

Fast-Tracking the Martin County/Sailfish Dune Restoration

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Coastal Management
Consulting

Dune Plants
Revegetation
Project
PLEASE STAY OFF
Coastal Growers, Inc.
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Bathtub Beach and Sailfish Point
Post-Hurricane Sandy

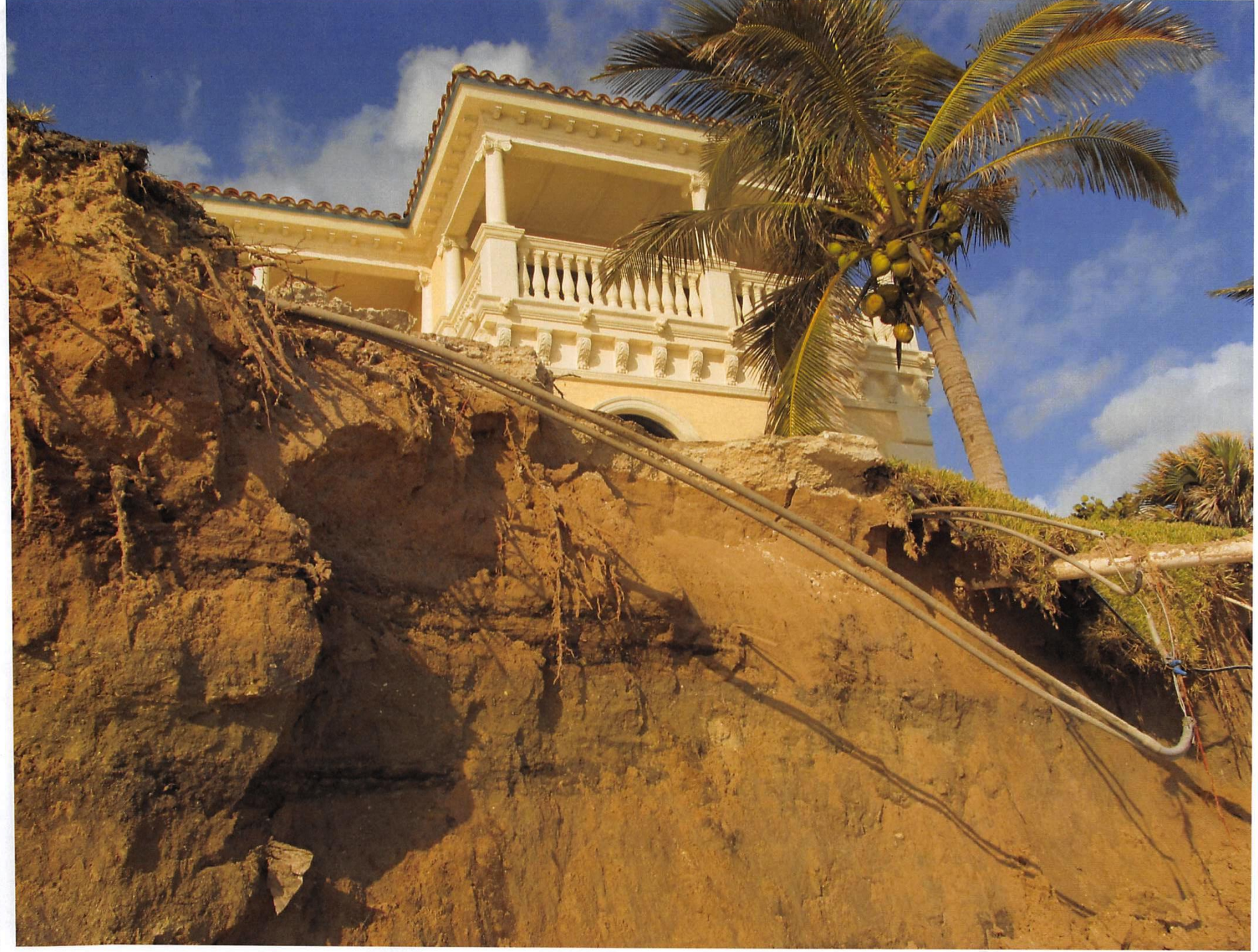












And so... 5000+ feet, 330K cubic yards and new shore normal width of 40 to 110 feet.



Rebuilt beach with 24 to 46 foot wide
5 feet high dune berm profile



\$5.38M.

5%FIND, 33%FDEP,

31%Martin County, 31%Sailfish Point

So we get planting while the dredging marches north



but new profile exposes nesting marine turtles to new risks



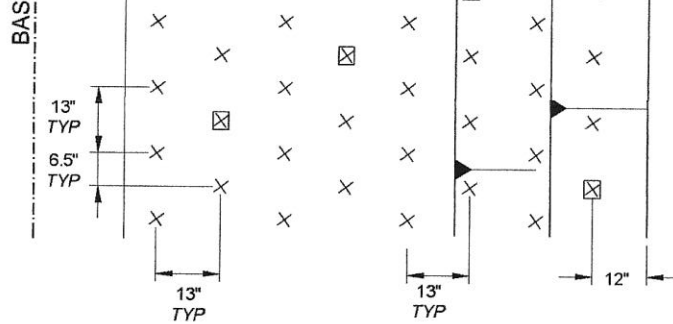


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Heavy Treasure Coast nesting density, but reduced hatching success, due to narrow beach, summer erosion.

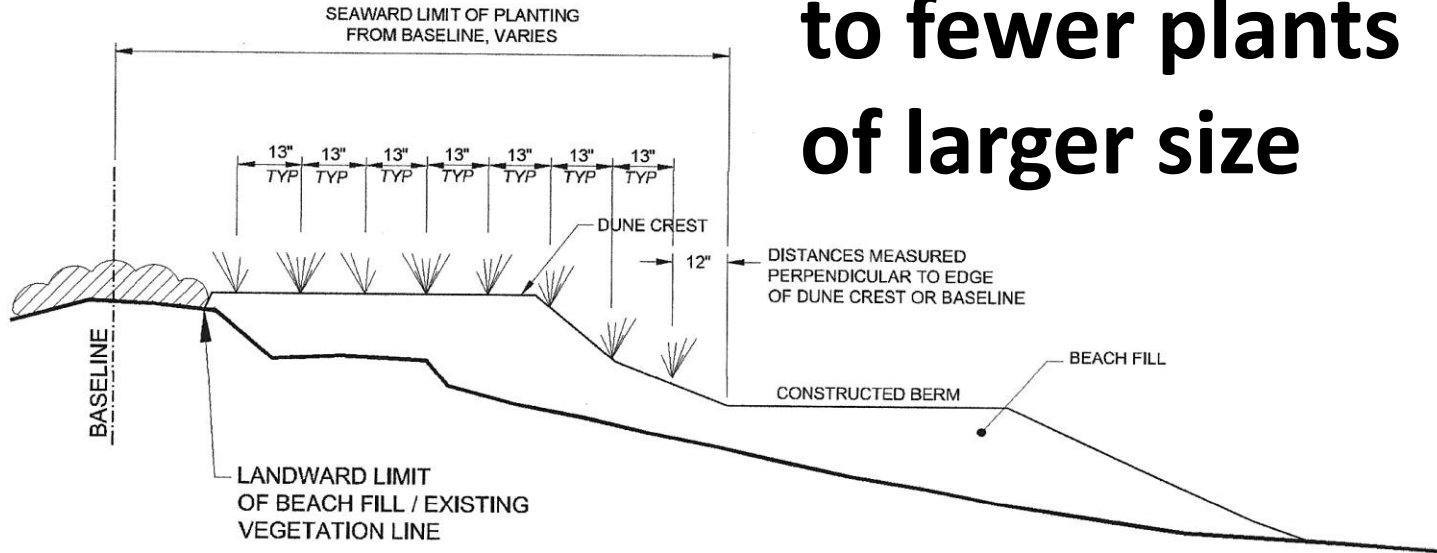
Immediate disorientation and near stranding





- BLANKET FLOWER (*GAILLARIDA PULCHELLA*)
- INKBERRY (*SCAEVOLA PLUMIERI*)
- BEACH CROTON (*CROTON PUNTATUS*)
- SEASHORE DROPSEED (*SPOROBOLUS VIRGINICUS*)
- SEA OX-EYE DAISY (*BORRICHIA FRUTESCENS*)
- SEA GRAPE (*COCCOLOBA UVIFERA*)

**Design adjusted
to fewer plants
of larger size**



NOT TO SCALE

PERMIT DRAWINGS
NOT FOR CONSTRUCTION



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COA No. 3491

BATHTUB BEACH / SAILFISH POINT
BEACH NOURISHMENT PROJECT
MARTIN COUNTY, FL
DUNE PLANTING

DATE: REVISION:

12/4/2015

DRAWN BY:

SCH

SHEET

11 OF 11

Plant quantity reduced from 9 to 6/square yard.. ± 14.7" oc.
Plant quality spec increased to average 4 seedlings per cell.



A.. 50 cell cone
hard to kill

B..128 cell liner w
two seedlings
(typical project)

C..96 cell liner w
four seedlings.
Installed in the
Bathtub Beach
Project



Contract grow for more seedlings per cell added about five cents to unit installed cost per plug, about 12 per cent to the job, but more than doubled root and leaf biomass.



Planting schedule was altered
to first establish vegetative
alert to nesting females.

hence..more false crawls, less nests in planted areas







But with the risk of stranding to moms and babies, Regulators suggest chain link, seagrape fence.



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"A Better Way to a Cleaner Environment"

Silt-Saver Priority 2 Silt Fence

Black Banding Provides Linear Support



For use in less sensitive areas requiring some measure of sediment control.

3' x 100' Pre-Staked Rolls

- Fabric Attached with Bonding Strips to 1 1/8" x 1 1/8" Posts
- Bonding Strips Prevent Teardowns
- Post Spacing at 6' Centers
- Designed for Sheet Flow
- Superior Filtration in Slurry Conditions



With patient discussion, FWC and USFWS agree to settle for "silt fence on steroids"

Installed with 12 inches below grade and 24 inches above, in areas with risk of nesting female or hatchling stranding, such as seaward of pools, or open corridors to street side.



Concept proven with two engagements..one nest deposited and no hatchling problems.



09.07.2016 13:29



06.30.2016 09:37

Team 1 with various planting tools and planting grid.

novel new plant
deliver methods



fresh installation..



three
weeks
growth

06.20.2016 1



only four nests into dune area after planting



07.23.2016 07:44

predated nests were left
unplanted



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two months growth



09.07.2016

four months





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5 months

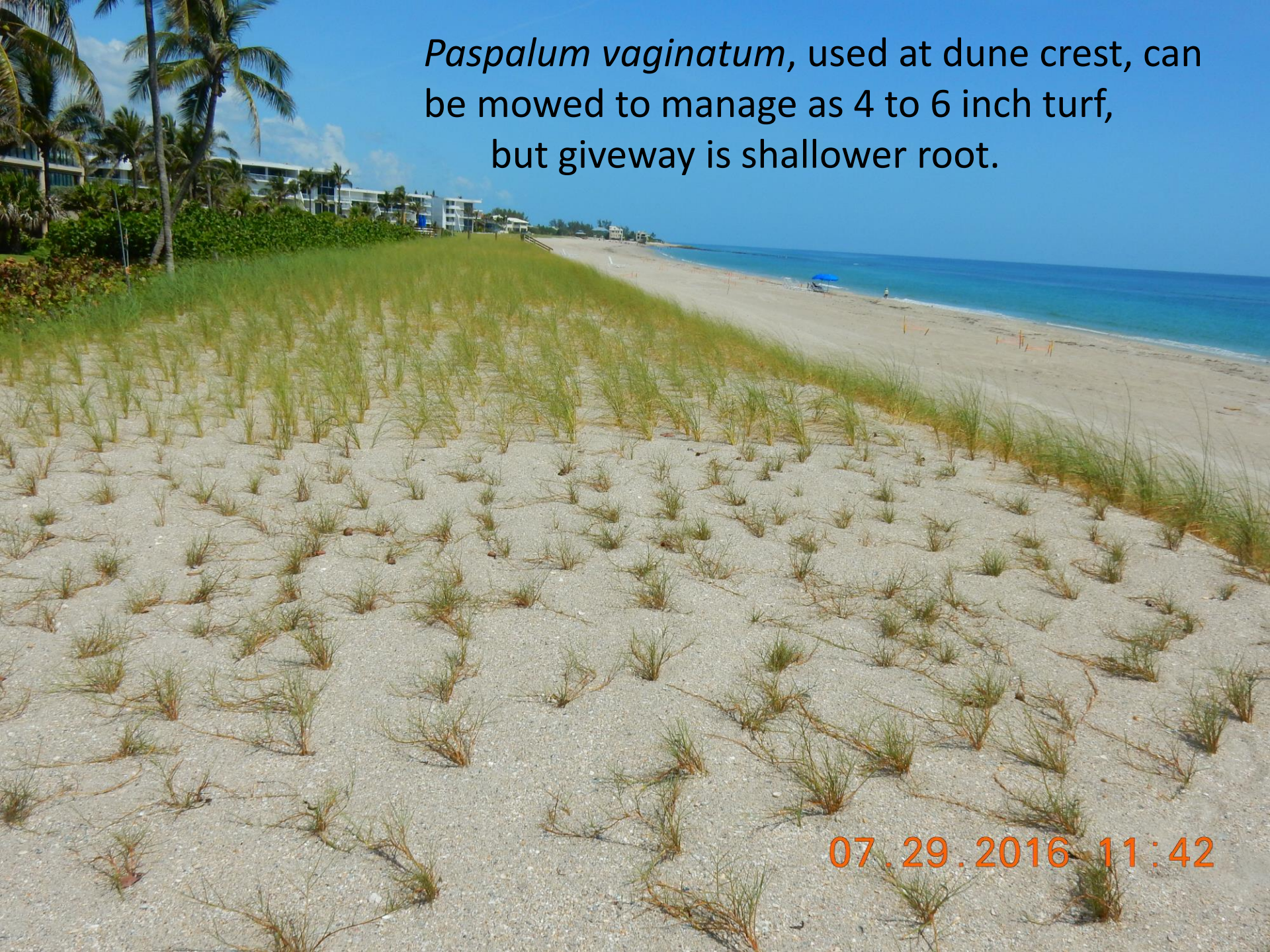


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Big issue.. Vista to ocean would have been obstructed on approach to 18th green with sea oats. So alternate native dune grass used.

Paspalum vaginatum, used at dune crest, can be mowed to manage as 4 to 6 inch turf, but giveaway is shallower root.



07.29.2016 11:42



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Stable ATV access needed



3X6 PT boards drilled

1/2 inch yacht
braid, ss screw





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Readily adjusted to changes in shore conditions.



Removed after 32 years in service..top of boards worn, but could be flipped over for another 30 years.





Low cost post and rope barrier, prefab 1.5 inch PVC with 3/8 inch polyethylene rope. About \$1.50/foot installed.



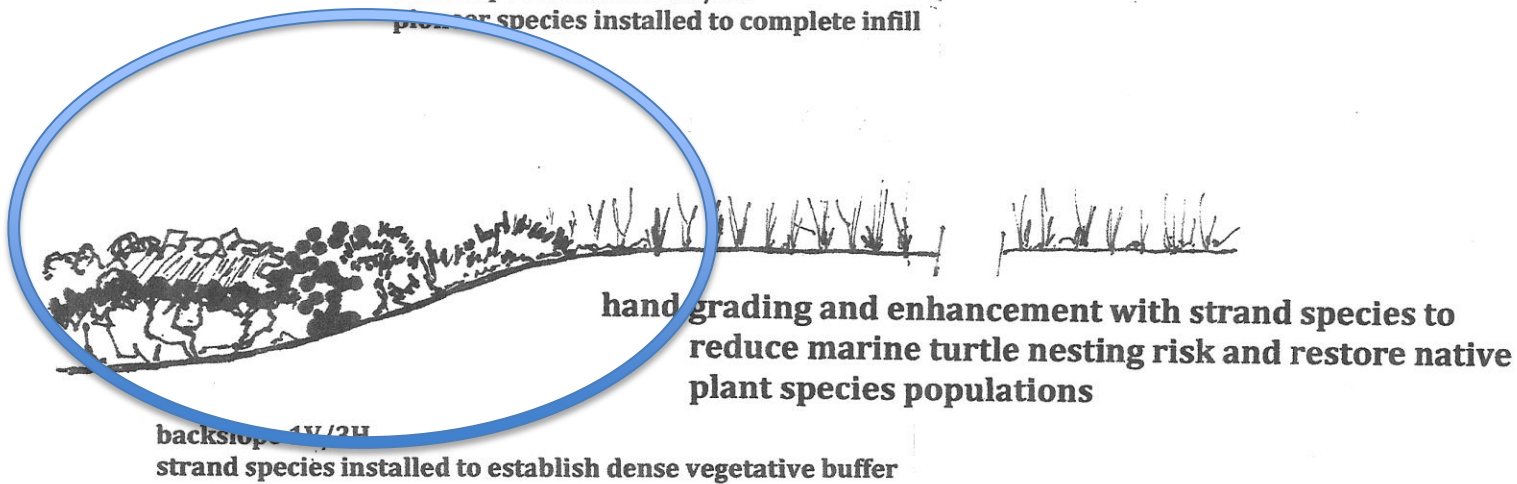
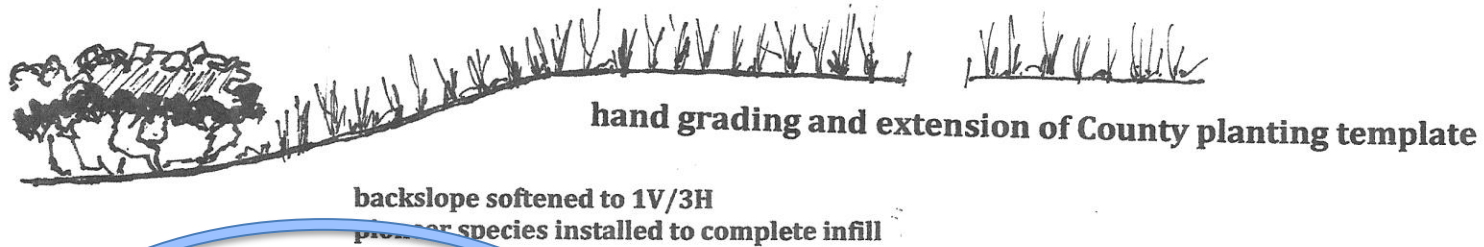
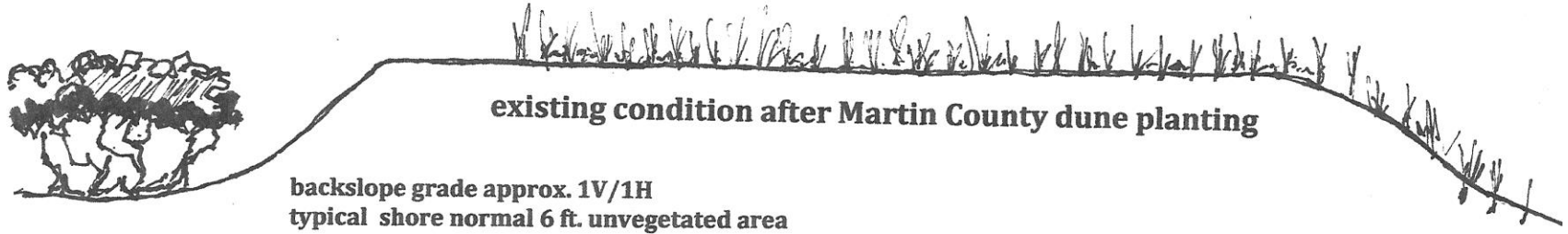
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Oetiker clamps tighten the rope, and discourage rope theft.

Opportunity lost

PROJECT DESIGN OBJECTIVES

1. Complete installation of stabilizing native dune vegetation to new dune berm.
2. Reduce disorientation or trapping risk to nesting marine turtles.
3. Restore populations of declining local native coastal strand plant species.
4. Minimize maintenance and pruning burden.



STRAND ZONE SPECIES LIST

Strand/scrub species to be chosen from *Ernodea litorallis*, *Suriana maritima*, *Argusia gnaphalodes*, *foresteria segregata*, *Eugenia foetida*, *Ardisia escaloniodes*, *Pithecellobium keyense*, *randia aculeata*, or other species observed in local public park dune areas.

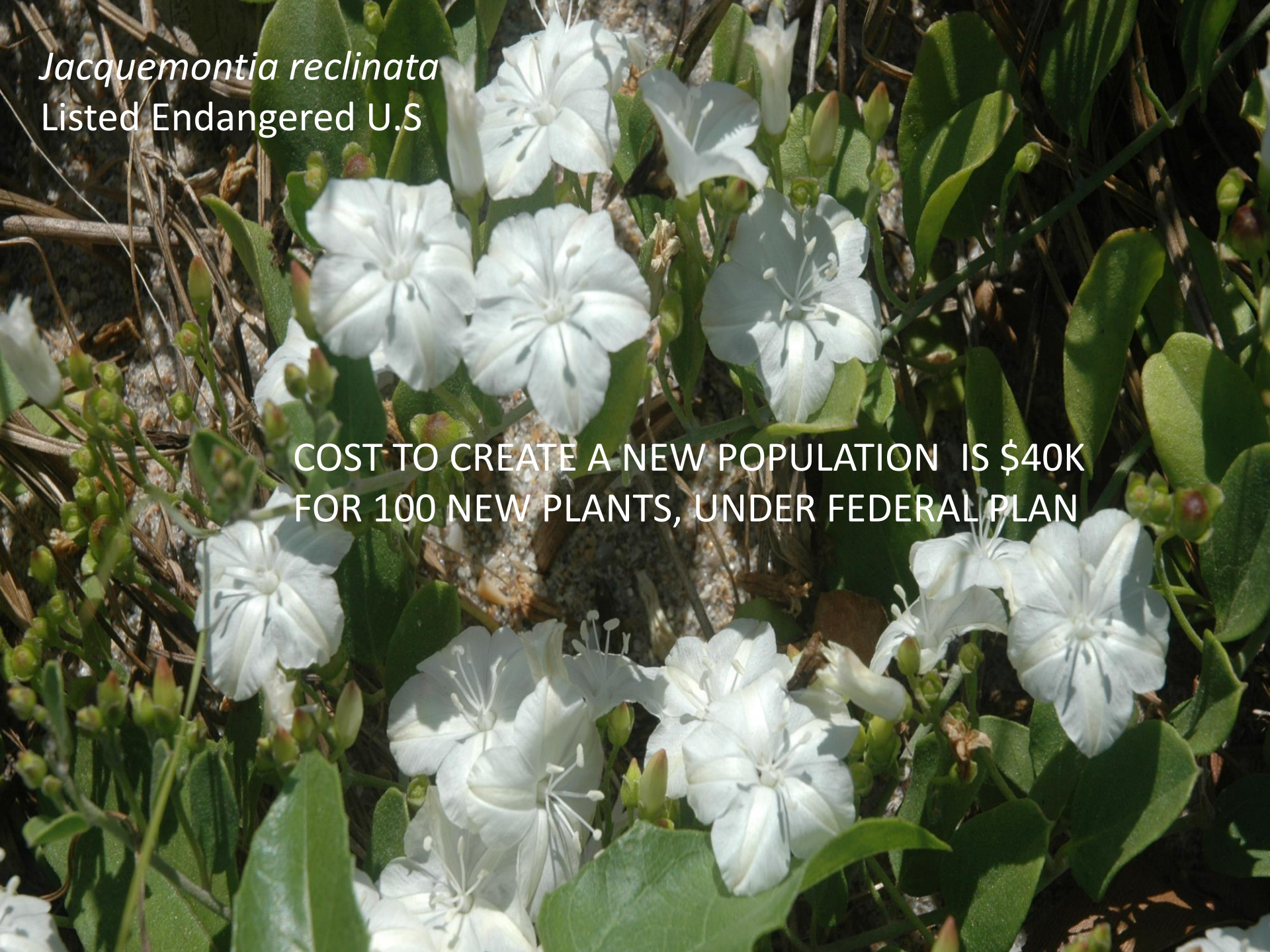
A few of the rare plants added to the project..

Ambrosia hispida



Jacquemontia reclinata
Listed Endangered U.S

COST TO CREATE A NEW POPULATION IS \$40K
FOR 100 NEW PLANTS, UNDER FEDERAL PLAN









196 plant species are known to inhabit wild beach dunes in South Florida

120 now found in Delray dunes (60 installed)

Dalbergia ecastophyllum, coinvine”
..single 3 year old plant with 36 leads
to 30 feet long



If not controlled while small, this invasive native species can overwhelm large areas of healthy dune in just a few seasons..but provides little stabilizing rootmass.

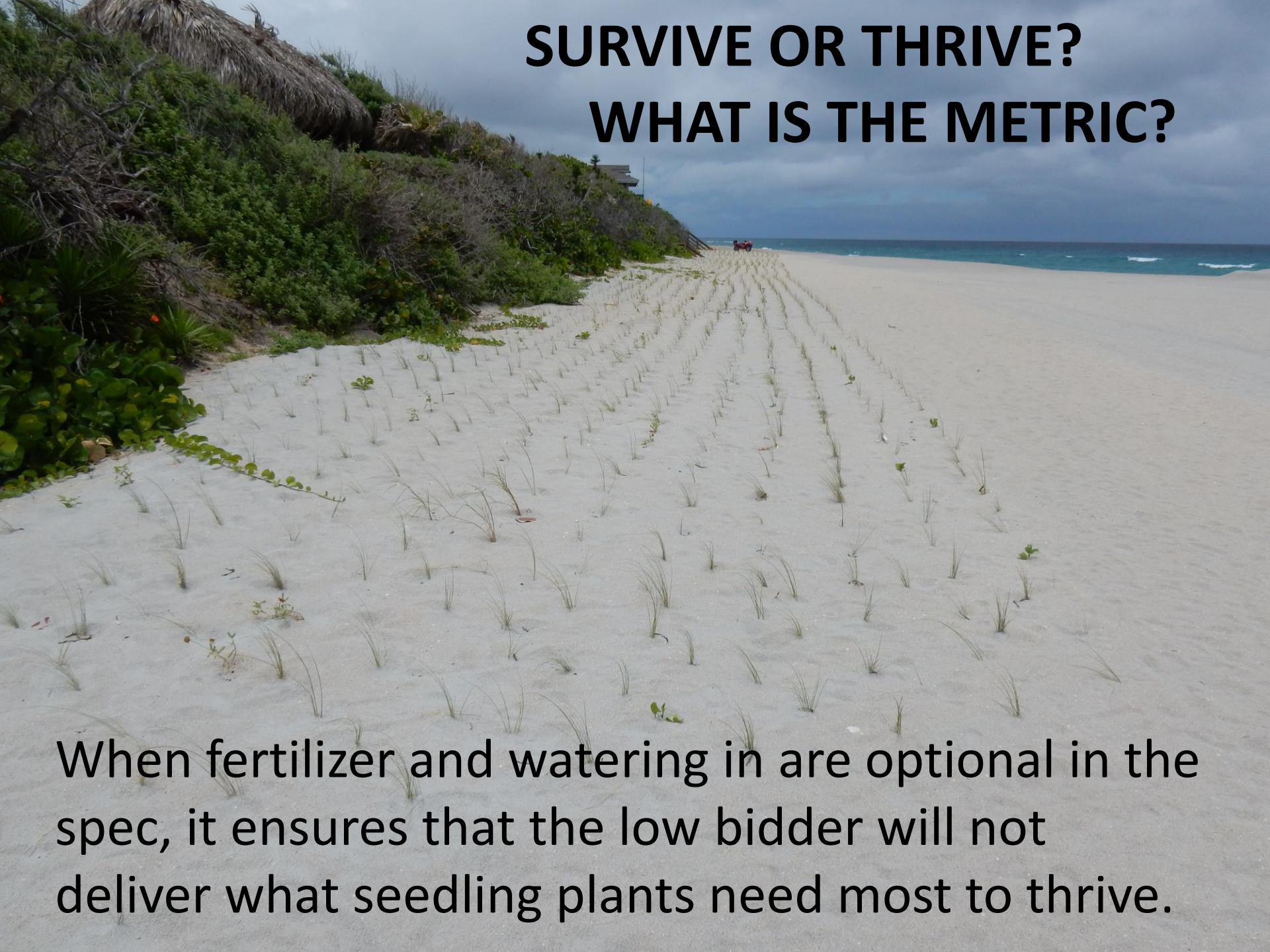
OPTIMAL PLANTING TEAM





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SURVIVE OR THRIVE? WHAT IS THE METRIC?

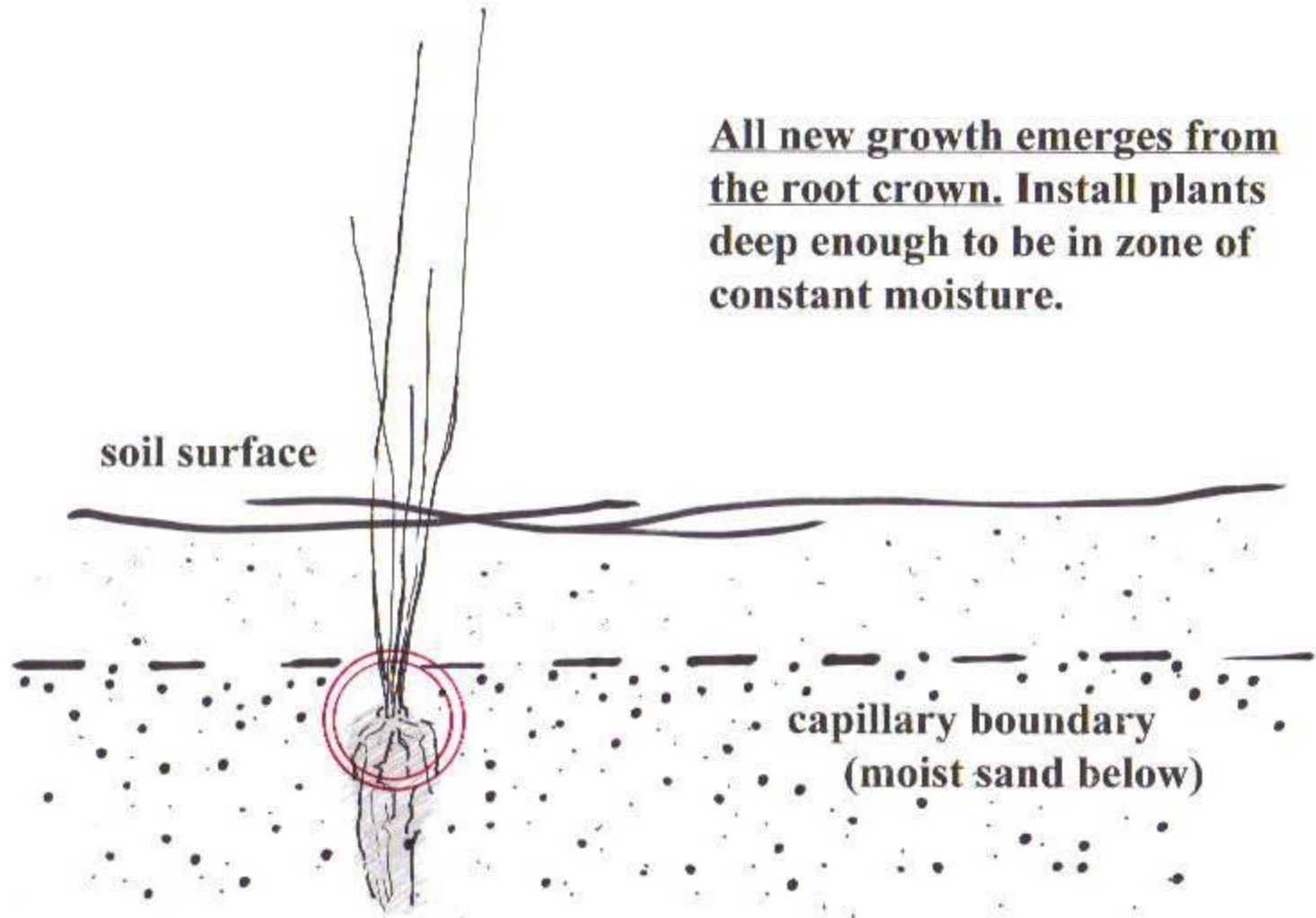
A photograph of a beach with rows of young plants growing in the sand. The plants are arranged in neat, parallel lines, extending from the foreground towards the ocean. The sand is light-colored and appears to be a mix of natural sand and some organic matter. In the background, there is a line of green vegetation and a thatched roof structure on the left, and the ocean with waves on the right. The sky is overcast and grey.

When fertilizer and watering in are optional in the spec, it ensures that the low bidder will not deliver what seedling plants need most to thrive.



09.09.2016

All new growth emerges from the root crown. Install plants deep enough to be in zone of constant moisture.





Survival at one year ± 50 per cent. WHY?



Spec was 6 inch depth but installed to only 3.5.
with air pocket below..dries out every day.



“met the spec”

Yep..

09.09.2016



“met the spec”



“met...”

09.09.2016



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Effect of Polyacrylamide Gel on Woody Plant Establishment in Barrier Island Swales

Deborah L. Miller^{1,3}, Mack Thetford¹ and Lesley W. Atwood²

¹ Department of Wildlife Ecology and Conservation University of Florida

No science to demonstrate value to the plant. Results in lazy roots, and benefits only the careless installer. Adds cost. This study saw no value, recommended against.



STOP USING POLYMER GELS!!!

So..today's condition



02.03.2017 15:12



02.08.2017 14:30



02.08.2017 14:27



02.08.2017 14:30



02.08.2017 14:31



02.03.2017 15:13



02.08.2017 14:27



09.07.2016 13:06

THANKS FOR LISTENING

please practice redundant contraception



Robert H. Barron
Coastal Management