4.7 Attachment D

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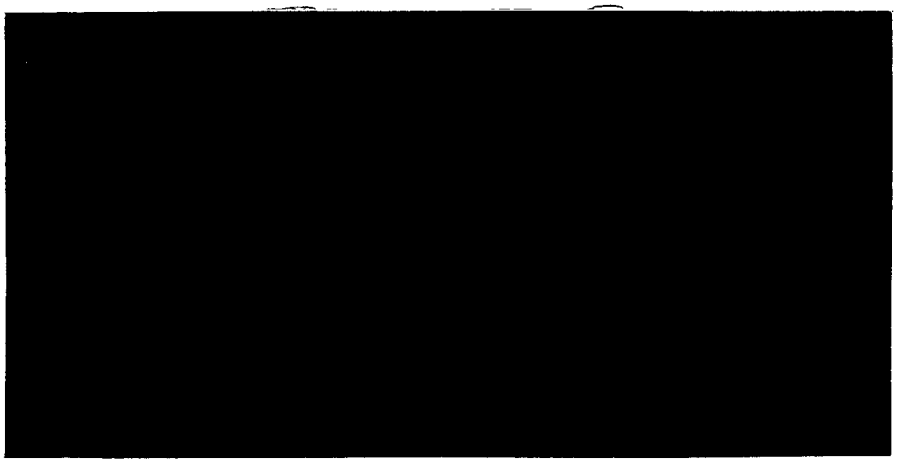

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PROVIDENCE HARBOR: Problems and Prospects

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Providence Harbor: Problems and Prospects

The purpose of this workshop is to initiate a process for special area coastal planning in Providence Harbor. Since its establishment in September, 1980, the Urban Waterfronts Subcommittee of the Coastal Resources Management Council has been working on several issues of importance to future Harbor development and management. These include dredging needs, debris removal, harbor line revisions, and the need to foster a continuing discussion of Harbor problems and prospects in order to build the public and private cooperation essential to their solution.

Providence Harbor merits close examination and attention for several reasons. Non-petroleum cargo traffic increased through the 1970's. Private interests on both sides of the Harbor are making investments in new port facilities for shipping and receiving bulk and general cargo. Rhode Island voters approved the creation of the Narragansett Bay Water Quality District Commission, which is authorized to issue $87.7 million in general obligation bonds to reduce pollutant levels from sewage and storm overflow facilities. Full implementation of the Providence Water Pollution Abatement Program will lead to effluent reduction and water quality improvements. Public ownership of the Harbor shoreline has increased with the development of India Point Park and the acquisition of the rail-road right of way along the East Providence shore. The Block Island Ferry Terminal will be used as a major gateway to the Bay Islands Park System.

There has been no shortage of ideas about the future physical development of the Providence Harbor waterfront for port, commercial, and recreational purposes. The need for a better management and planning mechanism is also widely recognized as essential if sustained public support and private investment is to be obtained.

Transforming the best of these ideas into physical, economic, and institutional reality will require the consent, cooperation, and financial committment of both the public and private sectors. The presence of such a constructive climate for waterfront redevelopment is not a matter of accident, but a function of public policy at the State and local levels. During the next year, the process of developing and adopting a special coastal plan for Providence Harbor will provide an opportunity to explore and discuss Harbor problems, as well as take new initiatives to achieve harbor management and development goals.

To those who are familiar with the problems of their City's waterfront and have thought a great deal about the best course of action, the lack of public and private dollars for implementation stands out as the real problem, rather than the need for more discussion. Federal support for urban redevelopment programs is diminishing at a time when municipal resources are stretched to the limit. The 1980's are generally presumed to be a time of retrenchment from tackling important public problems. Rhode Island State and local government ranks 42 out of 50 states for total government spending per capita on parks and recreation. Upper Bay communities spend far less per capita than cities of equivalent size across the country. A Statewide recreation bond issue has not been adopted since 1965.

Yet in November, 1980, voters statewide overwhelmingly approved the expenditures of $87.7 million on a plan to abate water pollution from the City of Providence and adjoining communities, hardly evidence of a public retreat from concern for environmental quality. However, the coastal management problems of Providence Harbor are not yet a matter of public knowledge and concern despite the private investments being made in the port industry, the likelihood of improved waterquality, and the existence of a considerable amount of unutilized publicly owned property. The task of this and subsequent discussions must be to construct and articulate the case for Providence Harbor.

DEBRIS REMOVAL

INTRODUCTION

One of the legacies of port development in this century is the presence of a large amount of floating and shoreline debris. Dilapidated wharves and piers, some abandoned, others damaged by hurricanes, are the main sources of this debris. Abandoned and wrecked barges and scows also contribute to this problem. Shoreline debris is a hazard to navigation, detracts from the visual quality of the shore and water, and restricts commercial redevelopment of the urban waterfront. Debris removal is widely recognized as beneficial to both the public and private sectors.

The New England Division of the Army Corps of Engineers completed a draft feasibility report on debris removal in Providence Harbor in 1978 as part of its program to implement responsibilities under the 1889 Rivers and Harbors Act. The present program was authorized by Section 202, of PL 94-387, the Water Resource Development Act of 1976. However, the Corps New York division is already in the midst of an active debris removal project at present. A look at that project provides some idea of how the Providence project would operate when it is finally undertaken.

Since 1915 the Army Corps of Engineers has been collecting floatable debris from the waters of New York Harbor. In 1974, a report was submitted by the Corps to the Department of the Army that showed the need for attacking the problem of floating debris at its source: the dilapidated wharves and piers around the harbor. The program was approved by the Army

and funded by Congress in 1975.

The cost-sharing scheme in the New York project is 2/3 federal, 1/3 non-federal, and all debris sources are eligible for federal cost-sharing funds. This includes debris sources for which owners can be identified.

The Corps of Engineers' role in the New York project is that of an administrator, as it would be in a Providence Harbor project. When non-federal money is raised for removal of debris sources (this money comes from both public and private sources), the Corps matches it with the federal funds which have been appropriated by Congress. The Corps then solicits bids for the work from private contractors, and monitors the work as it progresses.

According to the New York division of the Corps, approximately 20 per cent of the total debris sources have been removed so far. The total cost of the project is estimated at $90 million for the 750 miles of shoreline in New York Harbor.

Another debris removal program is in the approval stage, concerning Boston Harbor. A final feasibility report was completed for Boston by the Corps in 1979, and revised in 1980. It is being reviewed by the Department of the Army before being submitted to Congress for authorization and funding.

The major difference between the New York project and the Boston and Providence projects is the cost-sharing arrangement. All debris sources are eligible for federal cost sharing funds in New York; in Boston and Providence, the cost sharing will apply only to sources of debris for which the owner can't be identified. Non-federal interests will

have to recover the costs of removing debris sources for which the owner can be identified.

Governor King of Massachusetts supports the Boston debris-removal project, but is seeking legislation to change the cost-sharing arrangement so as to reduce the State's share of the costs. The Corps of Engineers is awaiting the results of his efforts before moving ahead with the Providence feasibility report. The Corps has indicated that it expects to resume work during the summer of 1981.

STATUS OF PROVIDENCE RIVER PROJECT

The Providence River and Harbor and Seekonk River Debris Study, as the feasibility report is entitled, is still in a draft stage. The most recent draft report was completed in January of 1978. Since then, no information has been added, and present Corps files were not maintained. In the past three years, the amount of debris and the number of sources has changed somewhat. When the Corps does update the report, a partial reinventory will probably have to be done, which will lead to a revision in the cost estimates.

Using the information from the 1978 draft, approximately 25 per cent of the total projects costs of $4,857,364 will be borne by the federal government under the present cost-sharing scheme (Table 1). This represents $1.2 million against a non-federal share of $3.6 million. 58 per cent of the non-federal share or $2.7 million would possibly be recovered from private property owners. Table 2 shows total volume and 1978 costs for each municipality in the study area.

The Corps draft report proposes several alternative plans for removal

	Entire Study Area (dollars)	Providence Harbor and River (dollars)
Federal Share	1,225,312	871,243
Non-Federal Share:		
Recoverable	2,687,785	2,117,711
Non-Recoverable	944,266	684,364
Total Non-Federal Share	3,632,051	2,802,075
TOTAL	$4,857,364	$3,673,319

Table 1: Estimated 1981 Cost for Debris Removal in Upper Narragansett Bay and Providence Harbor.

(Estimated from 1978 Figures developed by New England Division, Army Corps of Engineers)

	Eligible Debris	Total Debris	Percent of Debris Eligible for Federal Cost Sharing
Barrington	2,033 ft^3	4,694 ft^3	43%
	$9,879	$26,041	40%
East Prov.	113,303 ft^3	256,647 ft^3	44%
	$436,483	$1,005,625	43%
Pawtucket	210 ft^3	12,886 ft^3	2%
	$1,061	$73,608	1%
Providence	156,328 ft^3	376,946 ft^3	41%
	$628,690	$1,498,048	42%
Cranston	22,732 ft^3	29,342 ft^3	77%
	$92,269	$122,206	75%
Warwick	10,764 ft^3	14,108 ft^3	76%
	$44,558	$62,439	71%
TOTAL VOLUME	305,370 ft^3	694,623 ft^3	
TOTAL COST	$1,212,940	$3,787,967	

Table 2: Proportion of Debris Eligible for Federal Cost Sharing in Upper Bay Communities. Source: 1978 Corps of Engineers Study

and disposal of the debris. Based on benefit-cost ratios, evaluation of negative impacts, and on the feasibility of each plan's disposal methods, a single proposal was chosen as the best way to proceed. This plan calls for a one-time effort to clear the Providence River and Harbor of all floating debris, and barging the collected debris to a staging area at Field's Point in Providence. There it will be reduced in size, trucked to a landfill site in Johnston and buried.

The plan also calls for repair of partially dilapidated structures still in use and the erection of retaining fences along shorelines in front of shorefront dumps. This one-time cleanup could be accomplished in a two-year period, according to the Corps of Engineers. Changing conditions, such as the change in ownership status of the Johnston landfill site, could cause the Corps to alter this plan, or to select another plan as the best way to proceed.

Map 1 shows the Providence Harbor and River debris sources based on Army Corps survey maps. It is accompanied with a debris sources information key. The type of debris varies, from bulkheads to bridge fenders. The most common source of debris are dilapidated wharf structures. The total volume of debris in these sources noted is 300,330 cubic feet.

RECOMMENDATIONS

Some of the debris sources could be removed in actions independent of the Corps of Engineers plans. If this were accomplished, the total costs and the non-federal costs of the plan would be reduced, thereby increasing the benefit-cost retio, and making the expenditures more palatable to the public. Approximately 27 percent of the debris in Providence Harbor shown in Figure 1 is on public property. Debris sources located on public lands, could be repaired or dismantled and removed with manpower and equipment supplied by the respective (State and local) DPW's. This expenditure could be justified by the increase in utility and property values that would occur as a result.

The Coastal Resources Management Program sets policy and regulations concerning abandoned piers and wharves in section 520.1-2(c) (page 180). The Council is authorized to order removal of such debris sources, at owner expense. Failure to do so would subject the owner to fines and penalties established by law. If the Council were to start exercizing this authority, there would be created an incentive for voluntary removal of privately-owned debris sources.

The Council could support and coordinate a volunteer cleanup project. The objective of such a project would be the removal of small, floatable onshore debris littering the coastline. While this item is eligible for federal cost-sharing funds, a reduction in its volume would reduce the total non-federal costs for the project. The non-federal share of the cleanup costs of this type of debris, according to the Corps 1978 draft report, is about $77,000.

Map 1

Debris Sources in Providence Harbor

◇ Structure in good condition

▲ Partially dilapidated

◆ Completely dilapidated

· Wrecked vessel

—— Loose shoreline debris

● Shorefront dump

Source: U.S. Army Corps of Engineers Providence River and Harbor and Seekonk River Debris Study. Feasibility Report. New England Division Corps of Engineers. 1978.


PROVIDENCE

DEBRIS SOURCES INFORMATION KEY

PROVIDENCE HARBOR

Structure Number	Total Volume to remove (cu. ft)	Total Removal Cost (1978) (dollars)	Type of Debris	Notes
102	2,100	7,235	wharf	-
*103	-	-	-	Mobil wharf
104	1,755	6,406	wharf	-
105	208	2,004	wharf	-
106	170	1,122	wharf	-
107	50	111	tree stump	-
*108	-	-	-	-
*109	-	-	-	-
110	227	1,683	bulkhead	-
111	13,868	44,543	wharf	Old Arco Dock
*112	-	-	-	Amoco Dock
*113	-	-	-	Gulf Oil Co.
114	420	1,506	dolphins	-
115	34,500	153,474	bulkhead	On or near Wilkesbarre Pier
116	860	3,194	wharf	Just south of Bold Point
117	22,000	80,795	wharf	-
118	1,358	4,825	wharf	-
119	240	1,778	marine railway	Just west of Bold Point
120	1,400	5,192	wharf	-
121	1,100	4,351	wharf	-
*122	-	-	-	-
*171	-	-	-	-
*172	-	-	-	-
*173	-	-	-	-
174	9,800	36,861	wharf	India Pt.
175	9,800	34,270	wharf	India Pt.
176	3,960	13,382	wharf	India Pt.
*177	-	-	-	-
178	8,700	29,625	wharf	India Pt. Park
179	14,200	46,662	wharf	India Pt. Park
180	430	2,518	wharf	-
181	3,900	12,748	wharf	-
*182	-	-	-	-
*183	-	-	-	-
184	8,200	37,615	wharf	-
185	170	870	wharf	-
186	4,800	20,282	wharf	-
187	700	3,728	bridge fenders	
*188	-	-	-	-
*189	-	-	-	-
190	270	1,072	wharf	-
191	90	357	bulkhead	-
192	50	199	bulkhead	-
193	20	79	bulkhead	-
*194	-	-	-	-

-continued-

DEBRIS SOURCES INFORMATION KEY
PROVIDENCE HARBOR

Structure Number	Total Volume to remove (cu. Ft.)	Total Removal Cost (1978) (dollars)	Type of Debris	Notes
*195	-	-	-	-
*196	-	-	-	-
197	15,705	60,805	wharf	Narr. Electric
*198	-	-	-	Narr. Electric
199	2,020	4,177	wharf	Narr. Electric
200	10,750	41,871	wharf	-
*201	-	-	-	-
202	44,600	173,045	wharf	C.H. Sprague
203	50	198	wharf	C.H. Sprague
*204	-	-	-	-
205	1,290	8,419	wharf	-
206	100	741	channel trough	
*207	-	-	-	-
208	4,700	18,302	wharf	50,673 Repair cost
209	2,930	42,538	wharf	42,538 Repair cost
210	3,510	19,119	wharf	42,159 Repair cost
211	40,650	156,460	wharf	
212	7,650	30,776	wharf	-
213	16,599	78,715	marine railway	
*214	-	-	-	Harbor Junct.
215	80	410	bulkhead	-
216	290	1,151	wharf	-
*217	-	-	-	-
*218	-	-	-	-
*219	-	-	-	-
*220	-	-	-	Municipal wharf
221	50	199	wharf	-
*222	-	-	-	-
*223	-	-	-	-
*227	-	-	-	Port Edgewood
228	829	3,352	wharf	-
*229	-	-	-	-
230	70	358	bulkhead	-
231	25	100	bulkhead	-
*232	-	-	-	-
234	1,242	6,091	wharf	-
235	770	3,339	wharf	-
239	840	3,443	wharf	-
*240	-	-	-	-
*241	-	-	-	-
*242	-	-	-	-
243	234	894	wharf	-

* These structures are in use and not in need of repair.

Much can be accomplished by a voluntary project like this, when donations of manpower, equipment, and supplies are enthusiastically solicited. An estimated 10,000 peopole participated in Project ZAP on the Blackstone River in September of 1972. This effort was sponsored by the Blackstone Valley Watershed Association and coordinated by the Providence Journal. In addition to the voluntary efforts of the citizens of the area, help came from groups such as the National Guard, local and State DPW's and private business.

Although the Corps of Engineers feasibility study on debris removal in Providence Harbor seems to be stalled at present, positive steps can still be taken to ensure that this issue gets the attention it deserves. Heightened awareness by the private and public sectors, of the recreational and commercial advantages of debris removal will create an incentive for the Corps to bring its past efforts to fruition.

Assuming this project is undertaken, the State and local share of costs for debris removal which is eligible for federal funds must be appropriated before those federal funds will become available. There must be a large base of support for these expenditures if they are to become available. The time between now and whenever this project is approved by the Department of the Army and Congress can be put to good use in creating this base of support.

THE PORT INDUSTRY

INTRODUCTION

Providence Harbor stretches from Pomham Rocks Light north to the Henderson Bridge. Within the harbor are petroleum terminals, marine service and repair facilities, docks that specialize in liquid and dry bulk cargo handling, and the Port of Providence which is a general cargo facility (Map 2). It is a modest operation by North Atlantic standards, but dominates some ten miles of metropolitan shoreline. The Harbor has grown and changed with the surrounding urban area during the past two centuries, although its history is less known and appreciated than that of nearby residential and commercial districts. Table 3 illustrates the trend in cargo flows between 1969 and 1978 as reported by the Army Corps of Engineers. While petroleum traffic has declined, non-petroleum cargo traffic doubled during the period.

There is a potential for growth in Providence Harbor during the 1980s. The Port of Providence, which is operated by the Department of Public Works of the City of Providence has made progress in recent years, increasing traffic and revenues, upgrading berths and improving terminal facilities. The Providence and Worcester Railroad is pursuing a plan which would create a major new wharf adjacent to the Wilkes Barre terminal on the East Providence shore. Creation of a new berth at the southern most portion of Fields Point is one of the long-range plans for Providence.

Map 2

Port Industry in Providence Harbor

Dredged channels

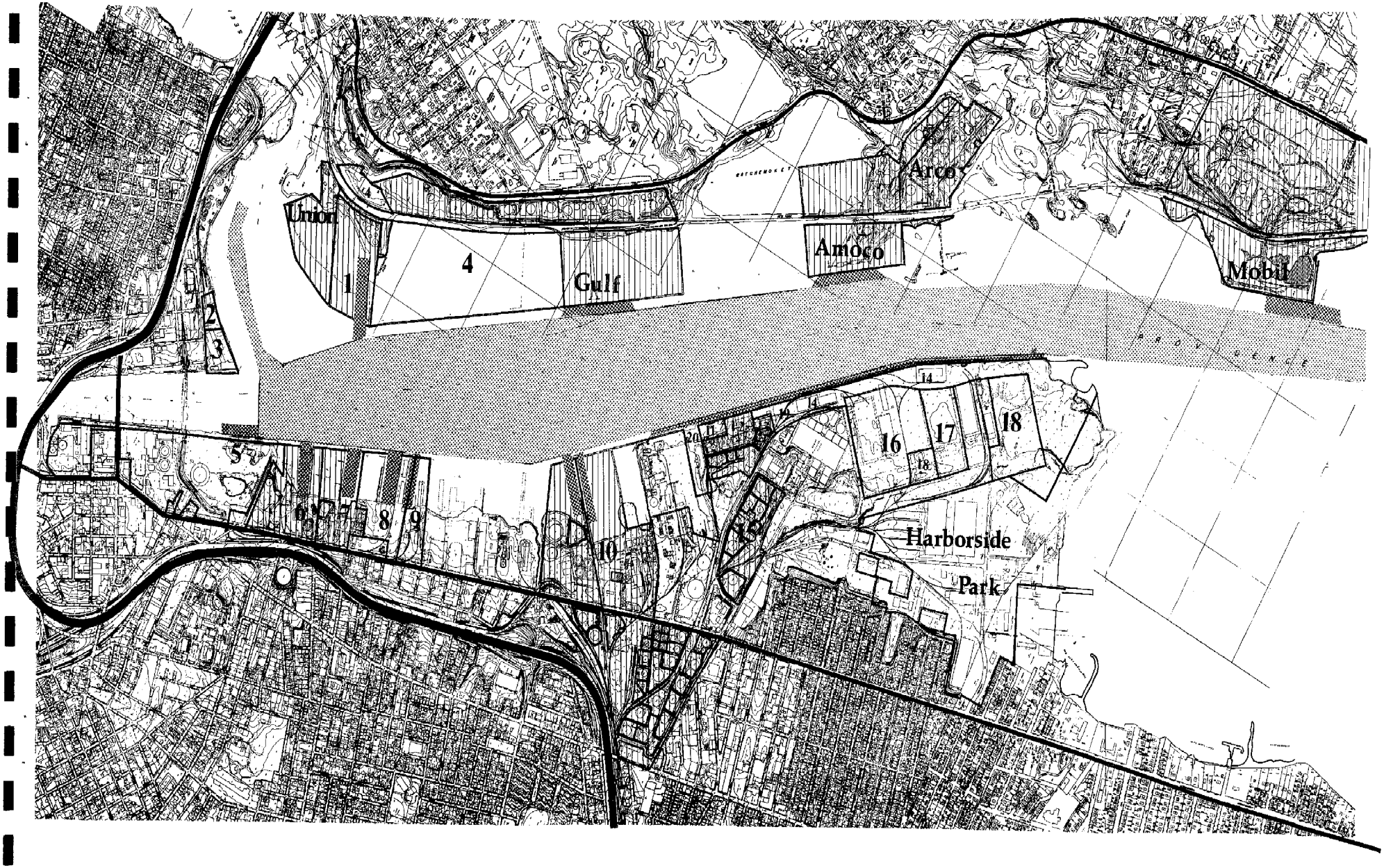
Dredged berths

Petroleum related facilities

Providence Harbor Berth Key:

1. Union Oil, P & W, Getty Oil, N.E. Petroluem (Wilkes barre pier)
2. Lausall Realty
3. Maurania Corp
4. P & W
5. Narragansett Electric
6. Sprague Terminal Corp
7. Northeast Petroleum and others
8. State of RI land and Promet Terminal
9. J.F. Donovan, Inc.
10. Texaco, Inc. and Paragon Oil
11. Lehigh Portland Cement, Operator on City land
12. New England Bituminous Term. Corp.
13. Sun Oil Co., Operator on City land
14. Port of Providence, Municipa Wharf
15. B.P. Oil Co.
16. Metals Processing
17. City Land, Petrolane
18. J.J. Orr
19. Sun Oil Terminal, on City Land
20. Providence Gas Co.

approximate scale:


Union
Gulf
Amoco
Arco
Mobil
Harborside
Park
1
2
3
4
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10
15
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17
18

Table 3: Historical Cargo Flows
(1969 - 1977)in 000s Short tons

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Total	10,153	9,872	8,762	9,200	10,236	8,856	8,266	8,678	8,624	8,459
Pet. Prod,	9,505	9,116	7,812	8,324	9,123	7,705	7,453	7,468	7,498	7,190
Other	648	754	949	875	1,110	1,150	812	1,109	1,125	1,269

Source: Waterborne Commerce of the United States, Annual
U.S. Army Corps of Engineers.

Some oil terminals have recently announced or completed plans for berth dredging and pier reconstruction. Providence municipal wharf has taken advantage of the 40-foot channel dredged for the benefit of petroleum tankers by the Army Corps of Engineers in the early 1970s, by dredging three of its berths to channel depths.

Providence Harbor still lags behind most other ports of its size in new investments. It faces a number of limiting factors, the most important of which is the absence of basic planning and development programs for the Harbor as a whole. The State's approach to the redevelopment of Quonset/Davisville is an example of the coherent and orderly development program so clearly needed for the Port of Providence. At Quonset/Davisville publicly owned properties are being improved, roads, utilities, and services upgraded, and industrial clients provided with a package of services and incentive for locating at the site. Providence Harbor may not be wholly owned by the public, yet it was created by the expenditure of a considerable amount of federal, state, and local funds. Consequently the Harbor has a similiar need for planning, management and public support to insure that as a major public investment it provides a full return to the metropolitan area.

ECONOMIC CONTEXT OF PORT DEVELOPMENT

Aside from the fact that petroleum receipts have declined while other cargo traffic has doubled since 1968 there is no current information on the contribution which the port industry makes to the metropolitan economy. In cooperation with the Cities of Providence and East Providence, the

Coastal Resources Center is undertaking an economic base survey of the port industry following a methodology developed by the Department of Commerce, Maritime Administration. Interviews will be conducted with firms directly involved in the port to develop aggregate data on employment, payroll, and revenues, as well as business plans for the future. In addition, information will be collected on port dependent firms.

The New England River Basins Commission has conducted a $675,000 study of New England common user ports. Work began in early 1980, with the initial round of consulting reports becoming available in May, 1980. Several workshops were held at various stages of the project. The early results of the study present a fairly pessimistic view of the future of New England's ten common user ports, citing a fundamental shift in the economy away from manufacturing, stabilization of population, changing marine transportation technology, the deterioration of the rail system, and the rise of trucking. Many of New England facilities are piers rather than wharves, better suited to the outmoded technique of breakbulk cargo handling. According to project consultants, the basic strategy of New England ports should be to divert the approximately 32 percent of New England's general cargo imports and exports which move via the Port of New York and New Jersey. This would be done by the designation of the Port of Boston (Massport) as the container load center, with two feeder services, one each in Southern and Northern New England. A regional ports organization would help ports improve efficiency, obtain better management information, and conduct promotional activities.

Considerable attention was devoted to identifying appropriate roles for the ten common user facilities. The consultants concluded that there simply is not a great enough volume of cargo to support ten general cargo ports at more than marginal survival level. Although there was general agreement at one study workshop on the need for careful justification of port expansion investments, no agreement was reached on the concept that ports should stay with certain specialties, rather than increase flexibility. The representatives of Providence Harbor expressed strong concern about designation of Boston as the container load center. Massport representatives revealed that the container operation actually lost money, and that even with larger more efficient facilities at Castle Island, no profit was expected in the near term. However, it is generally believed that of all port operations, container facilities have the best 'spin-off' effect, in terms of multiplying employment and income, therefore justifying large public expenditures to foster their development.

In addition to the development of facilities for handling containers, coal importing and exporting has emerged as a new commodity for Providence Harbor and the New England Ports. Coal was the dominant fuel source during the early portion of the twentieth century. The discovery and exploration of large reserves of petroleum and natural gas, the conversion of railroads from steam to diesel, and the surge in industrial and domestic use of petroleum all contributed to the decline of coal. A recent shift in world demand for steam coal due to slower increases in coal prices, the threat of future oil embargoes, and policy changes has indicated a return to coal.

New England especially has become dependent upon foreign oil imports. A historical summary of the domestic receipts of coal by New England ports from 1935 to 1978 is presented below:

DATE	ANTHRACITE	BITUMINOUS	TOTAL*
1935	820,799	11,065,829	11,886,628
1946	376,647	12,420,552	12,807,199
1950	169,670	7,531,795	7,701,465
1955	32,955	7,226,271	7,259,226
1960	---	5,320,369	5,320,369
1965	---	6,842,137	6,842,137
1970	---	1,478,392	1,478,392
1975	---	319,624	319,624
1976	---	73	73
1977	---	15	15
1978	---	---	---

*Short tons

Source: U.S. Army Corps of Engineers, 1979

The Power Plant and Industrial Fuel Use Act in 1978 provides for the promotion of other fuel sources. A number of New England power plants are located on navigable channels, receive fuel supplies by water, and have previously burned coal. New England Electric System has begun conversion of three of four generators at the Brayton Point power station in Fall River, MA from oil to coal. The first unit began burning coal in March 1980. The Salem power plant in Salem, MA is currenty under study. The Narragansett Electic South Street plant in Providence last burned coal during the Arab oil embargo of 1973. Coal remaining from that shipment still remains on their property.

Providence Harbor could once again participate in the coastwise coal trade. The Port of Hampton Roads, Va, traditionally shipped most of the domestic coal to New England. Other East Coast ports considering entry

into this trade include the Port of New York. Coal carried by rail to New York could be transshipped by barges or even larger coal vessels to the Port of Providence. Brayton Point expects to have a coal collier capable of hauling 36,000 tons of coal between the plant and Hampton Roads by 1983. Coal handling facilities located on the Providence River would provide fuel savings for customers and allow for coal transport by rail or truck to other parts of the State.

HARBOR MANAGEMENT

Among the major institutional problems facing smaller New England ports such as Providence are outmoded governing structures, the absence of a realistic and supportive port development policy and program, and the reluctance of any body or agency to act as a catalyst. On the one hand, states such as Maine have strong port development programs which may be based on unrealistic expectations of the financial viability of proposed public investments in facilities. Providence Harbor, on the other hand, continues to lack adequate support despite modest but steady increases in non-petroleum cargo movement. The Port Director is near the bottom of a complex city administration and council system, rather than being located at the top of an organizational pyramid consisting of supporting staff, financial resources, and decision making powers adequate to conduct business and deal with other public agencies in the same manner as a private firm.

A recent report to the New England River Basins Commission by the University of Rhode Island Intergovernmental Policy Analysis Program,

described four options for redesigning the Municipal Wharf operation. The study recommended the establishment of a 'port coordinative body' to link port development with other Bay users, prepare a long range Port Redevelopment Strategy, and coordinate marketing activities. The need for independence in the Municipal Wharf operation has been recognized for more than a decade. Both the business community and public officials have often suggested the need for an even more powerful Providence Harbor Authority on numerous occasions. It would not only manage port operations, but serve as a focal point for Harbor planning and improvement. Little progress has been made towards such a reorganization.

DREDGING AND DREDGED MATERIAL DISPOSAL

Twenty three operations were identified in Providence Harbor which extends north from Pomham Rocks Light to the Henderson Bridge. During the 1980 Dredging Needs Survey conducted by the Coastal Resources Center, interviews were completed with nineteen operators, eleven of which expressed a desire to dredge. Only one expected to undertake work in the near future, while two others were in the process of dredging. Approximately 803,000 cubic yards would be removed if all plans were implemented. Most of these projects required offshore disposal, although some petroleum terminals had sufficient onsite capacity. The largest single project was the expansion plans of the Providence and Worcester Railroad, which accounted for 516,000 yards or 65 percent of the total. Only 65,000 cubic yards were going to be removed immediately. In maintenance dredging of the Wilkes Barre pier, used by several oil companies, the implementation of the major portion of the project is slated for completion in the next two

to three years. The lack of success in gaining approval to use an offshore disposal site for the material increased development costs from $12 million to the present $25 million, according to project engineers.

A future maintenance dredging effort by the Corps of Engineers in the Providence River would entail 200,000 cubic yards of material. However the Corps have no plans to maintain Providence Harbor to its current forty foot depth unless petroleum terminals are dredged first in order to take advantage of it. No plans exist to dredge the Seekonk River.

The Coastal Resource Management Council held a workshop on dredging on March 25, 1981. A major portion of the session was devoted to a round-table discussion of the problems of dredged material disposal. Several themes emerged which reinforced the conclusions and recommendations developed by the Urban Waterfronts Subcommittee of the Coastal Resources Management Council. Support was given to the concept of developing dredged material disposal plans and options on a geographic basis reflecting the differences that exist among the needs and problems of the major coves and harbors. Providence Harbor, Bullocks Cove and Warwick Cove were identified as candidates for follow-up discussion and planning. The Providence Harbor session is scheduled for late May, 1981.

A second areas of concern was the need to improve the overall process of regulating dredging and material disposal. This problem is particularly acute in the area of interagency coordination. A preference was expressed for a process in which an applicant can prepare a single set of plans and data for review by various local, State, and federal agencies in order to

avoid interagency disagreements. One step in this direction has already been taken. The first joint hearing between the Coastal Resources Management Council and the Army Corps of Engineers was held on April 29, 1981 on an application to build a salt marsh out of dredged material on Department of Environmental Management property in Pawtuxet Cove.

In Providence Harbor, offshore disposal has been the preferred option for many terminal operators due to a shortage of space to land fill and its low cost. Despite its high cost, the Providence and Worcester Company is constructing a massive dike to contain dredged material. Other firms such as Mobil use the area behind their terminal bulkhead to hold material from maintenance dredging. Other operators have been required to have sediment tested for loads of various pollutants, before being permitted to remove it offsite by truck. Suggestions for constructing marshes at places such as Watchemoket Cove have raised considerable controversy. Bulkheading would be done in several shallow water locations in the Harbor, either to create usable land or a park. However, private firms must weigh the cost of regulatory delay and controversy as well as technical criteria in deciding which strategy to pursue. Filling represents an expensive, short-term, and limited option for the long-term question of maintaining adequate channel depths for commercial navigation.

The question of offshore dumping raised many concerns at the March 25th meeting which demand additional discussion. Previous experience has left the fishing industry concerned about the impacts of offshore disposal. This concern was particularly strong in terms of the use of Brenton Reef, located in federal waters south of Brenton Point, as a regional dumpsite

for dredged material from Fall River and other non-Rhode Island harbors. The results of followup research on the impacts of previous use of Brenton Reef, as well as new ways to eliminate dumping of material short of the approved site, need to be discussed in greater detail. In addition, a clear picture of genuine offshore disposal needs by the port industry in Rhode Island must be developed. Both of these concerns will be included in the forthcoming work session on Providence Harbor dredging.

State offshore disposal policies and regulations will have to be in place before such dumping is likely to resume. Controls on the volume of material, project source, quality, and total disposal site capacity will be needed. In addition, strict procedures will be required to assure the accuracy of dumping on the site, monitoring of impacts, and establishing the proper time of year for disposal operations to occur. Material from Providence Harbor will probably need to be covered by cleaner material.

Water Quality and Pollution Control

A century ago, in 1883, the Providence Board of Trade passed a resolution stating, "...in view of the present state of the waters of the Providence River and Cove Basin, we deem it essential for the preservation of the health of our City, that immediate steps should be taken to provide a better system of sewage." Pollution of the Providence River and Upper Narragansett Bay is still a major public concern.

During the 1970s, Anderson-Nichols, Inc. prepared a pollution abatement plan for the City of Providence funded by the Environmental Protection Agency (EPA). The plan, accepted by the State and federal government as the basis for future EPA construction grants, called for rebuilding the Fields Point Sewage Treatment Plant so that it would meet 1983 NPDES effluent discharge limits of 30 milligrams per liter of both biological oxygen demand (BOD), and total suspended solids (TSS) on a monthly averagge. In addition, the plan called for the consolidation of 65 combined sewer overflows (CSOs, outfalls where a mixture of stormwater and raw sewage enters the river) into 9 combined sewer treatment facilities (CSTFs). The location of the CSOs draining into Providence Harbor are shown in Map 3, along with the proposed location of Combined Sewer Treatment Facilities 6, 7, and 9.

Due to the severe deterioration in the operation of the Fields Point Treatment Plant, the City of Providence hired a consulting firm to develop and implement physical and operational improvements so that the plant would be able to meet its interim monthly average discharge limits of 40 mg/l BOD, and 45 mg/l TSS. In addition, contracts were given to engineering firms

Map 3

Existing and Proposed Sewage Facilities in Providence Harbor

○ combined sewer overflow (CSO) or outfall, EPA number
Ⓣ CSO with tide gate(s)

Providence's Fields Point Sewage Treatment Plant, currently under redesign

■ Pumping station

● A1, A2 water quality sampling stations for MERL project funded by EPA

Candidate sites for Combined Sewage Treatment Facilities (CSTF)

2: a 253 million gallon per day peak capacity facility currently under design

6: a 602 million gallon per day peak capacity CSTF for combined sewer overflows # 004 to 015, 060 and 061. Not under design.

7: a 219 million gallon per day peak capacity CSTF for combined sewer overflows # 016 to 022. Not under design.

△ storm drain outfalls

—— interceptor sewer line

← indicates where an important sewer line intersects with interceptor line.

Approximate Scale: One inch equals 900 feet.

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to begin design of the sewage plant reconstruction, and to design two of the nine Combined Sewage Treatment Facilities. The poor performance of the Fields Point Sewage Treatment Plant during 1979 raised considerable public concern regarding the availability of federal construction grants to complete the $250 million (1979 dollars) in improvements recommended in the Facilities within a reasonable time frame. As a result, Governor Garrahy created the Upper Narragansett Bay Sewage Treatment Task Force in 1979 to examine the options for expediting facility construction in Providence. The work of the Task Force led ultimately to the creation of the Narragansett Bay Water Quality District Commission (NBWQDC, or the Bay Commission), and voter approval of an $87. million sewer bond issue in November 1980.

During 1981, the governmental structure responsible for pollution control is undergoing important changes. The Department of Environmental Management's Division of Water Resources is taking on more of EPA's duties in the construction grants program. At the same time, the City of Providence is awaiting the transfer of control of the sewage treatment plant, combined sewer overflows, and interceptor lines to the Bay Commission. Before this takes place, however, Providence will supervise the preparation of designs for the Fields Point Treatment Plant reconstruction, as well as CSTFs 2 and 9 which, will actually be constructed by the Bay Commission.

The pollution control effort in the Providence River is faced with several difficulties, some of which are linked to the transition in the control over the facilities, while others are a reflection of the enormity of the task. At present, in the spring of 1981, the process of transfering

control of the treatment plant and the CSOs from the City of Providence to the Bay Commission is underway. The organization of administrative and fiscal responsibilities is changing from a parallel system of Providence Department of Public Work's staff and City-hired consultants to a consolidated structure under the Bay Commission (see Figure 1).

The effect of this transition period on overall responsibility for pollution control in Providence is shown in Figure 2. The City of Providence is currently supervising much of the design work for facilities which the Bay Commission was established to construct and operate. The City is also undergoing severe financial problems which prevents it from providing sufficient financial support to the operation and maintenance of the sewage system. During this transition, groups such as the Citizens Advisory Committee to the present design work commissioned by the City of Providence have expressed concern about the timely resolution of the problems such as tide gate repair, diversion of 12 million gallons of dry weather raw sewage flow from CSO #002 into the treatment plant, and other external factors crucial to the design and construction of the new facilities.

The other important challenge during the pollution control effort is the sheer enormity of the task in comparison to the available financial resources. The Reagan administration is proposing funding cutbacks in the construction grants program which will reduce the amount of federal money available to the Providence project. The actual impact will not be known until Congressional action has been taken. In the meantime, the consulting engineers are currently preparing design and cost estimates for the

Figure 1. Transition in control and responsibility for Providence sewerage system, 1981.

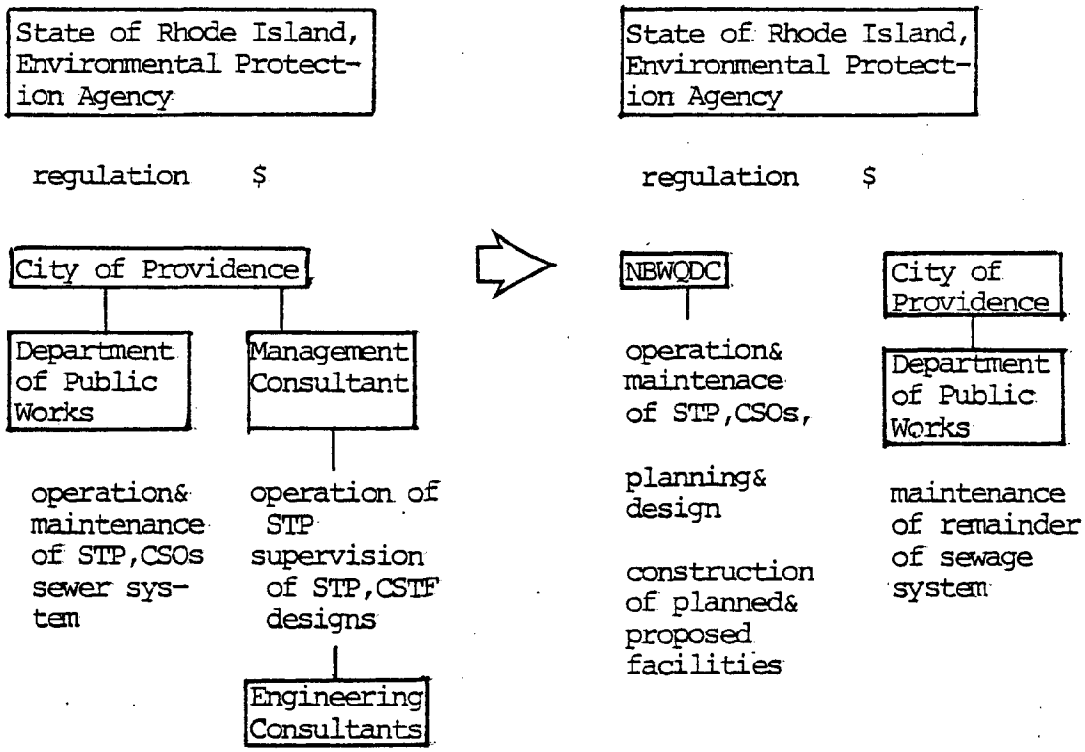
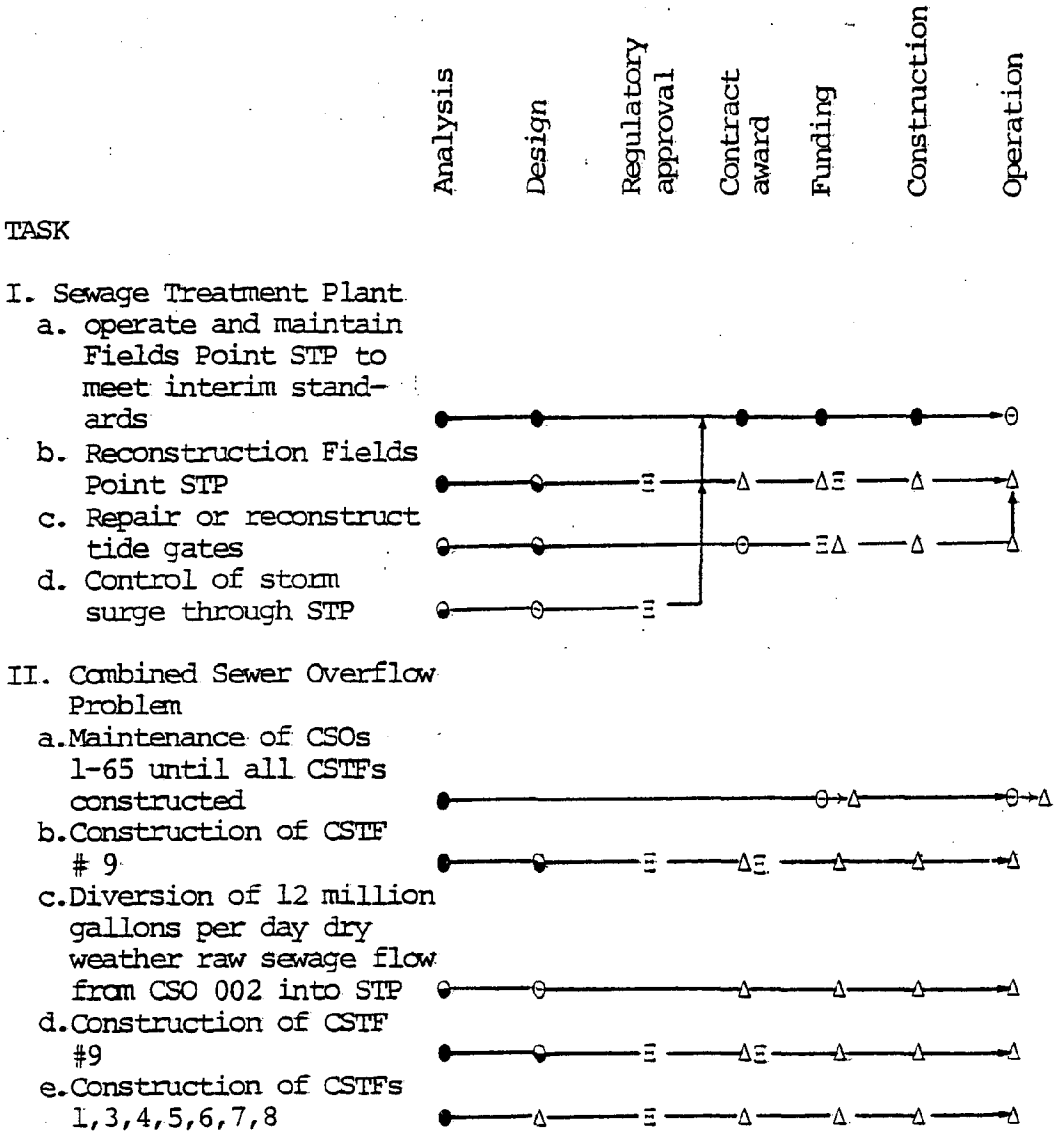


Figure 2. Simplified illustration of critical path to improved water quality in Upper Narragansett Bay, based on current policies and programs. Status as of May, 1981.

Key: ⊖ Providence Ξ State of RI, EPA Δ NBWQDC
◐ started
● completed
→⊖ indicates a step which is contingent upon earlier steps



reconstruction of the Fields Point Treatment plant and Combined Sewer Treatment Facilities 2 and 9. In addition, costs such as tide gate repair must be included. Table 4 shows estimated project costs based on the revised 1979 estimates by Anderson-Nichols, Inc.

The priorities which have already been established are the reconstruction of the Fields Point Treatment Plant, and CSTF numbers 2 and 9. In addition, a list of priorities within those projects is currently being prepared by the State and City, in order to assure that all available federal funds are utilized. Work that is probably not eligible for federal funds, such as tide gate repair, will also be considered by the Bay Commission which will have the principal responsibility for developing a strategy to match financial resources with pollution reduction goals.

Table 4. Estimated cost of proposed facilities plan. (Source: Anderson-Nichols, Inc., revised estimates.)

Combined Sewer Treatment Facility	1979 Capital Cost (millions)
1	17.5
2*	38.8
3	6.2
4	8.0
5	14.1
6	36.1
7	14.9
8	15.6
9*	16.7
	166.4
Upgrade Fields Point STP	65.0
Sewer Repairs	19.8
Pumping Station	2.2
	$253.4
Tide gate repair or reconstruction	?
Dry weather flow at CSO # 002	?
Inflation	?
	?

*Under design
**High range of original estimate. Lower than expected figure.

The Public Role in Providence Harbor

The development of Providence Harbor as a commercial port has been a cooperative effort between private entrepreneurs who constructed and operated wharfs and terminals, and the local, state and federal governments that sponsored continuous harbor navigation improvements and financed the Municipal Wharf. Today the Providence Harbor shoreline is a mixture of public and private ownership and use. Map 4 illustrates the extent of public land along the shore, parts of which, such as India Point Park and the railroad right-of-way were acquired or developed during the 1970s. Many areas are undeveloped today, including the rail right-of-way, Bold Point, which is owned by the city of Providence, portions of the state land along the Veterans' Memorial Parkway, and the southern portion of the Municipal Wharf at Fields Point.

In addition to ownership, public influence over Harbor development is exercised through municipal zoning and urban redevelopment programs, and through both state and federal regulatory and planning responsibilities. Since the late 1960s, the emergence of new federal approaches to Harbor development by the Army Corps of Engineers, and the creation of the Coastal Resources Management Council (CRMC) have greatly increased the level of public involvement and responsibility for guiding marine and shore development and activity.

An important step in the process of achieving improved prospects for the Providence Harbor waterfront will be the preparation and adoption in 1981-82 of a Special Area Coastal Management Plan for the Harbor. This plan will combine clear statements of Harbor goals in terms of physical

Map 4

Publicly Owned Land around Providence Harbor

● City of Providence

1 India Point Park
2 Fox Point Hurricane Barrier
3 Providence Redevelopment Authority
4 Henderson Street
5 Public Street
6 city owned right of way
7 Thurbers Avenue
8 Department of Public Works
9 Department of Public Works
10 Sewage Treatment Plant
11 Municipal Wharf
12 City of Providence, leased to private firms
13 Playground
14 Vacant lot
15 Bold Point, owned by Parks Department

▽ East Providence, Green acres tract

◆ State of Rhode Island

a. rail right of way
b. Veterans Memorial Parkway
c. Recreation area
d. leased to ProMet company
e. Rhode Island Industrial Facilities Corporation

Approximate Scale: One inch equals 900 feet

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development and improved coordination and management with the articulation of the means of achieving those goals. In its broadest outline, the plan will translate goals for Harbor use and development into guidelines for both physical development and institutional relationships which strive to find the proper mix and balance among various uses. The discussion of physical development will include both site specific designations and areawide development criteria. The concern for institutional relationships includes clearer regulatory requirements and more coordinated procedures, better port management, and the establishment of a sound working relationship among the important institutional and business actors and the public.

The topics which will be dealt with in the plan include:

shoreline development
debris removal
dredging and dredged material disposal
marine transportation
port development and management needs
recreation opportunities
water quality
use conflicts (shore and marine)

The process of preparing a special coastal area plan can also be used to help resolve near term Harbor problems. In addition, it provides an opportunity to strengthen relationships among the important public agencies and organizations which have responsibilities over various aspects of the Harbor.