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ATLANTIC CITY

WETLANDS

STUDY

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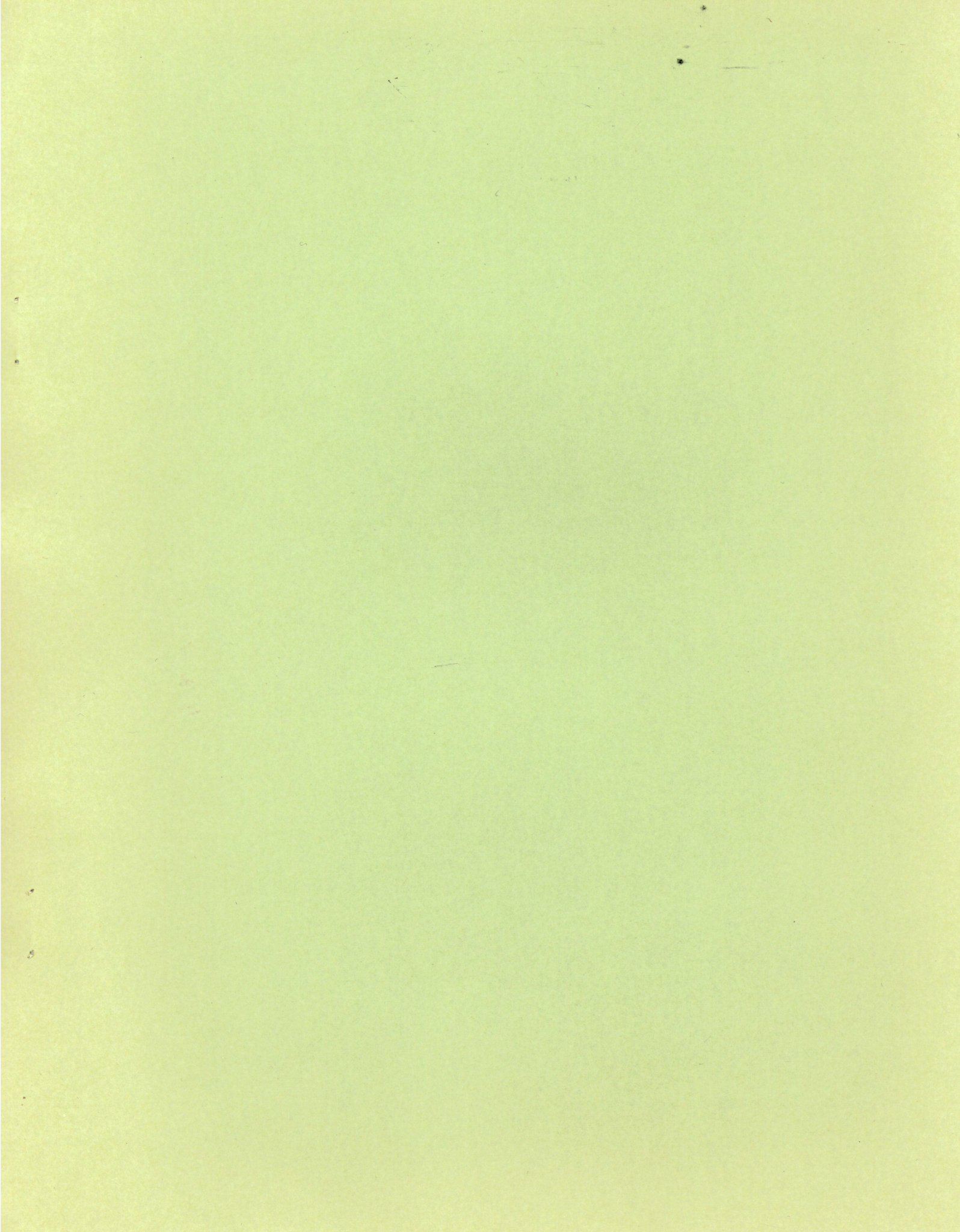
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DIVISION OF COASTAL RESOURCES

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ATLANTIC CITY WETLANDS STUDY

July 1979

New Jersey Department of Environmental Protection
Division of Coastal Resources
P.O. Box 1889
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INTRODUCTION

In 1970, the New Jersey Legislature passed the Wetlands Act, which stated that the wetlands are "one of the most vital and productive areas of our natural world ... and that in order to promote the public safety, health and welfare, and to protect public and private property, wildlife, marine fisheries and the natural environment, it is necessary to preserve the ecological balance of this area and prevent its further deterioration and destruction".

The Division of Coastal Resources in DEP is responsible for regulating development of coastal wetlands, through a permit application process. Any development of Atlantic City's wetlands requires a permit from DEP. Since the 1976 casino gambling referendum, casino gambling pressure in the Atlantic City area has increased dramatically. Some developers have held pre-application conferences with DEP for proposals involving wetlands sites in Atlantic City.

In order to ensure a sound basis for wetlands permit decisions in Atlantic City, DEP's Office of Wetlands Management (since July 1, 1979, reorganized into the Bureau of Coastal Project Review) has evaluated the existing wetlands in Atlantic City, as delineated and mapped at a scale of 1:2,400 or 1 inch = 200 feet in the early 1970's. This evaluation has produced a generalized map that shows which wetlands are of high, intermediate and low quality. However, even those wetlands of low quality, that is those which contribute less to the food chain process, act as breakwaters, mitigating the fury of storm waves, protect beaches and prevent shore erosion. The summary of the DEP staff report is presented here, but the individual map reports and a discussion of the ecological importance of coastal wetlands are described in the basis and background document for this study.

DEP has prepared a single map composed of four U.S. Geological Survey quadrangles, originally at a scale of 1:24,000, to distinguish the quality designations (see the pocket at the end of this report). However, the map does not define which areas will be approved for development if an application for a wetlands permit were submitted. The quality designations are merely a guide to the current physical status of the Atlantic City marshes and are unrelated to any specific land uses. Each individual submittal will be reviewed within the spirit and intent of the Wetlands Act and the New Jersey Coastal Management Program - Bay and Ocean Shore Segment and its Rules on Coastal Resource and Development Policies. In order to obtain a wetlands permit, the applicant must demonstrate to DEP that the activity: (a) requires water access or is water oriented as a central purpose of the basic function of the activity, (b) has no prudent or feasible alternative on a non-Wetlands site, (c) will result in minimum feasible alteration or impairment of natural tidal circulation, and (d) will result in minimum feasible alteration or impairment of the natural contour or the natural vegetation of the Wetlands, and comply with all applicable Coastal Resource and Development Policies.

Any construction on wetlands also requires a permit from the U.S. Army Corps of Engineers. The Corps is also conducting a comprehensive assessment of the wetlands around Atlantic City.

BASIS AND BACKGROUND DOCUMENT
Atlantic City Wetlands
Prepared by
Department of Environmental Protection
Division of Coastal Resources

The ecological importance of wetlands as an irretrievable natural resource has been previously documented by scientists for many years. However, not until the 1970's were any significant steps taken to inventory, protect, conserve, or regulate the delicately balanced ecosystem of the estuarine zone. Two completely different types of coastal habitats occur in New Jersey. The eastern coast consists of salt and brackish wetlands, sound and bays, inlets and barrier beaches. On the western coast of New Jersey, the Delaware River along with its tributaries and their feeder streams flood the brackish and freshwater coastal wetlands. Each coastal region contributes a continuous supply of nutrients to their surrounding environs which is readily utilized by its biological constituency. Species diversification of both plant and animals in these coastal habitats is a distinguishing characteristic that indicates a broad scope of interactions between complex physical, chemical, and biological processes. Through these interactions is created an exceptional but delicately balanced environment, having strength and beauty yet changing with nature, and vulnerable to the development pressures of man.

Wetlands, or coastal marshes, provide the basis of the marine food chain. The natural formation process of a salt marsh begins when tidal action deposits sediments within bays and estuaries. Shallow waters begin to fill in with the fine-grained silt. The protected tidal flats that develop are then colonized by salt marsh cordgrass. This development is further affected by changes in upland and upstream runoff. The natural process may take a few decades to a hundred years depending on the environmental conditions, but eventually peat builds up around the roots of those plants and the marsh stabilizes and expands in surface area.

Estuaries, which include wetlands, serve as vital areas for spawning, feeding, wintering and nursery grounds for most species of pelagic and forage fishes. For example, nearly 70% of the most valuable Atlantic Coast fisheries, including over a 150 species of finfish, are dependent on the estuary during some phase of their life cycle. In addition to providing habitats for marine life the salt marsh community acts as a basin, storing the tidal waters together with aperiodic storm waters. They function as an element of dispersion of wind-driven wave energy before it can reach the areas of human habitation. Inshore tidal flats also serve as breeding and development grounds for various species of shellfish which provide a valuable contribution to the marine and sport fisheries industry.

The productivity of wetlands is phenomenal when compared to man-influenced farm production. Coastal wetlands have an average annual yield of ten (10) tons of plant fiber per acre--six times the worldwide average for wheat production. However, with the exception of salt hay (Spartina patens), which is extensively harvested along the Atlantic seaboard, none of this plant production is directly utilized by man and, therefore, their value is frequently overlooked.

Wetlands are important in other respects. Not only do they serve as open space for public use but they provide the world's most beautiful water purification facilities. One of the most important contributions they can make is in tertiary treatment, a very expensive artificial process.

The destruction of wetlands is a historical fact, but the actual decrease in terms of acreage is not specifically known since there are no accurate records concerning wetlands acreage at the time of colonization. In New Jersey alone over 65,000 acres of marsh land has been lost to indiscriminate filling and dredging projects for the period between 1953 and 1971. The loss of any given wetland may be insignificant on a case by case basis; however, the cumulative effect of these losses is devastating. With fewer acres available, fish and game must concentrate on an even smaller habitat and decreased levels of nutrients, thus creating a higher level of competition for survival.

As a result of these significant losses, and recognizing further destruction, the State Legislature drafted the Coastal Wetlands Act which was signed by the Governor on November 5, 1970. The Act required the Department of Environmental Protection to inventory lands meeting the definition and specified in the Act and to promulgate regulations controlling activities on these lands. Using detailed aerial photography taken in 1971 and 1972, contractors for the state completed this inventory. On a county-by-county basis, the Department promulgated regulations governing all activities on the wetlands so inventoried.

Over one-half of the land within the Atlantic City boundary is classified as wetlands. With the advent of casino gambling in Atlantic City diverse proposals for development are almost assured.

The foregoing provides a basis for a careful examination of the inventoried wetlands in Atlantic City. The purpose of the study is to provide guidance to developers in Atlantic City concerning those wetlands that are the least environmentally valuable based on a number of factors. This study merely provides developers with an indicator of wetlands quality and should not be construed to represent a prejudged opinion of a potential permit application.

The designations, by definition, do not preclude a property owner from applying for a wetlands permit for development. All property owners have the preemptive right to apply for any necessary construction permits. Decisions are based on those considerations and findings of fact enumerated in Section 7.1 and 7.2 of the Procedural Rules and Regulations Implementing the Wetlands Order. The purpose and intent of the Wetlands Act and Regulations is to provide a balance between rampant destruction and total preservation. The consideration of the public benefit versus the destruction of a valuable resource of the state, are brought forth within individual permit applications.

For the purpose of this study four designations are used: (1) "high quality" wetlands that should remain undeveloped due to their significant contribution to the estuarine ecosystem; (2) "intermediate quality" wetlands whose contributions to the estuarine ecosystem are potentially limited and which may be suitable for development based on site-specific analysis; (3) "low quality" wetlands whose contribution to the estuarine ecosystem is marginal, but still greater than a non-productive upland site, and which may be suitable for development based on site specific analysis; and (4) "no longer wetlands", areas that have been filled to an elevation no longer capable of supporting wetlands species and/or areas that have undergone significant changes due to natural causes (i.e. erosion).

The quality designation is based on a number of interrelated factors, which, together, provide a general indication of the value of a marsh. Vegetation type, elevation, tidal inundation and man-made disturbances together form the basis for the high productivity which can be utilized in the estuarine system.

Spartina alterniflora is a salt-tolerant (Halophyte) grass which grows almost without competition between the zones of mean low water and mean high water. This species is considered by many authorities to be one of the most significant contributors to the marine food chain. As it dies it is decomposed by bacteria, thereby increasing its food value to the zooplankton, or microscopic animals, of the estuary. Because of the relatively low elevation, this partially decomposed vegetation, is periodically washed by the tides into the estuary where it is further decomposed, and utilized by zooplankton.

The zooplankton and decomposed vegetation, are the food for filter feeders such as clams and muscles and for juvenile and adult species of fin fish. The smaller fish act as prey for larger fish and wildlife. Although oversimplified, this progression represents the base of a food chain which eventually leads to man. Removing a portion of this chain, such as wetlands, will have an adverse effect on those higher organisms, relying directly or indirectly on the wetlands as a source of food.

When tidal inundation is partially or totally obstructed by man-made disturbances, such as diking, the system is short-circuited. The periodic tides will not be able to remove the decomposing vegetation which will then remain on the marsh. The decomposed material will gradually build up on the marsh and eventually increase its elevation. With an increase in elevation and lack of direct salt water contact, resulting in a decrease in salinity, the vegetation type will change, succeeding eventually to a reed community. While such a vegetation type may provide limited habitat for a few species of wildlife and a buffer for storm waters, its productive food value, provided to the estuarine inhabitants, is greatly reduced.

Other species of wetland vegetation also supply food to the estuary in a similar manner. Spartina patens, and Distichlis spicata are the remaining dominant estuarine contributors of the marshes within Atlantic City. These species are usually found growing in conjunction with each other or with S. alterniflora, occurring at an elevation slightly above mean high water continuing to the elevation of extreme high water (full moon tides). Because of its higher elevation, its vegetative contribution to the estuarine food chain is slightly less than S. alterniflora. Nevertheless, the aperiodic tides remove much of the decomposed plants and supply necessary food to filter feeders and finfish.

Because of their contribution of food to the marine inhabitants, these species growing alone or in conjunction with each other have been designated as "high quality" wetlands. Man-made disturbances to these areas may, in some cases, reduce the designation to that of "intermediate quality".

Species of wetlands vegetation such as Iva frutescens, Baccharis halimifolia, Phragmites communis and others, contribute to the estuarine system in another manner. Such species provide cover and nesting habitat for inhabitants of the marsh. The diversification of such vegetation leads to a greater variety of wildlife including many species of shore birds and waterfowl. In addition, these areas provide a basin for storm water thereby protecting developed uplands from flooding and erosion. Further the root systems of certain species hold sediments which could easily be deposited in navigable channels. Finally, the vegetation removes organic pollutants from the water utilizing them as fertilizers and acting as a water purifier.

For these reasons, even the vegetative species that occupy the higher elevations of a marsh contribute to the estuarine system. Therefore, the remaining wetland vegetative types will be designated as "intermediate" or "low quality" wetlands depending on the degree to which elevation, tidal inundation and man-made disturbances have affected the area.

The final wetlands designation has been categorized as "no longer wetlands". These areas were mapped and delineated on the base-line inventory as viable wetlands. Between the initial mapping and promulgation of the Wetlands Regulations for Atlantic County, filling of the wetlands was not under any regulatory jurisdiction by DEP. Therefore, the vegetation, elevation, and tidal influence had the potential to be altered significantly enough to no longer constitute "wetlands", as defined in the Act. Some areas that are low-lying mud flat, salt pond, or partially filled are still regulated due to their capability to support some of the vegetative species listed in the Wetlands Act. Additionally, permits issued for the development of wetlands may have eliminated these lands from such a classification.

A total of 17 wetlands maps cover the marshes within the municipal boundaries of Atlantic City. Each of these maps was carefully analyzed in order to determine the vegetative types, and man-made disturbances. The maps themselves were individually examined, together with the infrared color photography taken in 1971-72. Additional aerial photography taken in 1973 was then analyzed in order to observe any man-made disturbances. Finally, all such disturbances or areas having such a potential (i.e. wetlands adjacent to uplands) were field inspected during May 1977.

As a result of this examination, map reports have been prepared for each of the 17 wetland aerial photos. These reports supplement this Basis and Background Document by describing the reasons for the quality designations at a site-specific level. Finally, a single map composed of four U.S.G.S. quadrangles has been prepared using a shaded overlay to distinguish the quality designations.

Again, a strong inference must be made that the map will not define what areas will be approved if an application were submitted for proposed development. The quality designations are merely a guide to the current physical status of the Atlantic City marshes and are unrelated to any specific land uses. Each individual permit submittal shall be reviewed within the spirit and intent of Wetlands Regulations and the New Jersey Coastal Management Program - Bay and Ocean Shore Segment.

Atlantic City Wetlands Study

MAP NO. 182-2052
INSIDE THOROFARE
ATLANTIC CITY

Wetlands Imagery: CJP-IRC 4652; 8/31/72

Coastal Zone Imagery: DDE-IRC 557,578

Site Inspection: May 18, 1977

General Description

The wetlands within the Atlantic City boundary appear in the north central portion of the map, northwest of Inside Thorofare, and northeast of Jackson Avenue along Inside Thorofare, the wetlands are characterized by low vigor *Spartina alterniflora*, *Spartina patens*, *Distichlis spicata*, *Iva frutescens*, and *Baccharis halimifolia*. Scattered hummocks of upland are also present in some areas. These hummocks were created by fill deposited on the wetlands years ago and have revegetated with upland species and trees. The primary wetlands vegetation on this marsh is low vigor *Spartina alterniflora* with high vigor present along creeks and ditches. *Spartina patens* and *Distichlis spicata* are also common in partially disturbed areas that are of a slightly higher elevation. These wetlands are adjacent to developed lands on three sides with a large shopping center on its northern boundary. There is presence of mosquito ditching and minor spoil deposition which, for the most part, has revegetated.

Determination

This wetlands area receives excellent tidal inundation from Inside Thorofare. Two main unnamed creeks are present with numerous meandering tributaries that enhance tidal flow to most areas of the marsh. Some spoil deposition in the southeastern portion of the wetlands tract located between West End Avenue, Raleigh Avenue, and Jackson Avenue has revegetated with an array of high and low marsh species. For the most part the area generally receives good tidal flushing and maintains a diversified habitat for wildlife and birds because of the plant species diversification. The elevations remain relatively low in nature with minor disturbances in some small areas. The wetland area is also buffered from residential homes to good tidal exchange, predominantly low marsh species, and minor disturbance by man, the wetlands in the northern central portion of the map have been deemed high quality.

A portion of the area south of West End Avenue and west of Raleigh Avenue has been deemed intermediate quality because some filling has occurred which has increased the elevation of the area and retards tidal inundation. The plant species are also typical of high marsh vegetation.

Most of the central and southern portion down to Inside Thorofare has been designated high quality because of low elevation, low marsh species, and good tidal inundation.

Atlantic City Wetlands Study

MAP NO. 189-2046
GREAT ISLAND
ATLANTIC CITY

Wetlands Imagery: CJP-IRC 843; 8/25/71

Coastal Zone Imagery: DDE-IRC 519, 520

Site Inspection: May 18, 1977

General Description

The northeastern portion of Great Island has been disturbed by the erection of sod banks which effect tidal flow to certain areas of the marsh. Many tidal creeks are present within the diked area along with a man-made canal that has been cut on the inside portion of the dike. The material used to construct the sod bank was excavated from these areas creating a canal. The canal has two or three openings that were cut by the County Mosquito Commission allowing adequate tidal inundation from Great Thorofare on the north and Lakes Bay on the west to the viable salt marsh contained within the sod banks. These openings afford ebb and flow of the tide and help minimize creation of habitat conducive to mosquito production. *Spartina alterniflora* low vigor is present on this partially enclosed area.

This undisturbed portion of Great Island is surrounded by Great Thorofare on the north and east, Lakes Bay on the west and Turtle Gut Thorofare to the south. The remainder of Great Island is predominantly vegetated by high and low vigor *Spartina alterniflora*. A massive network of natural tidal creeks provides excellent tidal transfer for distribution and transfer of nutrients. All areas south of Turtle Gut Thorofare are outside of the Atlantic City limits and therefore not considered in this discussion.

Determination

Great Island exemplifies a large salt marsh island laced with tidal creeks which provide excellent tidal exchange and maintains a low elevation that supports an abundance of low marsh species.

Minor disturbance by man has slightly altered the contour of the island but the low marsh vegetation still flourishes.

Tidal exchange is excellent in most portions of the island and appropriately it has been designated as high quality.

Atlantic City Wetlands Study

MAP NO. 189-2052
GREAT THOROFARE
ATLANTIC CITY

Wetlands Imagery: CJP-IRC 4654; 8/31/72

Coastal Zone Imagery: DDE-IRC 577, 578

Site Inspection: May 25, 1977

General Description

The entire area north of Turtle Gut Thorofare and east of Jackson Avenue is within the Atlantic City Boundary. The mapping involves a large portion of Great Island. A large shopping center and "butterfly" turn-around are present on the northeast portion of Great Island. The turn-around acts as a U-turn feature. The extent of the "butterfly" stops just short of the UWB line separating Great Island wetlands from the upland. It appears that approximately 1/5 of Great Island has been filled in the northeast portion. U.S. 40 and 322 borders the extreme northeast corner of the island and crosses both Great Thorofare to the north and Turtle Gut Thorofare to the south with bridges.

In the extreme northeastern portion of the map the Atlantic City Expressway passes in a northwest-southeast direction with wetlands and Great Thorofare to the south. The railroad is situated just north of the Expressway.

The southwest corner of the map is not within Atlantic City limits and therefore, will not be assessed for the purposes of this project. Wetlands are situated north and south of West End Avenue. Good tidal flow with meandering creeks are present. A small area immediately adjacent and west of Raleigh Avenue has been filled. The wetlands map indicates two high marsh species, *Iva frutescens* and *Phragmites* as previous inhabitants. West End Avenue blocks flow to wetlands bordering it on the south, but tidal flow prevails through the remaining creeks and ditches connected to Inside Thorofare, the water course to the south.

In the extreme northwestern corner of the map on the south side of U.S. 40 and 322 is an area of wetlands consisting predominantly of *Spartina alterniflora*, low vigor, which has a network of mosquito ditching providing tidal flow.

Determination

The wetlands in the northwest corner are deemed high quality. Low marsh species are present in the form of low vigor *Spartina alterniflora*. This area receives good inundation from Great Thorofare and small tidal tributaries are connected by remnants of mosquito ditching.

The area north and east of the Expressway has been deemed intermediate quality because that area has been diked and spoiled upon. The physical presence of the Expressway interferes with natural tidal inundation, however, culverts do help to maintain water exchange.

All wetland portions south of the Expressway receive good tidal flow and are relatively low in elevation. Therefore, these areas have been designated high quality.

The entire portion of Great Island that is mapped as wetlands has been deemed high quality and meandering tidal streams, low elevation, and minor disturbance by man.

The area north of West End Avenue draws a high quality designation having excellent flow and tidal exchange from the waters of Turtle Gut Thorofare. A portion of the area south of West End Avenue and west of Raleigh Avenue has been deemed intermediate quality because of man's disturbance in the form of filling. The elevation has been increased in this section which inhibits and, in some cases, prevents wetlands growth.

Most of the central and southern portion south to Inside Thorofare has a high quality designation with numerous tidal ditches providing excellent water exchange.

Low marsh species are dominant throughout the area in question.

Atlantic City Wetlands Study

MAP NO. 189-2058
BEACH THOROFARE SOUTH
ATLANTIC CITY

Wetlands Imagery: CJP-IRC 4682; 8/31/72

Coastal Zone Imagery: DDE-IRC 576, 577, 578

Site Inspection: May 25, 1977

General Description

The mapped wetlands are situated mostly to the south of the Atlantic City Expressway. Some degree of filling has occurred on the north side of the Expressway, presumably as a result of the highway construction activities and subsequent dredging of Beach Thorofare. Great Thorofare is the body of water separating the airport from the Expressway. It is located south of the Expressway and north of Bader Field.

The wetland area south of the Expressway is partially disturbed by long ditches which connect small tidal creek tributaries that appear to have been part of a larger tidal creek system now obliterated by the expressway. However, the tidal influence is uninhibited to the south of the expressway and *Spartina alterniflora* high and low vigor are abundant.

Just north of the Expressway is the Pennsylvania Reading Seashore Line Railroad. North of the railroad is very high ground with some small pockets of wetlands vegetation. However, a substantial green belt exists bordering the south side of Beach Thorofare; predominantly vegetated by low vigor *Spartina alterniflora*.

A small portion of the land south of the Expressway is vegetated intermittently with *Spartina patens* (salt hay) and *Distichlis spicata* (spike grass) and also a small area of high tide bush (*Iva frutescens*).

Determination

The wetlands present both north and south of the railroad and Expressway are not significantly disturbed or ditched by mosquito ditches. The wetlands appear to be functioning as a natural flood buffer and detrital contributor from the tidal waters of both Beach and Great Thorofares. For these reasons, the majority of these wetlands are deemed high quality. An area of exception is triangular or "pie-shaped" and extends approximately 700' just south of the Atlantic City Expressway bridge crossing of Beach Thorofare and angles toward the Expressway where it finally meets with the Expressway slope approximately 1,600' from the bridge crossing. This area has been deemed intermediate quality.

Atlantic City Wetlands Study

MAP NO. 196-2046
JONATHAN THOROFARE
OCEANVILLE

Wetlands Imagery: CJP-IRC 841; 8/25/71

Coastal Zone Imagery: DDE-IRC 519, 520, 521

Site Inspection: May 25, 1977

General Description

The wetlands within Atlantic City on this map are crossed by several major transportation routes. North of the Pennsylvania Reading Seashore Line, the salt marsh is heavily ditched. The predominate species is low vigor *Spartina alterniflora* with the high vigor form found along the shoreline and the banks of most channels and ditches. *Spartina patens* and *Distichlis spicata* also cover large areas.

The natural boundary acting as the western limit of the City of Atlantic City is Jonathan Thorofare. The main highway arteries which sectionalize the marshes on this map are Absecon Boulevard to the north, the Pennsylvania Reading Seashore Railroad, the Atlantic City Expressway and U.S. 40 and 322.

In the southern central portion of the map is the northern most tip of Great Island. A sod bank encloses some of the island as discussed in the map report of Wetlands Map #189-2046. The area within the sod bank consists of low vigor *Spartina alterniflora* and bareground portions which are revegetating with low vigor. The northernmost tip of Great Island is about half high, and half low vigor *Spartina alterniflora*. No regulated wetlands appear to be present within city limits between U.S. 40 and 322 and the Atlantic City Expressway. Partially filled areas of regulated wetlands are present between the Expressway and the railroad. North of the railroad to Absecon Boulevard is a large expanse of low vigor *Spartina alterniflora* which is laced with mosquito ditching. The ditches are nearly overgrown with high vigor *Spartina alterniflora*.

Determination

The area of wetlands between the railroad and the Expressway has been designated intermediate quality due to increased elevation and inhibited tidal flow. The wetlands north of the railroad and east of Jonathan Thorofare have been designated high quality because of good tidal inundation and uniform elevation supporting substantially low vigor, *Spartina alterniflora* and high vigor along the creeks and ditches.

Atlantic City Wetlands Study

MAP NO. 196-2052

LITTLE BAY
OCEANVILLE

Wetlands Imagery: CJP-IRC 4656

Coastal Zone Imagery: DDE-IRC 519, 520, 521

Site Inspection: May 25, 1977

General Description

Approximately 95% of this mapped area is wetlands. In the northern portion of this map just south of Flat Creek and Newfound Thorofare is U.S. Route 30. Intermittent parcels along the highway are filled anywhere from 1,000' back off the road to only a few feet into the right-of-way. A large degree of disturbance occurs in the southwestern portion due to the Pennsylvania Reading Seashore Railroad, the Atlantic City Expressway and U.S. 40 and 322. As these highways interconnect portions of wetlands have been severed from tidal exchange or bottlenecked through limiting culverts. Sluff-off of fill and excavation areas has destroyed portions of wetlands in close proximity to the networks of highways.

Duck Thorofare, Newfound Thorofare, and Little Bay are situated between U.S. 30 and the railroad. Many tidal tributaries branch off these waterways to afford tidal flow to most portions of the marsh. Numerous ditches connect to these creeks bringing tidal water into far reaching areas. The predominant vegetative cover-type is low vigor *Spartina alterniflora* with a network of high vigor along the creeks and ditches.

Determination

The areas deemed intermediate quality would normally be designated as high quality primarily by cover type. However, tidal flow is restricted due to the sectionalization caused by highway connections. Areas north of the railroad to U.S. 30 have been designated as high quality. The area east and west of Little Bay and north and south of Newfound Thorofare are laced with tidal creeks and ditches promoting excellent tidal exchange.

Wetlands north of U.S. 30 receive excellent tidal flow and support high and low vigor *Spartina alterniflora*. These cover types are at a low elevation and therefore are also considered high quality.

Atlantic City Wetlands Study

MAP NO. 196-2058
BEACH THOROFARE
OCEANVILLE

Wetlands Imagery: CJP-IRC 4680; 8/31/72

Coastal Zone Imagery: DDE-IRC 576-577

Site Inspection: May 5, 1977

General Description

The main water courses in this geographic area are Duck, Beach and Clam Thorofares. The portion of the map that lies South of Route 30, is, for the most part, developed with a few sparse areas of *Spartina alterniflora*. The area South of Route 30, between Duck and Beach Thorofare is predominantly vegetated by *Spartina alterniflora*, both inland and directly along the creek banks and Thorofares.

Two small wetland sites, North of Route 30, between Gramercy Avenue and Beach Thorofare, were designated in the baseline inventory as *Spartina alterniflora*, *Phragmites communis*, Bare Ground. Some fill has been placed on a small portion of the area in question, east of Beach Thorofare, which reduces the quantity surveyed in the baseline inventory.

City Island has been subjected to a high degree of disruption with the filling of wetlands for the Atlantic County Regional Sewerage Plant site and the installation of force main and interceptor sewer lines, which will eventually return to the preconstruction vegetative cover-type, *Spartina alterniflora*.

The wetland area between Duck Thorofare and Beach Thorofare, is bordered by a small oil tank farm on the south (coordinates: 199-2060) and Route 30 on the West. The wetlands in this area are receiving good tidal influence periodically and *Spartina alterniflora* is predominant. Some creeks branching off of Duck Thorofare flow South into the area in question, afford good tidal exchange, low elevation and are vegetated with *Spartina alterniflora*.

The area northeast of Duck Thorofare has not been disturbed and many tidal creeks and ditches afford excellent tidal exchange.

Determination

Because much of the wetland situated on this map is subjected to excellent tidal flow, has a low elevation and is vegetated by *Spartina alterniflora*, portions are designated as high quality.

For the areas which have been disturbed by man, for the purpose of upgrading the sewerage treatment system in the Atlantic County area, the restored areas will return to *Spartina alterniflora* and shall be considered high quality. For the areas filled to accommodate the plant site, these no longer constitute a wetlands, and are so designated.

Atlantic City Wetlands Study

MAP NO. 196-2064
CLAM THOROFARE
OCEANVILLE

Wetlands Imagery: CJP-IRC 782; 8/25/71

Coastal Zone Imagery: DDE-IRC 575, 576, 577

Site Inspection: May 5, 1977

General Description

The easternmost portion of City Island has Beach Thorofare to the north and Clam Thorofare to the south. The wetlands on this portion of City Island are undisturbed and characterized by low vigor *Spartina alterniflora* with high vigor along the creeks and shoreline. The wetlands present just south of Clam Thorofare are characterized by the same vegetative cover-type but show some evidence of disturbance from erosion along the northern perimeter of the Atlantic City Sanitary Landfill.

A small area just north of the Brigantine Boulevard bridge adjacent to Absecon Channel is characterized by low vigor *Spartina alterniflora* and receives excellent tidal flow. Just north of this section of wetlands across the unnamed Thorofare is a large unnamed island which centrally supports low vigor and high vigor *Spartina alterniflora* along the fringes.

A small portion of wetlands exists in the southwestern portion of the map at coordinates 198-2064. Tidal flow is good which supports a relatively equal amount of high and low vigor *Spartina alterniflora*.

Determination

All the wetlands present on this map are designated high quality due to good tidal exchange, low elevation, and minimum disturbance by man. One area has been deemed intermediate quality due to previous disturbance by man and a slight increase in elevation. However, revegetation is apparent with low vigor, *Spartina alterniflora*.

Atlantic City Wetlands Study

MAP NO. 196-2070
ABSECON INLET
OCEANVILLE

Wetlands Imagery: CJP-IRC 730; 8/25/71

Coastal Zone Imagery: DDE-IRC 575, 576, 577

Site Inspection: May 5, 1977

General Description

The wetlands in the extreme northwest portion of this map are the only species within the Atlantic City boundary. A large portion of the area north of Brigantine Boulevard has been previously filled. Revegetation by upland species is apparent. However, *Spartina alterniflora* high vigor does flourish below the high water line on the eastern shoreline of the unnamed island which is divided by the crossing of Brigantine Boulevard from Atlantic City to the City of Brigantine.

Determination

The wetlands are situated below the high water line and consist of high vigor *Spartina alterniflora*. The tidal flow is received from Broad Thorofare with no disturbance to flow. Therefore, these wetlands are designated high quality.

Atlantic City Wetlands Study

MAP NO. 203-2046
ABSECON CREEK SOUTH
OCEANVILLE

Wetlands Imagery: CJP-IRC 839; 8/25/71

Coastal Zone Imagery: DDE-IRC 520, 521

Site Inspection: May 25, 1977

General Description

The City limits of Atlantic City for this map are determined by Jonathan Thorofare. The wetlands in question include areas, South of Absecon Bay and East on Jonathan Thorofare and Absecon Boulevard. The predominant vegetation is low vigor *Spartina alterniflora*, *Spartina patens*, and *Distichlis spicata*. The wetlands have been ditched and high vigor *Spartina alterniflora* lines the sides of the ditches, as well as the shoreline and small tidal stream that meanders between ditches, in the extreme southeastern quadrant of the map.

Areas further away from Absecon Bay are designated as low vigor *Spartina alterniflora*, having a relatively uniform elevation and no spoil deposition by man, since the cutting of the ditches.

Determination

Because of a relatively uniform low lying wetland, with unobstructed tidal flow, aided by mosquito ditching, the area within the City limits of Atlantic City, on this map, is designated as high quality.

Atlantic City Wetlands Study

MAP NO. 203-2052
NEWFOUND THOROFARE
OCEANVILLE

Wetlands Imagery: CJP-IRC 4658; 8/31/72

Coastal Zone Imagery: DDE-IRC 520, 521; 10/1/73

Site Inspection: None required

General Description

The entire map consists of low-lying, saline wetland species. The main water body to the north is Absecon Bay and Newfound Thorofare is situated in the southeast corner of the map. The map, as a whole, is riddled with tidal ditches and remnants of past mosquito ditching. There appears to be no obstruction to tidal flow.

The predominant wetlands vegetation consists of low vigor *Spartina alterniflora* with high vigor lining the shoreline channel banks, tidal creeks and ditches. Two unnamed islands (coordinates: 206-2056) consist mainly of high vigor *Spartina alterniflora*, with Weakfish Island in the northeastern portion of the map predominantly inhabited by low vigor *Spartina alterniflora* and fringed by high vigor.

In the southwestern portion of the map, it appears that a slight increase in elevation provides suitable growing conditions for *Spartina patens* and *Distichlis spicata* as well as low vigor *alterniflora*. This may have been as a result of dredge spoil deposition placed at random in the southwestern portion of the map.

Although the wetlands within the mapped area have been ditched, this disturbance has not adversely affected tidal inundation or appreciably altered the elevation of the marsh.

Determination

Because of the low elevation and numerous tidal ditches, inundation is frequent. The marsh has completely recovered from the mosquito ditching of many years ago. Therefore, all the wetlands prevalent on this map have been designated as high quality.

Atlantic City Wetlands Study

MAP NO. 203-2058
ABSECON CHANNEL
OCEANVILLE

Wetlands Imagery: CJP-IRC 4678; 8/31/72

Coastal Zone Imagery: DDE-IRC 521-522, 575-576; 10/1/73

Site Inspection: None required

General Description

The mapped area includes several islands of various sizes, located at Absecon Channel and Wills Thorofare. The entire area is below the Upper Wetlands Boundary and there appears to be no interference with normal tidal flow. Although most of these wetlands are undisturbed, the southern portion has been sparsely ditched.

Extensive areas are vegetated by *Spartina alterniflora*. Most of the vegetation covering the island are situated at or below mean high tide.

Determination

Because of the low elevation of these salt marshes, tidal inundation is frequent. The vegetation is high quality and there has been no disturbance by man. Therefore, all the wetlands shown on this map have been designated as high quality.

Atlantic City Wetlands Study

MAP NO. 203-2064
MANKILLER BAY
OCEANVILLE

Wetlands Imagery: CJP-IRC 780; 8/25/71

Coastal Zone Imagery: DDE-IRC 575, 576; 10/1/73

Site Inspection: None required

General Description

The mapped area consists of a number of various size islands with the main water bodies being Broad Creek, Mankiller Bay and Absecon Channel. The predominant vegetation is *Spartina alterniflora*, low vigor. However, some islands support large areas of high vigor *Spartina alterniflora*, which also is prevalent along the shorelines and creek banks.

The entire map is a virgin, saline with no man-made disturbances to the vegetation or tidal flow. Extensive ponding on the island is apparent.

Determination

Because of numerous tidal creeks and low elevation, tidal inundation is both frequent and uninterrupted. The vegetation is high quality and has been designated as such for the entire map, except for one small filled portion in the extreme southeastern corner (coordinates: 203-2070).

Atlantic City Wetlands Study

MAP NO. 203-2070
EAGLE BAY
OCEANVILLE

Wetlands Imagery: CJP-IRC 732; 8/23/71

Coastal Zone Imagery: DDE-IRC 575, 576; 10/1/73

Site Inspection: None required

General Description

Wetlands within the Atlantic City boundary are limited to the extreme southeastern portion of the map. The area between Absecon Channel, Broad Creek, Brigantine Boulevard, and an unnamed creek is upland except for a fringe of *Spartina alterniflora*, high vigor.

The larger expanse of wetland directly north of the aforementioned area is low lying marsh with *Spartina alterniflora*, low vigor as the predominant vegetation. Numerous ponds are prevalent indicating tidal inundation is not being hindered in any way.

The entire wetlands map is not being considered in this report. Only the areas contained within the city limits of Atlantic City have been reexamined.

Determination

Because of the low elevation and good tidal inundation, the vegetation within city limits is designated high quality. Disturbance by man is not evident.

Atlantic City Wetlands Study

MAP NO. 210-2052
ABSECON CREEK EAST
OCEANVILLE

Wetlands Imagery: CJP-IRC 4660; 8/31/72

Coastal Zone Imagery: DDE-IRC 520, 521, 522; 10/1/73

Site Inspection: None required

General Description

The wetlands within the Atlantic City boundary are present in the extreme southeast corner of this map. However, geographically the wetlands can be found along the northeast portion of Absecon Bay at coordinates 210-2058. The area consists of the upper portion of Weakfish Island. *Spartina Alterniflora*, high vigor is the predominant vegetation.

Determination

There has been no disturbance of the marsh by man, surface elevation is low, and inundation is uninterrupted. Based on this observation, the entire area in the southeast corner of the map is designated as high quality.

Atlantic City Wetlands Study

MAP NO. 210-2058
STEELMAN THOROFARE
OCEANVILLE

Wetlands Imagery: CJP-IRC 4676; 8/31/72

Coastal Zone Imagery: DDE-IRC 521-522, 575-576; 10/1/73

Site Inspection: None required

General Description

All of the mapped wetlands south of Steelman Thorofare are within the city limits of Atlantic City and make up the northern portion of a large wetland island. The vegetation is predominantly *Spartina alterniflora*, high vigor. Numerous ponds and tidal creeks are prevalent within the subject area referred to above.

Determination

This large island is low in elevation, receives excellent tidal inundation, and has not been ditched or disturbed in any way by man. For these reasons, the entire wetland area situated inside the city limits has been designated as high quality.

Atlantic City Wetlands Study

MAP NO. 210-2064
GULL ISLAND THOROFARE
OCEANVILLE

Wetlands Imagery: CJP-IRC 778; 8/25/71

Coastal Zone Imagery: DDE-IRC 575, 576; 10/1/73

Site Inspection: None required

General Description

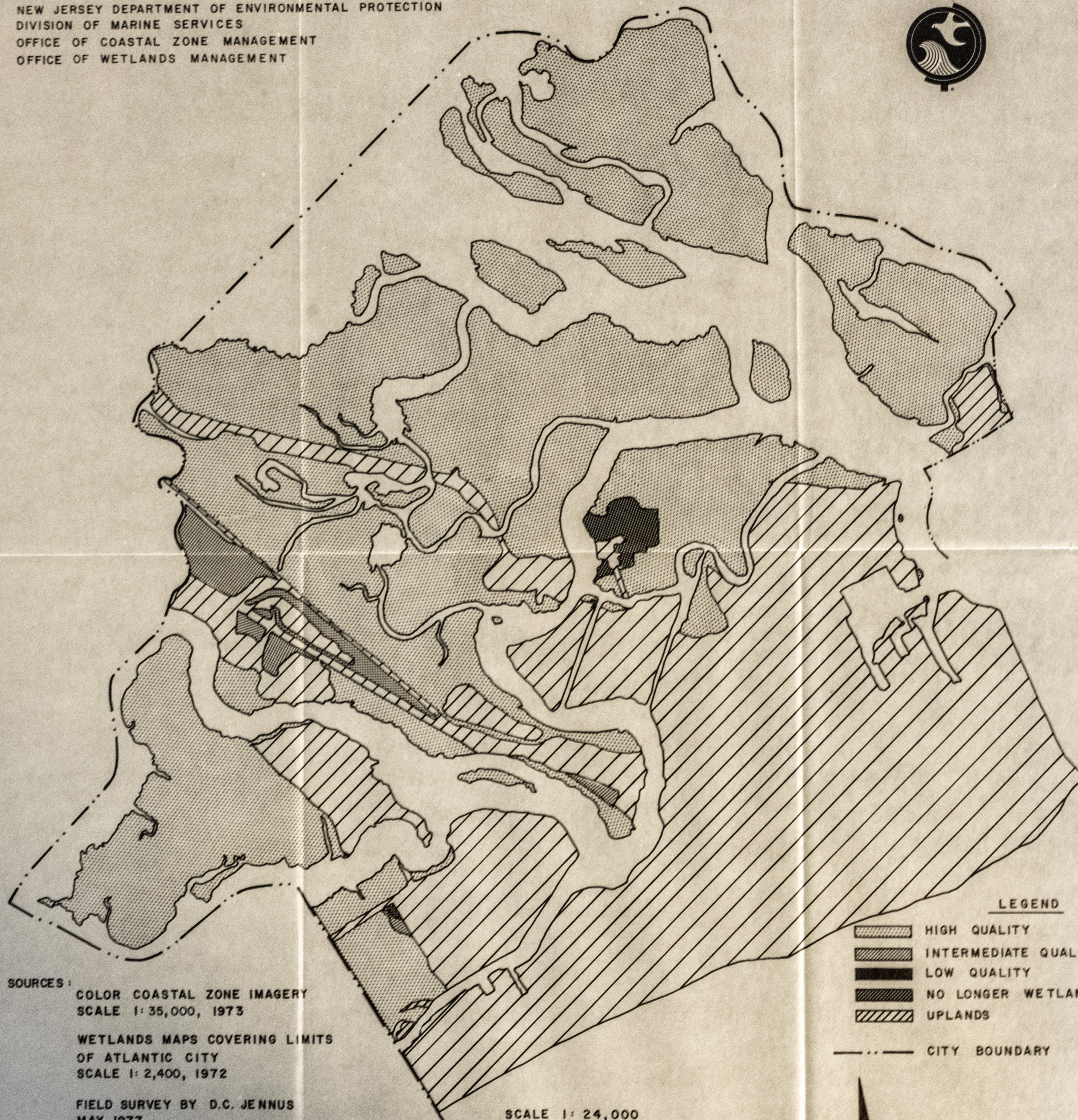
The portion of this map that is within the city limits of Atlantic City does not contain any vegetated areas. The only portion on the map constitutes a part of Broad Creek which is entirely a water course with no wetlands present.

Determination

No determination is required because of nonexistent vegetation within city limits.

ATLANTIC CITY WETLANDS QUALITY DESIGNATION
JUNE 1978

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF MARINE SERVICES
OFFICE OF COASTAL ZONE MANAGEMENT
OFFICE OF WETLANDS MANAGEMENT



SOURCES:

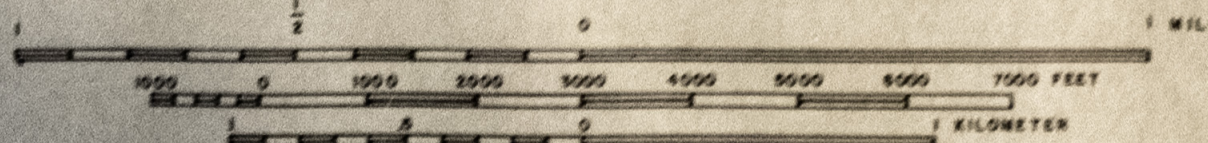
COLOR COASTAL ZONE IMAGERY
SCALE 1: 35,000, 1973

WETLANDS MAPS COVERING LIMITS
OF ATLANTIC CITY
SCALE 1: 2,400, 1972





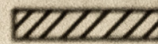
FIELD SURVEY BY D.C. JENNUS
MAY 1977

NOTE: FOR ACCURATE LOCATION CONSULT WETLANDS MAPS AND
1977 FIELD SURVEY.

SCALE 1: 24,000



LEGEND

-  HIGH QUALITY
-  INTERMEDIATE QUALITY
-  LOW QUALITY
-  NO LONGER WETLANDS
-  UPLANDS

--- CITY BOUNDARY





BASE MAP INCLUDES PORTIONS OF
 USGS 7 1/2 MINUTE TOPO QUADS
 FOR

- ATLANTIC CITY
- OCEAN CITY
- OCEANVILLE
- PLEASANTVILLE

