MARTIN *ecoproducts*

Erosion control

turn the tide on coastal erosion

- protect shorelines
- retain sediment
- create marsh

Wave goodbye
to shoreline erosion.

Martin Eco Products is an environmental technology company that develops products designed to protect coastal marine environments. Reinforced by the Matrix's high tensile and tear strength and open cell design, our products are durable, lightweight, sustainable and cost-effective solutions that can help **protect shorelines, retain sediment and create marsh.**

	Application	*Typical projects*
Floating Breakwater	• Up to 4.5' water depths • Wind chop mitigation • Vegetation establishment	• Marsh restoration • Marsh creation • Shoreline protection • On-site mitigation
Vegetated EcoShield™	• Recommended slope range 1:4 to 1:12 • Vegetation establishment	• Levees, berms, dikes, terraces • Shoreline protection • Bank stabilization

Plastic *makes perfect*

The foundation of our products – **the Matrix** – is manufactured with 100% recycled Polyethylene terephthalate (PET) plastic drinking bottles.

1 Habitat enhancement

The Matrix allows for **vegetative growth**, mimicking a natural habitat that is suitable for fish and wildlife.

2 Sediment retention

The **open cell design** of the Matrix allows for sedimentation.

3 Wave attenuation

The Matrix retains a **high tensile and tear strength**, making it suitable for coastal and marine environments.

Standard Matrix properties

properties	value*
Thickness	43 mm
Weight	43 oz/yd^2
Tensile & tear strength	40 lb/in (min.)
Volumetric displacement	1015 ml/cubic ft
Surface area	124 ft^2/ft^3 of Matrix

**Based on one standard layer of Matrix*

The polyurea difference

Our **fast set, rapid curing polyurea spray** produces a tough coating that is inert, will not hydrolyze, leach or contaminate. It is designed for industrial applications receiving constant or intermittent attack from corrosive substances and abrasive action. It provides substantial UV protection and is food certified.

properties	test	value
VOC	Theoretical	0%
Gel time	ASTM D1640	3-7 seconds
Tack free	ASTM D1640	8-12 seconds
Tensile strength	ASTM D638	2000-2800 psi
Tensile elongation	ASTM D638	200-250%
Tear strength	ASTM D624	300-450 lb/in
Shore (D) hardness	ASTM D2240	50
Taber abrasion, mg wt loss	ASTM D4060	15-30
Taber abrasion, mg wt loss	ASTM D4060	150-250
Exposure temperatures		-40° F to 350° F
Lifespan in saltwater*		75 years

**Primeaux paper based on testing, flexibility of the system, chemical resistance and thermal properties.*

Endorsed by:

THE WATER INSTITUTE OF THE GULF®

for shoreline protection and bank stabilization

Floating Breakwater
marsh creation and restoration

A lightweight, cost-effective and easy to install solution to:

- Reduce wave energy
- Repair damaged marsh
- Restore fish and wildlife habitat
- Protect shorelines
- Promote vegetative growth

The Floating Breakwater is a patented floating structure with hydroponically grown vegetation designed for **marsh creation, shoreline protection and marsh restoration.** It helps establish new vegetation, reduce wind chop and create wildlife habitats. The Matrix-polyurea combination creates a lightweight, porous structure with significant strength to withstand wind and wave energies. Short period waves are attenuated effectively by the Floating Breakwater. The Floating Breakwater is anchored in place using an engineered netting mooring system that includes a rope border with stainless steel rings woven into it. These act as mooring points for nylon rope mooring lines that connect the Floating Breakwater to galvanized steel multi-helix power anchors.

Phase 1
installation

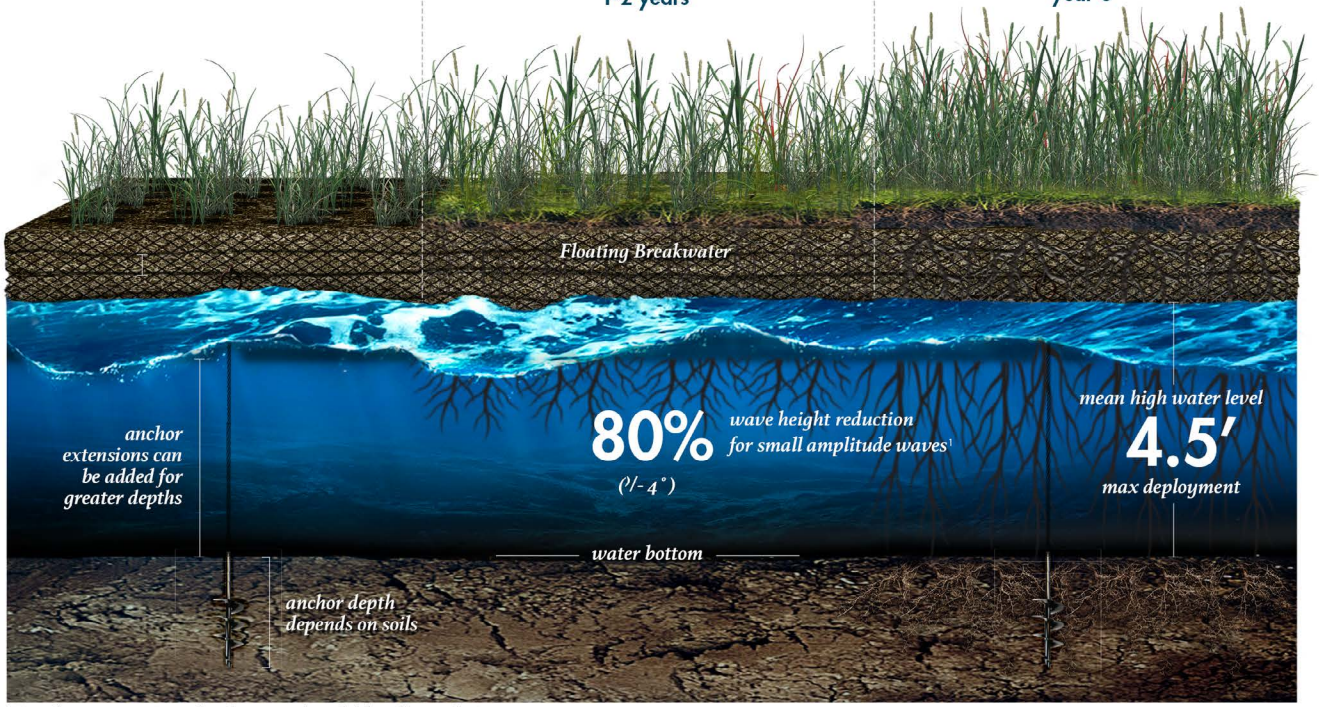
Vegetation is planted into pre-drilled holes on top of the BFB.

Phase 2
growth

As roots grow below the surface, vegetation shows early growth on top.
1-2 years*

Phase 3
maturity

Vegetation reaches maturity on top as roots continue growth beneath.
year 3*



*Time frames are estimated and may not be valid for all growth circumstances.

References: 1. *Brett Webb, PhD., P.E., 2014, Wave Transmission Testing of Floating Breakwater.*

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for shoreline protection and bank stabilization

Vegetated EcoShield™
shoreline protection

A lightweight, cost-effective and easy to install solution to:

- Reduce erosion
- Promote vegetative growth
- Stabilize loose soil
- Reduce wave energy
- Protect levees, berms, dikes & terraces

Vegetated EcoShield™ is a patented living shoreline solution for **protecting shorelines and stabilizing banks.** Matrix layers installed on earthen structures stabilize the soils while a pre-vegetated Matrix strip helps jump-start vegetative establishment and growth. Research has shown that Vegetated EcoShield™ is effective at reducing wave energies along the shorelines of levees, berms, dikes and terraces. With an open cell structure, the Matrix allows for deep vegetative root growth and spread. Vegetated EcoShield™ is installed in a stepped format toward the water's edge using a wire mesh binder along the edges and secured in place with a rebar staple and washer.

Phase 1
installation

Vegetation is planted into the top Matrix layer and pre-vegetated strip installed.

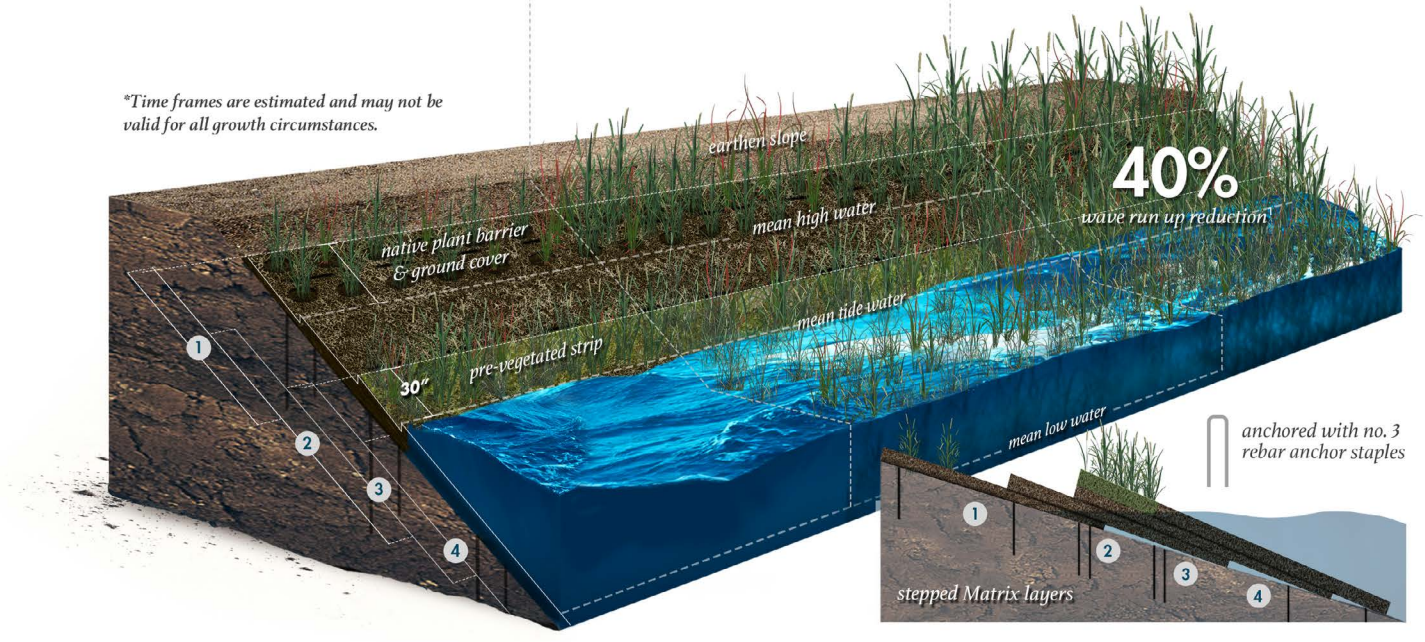
Phase 2
growth

As roots grow below the surface, vegetation shows early growth on top.
1-2 years*

Phase 3
maturity

Vegetation reaches maturity on top as roots continue growth beneath.
year 3*

**Time frames are estimated and may not be valid for all growth circumstances.*



References: 1. *Chinyun Li, Shelley Meng, 2016, Effect of EcoShield on Erosion Protection.*

Advantages over hard armor:
lightweight and modular design

Mitigates
need for subgrade improvements required to support heavier structures

Provides
a protective medium for vegetation to root in, grow and spread

Minimizes
effect from barge draft, which eliminates need for dredging in shallow areas

Decreases
cost of production, handling, transport and installation

Accommodates
a variety of slopes and water depths

SUSTAINABLE DEVELOPMENT GOALS

6 CLEAN WATER AND SANITATION

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

14 LIFE BELOW WATER

17 PARTNERSHIPS FOR THE GOALS

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