Visual Site Assessment

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Visual Site Assessment

• Explore the specific conditions on the property in-person

• Gather information to determine which living shoreline option to select

• The property’s characteristics may make certain living shoreline options unsuitable
  • For example, submerged oyster shell beds are not recommended in high wave energy or deep water

Photo: Texas Parks and Wildlife Department

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Visual Site Assessment Components

**WATER**
- Wave energy
- Fetch
- Water depth
- Salinity

**SHORE**
- Shoreline type
- Slope
- Erosion Rate

**OTHER**
- Neighboring property conditions
- Personal preference

Guidance Document Appendix B: Visual Site Assessment Worksheet
Wave Energy

Wave energy is a strong erosional force caused by natural forces or human activity.

Questions to help determine the wave energy at a site:

- Is the property sheltered or far from boat traffic? Is it a mud or tidal flat? **LOW**
- Is there shell hash on the shore? **MODERATE**
- Does the property border a shipping channel or have steep bluffs? **HIGH**

Photos: GLO
Type of Shoreline

The type of shoreline on the property will help determine which living shoreline option is the most practical.

Questions to help determine the shoreline type:

- Is the shoreline a marsh, beach, tidal flat, or mud flat?
- Is the shoreline sand or fragmented shells?
- Does the shoreline have a hard stabilization structure in place? For example, is there a bulkhead?
The grade or steepness of the shoreline

Flat or gradual sloping shorelines are best for marsh plantings, while steeper slopes might require a rock alternative.

Grading to flatten the land and prepare it for installation might be necessary.

Slope types:
- Flat
- Gradual
- Moderate
- Steep

Photos: GLO

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Salinity

Freshwater mixing with saltwater produces a range of salinity.

The salinity determines which vegetation will grow best and whether oysters will be a successful part of the living shoreline design.

Salinity options:
- Saltwater
- Freshwater
- Brackish

Photo: Galveston Bay Foundation
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<tbody>
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<td></td>
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<td>Marsh</td>
<td>Beach Sand / Shell Hash</td>
<td>Low</td>
</tr>
<tr>
<td>Soft Stabilization</td>
<td>Marsh Vegetation Plantings</td>
<td>X</td>
<td>✓</td>
<td>•</td>
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<tr>
<td></td>
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<td>✓</td>
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<td>Articulated Mats or Blocks</td>
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- ✓: Best management strategy
- •: Potential management strategy
- X: Generally not recommended

Living shoreline option based on property’s characteristics
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Oak Island Property Owner

Photos: Galveston Bay Foundation
Oak Island Property Owner

Wave energy: Moderate
Shoreline Type: Existing bulkhead
Slope: High
Salinity: Low

Photos: Galveston Bay Foundation
Oak Island

Living Shoreline Installed:
• Rock breakwater with marsh vegetation planting

Photos: Galveston Bay Foundation

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The GLO has identified four broad categories of living shorelines commonly used along the Texas coast:

- **Soft Stabilization**
- **Hybrid Stabilization**
- **Retrofit: Soft Stabilization**
- **Retrofit: Hybrid Stabilization**

Photos: GLO
Soft Stabilization

- Non-structural in nature and usually involve planting marsh grasses along the existing shoreline
- Marsh grass plantings
  - Root systems hold soil in place to help reduce erosion
  - Plant shoots reduce wave energy and increase sediment deposition
- Coir logs
  - Most effective in low energy environments above the mean high tide line
Hybrid Stabilization

Incorporate the materials used in soft techniques with hard features to provide additional erosion protection

Options:

- Submerged Oyster Shell Beds
- Reef Balls
- Articulated Blocks or Mats with Marsh Plantings
- Riprap with Marsh Plantings
- Breakwater with Marsh Plantings

Photo: Triton Environmental Solutions, LLC

Photo: Mott MacDonald

Photo: GLO

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Retrofit: Soft Stabilization

- Used in lower energy environments that already have a hard structure in place such as a bulkhead or seawall
- For environments that can support marsh vegetation without any additional offshore structure to protect the plants
- Vegetation is planted seaward of the existing hard structure
Retrofit: Hybrid Stabilization

• Used when there is an existing shoreline structure in place such as a bulkhead or seawall
• There may or may not be existing marsh plantings that need additional protection from an oyster reef, articulated blocks or mat, breakwater, or riprap.
• The living shoreline is installed seaward of the existing hard structure
Out of the 114 known living shoreline projects in Texas, there are…

- Hybrid: 64
- Soft: 31
- Retrofit: Hybrid: 18
- Retrofit: Soft: 1