passing LNG ship in areas where the waterway is narrower, we identified the locations where the moving safety and security zone has the greatest potential to encompass the entire width of the waterway. We specifically looked for areas where there might be less than approximately 1,500 feet of open water on both side of the LNG ship route (the anticipated width of the safety and security zone on either side of the ship). *These areas include the East Passage between Newport and Jamestown, the Mount Hope Bridge area*, and the Taunton River. For an LNG tanker in transit at 10 knots *(East Passage)*, recreational craft attempting to travel in the opposite direction at a narrow location may need to wait *up to 18 minutes* for the LNG ship to pass before proceeding on its way. For an LNG tanker in transit at 5 knots *(Sandy Point, Mount Hope Bridge, Mount Hope Bay)*, recreational vessels may be delayed for *up to 36 minutes*." (WC 4-273, emphasis added)
- "The extent of the impact on recreational boaters would depend on the number of boats in the project area during the 50 to 70 days per year that LNG tankers would call on the LNG terminal. These impacts would primarily occur during the peak recreational boating season between about May and September. As noted above, the Coast Guard is expected to use a program of announcements to give advance notice of approaching LNG ships. Weaver's Cove Energy has stated that it is willing to consider limiting ship transits during peak recreational traffic weekend hours and

using early morning periods, *subject to tidal conditions.* With the agreement of the Coast Guard and the pilots, Weaver's Cove Energy would also look to eventually using nighttime transits for the LNG ships, which would further reduce the impact to boaters." (WC –4-273, emphasis added)

Narragansett Bay Navigation

Visibility

- Visibility must be at least two miles for the estimated duration of a LNG tanker's journey for the LNG tanker to be allowed to enter the bay or sail off from berth. (MNI 7 of 26)
- NMI indicates that fog typically prohibits navigation from about 2 am until noon, about twice a month during the winter months (November through March) and about twice a week from April through July. (MNI 8 of 37)

One-way Vessel Traffic System

- "A one-way system will be enforced throughout the bay and rivers when an LNG carrier (KeySpan or Weaver's Cove Energy) transits to or from its berth. Specifically, while a KeySpan carrier is traveling to (from) its terminal, all Providence Harbor outbound (inbound) traffic in the river or bay is delayed and any Fall River harbor outbound (inbound) traffic that would otherwise meet the carrier south of the Hope Bay turn-off is also stopped. Similarly, while a Weaver's Cove Energy carrier is traveling to (from) its terminal, all Fall River outbound (inbound) traffic in the river or bay is delayed and any Providence Harbor outbound (inbound) traffic that would otherwise meet the carrier south of the Hope Bay turn-off is also delayed. *It is assumed that the LNG carriers do not have any special priority over other vessels, thus they must wait for other vessels to complete their journey in the opposite direction; there will be no clearing of traffic in the opposing direction ahead of the LNG carrier's arrival to reduce its potential delay*." (MNI LOI 16 of 37, emphasis added, WC 4-265)
- Based on the "one-way rule" above, the waters off Sandy Point on Prudence Island would be used to hold waiting LNG tankers for transit to either Providence or Fall River.
- "It is estimated that the delay to a ship scheduled to depart from an existing Fall River berth due to inward passage of an LNG ship in the navigation channel could be between 60 and 90 minutes." (WC 4-265)

LNG Shipping Simulation (commercial vessels, only)

- Commercial traffic entering Narragansett Bay averages roughly two to three commercial vessels per day. This includes tankers, coal ships, LPG ships, car carriers, passenger/cruise ships, and general cargo. (WC 4-263)
- Impacts are projected to range from delay to 3 percent of commercial vessel traffic under current conditions to delay of 8.4 percent of commercial traffic for the scenario with increased vessel traffic and increased LNG activity at both the Key Span and Weaver's Cove Energy terminals. This analysis, conducted by MNI, was prepared for KeySpan. (MNI 8 of 26)

- "Although the traffic impacts due to ships proposed for the Weaver's Cove Energy project were not studied separately, these ships would be expected to have *less* impact than the analysis for the Keyspan LNG Facility Upgrade Project." (WC 4-272, emphasis added). Reference is to the MNI study, above.
- Recreational boat traffic impacts were not projected for either LNG facility.
  - "Recreational boating traffic was not included in the shipping traffic simulations. The impact of a transit of a loaded KeySpan vessel on recreational boating would be limited to one a week. A proposal to schedule early morning or night-time transit, outside the normal peak periods of recreational usage of the waterway, would minimize the once-weekly impact." (KeySpan LOI, 9 of 26).
  - "Recreational boats were not included in the simulation; however, it can be assumed that the impacts on recreational boaters would be less than on deep draft vessels since recreational boats have shallower drafts and are less restricted on where they can travel in the bay and river." (WC 4-309)

Appendix 2: East Passage Boat Counts

Boat counts were conducted during a weekday and weekend period to document use of the East Passage for recreational and commercial boating. Both counts were conducted during fair early summer weather. Weekday counts were conducted from 5:45 AM to 1:45 PM to observe commercial fishing boats and general recreational use. Weekend counts were conducted between 10:00 AM and 5:15 PM to observe maximum recreational use. Counts were conducted for a total of six hours on each day with two hours of counts at three locations: Fort Adams, Pell Bridge, and Melville. Recreational boats were identified as motorboats, sailboats, or large yachts. Commercial boats were categorized as ferries/cruise boats, fishing boats, or other (including commercial tankers).

As indicated in Table A-2.1, 129 boats were observed passing count stations on Friday, June 24 during a six hour period between 5:45 AM and 1:45 PM and 565 boats were observed on Saturday, June 25 between 10:00 AM and 5:15 PM. Of the total traffic observed, 89% was recreational on the weekday count and 98% was recreational on the weekend count. These counts do not include the general observations to the north or south of the count location (see Table A-2.1 notes). Boat counts are graphically presented in Exhibit 1.

Table A-2.1: Boat Counts, June 24 and 25, 2005

Date	**Friday, June 24, 2005**						**Saturday, June 25, 2005**					
Location	**Fort Adams**		**Pell Bridge**		**Melville**		**Fort Adams**		**Pell Bridge**		**Melville**	
Time	0545-0645	0645-0745	0830-0930	0930-1030	1145-1245	1245-1345	1000-1100	1200-1300	1230-1330	1330-1430	1515-1615	1615-1715
Recreational Boats												
Motorboats	10	8	23	23	14	11	45	72	78	92	34	22
Sailboats	2	4	2	8	3	3	29	39	27	75	13	19
Yachts	1	1	0	0	2	0	4	4	1	1	1	0
Total Recreational Boats	13	13	25	31	19	14	78	115	106	168	48	41
Commercial Boats												
Ferry/cruiser	1	0	1	1	1	1	0	4	1	0	1	0
Fishing	1	0	2	0	0	0	0	0	0	0	1	0
Other	1	1	0	1	2	1	0	1	0	0	1	0
Total Commercial Boats	3	1	3	2	3	2	0	5	1	0	3	0
TOTAL BOATS	**16**	**14**	**28**	**33**	**22**	**16**	**78**	**120**	**107**	**168**	**51**	**41**
North Observations	Dead (1)	Dead (2)	Dead	Dead (3)	Dead (4)	Dead (4)	Busy (6)	Busy (6)	Busy (8)	Busy (8)	Slow (9)	Slow (11)
South Observations	Dead	Dead	Dead	Dead	Dead (5)	Dead (5)	Busy (6,7)	Busy (6,7)	Busy (8)	Busy (8)	Slow (10)	Dead (12)

Notes:

(1) One sailboat observed at dock across passage and one boat fishing under the Pell Bridge

(2) Two boats fishing under Pell Bridge

(3) Three sail boats off in distance

(4) Yacht driving in circles, couple of jet ski's across passage

(5) Couple of sailboats in distance past Pell Bridge

(6) 10-15 sailboats in sight, 5-10 power boats in sight

(7) People fishing off Fort Adams

(8) Boats and sailboats everywhere

(9) Many sailboats in sight

(10) Few boats near shore, few sailboats in sight

(11) Only a few sailboats in sight

(12) Couple of boats in sight

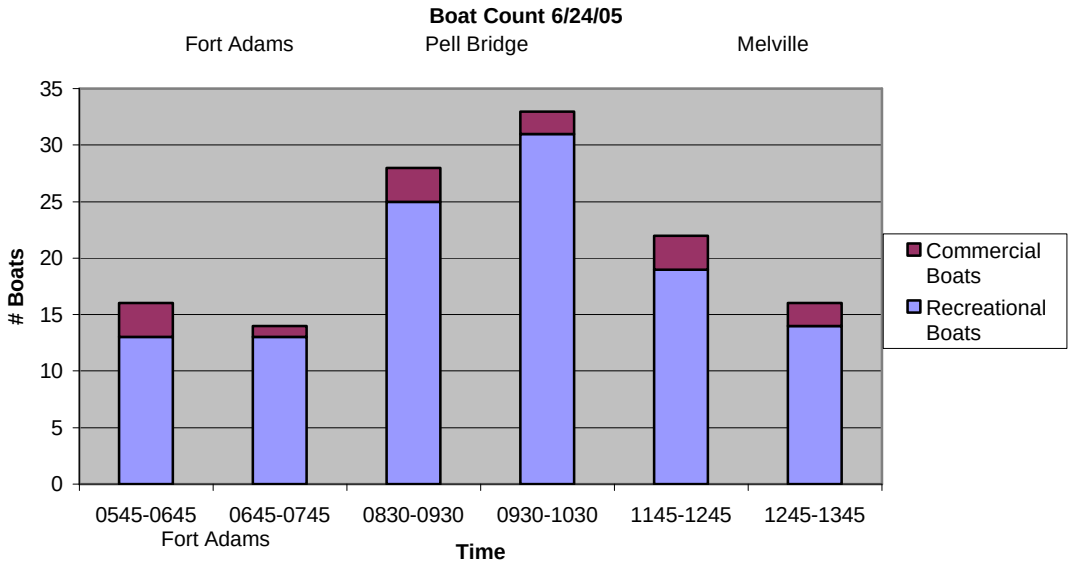
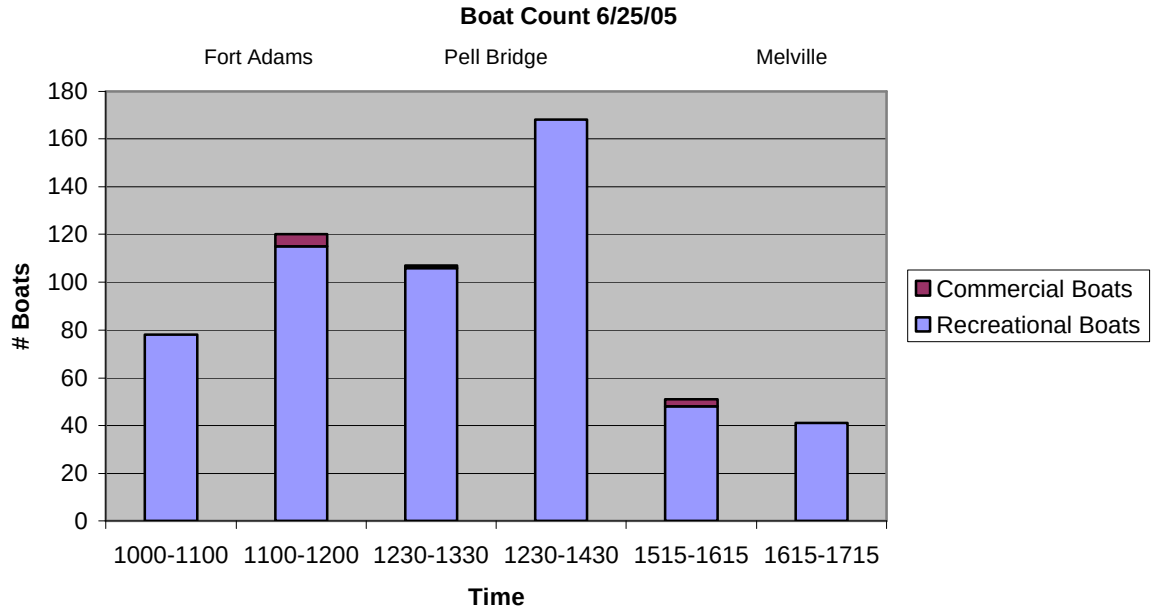



Exhibit 1: East Passage Boat Counts