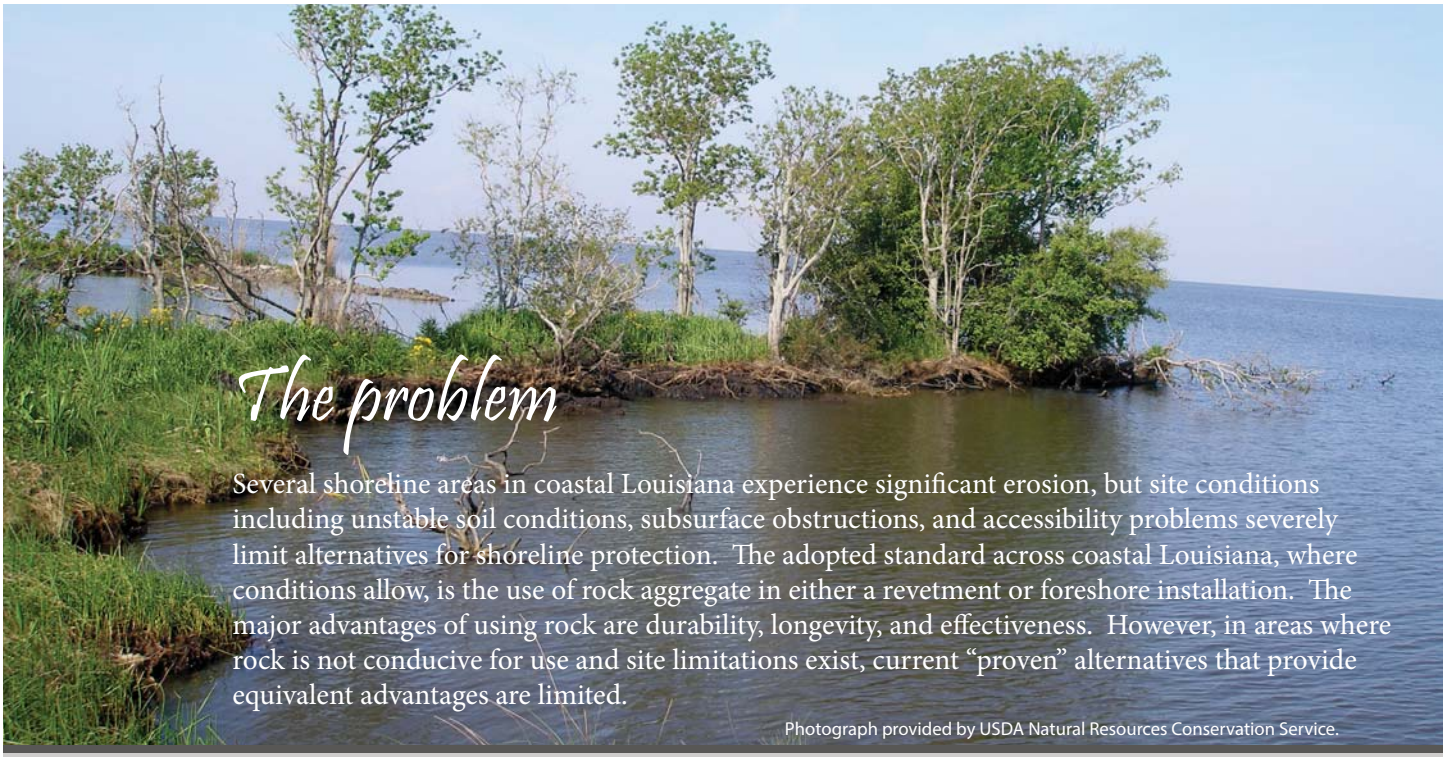
# Non-Rock Alternatives to Shoreline Protection Demonstration Project (LA-16)


To be built under the
**Coastal Wetlands Planning, Protection, and Restoration Act**
**Public Law 101-646**

by the
**United States Department of Agriculture**
**Natural Resources Conservation Service**

with assistance from the
**Coastal Protection and Restoration Authority of Louisiana**



## The problem

Several shoreline areas in coastal Louisiana experience significant erosion, but site conditions including unstable soil conditions, subsurface obstructions, and accessibility problems severely limit alternatives for shoreline protection. The adopted standard across coastal Louisiana, where conditions allow, is the use of rock aggregate in either a revetment or foreshore installation. The major advantages of using rock are durability, longevity, and effectiveness. However, in areas where rock is not conducive for use and site limitations exist, current "proven" alternatives that provide equivalent advantages are limited.

Photograph provided by USDA Natural Resources Conservation Service.

# Non-Rock Alternatives to Shoreline Protection

## Project location

Shark Island, Iberia Parish, Louisiana

## Project goals

The goal of this demonstration project is to identify and test an alternative method(s) of shoreline protection that can be used in areas having one or more limiting factors which preclude the use of currently adopted standards (i.e. rock, concrete panels, bulkheads, etc.).

## Project benefits

The primary benefit of this project would be to find a product(s) that effectively reduces or eliminates shoreline erosion at sites where current standards are either non-acceptable or not economically justified.

## Identification of potential issues

One of the criteria to be used in the selection of a viable product(s) is its ability to circumvent or avoid potential issues (subsurface utilities, accessibility, etc.). Project site limitations include, but are not limited to, considerable fetch length, unstable soil conditions, moderate to high erosion rates and large tidal fluctuations. Any shoreline protection system selected would also have to allow marine fisheries access, where applicable.

## Project funding

LA-16 was authorized by the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) of 1990, 16 U.S.C. Section 3951 et seq., (Public Law 101-646, Title III), and for local sponsorship by the Louisiana Coastal Wetlands Conservation and Restoration Plan, by the State of Louisiana on January 21, 2009. Funding includes soliciting for and researching new products/methods/techniques, seek potential location(s), engineering and design, fabrication, construction, and three years of onsite monitoring.

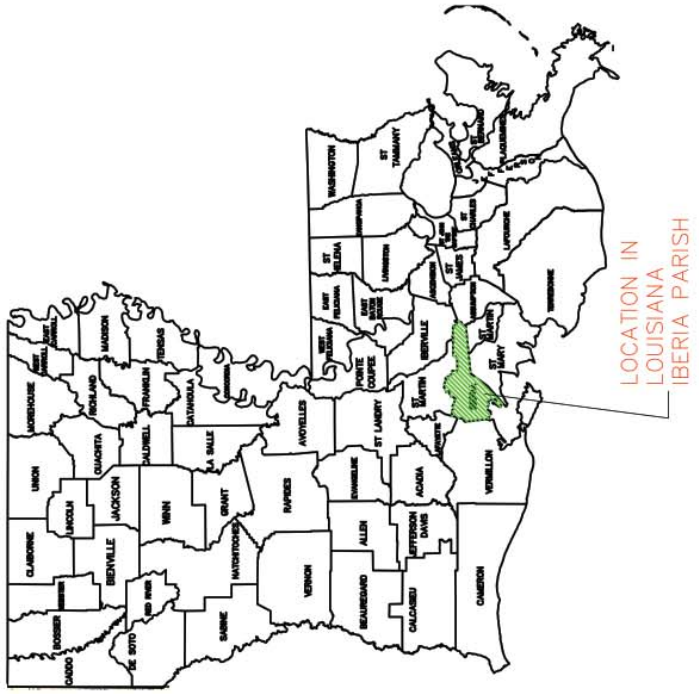
## Project sponsors

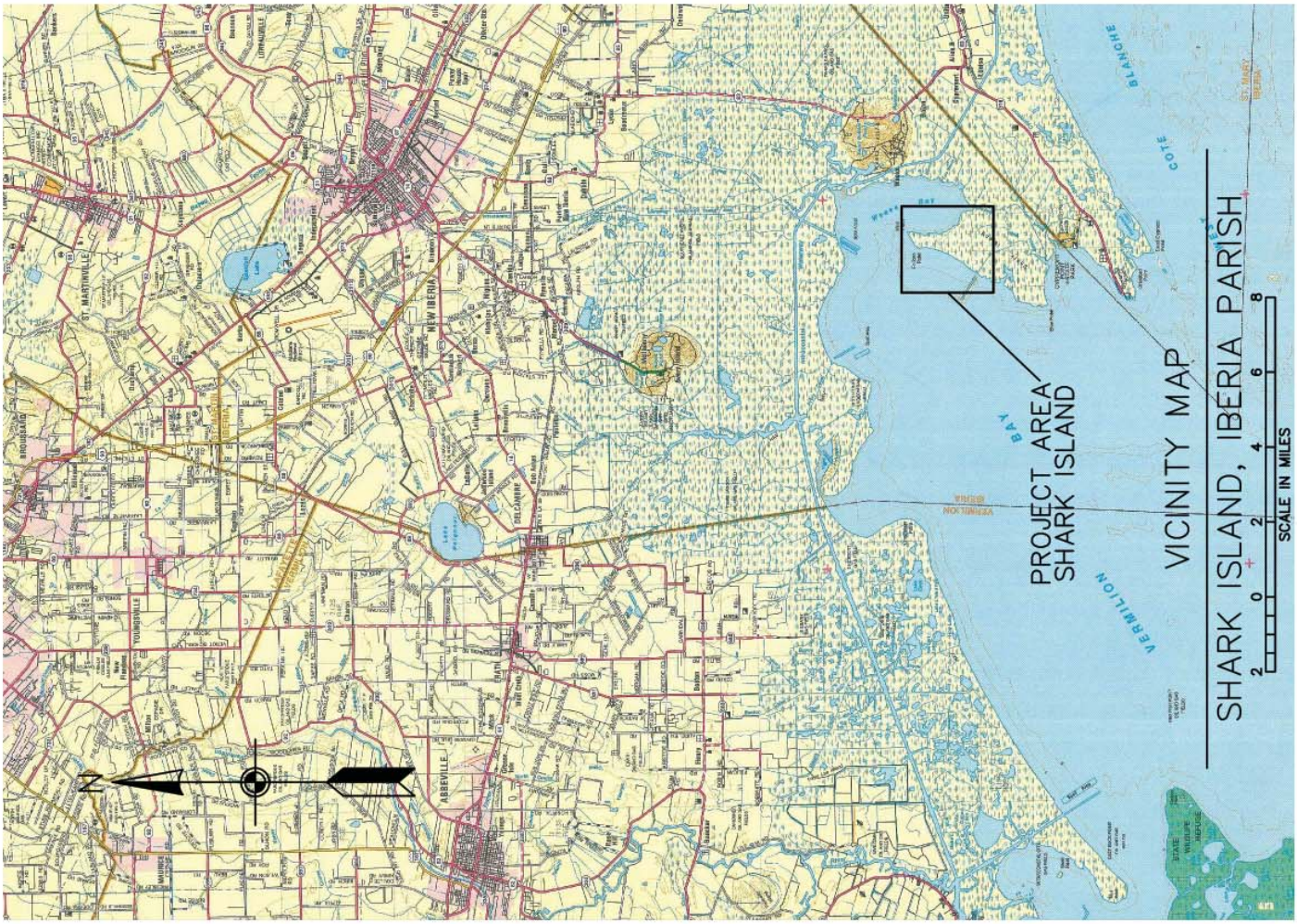
**Federal:** USDA Natural Resources Conservation Service

**State:** Coastal Planning and Restoration Authority

Photograph provided by USDA Natural Resources Conservation Service.

LA-16 NON-ROCK ALTERNATIVES
TO
SHORELINE PROTECTION
DEMONSTRATION PROJECT
SHARK ISLAND SITE

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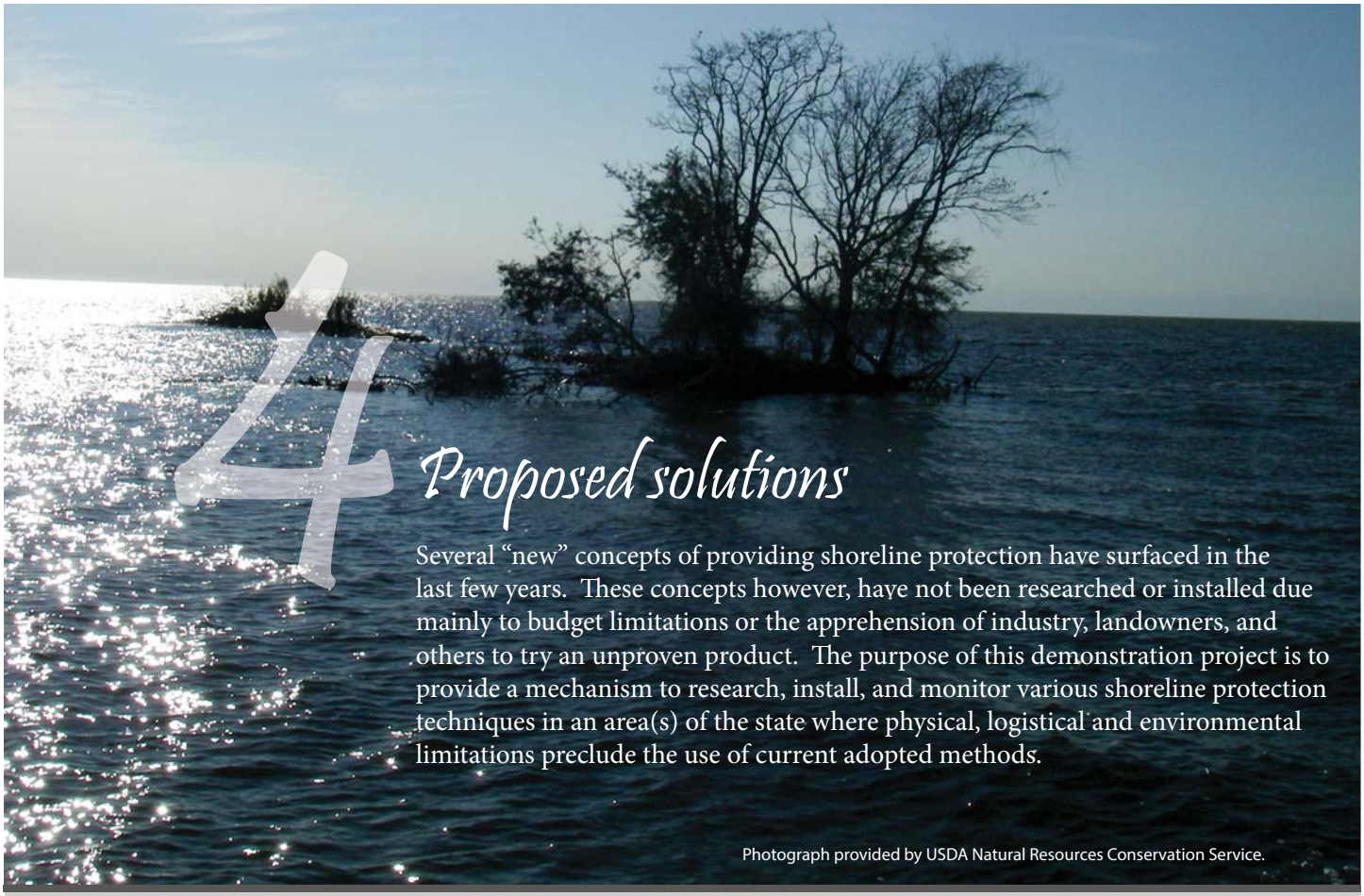
|---|---|---|---|---|
| SHEET 01 OF 02 | FILE NAME LA-16-INFO<br>DRAWING NAME LA-16-INFO-01 | NRCS Natural Resources Conservation Service United States Department of Agriculture | VICINITY MAP<br>LA-16 NON-ROCK DEMONSTRATION PROJECT<br>SHARK ISLAND SITE<br>IBERIA PARISH, LOUISIANA | DESIGNED D. GILLEN 10/13<br>DRAWN A. GREMILLION 10/13<br>CHECKED L. BROUSSARD 10/13<br>APPROVED |



# 4 Proposed solutions

Several "new" concepts of providing shoreline protection have surfaced in the last few years. These concepts however, have not been researched or installed due mainly to budget limitations or the apprehension of industry, landowners, and others to try an unproven product. The purpose of this demonstration project is to provide a mechanism to research, install, and monitor various shoreline protection techniques in an area(s) of the state where physical, logistical and environmental limitations preclude the use of current adopted methods.

Photograph provided by USDA Natural Resources Conservation Service.

## Product No. 1

**Contractor:**
Living Shoreline Solutions, Inc.
Dade City, Florida

**Product Name:**
Wave Attenuation Devices (WAD®s)

**Product Description:**
The structure consists of individual modular units connected to each other at the base. Each unit is a three-sided pyramid shaped concrete structure with angled sides and triangular-shaped tapered openings on each side. The units are placed in a double row array in approximately 4-5 feet of water; parallel to shore and designed such that the wave is actually allowed to transmit through the structures and in doing so, wave energy is significantly reduced. Refer to Figure 1 for a typical isometric drawing of the structure.

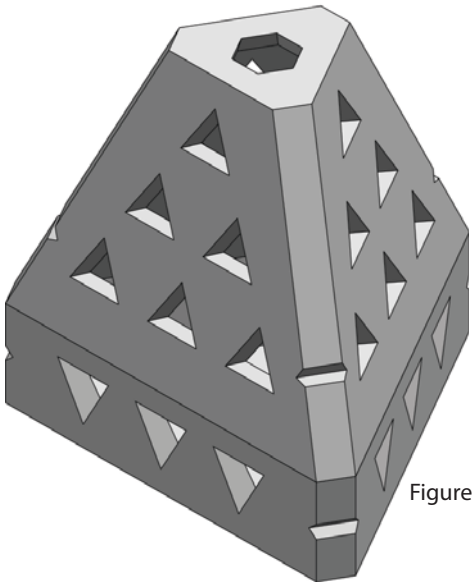


Figure 1

Living Shoreline Solutions Inc.

WAD®

U.S. PATENT 6,386,702 B1

## Product No. 2

**Contractor:**
Royal Engineers & Consultants, Inc.
Lafayette, Louisiana

**Product Name:**
Integrated Shoreline Solutions – Wave Screen System

**Product Description:**
The structure is a continuous linear feature consisting of two parallel vertical walls of perforated HDPE sheeting supported by steel pilings. The bottoms of the vertical walls are positioned 1 – 1.5 feet above the bay bottom. Two walls will be installed parallel to each other in a straight configuration parallel to the shoreline and in approximately 4 – 4.5 feet of water. Refer to Figure 2 for a typical isometric drawing of the structure.

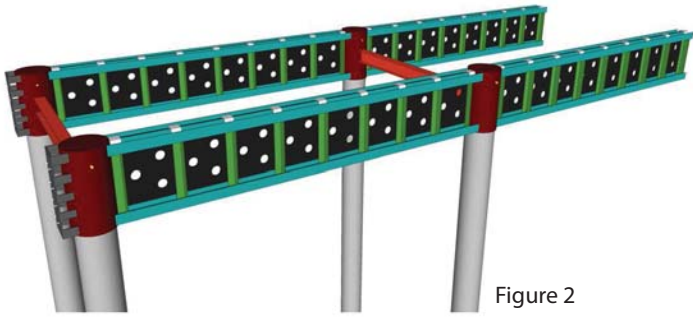


Figure 2

Product developed by Integrated Shoreline Solutions LLC in association with Royal Engineers & Consultants LLC. The authors reserve and retain any and all intellectual property and licensing rights associated with the design and pending patent, Copyright 2013, all rights reserved.

## Product No. 3

**Contractor:**
Jesco Environmental & Geotechnical Services, Inc.
Jennings, Louisiana

**Product Name:**
Wave Robber

**Product Description:**
The structure consists of individual modular units that are cabled together in a linear fashion to form a continuous unit paralleling the shoreline. Each module has vertical side and rear (land side) walls, a front (bay side) wall that slopes up toward the shore to deflect waves, and baffled tubes to promote sediment retention behind the module. Every module is built primarily of HDPE molded material and sits on the bay bottom in approximately 4 feet of water. The units are held in place by cables with anchors driven below the surface and are partially water-filled to provide the proper ballast. Refer to Figure 3 for a typical isometric drawing of the structure.

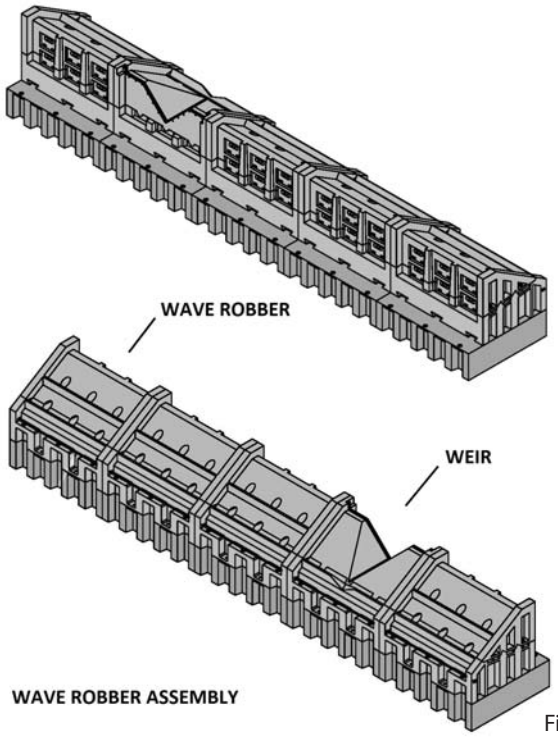



Figure 3

Product developed by Pierce Industries LLC in association with Jesco Environmental & Geotechnical Services, Inc. The authors reserve and retain any and all intellectual property and licensing rights associated with the design and pending patent, Copyright 2013, all rights reserved.

## Product No. 4

**Contractor:**
Jansen, Inc.
Ferndale, Washington

**Product Name:**
Buoyancy Compensated Erosion Control Modular System

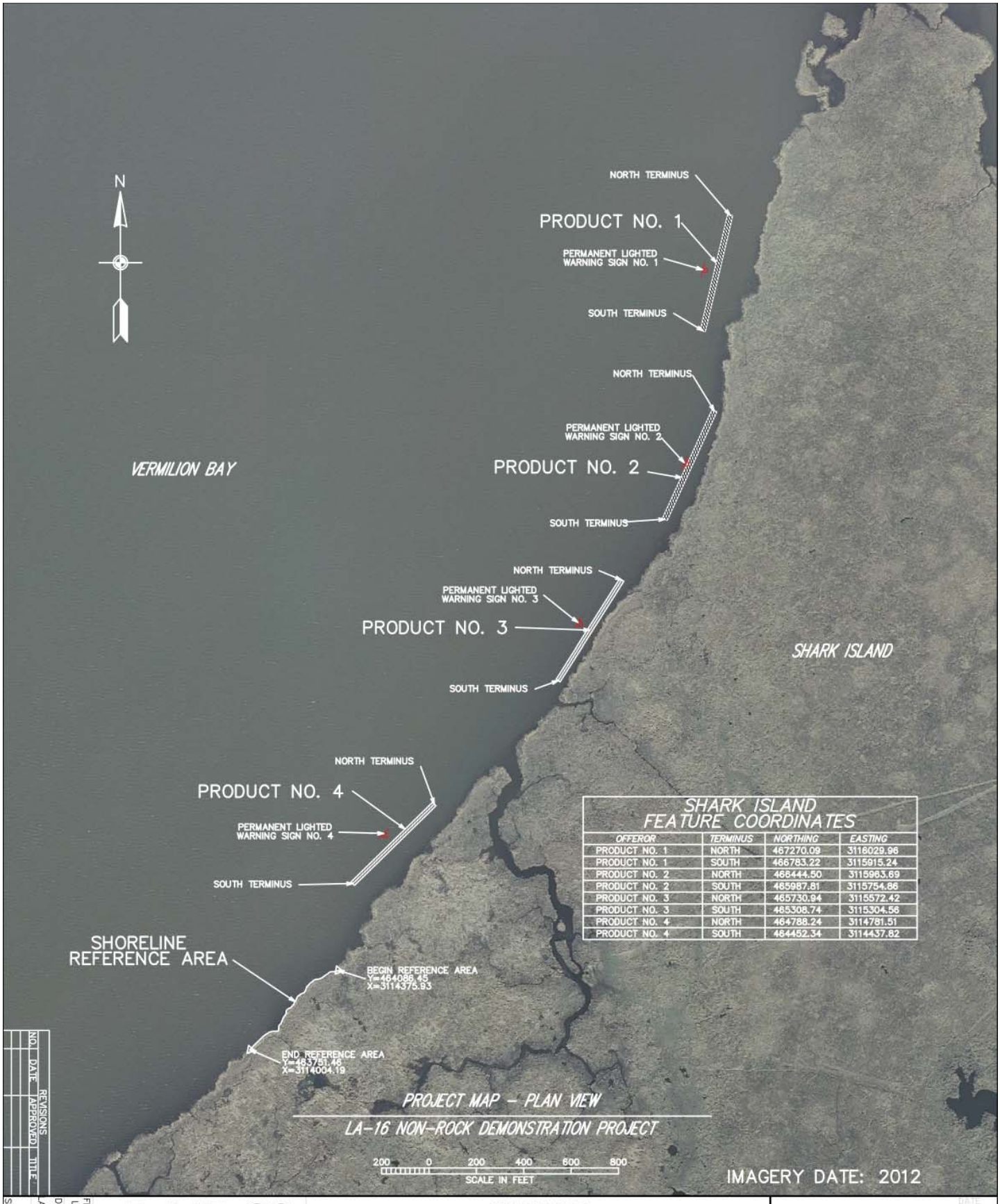
**Product Description:**
The structure consists of individual modular units placed adjacent to each other in a linear fashion to form a continuous unit parallel to the shoreline. Each unit is a 4-sided styrofoam-filled concrete shell with sloped front (bay) and rear (land) sides and has an enclosed bottom. Individual units will be held to each other via winched cables and secured in place with 2 vertical and 2 batter driven pin piles. The structure will be placed in approximately 5 feet of water. Refer to Figure 4 for a typical isometric drawing of the structure.

Figure 4

JANSEN INC.



Photograph provided by USDA Natural Resources Conservation Service.




SHARK ISLAND
FEATURE COORDINATES

| OFFEROR | TERMINUS | NORTHING | EASTING |
|---|---|---|---|
| PRODUCT NO. 1 | NORTH | 467270.09 | 3116029.96 |
| PRODUCT NO. 1 | SOUTH | 466783.22 | 3115915.24 |
| PRODUCT NO. 2 | NORTH | 466444.50 | 3115983.69 |
| PRODUCT NO. 2 | SOUTH | 465987.81 | 3115754.86 |
| PRODUCT NO. 3 | NORTH | 465730.94 | 3115572.42 |
| PRODUCT NO. 3 | SOUTH | 465308.74 | 3115304.56 |
| PRODUCT NO. 4 | NORTH | 464788.24 | 3114781.51 |
| PRODUCT NO. 4 | SOUTH | 464452.34 | 3114437.82 |

| NO. | DATE | REVISIONS | APPROVED | TITLE |
|---|---|---|---|---|

SHEET 01 of 01

FILE NAME LA-16 NRD-CG

DRAWING NAME LA-16 NRD-CG-002

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

PROJECT MAP
SHORELINE REFERENCE AREA
LA-16 NON-ROCK DEMONSTRATION PROJECT
IBERIA PARISH, LOUISIANA

| | | DATE |
|---|---|---|
| DESIGNED | D.GILLEN | 08/2013 |
| DRAWN | A. GREMILLION | 08/2013 |
| CHECKED | L. BROUSSARD | 08/2013 |
| APPROVED | M. GILFORD | 08/2013 |


# Coastal Wetlands Planning, Protection, and Restoration Act

Public Law 101-646

The CWPPRA Task Force manages the CWPPRA program. The Task Force is composed of the State of Louisiana and five federal agencies: the U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (USFWS), USDA Natural Resources Conservation Service (NRCS), NOAA-National Marine Fisheries Service, and the U.S. Army Corps of Engineers (USACE).

For more information about this demonstration project, contact:

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