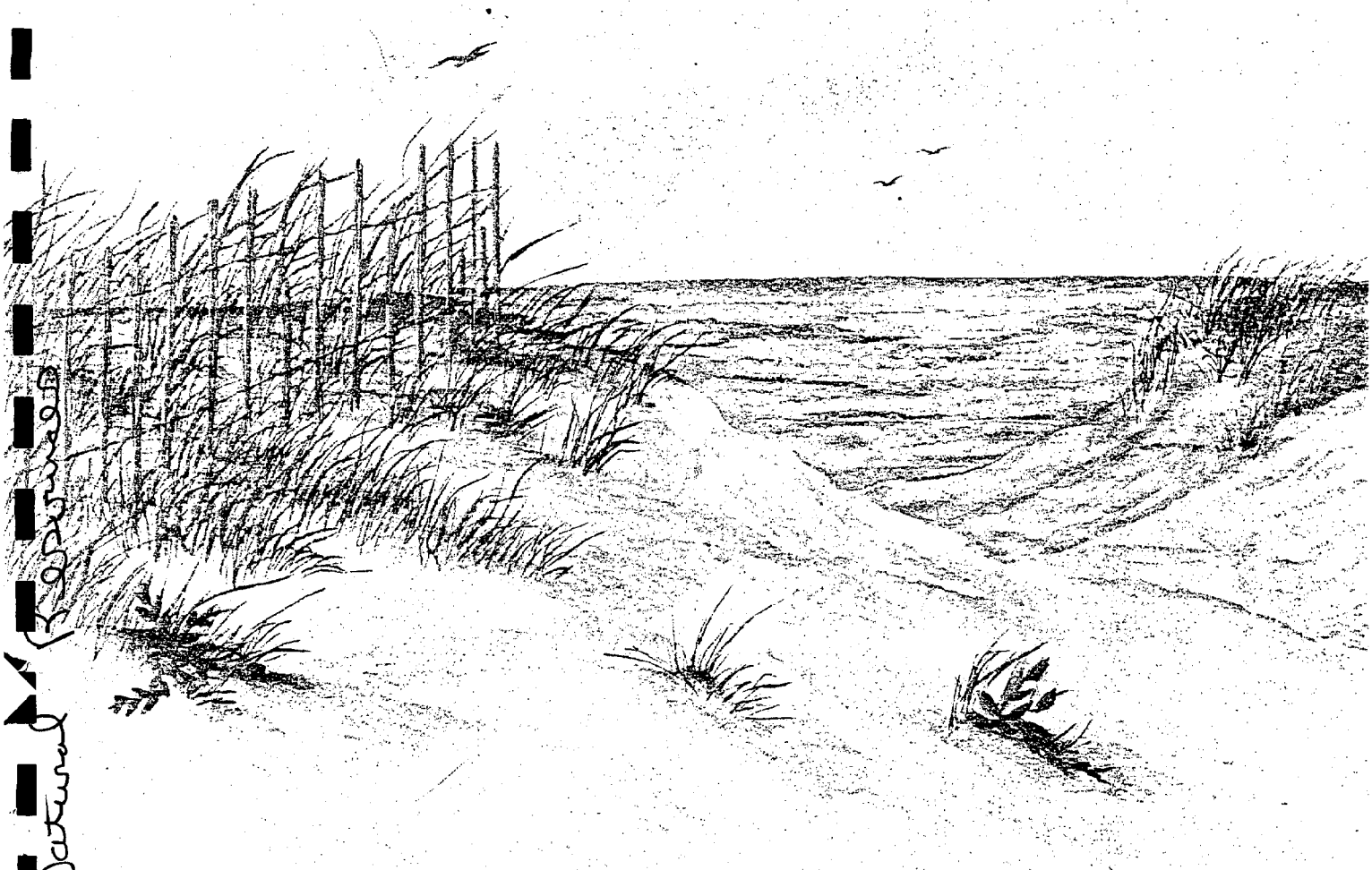

OCEAN CITY DUNE STABILIZATION COMMITTEE

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DUNE PACKET

COASTAL ZONE
INFORMATION CENTER

GB458.4 D86 1987

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Publication Made Possible By
the Maryland Coastal Zone
Management Program
Through A Grant From The
Department of Commerce

1983-84

OCEAN CITY DUNE STABILIZATION COMMITTEE

Non-Profit Organization Number 52-1299356

Commissioner Roland Powell	Honorary Member	
Ann Horner	Chairman	524-4003/524-2596
Syd Gaarder	Vice-Chairman	524-1199/289-3111
Annette Reinstein	Non-Resident Member	524-2671/1-320-3623
Sally Fisher	Public Relations-Europe/ USA Liaison	1-583-1451/289-9288
Harold Decker	Treasurer	524-4645
Buck Mann	Fund Raising	289-6156
Angie Schroeder	Committee Member	289-8221
Jamie Horner	Committee Member	289-8200/524-9614
Jim Hall	Committee Member	524-7888

Support and Technical Staff

Norma E. Truitt	Soil Conservation District Manager	632-1369
Anthony Barrett	Town Manager	289-8221
Bruce E. Nichols	District Conservationist	632-0939
William Fritz	Sediment Control Specialist	632-1369
Mike Delano	Extension Service	632-1972

SPECIAL EVENTS

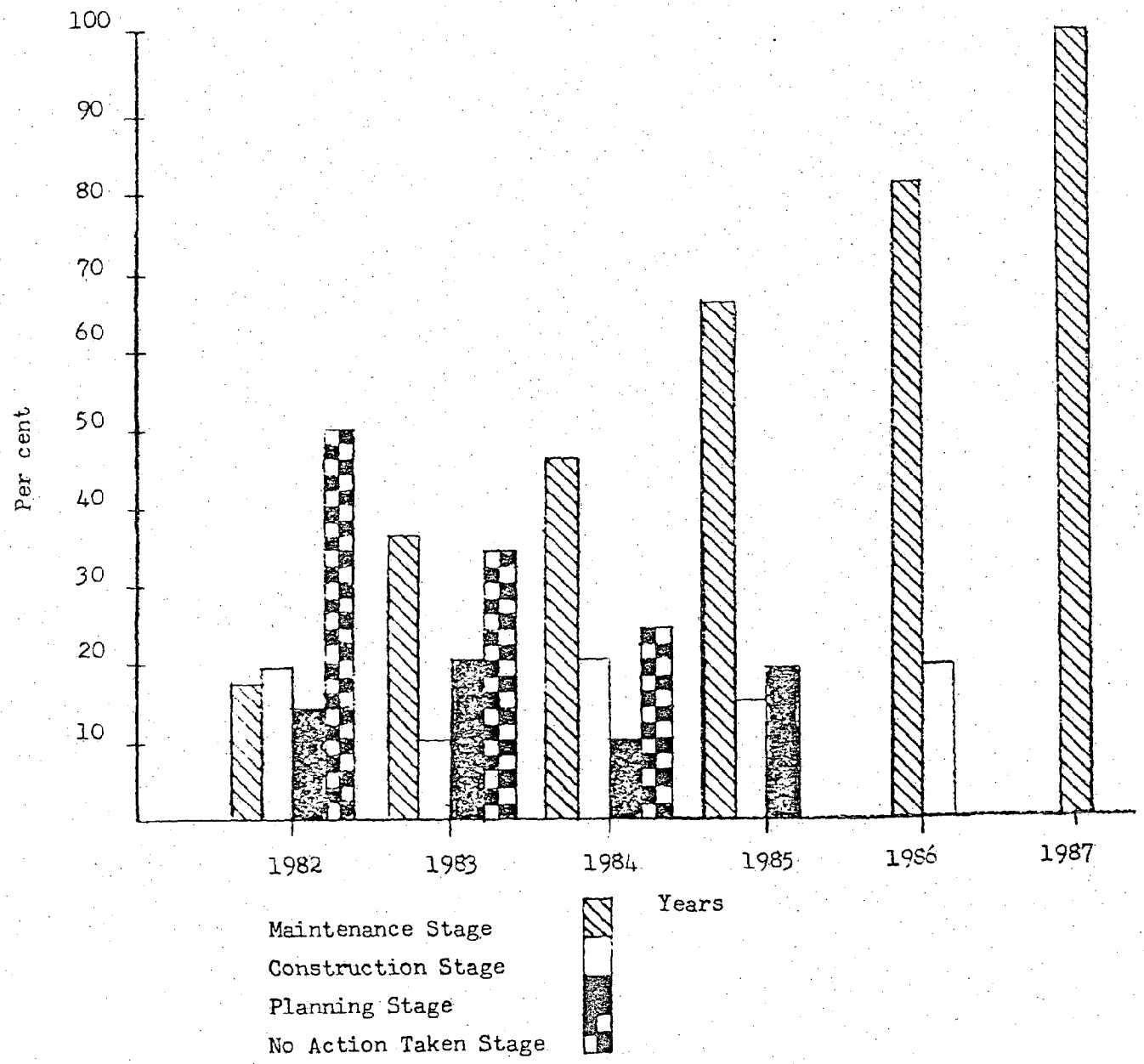
Dune Stabilization Month (Ocean City) - November

Dune Day (State of Maryland) - November 9th

March - Dune Preservationist of the Year Award

STATEMENT OF GOALS

1. The goal is to organize property managers and owners to act in the most effective, technical and economic manner to enhance and develop a protective dune line.



THE VALUE OF DUNE ESTABLISHMENT

Extra Time

The adage that you can't buy time fails when you establish a protective dune line. The dune cannot withstand continual wave assault, however, the more sand and vegetation available, the more wave energy is required to remove protection and make the structure vulnerable to damage. Therefore, by establishing a dune, you buy time!

Frequency of Storm Damage

Storms with various intensities occur with different frequencies. The storms with the greatest intensity occur at far less frequency than do more minor storms. Dunes not only buy time during real intense storms but also preclude damage for most minor storms. Dunes lower the probability of damage to properties.

Sand Erosion and Deposition

The movement of sand along the beach is relative to the velocity of wind. When wind velocity reaches 12 miles per hour, significant erosion and deposition occurs. When wind velocities go to extremes such as in nor'easter or hurricanes, sand becomes so mobile, it crosses the total city becoming airborne to elevations exceeding and being deposited on sun decks nine stories high. The dune traps the sand stopping its encroachment on the city preventing undesirable deposition in roads, on lawns and against buildings.

Natural Landscape Beauty

The establishment of the vegetative cover on the dunes provides scenic beauty once typical of all coastal areas. The plants provide diversity to the environment cushioning the harsh edge between buildings and sand. Breezes induce gentle flowing grass movement where otherwise, there would be only motionless sand. The vegetation provides habitat for shore birds, rabbits and a base for outside classrooms.

Cost for Dune Establishment

440' fence for 200 by 20 area

Fence - 440 x 39 = $171.60

Fence Post - 29 x $2.85 = $82.00

Plants - 4000 x $85.00 = $340.00

Fertilizer - 40 lbs/application/4000 sq. ft., 3 applications of 10-10-10 per year, 120 lbs of 10-10-10 approximately $12.00

Labor for establishment and fertilizing

Estimated at 4 man days or 32 hrs. at $6.00 or $192.00

Total price $797.60

Now consider the fact that the dunes once established should need maintenance and that cost should be considered over a ten year duration.

1st Year Cost

Maintenance cost over 10 years given the following assumptions:

(a) Replace and mend fence (3 times)*	$514.80
(b) Fertilizer at $14.00/year	120.00
(c) Labor at 2 men days/year or 16 hours @ $6.00	960.00
	$1594.80

Total for 10 years maintenance - $2391.18
Or $239.18 per year

1983 Cost Example

3 stems per culm

1-1000 culms $12.00 per 100 culms

1,001 - 10, 000 culms $25.00 per 1000 culms

10,000 and up $80.00 per 1000 culms

Packing and shipping charges - $15.00 per 1000 culms

For up-to-date cost estimates, contact Ann Horner

Sea Watch Condominium
11500 Coastal Highway
Ocean City, MD. 21842
Phone 301-524-4003 Office
301-524-2596 Home

*$19.50 per 50 ft. City Charges

Dune Development and Stabilization

Suggested Schedule of Activity

Ocean City, Maryland

1. Establish dune by use of dozer, if available, through present program. Fence proposed planting site so as to trap the greatest amount of moving sand - September/October. (Snow fencing materials are acceptable).

2. Contact possible plant material suppliers and select best price and delivery means. Arrange for delivery when planting is scheduled - September-November.

3. Determine if a special landscape appeal is desired and plan for establishing irrigation or other needs as determined.

4. Mulch and protect existing vegetation from wind erosion encroachment on slopes.

5. In late winter or early spring, relocate or place additional fencing around area proposed to be stabilized to exclude man's encroachment - November-March. Any fencing materials selected will be acceptable that exclude man but preference should guide selection that will also aid in sand trapping. Fence should be 50% open area.

6. Plant American beachgrass from November to March 30th with preference for the month of February.

7. Select and apply a recommended fertilization program. Select one which also enhances plant succession species. (See recommended fertilizer rates) page 7.

8. Do not remove desirable invasion plant species from stabilization area.

9. If it is desirable to incorporate shrub species, select desired species and order. (See plant selection list) page 6.

10. Plant shrub species the first year after beach grass establishment.

11. Apply slow releasing fertilizer to shrubs and perform related maintenance activities such as irrigation.

PLANT SELECTION

The dune area is a harsh environment, one which combines sand, drought, wind, sun, salt spray and temperature in such a manner that sea-side plant establishment requires selection of adapted, if not specialized plant species. The following is a list of plants which have been tried and have met with success depending on site. If you wish to enhance the landscape appeal at the site by shrub and vine planting, consider the following:

Eastern Baccharis	BACCHARIS HALMIFOLIA
Shore Juniper	JUNIPERUS CONFERTA
Waxmyrtle	MYRICA CERIFERA
Marsh elder	IVA IMBRICATA
Chickasaw Plum	PRUNIS AUGUSTIFOLIA
Rugosa Rose	ROSA RUGOSA
Yucca Sp	YUCCA SP

Vines

Trumpetcreeper	CAMPSIS RADICANS
Virginia Creeper	PARTHENOCISSUS QUINQUEFOLIA
Summer Grape	VITIS AESTIVALIS
Muscadine Grape	VITIS ROTUNDIFOLIA
Sweetautumn Clematis *	CLEMATIS PANICULATA
Wintercreeper *	EUONYMUS FORTUNEI

* Not suited for dune stabilization

Tree species are not usually selected for dune stabilization along the outside dune line. Most trees are not suited to the harsh conditions. If you select to try to establish trees, the following list should be considered:

Japanese Black Pine	PINUS THUMBERGII
White Poplar	POPULUS ALBA
Black Cherry	PRUNUS SEROTINA
Live Oak	QUERCUS VIRGINIANA
Eastern Red Cedar	JUNIPERUS VIRGINIANA

After the dune becomes established, succession will lead to the encroachment of native or wild species. Usually one of the first species to become established after the beachgrass is the seaside goldenrod. Additional species including shrubs such as waxmyrtle tend to follow in successional stages. If fertilization of the dune is accomplished, succession is hastened. A general rule to follow is that any plant growth is beneficial and should not be removed.

RECOMMENDED FERTILIZER RATES

BROADCAST PER 1,000 SQUARE FEET

Type Fertilizer	Time of Application			
First Year	**March**	**June**		**September**
(1) 30-10-0	4 lbs.	3 lbs.		3 lbs.
or				
(2) 16-8-8	6 lbs.	6 lbs.		6 lbs.
or				
(3) 10-10-10	10 lbs.	10 lbs.*		10 lbs.*
or				
(4) 8-8-8	12 lbs.	12 lbs.*		12 lbs.*
Second Year				
(5) 30-10-0	3 lbs.	0	Only if Needed	2 lbs.
or				
(6) 16-8-8	6 lbs.	0		4 lbs.
or				
(7) 10-10-10	10 lbs.	0		5 lbs.**
or				
(8) 8-8-8	12 lbs.	0		6 lbs.**

* In fertilizer schedules No. 3 and 4, the June and September application may be changed to 3 lbs. of ammonium nitrate.

** In fertilizer schedules No. 7 and 8, the September applications may be changed to 2 lbs. of ammonium nitrate.

Check-list of conservation publications presently available through the local Soil Conservation Service that could aid in dune stabilization. Check desired publication and return to

Soil Conservation and Extension Service
301 Bank Street
Snow Hill, Maryland 21863

1. Seacost Plants of the Carolinas
2. Cape American Beachgrass
3. Vegetation for Tidal Shoreline Stabilization in the Mid-Atlantic States
4. Building, Planting and Maintaining Coastal Sand Dunes
5. Sand Dune Protection
6. The Care and Feeding of Sand Dunes
7. Dune Stabilization Packet - Ocean City

Committee Goals

1. Increase the number of property owners/managers interested in property protection through dune stabilization.

2. Maintain a procurement committee whose charge it is to determine the cheapest and best methods to acquire fence materials, fertilizers, plant materials, labor and other materials as needed.

3. Maintain cooperative relations with all divisions of government interested in proposed activity and others that might be of assistance including conservation oriented groups.

4. Obtain assistance in developing a conservation and dune development and stabilization plan for each land owner who is a member of the group.

5. Establish a preference for early dozer work for participants of the dune stabilization program if the city continues to doze sand.

6. Follow the dune development and stabilization suggested schedule of activities.

7. Document successful and unsucessful dune development and stabilization attempts and the reasons why.

8. Twice a year (May and September) select a committee whose charge it is to view the dunes and identify maintenance work that needs to be accomplished.

9. Inform the public through news articles of all activities of the organized group. Establish an information campaign to increase and <u>retain</u> group membership.

10. Establish a requirement for city dozer work to be performed only after a vegetation stabilization plan is developed.

EXCERPTS OF INTEREST TO DUNE STABILIZATION
Taken from Ocean City, Maryland Ordinance dated April 19, 1971

In the event there is no dune line in a respective location, the west boundary shall be the boardwalk maintained by the Town of Ocean City.

Prior to the issuance of a building permit, a plan for erosion and sediment control shall be first submitted to and approved by the Worcester Soil Conservation District.

Prior to construction of any structure on any lot, parcel or tract in the Beach Erosion Control District, the owner, builder or developer shall construct a sand dune as specified.

All areas east of said "dune line" between +5 feet above mean low water and +16 feet above mean low water not covered by a building or structure and not paved shall be planted in vegetation suitable to the environment of the location. Said vegetation shall be acceptable to the Worcester Soil Conservation District.

Said covenant shall require the owner, his successors, heirs and assigns to conduct maintenance according to the requirements, as they may be established by the Worcester Soil Conservation District.

Violations: Any private person, partnership, corporation or officer of the municipal government who disturbs earth or commences any activity regulated by this ordinance, in violation of this ordinance shall be subject to a fine not exceeding five thousand dollars ($5,000.00) or one year imprisonment for each and every violation.

NOTE: The official building line is displayed on maps available through the City.

DUNE STABILIZATION

The summer of 1983 the Soil Conservation Service in Worchester County completed a follow-up study of the dune stabilization project North of 27th Street along the ocean front in Ocean City. The results are as follows:

Vegetation:

1. Approximately 66% of the sites were completely devoid of any appreciable vegetation.
2. Only 2% were considered to be "natural and well covered".
3. 7% were "natural and sparse".
4. 8% were considered to have "natural and medium" coverage.
5. 7% were "planted and well covered".
6. 6% were "planted and medium".
7. 4% were "planted and sparse".

Fencing:

1. 60% of the sites had no fencing at all.
2. 4% were covered with less than 24" of the fence showing.
3. 6% were "broken down - inadequate for dune formation".
4. 30% of the sites were "adequate - in good shape".
5. Virtually all of the sites with the exception of those between 94th and 115th streets were easily accessible, i.e., the sites were not adequately protected by fencing.

Dune Height:

1. 42% of the sites averaged less than 1 ft. of height.
2. 11% of the sites averaged 1 ft. to 3 ft. in height.
3. 22% averaged 3 ft. to 5 ft.
4. 25% were 5 ft. in height or greater.

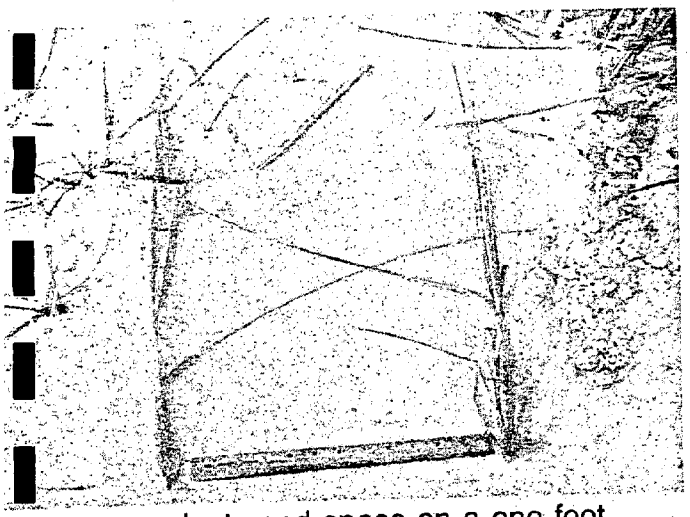
Vegetative appearance:

1. 66% of the sites were devoid of vegetation.
2. 26% of the vegetation was considered to be green or vigorous.
3. 8% was considered to be yellow or stressed.

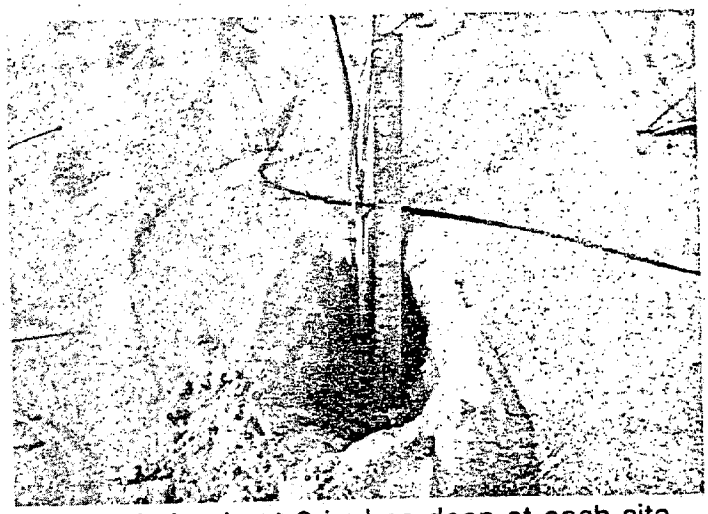
Dune Formation:

1. 58% of the sites had some type of dune formation.
2. 42% of the sites had no dune formation.

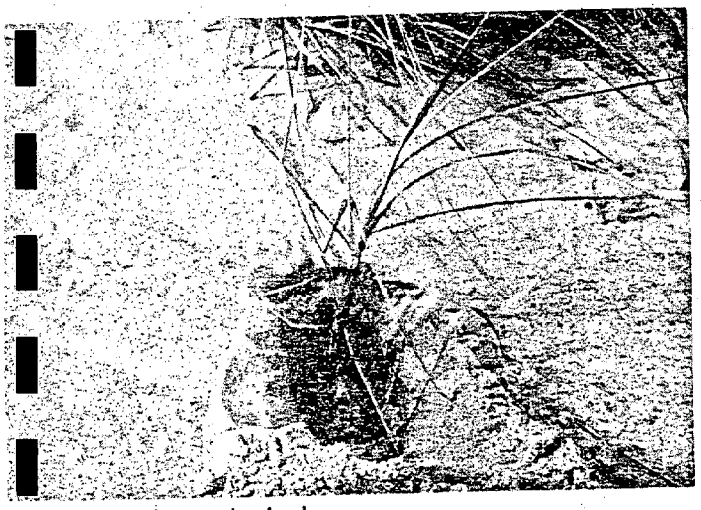
Please note that the total number of sites equaled 241.



1. Separate plants and space on a one foot grid.

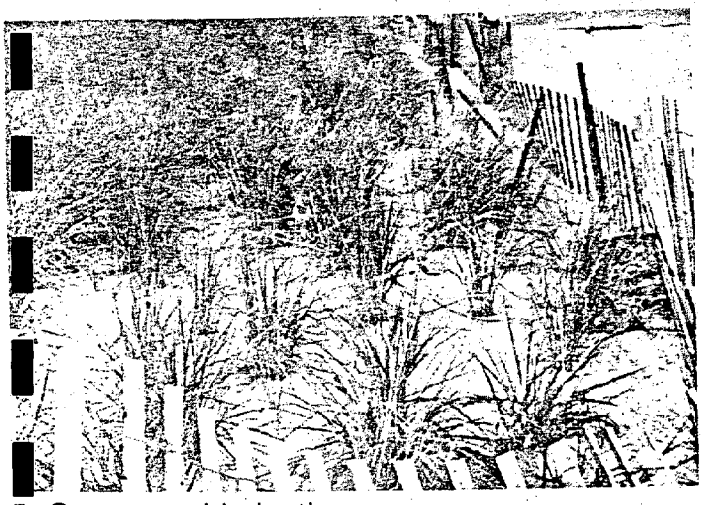


2. Dig a hole about 6 inches deep at each site.

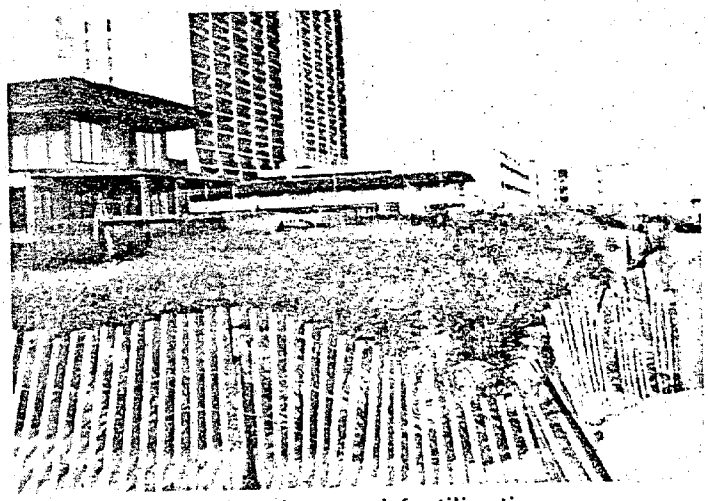


3. Place plants in hole.

4. Pull sand in and fill holes.



5. One year old planting.



6. Maintain by fencing and fertilization.

RESOLUTION 1983-11

RESOLUTION OF MAYOR AND CITY COUNCIL OF OCEAN CITY RECOGNIZING THE EFFORTS OF THE OCEAN CITY DUNE STABILIZATION COMMITTEE AND PROCLAIMING THE MONTH OF NOVEMBER AS DUNE MONTH IN OCEAN CITY, MARYLAND

WHEREAS, the Town of Ocean City, Maryland is economically dependent upon its most precious natural resource, the beautiful beach; and

WHEREAS, said beautiful beach is constantly under attack by raging seas and storms which erode the sand and threaten lives and property; and

WHEREAS, the Mayor and City Council has constantly fought against the devastating forces of Mother Nature in an effort to build, maintain and preserve its beach; and

WHEREAS, the Mayor and City Council has encouraged its citizenry to make efforts to conserve and protect the beach; and

WHEREAS, the Ocean City Dune Stabilization Committee is working to educate the public, to conserve the beach and to protect the Town of Ocean City through its dune stabilization project;

NOW, THEREFORE, BE IT RESOLVED THAT the Mayor and City Council of Ocean City recognizes and congratulates the Ocean City Dune Stabilization Committee for its worthy conservation project; and

BE IT FURTHER RESOLVED by the Mayor and City Council of Ocean City that the month of November be, and it is, hereby, proclaimed to be Dune Month in Ocean City, Maryland.

Passed this 7th day of November, 1983.

Harry W. Kelley, Mayor

Edward J. Ellis, Secretary

Granville Trimper, President

The State of Maryland

Proclamation from the Office of the Governor

DUNE DAY

NOVEMBER 9, 1983

WHEREAS, The beautiful beaches of Ocean City are among the most precious natural resources of the State of Maryland, providing recreational activities to many thousands of our citizens and contributing greatly to the local and State economy; and

WHEREAS, The Ocean City Dune Stabilization Committee is working to enhance the natural beauty of these beaches and to protect the city through its dune stabilization project; and

WHEREAS, This worthy conservation project has the support of concerned citizens, local government and the U.S. Soil Conservationist; and

WHEREAS, It is fitting that the State of Maryland join in this effort to preserve the dunes along the ocean front in Ocean City by calling attention to conservation efforts and supporting the goals of protection of this resource;

NOW, THEREFORE, I, HARRY HUGHES, GOVERNOR OF THE STATE OF MARYLAND, do hereby proclaim November 9, 1983, as DUNE DAY in Maryland, and commend this observance to all our citizens.

Given Under My Hand and the Great Seal of the State of Maryland, this 27th day of October, In the Year of Our Lord, One Thousand Nine Hundred and Eighty-three

Harry Hughes
Governor

Lorraine M. Sheehan
Secretary of State

NOAA COASTAL SERVICES CENTER LIBRARY
3 6668 14109 4740