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The Navy and Aquidneck Island: A Study in the Coastal Zone

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THE NAVY AND AQUIDNECK ISLAND--
A STUDY IN THE COASTAL ZONE

A Supervised Writing

Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Marine Affairs

by

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1972

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THE NAVY AND AQUIDNECK ISLAND--

A STUDY IN THE COASTAL ZONE

by

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The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Date: 19 June 1972

Abstract of
THE NAVY AND AQUIDNECK ISLAND--
A STUDY IN THE COASTAL ZONE

Navy fleet operating bases are all located within the coastal zone, a unique area neither land nor sea. This paper opens with a brief review of the nature of the coastal zone, followed by a discussion of regulations pending in Congress and an example of one state's coastal zone legislation. Navy policies regarding environmental factors that must be considered in land use management are also discussed. Interactions of the U.S. Naval Base, Newport, and non-Navy interests with the coastal zone of Aquidneck Island are examined to develop a model for analysis of these relationships. The Navy decision maker can use this model to examine interactions in the coastal zone and use this as a basis for rational decision making. A matrix arrangement is used to display and analyze the complex nature of coastal zone interactions. The paper concludes with recommendations aimed toward better integrating the use of Navy and non-Navy holdings in the coastal zone. The matrix system of analysis is recommended for use by Navy decision makers faced with management problems in the coastal zone.

PREFACE

Federal Government interest in problems of the coastal zone began in 1959 with a report issued by the Committee on Oceanography of the National Academy of Science entitled "Oceanography 1960-1970." Congress took action on this report in 1966 with passage of the Marine Resources and Engineering Development Act, which created the Commission on Marine Science, Engineering and Resources (hereinafter referred to as the Stratton Commission). Most pending Federal coastal zone legislation, as well as existing state legislation on the subject, received its impetus from the Stratton Commission's report.

Developments apart from those of the Stratton Commission also focused interest on the coastal zone. Offshore oil exploitation, with its attendant risks of pollution, became highly visible in the decade of the 1960s. Increased pollution of rivers and coastal estuaries became growing public concerns. Intense competition among users of the coastal zone representing recreation, industry, conservation, and the military to name but a few became increasingly common. Slowly, many Americans came to appreciate the

uniqueness of this limited resource called the coastal zone; neither land nor sea, the coastal zone blends the two.

Particularly along the northeast coast of the United States, the need for a concerted effort at management of this limited resource was reinforced by the specter of pollution. Developers, who filled in marshes and wetlands for industrial purposes, aggravated the pollution problem. In some areas, Navy ships poured untreated effluent into already overburdened waters, further increasing pollution levels. The decade of the 1960s saw the closing of productive shellfish areas due to pollution. It was not uncommon for beaches to be declared unsafe for swimming.

The states of the Atlantic coast from Virginia to Maine contain a large number of the American people, much of its industry and shipping, and a great deal of desirable recreation area. In several areas, United States Navy installations occupy miles of valuable coastal real estate. Conflicts have arisen that appear to defy solution: fish traps and lobster floats in the way of ships, fleet anchorages interfering with yacht racing courses, open space advocates versus shoreline developers, and so forth.

Central to these sorts of conflicts is the problem of

applying state and local regulations to the Navy as an agency of the Federal Government. These problems have been aggravated by Navy planners, who when drawing up land and water use plans, too often have not taken into consideration possible adverse affects upon the environment.

Recently, the Navy Department has come to realize that its bases do not exist in a vacuum, and has issued directives requiring local Navy Commanders to consider environmental factors in their land use practices. However, to manage their coastal zone resources properly, Navy decision makers need to understand the full scope of the interactions involved in this unique area. Yet no technical models of these interactions have been developed, and management techniques are in their infancy.

The purpose of this paper is to introduce the Navy decision maker to the coastal zone and some of its unique problems. After reviewing some pertinent regulations regarding the coastal zone, a model coastal zone interaction will be developed using a portion of Narragansett Bay, Rhode Island, and the United States Naval Base, Newport. A management tool for the display and analysis of Navy and non-Navy interactions in a typical coastal zone will be derived

from this model. The process of display and analysis leads to certain conclusions and recommendations regarding land and water use practices at the Newport facility. These will be discussed. Some of these recommendations may be applicable elsewhere. Navy decision makers will find the analysis method itself useful in evaluating the effectiveness of their facilities planning and land use practices in the coastal zone.

TABLE OF CONTENTS

CHAPTER		PAGE
ABSTRACT		ii
PREFACE		iii
LIST OF TABLES AND ILLUSTRATIONS		viii
I	AN INTRODUCTION TO THE COASTAL ZONE	1
II	COASTAL ZONE REGULATIONS	9
III	THE AQUIDNECK ISLAND COASTAL ZONE	21
IV	INTERACTION ANALYSIS	38
V	CONCLUSIONS AND RECOMMENDATIONS	46
	Co-Use of Navy Shoreline	47
	Land Use Retention	49
	Water Use Conflicts	50
	Pollution Control	50
	Force Levels	51
	Coastal Zone Planning	52
NOTES		55
BIBLIOGRAPHY		60

LIST OF TABLES AND ILLUSTRATIONS

TABLE	PAGE
I. Recreational Facilities on Aquidneck Island . .	27

FIGURE

1. Location of Aquidneck Island	5
2. Coastal Recreation on Aquidneck Island	26
3. Land Use Patterns of the U.S. Naval Base, Newport	30
4. Navigational Conflicts Off of Aquidneck Island	33
5. Shellfishing and Polluted Waters Off of Aquidneck Island	35
6. Coastal Zone Interaction Matrix	43
7. Base Component Interaction Matrix	44

THE NAVY AND AQUIDNECK ISLAND--

A STUDY IN THE COASTAL ZONE

CHAPTER I

AN INTRODUCTION TO THE COASTAL ZONE

The United States Navy is deeply involved in the coastal zone. Naval activities use many of the multiple resources of the coastal zone: both land and water. Yet, Navy planners have long considered that they could do as they wanted with their land, subject only to fiscal constraints. As a result, these planners have designed bases around the needs of the base to fulfill its military requirements. Navy decision makers have given little, if any, thought to the fact that how the Navy used its land greatly affected those communities bordering naval activities.¹

Congress, however, has forced the Navy Department in Washington to become more aware of the relationship between its use of land and the affect of this land use on surrounding communities. Naval Base Commanders have been ordered to ensure that their present and future land use plans have a minimal impact upon the environment. The development of weapons systems must now take into consideration possible adverse affects upon the environment.²

Moreover, on Capitol Hill, the Senate Subcommittee on Oceans and Atmosphere of the Committee on Commerce has recently concluded hearings on several land use bills.³ While these bills differ in scope, they have one common thread among them that will greatly affect future Navy land use policies. Federal Government activities will be required to integrate their land use plans with those of the states. As agents of the Federal Government, Commanders of Naval Bases will be required to ensure that their land use plans do not, and will not, conflict with overall master plans being developed by state agencies for state wide land use.

Unlike other Defense activities owning real estate, and therefore involved in land use problems, the Navy is unique in that a great percentage of its real estate is located in the coastal zone. Navy Bases in Boston, Philadelphia, Norfolk, Charleston, San Diego, and Los Angeles/Long Beach are examples of the critical location of Navy controlled land holdings in major port cities. Bases in Newport, Pensacola, and Mayport occupy valuable shoreline in the midst of burgeoning recreation areas.⁴

The Stratton Commission in its 1969 report to President Lyndon Johnson defined the coastal zone as a "region of

transition between the land and the sea," with the coast itself referred to as "the Nation's most valuable geographic feature."⁵ The Commission noted:

The use of valuable coastal areas generate issues of intense State and local interest, but the effectiveness with which the resources of the coastal zone are used and protected often is a matter of National importance. Navigation and military uses of the coasts and waters offshore clearly are direct Federal responsibilities; economic development, recreation, and conservation interests are shared by the Federal Government and the States.⁶

Noting that there is often confusion as a result of these intermingling jurisdictions, the Commission commented that:

The key to more effective use of our coastland is the introduction of a management system permitting conscious and informed choices among development alternatives, providing for proper planning, and encouraging recognition of the long-term importance of maintaining the quality of this productive region in order to ensure both its enjoyment and the sound utilization of its resources. The benefits and the problems of achieving rational management are apparent. The present Federal, State, and local machinery is inadequate. Something must be done.⁷

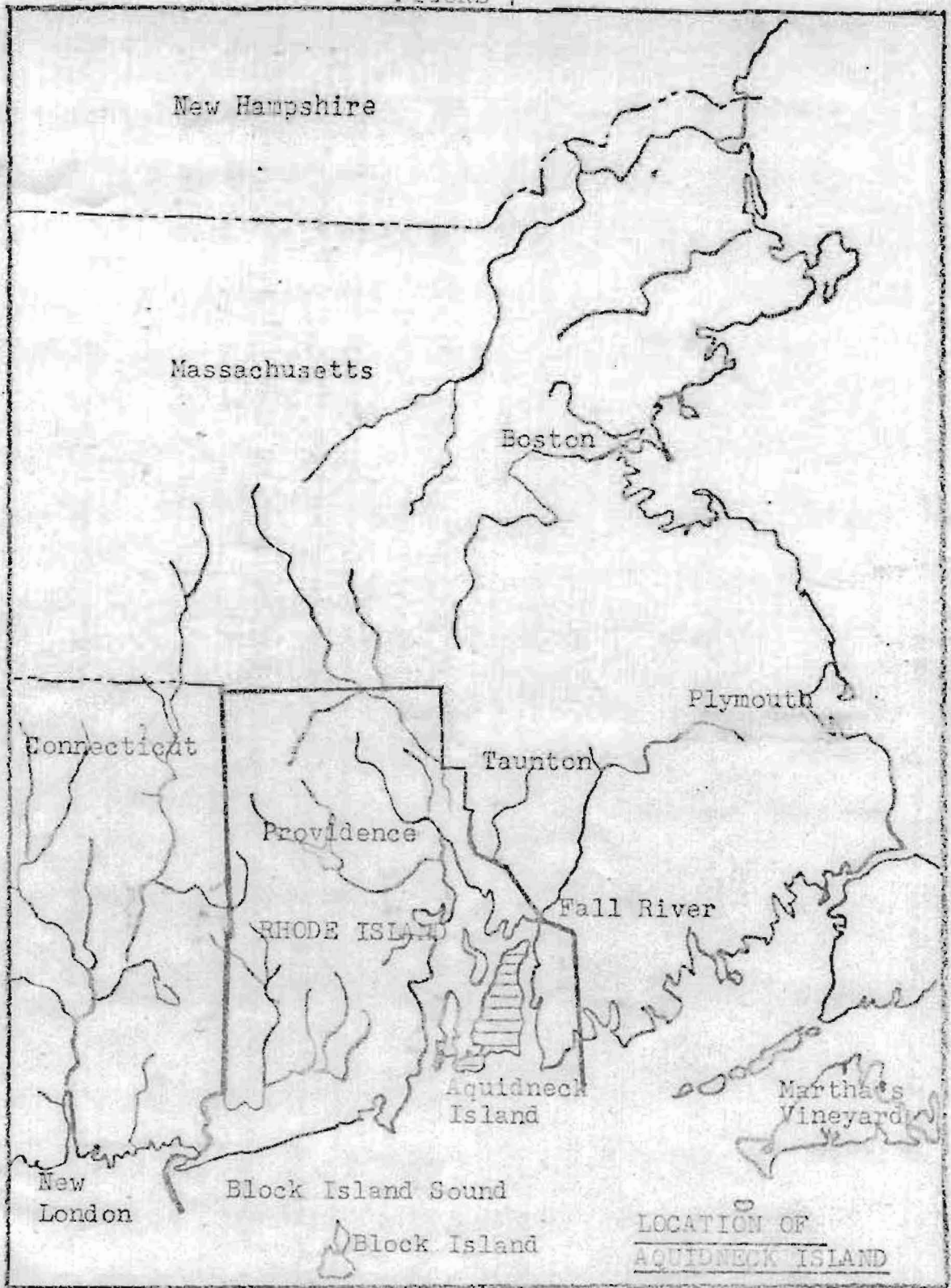
The proposed Congressional legislation referred to above is a hesitant first step at the Washington level toward achieving rational management of the coastal zone. In addition, several states have already created, or are in

the process of creating, state agencies for the management of their coastal zones.⁸ One of these is Rhode Island, which in 1971 passed an act creating a Coastal Resources Management Council as the "principle mechanism for the management of the state's coastal resources."⁹ Included within the Rhode Island coastal zone are two major naval complexes: one at Quonset Point, and the other on Aquidneck Island.

The U.S. Naval Base, Newport, has extensive land holdings on the western shore of Aquidneck Island. Figure 1 shows the location of Aquidneck Island at the southern entrance to Narragansett Bay. Numerous studies have pinpointed the fact that this base and its assigned personnel are truly the economic lifeblood of the three communities on Aquidneck Island.¹⁰ Because of this economic importance, and the extent of the shoreline occupied by the base, land use practices implemented by the Base Commander greatly affect the entire island.

The Rhode Island Coastal Resources Management Council will certainly not be able to develop a rational management plan for the coastal zone of the state without including Aquidneck Island. Any comprehensive plan for Aquidneck

FIGURE 1



Source: Niels Rorholm, et al., Economic Impact of Marine Oriented Activities - A Study of the Southern New England Marine Region (Kingston: University of Rhode Island, 1967), p. 75.

Island must include the Newport base. Therefore, it is necessary that the Commander of the base be prepared to make a meaningful contribution toward this effort.

A first important step for the Base Commander to take in this regard is to identify areas where the base interacts with the coastal zone. Broadly speaking, the coastal zone could be considered as extending from the outer limits of the territorial sea, inland to an area where the influence of the sea is no longer felt.¹¹ This sort of concept tends to become philosophic in nature and somewhat imprecise. The coastal zone must include waters adjacent to the coast, and for these purposes, the outer limits of the territorial sea, at three miles, are a good seaward boundary. Inland, the most exact boundary of the coastal zone is the coastline itself; the mean high water line being a readily identified mark. For purposes of this paper, these will be the boundaries of the coastal zone: outer limits of the territorial sea to the mean high water mark.

As an area where both the land and sea come together, the coastal zone has features in common to each, and yet is really part of neither. For example, a beach cannot be planned for a shoreline without considering the nature of

the land adjacent to the beach and the quality of the water lapping its shore. Water cannot be set aside for aquaculture near a channel requiring dredging as part of a base improvement program. In short, both the pressures of the interior and those of the world's oceans come together in the coastal zone, and create a unique zone with special problems for long-range planners to consider.

Too often, coastal zone interactions have been looked at chiefly from the point of view of conflicts. Reports have tended to emphasize factors such as Navy holdings on the coastline precluding state development of these shores for use as public recreation facilities. Too little emphasis has been placed upon those areas where the Navy presence directly benefits surrounding communities. Both aspects of coastal zone interaction (conflict and benefit) need to be identified, and avenues of improvement sought. In this way, the Commander might truly be able to integrate his land and water use requirements with those of the state in the development of a comprehensive state wide management plan.

Rhode Island defined its coastal zone, and established an agency for its management. In addition, several studies

have been made of this coastal zone area.¹² These studies have identified many areas of interaction between the Navy and the Aquidneck Island coastal zone. Because of these factors, the Newport Base and Aquidneck Island make an ideal laboratory for the examination of a coastal zone and its interaction with the U.S. Navy.

As mentioned, there is a need for all levels of government to establish definitive guidelines for the management of the coastal zone. With this in mind, before turning to the Navy's interactions with the coastal zone of Aquidneck Island, proposed Federal legislation on the coastal zone will be discussed, followed by recent Navy regulations on the subject of environmental impact. These form the regulatory framework within which improved management will be accomplished.

CHAPTER II

COASTAL ZONE REGULATIONS

The Federal Government took an early step in land use planning with the Northwest Ordinance of 1787. As the Nation expanded westward, Congress passed additional legislation to encourage use of the land for agriculture and mining. Late in the nineteenth century, the Federal Government set aside areas for National Parks and multiple-use National Forests. All of these steps were piecemeal. Until very recently, no agency of the Federal Government had set forth any plans for total, overall nationwide land use programs. Land use programs in effect were just that: plans for use of the land. While there were programs established for control of inland rivers and lakes, the zone of transition between the land and the seas, the coastal zone, was ignored.

Recognizing the lack of a national program for the coastal zone, Senator Ernest F. Hollings of South Carolina, on February 4, 1971, introduced a bill specifically dealing with coastal zone management. This bill, S. 582, was the direct result of the work of his Subcommittee on Oceans and

Atmosphere of the Committee on Commerce. Many features of this proposed legislation will have a direct impact on future Navy land use programs in the coastal zone.

The purpose of S. 582 is "to establish a national policy and develop a national program for the management, beneficial use, protection, and development of the land and water resources of the Nation's coastal and estuarine zone."¹ In establishing the need for legislation of this kind, the Senator noted "a national interest in the effective management, beneficial use, protection, and development of the Nation's coastal and estuarine zone."² The need for this effective management had been caused by the

. . . increasing and competing demands upon the lands and waters of our coastal and estuarine zone occasioned by population growth and economic development, including requirements for industry, commerce, residential development, recreation, extraction of mineral resources and fossile fuels, transportation and navigation, waste disposal, and harvesting of fish, shellfish, and other living marine resources, have resulted in the loss of living marine resources, wildlife, nutrient-rich areas, permanent and adverse changes to ecological systems, decreasing open space for public use, and shoreline erosion.³

Zeroing in directly on the heart of the problem, "the key to more effective use of the coastal and estuarine zone, was identified as "the introduction of a management system

permitting conscious and informed choices among alternative uses."⁴

With the problem identified, the Hollings Bill declares that it will be Congressional policy to preserve and protect the coastal zone, and to do this Congress will encourage states to set up and implement management plans for their coastal zones. Moreover, Federal agencies engaged "in programs affecting the coastal and estuarine zone" will have the "duty and responsibility . . . to cooperate and participate in the purpose of this Act." To be more specific, Federal, state, and local governments will all be encouraged to participate in "the development of coastal and estuarine zone management plans and programs."⁵

Section 313 of the proposed legislation covers "Inter-agency Coordination and Cooperation." Specifically, it requires that no management plan submitted by a state shall be approved by the Federal Government "unless the views of Federal agencies principally affected by such plan and program have been adequately considered."⁶

Of greater importance than the provisions above for affected Federal agencies such as the Navy to review state management plans, are the two following provisions. These

have the effect of integrating, and perhaps subordinating, Navy land use practices in the coastal zone with those of the states.

a. All Federal agencies conducting or supporting activities in the coastal and estuarine zone shall seek to make such activities consistent with the approved State management plan and program for the area.

b. Federal agencies shall not undertake any development project in a coastal and estuarine zone which, in the opinion of the coastal State, is inconsistent with the management plan of such coastal State unless the Secretary /of Commerce/, after receiving detailed comments from both the Federal agency and the coastal State, finds that such project is consistent with the objectives of this title, or is informed by the Secretary of Defense and finds that the project is necessary in the interests of national security.⁷

In summary, the Hollings Bill will establish a comprehensive management plan for the coastal zone to be implemented largely at the state level under guidelines spelled out by the Federal Government. Federal agencies planning future uses of lands in the coastal zone will have to ensure that their programs are consistent with established state and local policies. The Commander of a naval base such as the one in Newport will have to ensure that his land use plans do not conflict with what Rhode Island determines to be best for its coastal zone. In an age of increasing

concern with the environment and deep concern over the extent and nature of military spending, it is unlikely that the Secretary of Defense will invoke "national security" very often in opposition to state coastal zone management plans.

The Nixon Administration, through Senator Henry Jackson, of Washington, has proposed a national land use plan rather than one encompassing just the coastal zone.⁸ The Administration's plan would also require Federal agencies to integrate their land use plans with those of responsible state agencies. For many reasons, the Hollings Bill, S. 582, is given the best chance of passage, and therefore should be of more immediate concern to those in the Navy charged with land use planning.⁹

Yet, no representative of the Department of Defense or the Department of the Navy testified at any of the three days of hearings on the Hollings Bill. In fact, of the myriad of letters and reports received by the Subcommittee regarding this proposed piece of legislation, only one brief letter was from an agency of the Department of Defense. This letter, from the "Scientific Staff Assistant" of the Naval Undersea Research and Development Center in San Diego,

merely addressed the problem of which Federal agency should administer the Federal program of coastal zone management and recommended assignment to the National Ocean and Atmospheric Agency (NOAA).¹⁰ Considering that over 650 pages of testimony and submissions were recorded, this lack of Navy interest in a matter so vital to the future of its bases in the coastal zone is quite disturbing.

While the Subcommittee on Oceans and Atmosphere was conducting hearings on the Hollings Bill during the spring of 1971, the Rhode Island Legislature completed action on a bill establishing a Coastal Resources Management Council. The Council's purpose was to act as the principal management agency for the Rhode Island Coastal Zone, whose boundaries were also established by this act. In view of the fact that the Hollings Bill before Congress calls for Federal agencies to integrate their land use plans with those of the states, the manner by which Rhode Island manages its coastal zone will have a direct effect on the U.S. Naval Base, Newport.

Rhode Island's act created a Coastal Resources Management Council of 17 members with the "primary responsibility" for the "continuing planning for and management of the

resources of the state's coastal region." The Council was directed "to make any studies of conditions, activities, or problems of the state's coastal region needed to carry out its responsibilities." To assist the Council in its work, provisions were made for the Council to invite non-voting advisors representing Federal agencies in Rhode Island.¹¹

Original proponents of a coastal zone for the State of Rhode Island had hoped to include not only all of the tidal waters of the state and the ocean out to the limits of National jurisdiction, but also a considerable portion of the land surrounding these waters themselves.¹² However, as the result of considerable political infighting and compromise, the Council's jurisdiction was finally limited by the act to that area "within, above, or beneath the tidal water below the mean high water mark, extending out to the extent of the state's jurisdiction in the territorial sea."¹³ Authority over land areas above the mean high water mark was limited to that "necessary to carry out effective resource management programs" regarding specific uses such as power generation and desalination plants, petroleum operations, mineral extraction, sewage treatment, solid waste disposal facilities, and shoreline protection.¹⁴

The Council is responsible for developing a master plan for the coastal zone. Under provisions of the act, any person, business, or government agency "proposing any development or operation" within the Rhode Island coastal zone or its adjacent land in the specified circumstances, must demonstrate that the planned program will not conflict with the Council's management plans, or will not "significantly damage the environment of the coastal region."¹⁵

In addition to the Hollings Bill and the Rhode Island act discussed above, land use planners at the Newport Base must also consider Navy policies regarding environmental protection when formulating their land use plans. On November 10, 1971, the Chief of Naval Operations issued a comprehensive instruction to implement the National Environmental Policy Act of 1969, pursuant to amplification provided by the Department of Defense on August 9, 1971. Even though the subject of this instruction is not the coastal zone per se, it does promulgate definite Navy policy regarding the environment, of which the coastal zone forms a very significant part. Policies promulgated by this instruction (OPNAVINST 6240.2B) form the basis for any additional procedures required to integrate Navy planning specifically into coastal zone management practices.

This instruction clearly defined Navy policies regarding environmental protection. Briefly these are:

a. Actions planned, initiated, and implemented must minimize adverse effects on the quality of the environment.

b. At the inception of any action, an assessment of probable ecological and environmental impacts must be made.

c. These impacts shall be continued into the implementation phase, and continued reassessment must be made if there has been any affect upon the quality of the human environment, or its degree of controversy has significantly changed.¹⁶

The Deputy Chief of Naval Operations for Logistics (OP-04) was assigned implementation responsibilities for these policies at the Washington level. More specifically, direct responsibility was given to the Environmental Protection Division (OP-45). Among the specific tasks given OP-45 is that of maintaining coordination with the President's Council on Environmental Quality, the Environmental Protection Agency, the Assistant Secretary of Defense (Health and Environment), the Secretary of the Navy, and other Federal agencies concerned with environmental matters.

Recognizing that Washington area commands alone cannot protect the environment of an entire nation, OPNAVINST 6240.2B sets out responsibilities of individuals and commands. "Officers, enlisted men and civilians of all Navy ships, stations, and activities," now have the responsibility for complying with the laws of the land regarding environmental protection. "Only through alertness, foresight and notification through the chain of command will the eventual goals of NEPA and the Navy environmental protection program be realized." More specifically, Navy commanders are now required to ensure that the written justification for all projects such as military construction, land acquisition, and even weapons system development includes an environmental impact assessment, not only at the initial planning stage, but at each significant milestone along the way toward completion.¹⁷

The remainder of the instruction deals primarily with specific details of submission of environmental impact assessments and need not be covered. However, Navy planners now have been given general guidelines for determining the significance of environmental related actions. These guides are:

a. The geographic extent of an action.

b. The time span of an action. An added operational capacity of a base may be but the first step in a time sequence of increasing that base's complexity, and thus influencing attendant problems such as sewage treatment, garbage disposal, housing, and the capacity of the surrounding communities to provide these services.

c. The risk potential of an action must be evaluated.¹⁸ At a well run fuel depot there are seldom, if ever, oil spills. Yet, if an oil spill occurred, the effects on surrounding beaches, and the impact on their tourist trade or local fishing industries, might well make the construction of a fuel depot in an area where tourism and fishing are important businesses quite a significant event. By implication, therefore, the continued operation of an existing fuel depot is also significant.

OPNAVINST 6240.2B also discusses some types of Navy actions that might significantly affect the environment. A significant action might be "Mission changes which increase the number of personnel in an area to a degree that will tax the environmental resources of the local civilian community."¹⁹ Establishment of a Polaris Submarine Facility at the Newport base complex would certainly be an action significantly

affecting the environment. Furthermore, under the Hollings Bill, this facility would have to conform with any master plan being drawn up for the Rhode Island coastal zone. If the increase in personnel and their attendant requirements were more than the normal rate of growth envisioned by the Rhode Island Coastal Resources Management Council, the Polaris facility might indeed be inconsistent with the Council's plans. The potential problems anticipated by this brief discussion of just "mission changes" cannot be overemphasized.

Commanding Officers of naval activities in the coastal zone can no longer approve plans for the utilization of Navy land holdings based solely on military requirements. Passage of the Hollings Bill will require Commanders to integrate their plans with those of responsible state agencies. In Rhode Island, the Coastal Resources Management Council has been established as the agency responsible for coastal zone planning. Additionally, the Department of the Navy has instructed the Base Commander to consider environmental factors in all future actions involving land use. More than ever, the Base Commander must fully understand how his specific base interacts with the coastal zone in order to comply with these requirements.

CHAPTER III

THE AQUIDNECK ISLAND COASTAL ZONE

Military activities interact with their surrounding communities just because the activity exists and occupies real estate. Military ownership of land prevents others from owning that land and generally has precluded others from using it. Navy fleet operating bases, such as Newport, differ from other kinds of military activities in that they must be in the coastal zone, and along the shoreline. This important factor creates many interactions quite different from those associated with inland activities.

It has been shown that the coastal zone is a unique area of transition between the land and the sea. In addition, the coastal zone is also an area of increasing population pressures, making competition for the use of shoreline property very intense. These conditions are especially true in the highly urbanized northeast corridor from Virginia to Maine. The Newport Base is located in the middle of this corridor, in a region where the most critical issue directly affecting the coastal zone is population density.¹

The increasing population in the coastal zone aggravates

normal demands for housing, industrial locations, shopping centers, and recreation facilities. However, there is no intrinsic reason why housing, factories, and the like need be located directly in the coastal zone, along the shoreline. In fact, many of these kinds of buildings are located on land adjacent to the sea as a matter of historic accident. The same is true for many Navy activities. As population pressures on the shoreline increase, it may become necessary to decide whether activities that do not require shoreline access can continue to be situated on the coast. In some instances, Navy activities might have to be relocated away from the shoreline as part of a comprehensive, long-range, coastal zone management plan.

Whether land owned by the military is on the coast or inland, the land will still be removed from the tax rolls. Thus in examining a coastal zone interaction such as on Aquidneck Island, it is not important how much land per se is owned by the Navy. What is important is the extent of shoreline held, and the sum total of all demands upon that shoreline.

The same is true of military uses of municipal services such as fresh water, sewage, solid waste disposal, fire and police protection, schools, and the like. These requirements

exist whether military activities are in a coastal zone or in the center of the great plains. Payrolls to uniformed and civilian personnel and purchases from local enterprises all channel money into local communities. Again, these benefits as such are not strictly coastal zone interactions, but would exist wherever bases are located.

What then are the particular interactions of the coastal zone? With what groups or industries does a naval base such as the one on Aquidneck Island interact strictly in the coastal zone--along the shoreline and its adjacent waters? These interactions fall into three basic groups.

a. Those groups or activities who, like the Navy, require real estate on the shoreline.

b. Those groups or activities who require water space. These interact with Navy ships as neither can occupy the same water simultaneously. They also interact with a shore facility that requires adjacent water space; for example, a test range.

c. Environmental groups. Here the interaction is caused by problems of pollution, which in a coastal zone affect both the water and the shoreline.

Before examining these three groups in more detail, it is

necessary to differentiate among the various types of activities located on a naval base complex; some require shoreline or water access, others do not. In Newport, many elements of the base such as the Naval War College, Officers Training Center, and Navy Hospital are located on the coastline or immediately adjacent to it, even though they need not be so located in order to carry out their functions. On the other hand, ships homeported in Newport utilize water space and require direct access to the shoreline. Because of the ships, activities such as the fuel depot, piers, and supply center are located with direct access to the shoreline. Unlike the Hospital, they need this direct access to continue operations in an efficient manner.

With these distinctions in mind, let us first look at some non-Navy activities on Aquidneck Island that require real estate directly on the shoreline. Aquidneck Island's beaches are among its most valuable shoreline resources.² There are approximately six miles of sandy beaches on the island, nearly all of which are open to the public for water-oriented recreation. These beaches are generally scattered around the island except for the western shoreline owned by the Navy. These and other recreation facilities on Aquidneck

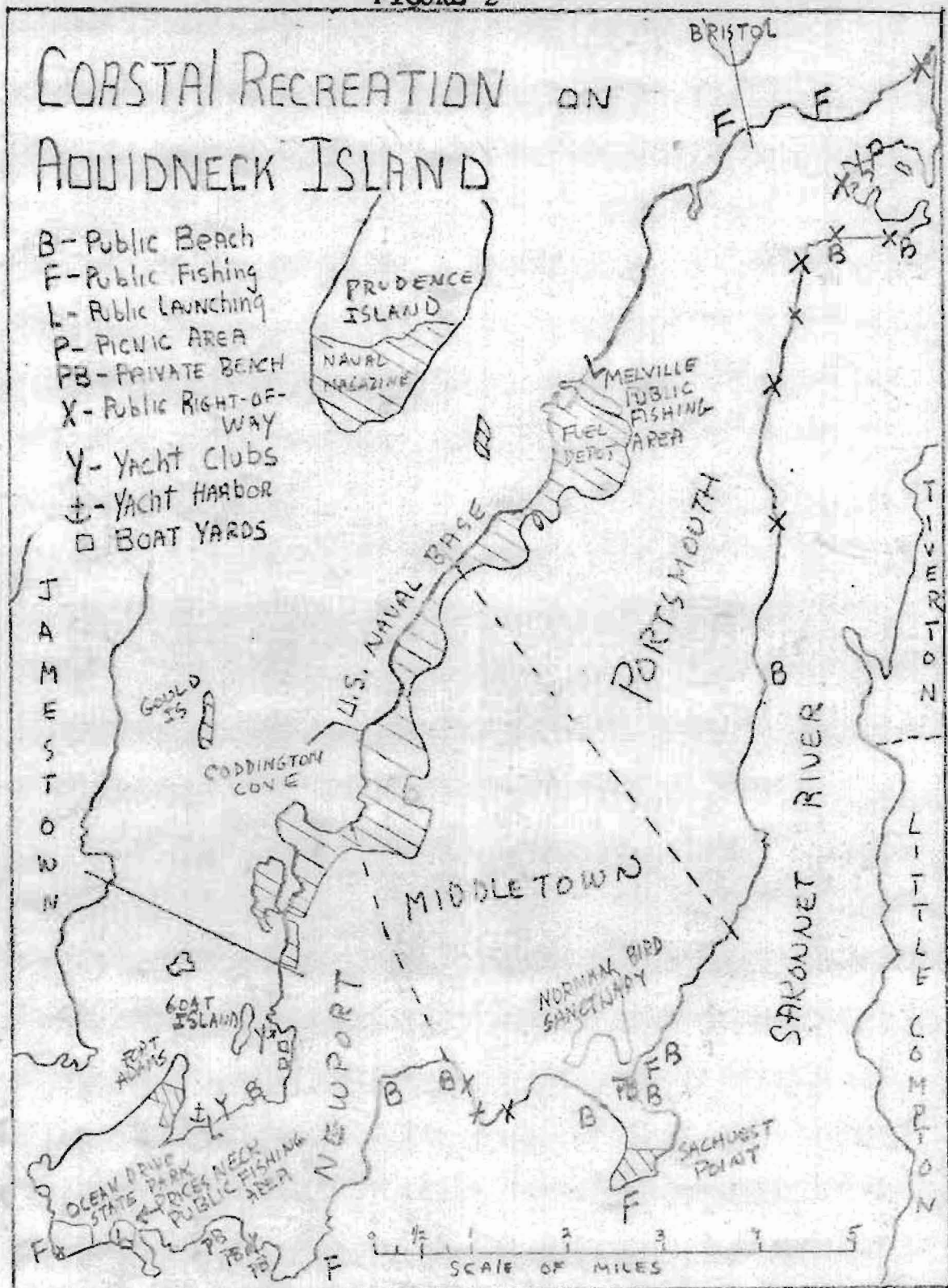
Island are shown on Figure 2. Table 1 enumerates shoreline areas of the island open to the public and describes their state of development.

Easton's Beach along Newport's southern shore is a popular surfing site. Waters of Narragansett Bay are attractive to scuba and skin divers because of "their relative accessibility, warmth, clarity, and rocky bottom." Popular areas for this activity on Aquidneck Island are Sachuest and Easton's Points, Cliff Walk, Land's End, Kings Beach, Brenton Reef, Butterball Rock, Agazzis Beach, and Castle Hill.³

In 1968, over 14,800 pleasure boats were registered in Rhode Island, a 35% increase over the prior year. This does not include sailboats, other non-powered craft, or boats registered outside the state but used in waters off Aquidneck Island. The Rhode Island Department of Natural Resources maintains guest moorings in Newport harbor for the use of pleasure boats. Moreover, there are four boat launching ramps on the island.⁴

Recreational fishing is popular in the area off Aquidneck Island, and requires coastal real estate from which to operate. There were 2,500 shellfishing licenses issued by

FIGURE 2



Source: Rhode Island, Development Council and Department of Transportation, 1971-72 Rhode Island Highway Map; Rhode Island, Statewide Planning Program and The Rhode Island Department of Natural Resources, Plan for Recreation, Conservation, and Open Space, Second Interim Report, Report No. 12 (Providence: The State House, 1970).

TABLE I

RECREATIONAL FACILITIES ON AQUIDNECK ISLAND

FACILITY	SHORELINE (FT)	ACTIVITIES*
Brenton's Point	9,300	D, F, K, L, O
Cliff Walk	16,000	F, K, O
Easton's Beach	7,500	C, G, K, L, P, S
Fort Adams	7,000	Under Development
Goat Island	2,000	D, K, L, M, O
Island Park	5,300	F, K, L, P, R
Kings Park	4,000	B, C, F, K, L, O, P, R
Melville Recreation Area	1,000	B, F, K, L
Second Beach	7,500	C, G, K, L
Sandy Point Beach	800	C, K, L, R

*Key:

B--Boat Launching Area	L--Parking Lot
C--Supervised Bathing	M--Marina
D--Scenic Drive	O--Observation Area
F--Fishing	P--Playground
G--Bath House and Rest Rooms	R--Restroom
K--Picnicking	S--Surfing

Source: Rhode Island, Technical Committee With The Assistance of the Statewide Comprehensive Transportation and Land Use Planning Program, The Department of Natural Resources, and the University of Rhode Island, Report of the Governor's Committee on The Coastal Zone (Providence: The State House, Table 4, p. 35; Visits of author to facilities in February 1972.

the State of Rhode Island in fiscal year 1967-1968. Salt water fishing requires no license. Recreational fishing can be done from boats, the shoreline, or in shallow water.⁵ Boating has been discussed above. Both shoreline fishing and shallow water fishing require shoreline access.

There appears to be less than the optimum number of public rights-of-way to the Narragansett Bay shoreline. Recognizing this problem, the State of Rhode Island in 1956 established a Commission on Public Rights of Way to locate these areas, confirm title to them, and then officially designate them as such. The survey taken did not include lands now under Navy title.⁶ Areas identified on Aquidneck Island are shown on Figure 2.

Conservation areas such as undeveloped parks, management areas, bird sanctuaries, and wildlife preserves are another important use of coastal real estate. The State of Rhode Island has two undeveloped parks in Newport. Private conservation areas include Audobon Society properties in Middletown, Newport, and Portsmouth. Some of these border directly on the coast.⁷

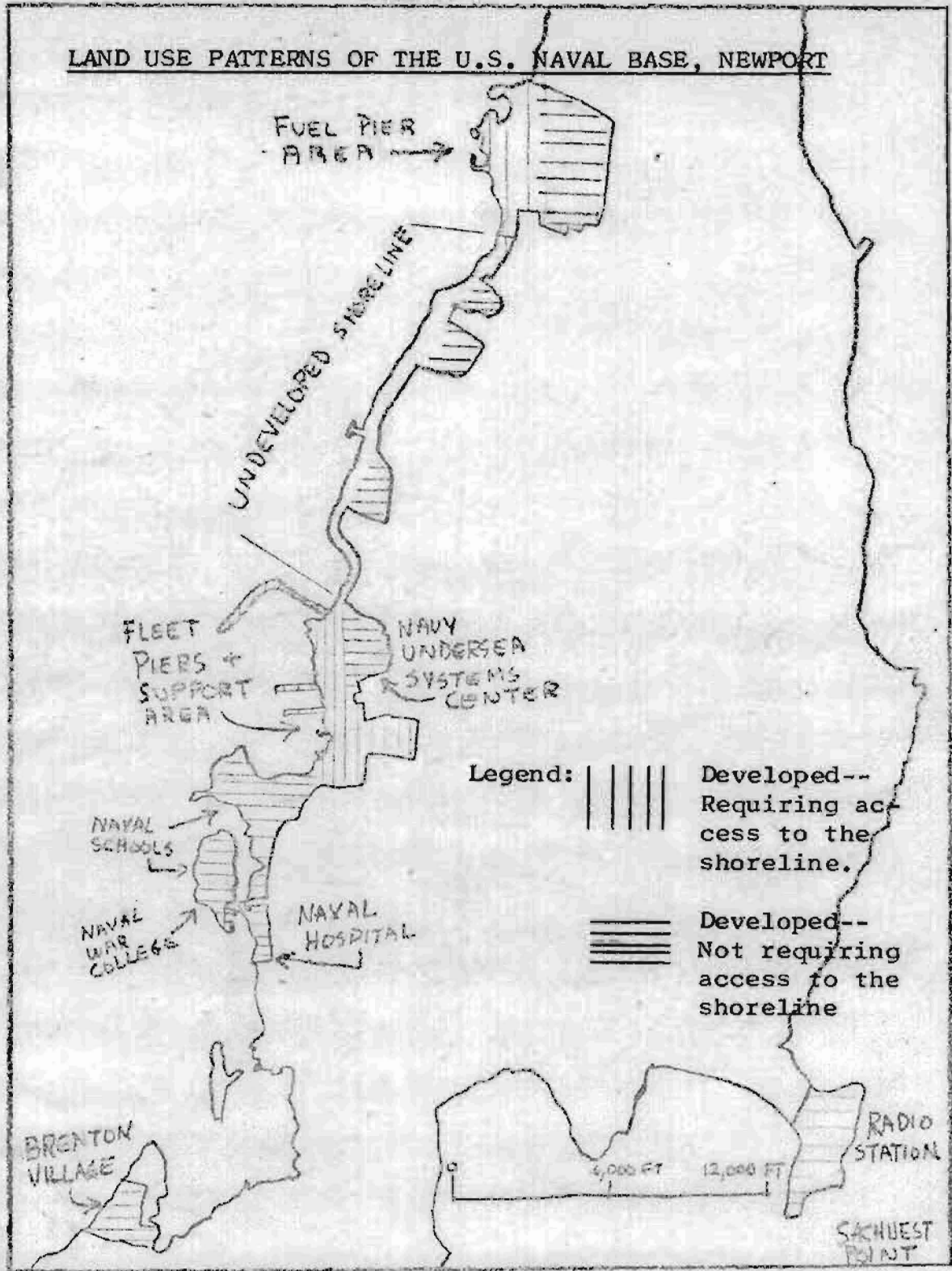
Commercial interests requiring shoreline access include fishing, shipping, and marine construction and repair.

Generally these industries require piers and adjacent work areas. The only commercial shipping of significance on Aquidneck Island utilizes piers specifically constructed for them in Portsmouth. Summer passenger ferry service from Providence to Block Island stops once daily in Newport to pick up and discharge passengers. Some commercial fishermen use Newport harbor, and there is also a small marine construction and repair business.⁸

Navy holdings on Aquidneck Island are concentrated on the western shore, where they occupy approximately 14 miles of shoreline, some of which is unimproved. Those activities requiring shoreline access are concentrated at the petroleum and ammunition facility at Melville, the fleet piers and Supply Center at Coddington Cove, and the small craft landings at Coasters Harbor Island.⁹ While other activities such as the Naval War College occupy extensive permanent sites along the shoreline, their presence at the water's edge is not mandatory to their continued operation. Shoreline use patterns of the Newport base are shown in Figure 3.

All of the non-Navy activities previously discussed utilize shoreline property and also use water adjacent to the shoreline. To varying degrees these activities interact

FIGURE 3



Source: Personal observations of author based on inspections conducted during January and February 1972.

with Navy uses of this water. They are all excluded from the Navy's 14 miles of shoreline.

Clams are mostly found in the upper parts of Narragansett Bay. Lobsters are distributed in the middle and lower parts of the bay as well as off the southern shore of Aquidneck Island. There are some floating fish traps near the bay's entrances, "but the majority of the catch comes from offshore grounds."¹⁰

The main shipping channel to Providence, New England's fourth largest port, as well as to Portsmouth and Fall River, Massachusetts, passes through the East Passage between Aquidneck and Prudence Islands. This Passage is also used by the summer ferry to Block Island. The bay in this area is crisscrossed with numerous cables and submerged pipelines.¹¹

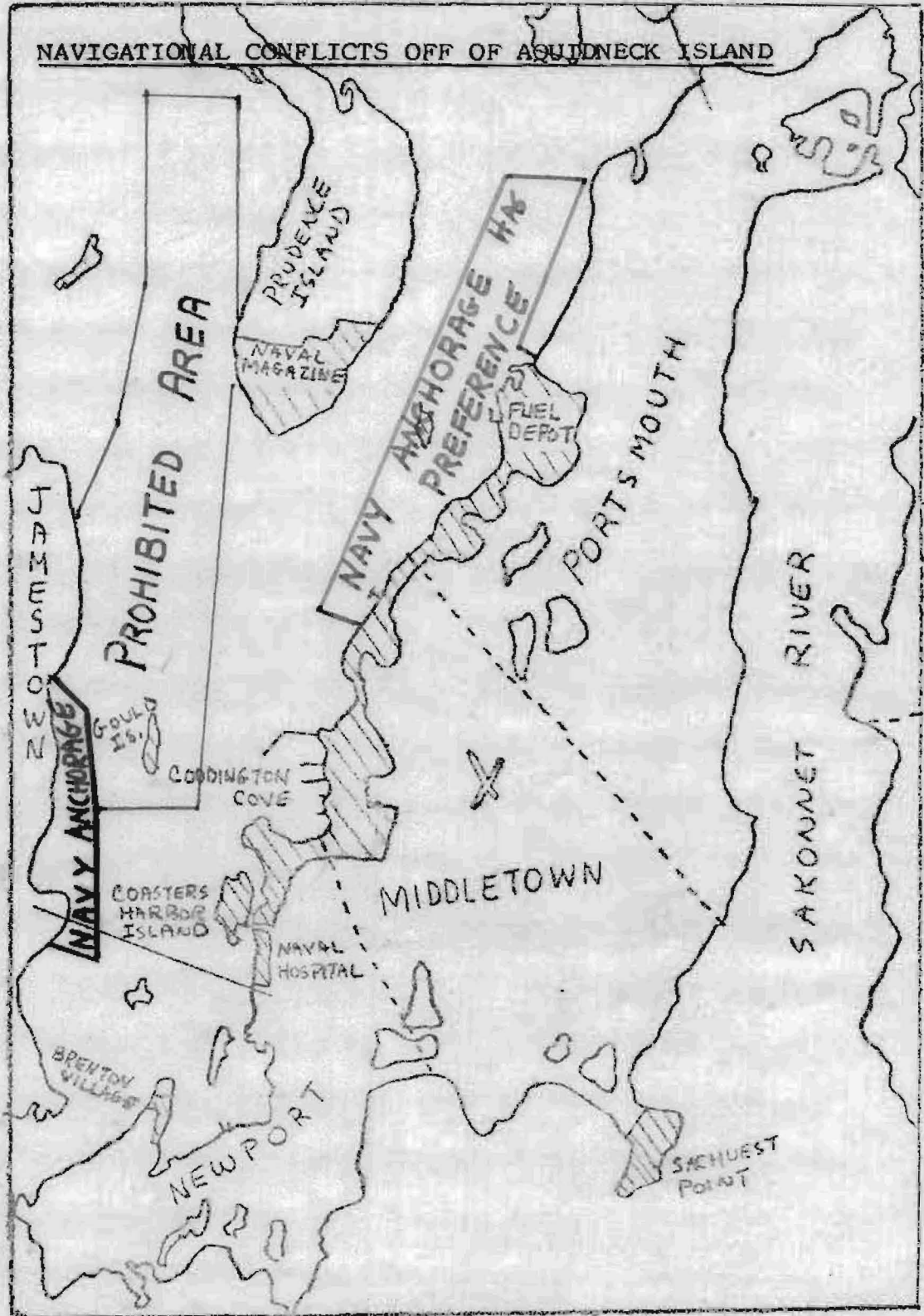
A deep, safe, and well marked channel, free from obstructions, is of major importance to the Navy. Navy ships must be able to navigate safely in and out of port. They also require water space adjacent to the degaussing station. Additionally, the specialized work of the Navy Underseas Systems Center requires the use of a testing range between Gould and Prudence Islands. To accomplish the latter two uses, the Navy has been granted primary or preferential

water use in certain circumstances. Navy anchorages have also been established in the Bay. These consist of both moorings and anchoring areas.¹² All of these areas are shown in Figure 4.

Pollution in coastal waters cuts across all special interest groups using the coastal zone, and in addition is a major concern to conservation organizations. In economic terms alone, the use of coastal waters as sewers may be of great significance. While not advocating the use of Narragansett Bay as a sewer, Dr. Niels Rorholm of the University of Rhode Island has recognized that it does have an economic value as a sewer. He has estimated this value at \$7,200,000, based on the assumption that "pollution of the Bay saves money for waste treatment that are available for other expenditures."¹³

There are two chief causes of water pollution in Narragansett Bay: sewage and oil spills. Debris is present, but is not a major problem.¹⁴ Pollution has reduced shellfish harvests by an estimated one million dollars annually.¹⁵ Approximately 30% of the bay's waters are unsuitable for one or more uses. For all intents and purposes, the State has designated the entire west shore of Aquidneck Island

FIGURE 4



Source: Rhode Island, Technical Committee, Report of the Governor's Committee on the Coastal Zone, Figure 8.

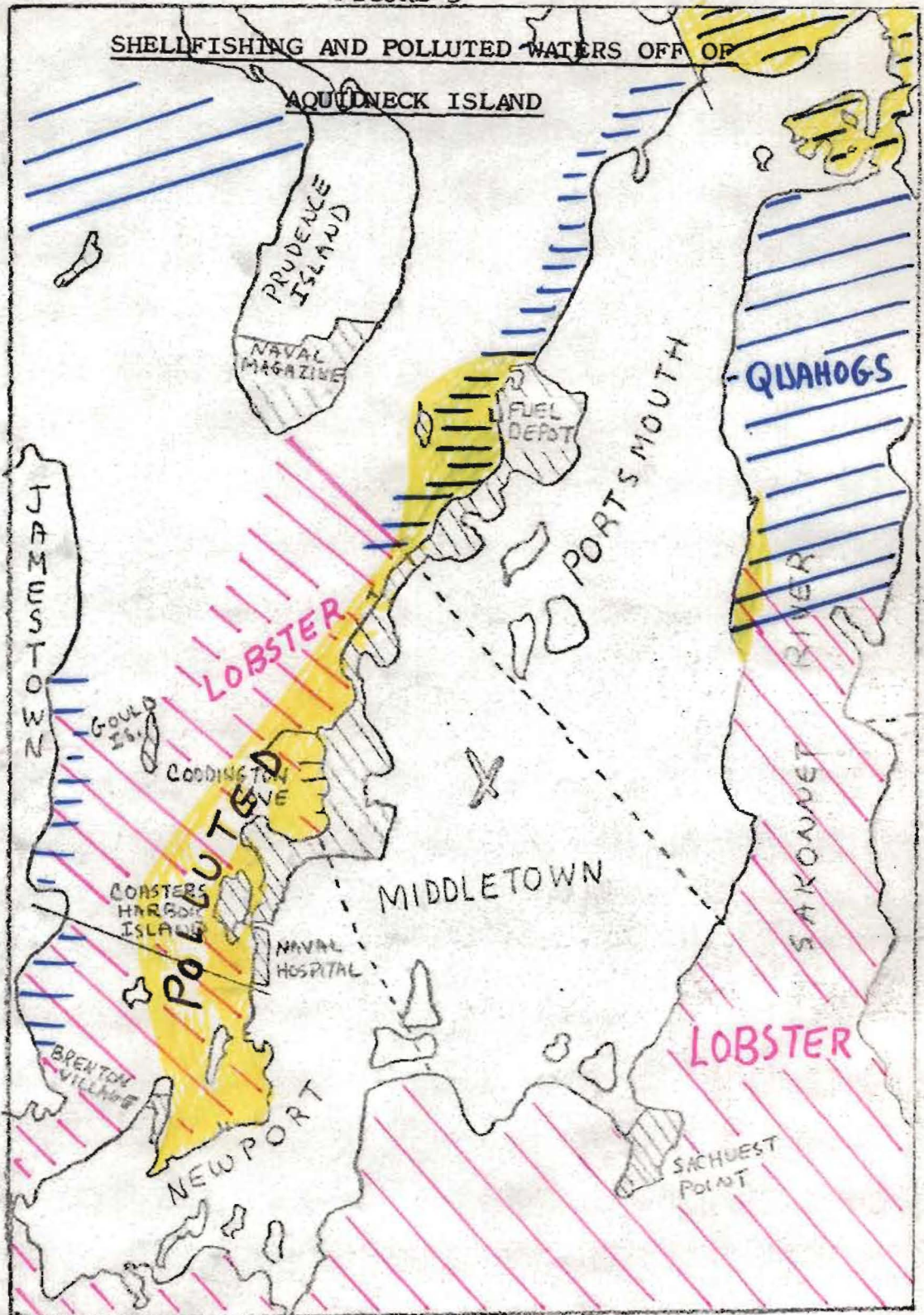
from the northern boundary of the Naval Base to Fort Adams as a polluted shellfish area, as well as an area "not recommended for bathing."¹⁶ These areas are shown on Figure 5.

Newport has a primary sewage treatment plant, which also serves a portion of the older, developed portion of Middletown and parts of the Naval Base. This plant provides secondary treatment (70-90% of all pollutants removed), however, it is inadequate to handle the extra load caused by severe storms.¹⁷ Recreational boats also contribute some raw sewage to the Bay, but in relatively small amounts.¹⁸

Civilian tankers conduct petroleum transfers between themselves in the area between Gould Island and Jamestown. A recent grounding of one tanker in a storm prompted expressions of renewed concern about these transfers by many local citizens. Some legislators have proposed regulations to prohibit such inter-ship transfers.¹⁹

"Navy ships continue to be major polluters" of the bay. Moreover, "the State Department of Health considers the Navy to be the primary source" of water pollution.²⁰ An executive order by President Nixon in 1970 ordered Navy ships to comply with state water quality standards by the end of 1972, and programs have been implemented to meet this goal.²¹

FIGURE 5



Source: Rhode Island, Technical Committee, Report of the Governor's Committee on the Coastal Zone, Figure 7.

However, with the number of ships requiring conversion, and the expense involved, whether this goal will be met on schedule remains an open question.

The normal method used by the Navy to fuel ships moored at the Naval Base piers is by using yard craft. Small oilers designed for this work take on oil at the fuel depot in Melville and then transport it for transfer to ships moored at the piers. Large, oceangoing tankers discharge their cargoes directly to connections at the Melville piers. Stringent precautions are taken in order to avoid oil spills. Chemical agents can be used to disperse oil spills, "but the best antidote is of course prevention."²²

It has been shown that both Navy and civilian interests mutually interact with the coastal zone of Aquidneck Island. These interactions have been considered apart from those taking place inland from the coastal zone. Those inland would be present whether the naval base were on the shoreline, or not. Coastal zone interactions are not independent of one another. Pollution originating on land or ships affects water and its use in a number of ways. Use of water in certain ways affects how land adjacent to the water may be used. By way of illustration, the city of Newport's

water sewage treatment plant now operates at maximum capacity, and yet still allows untreated sewage to enter the bay. As a result, the construction of badly needed housing has been halted. This in turn affects a well documented Navy housing shortage. Unless this housing shortage is alleviated, Navy sources have indicated that they may be forced to move some of the Newport homeported ships to ports where housing is available.²³

The naval base interacts in the Coastal zone with non-Navy activities in both a complementary and competitive manner. Some of these involve simple questions of water or land use practices. Others also concern pollution and its adverse affect upon the environment. All of these interactions to varying degrees fall within the purvue of recent Navy instructions on environmental impact. They also must be considered by the decision maker in his work of integrating Navy land use plans with those of the state in whose coastal zone he is located. It is now time to turn to the development of an analytical management tool to help this decision maker better visualize these interactions and perhaps suggest areas where these interactions need improvement or modification.

CHAPTER IV

INTERACTION ANALYSIS

Both Navy and civilians utilize the multiple resources of the coastal zone. Within Rhode Island, these groups have been identified and discussed in Chapter III, and the extent of their use of the coastal zone has been documented. On Aquidneck Island, the Navy is a major user of these resources by virtue of the size of its base and the magnitude of activities associated with the base. It has been noted that the Base Commander must now ensure that his land use actions consider environmental impact factors. Passage of the Hollings Bill will further require that the Base Commander integrate his plans with those being established by the State of Rhode Island.

Demands being placed on the coastal zone by both Navy and non-Navy interests need not be thought of as necessarily competing. In some cases they are complementary. In either case, they require a method of display and analysis such that these areas of interaction might be explored. As part of the process of determining areas of interaction, the Base Commander must be prepared to answer realistically several questions:

a. Which of his activities require that they be situated on, or have direct access to the shoreline?

b. Which of his activities require that they be situated on, or have direct access to the water?

c. Can developed portions of the base be turned over to the state, or use shared with state agencies on a full or part-time basis, subject to future Navy needs?

d. Can undeveloped portions of the base be shared with others, or is disposal warranted?

These are not merely academic questions in view of pressures now being put upon the limited resources of the coastal zone. The Stratton Commission recommended that in areas of high urban pressures, government holdings might be made available for use by the general public, particularly on weekends and holidays.¹ Under this concept, areas of Camp Pendleton, California, are now open to the public for beach and surfing use.²

In 1966, the Federal Government declared Goat Island to be surplus Navy property, and it was purchased by the city of Newport. The city has begun developing this former Navy property as a resort and marina area.³ In 1965, 55 acres of land at Fort Adams on the entrance to Newport harbor were

deeded to the State of Rhode Island. This area is being developed as a historic site. A public dock and boat launching ramp will be constructed. Adjacent to Fort Adams is the Brenton Village Navy housing area. Some state officials have urged that this land be turned over to the state as a logical extension of the Fort Adams park.⁴

With these sort of real world situations in mind, an interaction matrix will be a valuable tool of decision making for the Base Commander. A matrix can identify areas of interaction between Navy interests in the coastal zone and those of other interest groups discussed in Chapter III.⁵ In analyzing interactions identified by the matrix, four questions will be asked:

a. Is the interaction one of a long-term utilization of space such that resolution in favor of one or more contending parties precludes others from ever using the resource in question?

b. Is the interaction one of short-term utilization such as the conflict between two ships trying to occupy the same body of water at the same time?

c. Does the interaction primarily affect the quality of the environment? For example, raw sewage from

Navy ships pollutes shellfish grounds and reduces the shellfish harvest.

d. Is the interaction conflicting or complementary?

In a multiple-use resource such as the coastal zone of Aquidneck Island, more than one of these questions will be involved. The relative importance of these various factors must be weighed by the decision maker as he attempts to integrate his management concepts with those of other users of the coastal zone.

The matrix that has been developed is based on the circumstances of the coastal zone of Aquidneck Island and may not encompass all circumstances in localities where other Navy fleet operating bases are located. Navy uses of the coastal zone have been displayed along the left side of the matrix and those of other identified users along the top. Symbols in the interaction blocks are:

- I -- long-term interaction
- II -- short-term interaction
- E -- environmental interaction
- C -- conflicting interaction
- X -- complementary interaction

More than one symbol might be used. For example, petroleum handling operations interact with swimming, surfing, and diving interests in the manner of a short-term, environmental conflict, as shown in Figure 6.

With interactions identified, the Base Commander must break them down to see which base components are affected. Again, a matrix arrangement can be used. The same Navy interactions are displayed on the left. Across the top are listed various components of the naval base. Areas where a coastal zone interaction directly affects the operations of a base component are designated by an "X" as shown in Figure 7.

This second matrix indicates that all activities on the Newport base complex but the ships themselves and one staff are directly concerned with real estate holdings. For these purposes, piers are considered as extensions of shoreline real estate. Whether the real estate occupied by these various activities need be on, or adjacent to, the coastline remains a question for the Commander of the Naval Base to weigh along with economic engineering, and other considerations. Most Navy interactions involve relatively few activities, and reveal that it is really ships and their

FIGURE 6

COASTAL ZONE INTERACTION MATRIX

INTERESTS REQUIRING DIRECT ACCESS TO THE RESOURCES OF THE COASTAL ZONE OF AQUIDNECK ISLAND

NAVY INTERACTIONS	Swimming, surfing, and diving	Recreational boating	Recreational fishing	Rights-of-way	Conservation	Commercial fin fishing	Commercial shellfishing	Commercial shipping	Ferries	Marine construction and repair
Cables and pipelines	I, C						I, C			
Exclusive water use	I, C						I, C	I, C	I, C	I, C
Navigational Channel		I, X	I, X			I, X	I, X	I, X	I, X	I, X
Petroleum Operations	II, E, C		II, E, C		II, E, C		II, E, C			
Preferential water use	II, C	II, C					II, C	II, C	II, C	
Shipboard Sewage	I, E, C		I, E, C		I, E, C		I, E, C			
Shoreline Holdings	I, C			I, C	I, C	I, C	I, C	I, C	I, C	I, C

Legend: I--Long-term interaction
 II--Short-term interaction
 E--Environmental interaction
 C--Conflicting interaction
 X--Complementary interaction

FIGURE 7

BASE COMPONENT INTERACTION MATRIX

COMPONENTS OF THE U.S. NAVAL BASE, NEWPORT

NAVAL INTERACTIONS	Naval Station & H.Q. Naval Base	Public Works Center	Marine Barracks	Finance Center	Naval Hospital	Dental Clinic	Naval Justice School	Naval Officers Training Center	Navy Underseas Systems Center	Naval Destroyer School	Commissary Store	Naval War College	Ships	ComCruDesLant Staff	ComServRon Two Staff	Fleet Training Center	NavCommSta & Receiver Site	Sub-Board Inspection & Survey	Mobile Technical Unit Eight	Naval Supply Center
Cables and pipelines									x				x							x
Exclusive water use								x					x	x	x					
Navigational Channel								x					x	x	x					x
Petroleum Operations													x	x	x					x
Preferential Water use								x						x	x					
Shipboard Sewage		x												x	x					
Shoreline Holdings	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x	x	x	x

embarked staffs that are involved in the majority of the non-real estate interactions within the coastal zone.

Use of these matrixes by the Base Commander is a key step in solving the twin problems of how best to integrate his planning with that of the state Coastal Resources Management Council. Using the information contained in Chapter III, the interactions displayed by the matrixes can now be developed into methods for improving integration of the Navy into the state's coastal zone planning mechanism. In addition, those base activities having identified in a given interaction can be made aware of that interaction. Like the Base Commander, tenant activities must realize that they too will be affected by the integration of Navy planning and land use practices into those of the state-wide coastal zone authorities.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

The coastal zone and its interaction with the Navy have been examined using Aquidneck Island and the U.S. Naval Base, Newport, as a model. Several areas where both Navy and non-Navy activities use coastal zone resources have been examined. Their interaction has been displayed by use of the interaction matrix as a management tool for the Base Commander. In addition, the Base Commander now has a tool available to him for identifying those activities on his base which contribute to a given interaction.

Can the conflicts shown on the interaction matrix be resolved? There are several areas where the Commander of the Newport base might better integrate his land use practices with those of other activities using the coastal zone. Because of its role as a major user of the coastal zone, the Base Commander can better take the initiative in avoiding conflicts. Several steps can be taken on the basis of local initiative to alleviate pressures on recreational facilities and to make better use of the scarce commodity of the shoreline. Public access to military facilities will make better

use of some of these facilities. It will have the additional benefit of improving Navy-community relations by opening areas of the base for use by local residents.

The need for responsible commanders to provide for the security of their installations remains a major concern. Yet, it is submitted that this can be just as efficiently done in areas where required, without restricting access to the base as a whole. Dependents, both adult and children, have free access to the base, as for all practicable purposes does anyone entering in a vehicle with a military pass decal. Many naval personnel themselves do not possess security clearances and access to any security space still requires a need-to-know regardless of any clearance held.¹

Co-use of Navy Shoreline. There is a demonstrated need for more public access to the coastline for recreational purposes. Several areas of the Newport base can be made available for use by the general public on weekends and holidays on a not-to-interfere basis.

a. A developed small boat launching ramp is located on Coasters Harbor Island adjacent to the small craft mooring and the Navy Yacht Club. The area is now being used

by Navy personnel to launch their personal small boats. Ready access to the area can be obtained by entering the base at Gate 1. Limited parking space is now available. Recommend the facilities of this ramp be made available to the general public.

b. Much of the area between Coddington Cove and the Melville Fuel Complex to the seaward of the access road is undeveloped. Some is used by Navy personnel for recreational activities. Boat launching and picnic areas could be developed at minimal cost. Gates 10 and 17 are now used by the general public on Sundays to visit ships opened for general visiting. These gates could provide access to this shoreline area. Recommend appropriate portions of this area be made available to the general public, and steps be taken to investigate improvement of some sites for expanded recreational use.

c. A limited number of naval personnel are allowed to fish on the shores of Navy property at Sachuest Point. They must not interfere with the operations of the radio site; especially dangerous in this regard are the radio antennae. With the need for this precaution in mind, recommend this site be made available to limited numbers of

general public for fishing. This would be particularly desirable during the prime fishing season in late summer and early autumn.

Land Use Retention. Navy housing at Brenton Village is of World War II vintage and is marginally suitable for continued use. A limited amount of new construction is now being started to replace this housing. Brenton Village land would make a good extension of the state historic site being developed at Fort Adams. Some officials have suggested that this land be declared surplus by the Navy and turned over to the State of Rhode Island.

a. Recommend investigate the need for continued use of the Brenton Village housing area.

Several facilities on the shoreline, or immediately proximate to it, need not be so located to carry out their function. Some examples are several of the shore based schools, the Commissary Store, and Navy Exchange. Federal law provides for land swaps between Federal agencies and the states.

a. Recommend all future developments on the base be undertaken with the view toward locating facilities away from the shoreline whenever possible.

b. Recommend land use planning incorporate the requirement for a determination as to whether new or replacement activities need be on the shoreline in order to carry out their assigned mission.

Water Use Conflicts. Three sections of Narragansett Bay have been given to the Navy for preferential or exclusive use. These areas are adjacent to the main channel, and in two cases, are in areas where there is a great deal of recreational boating and shellfishing.

a. Recommend the Navy reevaluate its need for the Navy Only Anchorage between Jamestown and Gould Island.

b. Recommend the Navy reevaluate the retention of the Prohibited Zone to the west of Prudence Island.

Perhaps this area can be changed to one of Navy Preference with sufficient advance notice of use being promulgated in the local newspapers and through Notice to Mariners.

c. Recommend the Navy reevaluate the retention of the Navy Preferred Anchorage off the west coast of Aquidneck Island between Coddington Cove and Melville.

Pollution Control. Installation of shipboard sewage treatment plants is a necessary step toward cleaning up the

waters of Narragansett Bay. This is a matter of Washington level action, closely influenced by available monies.

a. Recommend every step be taken to impress upon the Navy Department the urgency of installing shipboard pollution control devices as soon as possible.

b. Recommend a continuing program of liaison and public relations be conducted with concerned citizens' groups. These organizations should be made aware of the fact that the Navy is proceeding as quickly as funding allows.² Perhaps these groups can exert pressure on Congress for more funding in this area.

Force Levels. The Navy is reducing its number of ships and the extent of its supporting shore establishment. There is always the possibility that large numbers of ships might be moved out of the Newport area for economy reasons. If this were to take place, areas of the base now being used for fleet support would no longer be so required. This is especially true of the piers and adjacent supply and industrial area.

a. Recommend studies be undertaken to determine which, if any, Navy facilities might be made available for use by private interests in the event of force level

reductions. For example, a 50% reduction in the number of ships homeported in Newport might make one of the two piers available for commercial use.

Coastal Zone Planning. Force levels and base development plans are often classified because of the military information they reveal. However, within the limits of security, many land use plans can be made public. Certainly, the plans of the coastal zone authorities can be reviewed by the Base Commander to determine possible areas of conflict between Navy and non-Navy planning.

a. Recommend the Base Commander establish close liaison with appropriate coastal zone authorities to determine possible areas of conflict and to ensure a smooth integration of Navy and state planning. Within the limits of national security, base plans should be made available to state and local planning authorities.

Navy planners and decision makers can no longer consider their requirements in a vacuum. As owners of real estate in the coastal zone, Navy leaders have the responsibility to recognize the uniqueness of this zone. As a zone of transition between two mediums, the coastal zone is influenced by the problems of both land and water management.

Population pressures and the scarcity of coastal resources have created a situation where many coastal zone problems must be solved now; tomorrow will be too late.

Pending Federal legislation seeks to fully integrate, and in some cases subordinate, Navy land use practices in the coastal zone with those of other responsible governmental agencies. Navy leaders should not think of co-use of Navy assets as one more civilian encroachment upon the military. Neither should civilians view the Navy as interfering with their uses of the coastal zone. Both viewpoints are equally wrong. To operate the Navy required for national defense, fleet operating bases must be in the coastal zone and must of necessity utilize the shoreline. But in few instances must these bases totally exclude the very people they exist to defend. Newport is not a special case. All naval facilities in the coastal zone are located in areas of high population concentrations. They will always be visible; they need not remain isolated.

As major users of the coastal zone, Commanders of naval fleet operating bases have the responsibility to understand the full scope of their interactions with the coastal zone. Conflicts can be avoided with a little foresight. Areas

where both the Navy and other interests complement one another can be improved. As the interaction of the varied forces in the coastal zone become better understood, the result will be better overall management. All users will reap the benefits.

NOTES

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2. U.S. Office of Naval Operations, "The National Environmental Policy Act and Environmental Impact Statements; policy regarding and assignment of responsibilities for," OPNAVINST 6240.2B (Washington: 10 November 1971), UNCLASSIFIED.
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4. Ward, p. 28-29.
5. Julius A. Stratton, Chairman, Commission on Marine Science, Engineering and Resources, Our Nation and the Sea (Washington: U.S. Govt. Print. Off., 1969), p. 49.
6. Ibid.
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8. Maine, Rhode Island, and Delaware. See Robert W. Knecht, "The Politics of the Coastal Zone," Unpublished Paper, University of Rhode Island (Kingston: 1972), p. 2.
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10. Niels Rorholm, et al., Economic Impact of Marine Oriented Activities--a Study of the Southern New England Marine Region (Kingston: University of Rhode Island, 1969), p. 76; Lewis M.

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11. For a discussion of the concept of marine regions, see Lewis M. Alexander, "Marine Regions of the United States," unpublished paper, University of Rhode Island (Kingston: 1971).

12. See footnote 10 for the three chief studies encompassing the area surrounding Aquidneck Island.

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2. Ibid., p. 4.
3. Ibid., p. 5.
4. Ibid.
5. Ibid., p. 6.
6. Ibid., p. 15.
7. Ibid., p. 16-17.
8. Ibid., p. 1.
9. Knecht, p. 10, 14. However, it should be noted that some knowledgeable observers think neither will be passed prior to the 1972 election. See "Politics, Inland Boundary Line Holds up Senate Coastal Zone Bill," Coastal Zone Management, ed. by E.W. Seabrook Hull, January 1972, p. 1-2.

10. Committee on Commerce, p. 427.
11. Rhode Island, An Act, sec. 46-23-2, 46-23-6.
12. Rhode Island, Technical Committee, p. 12-13.
13. Rhode Island, An Act, sec. 43-23-6; Daniel W. Varin, "The Rhode Island Coastal Zone: Resource Management and Political Realities," The New England Coastal Zone Management Conference, Proceedings of Conference, April 28-29, 1970 (Durham, New Hampshire: 1970), p. 128-133.
14. Rhode Island, An Act, sec. 43-23-6.
15. Ibid.
16. U.S. Office of Naval Operations, "Environmental Policy," p. 1.
17. Ibid., p. 2.
18. Ibid., Enclosure (1), p. 1.
19. Ibid., Enclosure (1), p. 2.

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1. Stewart Lamprey, "Regional Considerations in Coastal Development," The New England Coastal Zone Management Conference, Proceedings of Conference, April 28-29, 1970 (Durham, New Hampshire: 1970), p. 151.
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3. Ibid., p. 57.
4. Ibid., p. 58-59; Visits of author around Aquidneck Island, January 1972.
5. Rhode Island, Technical Committee, p. 60.
6. Alexander, Narragansett Bay, p. 58; Providence Sunday Journal, December 12, 1971, p. 1.

7. Rhode Island, Technical Committee, p. 61-62.
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13. Rorholm, et al., p. 33.
14. Rhode Island, Technical Committee, p. 81.
15. Ibid., p. 63.
16. Alexander, Narragansett Bay, p. 83, 85.
17. Newport Daily News, February 12, 1972, p. 1, and February 18, 1972, p. 1.
18. Rhode Island, Technical Committee, p. 81.
19. Newport Daily News, February 16, 1972, p. 2.
20. Rhode Island, Technical Committee, p. 96.
21. Ibid.
22. Ibid., p. 81. Author has based information in this section on fueling procedures used in Newport as a result of his experience on both fleet oilers and destroyers homeported in Newport. Assignments were in the deck and engineering sections involved in taking on fuel.
23. Newport Daily News, February 14, 1972, p. 1.

Chapter IV

1. Stratton, p. 71.

2. Ward, p. 36.
3. Alexander, Narragansett Bay, p. 58.
4. Rhode Island, Statewide Planning Program and The Rhode Island Department of Natural Resources, Plan for Recreation, Conservation, and Open Space, Second Interim Report, Report No. 12 (Providence: The State House, 1970), p. 27, 30.
5. Ward, p. 52, proposes one such matrix based on the work of Niels Rorholm in his Economic Impact of Narragansett Bay, Bulletin 374 (Kingston: University of Rhode Island, Agricultural Experiment Station, 1963).

Chapter V

1. U.S. Office of Naval Operations, "Security Manual for Classified Information," OPNAVINST 5510.1C (Washington: 1 July 1965), UNCLASSIFIED, discusses the requirements of the Commanding Officer for the protection of classified material and emphasizes a need-to-know throughout.
2. Newport Daily News, March 10, 1972, p. 1. This article concerns military construction in Newport sought for fiscal year 1973 and includes provisions for \$1.4 million for the construction of sewage collection system for ships berthed at Melville and Pier 2.

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