

Report of

*South Carolina
Blue Ribbon Committee
on Beachfront Management*



South Carolina Blue Ribbon Committee on Beachfront Management

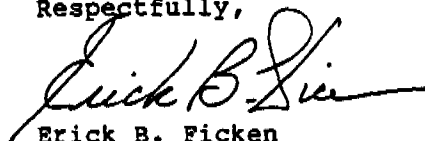
Dear Friends of the South Carolina Coast,

The Blue Ribbon Committee on Beachfront Management was appointed by Senator James M. Waddell, Jr. and the South Carolina Coastal Council last October. The Committee was asked to investigate the problems of beach erosion along the South Carolina coast and determine how the beaches and dunes should best be managed by the State for its citizens. We were further asked to propose long-term solutions to the identified problems.

This report of the Blue Ribbon Committee represents our findings and makes specific recommendations to assure the long-term preservation of the beaches and dunes along the coast of South Carolina. The Committee worked long and hard in developing this report, agonizing over how to balance the interests of the private property owner with that of the public--all of the citizens of South Carolina.

The coastline obviously plays a vital role in the economy of our State. The Blue Ribbon Committee believes that positive action must be taken by the General Assembly in line with the recommendations included in this report if we are to preserve, restore, and enhance this most important natural resource. On behalf of the membership of the Blue Ribbon Committee, I am pleased to submit this report.

Respectfully,



Erick B. Ficken
Chairman

mcb

March, 1987

Erick B. Ficken, Chairman
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Alan S. Altman
Pawleys Island
Richard L. Beck
Folly Beach
Frank W. Brumley
Charleston
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SOUTH CAROLINA BLUE RIBBON COMMITTEE
ON BEACHFRONT MANAGEMENT

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TABLE OF CONTENTS

Introduction	i
I. Findings of Fact	1
II. Policies	4
III. Implementation Guidelines	6
Appendix A	A-1
Appendix B	B-1
Appendix C	C-1
Appendix D	D-1

I N T R O D U C T I O N

The state of South Carolina is blessed with 198 miles of Atlantic Ocean shoreline which is generally characterized by beautiful dry sand beaches and rolling sand dunes. This shoreline is a resource which is vitally important to the citizens of this state and to the state's economy as it annually attracts millions of visitors and generates approximately two-thirds of the state's annual \$3.75 billion dollar tourist industry.

The shoreline, with a healthy beach/dune system in place, also provides the first line of defense in protecting life and property against the ravages of storms and shoreline erosion. In addition, the beach/dune system serves as a habitat and nesting area for many species of plants and animals.

The South Carolina beach/dune system is now in a state of crisis. Over 57 miles of our beaches are critically eroding. This erosion is threatening the continued existence of the beach/dune system and thereby threatening life, property, the tourist industry, vital state and local revenue, marine habitat, and a national treasure.

The primary causes of this crisis include a persistent rise in sea level, poorly planned development which encroaches upon the beach/dune system and a lack of comprehensive beach management planning. This crisis will continue unabated unless the State makes a firm commitment to protect, preserve, restore, and enhance our beach/dune system. This resource is now in desperate need of the State's stewardship.

In 1977, the State enacted the Coastal Tidelands and Wetlands Act (Coastal Zone Management Act) which was intended to prevent poorly planned development and to protect, preserve, restore and enhance the beach/dune system. This legislation has been ineffective because too little authority over the beach/dune system was given to the Coastal Council which is responsible for administering the Act.

The result of this limited authority is that the Coastal Council has been unable to prevent structures from being sited unwisely close to the eroding beach and the impact area of storms and high tides. The owners of these structures, in most instances, have quickly sought permits from the Coastal Council to construct erosion control devices in order to protect their erosion threatened structures. Unfortunately, most erosion control devices result in increased erosion, a drastic lowering of the beach profile (thereby reducing the beach/dune system's tourist and recreational value) and a decrease in the ability of the beach/dune system to protect upland property from storms and high tides. The result of attempting to protect upland property utilizing hard erosion control structures is that dry sand beaches are rapidly disappearing thereby placing many millions of tourist dollars in jeopardy.

Sea level rise in this century is a scientifically documented fact. Our shoreline is suffering from its effects today. Moreover, a recent study conducted by the U. S. Environmental Protection Agency (EPA, 1983) predicts a possible one foot rise in sea level over the next thirty to forty years and approximately three feet over the next hundred years. It must be accepted that regardless of attempts to forestall the process, the Atlantic Ocean, as a result of sea level rise and periodic storms, is ultimately going to force those who have built too near the beach front to retreat.

If we had the opportunity to step back in time and plan the development of South Carolina's beaches with today's knowledge, we would most certainly chart a different course from that of the past. We would not allow development in close proximity to the beach/dune system. Unfortunately we are not afforded that luxury, for much of South Carolina's coast is heavily developed today. Any new rational beach management policy must recognize the existence of such development and the vast differences which exist between

various sections of our coast with regard to the degree and pattern of development and the monetary investment involved.

The storm and high tides of January 1, 1987, have made everyone painfully aware of the dynamic nature of our coastline. A relatively minor storm in early December, 1986, closely followed by the January 1, 1987, storm inflicted substantial damage to upland property (\$20 million) and left the coast of South Carolina severely damaged and highly vulnerable to future storms. The present condition of the South Carolina shoreline has raised the awareness level of the citizens of South Carolina to a point where almost everyone agrees that improved beach management is absolutely necessary.

There are three possible approaches upon which to base a beach management policy:

- 1) Armor the beach with erosion control devices,
- 2) Nourish the beach with sand; and,
- 3) Retreat from the beach.

We believe that combinations of the three approaches, depending upon site specific factors, may be the most realistic policy.

We have already tried armoring the shoreline. While armoring the shoreline has temporarily offered protection to private property, it has caused damage to the public beach. Carefully planned nourishment of the beach/dune system is certainly a more desirable approach to forestalling the effects of the encroaching sea upon existing development. Nourishment is expensive but can be effectively utilized at locations where the benefits justify the cost. Furthermore, it is anticipated that the cost of nourishment will rise as the sea level rises and could ultimately become extremely expensive.

The Blue Ribbon Committee therefore concludes that a retreat from the beaches over a thirty year transition period, in combination with selective

beach nourishment, is the only practical approach to our coastal erosion problems. A retreat implemented over 30 years will allow owners of structures sited too close to the beach to realize the economic life of their structures and adjust their plans over a reasonable 30 year time period. This retreat must be based on sound state and local comprehensive beach management plans, which, when implemented, will result in the preservation, protection, restoration, and enhancement of our beach/dune system for the enjoyment of this and future generations.

I. FINDINGS OF FACT

- A. The beach/dune system along the coast of South Carolina is extremely important to the people of South Carolina and serves the following functions:
1. Protects life and property by serving as a storm barrier which dissipates wave energy and contributes to shoreline stability in an economical and effective manner.
 2. Provides the basis for a tourist industry that generates approximately two-thirds of South Carolina's \$3.75 billion annual tourist industry revenue which is a significant portion of the State's economy. The tourists who come to the South Carolina coast to enjoy the ocean and dry sand beach also contribute approximately \$100 million annually in State tax revenues and \$20 million annually in local tax revenues.
 3. Provides critical habitat for numerous species of plants and animals, several of which are threatened or endangered. Waters adjacent to the beach/dune system also provide a habitat for many other marine species.
 4. Provides a natural healthy environment for the citizens of South Carolina to spend leisure and tranquil moments that serve their physical and mental well being.
- B. Beach/dune system vegetation is unique and extremely important to the vitality and preservation of the beach/dune system.
- C. Approximately fifty-seven miles of South Carolina's beaches have been identified as critically eroding.
- D. The Coastal Tidelands and Wetlands Act of 1977 (Coastal Zone Management Act) does not provide adequate jurisdiction to the South Carolina Coastal Council to enable it to effectively

protect the beach/dune system. Consequently, uncontrolled and unwise development sited too close to the beach/dune system has jeopardized the stability of the beach/dune system, accelerated erosion, and endangered adjacent property. It is in both the public and private interest to preserve and protect the beach/dune system from such unwise development.

- E. The use of armoring, in the form of hard erosion control devices such as seawalls, bulkheads, rip-rap, etc., to protect erosion threatened structures adjacent to the beach has not proven effective. These armoring devices have in many instances, increased the vulnerability of upland property to storm damage and have contributed to the deterioration or loss of the dry sand beach.
- F. Erosion is a natural process which becomes a significant problem when structures are erected in close proximity to the beach/dune system. Therefore, it is in both the public and private interest to plan a gradual retreat from the beach/dune system by discouraging new construction in close proximity to the beach/dune system and encouraging those who have erected structures too close to the beach/dune system to retreat from the beach/dune system.
- G. Inlet and harbor management practices, including the construction of jetties which interrupt the natural long shore transport of sand, thereby depriving down drift beach/dune systems of their natural sand supply, and dredging practices which frequently include disposal of large quantities of beach quality sand at sea, have resulted in accelerated erosion of down drift beach/dune systems.

- H. It is in the State's interest to protect and to promote increased public access to South Carolina's beaches for tourists and South Carolina residents alike.
- I. Present funding for the protection and management of the beach/dune system is inadequate.
- J. There is no coordinated statewide policy for post storm emergency management of the beach/dune system.
- K. A long-range comprehensive beach management plan is needed for the entire coast of South Carolina to protect and effectively manage the beach/dune system, prevent unwise development, and to minimize man's adverse impact on the beach/dune system.

II. POLICIES

A. In recognition of its stewardship responsibilities, the policy of the State of South Carolina shall be:

1. To protect, preserve, restore, and enhance the beach/dune system, the highest and best uses of which are to provide:
 - a. A barrier and buffer from high tides, storm surge, hurricanes, and normal erosion.
 - b. A public and private recreation area which serves as a major source of revenue.
 - c. A habitat for flora and fauna.
 - d. A place of natural beauty.
2. To assure a stable source of funds to provide research, planning, public education, aquisition, and proper management of one of the state's most valuable resources--the beach/dune system.
3. To create a comprehensive, long-range beach management plan and require local comprehensive beach management plans for the protection, preservation, restoration, and enhancement of the beach/dune system. These plans shall promote wise land use, responsible construction techniques, and facilitate a gradual 30 year retreat from the beach/dune system.
4. To discourage continued armoring of the beach/dune system.
5. To encourage the use of erosion inhibiting techniques which do not adversely impact the long-term well being of the beach/dune system.
6. To promote carefully planned nourishment as a means of beach preservation and restoration where economically feasible.

7. To preserve existing public access and to promote increased availability of public access to assure full enjoyment of the beach.
8. To involve local governments in long-range comprehensive planning and management of the beach/dune system.
9. To establish procedures and guidelines for the emergency management of the beach/dune system following a significant storm.

III. IMPLEMENTATION GUIDELINES

A. The Thirty-Year Retreat Policy: The Thirty Year Retreat Policy shall be implemented based on the following:

1. Definition of Shoreline Zones: Two shoreline types are defined for purposes of implementing these regulations.

a. Primary Geomorphological Reach (PGR): Shoreline of a given area subject to essentially the same set of coastal processes; having a fairly constant profile shape and sediment characteristics; and not directly influenced by tidal inlets or their associated offshore shoals.

b. Inlet Management Zones (IMZ): Shorelines along or adjacent to tidal inlets which are, or potentially will be, directly influenced by the inlet and its associated offshore shoals during the next thirty years.

2. The BASE LINE

a. The Base Line for each PGR is the location of the crest of a typical (for the PGR) primary ocean front dune.

Where the shoreline has been artificially altered, the Base Line is the line where the crest of the typical primary ocean front dune would be located if the shoreline had not been artificially altered.

b. The Base Line within IMZ's is determined as the most landward point of dune erosion associated with shoreline changes around the inlet using the recent 30 year shoreline trends for each area.

3. The SETBACK LINE

a. For PGR's undergoing erosion, the Setback Line is the location of the Base Line based on a 30-year landward

projection as determined by historical erosion rate and not influenced by erosion control structures or nourishment.

b. For PGR's which have experienced 30 year accretion, the Setback Line is the Base Line is projected landward by a distance equivalent to the predicted short-term dune erosion during a 50-year return period wave and water level event.

c. For IMZ's which have experienced net erosion over 30 years, the Setback Line is the Base Line projected landward by a distance equivalent to the average erosion rate for the entire IMZ.

d. For IMZ's which have experienced net accretion over 30 years, the Base Line is projected landward by a distance equivalent to the predicted short-term dune erosion during a 50-year return period wave and water level event.

4. Both the Base Line and the Setback Line will be reset at least every five years.

B. Existing Structures (Upon effective date of legislation):

1. Habitable Structures: If a habitable structure is substantially damaged or rendered uninhabitable, it must be removed by owner. It can be replaced by a habitable structure no larger than 4500 total square feet, inclusive of porches, decks, patios, garages, etc. If a habitable structure is removed or destroyed, it can be replaced by a habitable structure no larger than 4500 total square feet. All new habitable structures must be

constructed according to the Local Zoning and Building Code and be permitted by Coastal Council.

2. Minor Structures: If a minor structure is rendered nonfunctional or is deemed a threat to the beach/dune system by the Coastal Council, it shall be removed by the owner.
3. Armoring Devices: Armoring devices shall be removed by the owner thirty years from the effective date of the legislation, unless such devices are permitted to remain in place by the Local Comprehensive Beach Management Plan as provided hereinafter in Paragraph III. In the event the structure needs substantial repair, or emergency repair the Coastal Council may require removal prior to 30 years from the effective date of the legislation or may allow the structure to remain provided it be made to conform to current erosion control permitting guidelines outlined in Appendix A. The owner shall be required to post financial security to assure compliance with the guidelines.

Armoring devices may be permitted to remain in place more than thirty years from the date of this legislation and every five years thereafter provided that the following conditions are met:

- a. The Local Comprehensive Beach Management Plan has been recently updated and approved by Coastal Council and which plan will allow the armoring devices to remain in place for an additional five years; and,
- b. The beach has been, continuously in the past and is currently, nourished with sand supplied by the permittee

or his designee as required by Coastal Council regulations (see Appendix A) or is nourished with sand as supplied by a local nourishment program or accretion and in either situation will continue to be so nourished during the next five years.

C. **New Structures:** Following the effective date of the legislation, no new structures shall be allowed seaward of the Setback Line except for the following which require a permit from the Coastal Council:

1. Habitable structures of 4500 total square feet or less, inclusive of porches, decks, patios, garages, etc. provided that:
 - a. The structure meets the Local Zoning and Building Code.
 - b. The lot was platted prior to the effective date of the legislation.
 - c. The owner does not own an adjacent lot landward of the lot he intends to build on.
 - d. The structure is sited at a location approved by the Coastal Council. In any event, construction will never be allowed on accreted land seaward of the Base Line as it existed on the effective date of the legislation.
 - e. The owner provide a plan for removal of the structure.
 - f. The owner may be required to post financial security to assure compliance with the removal plan.
 - g. If any portion of a structure extends seaward of the Setback Line, it must conform to the requirements of this section.

2. Public Utilities and Other Public Works provided that the structures must serve an overwhelming public interest.
3. Walkways, Dune Crossovers, and Sand Fencing may be built only in accordance with Coastal Council Guidelines.
4. New Armoring Devices may only be allowed for habitable structures existing on the effective date of the legislation under guidelines set forth in Appendix A. New armoring devices shall be subject to the same removal requirements as existing armoring devices.

D. Beach Dune Vegetation: Destruction of vegetation seaward of the setback line is permitted only when there is no feasible alternative, and when there is destruction of vegetation it shall be mitigated. (See Appendix D)

E. Responsibilities

1. Local Government responsibilities shall be:
 - a. To prepare within three years of the effective date of the legislation, in coordination with the Coastal Council and within the guidelines prepared by the Coastal Council, a Local Comprehensive Beach Management Plan (LCBMP) which, when complete, will require the approval of Coastal Council, and shall be updated every five years thereafter. The LCBMP shall be prepared in accordance with Appendix B.
 - b. To issue and enforce building permits jointly with the Coastal Council seaward of the Setback Line.
2. Coastal Council's responsibilities shall include creation of a long range comprehensive beach management plan for the

coast of South Carolina which plan shall include but shall not be limited to:

- a. The development of a data base for the State's coastal areas which will provide essential information needed to make informed decisions concerning the beach/dune system.
- b. The development of guidelines and the coordination with appropriate agencies and local governments for:
 1. Beach/dune restoration and beach/dune nourishment which include:
 - Projected impact on coastal erosion rate.
 - Cost benefit of project.
 - Impact on flora and fauna.
 - Funding alternatives.
 2. Beach access.
 3. Beach maintenance.
 4. Dune protection.
 5. Protection of endangered species and important habitats such as nesting grounds.
 6. Regulation of vehicular traffic upon beaches and the beach/dune system prohibition of vehicles upon public beaches for nonessential uses.
 7. The development of a mitigation policy for construction seaward of the Setback Line.
- c. The coordination with appropriate agencies and local governments for development of plans and guidelines on:
 1. Building construction codes.
 2. Emergency preparedness.

3. Post storm recovery and redevelopment.
 4. Placement of beach quality dredge material on beaches in need of renourishment.
- d. The recommendation of funding programs for achieving the goals set forth in the State's Comprehensive Beach Management Plan.
 - e. The development of a program of public awareness of the importance of the beach/dune system.
 - f. The development of minimum guidelines for Local Comprehensive Beach Management Plans. Coastal Council should provide professional expertise in planning, coastal geology, law, funding, and other appropriate areas to assist local governments in the preparation, coordination, and implementation of the local plans (Appendix B).
 - g. The review of local comprehensive beach management plans under a plan review procedure which should include provisions for:
 1. Agency and public review.
 2. Approval/denial.
 3. Appeals.
 4. Revocation.
3. In the event a local government fails to act in a timely manner to establish and enforce an LCBMP, the Coastal Council shall have authority to impose an LCBMP for such local government. Furthermore, if a local government fails to establish and enforce an LCBMP, such local government shall

not be eligible to receive any available state shared revenues designated for beach/dune system protection, preservation, restoration, and enhancement.

F. Additional Considerations

1. Proposed legislation should include provisions for a disclosure statement in all Contracts of Sale and Deeds with respect to transfers of property located in the Velocity Zone as defined by the Federal Emergency Management Act. The required disclosure statement should include location of the property in proximity to the Base Line and the local erosion rate.
2. The State must provide a stable source of adequate funding for the establishment of the State and Local CBMP's, beach nourishment, Coastal Council staffing requirements, and other related considerations. Funding sources should be identified with assistance from local governments to determine the best sources of revenue. If necessary, legislation should be adopted to provide new sources of funding. Possible considerations may include:
 - a. Infrastructures Bill
 - b. Local Option Sales Tax
 - c. Permit fees sufficient to cover the cost of processing the permit application
 - d. Special Tax Districts
 - e. Property Transfer Fees (Deed Stamps)
 - f. Tourism Promotion Surcharge on Sales Tax upon Tourist Related Expenditures,

- g. Other User Fees
3. Additional funding considerations should include:
 - a. Federal Government (e.g. Water Resources Development Act of 1986)
 - b. Bond Financing
 - c. Fines
 4. Funding to local governments shall be distributed in a fair and equitable manner. Consideration shall be given to need, cost benefits, and the best interest of the beach/dune system.
 5. Establishment of a Hazardous Zone Building Code.

APPENDIX A

I. EROSION CONTROL PERMITTING GUIDELINES.

A. The following are the preferred erosion control solutions in descending order of desirability:

1. Natural systems
2. Nourishment
3. Sand bags
4. Relocation of existing structures
5. Water dynamic structures
6. Sloped seawalls, bulkheads, and rip-rap

B. Consideration for approval of an erosion control structure will be based on the following requirements:

1. All structures must be constructed of environmentally acceptable materials, be of sound design and construction so that one could expect the structure to be safe and effective while minimizing the impact on the beach.
2. The design will be prepared by a registered professional engineer and contain the following:
 - a. A list of considered alternatives to the project adequately described and a statement as to why rejected as a solution.
 - b. An estimate of the yearly maintenance cost of the project and evidence that the owner can maintain the structure.
 - c. The amount of mitigating sand required and the sand source.
 - d. The estimated cost of the project.
 - e. A set of drawings and specifications.

3. The Coastal Council in coordination with appropriate agencies will consider the following:
 - a. Mitigating sediment and sand budget.
 - b. The extent of probable updrift and downdrift damage resulting from the structure.
 - c. The projected erosion rates in the area.
 - d. The effect on adjacent properties.
 - e. The location and alignment relative to existing structures.
 - f. The projected erosion acceleration as a result of the structure.
 - g. The effect of the structure on public access.
 - h. The cumulative impact on the entire section of the beach.
 - i. The effect on significant habitats including turtle nesting.
4. No hard structures will be permitted unless the permittee or his designee nourishes the beach with compatible sand in an amount equal to the projected rate of erosion times the length of the armoring.
5. No hard erosion control structures will be permitted unless the permittee posts adequate financial security to assure performance of the permittee's obligation to nourish the beach with compatible sand and to assure performance of the permittee's obligation to remove the erosion control structure in the event that the structure is rendered nonfunctional or is deemed a threat to the beach/dune system by the Coastal Council.

APPENDIX B

I. LOCAL COMPREHENSIVE BEACH MANAGEMENT PLAN GUIDELINES

A. The Local Comprehensive Beach Management Plan, at a minimum, will contain the following:

1. An inventory catalog of beach profile data and available historic erosion rate data.
2. An inventory of public access and parking along with a plan for achieving an acceptable level of access and parking.
3. An inventory of all structures located in the Velocity Zone as defined by the Federal Emergency Management Act, including dimensions (L/W/H) of buildings and all erosion control structures.
4. An inventory of turtle nesting and important habitats of the beach/dune system and a protection and restoration plan if necessary.
5. A geomorphic map of the beach/dune system, including vegetation, and a protection and restoration plan if necessary.
6. A topographic map of the Velocity Zone including all structures, erosion control structures, and other physical features such as roads, utilities, and drainage systems.
7. A conventional zoning plan for the entire Velocity Zone if available.
8. A feasibility study prior to implementing a beach nourishment program including sand sources or, if applicable, an analysis of the effectiveness of an already implemented nourishment program.

9. A Velocity Zone drainage plan.
10. A copy of the emergency evacuation plan.
11. A post disaster plan including plans for cleanup, maintaining essential services, protecting public health, emergency building ordinances, and the establishment of priorities.
12. A detailed strategy for achieving the desired results by the end of the Thirty Year Retreat, including a description of the beach/dune system if the objectives of the Local CBMP are achieved. Consideration should be given to relocating buildings, removal of erosion control structures, and relocation of utilities and roads.

APPENDIX C

PRIMARY GEOMORPHOLOGICAL REACH

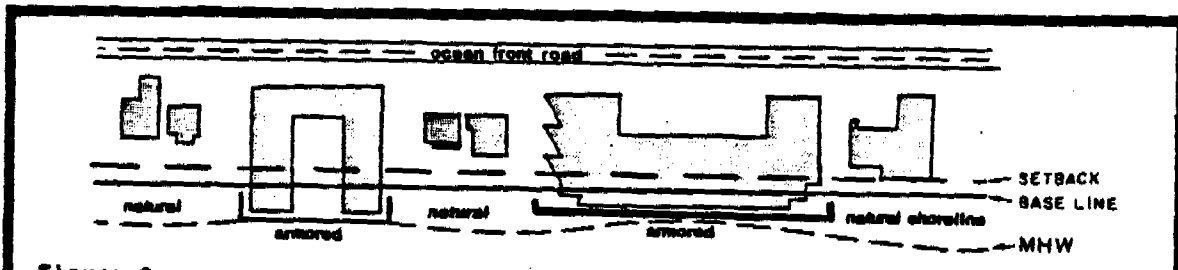
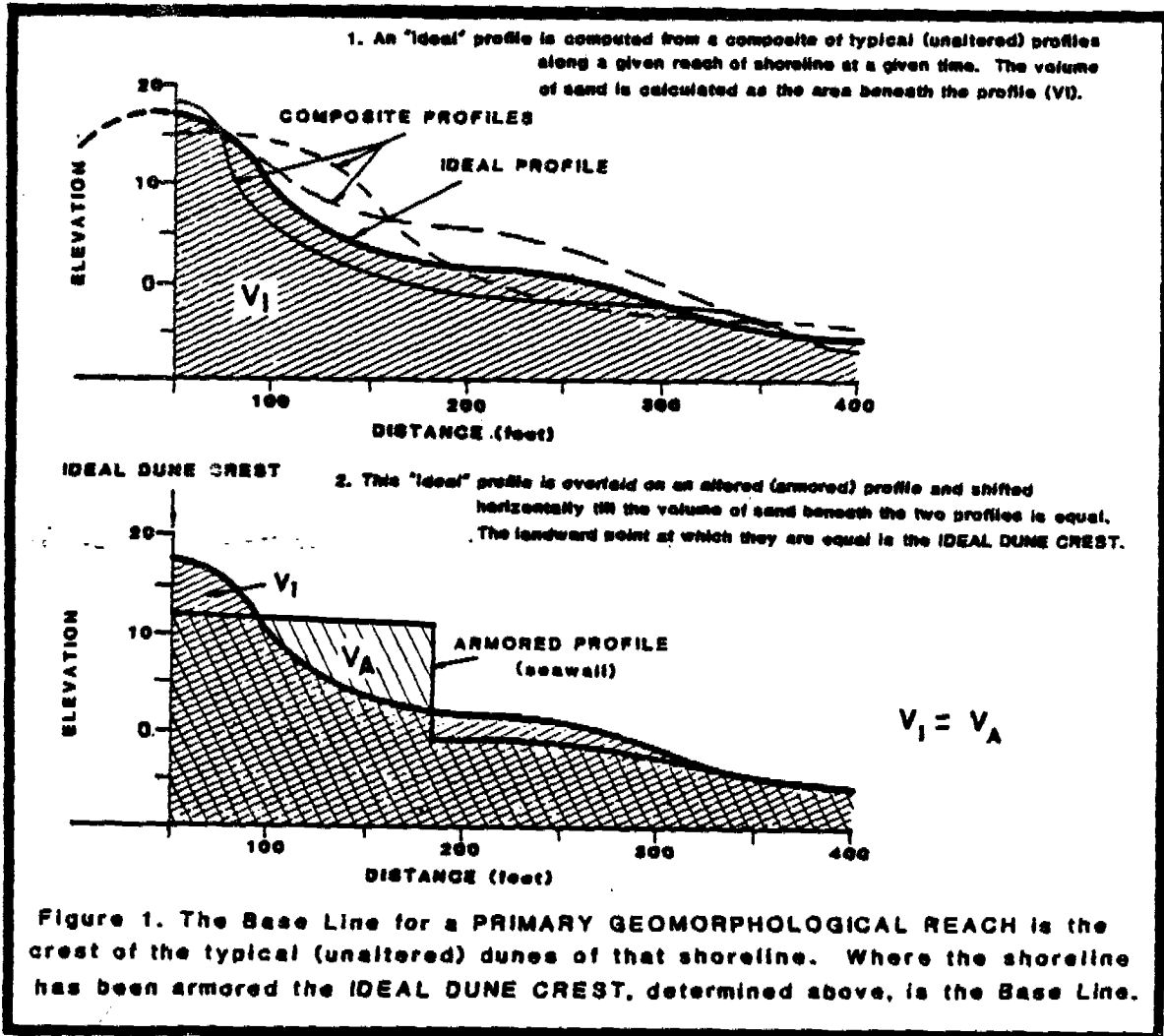


Figure 2.

A hypothetical PRIMARY GEOMORPHOLOGICAL REACH showing the Base Line - where the crest of the typical dunes would be on an unaltered shoreline. The Setback Line is the position of the Base Line after 30 years of erosion at the measured rate for that shoreline. If a shoreline is not erosional the Setback Line is the landward erosional penetration expected from a 50 year storm.

INLET MANAGEMENT ZONE

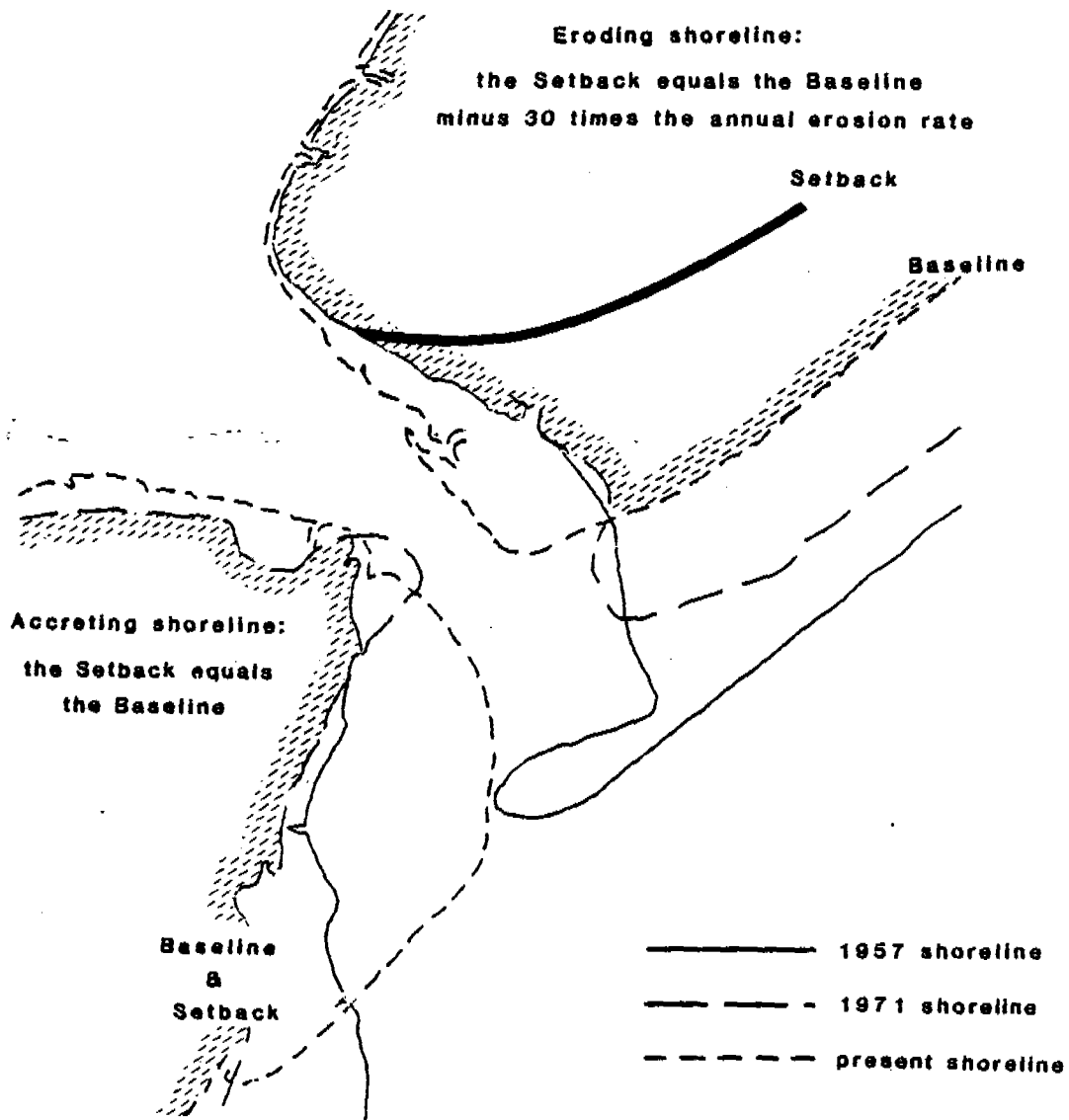


Figure 3. A hypothetical INLET MANAGEMENT ZONE showing the Base Line and the Setback Line. The Baseline is determined as the most landward position of the changing shoreline in the recent (30 year) trend. On an eroding shoreline the Setback is equal to 30 times the annual erosion rate. On an accreting shoreline the Setback Line is the Baseline.

APPENDIX D

Vegetation preserves beaches and dunes because the root systems of beach plants retard erosion of sand by water and wind, while the leaves, limbs, stalks, etc., act as a sand collector and provide organic nutrients to build up the dunes and beaches. Depending upon the type of root structure and the density of the foliage beach/dune vegetation will provide for varying degrees of continued growth of the dunes which form a buffer, retard erosion, and give protection from storm damage to coastal structures and property. Without the stabilizing and accreting effects of vegetation, the dunes will be eroded by the wind and will lose their protective capability. Because the dunes and beaches need constant protection from the elements and human activities, it is important that the beach/dune vegetation is not only preserved but is also adequately maintained and, if necessary, replanted.

A profile of vegetation in a beach/dune system typically includes a pioneer zone on the seaward side, a shrub zone landward of the pioneer zone, and a forest zone located more inland. The pioneer zone is the area closest to the wind and wave action of the active beach, where grasses such as sea oats, vines, and other low-lying plants are dominant. Any existing vegetation in this zone should be carefully preserved. When vegetation in the pioneer zone is sparse or has been damaged by pedestrian or vehicular traffic or other activities, revegetation should be undertaken. Further inland of the pioneer zone the vegetation generally changes to shrubs and woody plants which form the shrub zone. Sufficient organic matter should be left to accumulate in the ground in order to improve soil. Widespread cutting, trimming, hedging, etc., of woody plants seaward of the Setback Line in the shrub zone for the purpose of improving visibility of the beach from upland areas is not permitted.

Where old dunes exist and have become stabilized and protected from salt spray, the forest zone becomes evident. The ground cover in this zone may consist of a variety of grasses, shrub zone plants, and trees. Mature native plant communities in this forest zone should be left intact because of the major role they play in protecting inland structures from severe storm winds.