Design Review Manual

For

Lake Slope Treatment Options

Hammock Dunes Private Community ™

Issued: May 16, 2011 **Revised July 1,2012** (illustration 3 coquina rip rap option)

Prepared for:

Hammock Dunes Owners' Association, Inc.

HAMMOCK DUNES DESIGN REVIEW COMMITTEE
LAKE SLOPE TREATMENT OPTIONS
May 16, 2011

INTRODUCTION

The original concept for the Hammock Dunes community was to use natural indigenous vegetation as buffers between individual home and on original lake frontages, wherever possible. Since then, a number of factors have contributed to serious lake front erosion problems at many home sites. The Design Review Committee (DRC) has worked with home owners on several design options to mitigate the erosion. The options have emphasized maintenance of the natural habitat and promoted the use of native materials and vegetation including natural Florida coquina stone.

There are 12 named lakes in the Hammock Dunes community. Lakes San Marco, Anastasia, Cordoba and Granada are examples of lake banks that are adjacent both to single family homes and Club property. Residents looking to control erosion on their lake banks should evaluate designs that are compatible with the natural landscaping and plantings on the golf course and repairs that have been made on neighboring properties. Consideration must also be given to the cost and long term maintenance of the design options presented herein.

APPROVED LAKE SLOPE TREATMENT OPTIONS

DRC has developed this information manual to assist home owners evaluate and select designs for the stabilization of lake edges and slopes. Critical to success is customizing a design solution that is proper for the specific lake slope condition. Key factors for design consideration are: degree of slope from the finished grade to the lake edge; amount of erosion at the lake edge; depth and slope within the lake area; soil conditions; and erosion exposure, i.e. prevailing wind.

DRC has approved the following design options for various lake slopes:

Gradual Slope Condition—1 ft. drop for every 6 ft. of property:

+ Native plantings
+ Stabilization fabric with plantings, e.g. ShoreSox
+ Minor coquina rock rip rap
+ 2 ft. bulkhead with landscaping

Severe Slope Condition---1 ft. or greater drop for every 3 ft. of property:

+ Stabilization fabric with plantings, e.g. ShoreSox
+ Coquina rock rip rap
+ Coquina rock retaining wall
+ Sheet pile bulkhead faced with coquina rock
+ 2 ft. bulkhead with coquina rock terraced planters

Illustrations of the various designs are attached. In these illustrations the design water surface elevation is 4.0 NGVD (approximately 4 feet above sea level), as permitted by the St. Johns River Water Management District and maintained by the Dunes Community Development District (DCDD), and will vary significantly above and below this level during different rainfall conditions.

The illustrations have been prepared as guidelines and are not intended to serve as engineered solutions for construction. Each particular home site has different conditions of slope, soils, distances, etc. and will require an evaluation and design by a licensed contractor and/or engineer for a successful result as well as consistency with neighboring properties.

All erosion control designs and restoration options must be approved by DRC prior to installation.

ILLUSTRATIONS OF VARIOUS DESIGN OPTIONS

Illustration 1 shows the range of existing lake slope conditions: (1) the originally intended 1 foot drop for every 6 feet of property and (2) a 1 foot or greater drop for every 3 feet of property that probably resulted from construction and landscaping activities.

Illustration 2 shows the Stabilization Fabric with Plantings option as exemplified by the ShoreSox Erosion Control System. This approach uses a fabric tube with fill material (a mix of soil and mulch) that is anchored to the slope. Soil, vegetation and plantings are incorporated above, over and below the ShoreSox tube. To date six residents have installed the ShoreSox system providing a natural appearance along the lake banks. Long term performance of ShoreSox is not yet known.

Illustration 3 shows two coquina rock options – Coquina Rock Rip Rap for slopes of 3 to 1 maximum and Coquina Rock Retaining Wall for slopes of 1 to 1 maximum. When natural landscaping failed to control lakefront erosion, DRC approved the use of the coquina rock designs because they can follow a softer curve and conform to a number of slopes. The Coquina Stone Retaining Wall option may require periodic maintenance if the stone is not set on a supporting foundation. To date more than 20 residents have installed the coquina rock options.

DRC does not approve the use of sheet pile bulkheads for lake front erosion control unless faced with coquina rock. Two residents have installed the Sheet Pile Bulkhead Faced with Coquina Rock option in recent years. Sheet piling without coquina rock facing was approved on the east side of Lake San Gabriel in the fall of 2010 because of the unique conditions associated with the common property and because the 1800 foot wall presents a continuous architectural landscape feature. The project includes plantings along the top of the wall that eventually (two years or more) will grow down the concrete cap to buffer the pilings from view.

Introduction of the Lake San Gabriel architectural element for residential application would conflict with the natural theme guiding the design of the Hammock Dunes community. Application by individual home owners would result in a problematic and patchwork look throughout the lakes. However, DRC has developed a hybrid design option using a combination of elements with sheet piling to maintain the desired natural appearance of the lake banks. These are shown in Illustrations 4 and 5.

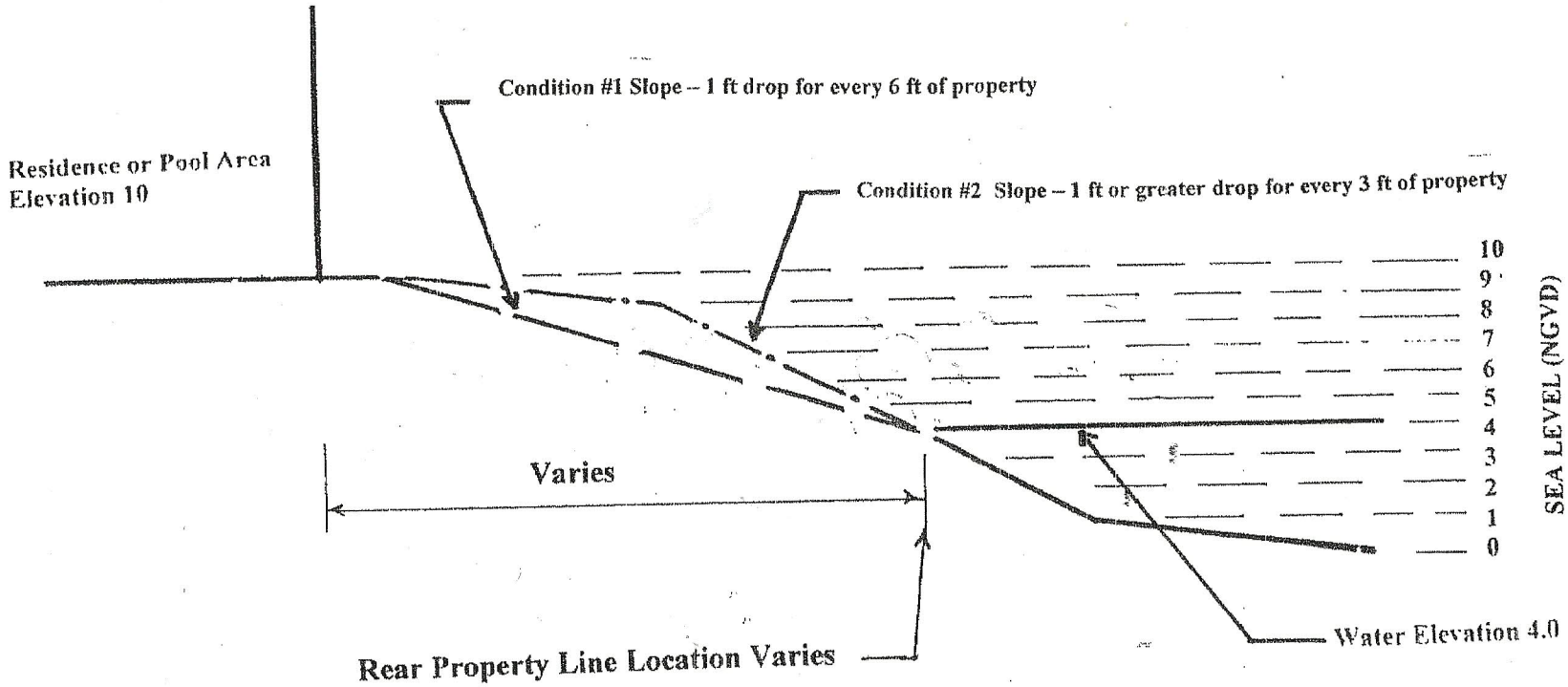
Illustration 4 shows the Bulkhead with Landscaping option for home sites with gradual slope conditions that incorporates a minimal 2 foot high sheet pile wall, i.e. 2 feet above the design water level of 4 feet NGVD. The design provides excellent stability for any landscaping that would be planted behind the bulkhead. The low wall height allows landscape plantings to grow over the terraced wall and soften the appearance in one growing season. This option may, during significant rains, cause the water elevation to flood the terrace planting area; therefore, plant types that survive flooding should be selected.

Illustration 5 shows the Bulkhead with Coquina Rock Terraced Planters option for home sites with steep slope conditions that incorporates a minimal 2 foot high sheet pile wall, i.e. 2 feet above the design water level of 4 feet NGVD. The design provides greater stability for the incorporated coquina rock wall compared to a higher sheet pile wall faced with coquina rock and also ends up requiring less coquina stone. Landscaping will soften the appearance in one growing season. This option may, during significant rains, cause the water elevation to flood the lower terrace planting area; therefore, plant types that survive flooding should be selected.

DUNES COMMUNITY DEVELOPMENT DISTRICT (DCDD)

All property boundaries are determined by deed. Property owners should check the location of the lake bank relative to the survey lines. The DCDD property line may indicate that the lake bank is fully on their property, or it may indicate that the lake has eroded off their property onto property not owned by DCDD. DCDD operates the lakes under the direction of the Saint Johns River District and must follow their mandates. Coordination of proposed lake bank work with DCDD, as well as the DRC, will be necessary.

Lake Slope Treatment Options
Hammock Dunes Design Review Committee



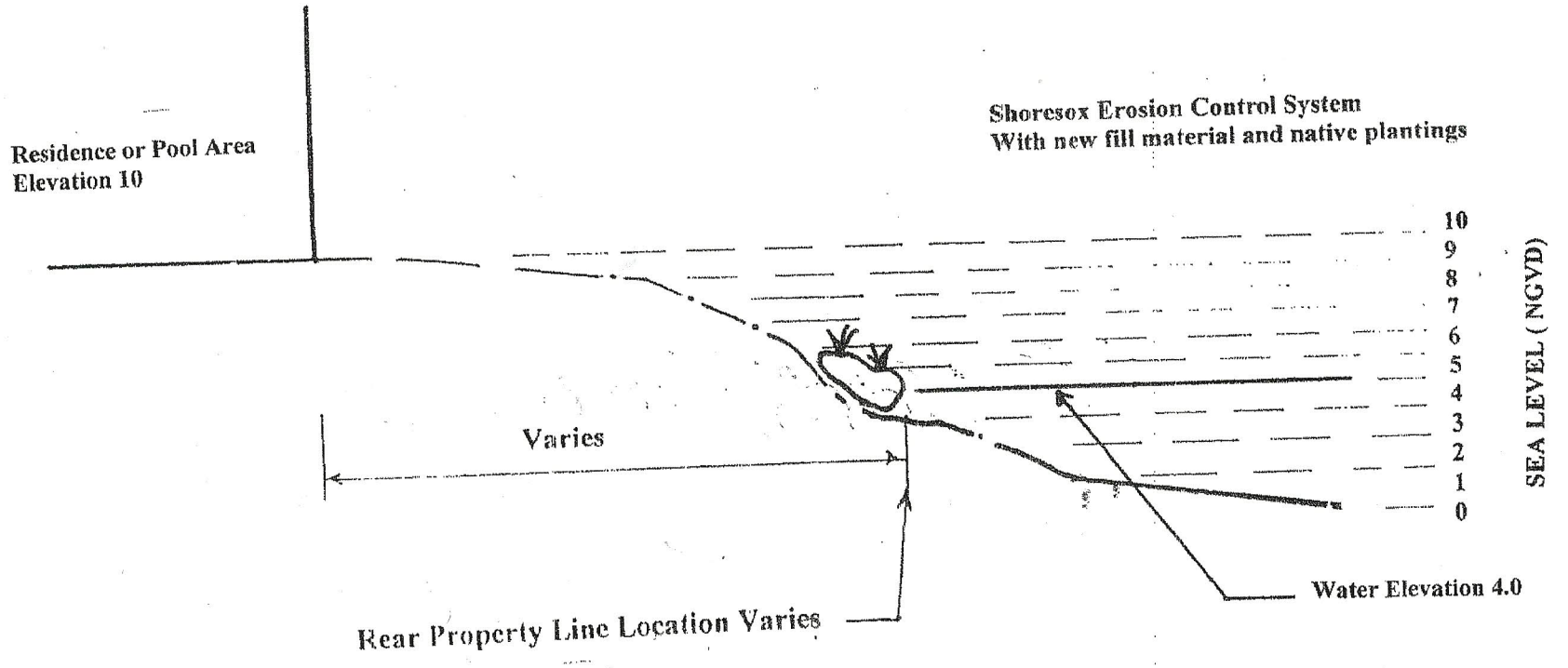
ALL ELEVATIONS SHOWN
ARE AT SEA LEVEL (NGVD)
AND ARE APPROXIMATE

Hammock Dunes Lake Slopes

Existing Conditions

ILLUSTRATION 1

Lake Slope Treatment Options
Hammock Dunes Design Review Committee



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ALL ELEVATIONS SHOWN ARE AT SEA LEVEL (NGVD) AND ARE APPROXIMATE.

Hammock Dunes Lake Slopes

Stabilization Fabric with Plantings e.g. ShoreSox

ILLUSTRATION 2

Lake Slope Treatment Options
Hammock Dunes Design Review Committee

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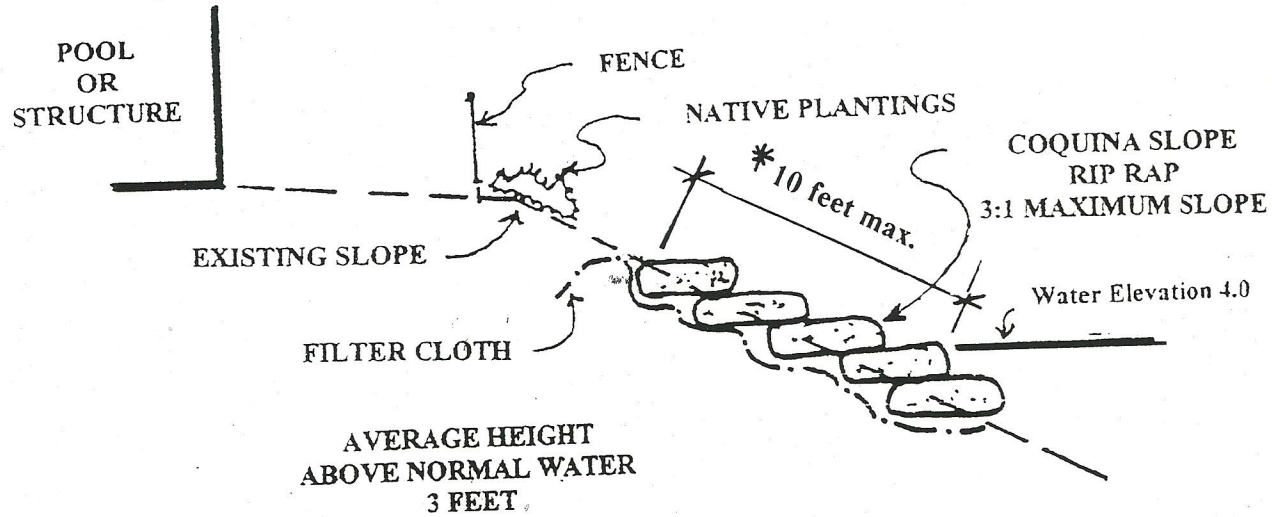
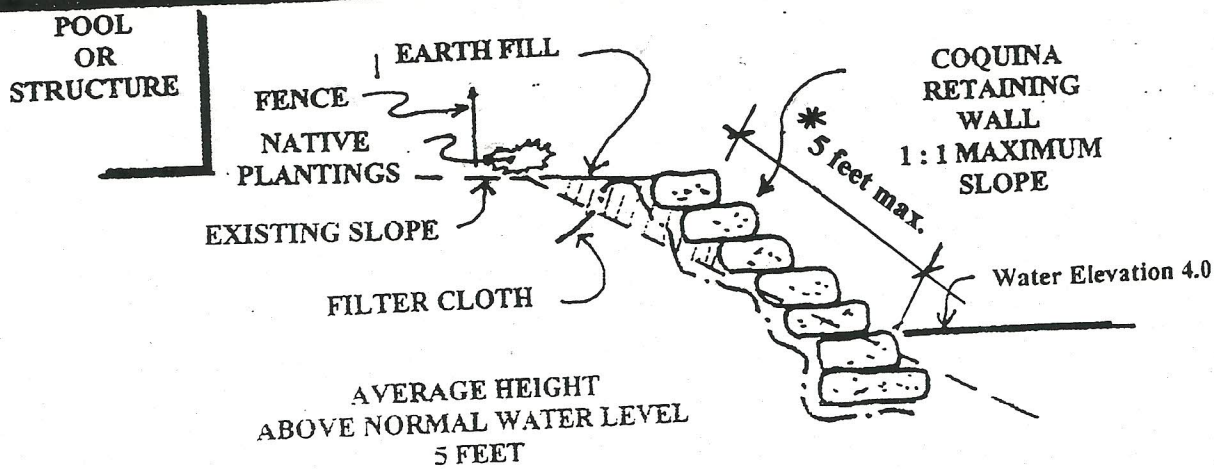


Hammock Dunes Lake Slopes
Coquina Rock Rip Rap Option



Hammock Dunes Lake Slopes
Coquina Rock Retaining Wall Option

ILLUSTRATION 3

* Revised July 1,2012

Lake Slope Treatment Options
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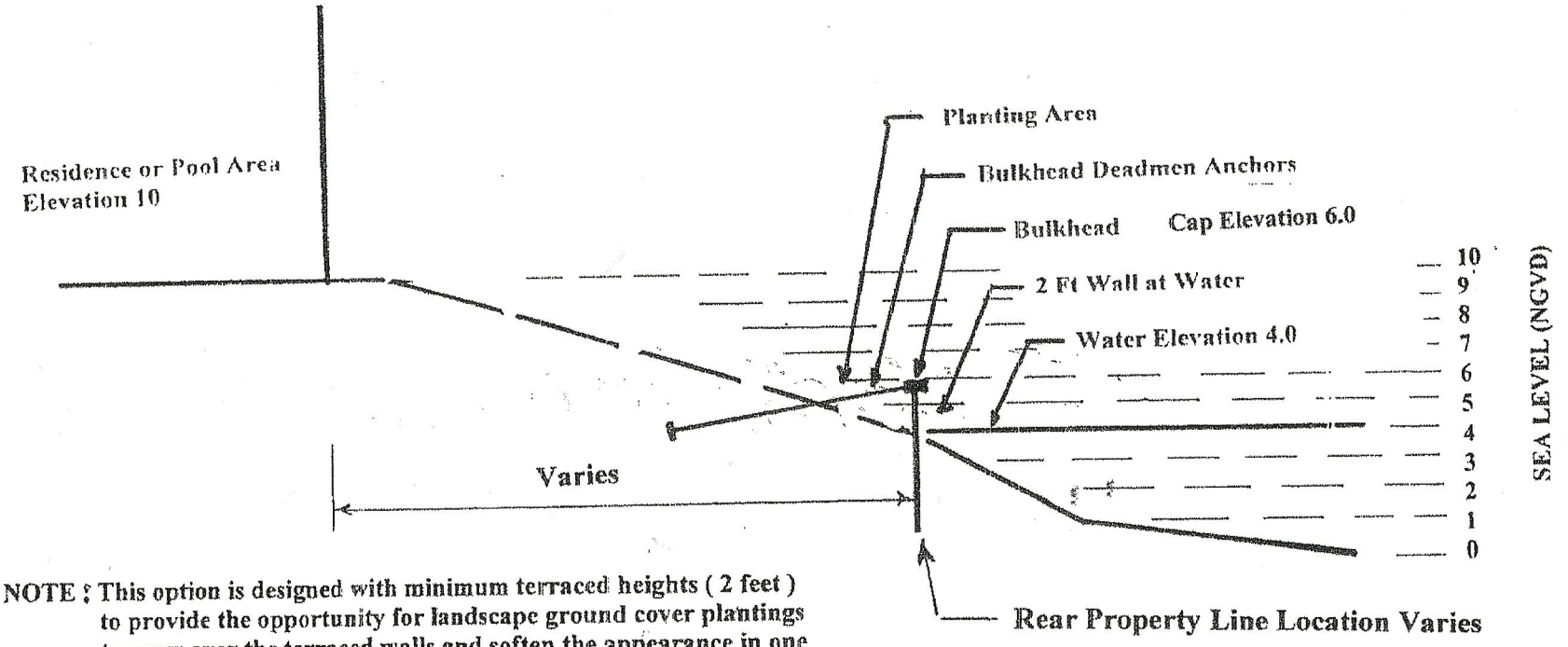

NOTE ; This option is designed with minimum terraced heights (2 feet) to provide the opportunity for landscape ground cover plantings to grow over the terraced walls and soften the appearance in one growing season . Significant rains may cause the water elevation to flood the lower terrace area ; therefore plant types that accept this condition need to be selected.

ALL ELEVATIONS SHOWN ARE AT SEA LEVEL (NGVD) AND ARE APPROXIMATE

Hammock Dunes Lake Slopes
Bulkhead with Landscape Option
(For home sites with lake erosion and gradual slope conditions)

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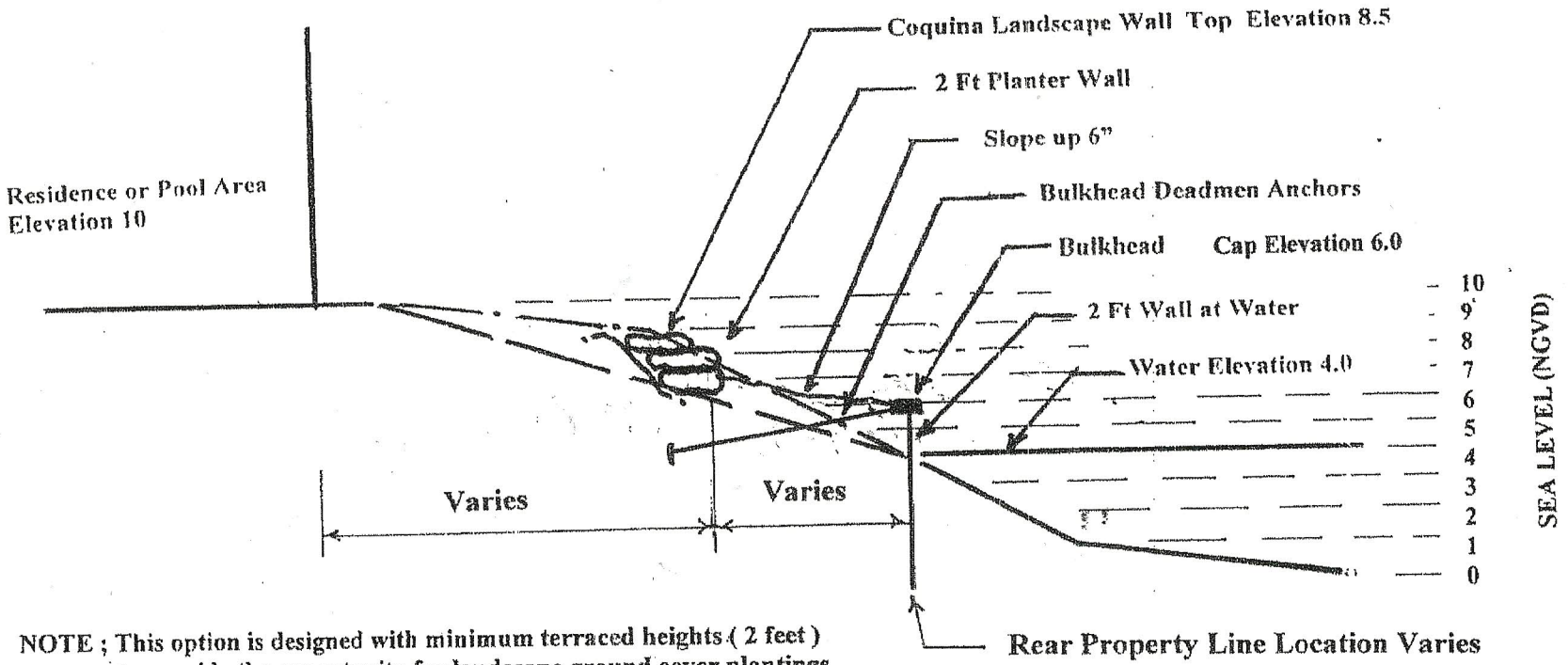
ILLUSTRATION 4

Lake Slope Treatment Options
Hammock Dunes Design Review Committee



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ALL ELEVATIONS SHOWN ARE AT SEA LEVEL (NGVD) AND ARE APPROXIMATE.

Hammock Dunes Lake Slopes
Bulkhead with Coquina Rock Terraced Plantings Option
(For home sites with lake erosion and steep slope conditions)

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ILLUSTRATION 5