

D. SHARMA

BACKGROUND INFORMATION
ATLANTIC COAST
BARRIER ISLANDS
Maine
Massachusetts
Rhode Island

UNDEVELOPED AND UNPROTECTED BARRIER ISLANDS OF THE UNITED STATES

Prepared by

THE UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

In cooperation with
U.S. Fish and Wildlife Service
Heritage Conservation and Recreation Service

(WORKING COPY)

(Atlantic Coast
Gulf Coast)

April 1980

PURPOSE

This report, Undeveloped and Unprotected Barrier Islands of the United States, has been prepared by the National Park Service, in cooperation with the U.S. Fish and Wildlife Service and other bureaus in the Department of the Interior, in response to a request from the Subcommittee on National Parks and Insular Affairs of the House Committee on Interior and Insular Affairs. It provides information for use in deliberations on pending legislation which would authorize Federal acquisition of remaining undeveloped coastal barrier islands not assured of long-term protection by their existing owners. The legislation would also restrict the involvement of the Federal Government in activities tending to subsidize or enable the residential and commercial development of these ecologically significant and geologically dynamic natural resources.

The report does not contain recommendations on actions needed to protect these barrier islands, nor does it constitute a position of the National Park Service or the Department of the Interior on pending legislation. It is intended solely as a vehicle for bringing together available information on their locations; the hazards they pose for permanent human use and occupancy; the significance of their natural, recreational, and cultural resources; and the significance and imminence of known human-caused threats to these resources. The professional evaluations contained in the report provide the basis for objective comparisons of 183 islands from Maine to Texas, and for the establishment of protection priorities. The amount of accurate information available varies substantially from island to island. For this reason, the report

is presented in loose-leaf format so that additional information which may become available through Congressional hearings, public review, or other sources can be incorporated.

BACKGROUND

In his 1979 Environmental Message to the Congress, the President underscored the immense importance of the natural land and water resources of the coastal zone to the Nation's economic health and to the well-being of its people. Noting the manifold threats to the vitality of these resources, he affirmed the Administration's strong commitment to protection and wise management of these resources, and endorsed designation of 1980 as the "Year of the Coast."

This broad commitment builds upon the President's 1977 Environmental Message, which announced major new initiatives to restrain Federal involvement in subsidizing the development of wetlands and barrier islands. On the day the message was delivered, the President issued Executive Orders redirecting Federal activities so as to reduce the loss and promote the protection of wetlands and floodplains. As a part of the Message itself, he directed the Secretary of the Interior to develop a plan to protect remaining unspoiled natural barrier islands from unwise development. In fulfillment of this directive, the Heritage Conservation and Recreation Service, in cooperation with the U.S. Fish and Wildlife Service, the National Park Service, and other agencies, is developing the plan. As of this writing, the planning alternatives have been made available for public review and final recommendations are expected to be made to the President in the near future.

Concurrent with these executive branch initiatives, legislation (H.R. 5981) was introduced in the House on November 28, 1979, by Congressman Phillip Burton and 23 co-sponsors. The legislation would provide statutory authority for increased protection of the "natural, ecological, and environmental values of the undeveloped areas of the barrier islands." This protection would be achieved through restrictions on Federal activities which license, subsidize, or otherwise enable development of these areas, as well as through increased Federal acquisition.

On October 18, 1979, the Chairman of the House Subcommittee on National Parks and Insular Affairs of the House Committee on Interior and Insular Affairs requested the National Park Service to provide preliminary general information on barrier islands of the Atlantic and Gulf Coasts. The information was requested to aid in development of the above legislation. On November 29, 1979, the National Park Service provided a summary of basic statistics on 217 islands, based largely on data compiled by the U.S. Fish and Wildlife Service. The data summary identified the barrier islands, indicated their approximate fast land and wetland acreage, and provided a breakdown according to the status of their protection and level of development. At the time these data were made available to the Subcommittee, the National Park Service was asked to provide more detailed information on undeveloped and unprotected islands.

To respond to latter request, the National Park Service brought together a team of barrier island experts and Interior bureau officials to develop the framework for preparing the information report. It was agreed that the report should contain, at the minimum, statistical data

about each barrier island structure (e.g., acreage, ownership, land use, etc.), an evaluation of the significance of its resource values and both the significance and imminence of any threats to these values, and finally an assessment of the stability of the structure and its vulnerability to major storms. The participants agreed on the format and content of the evaluations, and responsibilities were assigned for developing the information summaries for islands within individual States.

During the ensuing two months, the evaluations were prepared, edited, and entered on special text editing equipment allowing for rapid retrieval of both text and numerical information as well as summarization and limited analysis of stored data. Maps showing the general locations of all Undeveloped and Unprotected Natural Areas within each State, as well as the specific location of each area, were prepared.

DEFINITION OF BARRIER ISLANDS

Barrier islands are narrow, elongated structures, generally paralleling the mainland coast, which have been formed by the complex interactions of waves, tides, currents, winds and available sediments. There is normally an aquatic system, usually open-water, separating barriers from the mainland. The structures consist of sands and less often other kinds of unconsolidated sediments of very recent geologic origin. The barriers are fronted on the seaward side by a beach, usually of sand, and on the mainland side by a highly variable zone of wetlands. The wetlands range in extent from virtually nothing, to scattered discontinuous bands along the bayside, to large bayside areas dissected with numerous channels, to continuous expanses extending between the barrier and the mainland.

Barrier islands characteristically change position--sometimes very rapidly--in response to storms and alterations in water level and current patterns. For this reason, they may be poorly suited to permanent human use and occupancy. On the Atlantic and Gulf Coasts, the barriers are generally receding up the incline of the Coastal Plain toward the mainland in response to a progressive rise in sea level. Connections between islands, and between islands and the mainland, are continually being formed and severed during storms. This is a natural process to which these dynamic resources have at once adapted and, to some extent, are dependent upon for their perpetuation. For this reason, barrier islands, or better barrier structures, have been defined broadly so as to include areas which are temporarily joined to the mainland on one side (called spits) or on both sides (called bay barriers), so long as they fall within the variability in characteristics encompassed by the above definition (Figure 1).

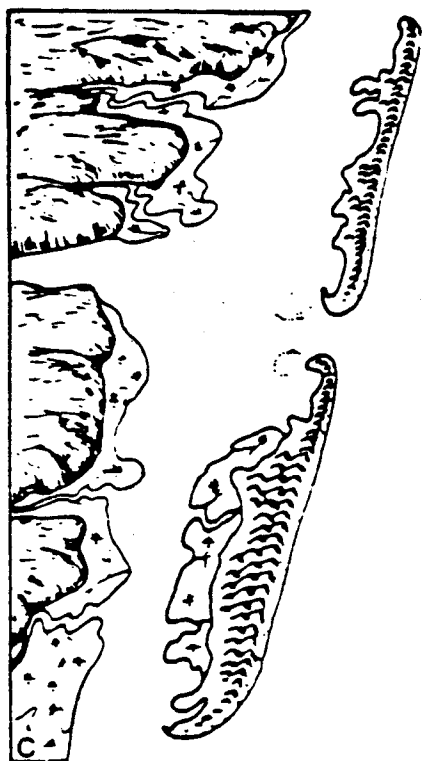
DELINEATION OF BARRIER ISLANDS

Barrier island structures occur in every State having a coastline on the Atlantic Ocean, Gulf of Mexico, or Pacific Ocean, as well as all Great Lakes States except Indiana, Illinois, and Minnesota. Barrier island structures also are present in the U.S. Virgin Islands and Puerto Rico. The structures range in size from small spits and bay barriers less than a mile long (mostly in New England) to the elongated barrier islands and spits of North Carolina, Florida, and Texas which often exceed 30 miles in length.

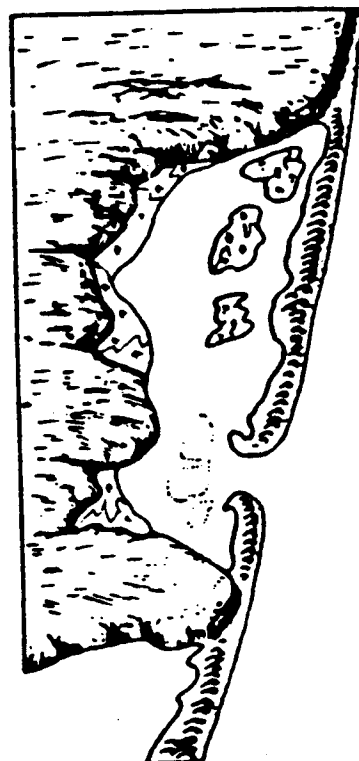
For purposes of this study, barrier island structures include beaches, fast lands between the beach and the bay, as well as small

Figure 1. Types of Barrier Structures (after Leatherman 1979)

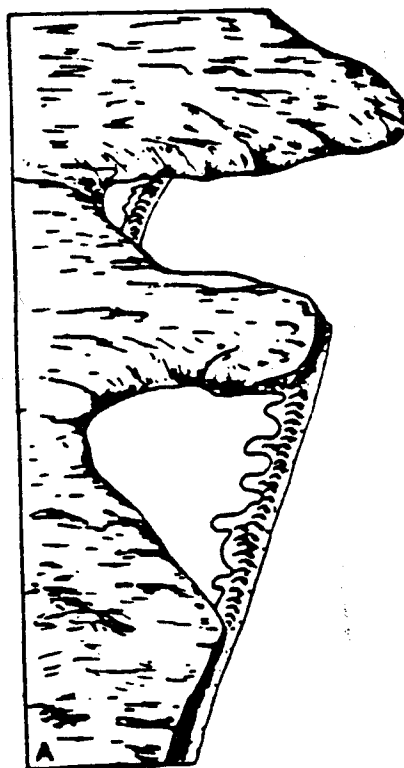
Type 1: Barrier Island - detached from the mainland on both ends



Type 2: Barrier Spit - connected to the mainland on one end



Type 3: Bay Barrier - connected to the mainland on both ends



islands in the bay and backside wetlands which are determined to be reasonably associated geographically, geologically, and ecologically with the barrier structure. In the majority of cases where a large bay is present between the barrier and the mainland, wetlands integrally related to the barrier structure are obvious and the boundary of the barrier was drawn to include them. In some instances, where extensive wetlands in a poorly defined bay are present, an important natural channel was taken as the boundary. In a few cases where a natural channel was lacking, a man-made canal or channel was used.

For spits, a boundary line was drawn along the single junction with the mainland. For baymouth barriers, boundary lines were generally drawn perpendicularly across the barrier structure at each junction with the adjacent headlands. In the latter instances, small ponds and their immediate shorelines located behind the barrier were included if they possess exceptional ecological value and were considered to form an ecological unit with the barrier structure.

For purposes of this study, the seaward limit of the barrier units is normally taken as the seaward limit of the beach or, in a few cases, tidal flats shown on the U.S. Geological Survey's topographical quadrangles. This boundary is obvious on the maps and has not been specifically delimited with a boundary line.

Rock outcrops and similar "permanent" landscape features normally were excluded from the boundaries except in a few cases where they are closely related physiographically to the barrier, because their

characteristics and suitability for permanent human use and occupancy normally differ markedly from the barriers themselves. Similarly, mangrove islands fronting directly on the Gulf of Mexico were excluded because their formation and many of their characteristics are quite different from barrier islands as defined above. Mangroves located in the wetland zone on the bayside of barrier island structures were included, because, in this case, they form an integral part of the barrier island ecosystem.

Barrier structures having a beach length of less than 1/4 mile were excluded.

CATEGORIZATION OF BARRIER ISLANDS

The Nation's coastal barrier islands are an extremely diverse resource. They differ widely in size, topography, shape, and the ways in which they have developed geologically and ecologically over time. They differ also in their history of human occupancy and the extent to which they have been developed and manipulated to serve the demands of a growing human populations. They differ in significance of their natural resources and the suitability of these resources for development, recreation, wildlife management, and other uses. Finally, they differ in ownership and in the capability and intent of their owners to assure long-term resource protection and to manage the resources in the public interest. Because of this great diversity, and the almost limitless potential for developing classification categories, any system for classifying barrier islands must be developed in accordance with carefully specified objectives.

For this study, the primary objective was to identify barrier islands which are today undeveloped and unprotected. In other words, we sought to identify those barrier island structures or portions thereof (1) in which natural resources and processes exist essentially undisturbed by present human development and human activities and (2) where the existing owner cannot be shown to have both the capability and the intent to assure long-term protection of these resources and processes for the benefit of the Nation's people. For purposes of this study, long-term is assumed to mean at least 25 years.

To carry out this objective, barrier island structures of the coastlines bordering the Atlantic Ocean and the Gulf of Mexico were identified and the status of their protection and degree of development determined. This work was initiated in 1977 by the U.S. Fish and Wildlife Service, which is continuing to update the data base as new information is obtained. A major effort was made to determine the status of protection and development for fast lands for each structure--that is, the lands located within the mean high water line on the seaward side and the bayward limit of upland vegetation on the back side. The principal reason for this focus was that the impacts on the total barrier island ecosystem including the valuable wetlands, estuaries, and marine littoral areas are typically due to pressures associated with progressive development of the fast lands. It was determined that classifying the barrier structures on the basis of use of their fast land and their protection status would provide the most sensitive indication of overall ecosystem condition and the most useful information for developing an effective plan for protection.

The classification system segregates the fast land portions of barrier island structures into three principal categories on the basis of

Connecticut

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Maine

Massachusetts

Rhode Island

(1) the density of existing development, and (2) the capability and intent of the existing owner to provide long-term protection of natural and historic resources in the public interest. Three principal categories were used, as follows:

Developed Areas (Class I)

Developed areas are defined as barrier structures, or portions thereof, where residential, commercial, military, industrial, recreational, or other forms of permanent development have caused significant loss of native vegetation and significant alteration of natural geological and ecological processes. As a general rule, areas containing an average fast land development density in excess of one permanent structure per five acres were considered developed.

Both private and public lands were included in the Developed Area category wherever development level criteria were met. Thus, given a sufficient level of development, urban recreation areas, military installations, and U.S. Coast Guard Reservations are all subject to inclusion in the category along with private residential communities, commercial developments, and industries.

Open space and small natural reserves set aside within developed communities were normally considered part of the Developed Area itself because the development was considered to have potentially serious adverse impacts on both the resources themselves and the processes responsible for their long-term perpetuation.

Roads and utilities were considered part of a Developed Area whenever they passed through such an area, but were not themselves considered a sufficient level of development to warrant allocating an otherwise undeveloped area to this category.

Preserved Natural Areas (Class II)

Preserved Natural Areas are defined as barrier structures or portions thereof where the existing private owner or public administrator has (1) the capability to assure long-term protection of natural and historic resources, and (2) demonstrated the intention to provide this long-term protection, either by establishing unequivocal preservation objectives or by underscoring this intent through previous management commitments and performance. The native vegetation of Preserved Natural Areas is largely or completely unaltered, and natural ecological and geological processes are allowed to operate substantially unimpeded by human development and human activities. Preserved Natural Areas contain few permanent structures, but limited development supporting public use, resource management, scientific study, or administration of the area is often present.

National seashores, national wildlife refuges, State and local parks, and sanctuaries managed by private scientific institutions and conservation organizations comprise most of the Preserved Natural Areas. Although nearly all of these are open to the public for various recreational and educational activities, this is not prerequisite to inclusion in this category. Additionally, it deserves mention that areas owned by private individuals and some groups, such as hunting clubs, were normally not included in this category because their ability to provide long-term protection cannot be assured.

Undeveloped and Unprotected Natural Areas (Class III)

Undeveloped and Unprotected Natural Areas are defined as barrier islands or portions thereof where (1) natural resources and the natural processes responsible for their perpetuation remain largely or completely unaffected by human development and human activities, and (2) the existing private owner or public administrator cannot be determined to have the capability as well as the demonstrated intention to provide long-term resource protection. These areas may contain scattered permanent structures, such as residences or docks, in densities normally less than one per five acres.

Undeveloped and Unprotected Natural Areas were identified regardless of their status with respect to local zoning and approval of subdivision plats, permits, or financing for planned future development. However, in places where the supporting roads, utilities, and other infrastructures to serve approved developments are under construction or completed, the areas were placed in a special Transitional Area subcategory (Class III-D). These areas were considered to be committed to development to such an extent that reversal of the development process would be extremely difficult. Areas placed in Class III-D are considered transitional to Class I and were not included in the inventory of Undeveloped and Unprotected Areas under consideration for legislative protection.

METHOD OF MAPPING

To develop the categorization itself, a variety of information sources were used. United States Geological Survey Topographic Quadrangles

(mostly 1:24,000 scale) were used for initial identification of barrier island structures and for determining locations of fast lands, associated wetlands, and areas of development. An identification of 284 islands was first made in October 1977 by the U.S. Fish and Wildlife Service (Peoples 1977). Aerial imagery, research reports, State and Federal planning documents, and professional contacts were employed to confirm the locations of these structures and to develop a preliminary classification. During the ensuing years, the USFWS' effort increased the number of identified islands to more than 400. In recent months, this work has been further expanded by the NPS to include an on-going survey of the barrier island structures of the Great Lakes, the Pacific coast, the U.S. Virgin Islands, and Puerto Rico.

Boundaries between categories were drawn, to the greatest extent possible, roughly perpendicular to the coast across the barrier structure's fast lands and wetlands. The delineation of the boundaries between categories was based on best professional judgment in light of available information. For this reason, it is important that the flexibility to make further adjustments in these boundaries be retained as additional information is obtained.

All mapping was performed directly on U.S. Geological Survey topographic quadrangles (usually 1:24,000 scale). The minimal size considered for mapping of an entire island was 50 acres, except in a few cases of very small islands with exceptional resource value. No island or categorization unit was mapped if its seaward shoreline was less than 0.25 miles long.

FORMAT OF THE REPORT

This report contains information on 182 islands or parts of islands on the Atlantic and Gulf Coasts which, as of February 1, 1980, are categorized as Undeveloped and Unprotected Natural Areas. For each island, the presentation includes an evaluation sheet and an opposite-facing map. The evaluation sheet provides statistical data about the island, an assessment of the significance of its resources, the threats to these resources, and the hazards the island poses for permanent human occupancy and development. The map shows the boundaries of the barrier island, the boundaries of the classification categories it contains, and (using a small insert) its position along the particular State's coastline.

The information is presented in two volumes. Volume I contains information on Atlantic Coast islands, organized by State from Maine to Florida. Volume II contains information on Gulf Coast islands from Florida to Texas as well as tables and charts providing summaries of information which will aid the user to obtain a broad perspective on barrier islands in general, as well as barrier islands within particular States and sections of the coast. Volume II also contains a bibliography of information sources used in preparing this report, and a listing of the report's preparers.

CONTENT OF THE EVALUATION SHEETS

The following description of the content of the evaluation sheets is provided according to the format headings.

Name of Island. Locally used names were adopted as much as possible.

Normally, the island name was taken directly from U.S. Geological Survey

topographic quadrangles. In some cases, such as for most of New England's baymouth barriers, the barrier structure was given the name of a nearby associated natural feature or political jurisdiction. Sachem Pond and Namskaket Spits are examples. If a barrier island is associated with another geographical area and if mention of the latter could assist the user in locating the barrier, the associated area has been identified in parentheses after the name of the barrier. Examples include Block Island, Gardiners Island, and Martha's Vineyard.

Code. The code numbers are assigned sequentially by State from north to south for all barrier islands on the Atlantic Coast, and from east to west on the Gulf, regardless of their classification category. The codes are used to facilitate information retrieval.

State, County, Congressional District. These are determined from widely available maps.

Summary Evaluation. This is a paragraph highlighting the most important information on the evaluation sheet. It normally provides a brief overview of significant resource features, hazards to human use and development, and threats to resource values.

Description. This section contains primarily statistical data on the island's size, use, ownership, access, and relationship to urban areas, as follows:

Connecticut
New York
ATLANTIC COAST
BARRIER ISLANDS

Maine

Massachusetts

Rhode Island

Land use/land cover. Data on land use and land cover were compiled by the U.S. Geological Survey using large-scale aerial imagery flown between 1972 and 1975 (Lins 1979). Barrier island boundaries were determined empirically during the planimetry of the imagery and were not recorded. They are often not the same as the boundaries presented in this report. For this reason, percentages rather than acreages were reported for the individual land use/land cover categories on the assumption that, although the boundaries of the two delimitations may be different, the breakdown of land use/land cover is likely to be similar. In instances where the USGS breakdown is known to be widely at variance with existing conditions within the delimited boundary, no figures were presented. In a few of the latter cases, NPS was able to determine land uses and these data were reported.

USGS data on the total acreage of the barrier island structure were presented, unless more accurate data were available for the USFWS/NPS-delimited boundary, in which case the latter figures were used. .

USGS acreage data apply to entire islands and thus cannot be used to describe Undeveloped and Unprotected Natural Areas for islands containing two or more categories. For these islands, the NPS used USGS topographic maps to determine the approximate acreage of Undeveloped and Unprotected Natural Area and a breakdown of its acreage into fast lands and wetlands. These acreages are reported separately on the evaluation sheet.

Beach length. The total miles of seaward-facing shoreline were determined for each barrier island structure and for each classification category within it. For spits and bay

barriers, distances from the ends connected with the mainland were measured from lines drawn approximately perpendicular to the shoreline at the connection. Data for all classification categories were collected. Only total beach length and beach length of Undeveloped and Unprotected Natural Areas are reported on the evaluation sheets.

Land ownership. Land ownership information is tabulated for entire islands only, as insufficient time was available to conduct surveys of Undeveloped and Unprotected Natural Areas. Land ownership data were obtained directly from States or local governments for the delimited boundary, or from records of the Heritage Conservation and Recreation Service, the U.S. Fish and Wildlife Service, and other sources, including interested members of the public.

Land ownership data are approximate and are provided to show the relative importance of Federal, non-federal governmental, and private landownership on the island as a whole. Because different information sources were often used for determining total acreages and land ownership, and because these determinations were sometimes based on different boundaries, the reported acreages under "total area of unit" and "land ownership" may not necessarily agree.

Access. The methods of access to the island are reported in brief narrative form. Land-based access facilities, such as paved roads, bridges, and airports, are identified. For water access, the vehicles of transport, such as private boats and ferries, are reported. Areas

that are accessible only on foot, or by helicopter, or that are off-limits to the public, are indicated, to the extent information was available. Information was obtained from local contacts and governmental sources, such as USGS topographic quadrangles and the HCRS island inventory.

Relationship to urban areas. Because proximity to major urban centers is often related to the types of use pressures and potential public benefits associated with a particular island, the evaluation sheets identify the nearest Standard Metropolitan Statistical Area (SMSA), the approximate shortest road distance between the SMSA and the closest access point on or near the barrier, and a recent estimate of the population of the SMSA (developed from U.S. Census Bureau statistics, normally for 1978).

Physical Characteristics. This section primarily contains information about the geological structure of the barrier island and the natural forces which shape it and determine its suitability for human use and development.

Type of barrier island structure. Barrier island landforms are the physical manifestation of a complex interaction of hydrological, geological, and ecological processes. Dr. Paul J. Godfrey at the University of Massachusetts has developed a classification system which takes these interactions fully into account. The classification system used herein was adopted from this work (see Appendix).

Geological/hydrological features. This section provides a brief description of existing landforms and water bodies associated with the barrier island, including identification of any significant features. If sufficient accurate information is available for evaluating the features, a significance rating is assigned as follows:

Very high: Area contains nationally unique feature or best example of feature

High: Area contains nationally rare or unusual features

Moderate: Area contains regionally rare or unusual features

Low: Area contains features frequently characteristic of other barrier islands in the region.

Hazards. Barrier islands pose a variable degree of hazard to permanent human development and occupancy, depending upon their vulnerability to the high winds, waves, and flooding associated with storms, as well as the nature and rate of changes in the position of the shoreline in response to prevailing natural forces and storms. Islands that are subject to a high frequency of intense storms, prone to overwash and inlet formation, and subject to rapid shoreline erosion are the most hazardous. This section summarizes relevant statistics and provides evaluations on the geological stability of each island and the severity of its associated natural hazards.

Storm probability. Storm probability statistics are provided for tropical storms of different intensities. Using data on the frequency and severity of hurricanes for Atlantic and Gulf Coast

counties from 1900-1974 (Hebert and Taylor, 1975), the NPS determined the likelihood that a Great Hurricane and any hurricane^{1/} will occur during a given year. Quantitative data for each county on the frequency of tropical storms and extra-tropical northeasters of less than hurricane force were not available, although the evaluation format allows for their inclusion. As northeasters during the winter and early spring months can have significant impacts along the middle Atlantic and North Atlantic Coasts, the storm probability report for each area north of Cape Hatteras, North Carolina, contains a qualitative evaluation of the importance of these storms.

The storm data for 1900-1974 were used to calculate the Annual Storm Intensity Factor, which provides an objective basis for rating each island on the basis of its vulnerability to major storms. The Annual Storm Intensity Factor (A) is determined as the product of the Mean Storm Intensity Factor (I) and the Annual Storm Frequency (F). The method used for the calculations and assignment of storm vulnerability ratings is described in the Appendix.

Flooding. The amount of fast land inundated during storms having intensities likely to occur once every hundred years is a commonly used indicator of the flood hazard associated with a major storm. Because many barrier islands have very low relief and are subject to high storm surges, complete inundation during a 100-year storm

^{1/}For purposes of this report, a Great Hurricane is considered to be a storm with peak winds > 131 mph. A hurricane has peak winds ≥ 74 mph.

event is not uncommon. In fact, the most flood-prone barriers are completely flooded very frequently, sometimes several times a year. The tabulation summarizes available data on the stillwater height of the storm surge and the percent of the Class III fast land flooded for storm intensities likely to occur once every 10, 50, and 100 years. For most islands, data were available only for the 100-year flood, and were taken from the U.S. Geological Survey maps of flood hazard areas, prepared in cooperation with the Federal Insurance Administration. It should be noted that the statistics do not reflect the fact that waves, sometimes many feet above the stillwater flood level, are a major factor in barrier island flooding, and are in part responsible for the enhanced flood impacts in these areas. However, data on wave set-up were not available for most areas.

Ratings for severity of flood hazard were assigned as follows:

<u>% of Fast Land Flooded by the 100-year Storm</u>	<u>Rating</u>
91-100%	very high
61-90%	high
31-60%	moderate
0-30%	low

Shoreline changes. All barrier islands are, at least to some degree, locationally unstable. The loose sediments that make up their structure tend to move readily in response to winds, waves, and currents. While erosion of the ocean shoreline is the predominant trend along most of the Nation's coast, parts of an

individual island may be simultaneously stable, eroding, and accreting at different places at the same time. In addition, the locations of areas of stability erosion, and accretion tend to shift, sometimes dramatically, in response to forces and conditions still not fully understood. Thus, determination of average shoreline changes during the longest possible period of record is desirable in order to minimize the effects of short-term variations on the reliability of shoreline trend estimates.

For each Undeveloped and Unprotected Natural Area, the report summarizes available information on shoreline condition (i.e., stable, eroding, or accreting), the miles of shoreline illustrating each condition, and the mean rate of change in feet per year. The data are presented sequentially for different sections of the these shorelines in the form of a chart. The chart contains geographic or directional reference points, or locators, which can be visually cross-referenced with the location map for the island to determine the approximate locations of different shoreline conditions.

Summary evaluation of island stability. To the extent information is available, this section presents a brief discussion of the role of natural processes, such as dune formation, overwash, and inlet migration, in determining the position and stability of the shoreline. Major dune fields, extensive wetlands, and other features that influence the stability of the island are indicated. Human manipulations of the shoreline, such as through construction of groins on

the beach or jetties around inlets, are sometimes mentioned if they have a substantial influence on shoreline stability. The section contains an overall qualitative rating of the island as either extremely unstable, unstable, moderately unstable, or stable.

Resource Values. This section briefly describes the fish and wildlife resources, special ecological features, recreation potential, and cultural resources of Undeveloped and Unprotected Natural Areas. It also provides a preliminary evaluation of the significance of each, based on available information.

Fish and wildlife. Barrier islands, and the estuarine systems they protect, are among the Nation's most diverse and productive natural ecosystems. These islands, located at the interface of land and sea, provide interlinked and varied upland, wetland, and aquatic habitats supporting large numbers of both resident and migratory animals.

Significance values for fish and wildlife values were assigned in accordance with qualitative criteria for evaluating different kinds of habitats. The significance level assigned on the evaluation sheet represents the highest rating given for any of the habitat types present.

Type of habitat

Ratings

Migratory waterfowl
habitat

Low: Use of island incidental, no major concentrations of resting, feeding, or nesting waterfowl.

Moderate: Important resting, feeding, or nesting area for widely distributed species.

High: Major resting, feeding, or nesting area for widely distributed species; and/or important area for rare or endangered species.

Type of habitatRatings

Terrestrial and wetland
wildlife habitat (small
mammals, ungulates,
reptiles, passerines,
marsh birds, raptors,
nesting colonial shore-
birds, etc.)

Very High: Supports very large
density of resting, feeding,
or nesting waterfowl of wide
distribution; and/or provides
critical habitat for rare or
endangered species.

Low: Diversity of wildlife low;
not known to provide habitat
for rare or endangered animal
species.

Moderate: Provides important
habitat for widespread animals;
may support large populations
of a small number of species.

High: Provides important habitat
for diverse animal species;
and/or important feeding or
resting habitat for rare or
endangered species.

Very High: Exceptional diversity
of animal species; and/or
important breeding/nesting
habitat for rare or endangered
species.

Sea turtle habitat

Low: Within the range of at
least one sea turtle species,
but not known to have been used.

Moderate: Incidental nesting of
at least one species reported.

High: Island regularly used by
one or more species for nesting.

Very High: Island provides
critical habitat for one or
more endangered sea turtle.

Special ecological features. Many barrier islands contain rare,
unusual, or unique features such as freshwater ponds, artesian springs,
and unusual flora. This section identifies these features and discusses
their significance. Special designations, such as Natural Landmark status.

Unique Ecosystem status, and protection designations under State Coastal Zone Management Acts and other State or local authorities, are indicated. Significance ratings for special ecological features are assigned as follows:

Low: Feature usually found on barrier islands in the region.

Moderate: Feature found on many barrier islands in the region.

High: Feature restricted to a few barrier islands in the region.

Very high: Feature unique to the particular barrier island.

Recreation potential. All Undeveloped and Unprotected Natural Areas on barrier structures have some potential to support public recreational activities. The nature and level of recreational activities best suited to a particular island depend on a large number of factors, such as the geological stability of the area, the sensitivity of its resources to particular recreational activities, the proximity to major population centers, the availability of road access, and regional demand for particular recreational activities.

We have attempted to provide very preliminary ratings for overall recreational potential based on qualitative factors such as those mentioned above as well as information available from the Island Inventory data bank managed by the Heritage Conservation and Recreation Service and from State and local recreation plans.

Cultural resources. Barrier islands, particularly those on the Atlantic and Gulf Coasts are the sites of some of the earliest colonial settlements, and the islands' association with the Nation's colonial, maritime, military, and industrial history provides varied subject matter for educational programs.

Connecticut

New York
ATLANTIC COAST
BARRIER ISLANDS

Maine

Delaware
Massachusetts

Rhode Island

Each Undeveloped and Unprotected Natural Area was assigned a preliminary significance rating for cultural resources. Areas containing archeological or historic resources eligible for or listed on the National Register of Historic Places were assigned a "High" rating. Areas supporting known resources of interest, but not yet determined to be eligible for the Register, were given a "Moderate" rating. All other areas were given a "Low" rating.

Threats to Resource Values. In this section, known, probable, and possible threats to the natural, historic, and recreational values of each barrier island are discussed briefly. We have assigned preliminary qualitative ratings to indicate the significance of the threats associated with development, shoreline manipulation, environmental pollution, and other causes, as well as to indicate the probable imminence of the threats. Ratings were assigned on the basis of the following general criteria:

Significance Ratings

Very High	The activity or development will adversely affect all or nearly all of the Class III lands and will cause severe or total disruption of the natural ecosystem and/or historic resources and their settings.
High	The activity or development is likely to have adverse effects on most of the Class III lands and is expected to cause severe or total disruption of natural resources or processes and/or historic resources and their settings in the affected area.
Moderate	The activity or development is likely to have adverse effects on local areas within the Class III lands and is expected to cause locally substantial disruption of natural resources or processes, and/or historic resources and their settings.

Low: The activity or development will have either no adverse effect or only minor adverse effects on local areas within the Class III lands and is not expected to disrupt natural resources or processes, and/or historic resources and their settings.

Imminence Ratings

Very High The threat to natural and/or historic values is immediate and the Class III lands can be protected only by immediate action.

High The threat is very near-term and is likely to begin compromising Class III natural and/or historic values within the next six months.^{1/}

Moderate The threat is relatively near-term and is likely to begin compromising Class III natural and/or historic resource values within the next two years.

Low The threat is distant and, may begin compromising Class III natural and/or historic resource values more than two years from the present. These threats are often of a highly speculative nature.

Development. This section discusses threats associated with existing or planned future development within the Undeveloped and Unprotected Natural Areas. Subdivision approvals, governmental or private plans for development, proposals for bridge construction paving the way for future development, planned extensions of utilities into Class III areas, and a wide variety of other on-going or future development activities can result in significant adverse direct and indirect impacts on barrier island resources and the processes responsible for their perpetuation, as well as on historically significant sites and structures. The discussion provides information about the nature of the development (with quantitative data, if available); its status with regard to planning,

^{1/}Timeframes determined from March 1980.

design, approval, or construction; and the nature and significance of known or potential impacts caused by implementation of the development itself or associated with changed conditions resulting from the development.

Shoreline manipulation. Groins on the beach, jetties to stabilize inlets, dredge and fill operations for navigation channel maintenance, beach nourishment and associated borrow operations, seawalls and other structures for direct protection of development, and similar projects and programs have potentially significant impacts on natural sand transport processes, as well as ecological conditions on beaches, dunes, wetlands, and in estuaries. This section provides a brief discussion of the status of these projects (e.g., public support only, authorized, designed, approved, under construction, implemented), the nature of the project itself and known or potential impacts associated with the project and/or with the changed conditions, such as enabled additional development, associated with the project.

Environmental pollution. Potential threats to the environment of Undeveloped and Unprotected Natural Areas may result from point and nonpoint sources of air pollution and water pollution. Of particular concern are the impacts associated with oil spills from tankers, production wells, and pipelines; regional industrial development; agricultural and urban runoff; and inadequate wastewater treatment within and near the Natural Areas. Noise from aircraft overflights; use of the areas for dumping; visual pollution from debris on the beach, dumps, and development on adjacent lands; and other sources of environmental pollution affect a number of Natural Areas.

The text identifies the sources of existing and potential pollution, the status of any control efforts; and the significance of associated impacts.

Miscellaneous. This section includes additional relevant information about the island or its Natural Area resources, such as individuals particularly knowledgeable about the area, intent of present landowners on future management of the area, explanations of material covered elsewhere in the evaluation sheet, and so forth.

Preparer(s). The section identifies the individual(s) primarily responsible for preparation of the evaluation and the date of preparation. Evaluation sheets were edited and revised as necessary to improve consistency in treatment of the subject matter.

Connecticut

New York

ATLANTIC COAST
BARRIER ISLANDS

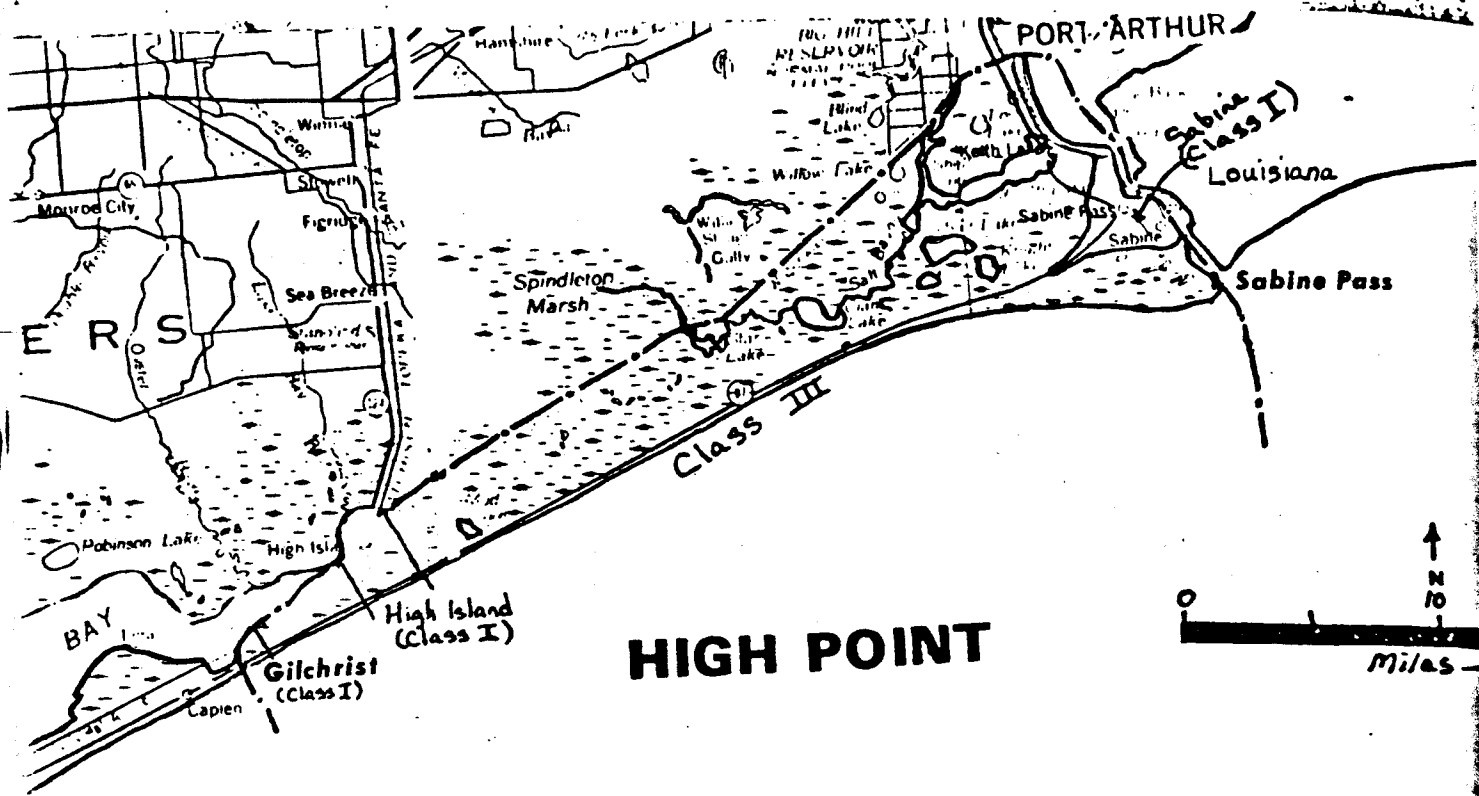
Maine

New Jersey

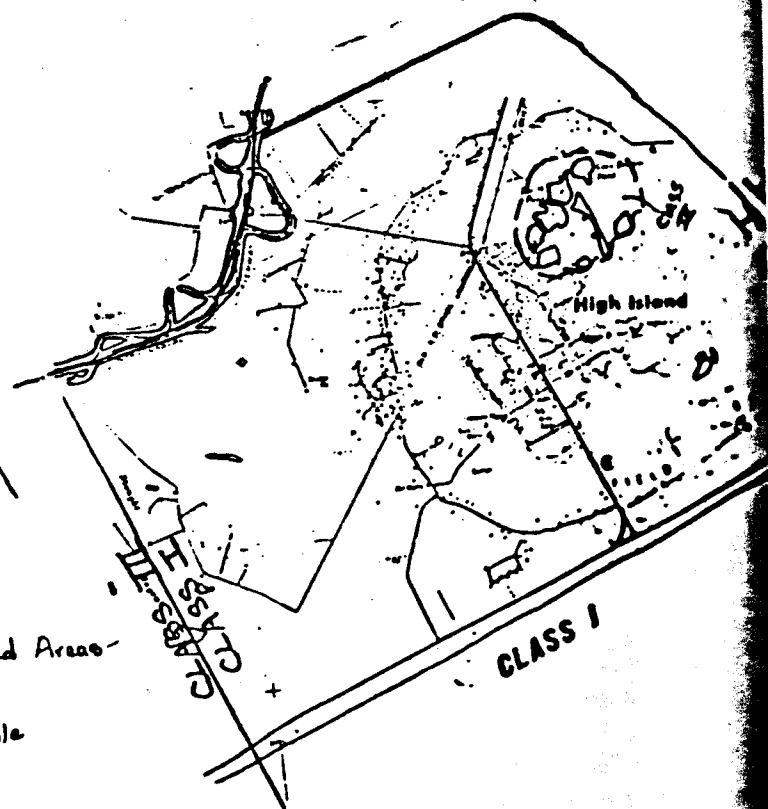
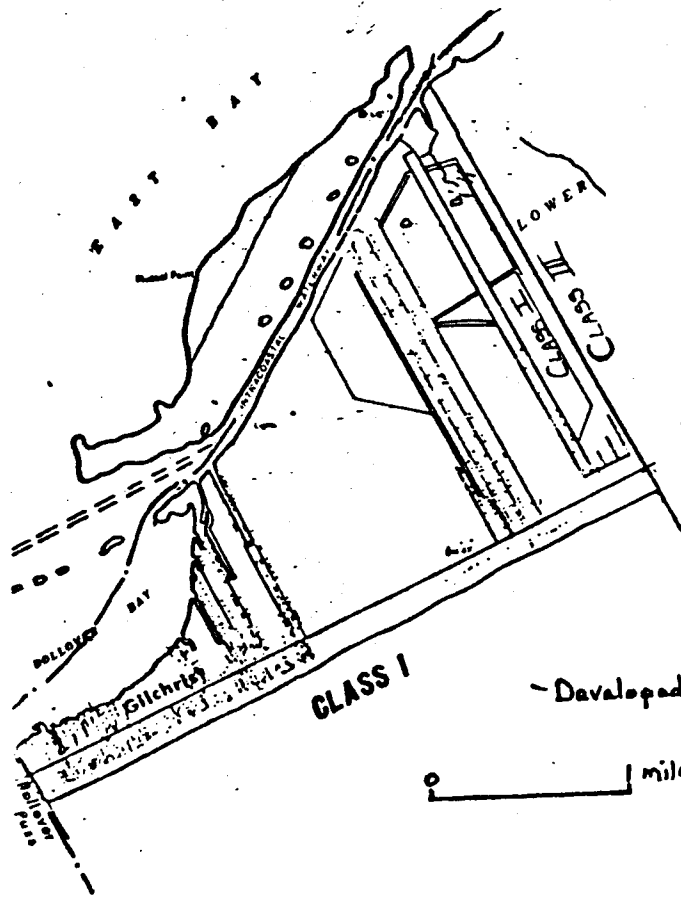
Delaware

Massachusetts

Rhode Island



G U L F O F M E X I C O



of Unit: High Point Island Reference Code: TX-01

ty: Jefferson Congressional District: 08

ENVIRONMENTAL EVALUATION: High Point Island host an extensive marsh system with many lakes and ponds. These marshlands provide habitat for a variety of bird species, including the bald eagle, the brown pelican, and the peregrine. Much of this area is administered by the National Audubon Society as a wildlife sanctuary. Principal hazards to use and development are: (1) A relatively unstable eroding Gulf shoreline; (2) Frequent inundation from storm surge during severe storms and fresh water flooding; and (3) Frequent or potential washovers.

DESCRIPTION: Total Area Of Unit: 116,216 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	5%
Agricultural Land	6%
Wetland	0%
Forest Land	12%
Water	5%
Outland	68%
Barren Land	4%

Developed/Unprotected Land (Category III):

Fast Land 25,565 Acres Wetland 82,483 Acres
Interior Waters 5,322 Acres

Each Length of Entire Unit: Total 44.2 Miles
Unprotected/Unprotected 35.0 Miles

Land Ownership: Federal: 0 Acres
Non-Federal Govt: 15,000 Acres Private: 101,216 Acres

ACCESS: Access available via paved, 2-lane state highway 37. Several unpaved roads and trails provide access to each area. Privately maintained access roads near Sabine Pass are closed to the public.

Nearest Standard Metropolitan Statistical

Area(SMSA): Beaumont/Port Arthur
Shortest Road Distance from Unit to SMSA: 30 Miles
Population of SMSA in 1978: >250,000

PHYSICAL CHARACTERISTICS:

Type of Barrier Island Structure: Eroding Deltaic Headland

Geological/Hydrological Features: An estimated 64% of High Point Island is tidal marsh or considered "wet". The marsh is bordered on the Gulf by a relatively thin transgressive beach. Marsh outcrops on beachface are common. Several lakes are present within the marsh system.

Significance Rating: High

Natural Hazards:

Storm Probability(% chance of occurrence in a given year):

Great Hurricane(Winds >131 MPH)	3%
Hurricane(Winds > 74 MPH)	15%
Tropical Storms	N/A

Vulnerability to Major Storm Damage: Moderate
(Annual Storm Intensity Factor = 0.33)

Flooding:

Flood Occurs	Stillwater Height of Storm Surge	% of Category III Fast Land Flooded
Once Every		
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	70-75%

Severity of Flood Hazard: Moderate

Shoreline Changes (Category III Areas Only):

Shoreline condition:	accreting	eroding	stable
Shoreline miles:	22.4	8.5	4
Rate/year:	5-10 Ft/yr.	5-10 ft/yr.	--
Locators:	South	North	

RESOURCE VALUES

Fish & Wildlife: High Point Island provides habitats for the following endangered and threatened species: bald eagle; brown pelican; peregrine; and red wolf.

Significance Rating: Very High

Special Ecological Features: The U.S. Fish and Wildlife Service has listed High Point Island as having high potential for conservation with respect to the wildlife shown above. High Point Island has one of the largest marsh systems found along the Texas coast. The numerous lakes provide habitats for many species of birds. The Texas land office reports both salt and fresh water marsh within the High Point Island boundaries.

Significance Rating: Moderate

Recreation Potential: Intensive beach recreation - low
Low-intensity beach recreation - high

Significance Rating: Moderate

Cultural Resources: No cultural resources have been reported for this area.

Significance Rating: Low

Miscellaneous Comments: None.

Summary of Island Stability: High Point Island is associated with the eroding Trinity deltaic headland. The island is presently transgressive from Clam Lake to Rollover Pass and regressive from Clam Lake to Sabine Pass. The entire area is subject to frequent flooding and washover activity. With respect to the high erosion rates and frequent flooding, High Point Island is evaluated as unstable.

THREATS TO RESOURCE VALUES

Development: Commercial, residential and access routes do not pose an immediate threat to the island's resource values; however, any development within the confines of the marsh system would threaten waterfowl and fish habitats with disturbance or removal.

Significance Rating: Moderate **Imminence:** Low

Shoreline Manipulation: Data not available

Significance Rating: N/A **Imminence:** N/A

Environmental Pollution: High Point Island's proximity to both the Intra-coastal Waterway and Sabine Pass expose it to the likelihood of contamination by spilled hazardous substances (e.g. oil, chemicals, etc.) Increasing tanker traffic in the Gulf heightens this threat.

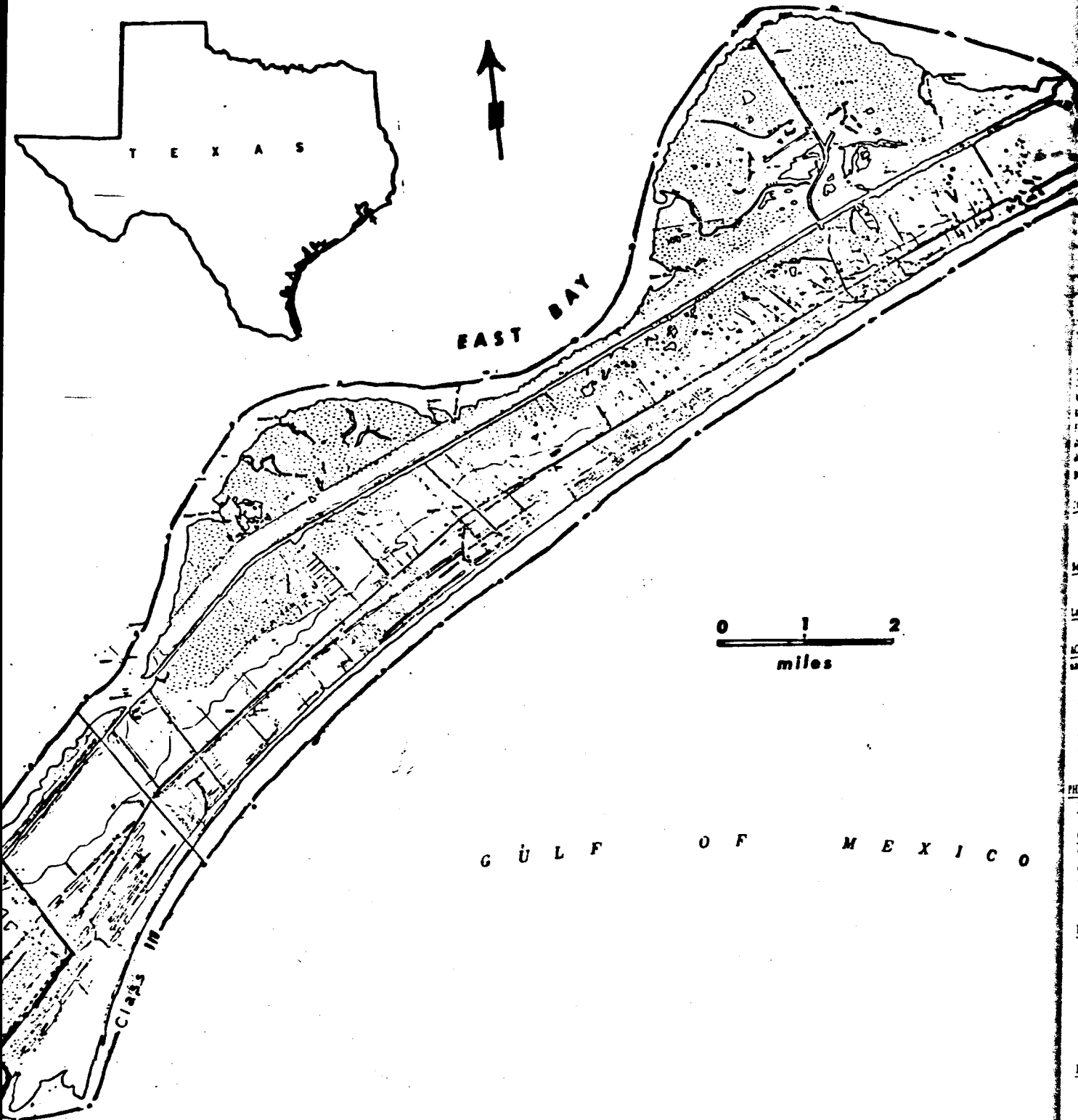
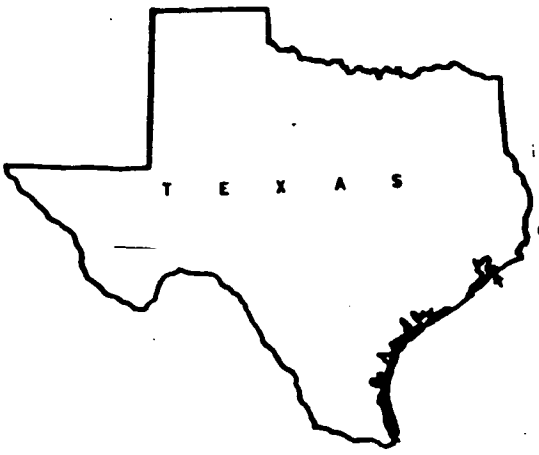
Significance Rating: High **Imminence:** High

Other Threats: Data Not Available

Significance Rating: N/A **Imminence:** N/A

Miscellaneous Comments: The area includes the private-owned Smith Woods approximately 300 acres in area within the town of High Island. This small habitat is widely regarded as the most important stopover for perching birds on the Gulf Coast. Any increase in development in the immediate vicinity of this area could adversely affect its value as bird habitat. Long-term protection is therefore viewed as uncertain.

Preparer: M.O. Hayes Date: 1/30/80



BOLIVAR PENINSULA

of Unit: B
City: Galveston
PRIMARY EVALUATION
located at the
has undergone
development of
beaching beach
lands for sever
is subject to
hurricane and sev
DESCRIPTION:
Total Area of U
and Use/Land C
Urban or Built-
agricultural La
Wetland
Forest Land
Water
Wetland
Woods, and
Undeveloped/Unp
Fast Land 3,4
Interior Water
Beach Length of
Undeveloped/U
Land Ownership:
Non-Federal G
ACCESS: (1) Per
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Nearest Stand:
Area(SMSA):
Shortest Road
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Storm Prob
year):
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Flooding:
Flood Occurs
Once Every
10 Yrs.
50 Yrs.
100 Yrs.
Severity
Shoreline Char
Shoreline
Condition
Shoreline
miles
Rate/year
Area:
Summary of Isl
Bolivar roads
accretion and/
be expected be
is considered

of Unit: Bolivar Peninsula Reference Code: TX-02

City: Galveston Congressional District: 08

PRIMARY EVALUATION: The undeveloped area on Bolivar Peninsula located at the extreme southern end of the peninsula. This area has undergone long-term Gulfward progradation, resulting in development of several small lakes and marshes between receding beach ridges. These marshlands provide feeding grounds for several species of commercial and sport fish. The area is subject to frequent inundation by storm surge during hurricane and severe storm conditions.

DESCRIPTION:

Total Area of Unit: 25,280 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	3%
Agricultural Land	0%
Wetland	0%
Forest Land	0%
Water	6%
Wetland	89%
Wetlands and	2%

Undeveloped/Unprotected Land (Category III):

Fast Land 3,429 Acres	Wetland 1,928 Acres
Interior Waters 153 Acres	

Beach Length of Entire Unit: Total 17.2 Miles
Undeveloped/Unprotected 3.3 Miles

Land Ownership: Federal: 200 Acres
Non-Federal Govt: 200 Acres Private: 24,880 Acres

ACCESS: (1) Ferry service from Galveston Island (2) State maintained paved, 2-lane highway #124 from Interstate 10.

Nearest Standard Metropolitan Statistical

Area(SMSA): Houston, Texas

Shortest Road Distance from Unit to SMSA: 70 Miles

Population of SMSA in 1978: 1,650,000

PHYSICAL CHARACTERISTICS:

Type of Barrier Island Structure: Peninsula

Geological/Hydrological Features: Bolivar Peninsula facing Galveston Bay and East Bay is characterized by a well-developed marsh system. The peninsula is separated from the Trinity deltaic headland by Rollover Pass.

Significance Rating: Low

Natural Hazards:

Storm Probability(% chance of occurrence in a given year):

Great Hurricane(Winds > 131 MPH) 2%

Hurricane(Winds > 74 MPH) 20%

Tropical Storms and Northeasters N/A

Vulnerability to Major Storm Damage: High

(Annual Storm Intensity Factor = 0.45)

Flooding:

Flood Occurs Once Every	Stillwater Height of Storm Surge	% of Category III Fast Land Flooded
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	85-90%

Severity of Flood Hazard: High

Shoreline Changes (Category III Areas Only):

Shoreline Condition	Accreting	Stable
Shoreline miles	1	2.0
Rate/year	0-5 ft/yr	-----
Area:	Northeast	

Summary of Island Stability: Primary sediment source for Bolivar roads is the Trinity deltaic headland. Short-term accretion and/or stabilization of the Bolivar roads area can be expected based on the history of the location. This area is considered stable.

RESOURCE VALUES

Fish & Wildlife: The marsh area (Galveston Bay side) provides habitats for waterfowl and resting sites for migratory birds. Oyster reefs are also present in the bay areas.

Significance Rating: Low

Special Ecological Features: None

Significance Rating: N/A

Recreation Potential: Intensive beach recreation - high
Low intensity recreational opportunities - low

Significance Rating: High

Cultural Resources: No cultural resources have been reported for this area.

Significance Rating: Low

THREATS TO RESOURCE VALUES

Development: This peninsula is moderately developed both residentially and commercially. Many homes are found along the beach immediately north of the Bolivar Roads area. Continued development of this type would adversely affect both the marshlands and the dunes in the remaining undeveloped area.

Significance Rating: Moderate **Imminence:** Low

Shoreline Manipulation: The class III shoreline is located adjacent to Bolivar Roads - Galveston Channel; the area is jettied and maintained for ship travel.

Significance Rating: Moderate **Imminence:** Low

Environmental Pollution: Bolivar Roads is located on the southern tip of Bolivar Peninsula within close proximity of the Galveston Harbor shipping lanes. The area is subject to contamination by spilled hazardous substances (i.e. oil spills, chemicals, etc.)

Significance Rating: High **Imminence:** High

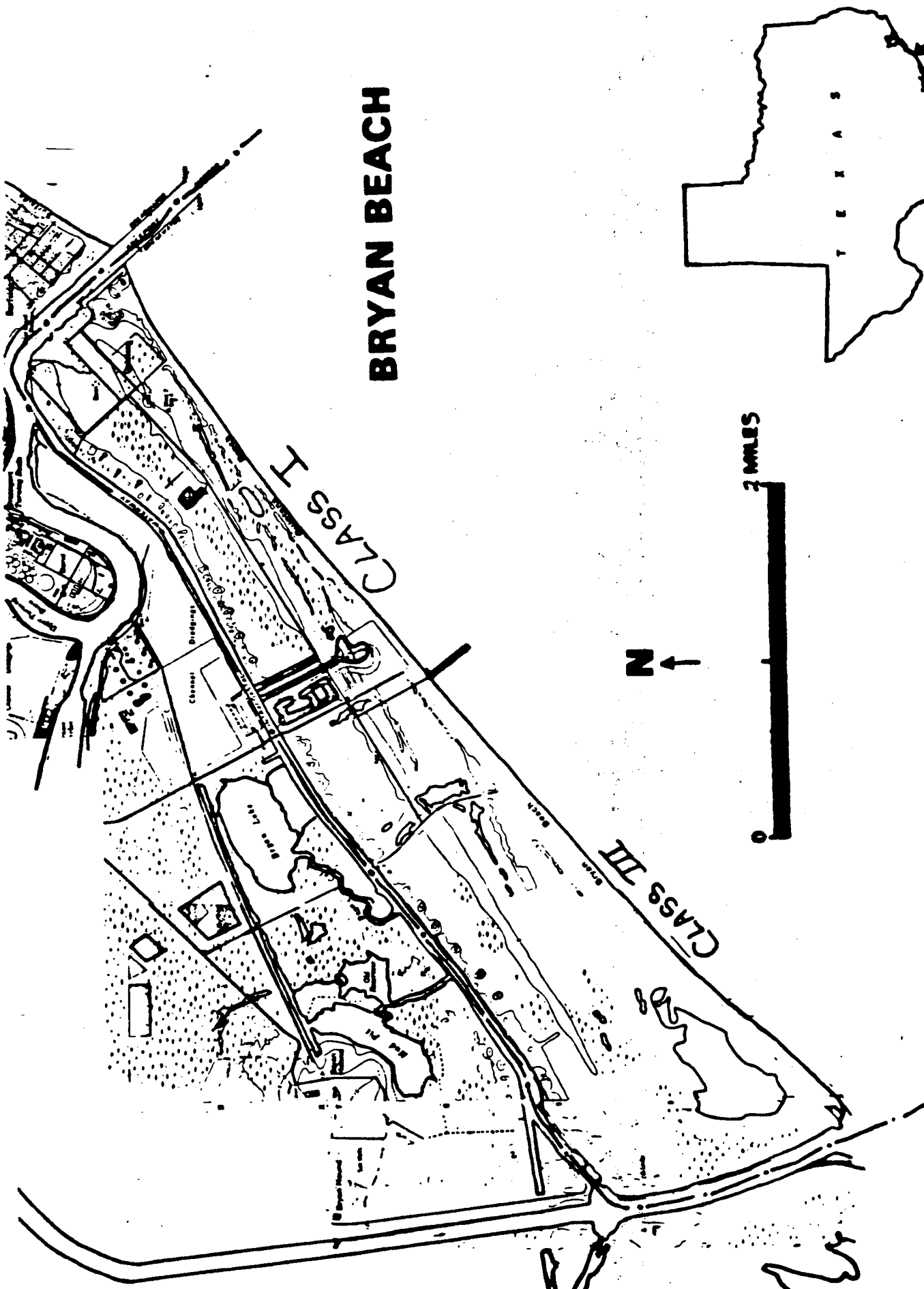
Other Threats: Data not available

Significance Rating: N/A **Imminence:** N/A

Miscellaneous Comments: None

Preparer: M.O. Hayes

Date: 1/30/80



TEXAS
 Name of
 County:
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TEXAS

Name of Unit: Bryan Beach

Reference Code: TX-05

County: Brazoria

Congressional District: 14

SUMMARY EVALUATION: The natural resources present at Bryan Beach include marshes, several small ponds and lakes, and dredge spoil sites which may provide nesting sites for a variety of birds. Principal hazards to use and development are: 1) tidal flooding from hurricane or severe storm conditions; and 2) an eroding shoreline. Bryan Beach has been used extensively as a dredge spoil site, allowing much of the low lying "wetland" areas to be completely or partially filled. Further development for public use would probably not severely threaten the remaining natural resources.

DESCRIPTION: Total Area of Unit: 3,316 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	5%
Agricultural Land	0%
Rangeland	0%
Forest Land	0%
Water	4%
Wetland	29%
Barren Land	62%

Undeveloped/Unprotected Land (Category III):

Fast Land 1,596 Acres Wetland 475 Acres
Interior Waters 138 Acres

Beach Length of Entire Unit: Total 6.3 Miles
Undeveloped/Unprotected 3.5 Miles

Land Ownership: Federal 0 Acres
Non-Federal 0 Acres Private 3,316 Acres

ACCESS: 1) One paved, 2-lane state maintained highway (I495) provides access to a pontoon bridge which leads to Bryan's Beach; 2) one light-duty paved road provides access to the beach.

Nearest Standard Metropolitan Statistical

Area(SMSA): Houston, Texas
Shortest Road Distance from Unit to SMSA: 45 Miles
Population of SMSA in 1978: 1,650,000

PHYSICAL CHARACTERISTICS:

Transgressive Beach - Partly
Type of Barrier Island Structure: an eroding Brazos River Deltaic headland

Geological/Hydrological Features: Bryans Beach is presently transgressive. The area is separated from the mainland by the Intracoastal Waterway. It is bordered on the south by the Brazos River and to the north by the Freeport Harbor ship channel. Approx. 52% of the island's surface is marsh or wetlands and includes several small lakes.

Significance Features: Moderate

Natural Hazards:

Storm Probability(% chance of occurrence in a given year):

Great Hurricane(Winds >131 MPH) 5%
Hurricane(Winds > 74 MPH) 19%
Tropical Storms N/A

Vulnerability to Major Storm Damage: High
(Annual Storm Intensity Factor = 0.46)

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	III Fast Land
		Flooded
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	55-60%

Severity of Flood Hazard: Moderate

Shoreline Changes (Category III Areas Only):

Shoreline	Accreting	Eroding	Stable
Condition			
Shoreline	---	2	1.5
miles			
Rate/year	>10 ft/yr	---	---
Locator:	South		

Summary of Island Stability: Bryans Beach is presently eroding, much of it in excess of 10 ft/yr. One "stable" area, approx. 1.5 miles long, is present near the south end. With respect to these erosion rates, the island is evaluated as moderately stable to unstable.

RESOURCE VALUES

Fish & Wildlife: The marshlands associated with Bryans Island provide habitats for a variety of fish and wildlife. Dredge spoil mounds border the Intracoastal Waterway behind the island. These spoil sites potentially provide rookery locations for many species of birds.

Significance Rating: Moderate

Special Ecological Features: None reported.

Significance Rating: N/A

Recreation Potential: 1) Intensive beach recreation - high in the stable portion of the shoreline. 2) low-intensity recreation opportunities high in the less stable portions of the shoreline.

Bryans Beach is a short drive from the town of Freeport. Beach access is presently dependent on a Pontoon bridge from the mainland to the island.

Significance Rating: High

Cultural Resources: None reported.

Significance Rating: Low

THREATS TO RESOURCE VALUES

Development: Development of this area does not pose a serious immediate threat to resource values.

Significance Rating: Moderate **Imminence:** Low

Shoreline Manipulation: Shoreline manipulation may occur should the Brazos River mouth require stabilization. The Freeport Harbor ship channel is presently jettied. No other structures extend from the beach.

Significance Rating: Low **Imminence:** Low

Environmental Pollution: Bryan Beach is located adjacent to Freeport Harbor ship channel which is used primarily by petroleum tankers to service inland refineries. Its proximity to these shipping lands increases the likelihood of environmental pollution from spilled oil or other petroleum products.

Significance Rating: High **Imminence:** High

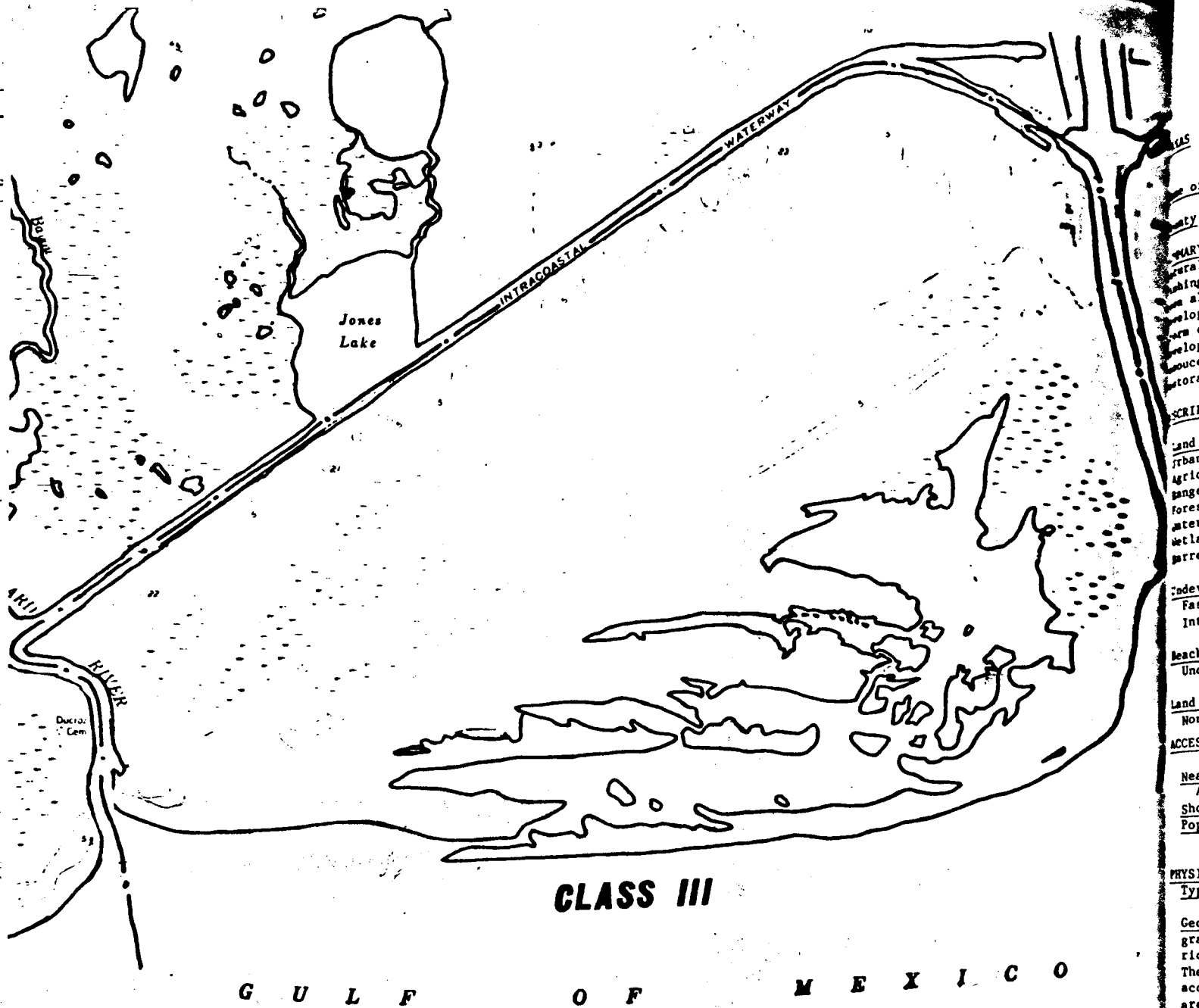
Other Threats: Data Not Available

Significance Rating: N/A **Imminence:** N/A

Miscellaneous Comments: None

Preparer: M.O. Hayes

Date: 1/30/80



CLASS III

G U L F O F M E X I C O

PERRYS ISLAND



0 miles 1

Unit: Perrys Island

Reference Code: TX 06

County: Brazoria

Congressional District: 14

PRIMARY EVALUATION: Perrys Island has little to offer in terms of natural resource values with the exception of possible sport fishing and limited beach recreation. Much of the island has been altered with dredge spoil sites. Principle hazards to development and use are: (1) flooding during hurricane or severe storm conditions; and (2) an eroding shoreline. Low-density development of this area could conceivably enhance the natural resource value of the island if associated with an ecosystem restoration plan.

DESCRIPTION: Total Area of Unit: 3,623

Land Use/Land Cover	% of Total
Urban or Built-up Land	0%
Agricultural Land	0%
Wangeland	0%
Forest Land	0%
Water	33%
Wetland	0%
Barren Land	67%

Undeveloped/Unprotected Land (Category III):

Fast Land 2,435 Acres Wetland 1,188 Acres
Interior Waters 0 Acres

Beach Length of Entire Unit: Total 4.0 Miles
Undeveloped/Unprotected 4.0 Miles

Land Ownership: Federal 0 Acres

Non-Federal Govt: 0 Acres Private 3,623 Acres

ACCESS: Accessible only by boat. No roads exist on the island.

Nearest Standard Metropolitan Statistical Area(SMSA): Houston, Texas

Shortest Road Distance from Unit to SMSA: 75 Miles

Population of SMSA in 1978: 1,650,500

PHYSICAL CHARACTERISTICS:

Transgressive Beach - part

Type of Barrier Island Structure: of the Brazos River deltaic headland

Geological/Hydrological Features: Navigation charts and topographical sheets show this area to have a series of beach ridges between which marshes and mud flats have developed. The island is dissected by several canals which allow barges access to the central part of the island. Much of this area is covered with dredge spoils.

Significance Rating: Low

Natural Hazards:

Storm Probability(% chance of occurrence in a given year):

Great Hurricane(Winds >131 MPH) 5%

Hurricane(Winds > 74 MPH) 19%

Tropical Storms and Northeasters N/A

Vulnerability to Major Storm Damage: High

(Annual Storm Intensity Factor = 0.46)

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	III Fast Land
		Flooded
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	45-50%

Severity of Flood Hazard: Moderate

Shoreline Changes (Category III Areas Only):

Shoreline	Condition	Accreting	Eroding	Stable
Shoreline	.6		1.5	1.75
miles:				
Rate/year:	>10 ft/yr		>10 ft/yr	---
Locators:	South		North	

Summary of Island Stability: With respect to the above measurements, this island is evaluated as moderately stable. NOAA navigation charts caution that the Brazos River mouth is subject to continual changes. Migration of these inlets could change the stability of the shoreline.

RESOURCE VALUES

Fish & Wildlife: Information is currently unavailable.

Significance Rating: N/A

Special Ecological Features: Information is currently unavailable.

Significance Rating: N/A

Recreation Potential: Recreation potential for this island is low for both the low-intensity recreational opportunities and the intensive recreational opportunities. Extremely limited access to the island and limited access to beach decrease the recreational potential of the island.

Significance Rating: Low

Cultural Resources: National Register Property - John McRoskey Cabin.

Significance Rating: Low

Miscellaneous Comments: None

THREATS TO RESOURCE VALUES

Development: Much of the ecologically sensitive marsh and low-lying wetlands have been destroyed or radically altered on Perrys Island. If associated with an effective ecosystem restoration program limited development would conceivably enhance the resource values of the island.

Significance Rating: Low

Imminence: Low

Shoreline Manipulation: Information is currently unavailable.

Significance Rating: N/A

Imminence: N/A

Environmental Pollution: Perrys Island is located close to shipping lanes which provide transport of petroleum products. The possibility of oil spill damage is very likely.

Significance Rating: High

Imminence: High

Other Threats: Information is currently unavailable.

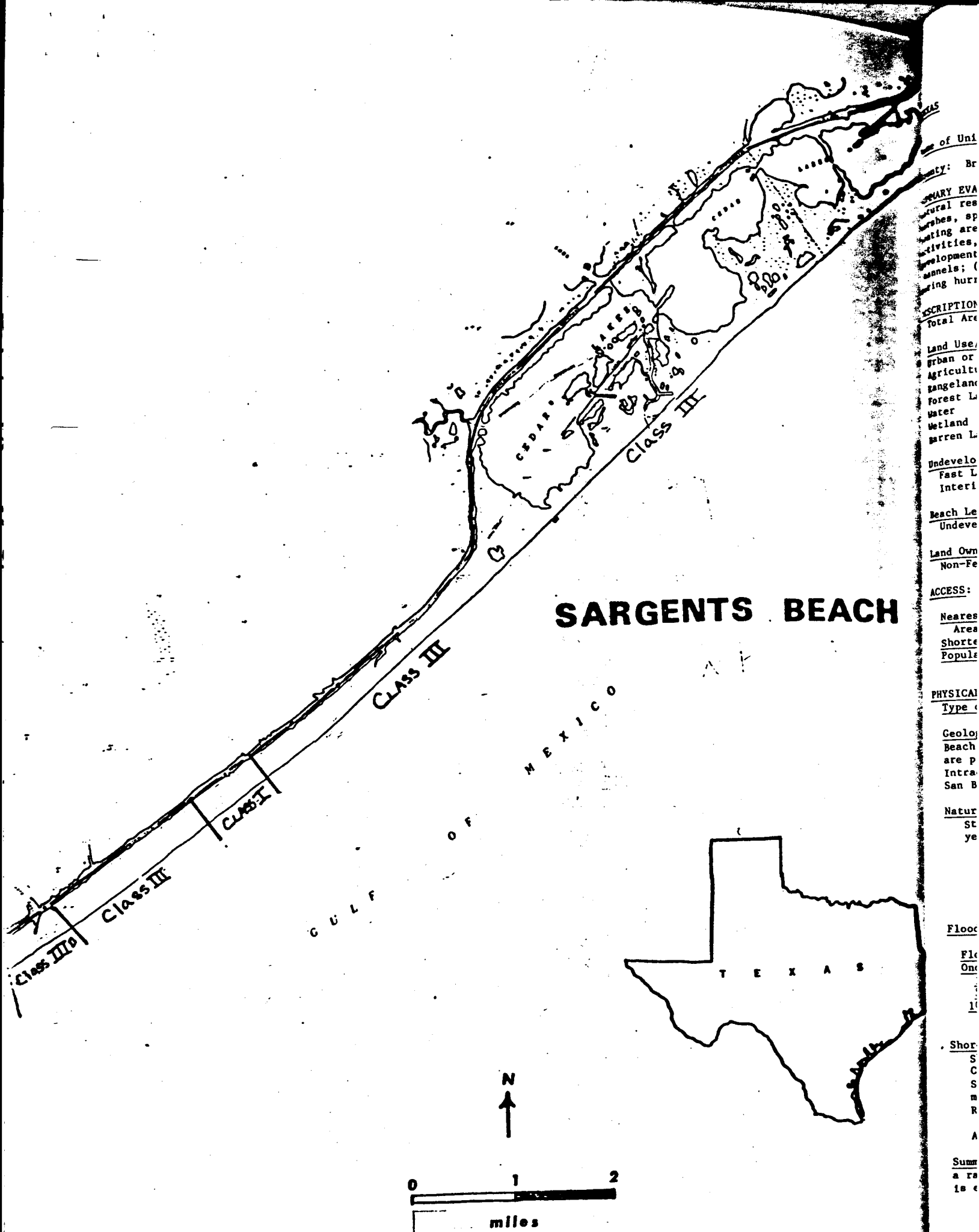
Significance Rating: N/A

Imminence: N/A

Miscellaneous Comments: None

Preparer: M.O. Hayes

Date: 2/2/80



Name of Unit: Sargeants Beach Reference Code: TX-07
 County: Brazoria/Matagorda Congressional District: 14

SUMMARY EVALUATION: Sergeant's Beach hosts a wide variety of natural resources. These resources include: lakes, ponds, marshes, spoil islands which have bird rookeries, excellent boating areas and potential for other low intensity recreation activities, such as fishing. Principal hazards to use and development are: (1) active or potentially active washover channels; (2) an intensely eroding shoreline; and (3) flooding during hurricane or severe storm conditions.

DESCRIPTION:
 Total Area of Unit: 7,827 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	0%
Agricultural Land	0%
Rangeland	0%
Forest Land	0%
Water	25%
Wetland	54%
Barren Land	21%

Undeveloped/Unprotected Land (Category III):
 Fast Land 1,365 Acres Wetland 4,262 Acres
 Interior Waters 1,978 Acres

Beach Length of Entire Unit: Total 17.9 Miles
 Undeveloped/Unprotected 8.9 Miles

Land Ownership: Federal 0 Acres
 Non-Federal 0 Acres Private 7,927 Acres

ACCESS: Light duty road across a pontoon bridge.

Nearest Standard Metropolitan Statistical Area (SMSA): Houston, Texas
Shortest Road Distance from Unit to SMSA: 80 Miles
Population of SMSA in 1978: 1,650,000

PHYSICAL CHARACTERISTICS: Transgressive Barrier,
Type of Barrier Island Structure: part of the Brazos River deltaic headland
Geological/Hydrological Features: Over 50% of Sargeants Beach is marsh or wetland. Several large Lakes (Cedar Lakes) are present. The area is separated from the mainland by the Intracoastal Waterway. The beach is bordered to the north by San Bernard River and to the south by the Brown Cedar Cut.

Natural Hazards:
Storm Probability(% chance of occurrence in a given year):
 Great Hurricane(Winds >131 MPH) 3%
 Hurricane(Winds > 74 MPH) 16%
 Tropical Storms N/A
Vulnerability to Major Storm Damage: High
 (Annual Storm Intensity Factor = 0.45)

Flooding:

Flood Occurs	Stillwater Height of Storm Surge	% of Category III Fast Land Flooded
Once Every		
10 Yrs.	N/A	N/A %
50 Yrs.	N/A	N/A %
100 Yrs.	N/A	80-85%

Severity of Flood Hazard: High

Shoreline Changes (Category III Areas Only):

Shoreline Condition	Accreting	Eroding
Shoreline miles	1	8.0
Rate/year	>10 ft/yr	10 ft/yr
Area:	Northeast	South

Summary of Island Stability: Sargeants Beach is eroding at a rate in excess of 10 feet per year; therefore, this area is evaluated as unstable.

RESOURCE VALUES

Fish & Wildlife: The lakes and marsh areas present at Sargeants Beach provide habitats for many species of wildlife.

Significance Rating: High

Special Ecological Features: Sargeants Beach borders the San Bernard Wildlife Refuge.

Significance Rating: High

Recreation Potential: High-intensity recreation value - low
 Low-intensity recreation value - high

The area is not readily accessible restricting high intensity use.

Significance Rating: Moderate

Cultural Resources: Information is currently unavailable.

Significance Rating: Low

THREATS TO RESOURCE VALUES

Development: Commercial or residential development along the Gulf shoreline would be a threat to developing dunes (very few in this area). Encroachment in the back-barrier environment would require filling of much of the marsh land. This would threaten the habitats of many species of fish and waterfowl.

Significance Rating: High **Imminence:** Low

Shoreline Manipulation: A single jetty or groin is shown on U.S. Coast Guard navigation charts.

Significance Rating: Low **Imminence:** Low

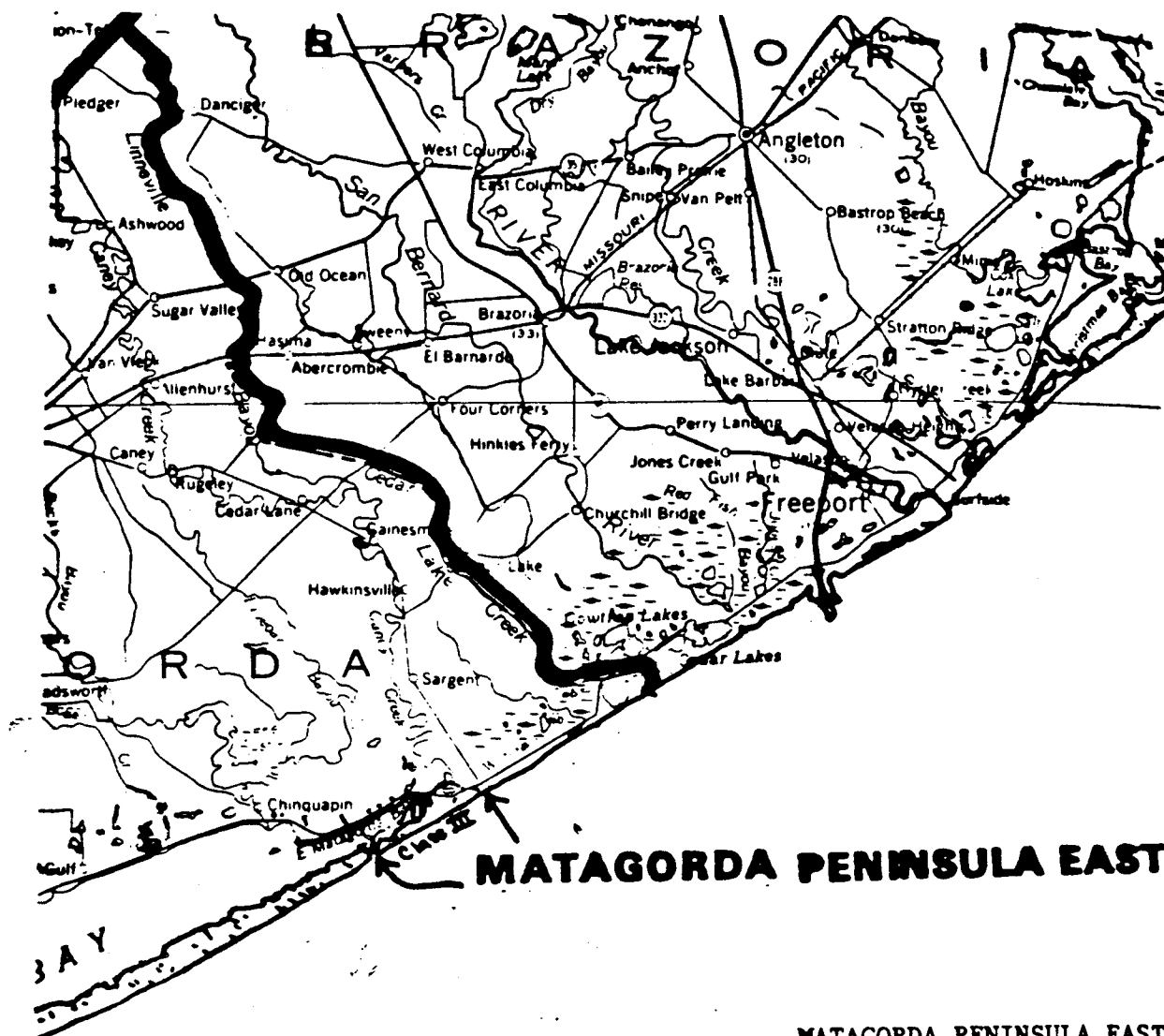
Environmental Pollution: Sargeants Beach's proximity to shipping lanes exposes the area to possible environmental pollution due to spilled oil or other hazardous cargo.

Significance Rating: High **Imminence:** High

Other Threats: None

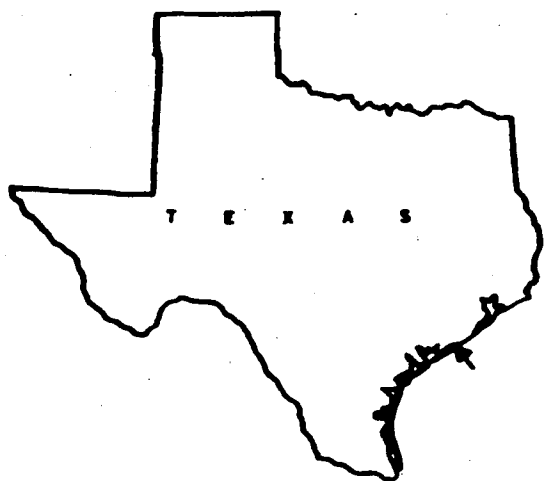
Significance Rating: N/A **Imminence:** N/A

Preparer: M.O. Hayes Date: 1/2/80



MATAGORDA PENINSULA EAST

MATAGORDA PENINSULA EAST is an Undeveloped and Unprotected Natural Area. It extends from the western boundary of Sergeant's Beach at Dead Caney Lake West to Brown Cedar Gut. The northern boundary follows the Intracoastal Waterway to its junction with Caney Creek, thence across East Matagorda Bay to Brown Cedar Gut.



of Unit: Matagorda Peninsula East Reference Code: TX-08

City: Matagorda Congressional District: 14

BRIEF EVALUATION: The natural resources of Matagorda Peninsula are its marshes, wetlands, small lakes and numerous islands formed from remnant washover deposits. The marsh and wetland provide habitats for a variety of waterfowl, commercial and sport fish, and other wildlife. Potential hazards to use and development are: (1) flooding from hurricane or severe storm conditions as an eroding shoreline; and the presence of active or potentially active washover channels.

DESCRIPTION:

Total Area of Unit: 11,296 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	0%
Agricultural Land	0%
Wetland	0%
Forest Land	0%
Water	2%
Wetland	55%
Barren Land	43%

Developed/Unprotected Land (Category III):

Fast Land 4,838 Acres Wetland 6,234 Acres
Interior Waters 224 Acres

Length of Entire Unit: Total 6.2 Miles

Unprotected/Unprotected 6.2 Miles

Land Ownership: Federal 0 Acres

Non-Federal Govt: 0 Acres Private 11,296 Acres

Access: Unpaved, single road access on north end ("457 road")

Nearest Standard Metropolitan Statistical

Area (SMSA): Houston, Texas

Shortest Road Distance from Unit to SMSA: 85 Miles

Population of SMSA in 1978: 1,650,000

PHYSICAL CHARACTERISTICS:

Type of Barrier Island Structure: Peninsula: Transgressive Barrier

Geological/Hydrological Features: This area is typically a transgressive beach overtopping beach and marsh deposits. Exposure of these deposits on the beachface is frequent. Washover channels dominate the topography of the island. Marshes and tidal flats characterize the bay shoreline. Interior of the island has many lakes formed from abandoned washover channels.

Significance Rating: Moderate

Natural Hazards:

Storm Probability (% chance of occurrence in a given year):

Great Hurricane (Winds > 131 MPH) 3%
Hurricane (Winds > 74 MPH) 16%
Tropical Storms N/A

Vulnerability to Major Storm Damage: High
(Annual Storm Intensity Factor = 0.45)

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	III Fast Land
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	100%

Severity of Flood Hazard: Very High

Shoreline Changes (Category III Areas Only):

Shoreline Condition: Eroding
Shoreline Miles: 6.2
Rate/year: > 10 ft/yr

Stability of Island Stability: The class III section of this island is evaluated as unstable: erosion rates exceed 10 feet per year and the shoreline is subject to frequent washovers.

RESOURCE VALUES

Fish & Wildlife: The island is rich in waterfowl, fish (both commercial and sport), shorebirds, and other wildlife. Limited access has left this area in a pristine state.

Significance Rating: High

Special Ecological Features: Information is currently unavailable.

Significance Rating: N/A

Recreation Potential: High-intensity beach recreation - low
Low-intensity recreation - high

This island has remained almost entirely unaltered by man. Recreational development given existing limited access is unlikely.

Significance Rating: Low

Miscellaneous Comments: None.

THREATS TO RESOURCE VALUES

Development: Commercial or residential development would destroy the pristine nature of this area. Any development requiring fill for marsh or tidal flat areas would disturb the habitats of many species of fish and wildlife.

Significance Rating: High

Imminence: Low

Shoreline Manipulation: There is presently no structure present on the shoreline. The development of future structures appears unlikely.

Significance Rating: Low

Imminence: Low

Environmental Pollution: Much of the Gulf's nearshore waters are actively being drilled for oil. Environmental pollution from these areas in the form of spilled oil or other hazardous substances is a possibility.

Significance Rating: Moderate

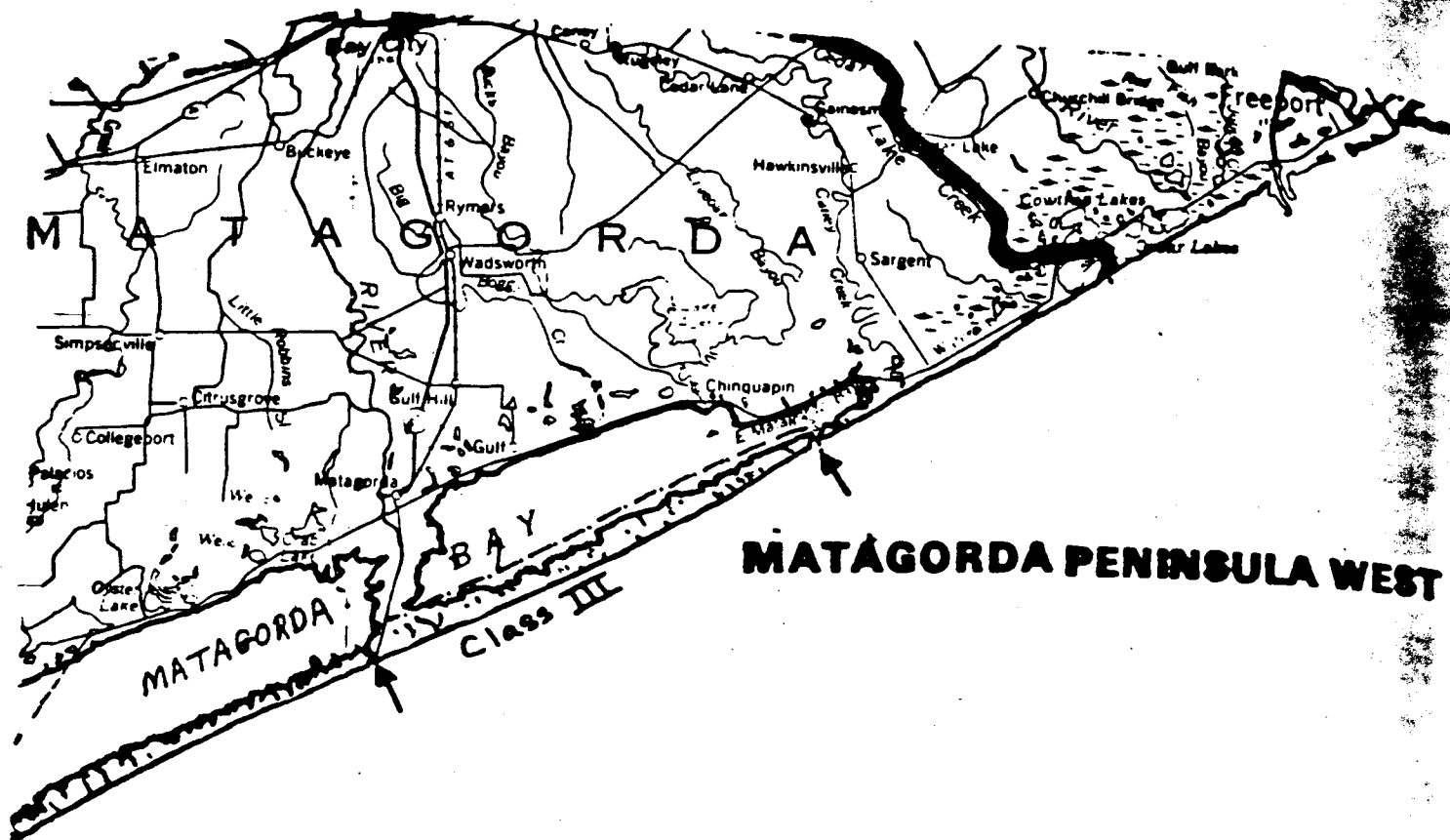
Imminence: Moderate

Other Threats: None

Miscellaneous Comments: None

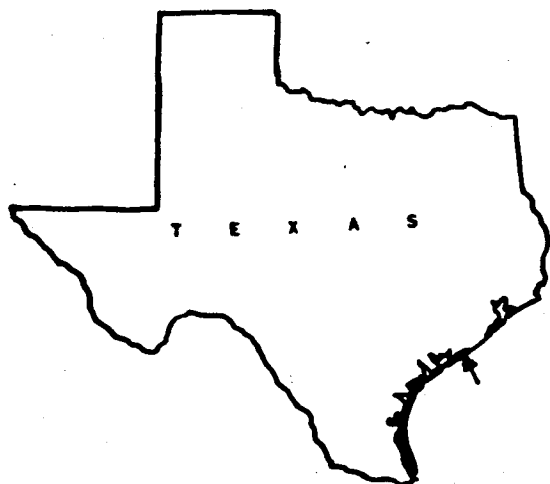
Preparer: M.O. Hayes

Date: 2/2/80



MATAGORDA PENINSULA WEST A

MATAGORDA PENINSULA WEST A is all an Undeveloped and Unprotected Natural Area. It extends from Brown Cedar Gut on the east to the Colorado River Channel on the west. The northern boundary follows the shoreline of the peninsula across Matagorda Bay.



Unit: Matagorda Peninsula West-A Reference Code: TX 09

County: Matagorda Congressional District: 14

PRIMARY EVALUATION: The marshes and tidal flats associated with Matagorda Peninsula West-A are some of the most productive coastal environments found along the Texas coast. This area, which has remained relatively unaltered by man, has become a haven for a wide variety of waterfowl, fish, and wildlife. Potential hazards to use and development are: (1) numerous active and potentially active washover channels, (2) flooding during hurricane and severe storm conditions; and (3) a relatively stable, eroding shoreline.

DESCRIPTION: Total Area of Unit: 18,662 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	2%
Agricultural Land	0%
Rangeland	29%
Forest Land	0%
Water	1%
Wetland	41%
Barren Land	27%

Undeveloped/Unprotected Land (Category III):
Fast Land 5,549 Acres Wetland 12,921 Acres
Interior Waters 192 Acres

Beach Length of Entire Unit: Total 19.6 Miles
Undeveloped/Unprotected 19.6 Miles

Land Ownership: Federal 2,000 Acres
Non-Federal 62 Acres Private 16,600 Acres

ACCESS: Light duty road on west end next to Colorado River.

Nearest Standard Metropolitan Statistical Area(SMSA): Houston, Texas
Shortest Road Distance from Unit to SMSA: 85 Miles
Population of SMSA in 1978: 1,650,000

PHYSICAL CHARACTERISTICS:

Type of Barrier Island Structure: Peninsula

Geological/Hydrological Features: Much of the island's topography is controlled by washover features. Abandoned washover channels create lakes and small ponds on the bayward side of the peninsula. The marshes and tidal flats that have developed on this peninsula are some of the most productive along the Texas coast.

Significance Rating: High

Natural Hazards:

Storm Probability(% chance of occurrence in a given year):

Great Hurricane(Winds >131 MPH)	3%
Hurricane(Winds > 74 MPH)	16%
Tropical Storms	N/A
Vulnerability to Major Storm Damage: High	
(Annual Storm Intensity Factor = 0.446)	

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	III Fast Land
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	100%

Severity of Flood Hazard: Very High

Shoreline Changes (Category III Areas Only):

Shoreline Condition	Accreting	Eroding	Stable
Shoreline miles	8	7.25	1.75
Rate/year	>10 ft/yr	5-10 ft/yr	-
Area:	South	North	

Summary of Island Stability: Over half of Matagorda Peninsula West-A is accretional. The zones of accretion are distributed over the entire shoreline. The distribution of alternating zones of erosion and accretion results in a "rhythmic topograph". The peninsula is subject to frequent washover activity.

RESOURCE VALUES

Fish & Wildlife: The marsh and tidal flat areas in Matagorda Peninsula provide breeding grounds for many species of commercial and sports fish. The bay, smaller lakes and ponds are over-wintering sites for many migratory birds. Deer and Coyotes have been reported on the peninsula.

Significance Rating: High

Special Ecological Features: No Data Available

Significance Rating: N/A

Recreation Potential: Present access would allow low-intensity recreation. High-intensity beach recreation is unlikely.

Significance Rating: Moderate

Cultural Resources: No cultural resources have been reported from this area.

Significance Rating: Low

THREATS TO RESOURCE VALUES

Development: Development, commercial or residential, would adversely affect the resource values of the peninsula. It would disturb many of the relatively pristine habitats.

Significance Rating: High **Imminence:** Low

Shoreline Manipulation: There is currently no evidence of shoreline manipulation. Future construction of coastal structures seems unlikely.

Significance Rating: Low **Imminence:** Low

Environmental Pollution: Offshore drill rigs present potential environmental pollution in the form of oil spills from blowouts or tanker accidents.

Significance Rating: Moderate **Imminence:** Moderate

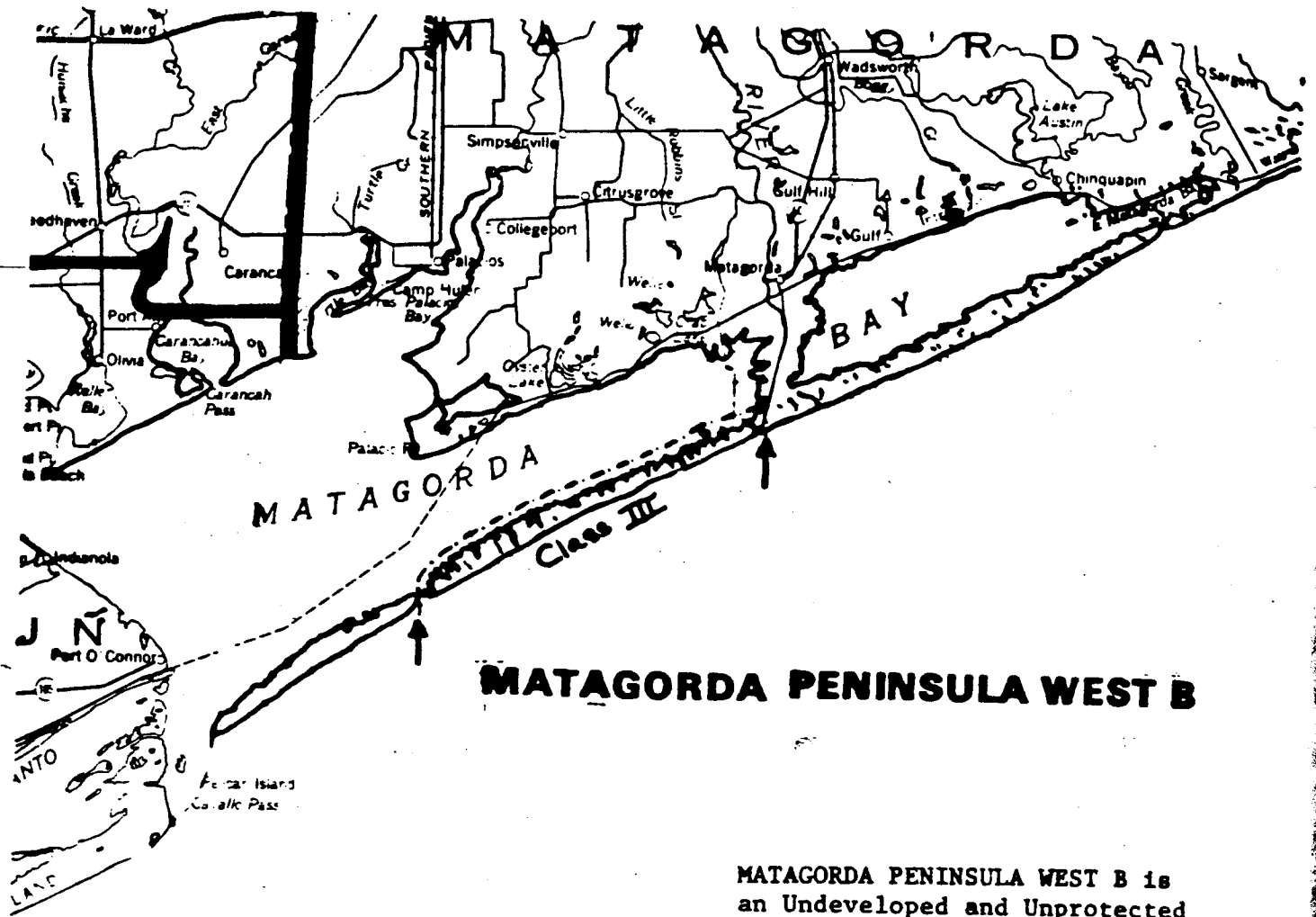
Other Threats: Information is currently unavailable.

Significance Rating: High **Imminence:** High

Miscellaneous Comments: None

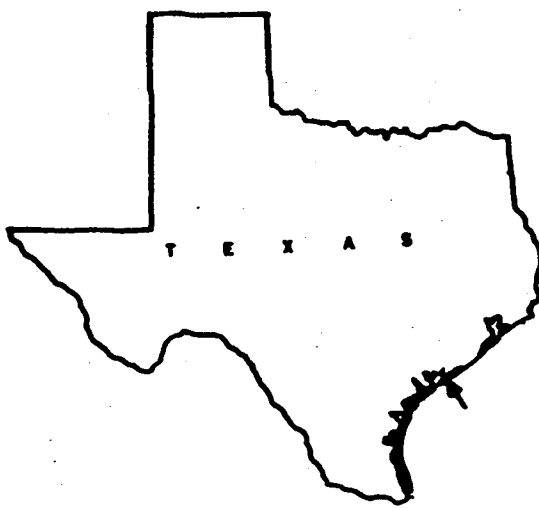
Preparer: M.O. Hayes

Date: 2/2/80



MATAGORDA PENINSULA WEST B

MATAGORDA PENINSULA WEST B is an Undeveloped and Unprotected Natural Area. It extends from the Colorado River Channel on the east to Greens Bayou Channel on the west. The northern boundary follows the shoreline of the peninsula across Matagorda Bay.



of Unit: Matagorda Peninsula West B Reference Code: TX 10

City: Matagorda Congressional District: 14

ENVIRONMENTAL EVALUATION: Matagorda Peninsula West-B extends from the Colorado River to Greens Bayou (now closed; the actual land now extends to the Matagorda Ship Channel). The marsh, grass flats and grass beds on the bay side of the island are rich in fish, wildlife and waterfowl. Several endangered species of birds have established rookeries near the Colorado River delta. The northwestern shores of the bay are being considered as an area of concern by the State of Texas. Oyster beds are present but not extensive.

DESCRIPTION: Total Area of Unit: 8,450 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	0%
Agricultural Land	0%
Wetland	0%
Forest Land	0%
Water	5%
Island	39%
Green Land	0%

Developed/Unprotected Land (Category III):
Forest Land 4,732 Acres Wetland 3,296 Acres
Interior Waters 422 Acres

Beach Length of Entire Unit: Total 16.3 Miles
Unprotected/Unprotected 16.3 Miles

Land Ownership: Federal 0 Acres
Non-Federal 0 Acres Private 8,450 Acres

Access: By boat only.

Nearest Standard Metropolitan Statistical Area (SMSA): Houston, Texas
Shortest Road Distance from Unit to SMSA: 85-90 Miles
Population of SMSA in 1978: 1,650,000

PHYSICAL CHARACTERISTICS:

Type of Barrier Island Structure: Peninsula; transgressive Barrier

Geological/Hydrological Features: Matagorda Peninsula attaches to the mainland at the Colorado River delta and extends continuously (at present) to Matagorda ship channel. The peninsula has a history of intense washover activity which has resulted in the development of several temporary inlets. The most recent inlet is Greens Bayou (now closed). The bay side of the island is largely marsh/tidal flats, with many coalescing ponds.

Significance Rating: High

Natural Hazards:

Storm Probability (% chance of occurrence in a given year):

Great Hurricane (Winds > 131 MPH)	3%
Hurricane (Winds > 74 MPH)	16%
Tropical Storms and Northeasters	N/A
Vulnerability to Major Storm Damage: High	
(Annual Storm Intensity Factor = 0.45)	

Flooding:

Flood Occurs Once Every	Stillwater Height of Storm Surge	% of Category III Fast Land Flooded
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	100%

Severity of Flood Hazard: Very High

Shoreline Changes (Category III Areas Only):

Shoreline Condition	Accreting	Eroding	Stable
Shoreline miles	2.7	10.5	3.1
Rate/year	5-10 ft/yr	5-10 ft/yr	---
Area:	South	North	

Summary of Island Stability: The peninsula's shoreline is largely erosional and subject to significance alteration from hurricane and storm activity. Washover channels and potential washover site dominate the topography. This area is evaluated as unstable.

RESOURCE VALUES

Fish & Wildlife: Matagorda Peninsula West Beach provides habitats for many species of wildlife, a notably bird rookeries for some endangered species. The marsh and wetlands provide feeding and nursery grounds for many commercial and sports fish. Also associated with this area are grass flats and oyster beds.

Significance Rating: High

Special Ecological Features: The north end of Matagorda Peninsula West-B (at the Colorado River delta) is administered by the National Audubon Society as a wildlife sanctuary.

Significance Rating: High

Recreation Potential: Current very limited access prohibits high intensity beach activity. Low-intensity recreational activity is possible although not likely because of limited access.

Significance Rating: Low

Cultural Resources: No data are available.

Significance Rating: Low

Miscellaneous Comments: None are available.

THREATS TO RESOURCE VALUES

Development: Development in this area would adversely affect the wildlife populations present in the marsh and tidal flat areas. Increased use by humans could threaten the existence of many of the bird rookeries which are located on the peninsula.

Significance Rating: Moderate **Imminence:** Low

Shoreline Manipulation: No shoreline manipulation is underway at Matagorda West B (Colorado River delta to Greens Bayou).

Significance Rating: Low **Imminence:** Low

Environmental Pollution: Matagorda Peninsula West-B is subject to environmental pollution from spilled oil or other hazardous substances related to the petroleum industry in this area.

Significance Rating: High **Imminence:** High

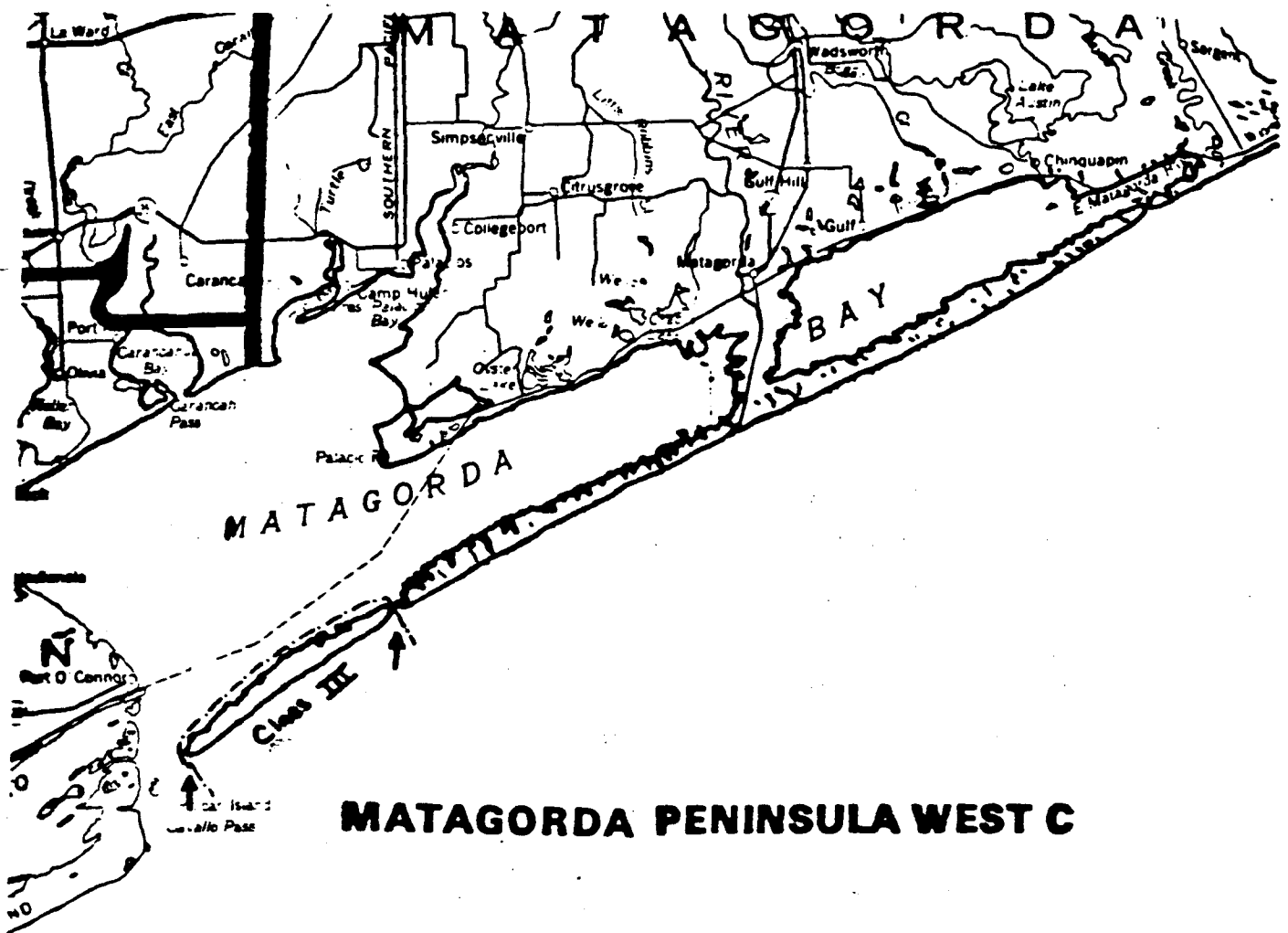
Other Threats: Commercial or residential development in this area would significantly disturb many habitats which have flourished in the absence of intense human activities. Very restricted development, such as that required to support low-intensity recreation, would, if well planned, probably have minimal adverse effect on the ecosystem.

Significance Rating: Moderate **Imminence:** Low

Miscellaneous Comments: None

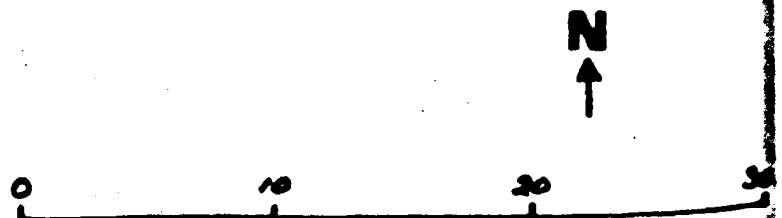
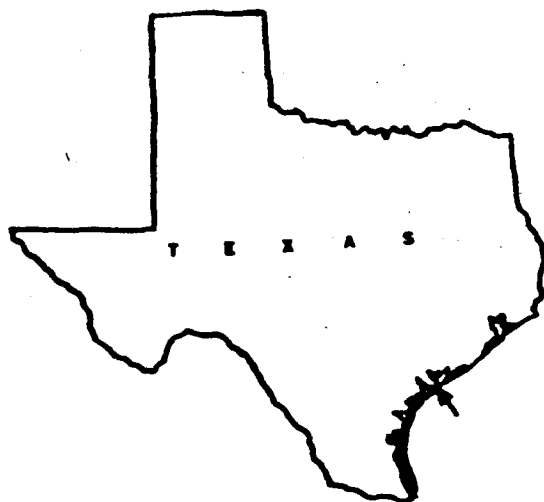
Preparer: M.O. Hayes

Date: 1/2/80



MATAGORDA PENINSULA WEST C

MATAGORDA PENINSULA WEST C is an Undeveloped and Unprotected Natural Area. It extends from the Greens Bayou Channel on the east to the Pass Cavallo on the west. The northern boundary follows the shoreline of the peninsula across Matagorda Bay.



of Unit: Matagorda Peninsula West-C Reference Code: TX-11

County: Calhoun Congressional District: 14

GENERAL EVALUATION: Matagorda Peninsula West C extends from Greens Bayou to Pass Cavallo. The bayward portion of the peninsula comprises marsh, tidal flats, grass flats and several small lakes and ponds. The Class III portion of the island does not have the extensive marsh system which exists to the north of Matagorda Ship Channel, but does provide nesting sites for several species of shore birds. Potential threats to use and development are: flood- ing from hurricane or severe storm conditions; and an active or potentially active washover channel.

DESCRIPTION: Total Area of Unit: 4,812 Acres
Land Use/Land Cover % of Total
 Urban or Built-up Land 0%
 Agricultural Land 0%
 Pastureland 0%
 Forest Land 0%
 Water 5%
 Wetland 38%
 Barren Land 18%
 Forest Land 39%
 Undeveloped/Unprotected Land (Category III):
 Forest Land 2743 Acres Wetland 1,828 Acres
 Interior Waters 241 Acres

Beach Length of Entire Unit: Total 10.9 Miles
 Undeveloped/Unprotected 10.9 Miles

Land Ownership: Federal 0 Acres
 Non-Federal 0 Acres Private 4,812 Acres

ACCESS: Boat access is possible, and dock facilities are available; an abandoned air force landing strip is located near the Matagorda ship channel; and several light duty roads provide access around much of the peninsula.

Nearest Standard Metropolitan Statistical Area(SMSA): Corpus Christi, Texas
Shortest Road Distance from Unit to SMSA: 100 Miles
Population of SMSA in 1978: 200,000

PHYSICAL CHARACTERISTICS: Peninsula - Transgressive
 Type of Barrier Island Structure: Barrier

Geological/Hydrological Features: Matagorda West C extends from Greens Bayou (now closed) to Decros Point at Pass Cavallo and is divided by the Matagorda ship channel. A well developed marsh and many small lake and ponds are associated with the area. The southern tip (Decros Point) is a recurved spit bordering Pass Cavallo and is relatively unstable.
 Significance Rating: Moderate

Natural Hazards:
 Storm Probability(% chance of occurrence in a given year):
 Great Hurricane(Winds >100 MPH) 3%
 Hurricane(Winds > 74 MPH) 16%
 Tropical Storms and Northeasters N/A
 Vulnerability to Major Storm Damage: High
 (Annual Storm Intensity Factor = 0.45)

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	III Fast Land
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	100%

 Severity of Flood Hazard: Very High

Shoreline Changes (Category III Areas Only):

Shoreline Condition	Accreting	Eroding	Stable
Shoreline miles	9.0	.5	1.5
Rate/year	5-10 ft/yr	>10 ft/yr	---
Area:	South	North	

Summary of Island Stability: The class III portion of this area has shown net long term accretion and has not been greatly affected by washovers. This area is evaluated as moderate stable.

RESOURCE VALUES

Fish & Wildlife: This area is rich in wildlife and provides habitats for many species of fish, both sports and commercial. No bird rookeries are specifically reported on this portion of the peninsula, but many exist nearby.

Significance Rating: Moderate

Special Ecological Features: No Data Available

Significance Rating: N/A

Recreation Potential: High-intensity beach activity is rated as low because of restricted access. Low-intensity recreation activity is more likely, but still rated low because of limited access.

Significance Rating: Low

Cultural Resources: No cultural resources have been reported.

Significance Rating: Low

THREATS TO RESOURCE VALUES

Development: Information is currently unavailable.

Significance Rating: Low

Imminence: Low

Shoreline Manipulation: Shoreline manipulation in the form of jetties at Matagorda Ship Channel have altered the shore morphology in this area. Future manipulation will probably evolve from dredging of the ship channel.

Significance Rating: Moderate

Imminence: High

Environmental Pollution: The threat of environmental pollution due to spilled oil or other hazardous substances is increased because of this area's close proximity to shipping lanes and petroleum operations.

Significance Rating: High

Imminence: High

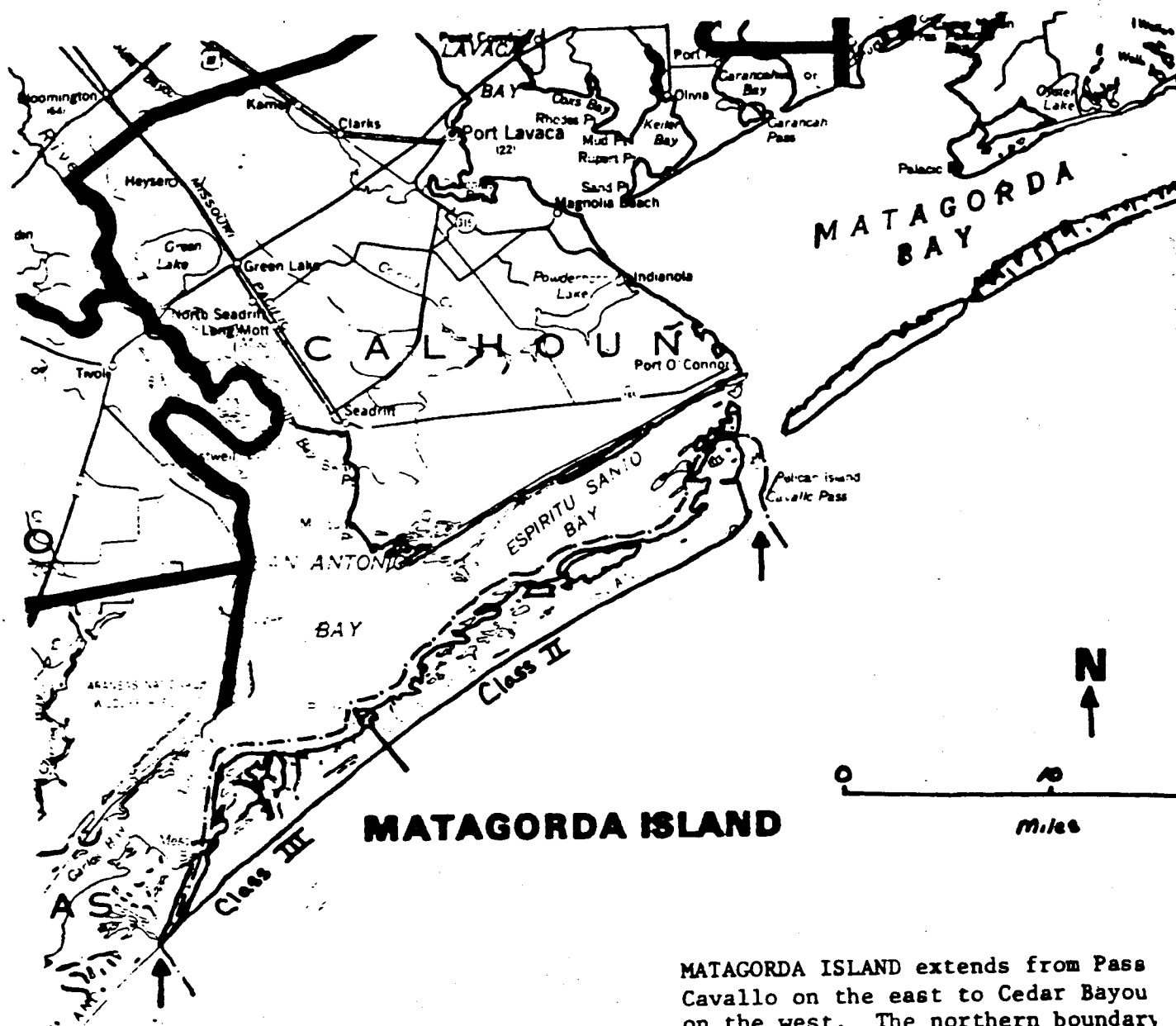
Other Threats: None

Significance Rating: N/A

Imminence: N/A

Preparer: M.O. Hayes

Date: 2/2/80



MATAGORDA ISLAND extends from Pass Cavallo on the east to Cedar Bayou on the west. The northern boundary follows the shoreline (from east to west) across the interconnected Espiritu Santo, San Antonio, and Mesquite Bays. The eastern two-thirds of the island is the Matagorda Island Bombing and Gunnery Range, and is considered a Protected Natural Area. The Undeveloped and Unprotected Natural Area includes all of the island west of Panther Point at the western boundary of the Gunnery Range.

of Unit: Matagorda Island

Reference Code: TX-12

City: Calhoun

Congressional District: 14

ENVIRONMENTAL EVALUATION: Matagorda Island's natural resources are abundant. The entire area is rich in wildlife, fish and waterfowl. The island is administered by the National Audubon Society as a wildlife sanctuary and is in close proximity to the Aransas Wildlife Refuge which provides a habitat for the Whooping Crane. A principal hazard to use and development is the possibility of damage during hurricane or severe storm conditions. In this relatively pristine area of abundant wildlife, substantial development would adversely alter the present sensitive ecosystem.

DESCRIPTION: Total Area of Unit: 56,134 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	3%
Agricultural Land	0%
Wetland	39%
Forest Land	9%
Water	7%
Barren Land	41%
Barren Land	10%

Developed/Unprotected Land (Category III):

Fast Land 11,242 Acres Wetland 9,359 Acres
Interior Waters 1,852 Acres

Each Length of Entire Unit: Total 36.2 Miles
Undeveloped/Unprotected 13.0 Miles

Land Ownership: Federal 33,681 Acres
Non-Federal 0 Acres Private 22,453 Acres

ACCESS: 1) An abandoned ferry channel provides access to the old Matagorda Island air force base; and limited access to island's interior is available via unpaved, one-lane roads.

Nearest Standard Metropolitan Statistical Area (SMSA): Corpus Christi, Texas
Shortest Road Distance from Unit to SMSA: 60-70 Miles
Population of SMSA in 1978: 200,000

PHYSICAL CHARACTERISTICS:

Type of Barrier Island Structure: Regressive Barrier

Geological/Hydrological Features: An extensive marsh system borders the bay side of the island. Large flood tidal delta complex dominates the islands northern end at Pass Cavallo. Several large lakes are present, the largest of which is Pringle Lake.

Significance Rating: High

Natural Hazards:

Storm Probability (% chance of occurrence in a given year):

Great Hurricane (Winds > 131 MPH)	2%
Hurricane (Winds > 74 MPH)	16%
Tropical Storms	N/A

Vulnerability to Major Storm Damage: Moderate
(Annual Storm Intensity Factor = 0.35)

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	III Fast Land
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	95-100%

Severity of Flood Hazard: Very High

Shoreline Changes (Category III Areas Only):

Shoreline	
Condition	Accreting
Shoreline	13.0
miles	
Rate/year	>10 ft/yr

Summary of Island Stability: The class III portion of Matagorda Island is accretional and is evaluated as stable.

RESOURCE VALUES

Fish & Wildlife: The bayward side of the island is abundant with wildlife, fish and waterfowl. The area provides a nursery and breeding ground for many species of fish. The marshland is lush and is some of the most biologically productive along the Texas coast. Also associated with the island are grass flats and oyster reefs. The area has been used during recent years for cattle grazing.

Significance Rating: High

Special Ecological Features: Special ecological features include:

- 1) rookeries for several endangered species;
- 2) the presence of black mangroves;
- 3) nominated as an area of national interest by the State of Texas and protection by the National Audubon Society.
- 4) the island is in close proximity to Aransas Wildlife Refuge.

Significance Rating: High

Recreation Potential: High-intensity beach activity is rated low because of restricted access.

The potential for low-intensity resource oriented recreation is somewhat greater, but also low because of restricted access.

Significance Rating: Low

THREATS TO RESOURCE VALUES

Development: Because of the abundance of wildlife and the presence of many endangered species, development, especially of more than very low density, would be detrimental to the resource values of the island.

Significance Rating: High

Imminence: Low

Shoreline Manipulation: Cedar Bayou was recently artificially closed during the IXTOC I oil spill. Permanent shoreline manipulation is unlikely.

Significance Rating: Low

Imminence: Low

Environmental Pollution: Matagorda Island is close to Port O'Connor and shipping lanes. This exposure to petroleum related activity increases the likelihood that the island could suffer environmental pollution from spilled oil or other hazardous substances.

Significance Rating: High

Imminence: High

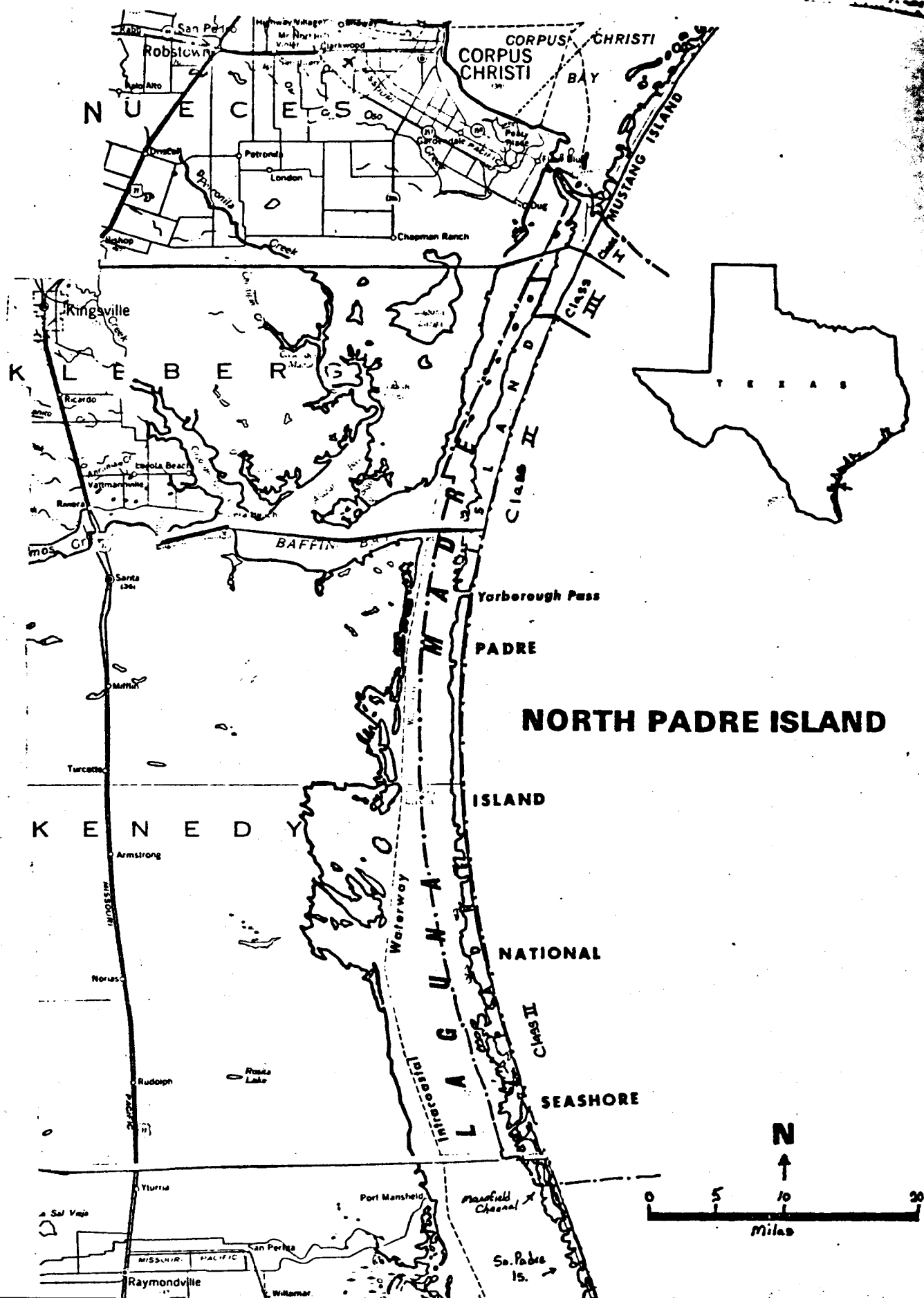
Other Threats: No Data Available

Significance Rating: N/A

Imminence: N/A

Preparer: M.O. Hayes

Date: 2/2/80



TEXAS

Name of Unit: North Padre Island

Reference Code: TX-15

Nueces/Kleberg/
County: Kennedy

Congressional District: 15

SUMMARY EVALUATION: The natural resources of North Padre Island include dense subtidal grass beds, broad tidal flats, marshes, large dune fields and beaches. These coastal environments provide habitats for a wide variety of fish and wildlife. The largest part of North Padre Island is protected by the National Park Service. The principal hazard to use and development is likelihood of washovers during hurricane or severe storm conditions. Development does not present a threat to the natural resources.

DESCRIPTION:

Total Area of Unit: 164,155 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	7%
Agricultural Land	0%
Rangeland	10%
Forest Land	0%
Water	0%
Wetland	65%
Barren Land	18%

Undeveloped/Unprotected Land (Category III):

Fast Land 9,495 Acres Wetland 28,486 Acres
Interior Waters 0 Acres

Beach Length of Entire Unit: Total 72.1 Miles
Undeveloped/Unprotected 6.3 Miles

Land Ownership: Federal: 125,000 Acres
Non-Federal Govt: 2,200 Acres Private: 36,955 Acres

ACCESS: Access to the island is by bridge (secondary hard surface highway) and a four-lane secondary hard surface high-

Nearest Standard Metropolitan Statistical
Area (SMSA): Corpus Christi, Texas

Shortest Road Distance from Unit to SMSA: 5-10 Miles
Population of SMSA in 1978: 200,000

PHYSICAL CHARACTERISTICS: Regressive Barrier
Type of Barrier Island Structure: Island

Geological/Hydrological Features: This area is characterized by well developed dune fields with migrating bar-
chan dunes. The beaches are typically fine sand with broad
flat profiles, but areas of mixed sand central and southern
end of the island.

Significance Rating: Moderate

Natural Hazards:

Storm Probability(% chance of occurrence in a given
year):

Great Hurricane(Winds >131 MPH) 2%
Hurricane(Winds > 74 MPH) 16%
Tropical Storms N/A

Vulnerability to Major Storm Damage: Moderate
(Annual Storm Intensity Factor = 0.39)

Flooding:

Flood Occurs Once Every	Stillwater Height of Storm Surge	% of Category III Fast Land Flooded
10 Yrs.	N/A	N/AZ
50 Yrs.	N/A	N/AZ
100 Yrs.		80-85%

Severity of Flood Hazard: High

Shoreline Changes (Category III Areas Only):

Shoreline Condition	Accreting	Eroding	Stable
Shoreline miles	3.6	2.3	1.9
Rate/year	0-5 ft/yr	0-5 ft/yr	0-5 ft/yr
Area:	North	South	—

Summary of Island Stability: Though subject to washover
and erosion, this island is evaluated as stable.

RESOURCE VALUES

Fish & Wildlife: North Padre Island provides habitats for many
birds and other wildlife such as the coyote. The associated Laguna
Madre also hosts extensive subtidal grass flats.

Significance Rating: High

Special Ecological Features: Much of Padre Island is protected as a
natural seashore under the management of the U.S. National Park Ser-
vice. A National Environmental Study Area under the Environmental
Education Program of the U.S. National Park Service is active here.

Significance Rating: N/A

Recreation Potential: North Padre Island is presently used for both
high and low-intensity recreational activity. The intensity of use
decreases to the south as access becomes more difficult. A portion
of the island is designated a National Environmental Study Area, a
cooperative educational venture carried out by the U.S. National Park
Service and local educational institutions. The potential for the
island is high for both high and low-intensity types of recreation.

Significance Rating: High

Cultural Resources: No cultural resources are known to exist for
this area.

Significance Rating: Low

Miscellaneous Comments: None.

THREATS TO RESOURCE VALUES

Development: The development present does not threaten resource
values; however, oil well and pipeline locations increase likeli-
hood of environmental damage from oil.

Significance Rating: Moderate Imminence: Low

Shoreline Manipulation: With the exception of Mansfield Pass, no
shoreline manipulation (Structures) is present.

Significance Rating: Moderate Imminence: High

Environmental Pollution: North Padre Island is potentially subject
to pollution from onshore oil spills (pipelines, drill rigs);
offshore oil spills (blowouts and tankers accidents); and daily
accumulation of recreation related trash and debris.

Significance Rating: High Imminence: High

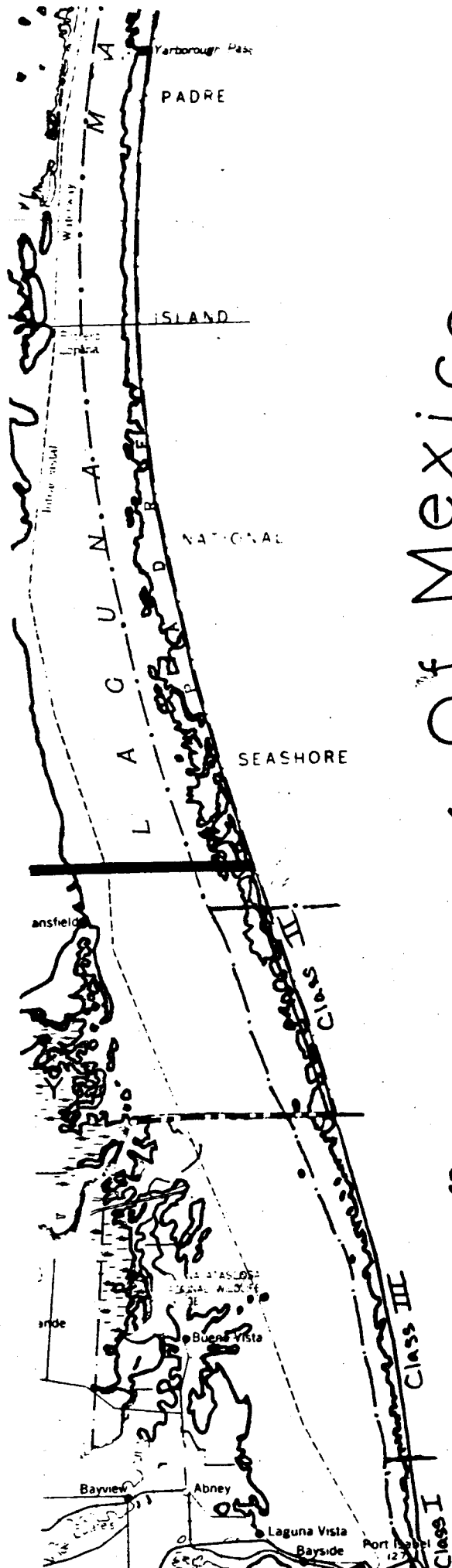
Other Threats: The beachface is heavily used by automobiles
and recreation vehicles.

Significance Rating: Moderate Imminence: High

Miscellaneous Comments: None

Preparer: M.O. Hayes

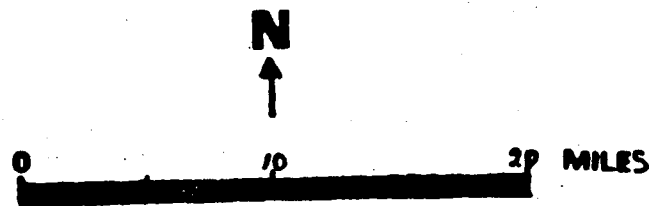
Date: 2/2/80



Gulf of Mexico



SOUTH PADRE ISLAND



Name of Unit: South Padre Island Reference Code: TX16

County: Cameron/Wallacy Congressional District: 15

SUMMARY EVALUATION: South Padre Island include a variety of both sport and commercial fishing as well as many species of wildlife, such as coyote and jack rabbits. It also includes bird rookeries of common shorebirds and some rare and endangered species. The island is very near the Laguna Atacosa National Wildlife Refuge and parts of it are administered by the National Park Service and the National Audubon Society as a wildlife refuge. Potential hazards to use and development are an eroding shoreline, as well as very active sand dunes.

DESCRIPTION:

Total Area of Unit: 15,000 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	7%
Agricultural Land	7%
Rangeland	12%
Forest Land	0%
Water	0%
Wetland	67%
Barren Land	17%

Undeveloped/Unprotected Land (Category III):

Fast Land 2,958 Acres Wetland 5,858 Acres
Interior Waters 0 Acres

Beach Length of Entire Unit: Total 39.9 Miles
Undeveloped/Unprotected 9.2 Miles

Land Ownership: Federal: 5,000 Acres
Non-Federal Govt: 0 Acres Private: 10,000 Acres

ACCESS: The Queen Isabella Causeway connects the mainland with South Padre Island. A paved two-lane state highway leads to the causeway from both sides.

Nearest Standard Metropolitan Statistical

Area(SMSA): Corpus Christi
Shortest Road Distance from Unit to SMSA: 90 Miles
Population of SMSA in 1978: 200,000

PHYSICAL CHARACTERISTICS:**Type of Barrier Island Structure:** Transgressive Barrier

Geological/Hydrological Features: South Padre Island is characterized by large tidal flats, migrating dune fields, well developed for dune ridges, and fine sand beaches. The back barrier shoreline is primarily tidal flats with some sand and shell beaches. Also present are several protected and fringing marshes.

Significance Rating: Moderate**Natural Hazards:****Storm Probability(% chance of occurrence in a given year):**

Great Hurricane(Winds >131 MPH) 2%
Hurricane(Winds > 74 MPH) 16%
Tropical Storms N/A

Vulnerability to Major Storm Damage: Moderate
(Annual Storm Intensity Factor = 0.34)

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	Flooded
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	85-85%

Severity of Flood Hazard: High**Shoreline Changes (Category III Areas Only):**

Shoreline	Condition	Eroding
Shoreline	3.2	14.8
miles:		
Rate/year:	5-10 ft/yr	5-10 ft/yr

Summary of Island Stability: Approximately 50% of the undeveloped, unprotected shoreline on South Padre Island is eroding at rates which exceed 10 ft/yr. Washovers and large

RESOURCE VALUES

Fish & Wildlife: The extensive grassflats that are present near the lagoon shores of South Padre Island provide breeding and nursery grounds for a variety of fish. The island's interior provides habitat for many forms of wildlife, such as the jack rabbit and coyote. The island also provides rookeries for several species of birds, some of which are endangered.

Significance Rating: High

Special Ecological Features: Some of South Padre Island is administered as a wildlife sanctuary by the National Park Service through the Padre Island National Seashore. The National Audubon Society also administers several sites as wildlife sanctuaries. Laguna Atacosa National Wildlife Refuge is directly across the lagoon from South Padre and many species of birds which inhabit this refuge have been reported on South Padre Island.

Significance Rating: High

Recreation Potential: As access to the island is very good, the beaches are presently experiencing high-intensity beach activities up to the Brazos Santiago Pass. It is expected that the potential for further intensive, urban-type recreation will be realized in this area. The potential for recreation of the resource-oriented, low-intensity type is moderate for the less accessible area north of Brazos Santiago Pass.

Significance Rating: High

Cultural Resources: Brazos Santiago Pass is on the National Register of Historic Places.

Significance Rating:

Miscellaneous Comments: The southernmost area of the island is extensively developed for tourism and recreation. Continued development of this type have adverse impact on the nearly pristine nature of the other parts of the island.

THREATS TO RESOURCE VALUES

Development: The southern tip of South Padre Island has been developed for recreation. No serious threat to resource values has occurred from this development thus far. However, continued development of this type would alter or destroy the pristine nature that continues to exist on much of the island.

Significance Rating: High**Imminence:** Moderate

Shoreline Manipulation: The shoreline is manipulated by the heavy traffic of automobiles and recreational vehicles. Some effort has been made by the National Park Service and county authorities to restrict traffic to a narrow zone near the top of the beachface but this has met with very moderate success. The only other form of shoreline manipulation is the jetties at both Brazos Santiago Pass and Mansfield Pass.

Significance Rating: High**Imminence:** High**Other Threats:** No data are available.**Significance Rating:** N/A**Imminence:** N/A

Miscellaneous Comments: Legislation recently passed by the U.S. Congress (H.R. 3757), will reduce South Padre Island's seashore area by 1,726 acres - 35% loss of the land area now owned by the Federal Government and protected by the U.S. National Park Service. If residential or commercial development is permitted to occur on this acreage lost, there is a high possibility that it will adversely impact on the unique ecological features of this unit. Development of the type that usually accompanies resource-oriented, low-intensity recreation would not be likely to have negative effects.

Preparer: M.O. Hayes

Date: 2/4/80

TEXAS

Name of Unit: Boca Chica

Reference Code: TX-17

County: Cameron

Congressional District: 15

SUMMARY EVALUATION: The natural resources of this limit are its marshes, tidal flats, and beaches. Each area is relatively pristine and plays a key role in the areas overall ecosystem. Key hazards to use and development are this island's active or potentially active washovers and the shoreline alterations from movements of the mouth of the Rio Grande. Recreation development of this area would not be likely to seriously alter the natural resources. Residential or commercial developments would create an exaggerated stress on many wildlife habitats because of an inevitable encroachment due to the small size of the island.

DESCRIPTION:

Total Area of Unit: 3,810 Acres

Land Use/Land Cover	% of Total
Urban or Built-up Land	0%
Agricultural Land	0%
Rangeland	24%
Forest Land	0%
Water	0%
Wetland	60%
Barren Land	16%

Undeveloped/Unprotected Land (Category III):

Fast Land 1,116 Acres Wetland 2,034 Acres
Interior Waters 0 Acres

Beach Length of Entire Unit: Total 7.5 Miles
Undeveloped/Unprotected 7.5 Miles

Land Ownership: Federal: 0 Acres
Non-Federal Govt: 200 Acres Private: 3,610 Acres

ACCESS: Access is via a medium duty highway in the central portion and a light duty road which becomes an unimproved dirt road at Boca Chica in the south.

Nearest Standard Metropolitan Statistical

Area(SMSA): Brownsville - Harlingen, Texas
Shortest Road Distance from Unit to SMSA: 35 Miles
Population of SMSA in 1978: 85,000

PHYSICAL CHARACTERISTICS:

Transgressive beach -
Type of Barrier Island Structure: part of the Rio Grande
deltaic headland

Geological/Hydrological Features:

The island has several lakes and ponds. The topography of the island is dominated by washover structures and migrating dunes.

Significance Rating: Moderate

Natural Hazards:

Storm Probability(% chance of occurrence in a given year):

Great Hurricane(Winds >131 MPH) 1%

Hurricane(Winds > 74 MPH) 8%

Tropical Storms N/A

Vulnerability to Major Storm Damage: Moderate
(Annual Storm Intensity Factor = 0.22)

Flooding:

Flood Occurs	Stillwater Height	% of Category
Once Every	of Storm Surge	III Fast Land
10 Yrs.	N/A	N/A
50 Yrs.	N/A	N/A
100 Yrs.	N/A	70-75%

Severity of Flood Hazard: High

Shoreline Changes (Category III Areas Only):

Shoreline
Condition Accreting Stable
Shoreline 1.2 4.5
miles
Rate/year >10 ft/yr ---

Summary of Island Stability: Stable - The island displays net accretion or stability of its shoreline but it is subject to shoreline alterations from washovers and fluctuation at the mouth of the Rio Grande.

RESOURCE VALUES

Fish & Wildlife: The back barrier environment of Boca Chica provides habitats for many species of waterfowl, fish, and wildlife. South Bay supports breeding and nursery grounds for both commercial and sports fish.

Significance Rating: Moderate

Special Ecological Features: The Del Mar Brazos State Park is ecologically interrelated with the undeveloped area.

Significance Rating: Moderate

Recreation Potential: The area is used for recreation and has significant - potential for high-intensity beach recreation.

Significance Rating: High

Cultural Resources: No cultural resources have been reported.

Significance Rating: Low

THREATS TO RESOURCE VALUES

Development: Future recreational development of this area would not be likely to threaten the natural resource values of the island appreciably.

Significance Rating: Low

Imminence: Low

Shoreline Manipulation: Presently, no shoreline manipulation is underway. No information is on hand concerning future plans for manipulation.

Significance Rating: Low

Imminence: Low

Environmental Pollution: Recreation-related trash is deposited on the beachface daily. Spilled oil or other hazardous substances from oil production and related activities are ever present threats.

Significance Rating: High

Imminence: High

Other Threats: Automobiles and recreational vehicles use the beachface for access to the area and may adversely affect beach life and physical condition.

Significance Rating: Moderate

Imminence: Moderate

Miscellaneous Comments: None

Preparer: M.O. Hayes

Date: 2/4/80