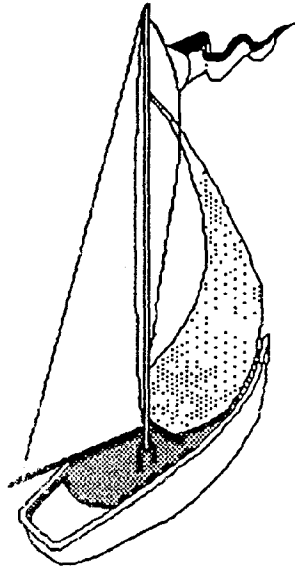


THE  
DELRAN  
HARBOR  
STUDY



**Tredinnick/Waetzman Associates**  
**January, 1987**

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**DELRAN TOWNSHIP  
HARBOR STUDY**

**DELRAN, NEW JERSEY**

**JANUARY, 1987**

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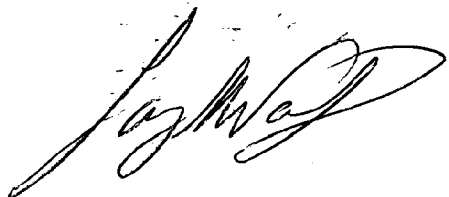
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**PREPARED FOR THE TOWNSHIP OF DELRAN, BURLINGTON COUNTY,  
NEW JERSEY**

**SUBMITTED BY:**

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This report was prepared under contract with the New Jersey Department of Environmental Protection, Division of Coastal Resources, Bureau of Coastal Planning with financial assistance of the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Zone Management Act, P.L. 92-583, as amended.



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**Delran Township Officials**

January, 1987

Richard J. Knight, Mayor

Delran Township Council

Maryann Rivelle, Councilwoman

Andrew Ritzie, Councilman

Patrick Tinney, Councilman

Walter J. Shultz, Councilman

William Smock, Councilman

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## **DELRAN TOWNSHIP HARBOR STUDY**

### **BACKGROUND STUDIES**

The eastern boundary of Delran Township, Burlington County, New Jersey is formed by the Delaware River, where the Rancocas Creek flows into the Delaware. Due to past dredging activities and the disposal of dredge spoils along the river, a harbor has been formed. The Township recognizes the importance of this harbor to the community and has sought to use the tools available to it to encourage unified and responsible development of the harbor area. The report which follows includes a comprehensive study of the harbor area and recommendations for its future development.

The present land use and transportation patterns are reviewed. The environmental characteristics of the harbor area and the surrounding area are examined. Current land use policies and ordinances which control the development of the area are reviewed. These background studies are used to set development policies and programs for the future use and development of the harbor area.

### **STUDY AREA**

The study area includes the land in the eastern portion of Delran. It includes the entire harbor area which abuts the Delaware River, known as Dredge Harbor, the Riverside Park residential area, a large block on the west side of St. Mihiel Drive bounded by St. Mihiel, Brown, Third, and Chester Streets, and three small blocks occupied by residences on the eastern side of St. Mihiel Drive. The study area is outlined in Figure 1.

### **EXISTING DEVELOPMENT IN THE STUDY AREA**

Because of the harbor, the character of the waterfront in Delran is significantly different from that in neighboring communities. Other riverfront communities along the Delaware in Burlington County have stretches of undeveloped waterfront, usually with a strip of grass lying between a riverfront road and the river and large riverfront homes facing the Delaware. Because of the harbor area, the riverfront in Delran is much more intensely developed with water-related activities, particularly marinas.

There are four marinas in operation along Dredge Harbor: Riverside, Dredge Harbor Yacht Club, Castle Harbor, and G. Winters Sailing. These facilities dominate the riverfront in Delran, in terms of the activity they generate and in terms of land use.

FIGURE 1

**DELRAN HARBOR STUDY**  
**DELRAN TOWNSHIP**  
 BURLINGTON COUNTY, NEW JERSEY

Prepared by:  
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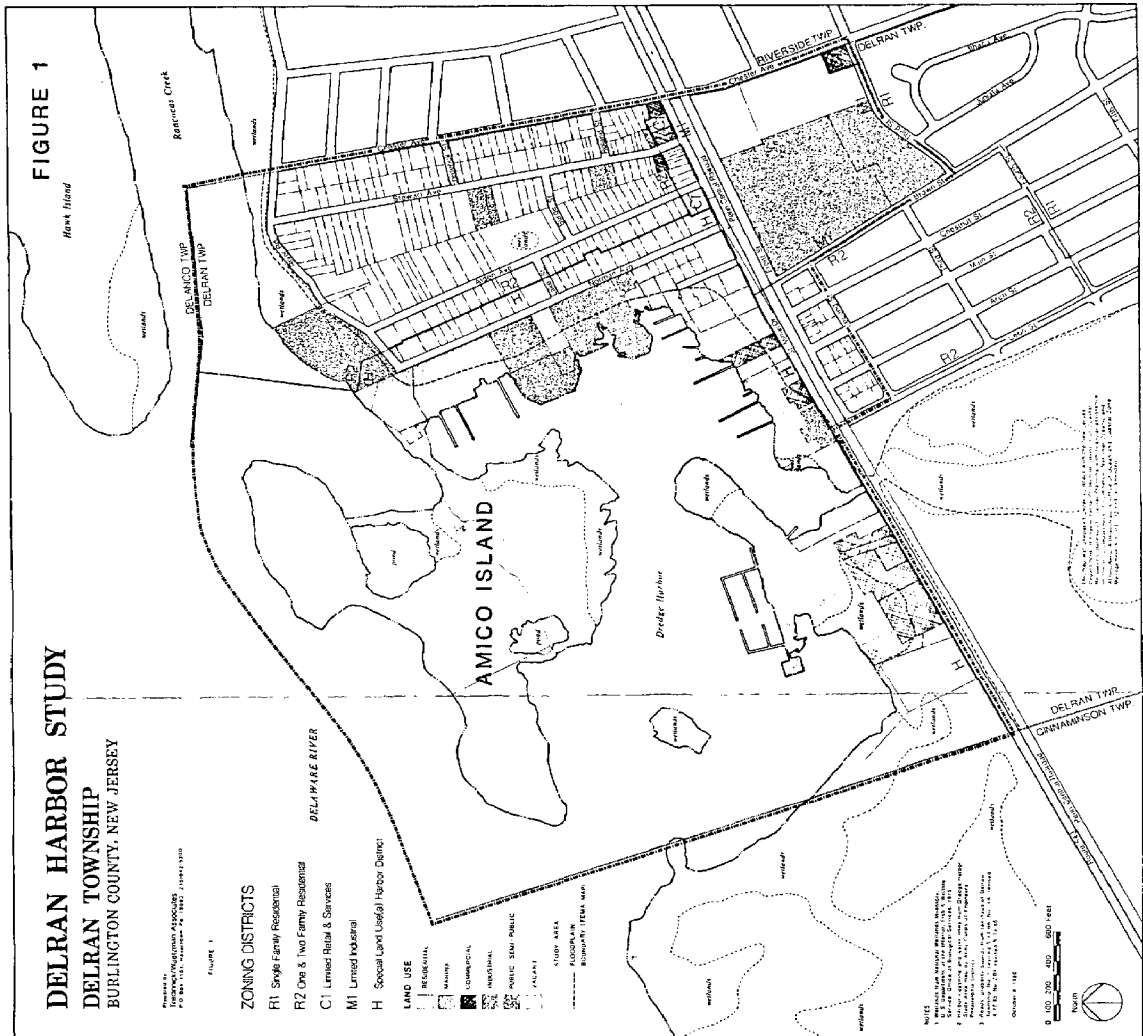
FIGURE 1

**ZONING DISTRICTS**

- R1 Single Family Residential
- R2 One & Two Family Residential
- C1 Limited Retail & Services
- M1 Limited Industrial
- H Special Land Use(a) Historic District

**LAND USE**

- RESIDENTIAL
- COMMERCIAL
- INDUSTRIAL
- PUBLIC SEMI-PUBLIC
- WATER
- WETLANDS
- STOP AREA
- PLACODERMAL
- BOUNDARY ITEM MAP



**NOTES**

1. This map was prepared for the Delran Harbor Study.
2. The map shows the zoning districts and land use patterns for the Delran Harbor area.
3. The map is based on the zoning ordinance and land use map of Delran Township.
4. The map is subject to change without notice.
5. The map is not to be used for any other purpose.
6. The map is the property of Environmental Planning Associates.
7. The map is not to be reproduced without the written consent of Environmental Planning Associates.

October 1, 1988

Residential uses are the other primary land uses in the harbor study area. The residential areas lie within the area bounded by Chester Avenue, Norman Avenue, Riverside Drive and St. Mihiel Drive and are characterized by small houses on lots of approximately one-half to one-quarter acre. There are some residences located on St. Mihiel Drive whose lots front on the street but which also have access to the harbor.

There are some commercial and industrial activities in the study area, in addition to the marinas. The Amico Sand and Gravel Company owns a significant amount of land in the harbor area, including Amico Island, the body of land which forms the western side of the harbor and separates it from the Delaware River. Also located in the harbor area is the Industrial Pattern Works, a small industrial plant on Norman Avenue, and the Amico Sand and Gravel office on Norman Avenue. Scattered commercial facilities, in addition to the marinas, are found along the western side of St. Mihiel Drive. These include a drive-in restaurant, the Moose Hall, a farm stand, and a garden center.

Besides the Amico facility, the most significant non-residential and non-marina development in the study area is the proposed redevelopment of the block on the east side of St. Mihiel Drive, adjacent to the Macmillan office complex. This former shopping center is being redeveloped for additional offices. Subdivision and site plans have been submitted to the Township for review. At the corner of Chester Avenue and Third Street, lying within this block, is a small convenience store.

The Conrail railroad line and St. Mihiel Drive, a four-lane thoroughfare which runs parallel to the railroad line, effectively divide the area west of them (the harbor and Riverside park) from the rest of the township. Chester Avenue is the only east-west street in the township which crosses the railroad line and which provides access to the harbor area.



Figure 2  
Major Non-Residential Land Uses in Harbor Area

Industrial	188.1* acres
Marina	82.6
Other Commercial	0.9
Sewerage Authority	10.4
Delran Township	1.3
Vacant	7.1

Source: Township of Delran Tax Records, 1986; Includes underwater acres

\* This includes Amico Island which, although vacant, is used as a source of sand and gravel by the Amico Sand and Gravel Company.

The largest land owner in the area is the Amico Sand and Gravel Company which owns approximately 186 acres in the harbor area. Although some of their property is underwater, they control the bulk of the land in the harbor. Much of it remains undeveloped or is used as a source of sand and gravel.

#### Other Significant Land Uses

There are several other significant land uses in the study area which affect the current character of the area and which will affect future development plans. The Delran Sewerage Authority Treatment Plant is located at the end of Norman Drive. The Authority owns 10.4 acres in the harbor area. The strip of land between Riverside Avenue and the Rancocas Creek, owned by the Amico Sand and Gravel Company, is the only place within the study area which affords passers-by and non-boaters a clear view of the water.

Just beyond the boundaries of the study area, on the other side of St. Mihiel Drive, is a lake, formed by Swedes Run, which is part of a 53-acre Township parcel of land. The other significant land feature lying beyond the study area is a nature preserve in Cinnaminson Township just below the Delran Township border. This is private property which is open to pedestrians and bicyclists, accessible by a dirt road. The property contains several farms buildings, wooded areas, and some cultivated fields. Proposals for large-scale residential development have been made for this property, although the property is not zoned for higher density residential development. A 59-acre tract with water and road frontage is currently for sale. Lying beyond this largely open tract along St. Mihiel Drive is large scale

commercial and industrial development in Cinnaminson Township, fronting on Route 543.

#### Vacant or Underutilized Land in the Study Area

The waterfront land in the harbor area is intensively used by boating and water-related activities, and few vacant parcels remain. The major vacant tracts are:

1. A lot of .86 acres lying between Norman Avenue and the river, between Riverside Marina and the Cherubini Boat Company. This is privately owned, and plans for its development as a sail-making facility have been submitted to the Township.

2. Two lots, totaling 6.19 acres, lying between St. Mihiel Drive and the harbor at the southern end of the township near the Cinnaminson Township border. These lots are owned by Shell Oil Company and are presently unused.

3. A few scattered lots along St. Mihiel Drive, such as the one used for a farm stand during summer months.

4. A lot of approximately 1 acre at the corner of St. Mihiel Drive and Norman Street.

5. There are a few scattered vacant tracts within the residential neighborhood of Riverside Park, but these residential lots bear no relationship to the harbor or the river.

6. Amico Island, although owned and used by the Amico Sand and Gravel Company, is undeveloped and could be considered vacant as plans are developed for the area.

#### **ACCESS AND PARKING**

The street system which serves the harbor area is limited to: St. Mihiel Drive which provides north-south access and is the access road for several of the marinas; and Norman Avenue, a residential street within the Riverside Park neighborhood. St. Mihiel Drive is a four-lane county road (Route 543) which runs through Delran and into Cinnaminson Township to the south and north into Riverside Township. Norman Avenue is a two-lane residential

road with a 30-foot width, bordered by residences on the north side and commercial/industrial uses on the harbor side.

There is no off-street parking in the harbor area except for that provided by the marinas for users of their facilities. Parking on many of the streets in the immediate harbor area is prohibited. For example, parking is restricted on Riverside Drive and along St. Mihiel Drive. On-street parking is permitted on most of the streets within the residential areas.

Pedestrian access to the waterfront is severely restricted. Because the land along the water's edge is privately owned, there is no public access to the water's edge for people who may wish a view of the river. Visitors to the area who park in the parking areas within one of the marinas may walk toward the water, but access to the piers is understandably restricted to members of the marinas, and much of the waterfront is occupied by boats in storage or repair facilities, marine equipment, or marina buildings.

A Conrail freight line crosses the study area, parallel to St. Mihiel Drive.

#### **PUBLIC SEWERAGE SERVICES IN THE STUDY AREA**

Public sewerage is provided in Delran Township by the Delran Sewerage Authority. The treatment plant is located within the study area on Riverside Drive. While much of the study area is served by public sewers, the area along St. Mihiel Street south of Leon Street is unsewered. Although development is sparse in this area, the Dredge Harbor Yacht Club and a few residences and other buildings located on the west side of St. Mihiel Drive are unserved by public sewers.

The sewage treatment plant currently has excess treatment capacity amounting to 200,000 to 250,000 gallons per day. New connections to the system, as well as a new pumping station, are being planned in the area near the Cinnaminson Township border where new industrial areas are being developed. This planned extension of the sewer lines beyond Leon Street may provide the possibility for public sewerage to the portion of the harbor area which is currently unserved.

Any significant development which is proposed for the southern end of the harbor area will have to proceed with public sewerage because of the seasonally high water tables associated with the soils in the area that make the sites unsuitable for individual septic systems.

## ENVIRONMENTAL CHARACTERISTICS

Because of the interface between land and water, the physical characteristics of the harbor area are special. The vegetation, soils, land forms, and wildlife found in the area reflect the relationship between land and water. Because it lies within the coastal zone, an area which has enjoyed increased protection by the state and federal governments from despoliation in recent years, the area is also subject to special environmental regulations which will determine to some extent what the future program for the area may be. For example, the federal government has become increasingly resistant to the disturbance of wetlands. As Figure 3 indicates, there are significant wetlands within the study area. The following sections describe not only the physical characteristics of the land but also the special regulations which might apply.

### Physical Characteristics

The waterfront of Delran Township consists of lands bordering the Delaware River and Rancocas Creek, the man-made Dredge Harbor, a small unnamed manmade island and Amico Island, the larger manmade island and causeway. The Delaware River in the Delran area is a large freshwater river with a tide height difference of about 6.2 feet. A shipping canal with a depth of fifteen feet is maintained from Trenton (which lies above Delran) to the Atlantic Ocean and the Chesapeake and Delaware Canal. An unmarked route from the Delaware River into Dredge Harbor has a depth of between 2 and 12 feet. Figure 4 is a nautical chart of the area.

The Rancocas Creek is a medium sized freshwater river which is tidal in the Delran area and which is navigable by small motorboat for six miles upstream. Its depth ranges from ten feet in the downstream area to five feet in the navigable upstream area.

Dredge Harbor was created in the 1920s by the dredging of sand and gravel deposits. Initially the harbor was 30 to 40 feet deep and open to the Delaware River. In the 1950s, Amico Island was created with dredged and excavated material from the Delaware River. Sediments from Amico Island filled the harbor leaving a mean low water depth of two to ten feet. A causeway built in the 1970s connects the island to the mainland. Amico Island is a source of sand and gravel for the Amico Sand and Gravel Company, the largest landowner in the harbor area.

A concern about the gradual shoaling of the channel led to a series of studies by the U.S. Army Corps of Engineers in the early 1980s. Sediments

FIGURE 3

**DELRAN HARBOR STUDY**  
**DELRAN TOWNSHIP**  
 BURLINGTON COUNTY, NEW JERSEY

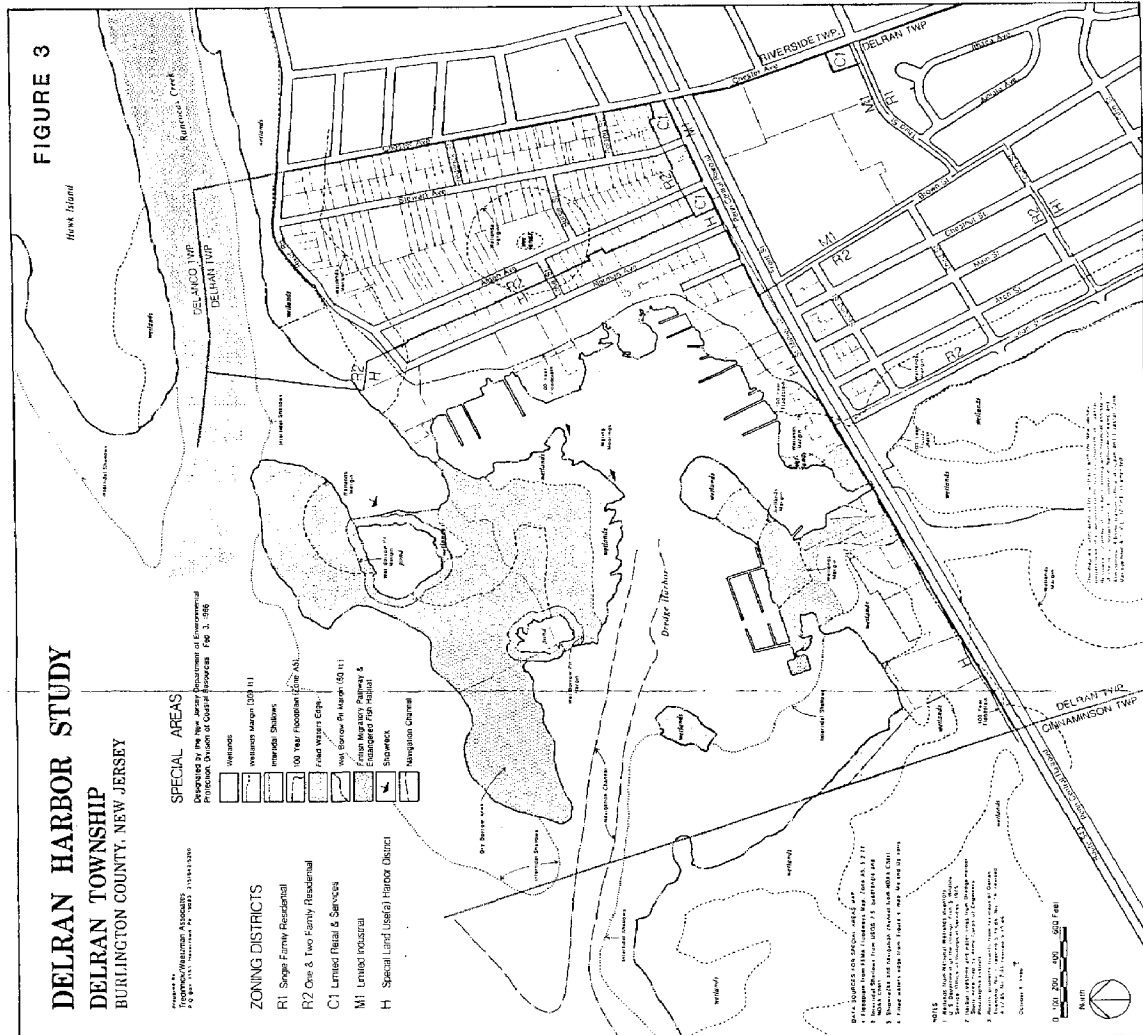
Prepared by:  
 Thompson/Watson Associates  
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**SPECIAL AREAS**  
 Designated by the New Jersey Department of Environmental  
 Protection, Division of Coastal Resources, Fig. 2, 1988

- Wetlands
- Research Marine (RM) II
- Marine Shoreline
- 100 Year Floodplain (100 Year ASL)
- Flood Hazard (FH)
- High Bayshore (H)
- Fossil Migratory Pathway & Exchange (FME)
- Endangered Fish Habitat
- Navigation Channel

**ZONING DISTRICTS**

- R1** Single Family Residential
- R2** One & Two Family Residential
- C1** Limited Retail & Services
- M1** Limited Industrial
- H** Special Land Use(s) Harbor District



**NOTES**

1. This map is a preliminary study and is not intended to be used for legal purposes.
2. The zoning districts shown on this map are based on the zoning ordinance in effect as of the date of this study.
3. The special areas shown on this map are based on the special areas map in effect as of the date of this study.

DATE: 10/1/88  
 DRAWN BY: JWA  
 CHECKED BY: JWA  
 APPROVED BY: JWA

FIGURE 4

NAUTICAL CHART, DELAWARE RIVER

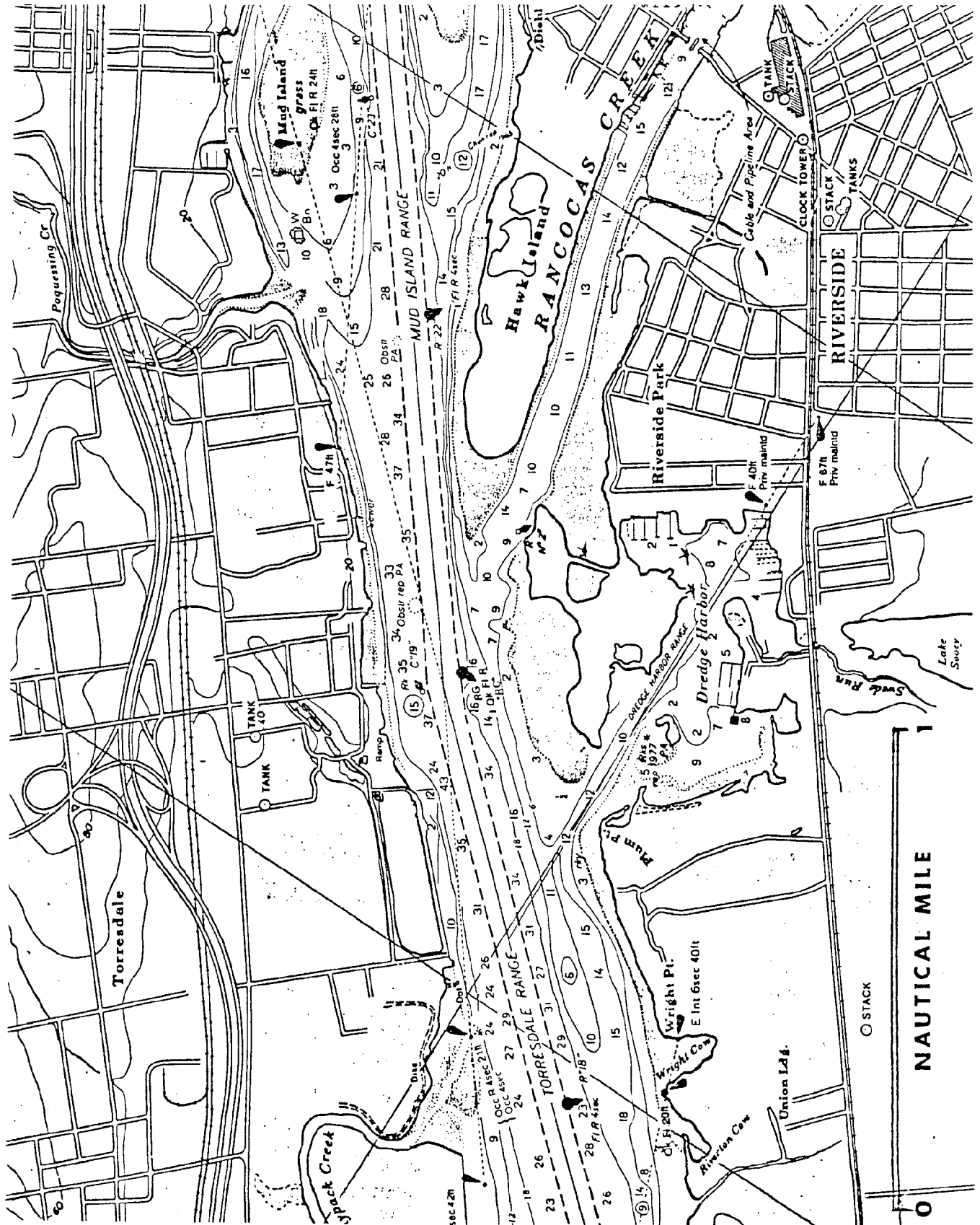
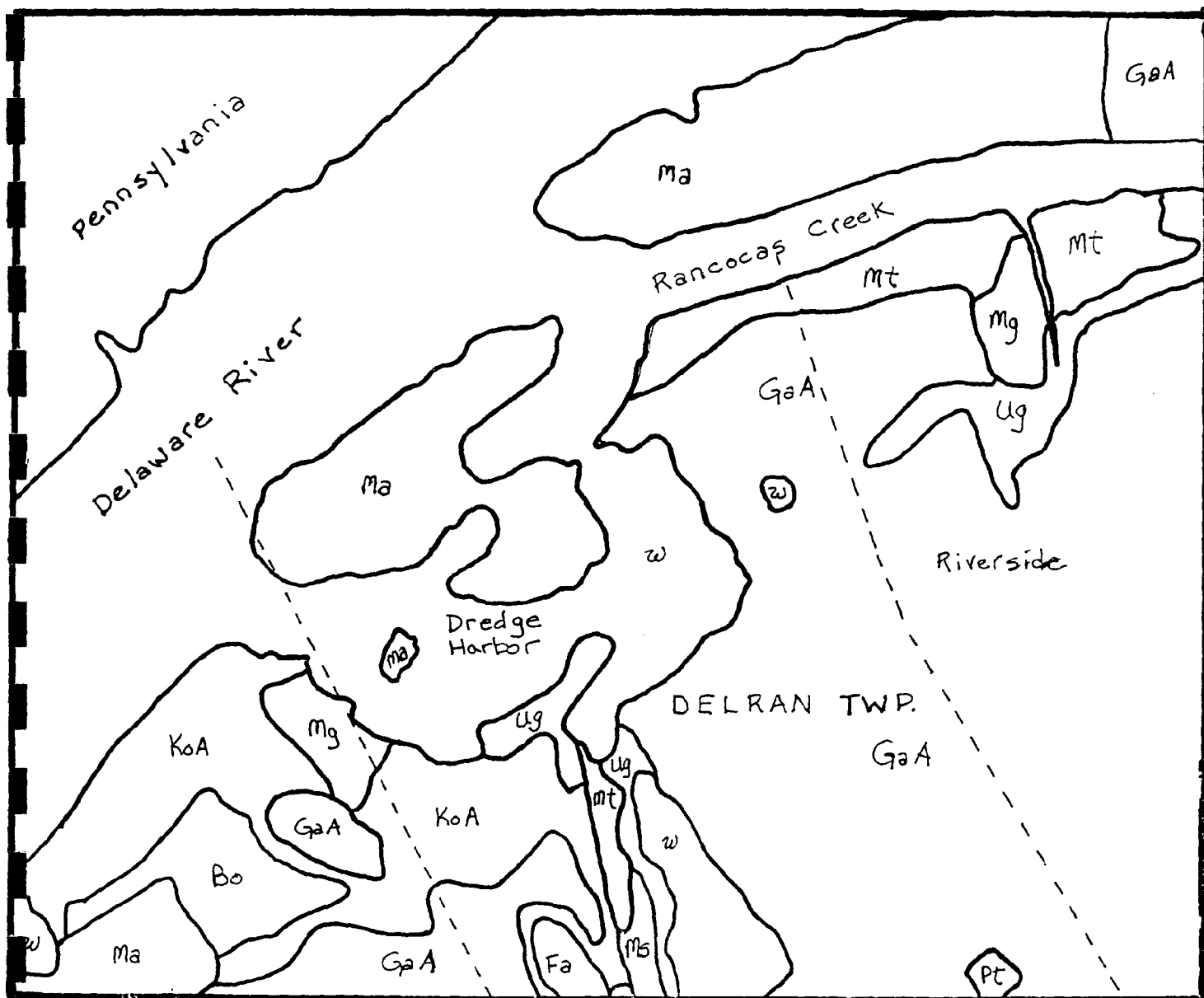


FIGURE 5 Soils



from the Delaware River and Rancocas Creek and spoils deposited on Amico Island continue to deposit and create shoals in Dredge Harbor. The Corps of Engineers considered dredging the harbor, but this program was not carried out. Because the harbor is composed of privately held lands, the harbor and channel maintenance becomes the responsibility of the land and waterway owners.

### Soils

The soils in the study area fall into two general categories: made land and soils associated with proximity to water. There are six soil types, which are listed below along with their characteristics. The soils are mapped in Figure 5 and described in Figure 6.

Figure 6  
Soil Types in the Delran Harbor Area

**Galestown Sand (GaA)** - These soils are excessively drained, nearly level sandy soils which occur along the Delaware River and which are susceptible to wind erosion.

**Klej Fine Sand (KoA)** - These fine sands are nearly level, moderately permeable, deep soils that have a fluctuating water table that is moderately high late in winter.

**Made Land (Ma) - Made Land, Dredged Coarse Material** - This mostly coarse material was dredged from the Delaware River and pumped into diked areas. This material is revegetated by perennial weeds, river birch, sycamore, black locust, red maple, boxelder, and willows. The material may be dredged for sand and gravel.

**Made Land (Mg) - Made Land, Sanitary Fill** - This land was used for rubbish disposal and then covered with soil. Landfills settle unevenly, leach polluted waters, and form gases (hydrogen sulfide and methane).

**Tidal Marsh (Mt)** - This soil is a highly organic silt that is flooded twice daily by Swedes Run.

**Urban Land (Ug) - Urban Land, Sandy** - This land has been cut and filled for developed uses. The soil has varying characteristics depending on the previous disturbance.

Source: Soil Survey of Burlington County, U.S. Soil Conservation Service



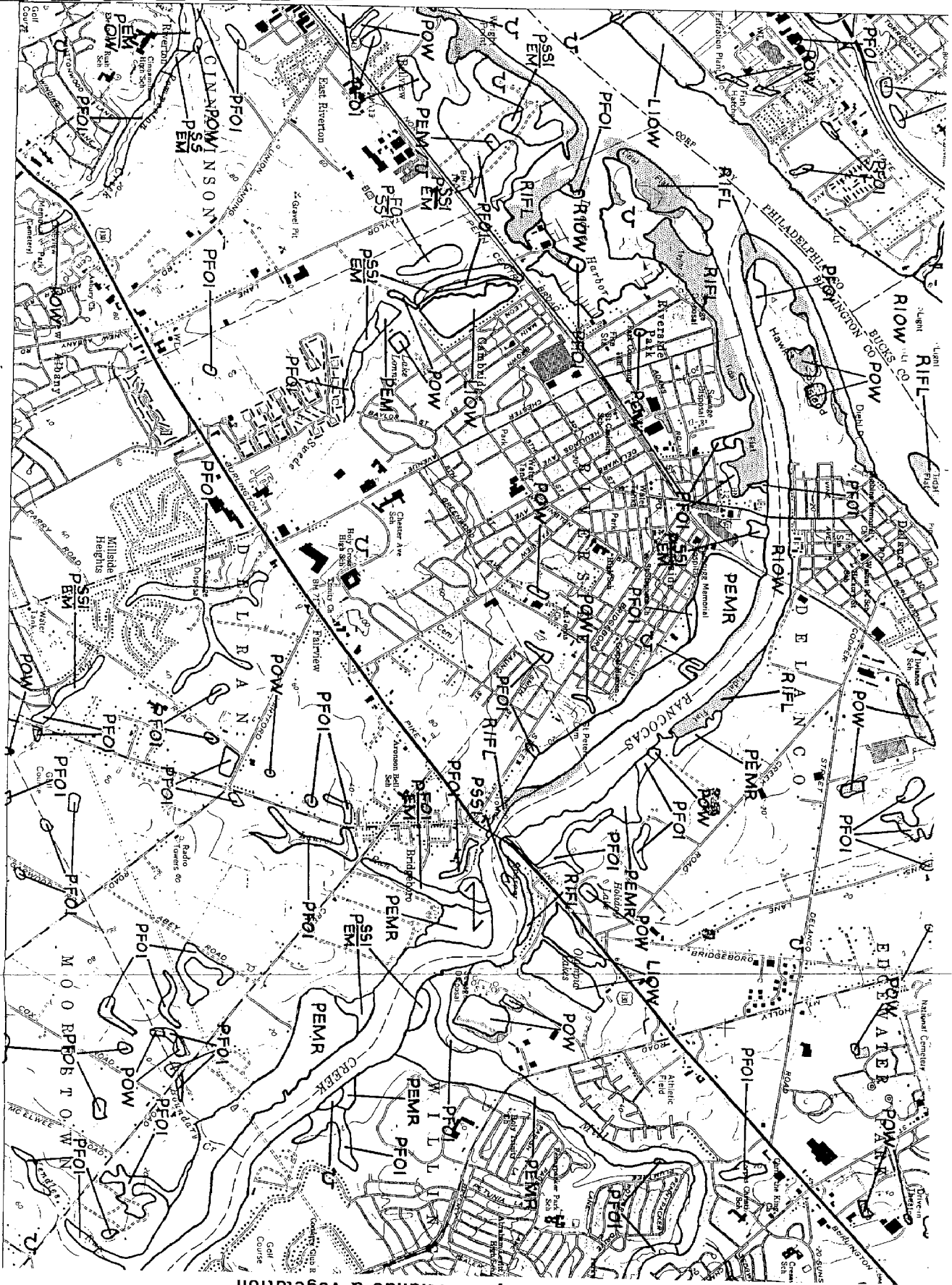


FIGURE 7 Wetlands & Vegetation

The land in the study area is nearly flat with slopes of five percent or less.

### Flood Plains

A large portion of the water front lies within the 100 year floodplain of the Delaware River and Swedes Run, according to the Federal Emergency Management Agency maps. However, large sections of Amico Island probably fall outside the floodplain line, based on more recent studies and surveys. This can be determined precisely only when a new engineered survey is completed. As will be discussed later, there are special regulations which control the development of floodplain areas.

### Vegetation

The vegetation in the area is typical of waterfront communities. Figure 7 shows the location of major vegetation types found in the study area. It also shows wetland areas mapped by the U.S. Department of the Interior. The five major types found in the area are described below in Figure 8.

#### Figure 8 Description of Vegetation Types in the Delran Harbor

Riverine, Tidal Open Water (R10W) - No emergent aquatic vegetation is noted, although submerged aquatic vegetation may be present.

Riverine, Tidal Flats (R1FL) - In a report on New Jersey's Endangered and Threatened Plants and Animals, it was noted that the intertidal and submerged vegetation in the portion of the Delaware River under study here is unique and decreasing in abundance. Fifteen wetland areas, including the Delran harbor area, were selected as critical habitats for endangered plant species. The eastern bank of the Delaware River from Beverly (which lies north of Delran) to the mouth of the Rancocas and the shoreline just downstream from Hawk Island support as species of Bidens which is found only in the Delaware River adjacent to Burlington and Bucks Counties and the Hudson River. Wild rice (*Zizania aquatica*) is a rare plant food along the Delaware River that provides excellent food for wildlife and birds. These two plants and the tidal freshwater, riverine wetland community to which they belong is becoming much less abundant along the Delaware. Erosion from the waves of passing ships, pollution, and development causing siltation threaten these wetland communities.

Upland (U) - Little of the upland forest remains in the study area. The areas on the map indicated primarily upland vegetation areas but may also include some wetland areas. The major vegetation types in this category are black oak, white oak, hickory, Virginia Pines, sassafras, and black cherry. The vegetation of Amico Island consists of perennial grasses and herbs, common indigobush, staghorn sumac, river birch, alder, black locust, red maple, boxelder, and willow.

Palustrine, Broad leaved deciduous forest (PFO1) - This mature forest is composed of white oak, black cherry, sweet gum, sugar maple, red maple, servicebush, honeysuckle, wild grapes, and spicebush.

Open Water (POW) - The area marked POW on the map represents a small shallow pond in the residential area.

Source: U.S. Department of the Interior, Wetlands Map

### Wildlife

The water quality in the Delaware River is poor but satisfactory for fish survival in Dredge Harbor from June through October. The U.S. Fish and Wildlife Service surveyed the area in 1980 and reported that the fish found in Dredge Harbor are the banded Killifish, brown bullhead, American eel, golden shiner, white perch, and pumpkinseed sunfish. Spawning silvery minnows, alewives, and blueacked herring have been found. The cove along the north side of Amico Island is a nursery for young fishes. The shortnose sturgeon, a federally designated endangered species, has been reported from Rancocas Creek and may occur in Dredge Harbor in the spring.

The small pond on the north end of the Amico Island supports recreational fishing for yellow perch, pumpkinseed, largemouth bass, and carp. Muskrat live along the banks of the pond and waterfowl use the pond also.

Dredge Harbor may provide a stopover point for waterfowl on the Atlantic flyway. A black duck nest was sited on the unnamed island in 1980, along with green and great blue herons.

### Special Use Areas

The harbor district contains many special environmental areas. The New Jersey Department of Environmental Protection, Division of Coastal Resources, has categorized and defined these special areas, and regulations

have been established setting guidelines which must be used by all state agencies in reviewing and granting permits in these areas. (N.J. Department of Environmental Resources, Rules on Coastal Resources and Development, N.J.A.C. 7:7E - 1.1 et. seq., 1986).

The special areas located within the Delran Harbor area are described below, along with any special regulations to which they are subject. They are shown in the map in Figure 3.

Wet borrow pits are manmade lakes that result from surface mining.

Wet borrow pit margins are areas surrounding pits that extend 50 feet inland from the water level in the pits or 100 feet inland if coarse soils are present.

Dry borrow pits also result from surface mining.

Filled water's edge areas are existing filled areas lying between wetlands or water areas and either the upland limit of fill or the first paved public road. Some existing dredge spoil disposal sites are considered to be filled water's edge areas.

Alluvial flood margins are mainland areas adjacent to floodplains. They extend inland to the limit of alluvial soils with a seasonal high water table equal to or less than one foot.

Wetlands buffers include all land within 300 feet of wetlands.

Intertidal and subtidal shallows are areas which are submerged permanently or twice daily, from the mean high water table line to a depth of four feet below mean low water.

Navigation channels are the deeper parts of the waterways which can safely be used by boats. Navigation channels are protected from any development which would cause terrestrial soil and shoreline erosion and siltation in the channel.

General water areas include medium rivers and manmade harbors such as those in the study area. In these areas, new boat ramps, recreational docks, maintenance dredging, and moorings are conditionally acceptable under state guidelines. However, filling, sand and gravel extraction, and the realignment of surface waters are discouraged.

Floodplains are special areas where development is discouraged or prohibited. Under the state regulations, "development is prohibited in the natural water's edge/floodplain within 100 feet of a navigable water body unless the use is water dependent." Development elsewhere in the floodplain is discouraged unless there is no feasible alternative and it would not preempt use of the waterfront for water-dependent uses. The addition of fill material to the floodway fringe (encroachment) increases the height of floodwaters, and a permit from the N.J. Department of Environmental Protection is required. A limit of 20 percent fill area per site has been established.

These regulations on Special Areas limit the development, use and activity possible in each area. The regulations are designed to preserve the natural or intended function or best use of each area. These Special Area regulations override other state policies or designations with respect to coastal areas. For example, the coastal areas are rated for their development potential. Although much of the Delran Harbor area is given a high or acceptable development intensity rating by the state, the presence of the special environmental areas listed above require that development be limited to water dependent activities such as marinas, boat yards, and beaches.

Other state regulations also affect what can happen in Delran Township's harbor area. The state's Resort/Recreational Use Policy states that "each waterfront municipality shall contain at least one waterfront park on each body of water within the municipality. Municipalities or private developments that do not currently provide, or have active plans to provide, access to the water will not be eligible for Green Acres or Shore Protection Bond Funding." There is no waterfront park on the Delaware River in Delran Township.

The State also maintains a policy on marinas which "aim to ensure that the area devoted to marinas is fully and efficiently utilized to keep the size of the area required to a minimum." The policy states that "new or expanded marinas for recreational boating are conditionally acceptable if the demonstrated regional demand for recreational boating facilities cannot be met by the upgrading or expansion of existing marinas. Expansions of existing marinas shall be encouraged by limiting non-water dependent land uses that preclude support facilities for boating."

Any future development in the harbor area must therefore deal with a host of regulations and guidelines adopted by the State of New Jersey.

## **LOCAL POLICIES AND REGULATIONS**

The Township has identified the harbor area as a special component of the township landscape and has created special land use regulations for the area.

The Township Comprehensive Master Plan, adopted in 1982, gives special attention to the harbor area and establishes it as a harbor district. This district, which is smaller than the study area established for this report, includes the area along the waterfront lying between St. Mihiel Drive and the waterline and along the southern side of Riverside Park residential area. The plan recommends that higher density clustered housing at a maximum density of six dwelling units per acre could be developed in this area if it is compatible with the marine uses. The plan encourages clustering so that environmental features can be protected and so that the cost of public services and development costs can be minimized.

The recommendations of the Master Plan are carried over into the Township Zoning Ordinance which establishes a special Harbor District whose purpose is to accommodate the present marine activities and to allow for, as conditional uses, residential uses which are related to and compatible with the pleasure boating activities which dominate the harbor area. The only uses permitted by right are marinas. Conditional uses, all of which must be "related to boating or water related recreational activities" include:

- Multi-family dwellings with a mix of housing types
- Single family dwellings
- Uses involving overnight lodging such as motels and hotels.

Hotels, motels and marinas must have at least 150 feet of water frontage as well as street frontage.

### Nonconforming Uses

The harbor district limits the types of activities which are allowed within the area to water-related recreational uses and residential uses. There remain within this area several uses which do not conform to these standards, making them non-conforming uses under zoning law. The most significant of these is the Amico Sand and Gravel Company, a large industrial facility. Other smaller industrial and commercial users which are not water-related include the Industrial Pattern Works on Norman Street, the garden store, the Moose Hall, the farmers stand, an auto repair shop on the north side of Norman Avenue, and other small retail outlets on St. Mihiel Drive.

Some of the commercial uses are related to the marine activities of the harbor area, such as the fast-food restaurant associated with Castle Harbor Marina and the Cherubini Boat Company.

### **RECREATIONAL FACILITIES IN THE AREA**

The recreational opportunities within the study area are dominated by the four marinas on the harbor, one of the best harbors along the Delaware River. These are private facilities, in that they are available for use for a fee. The four marinas are Dredge Harbor Yacht Club, G. Winter Sailing, Riverside Marina, and Castle Harbor Marina.

These full-service marinas have a total of 639 boat slips, ranging in size from 14 to 60 feet. Most of the boats are in the larger size class. Two marinas have restaurants, and one restaurant in the area is adjacent to another marina. None of the marinas sell grocery items or fishing supplies. All the facilities have a boating supply store, bathrooms and showers, haul in and out services, repair services, and dry storage areas. Recreational facilities for marina members are provided at three marinas and consist of two small picnic areas and a pool. There are no boat ramps where trailered boats might be launched, nor are there any small boats available for rent. Large sailboats of 25 feet or more are available for rent at G. Winters Sailing.

The demand for boat docking slips is great, and all four marinas report that their slips are full each year. Numerous requests for seasonal boat slips cannot be accommodated. In addition, the number of boaters using the Delaware is expected to increase as the water quality continues to improve. Two of the marinas are hoping to increase the number of slips at their facilities. G. Winter plans to add 200 more slips during the next three years, and Riverside Marina hopes to build 30 new slips.

The only public recreational facility in the Study Area is a small park on Stewart Drive. This playground (1.28 acres) has three swing seats, a sliding board, and a climber.

Delran Township has 221 acres of public recreational land and about 100 acres of undeveloped passive recreational land. The public facilities include:

- 8 tot lots
- 6 baseball fields
- 2 softball fields
- 2 soccer fields

6 basketball courts  
 3 tennis courts  
 24 picnic tables  
 Miscellaneous facilities such as 6 bleachers, 6 benches, 9 grills, and 2 restroom facilities

Lake Lonnie, which lies on the western side of the Township, has a normal water level of 2-4 feet and is not suitable for swimming or fishing.

A comparison of the facilities in Delran with generally accepted recreational standards is contained in Figure 9. These standards provide planning guidelines by indicating the number of facilities needed for certain population levels. A review of the amount of each facility recommended should be undertaken if preliminary plans for the study area indicate that recreational uses should be a major component of the final plan.

Figure 9  
 Recreational Facilities in Delran Township Compared with Recreational Standards

<u>Facility</u>	<u>No. in Delran</u>	<u>Recreational Standard</u>	<u>Service Radius</u>	<u>Surplus or Deficit</u>
Baseball	6	1 field/5,000 pop.	<1/2 mile	+ 3
Softball	2	1/5,000	<1/2 mile	- 1
Soccer Fields	2	1/10,000	1-2 miles	0
Basketball	6	1/5,000	<1/2 mile	+ 3
Tennis Courts	3	1/2,000	<1/2 mile	- 5
Picnic Tables	24	1/300		- 25
Tot Lots	8	1/1,000	<3/8 mile	- 7
Volleyball	0	1/5,000	<1/2 mile	- 3
Pool	0	1/20,000	15-30 min.	- 1
Trail	0	1 mile/3,000 pop.	N/A	- 5 miles

Source: Recreation, Park and Open Space Standards and Guidelines, National Recreation and Park Association, 1983, Roger A. Lancaster, editor.

The Township meets the open space standards established by the New Jersey State Comprehensive Outdoor Recreation Plan, which recommends an open space standard of eight acres per 1,000 residents. Delran Township, whose 1980 population was 14,811 people, was about ten acres of open space for each 1,000 residents.

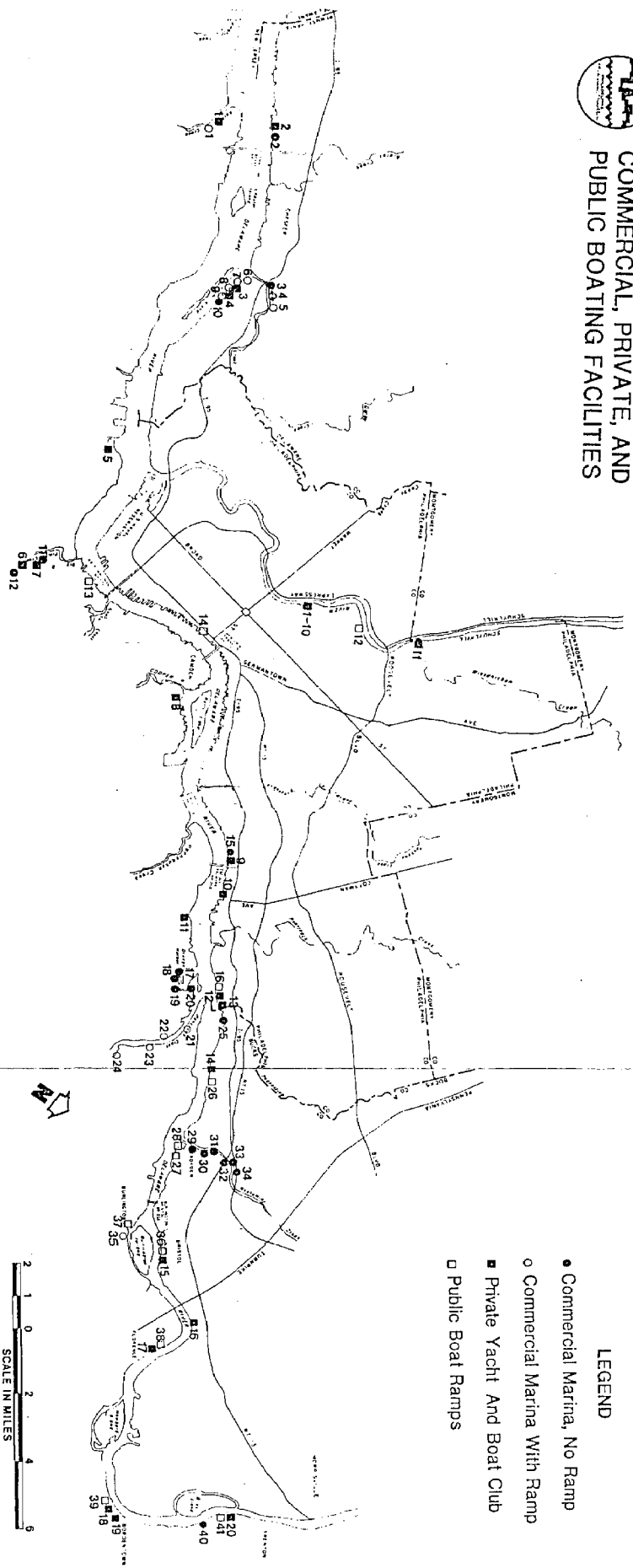
There are additional recreational facilities beyond the study area and along the Delaware River. There are no Delaware River waterfront parks





COMMERCIAL, PRIVATE, AND  
PUBLIC BOATING FACILITIES

FIGURE 10



LEGEND

- Commercial Marina, No Ramp
- Commercial Marina With Ramp
- Private Yacht And Boat Club
- Public Boat Ramps

2 1 0 2 4 6 8 9  
SCALE IN MILES

near Delran, although there are other marinas, as shown in Figure 10. Four commercial marinas on the Rancocas Creek have ramps which are open to the public. Boats launching here can easily travel to the Delaware River.

### **RECREATIONAL SAFETY**

Waterways patrolmen from the New Jersey State Police Marina Division do not report any safety hazards in the Dredge Harbor and Rancocas Creek area. Most boating violations in the area are speeding boats in no-wake zones of the Rancocas Creek. Boating and swimming accidents are not prevalent in this area.

The Delran Township Police Department reports few boating or swimming accidents or complaints regarding trespassing on marina property. Occasional thefts from boats in dry storage occur, and two marinas report occasional fishing from their docks.

## **EFFECT OF EXISTING CONDITIONS ON FUTURE DEVELOPMENT**

The review of existing conditions -- both manmade and natural -- points out several major factors which will have to be considered in the development of policies for future use of the harbor area. These considerations guide the development of a harbor area plan.

- There is little vacant land available within the study area. All of it is privately owned. Major changes in the established pattern of development will have to result from the redevelopment of larger parcels. Smaller changes in the pattern of development can be made through effective utilization of the few remaining vacant lands.
- Much of the land with the study area has environmental restrictions on how it may be used. These will have to be carefully considered in designing a future land use plan for the area.
- In addition to the environmental restrictions, the State's policies on coastal zone use must be taken into account.
- There is no public access to the river or public facilities along the river which residents of the Township can enjoy. The Township may wish to consider incorporating some kind of public access to the waterfront.

## **MASTER PLAN FOR DELRAN HARBOR**

The purpose of Harbor Area Master Plan is to design a development program for the harbor area which meets the goals of the Township residents and officials and which takes into account the present activities, land and water uses, natural features and wildlife, available undeveloped land, public utilities availability, local and regional recreational facilities, and environmental constraints which affect this area.

### **GOALS FOR THE HARBOR AREA**

Several general goals for the development and use of the harbor area have become apparent during the course of the study and through discussions of the project. The Township's Master Plan recommends that the harbor area be developed as a mixed use, waterfront-oriented area with commercial and residential uses. The goals of the Harbor Area Master Plan are consistent with and support this general direction for the harbor area. All of the goals reflect more specific concerns about the harbor area as well as a recognition of the opportunities provided by the harbor area. These concerns and opportunities are incorporated into the goals listed below and have been used to design and evaluate alternative plans.

#### **I. MAKE THE MOST OF THE POTENTIAL OFFERED BY DELRAN HARBOR.**

The waterfront is a major asset to the community. Urban waterfronts throughout the country have enjoyed a renaissance in recent years. In many communities, private redevelopment has been spurred by municipal harbor plans and policies encouraging redevelopment. Examples of riverfront revitalization can be seen elsewhere in New Jersey, where communities are discovering that riverfront property is increasing attractive to developers of residential and commercial projects. Delran has recognized that, in order to take advantage of the harbor's potential, positive steps must be taken to determine what that potential is and how it may be captured. In addition to local interest in the area, New Jersey State policies on waterfront development encourage residential, commercial and recreational mixed-use redevelopment of the developed waterfront.

In addition to the development potential of the waterfront, the special natural areas and panoramic views which result from the meeting of water and land are aspects of the harbor area which Delran recognizes as important.

In spite of these opportunities, there are some concerns and constraints which are associated with current use of the harbor area.

- The mixture of land uses does not take full advantage of the waterfront. The waterfront is dominated by marinas, but the non-marina land uses along the harbor underutilize waterfront land. Land uses should be upgraded or changed to make a cohesive waterfront environment. The business district in the harbor area should have a distinct identity related to the waterfront.

- There is a need to "clean up" the area to make it more attractive and inviting.

- The presence of the Delran Township Sewage Treatment Plant in the harbor district is a constraint which must be recognized by all development schemes. Because the adjacent greenhouses are sometimes used in the sewage treatment process, the land they occupy is not available for reuse at this time.

## **II. USE THE REMAINING VACANT LAND FOR WATERFRONT-ORIENTED LAND USES WHICH WILL ENHANCE THE HARBOR AREA.**

There are only a few vacant properties within the harbor area, the largest of which is Amico Island, a piece of land of about 50 acres which is attached to the mainland by a causeway. A few other scattered parcels within the harbor district as well as some underutilized parcels should be used for activities which help to realize the potential of the harbor area.

- One of the major advantages to the Harbor area is that most of the vacant property is in one ownership, and the owner of these properties is willing to work with the Township on utilizing the property wisely.

- Access to remaining vacant parcels is a major concern which must be addressed. An adequate street and parking system must support and serve any proposed waterfront development.

- The redevelopment of the tract of land on St. Mihiel Drive and Chester Avenue for a new office complex is a good indication of the interest of private developers in the area. The development and redevelopment of the harbor area will probably take place through private investment, with the guidance and support of the township.

- Because of the natural characteristics of the waterfront land and the special governmental regulations which apply to floodplains, wetlands, and other waterfront environments, it is important to be aware of the limitations which may be imposed on the use of the land. One of the goals of the study is to begin the process of determining what is and what is not feasible given the natural features and the regulations protecting these features.

- The presence of vacant land along the waterfront provides the opportunity to take advantage of the views of the Delaware River and of the skyline of Philadelphia.

### **III. PROVIDE BETTER PUBLIC ACCESS TO THE WATERFRONT**

The waterfront is virtually inaccessible to the public at this time. Land is held in private ownership and is used for marinas, industrial uses, or private residential use. It is impossible to walk to the river without going through private property, and in some areas it is impossible to see the river because of buildings or other obstructions. One of the elements of most successful riverfront revitalization programs is some kind of public access for viewing, walking, or sitting by the river.

It is especially important to note that any waterfront development occurring in Delran will be subject to New Jersey permitting policies, and the State has set the following goal with respect to project evaluation and public access:

Promote public access to the waterfront through linear walkways and at least one waterfront park in each waterfront municipality.

### **IV. THE HARBOR AREA SHOULD BENEFIT THE TOWNSHIP AND ITS RESIDENTS AS WELL AS THE MANY BOATERS WHO USE THE MARINAS.**

The Master Plan for the Harbor Area should take into account not only the needs of boaters but also the needs of the municipality and the Township residents. Because marinas now dominate the Delran harbor, boaters are the primary benefactors of this resource.

- The integrity of existing residential neighborhoods must be respected.

- Cooperation will be needed to plan and implement a waterfront development program which incorporates not only boating but also public

access and residential uses. Continued vitality of the marinas will require cooperation on the issue of dredging the channels to keep them open for boaters.

## **HARBOR AREA PLAN**

The development approach which is recommended for the harbor area strives to achieve more intensive use of the area as well as protection of critical natural features and provision of public access. The development approach is shown on the attached Concept Plan (Figure 11).

For the purpose of discussing the plan, the area will be divided into sections. Although the harbor area development proposes an integrated and coordinated plan, the plan description deals with the following sections:

1. Amico Island
2. The vacant area along River Road where the Rancocas Creek joins the Delaware River
3. The Norman Avenue harborside
4. The Riverside Park neighborhood
5. St. Mihiel (harbor side)
6. South side of St. Mihiel Drive (the Green Acres Park and the Macmillan tract)

### Amico Island

Amico Island is the only major piece of vacant land in the harbor area. About 50 acres in size, the island is actually connected to the mainland with a substantial causeway and road. The island was formed through dredging and filling resulting from sand and gravel mining operations and still serves as a source of sand and gravel.

The island is undeveloped and, because of its varied topography and interface with the river, has a number of varied natural areas.

One factor which must be taken into account when evaluating the development potential of the island is the floodplain boundary. The amount of floodplain on the island cannot be determined precisely without an up-to-date engineered survey of the area. Although the Federal Emergency Management Agency's map shows the entire island within the floodplain, subsequent studies and reports by that agency have indicated that only those areas below the 11-foot elevation fall within the 100-year floodplain.

FIGURE 11

# DELRAN HARBOR STUDY

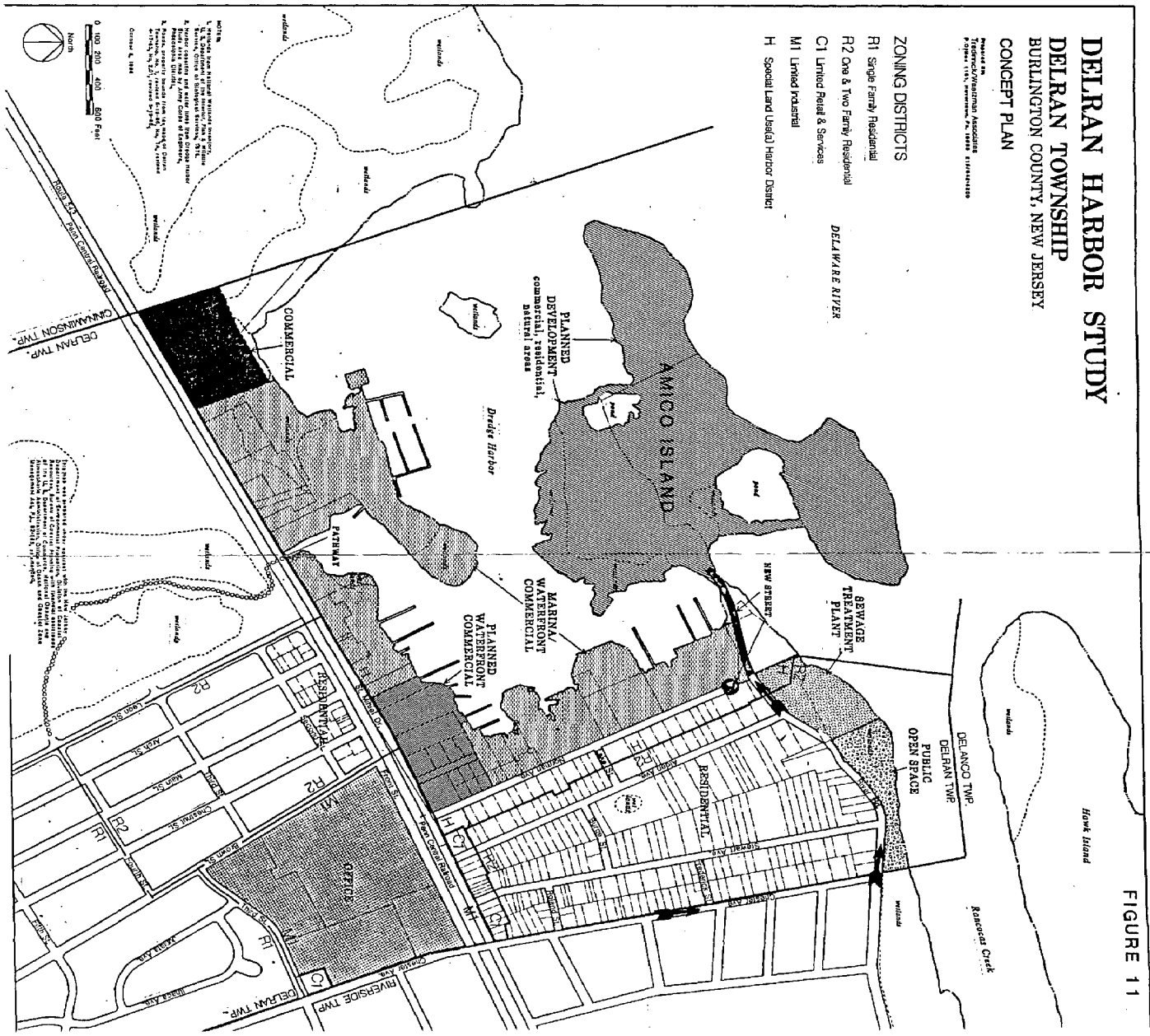
## DELRAN TOWNSHIP

### BURLINGTON COUNTY, NEW JERSEY

#### CONCEPT PLAN

Prepared by  
 Planning Associates  
 1000 N. 10th Street, Suite 1000  
 Philadelphia, PA 19107

- ZONING DISTRICTS**
- R1 Single Family Residential
  - R2 One & Two Family Residential
  - C1 Limited Retail & Services
  - M1 Limited Industrial
  - H Special Land Use(d) Harbor District



**NOTES:**

1. This plan is a conceptual zoning map and is not intended to be used for any other purpose.
2. The Department of Planning and Economic Development, Burlington County, New Jersey, is the authority for this plan.
3. No portion of this plan shall be construed to create any new or alter any existing zoning district.
4. This plan is subject to the provisions of the Zoning Ordinance of Burlington County, New Jersey, and any amendments thereto.
5. The Department of Planning and Economic Development, Burlington County, New Jersey, is the authority for this plan.
6. This plan is subject to the provisions of the Zoning Ordinance of Burlington County, New Jersey, and any amendments thereto.
7. The Department of Planning and Economic Development, Burlington County, New Jersey, is the authority for this plan.
8. This plan is subject to the provisions of the Zoning Ordinance of Burlington County, New Jersey, and any amendments thereto.

0 200 400 800 Feet





When last surveyed, the island contained a significant amount of area above this elevation.

Based on this information, the recommendation for planned development on the island can be made, with the restriction that an engineering survey will be need to be undertaken by the developer prior to site planning so that the floodplain boundary can be delineated.

Under this plan, the island would be used for planned development. The areas which are restricted from development because of floodplains or wetlands will provide open area on the island and will protect the critical environmental features. These areas should be utilized to insure public waterfront access. The commercial and residential residential development can make use of portions of the waterfront, incorporating site planning and design features which take advantage of the views of the river.

The following guidelines should be followed in developing detailed plans for the area and some will require amendments to the Township zoning ordinance.

- The natural features and special areas have been mapped but some, such as floodplains, should be re- defined following completion of a new topographic survey. A conservation plan should be prepared as part of any development proposal for Amico Island which will preserve the floodplain, wetlands, ponds, and mature vegetation. Areas of the island, such as the larger pond and wooded area, should be left as open space to preserve natural features and wildlife habitat. These could become public parks or be part of private facilities.

- The Township zoning ordinance should be amended to allow for clustering of dwelling units or lot averaging on Amico Island so that the overall density of residential development can be provided at five dwelling units per gross acre (including open space land areas but excluding commercial areas). Intensive recreational facilities such as an indoor sports club or a marina would be counted as commercial uses while outdoor active recreational facilities such as swimming pools and tennis courts (with accessory structures) would be counted toward open space. A minimum of 50 percent of the land thus designated for residential/open space use would be rezoned for single family development at an average density of 2 dwelling units per gross acre. A maximum of 50 percent of the residential/ open space land could be devoted to townhouse or multi- family dwellings, at an average density of 8 units per gross acre. These prosposals are slightly

lower than current zoning which allows an average density of 6 dwellings per acre.

- The commercial areas should not exceed 20% of the land area of the island and could include retail shops, a restaurant and/or hotel which could be patronized by boaters as well as people reaching the island by car. The island could also accommodate a private club with swimming, fishing, boating, tennis, beach and clubhouse facilities. Membership for this club could be drawn from local residents and from boatowners in the harbor. The commercial area should be designed so that visitors can view the waterfront and watch the harbor activity.

- Detailed site planning for the island has not been undertaken, partly because of the need to conduct a new topographic survey, but also to allow maximum design flexibility for the developer. However, as a general guide, it is proposed that the commercial areas, including possible marina and recreational uses as well as retail shops and restaurants, should be concentrated on the southern, or harbor, side of the island. Residential development may be sited through the balance of the island with riverfront dwellings being designed to take advantage of the views of the water and of the Philadelphia skyline which this location affords. Typical densities permitted by the development guidelines proposed here are shown in the following chart:

LAND USE TYPE	ACRES	DENSITY	TOTAL DU
Residential Land/ Open Space			
Single Family Units	20	2/Ac	40
Multi- Family Units	20	8/Ac	160
Total Residential	40	5/Ac	200
Commercial Land	10		
Total Island	50		

- The maximum impervious coverage (buildings plus walkways, parking lots, and similar hard surfaces) should be limited to of 35% of the entire island.

- The maximum height of structures on the island should be maintained at 35 feet .

### Rancocas Creek Area

The Rancocas Creek joins the Delaware River at the northern boundary of Delran Township. On the far side of the creek is Hawk Island, and on the Delran side of the creek is River Road and a strip of vacant land lying between the road and the creek. This narrow stretch of land, which is approximately 1000 feet in length, is vacant. It is largely wetlands and floodplain, thus limiting its potential for uses other than open space. It is one of the few areas of the Delran harbor where there is a clear view of the water.

A riverfront walk with benches and informal sitting area could be constructed in this area. The residents of the Riverside Park residential area would benefit from a small informal open area within their neighborhood. The scale of the improvements proposed would not interfere with views of the water from homes fronting on River Road or from cars driving along River Road.

### Norman Avenue Harborside

This area is a uniformly developed marina and marine-industrial area. One lot which may be available for development is centered between marina uses. This area should be developed for waterfront commercial uses which take advantage of the riverfront location and which would provide public access to the river at this point. A marina and a restaurant could be constructed there. Additional boat slips for smaller power boats will still be in demand after current marina expansions are completed. Present marina owners as well as the State Outdoor Comprehensive Recreation Plan indicate a continuing demand for freshwater recreational boating facilities. A building housing marina facilities and a second floor restaurant overlooking the harbor would fully utilize the site. New commercial or business activities should be designed as part of a unified development scheme, assuring adequate parking, waterfront access for pedestrians, and high quality uses. The commercial development of this area could include a sports club.

The area faces the Riverside Park residential area on the north side of Norman Avenue. Landscaped improvements are needed to buffer the residences from noise and dust of gravel lots and the visual clutter of boat storage areas.

### Riverside Park Neighborhood

The area to the north of the harbor is an established neighborhood known as Riverside Park. A community of tree-lined streets and single family homes, the area provides a pleasant neighborhood environment for about 150 families. The plan recommends that this neighborhood be protected as a residential area and that efforts to be made to provide the necessary buffers between residential and commercial uses to preserve the integrity of this area. It is essential that all plans for the other parcels contain buffers and provisions that protect the quality of life in this neighborhood, particularly along Norman Avenue. Part of this neighborhood falls within the Harbor district under current Township zoning. These small lots are not readily convertible to harbor district uses. Some of the lots are used for commercial purposes, although not waterfront-related commercial purposes. These commercial uses should be studied to insure that they are compatible with the residential area and the harbor area concept.

### St. Mihiel (Harbor) Drive

To provide a unifying theme to the area it is suggested that St. Mihiel Drive (Route 543) be renamed Harbor Drive. This area contains a mix of land uses which do not fully utilize its assets. This area could become a small marine and tourist related business center, with complete conversion to marine or leisure related commercial establishments along with off-street parking facilities, public open space, and public access to the waterfront on a walkway or a fishing pier.

The area presently contains a mix of residences, commercial establishments and marinas that prevent public access to the waterfront. Sections of this area could be acquired for a public park providing improved waterfront access. Several lots which run from the street to the waterfront would be excellent sites for landscaped parks and a waterfront pier. One such property is the former Plum Point Marina.

No land use changes are recommended for the area which is presently occupied by marinas, although some of the harbor theme and design elements of the plan which are described herein should apply to existing marina uses.

The proposed waterfront commercial development would take full advantage of the opportunities offered by its location on the water and street front. The street front provides direct access to automobile and

pedestrian traffic, while the waterfront offers access to boaters. Restaurant facilities could include not only sit-down restaurants but "food court"-type facilities which have been successful in other waterfront locations. This encourages casual recreational use of the area and patronage of the facilities.

Visitors to the area would travel on Chester Avenue and St. Mihiel Drive/Harbor Drive (Route 543). This traffic pattern would create little disturbance to the residents of Delran. An effort to unify the commercial district and the harbor district along St. Mihiel Drive would benefit existing retail establishments in the commercial district.

The Reserve Avenue area, which includes the Winters Sailing facility, some residences, a vacant lot at the corner of St. Mihiel and extending up to the former Plum Point Marina, is an area which may have potential for private redevelopment with direction from the Township.

The Winters Sailing facility is a major marina which is currently expanding. However, there are some small lot residential uses, as well as large residences on lots in excess of three acres which may be redeveloped for more intensive uses at some point in the future. This area lies at the heart of the harbor district and deserves special attention.

An integrated plan for this area should be prepared which incorporates commercial uses, water-oriented uses, and public walkways. The area formerly occupied by the Plum Point Marina could be used for boating activities and public access. These improvements can be achieved by a unified long term plan that is supported by the Township and reflected in its master plan and zoning ordinance.

The western end of the St. Mihiel Drive area is currently vacant or underutilized by small scale commercial uses. The vacant land at the extreme edge of the Township is part of a large 57-acre tract owned by the Shell Oil Company which is for sale. Below this parcel in Cinnaminson Township is large scale industrial development. This area will, when public sewerage is available, be suitable for commercial uses oriented toward St. Mihiel Drive. There is no waterfront access from the vacant parcels within Delran, so water-based uses are inappropriate. Because the vacant parcels lie partially within Cinnaminson Township, it is recommended that the townships and Delran and Cinnaminson meet to discuss planning for this section of St. Mihiel Drive. The transition from the recreational/marina uses in Delran to the industrial uses in Cinnaminson must be made with sensitivity to the land use, traffic, and environmental issues involved. Coordinated planning for the area will help to achieve this.

### South Side of St. Mihiel Drive

Three areas falling on the south side of St. Mihiel Drive which, although they play a minor role in the harbor concept plan, must be addressed. At the southern end of the township lies the Green Acres Park which is Township park land and open space. Studies should be undertaken to determine if a trail might be developed through this area that would safely connect to the waterfront area. The railroad tracks and St. Mihiel Drive are barriers which divide the park from the waterfront area, but some safe means of crossing may be developed as the harbor plan moves toward implementation stages. The purpose of the trail system would be to connect the waterfront area with other open space areas in order to encourage activity in the waterfront area.

The harbor study area also includes a small residential area lying between St. Mihiel Drive and Second Street. This area should remain as a residential area, and no changes are proposed for this neighborhood.

The block occupied by the Macmillan Company, bounded by Chester Avenue, Third Street, Brown Street, and Front Street, is currently undergoing redevelopment. A portion of the block is occupied by the facilities of the Macmillan publishing company, and the eastern portion of the site (which was formerly occupied in part by a super market) is now being redeveloped for office uses. This private redevelopment and investment in the area will help to set the tone for improvements in the harbor area.

## **CIRCULATION IN THE HARBOR AREA**

Additional activity in the harbor area will result in increased traffic and the need for more parking areas. The major generators of traffic will be the planned development on Amico Island and the waterfront commercial areas on Norman Avenue and St. Mihiel Drive.

According to the Institute of Traffic Engineers, single family units generate approximately 10 trips per unit per day, while the traffic generated by apartments and condominiums is about 5-6 trips per unit per day. Assuming the residential development mix projected above for Amico Island, approximately 1300 vehicle trips per day would result.

New commercial activity on both Amico Island and the expansion of the marina activities will bring an increase in the amount of traffic entering the area. Studies of the number of vehicle trips generated by quality restaurants indicate that the peak hours for restaurant traffic are between noon and 1 p.m. on weekdays and between 8 and 9 p.m. on Saturdays. Quality restaurants generate about 2.3 vehicle trips per restaurant seat per day. Specialty retail areas, such as might be developed at the Reserve Avenue area, would generate approximately 40-42 vehicle trips per day per 1,000 square feet of leasable floor area. Additional marina areas will also generate traffic, at a rate of 3 trips per boat berth per day.

Additional traffic would be generated by increases in marina capacities. Traffic generated by marinas, according to studies done by the Institute of Traffic Engineers, amounts to 3 vehicle trips per day per boat berth. Thus, an additional 100 boat berths can be expected to generate an additional 300 vehicle trips per day.

The primary concern with respect to traffic is Norman Avenue and access to Amico Island. It is proposed that the following steps be taken to allow for safe traffic flows and to protect the quality of the residential character of Riverside Park.

- The primary access to Amico Island should be by means of River Road. To insure this, Norman Avenue should be ended in a cul-de-sac at Riverside Marina, with the possible provision of a restricted roadway for emergency vehicle access only. There is some concern about the development of the Island in a high density residential use because of the limited access. Fires and floods have the potential of putting large numbers

of residents at risk. The risk will be somewhat less if the island development is a mix of residential and commercial development and if emergency access is allowed via the Norman Drive right-of-way.

- On-street parking along Norman Avenue should be restricted so that traffic may flow more smoothly to the Norman Avenue facilities and so that the visual effect of further development along Norman Avenue will not detract from the adjoining residential area. Norman Avenue has a width of 30 feet, which allows for two 10-foot moving lanes but not enough room for two lanes of parking.

### **PARKING REQUIREMENTS**

There is currently no off-street public parking within the harbor area. Parking is provided at some of the marinas and commercial establishments, but public parking is not provided because there are no public facilities along the waterfront.

The proposed development and redevelopment of the harbor area will require the establishment of off-street parking lots. The parking needs will have to be met as each area is developed or redeveloped.

Parking needs for various uses have been studied by the Institute of Traffic Engineers. According to their 1985 studies, marinas with associated restaurants and gift shops generate a need for about 0.7 spaces per boat berth to meet the peak parking demand, which occurs on Saturdays. Because so many of the patrons arrive by boat, the parking requirements are relatively low. The requirements for parking as regulated by the zoning ordinance should exceed this actual parking usage to allow for overflow, unanticipated demand, and to accommodate people visiting the area but not necessarily patronizing the establishments.

Restaurants, which may be part of the planned waterfront commercial area on St. Mihiel Drive, on Norman Avenue, and on Amico Island, require 17.6 parking spaces per 1,000 gross square feet of floor area to meet peak weekend demand. The requirements for parking as regulated by the zoning ordinance should exceed this actual parking usage to allow for overflow, unanticipated demand, and people using the area but not patronizing specific facilities.

Parking for planned residential development, as proposed for the island, should be provided at a rate of 2 off-street spaces per dwelling unit.



Off-street parking should be provided within the following developed or redeveloped areas: Amico Island, Norman Avenue waterfront commercial area, and St. Mihiel (Harbor) Drive waterfront commercial areas. The zoning ordinance should reflect the actual parking generation rates, as well as the need for overflow parking.

The possibility exists for joint use of the Macmillan property parking area. The offices will be using the parking lot during weekdays, while the need for overflow parking to serve the harbor area exists on weekends. An arrangement could be made to utilize this area when not used by the offices.

The potential for providing public parking adjacent to the railroad right-of-way near St. Mihiel (Harbor) Drive may also be investigated.

#### **PUBLIC ACCESS**

Public access is not needed along the entire length of the waterfront and harbor area. Some areas should remain private, such as the residential areas on Amico Island, existing marinas which require memberships, and existing residential properties. Public access for walking to the river and sitting by the river is recommended as part of commercial development on the Island and along the Rancocas Creek confluence, where sitting areas will be provided. Waterfront commercial uses on Norman Avenue, Reserve Avenue, and St. Mihiel Drive would have to be developed as planned commercial areas with site plan provisions requiring that land be reserved along the edge of the river for public sitting and walking. One possibility for the Reserve Avenue/St. Mihiel Drive area is the acquisition of a parcel for public park land which has waterfront access for boating, river-watching, and sitting.

Several of the principles and program approaches embodied in the New Jersey Outdoor Recreation Plan would lend support to these approaches. The Plan encourages public access to waterfronts. The Plan has projected recreational facility needs for Burlington County, which has the largest deficit in recreational land in the State, and among those needed are facilities for freshwater boating, walking for pleasure, and bicycling. These types of activities can be accommodated on Amico Island and within the other areas of public access.

## **HARBOR AREA THEME**

To unify the harbor area and its diverse activities, several program elements are proposed. A name for the harbor district should be adopted, such as Delran Harbor. The Burlington County Historical Society could be consulted regarding previous names for the area, and a logo should be designed and used with the name.

Signs bearing the name and logo will advertise and identify the area. Directional signs for automobiles along roadways and pedestrian signs along walks and trails will direct and control traffic, identify parking, and help delimit the boundaries of the harbor area. Signs marking historical and natural sites as well as planned events may be encouraged. A unified design should be adopted for these official signs and included in the Harbor District ordinance provisions. The harbor area could encourage the use of gateway signs with a common theme to identify entrances to the harbor area.

Individual establishments could design signs in accordance with their personal tastes, but the sign theme should be unified through a common use of materials, lighting, lettering style, or some combination of these elements.

An architectural theme may be established by a local business group or by ordinance to unify the harbor area. Historical design or modern themes employing style or color may be appropriate. Unified signage, sidewalks, and street furniture would help to unify the area and make it more attractive.

The name of St. Mihiel Drive could be changed to Harbor Drive or to another name which reflects the theme of the area. St. Mihiel Drive only exists within Delran Township and is a difficult name to pronounce.

## TOWNSHIP REGULATIONS AND STEPS TOWARD IMPLEMENTATION

Much of the success of the harbor area development will depend on Township regulations: Master plan and Land Use Code (zoning and subdivision and site plan regulations) and on other actions by the Township.

Incorporation into the master plan and adoption of zoning regulations which support the harbor area plan are important initial steps which the Township can take. In addition, the Township should make the concept plans available to developers and land owners so that they know what the Township wishes to see in this area.

The current Township zoning ordinance contains a Harbor District which is a mixed use district designed for residential and marine-oriented activities. The following changes to the zoning ordinance's harbor district provisions should be considered.

- Provisions for planned commercial facilities should be adopted. These would include standards for the development of unified commercial areas with waterfront walkways, landscaping, and off-street parking. Bonuses would be built into the ordinance which would allow for greater intensity of use for larger tracts of land planned as unified developments. Such provisions should include allowing more than one building per lot, so that an entire tract could be planned as a unified whole. This is in keeping with the current zoning ordinance which envisions unified and coordinated development.

- The requirements for outdoor storage of equipment and materials should be reviewed and possibly strengthened.

- The harbor district does not require sideyards. This may be appropriate in planned developments, such as those undertaken by a single developer on one tract of land and where the structures are linked to one another, but it would be desirable to require sideyards between properties not part of a unified development. This would help to eliminate some of the conflicts and confusion among land uses. Aggregate sideyards of 25 feet with a 12 foot minimum should be required for structures which are not part of a unified development. These required sideyards should apply to accessory structures and the outdoor storage of equipment, as well as to principal buildings.

- Landscaped buffer requirements should also be incorporated into the harbor district requirements. While buffering is not needed between uses which are part of a unified development, they are needed where two unrelated and possibly conflicting uses abut. Buffers of 25 feet should be required between commercial uses and residential zones to assure privacy in neighborhoods. Off-street parking areas should be landscaped in accordance with provisions which can be added to the subdivision and site plan regulations. These could include requirements for separation of parking areas with planting strips, buffering of parking areas from adjacent uses, and the provision of a minimum of 10 percent of the area for landscaped and maintained buffer areas and islands.

- The Township should investigate the possibility of receiving grants or loans for public improvements within the harbor area, such as street furniture, lighting, sidewalks, etc. which would serve as an incentive to private developers and an indication of the Township's commitment to the program.

- To accommodate the development of Amico Island, the capacity of the sewage treatment plant will have to be increased. This will require action by Township officials in conjunction with developers of the island.

- Much of the development of the area is based upon the continued demand for marina facilities and the continued navigability of the channels into Dredge Harbor. Present demand for marina use and the planned expansion of existing marinas is a good indication of the present and anticipated demand. The studies done by the State in conjunction with the Statewide Outdoor Recreation Plan indicated a deficit of freshwater boating facilities in Burlington County. However, the channel allowing access to the marinas must be maintained. Shoaling which has occurred in recent years will increasingly threaten boating activities. The Township and the waterfront landowners will have to cooperate to insure that dredging is accomplished periodically to insure navigability of the channel. Otherwise, the harbor development program will not succeed.

- The appearance of the area could be improved through private, community generated clean up efforts which would include improved planting, sidewalk repair, etc. The exterior storage of materials and equipment close to property lines detracts from the appearance of the harbor area. Although this is primarily the responsibility of land owners, the Township can play a role in instigating the project.

The program outlined is an ambitious, long-term one. It requires the cooperation and commitment of the Township as well as the owners of land and established facilities. It seeks to achieve a unified harbor area which will provide a source of enjoyment to residents of the Township, a stimulant to the economy of the area by attracting new and varied commercial uses, an increased source of tax revenues for the Township, and a pleasant living environment for the present and future residents of the area.

## References

U.S. Army Corps of Engineers, Dredge Harbor, Delran Township, Draft Detailed Project Report and Environmental Assessment, Small Navigation Project: Draft Appendices, 1982

New Jersey Department of Environmental Protection, Division of Parks, Forestry and Recreation, State Comprehensive Outdoor Recreation Plan, 1984

Delran Township Recreational and Open Space Inventory, Richard A. Alaimo Associates, Engineers, Mt. Holly, New Jersey

Recreation, Park and Open Space Standards and Guidelines, National Recreation and Park Association, Roger A. Lancaster, Editor

Philadelphia's Plan for River Recreation, Philadelphia City Planning Commission, 1984.

Nautical Chart, Delaware River, Philadelphia to Trenton, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, 1984

Soil Survey of Burlington County, New Jersey, U.S. Department of Agriculture, Soil Conservation Service, 1971

Flood Insurance Rate Study, Delran Township, New Jersey, Federal Emergency Management Agency, 1973

National Wetlands Inventory, U.S. Department of the Interior, Fish and Wildlife Service, 1975

New Jersey's Endangered and Threatened Plants and Animals, Stockton State College, Pomona, New Jersey, William J. Cromartie, Editor, 1982

Rules on Coastal Resources and Development, New Jersey Department of Environmental Protection, Division of Coastal Resources, N.J.A.C.7:7E-1.1 et.seq., 1986

Township of Delran Tax records

Township of Delran Master Plan

Township of Delran Zoning Ordinance

Developing a Marina in New Jersey, N.J. Department of Environmental Protection, Division of Coastal Resources, 1982

The Bristol-Delaware River Strategy: Actions for Riverfront Revitalization, National Park Service, Mid-Atlantic Regional Office, 1985

A Unified Landscape Treatment for a Portion of the Essington Waterfront, Delaware County Planning Department and the Pennsylvania Coastal Zone Management Program, 1986

Parking Generation and Traffic Generation, Institute of Traffic Engineers, 1985

Interviews were conducted with the following persons:

Mary Walters - Dredge Harbor Marina  
Glen Winter - G. Winter Sailing  
Joy Walzzuk - Riverside Marina  
May Watson - Castle Harbor Marina  
Sgt. Dempster - New Jersey State Police, Marine Bureau  
Lt. Art Saul - Delran Township Police Department  
James Drum - U.S. Army Corps of Engineers

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