



State of Louisiana

JOHN BEL EDWARDS
GOVERNOR

REQUEST FOR INFORMATION (RFI) ARTIFICIAL REEF PRODUCT INFORMATION

RFI NO. 2503-19-04

FEBRUARY 20, 2019

1.0 INTRODUCTION

The Louisiana Coastal Protection and Restoration Authority (CPRA) is conducting engineering and design activities for the PO-0174 Biloxi Marsh Living Shoreline Project (Project). The primary goal of the Project is to reduce shoreline recession rates and enhance local oyster production through the implementation of marsh-fringing artificial reef breakwaters to promote the formation of self-sustaining living breakwaters.

This Request for Information (RFI) intends to solicit information from artificial reef product manufacturers. CPRA intends to develop a list of approved equivalent product configurations for potential use in the construction of the Project. CPRA will use the information received through this RFI, supplemented with engineering analyses conducted by the Project design team, to evaluate the artificial reef product configurations to determine their applicability for use at the Project site. The criteria for evaluation of the potential product configurations is outlined within this RFI. All products submitted must be able to be installed by a third-party construction contractor.

Product configurations that meet the requirements specified herein will be placed on a Preliminary List of Approved Equivalent Product Configurations for the Project. See Section 17.0 POST-RFI COORDINATION for additional information.

This RFI is exclusive to the Project. Only submittals that meet the minimum requirements specified herein will be considered. Failure to be selected as an approved equivalent product configuration for this Project will **not** preclude a manufacturer from participating in other CPRA projects.

2.0 LOCATION

The Biloxi Marsh Living Shoreline Project (PO-0174) is located in St. Bernard Parish, LA. The project area is located along the eastern shore of Biloxi Marsh, off the shoreline of Eloi Bay and Eloi Point, near the mouth of Bayou la Loutre. The center of the project area is located at approximately 29.783185° North and -89.354931° West. See Appendix A for vicinity map. The map shows a project area of fourteen miles; it is estimated that the project will create up to eleven miles of artificial reef breakwaters.

3.0 GENERAL BACKGROUND AND INFORMATION

Artificial reef products are anticipated to be installed along the Project shoreline in continuous breakwater segments that are anticipated to be no longer than 1,000 feet and no wider than 35 feet. Gaps between breakwaters will be required for recreational and wildlife passage and are anticipated to be between 100 and 500 feet in length. Additional structures may be positioned landward or seaward to provide gap protection. The landward toe of the breakwaters is anticipated to be installed at an elevation of approximately -3.0 ft NAVD88, but this may vary between -2.0 ft NAVD88 and -6.0 ft NAVD88.

Project site data:

- 3.1 Survey Data: High-resolution survey data along the Project site shows that the nearshore elevations range from approximately -2.0 to -6.0 ft NAVD88. The survey data (dated 5/9/2018) is included in Appendix B of this RFI.
- 3.2 Bathymetry Hazards: The bathymetry data indicates the presence of tree stumps in certain areas along the Project site.
- 3.3 Tide: The tidal range at the Project site, based on hindcast of water levels, is as follows:

Tidal Datum	Elevation (ft., NAVD88)
Mean Higher High Water (MHHW)	1.10
Mean Sea Level (MSL)	0.31
Mean Lower Low Water (MLLW)	-0.48
Extreme Low Water (ELW)	-3.00

- 3.4 Extreme Design Conditions: The Project site is susceptible to extreme conditions such as hurricanes. For this Project, the extreme design conditions will be the 10-year return period storm (comparable to a Category 1 hurricane). This condition is characterized by a maximum water level of +9.8 ft NAVD88 with a maximum significant wave height of 6.3 ft. and maximum peak wave period of 12.6 seconds.
- 3.5 Design Conditions: The design conditions at the Project site that typically drive shoreline erosion are characterized by significant wave heights of 1 to 2.5 ft., wave periods of 2 to 4 seconds and water levels ranging from MLLW to MHHW + 1.7 ft.
- 3.6 Geotechnical Data: Geotechnical data collected along the Project site indicate mostly clay and peat soils. Allowable bearing capacities range from 350 to 450 pounds per square foot.

Products and product configurations shall have a life expectancy of greater than 20 years at the Project site, and shall be maintenance free.

Portions of the Project site conditions may require the use of marine mattress revetment along the shoreline. Submission for use of marine mattress in revetment configuration (direct slope protection) is not required.

4.0 MINIMUM REQUIRED INFORMATION

The Project is not a demonstration project. New or theoretical products or product configurations are not anticipated to be evaluated. Proposed product configurations shall have a minimum of three separate installations on property not owned by or affiliated with the product manufacturer. Manufacturers may submit up to two products, and up to two product configurations of each product. For the purposes of this RFI, “product” and “product configuration” are defined as follows:

- Product – A single unit or assembly of units. Submission of the same unit with different dimensions would be considered two products.
- Product configuration – An arrangement or layout of product to create a breakwater. Submission of an arrangement showing 2 rows wide of a product along the shoreline would be considered one product configuration. Submission of a similar arrangement showing 3 rows wide of the same product would be considered a second product configuration.

The following is the minimum required information that must be submitted per product configuration (maximum (2) two). Referring to previous CPRA projects for data is not sufficient and will not meet minimum required standards. Failure to submit the minimum required information will preclude product consideration from the Project.

1. Background Information

- a. Manufacturer's name and location;
- b. Manufacturer's contact information (name, title, address, phone number, and email address);
- c. Proof of patent or non-infringement per product and/or product configuration (if applicable);
- d. Product geometry for individual units and assembled product configuration recommended for the Project. Details shall include, at a minimum:
 - i. Plan, cross section, and profile views including terminations (ends);
 - ii. Minimum turning radius (both seaward and landward turns);
 - iii. Method of turning to accommodate irregular shoreline and bathymetry;
 - iv. Installed unit spacing and maximum spacing tolerance.
- e. Constraints on product configuration installation (e.g., geotechnical conditions, water depth, wave environment, and similar);
- f. Product weight (on dry land);
- g. Product density (in units of pounds per cubic foot);
- h. Three-dimensional rendering of the product and assembled product configuration, in digital 3D solid in AutoCAD (*.dwg or *.dxf) format;
- i. Materials list;
- j. Manufacturing and installation procedures (including pictures), production rates, and equipment;
- k. Quantifiable unit rejection criteria (crack height and width, surface defects height, width, and depth, or similar);
- l. Repair criteria, procedures, and materials;
- m. Stockpiling methods and limitations including stacking (if applicable); and
- n. Evidence of ability of oysters to grow on the product.

2. Breakwater Bearing Pressure Calculations. Provide bearing pressure calculations in accordance with Section 3.0 GENERAL BACKGROUND AND INFORMATION, Paragraph 3.6. Calculations shall consider three-dimensional shape of the product and configuration, minimum spacing tolerance submitted in accordance with Section 4.0 MINIMUM REQUIRED INFORMATION, water level, and seawater density of 64 pounds per cubic foot. Calculations shall assume a breakwater length of 1,000 feet in the product configuration proposed. Provide detailed bearing pressure calculations for each of the following conditions:

- a. Product configuration on dry land;
- b. Product configuration installed at an elevation of -3.0 ft. NAVD88 with tide at ELW;
- c. Product configuration installed at an elevation of -3.0 ft. NAVD88 with tide at MLLW;
- d. Product configuration installed at an elevation of -3.0 ft. NAVD88 with tide at MSL; and
- e. Product configuration installed at an elevation of -3.0 ft. NAVD88 with tide at MHHW.

3. Previous Projects and References. Provide details on previous experience:

- a. List of installed locations (limit to no more than 10 installations); and
- b. Project information for at least the three most recent/applicable locations including:
 - i. site location;
 - ii. length and width of project;
 - iii. product installed;

- iv. configuration and quantity of product installed;
- v. start and stop date of manufacturing;
- vi. client contact information;
- vii. construction costs (separately as manufacturing, transportation, and installation costs);
- viii. installation method;
- ix. installing contractor contact information; and
- x. problems and/or lessons learned during construction (separately as manufacturing, transportation, and installation).

5.0 SUPPLEMENTARY INFORMATION

The following is supplementary information that is requested to be submitted per product configuration. Submittal of this information is optional (not required).

1. Evidence of wave transmission reduction for the anticipated site conditions. In order of preference, this information may include the following:
 - a. Field-measured wave transmission data,
 - b. Laboratory-measured wave transmission data,
 - c. Numerical modeling wave transmission data, and/or
 - d. Analytical or empirical methods based on engineering data;
2. Materials testing results;
3. Any other information that demonstrates the benefits of the product.

6.0 EVALUATION CRITERIA AND METHODOLOGY

All information submitted will be evaluated by the Project design team and CPRA to determine product configuration applicability for the Project.

The Project design team and CPRA will evaluate each product configuration submitted for potential inclusion as an approved equivalent product configuration for the Project. The evaluation will be performed in the following order, eliminating products that fail to meet the required criteria with each successive evaluation criteria:

1. Statement acknowledging conditions specified in Section 9.0 CONDITIONS, as modified per Section 12.0 ADDENDUM.
2. Addendum Acknowledgement Form(s) as per Section 12.0 ADDENDUM.
3. Evaluation of minimum required information provided as per Section 4.0 MINIMUM REQUIRED INFORMATION:
 - a. Review of background information provided in Section 4.1 for completeness.
 - b. Review of bearing pressure calculations provided in Section 4.2 for completeness and accuracy. Any assumptions made shall be defined and must be appropriate for the Project site. The Project design team and CPRA reserve the right to question and refute assumptions used in the calculations. A geogrid and/or geotextile is anticipated to be placed under the products to distribute the weight over the footprint of the breakwater. Product configurations shall not exceed the allowable bearing capacities at the ELW level. If the product configuration exceeds allowable bearing capacities, product manufacturer may submit calculations for an alternate elevation.
 - c. Review of previous projects provided in Section 4.3 for completeness. The Project design team and CPRA reserve the right to contact the client and installing contractor to discuss the product and product configuration performance.

4. Evaluation of product configuration under extreme design (hurricane) conditions as per Section 3.0 GENERAL BACKGROUND AND INFORMATION. Water levels, wave heights, and wave periods will be varied to determine the maximum overturning and sliding forces on each product and product configuration during a 10-year return period storm. All products and product configurations will be evaluated under the same conditions. Products and product configurations must achieve a factor of safety of 1.1 against sliding and overturning during the maximum sliding and overturning forces.
5. Evaluation of product configuration's ability to attenuate waves under design conditions as per Section 3.0 GENERAL BACKGROUND AND INFORMATION. Product configurations must achieve an attenuation coefficient ($K_t = H_{\text{transmitted}} / H_{\text{incident}}$) as follows:

Tidal Datum	Kt
MHHW + 1.7 ft	Average < 0.95
MHHW	Average < 0.75
MSL	Average < 0.62
MLLW	Average < 0.50

The Project design team will perform hydrodynamic modeling of the product(s) and product configuration(s) for extreme and design conditions using a computational fluid dynamics software for detailed 3D modeling. The product configuration(s) will be modeled with the landward toe of the product configuration placed at -3.0 ft. NAVD88 and using the maximum spacing tolerance submitted in accordance with Section 4.0 MINIMUM REQUIRED INFORMATION. Hydrodynamic modeling may be performed at an alternate elevation in accordance with Paragraph 3.b; however, the Project design team will not make any modifications to the product(s) or product configuration(s) submitted in an effort to improve performance.

Product configurations that fail to meet the requirements or cannot meet Project site conditions will be removed from further consideration for use on the Project. Product configurations meeting the requirements will be placed on a Preliminary List of Approved Equivalent Products for the Project. See Section 17.0 POST-RFI COORDINATION for additional information.

Any information included as supplemental information submitted in accordance with Section 5.0 SUPPLEMENTARY INFORMATION will not be included in the evaluation.

7.0 DELIVERABLES

The following deliverables are required for evaluation:

- Minimum required information (as per Section 4.0 MINIMUM REQUIRED INFORMATION)

8.0 SCHEDULE

Event	Estimated Date
RFI Posting	February 20, 2019
Pre-Submittal Meeting	March 15, 2019
RFI Questions Due	March 20, 2019 @ 3:00pm
Responses to Questions Posted	March 28, 2019
RFI Submittal Due	April 17, 2019 @ 3:00pm

Preliminary List of Approved Equivalent Products	Approx. 60 days
Final List of Approved Equivalent Products	Approx. January 2020
Construction	Approx. July 2020

The schedule of events is estimated and may be modified depending on the number of submitted responses and environmental permitting.

A non-mandatory pre-submittal meeting will be held on March 15, 2019 at 10:00 AM local time at the Coastal Protection and Restoration Authority located at 150 Terrace Avenue, Baton Rouge, LA 70802. The purpose of the meeting is for product manufacturers to obtain clarification on the requirements of the RFI and to receive answers to relevant questions.

Although impromptu questions will be permitted and spontaneous answers will be provided during the meeting, the only official answer or position of the State will be stated in writing in response to written questions. Therefore, all questions should be submitted in writing even if an answer has already been given to an oral question. After the meeting, the questions will be researched and the official response will be posted on the Internet at: <http://coastal.la.gov/resources/rfps-rsiqs-contracts/contracts-and-grants/>.

9.0 CONDITIONS

The following conditions apply to all respondents to this RFI:

1. Responding to this RFI or selection as an approved equivalent product does not constitute a contractual obligation by CPRA or the Project design team.
2. A product configuration shall be removed from consideration for the Project if it is determined that fraudulent or misleading information was submitted at any time during the Project.
3. CPRA reserves the right to remove a product configuration from consideration for the Project in the event of a patent contest or legal challenge.
4. Product manufacturers may withdraw their participation from the Project at any time with written notice to CPRA.
5. The engineering and design process for the Project is anticipated to occur after the product evaluation. Additional information may be requested from the product manufacturer during this process. Product manufacturers are expected to work collaboratively with the design team and CPRA. Failure to work collaboratively may result in a product being removed from consideration for the Project.
6. Products must be able to be installed by a third-party construction contractor.

10.0 SUBMITTAL REQUIREMENTS

Questions about the RFI should be directed to Micaela Coner, by email at CPRAcontracts@la.gov. Emails must be addressed with the subject line “PO-0174 Artificial Reef Product Request for Information” and be received by March 20, 2019 at 3:00 PM local time. Questions received after the deadline will not be considered or answered. Failure to submit questions by the deadline will not be grounds for protest.

Official responses to all questions submitted by product manufacturers will be posted at <http://coastal.la.gov/resources/rfps-rsiqs-contracts/contracts-and-grants/>.

Responses to the RFI for artificial reef products are due by April 17, 2019 at 3:00 PM local time. Responses received after the deadline will not be considered or reviewed. Fax or email submissions are not acceptable.

Product manufacturers mailing their submittals should allow sufficient delivery time to ensure receipt by the time specified. Product manufacturers shall submit the information in electronic media format (CD, USB drive, or similar) along with a transmittal letter. The transmittal letter shall reference “PO-0174 Artificial Reef Product Request for Information”. Two copies of the electronic media and transmittal letter shall be submitted. All electronic media shall include the product manufacturer’s name. Unless otherwise specified, all electronic files shall be submitted in Adobe (*.pdf) format. Timely submission of the required information is the responsibility of the product manufacturer. Submittals must be delivered at manufacturer’s expense to:

Allison Richard
Executive Staff Officer
Coastal Protection and Restoration Authority
150 Terrace Avenue
Baton Rouge, LA 70802

11.0 BLACKOUT PERIOD

To ensure fair consideration and consistent and accurate dissemination of information for all product manufacturers, communications with the Project design team or CPRA, except as authorized in Section 10.0 SUBMITTAL REQUIREMENTS, shall be prohibited for the duration of the RFI process. During the blackout period no person affiliated with an RFI submittal team may lobby, contact, or otherwise discuss the RFI with the Project design team or CPRA. Violation of this provision shall result in disqualification from consideration for the Project on whose behalf the lobbying occurred. The blackout period shall expire upon announcement of the Preliminary List of Approved Equivalent Products.

12.0 ADDENDUM

CPRA may issue addendums to modify this RFI as deemed appropriate.

Addendums and clarifications to this RFI will be available at <http://coastal.la.gov/resources/rfps-rsiqs-contracts/contracts-and-grants/>. Each addendum shall be acknowledged by an authorized company representative in the transmittal letter included with the submittal.

13.0 OWNERSHIP OF SUBMITTAL

All materials submitted in response to this RFI shall become property of CPRA. Selection or rejection of submittal does not affect this right.

14.0 PROPRIETARY INFORMATION

Only information which is in the nature of legitimate trade secrets or non-published financial data may be deemed proprietary or confidential. Any material within a submittal identified as such must be clearly marked in the submittal and will be handled in accordance with the Louisiana Public Records Act, R.S. 44: 1-44 and applicable rules and regulations. Any submittal marked as confidential or proprietary in its entirety may be rejected without further consideration or recourse.

15.0 COST OF PREPARING SUBMITTAL

Costs associated with developing the submittal and any other expenses incurred by product manufacturers in responding to this RFI are entirely the responsibility of the manufacturer and shall not be reimbursed in any manner by CPRA.

16.0 ERRORS AND OMISSION'S IN SUBMITTAL

CPRA is not liable for any errors in submittals. CPRA reserves the right to make corrections or amendments due to minor errors identified in submittals by CPRA or the product manufacturers. CPRA, at its option, has the right to request clarification or additional information from the manufacturers.

17.0 POST-RFI COORDINATION

After the conclusion of the RFI process, the Project design team and CPRA will work collaboratively with each of the product manufacturers included on the Preliminary List of Approved Equivalent Product Configurations to maximize the performance of product configurations at the Project site. Detailed engineering and alternative analyses is anticipated to be performed by the design team to evaluate various product configurations. Product configurations may be removed from consideration for the Project if they are determined to contain design defects, flaws, or similar instance that could result in a design failure.

A Final List of Approved Equivalent Product Configurations will be developed and included in the For Bid documents for public bidding by prospective construction contractors. The For Bid documents are anticipated to include, among other items, design details within the plans and a comprehensive technical specification for each product or product configuration (as applicable). It is anticipated that the For Bid plans will delineate the Project shoreline into discrete segments with multiple product configurations eligible for installation to maximize Project performance and adapt to the variation in site conditions. It is anticipated that the bid form for construction will list each delineated segment as a single bid item for a fully installed product configuration selected by the contractor.

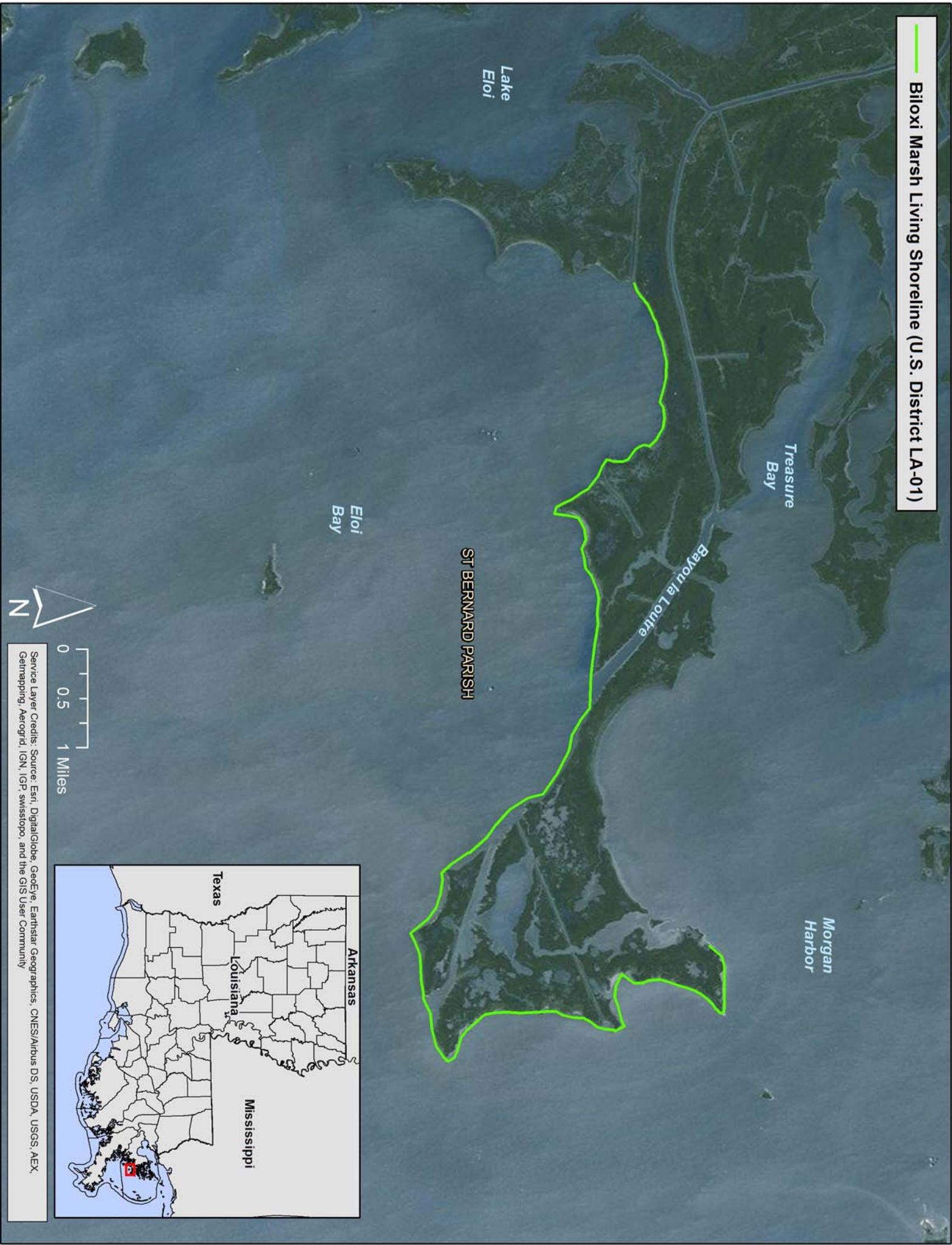
Ultimately, it will be the contractor's sole decision to select the product configuration he/she wishes to install from the eligible list for each delineated segment of Project shoreline. Not all product configurations are anticipated to be included for each delineated segment. Inclusion on the Final List of Approved Equivalent Product Configurations and For Bid documents does not guarantee selection by the contractor. One construction contract is anticipated to be awarded.

The For Bid plans and technical specifications will be site specific to the Project. Reuse or repurposing may be in violation of Louisiana Statutes, Title 37, Chapter 8.

APPENDIX A: VICINITY MAP
APPENDIX B: PROJECT SURVEY DATA

APPENDIX A
VICINITY MAP

— Biloxi Marsh Living Shoreline (U.S. District LA-01)



ST BERNARD PARISH

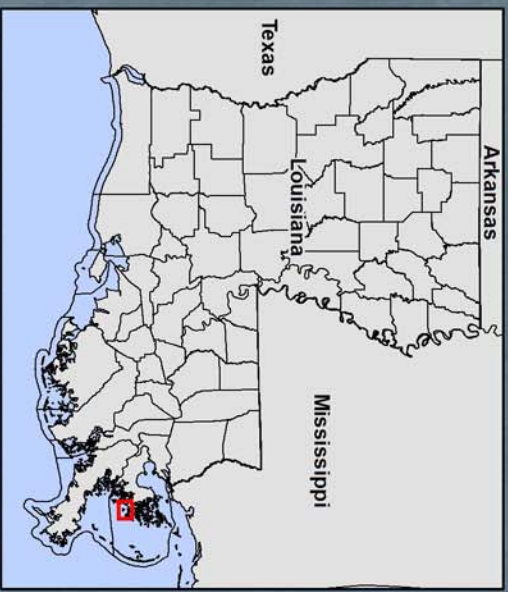
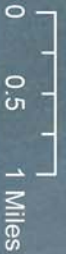
Lake Eloi

Eloi Bay

Treasure Bay

Bayou la Loutre

Morgan Harbor



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

APPENDIX B
PROJECT SURVEY DATA