

Coastal Impact Assistance Program (CIAP)
Coastal Forest Conservation Initiative
Spatial Decision Support System

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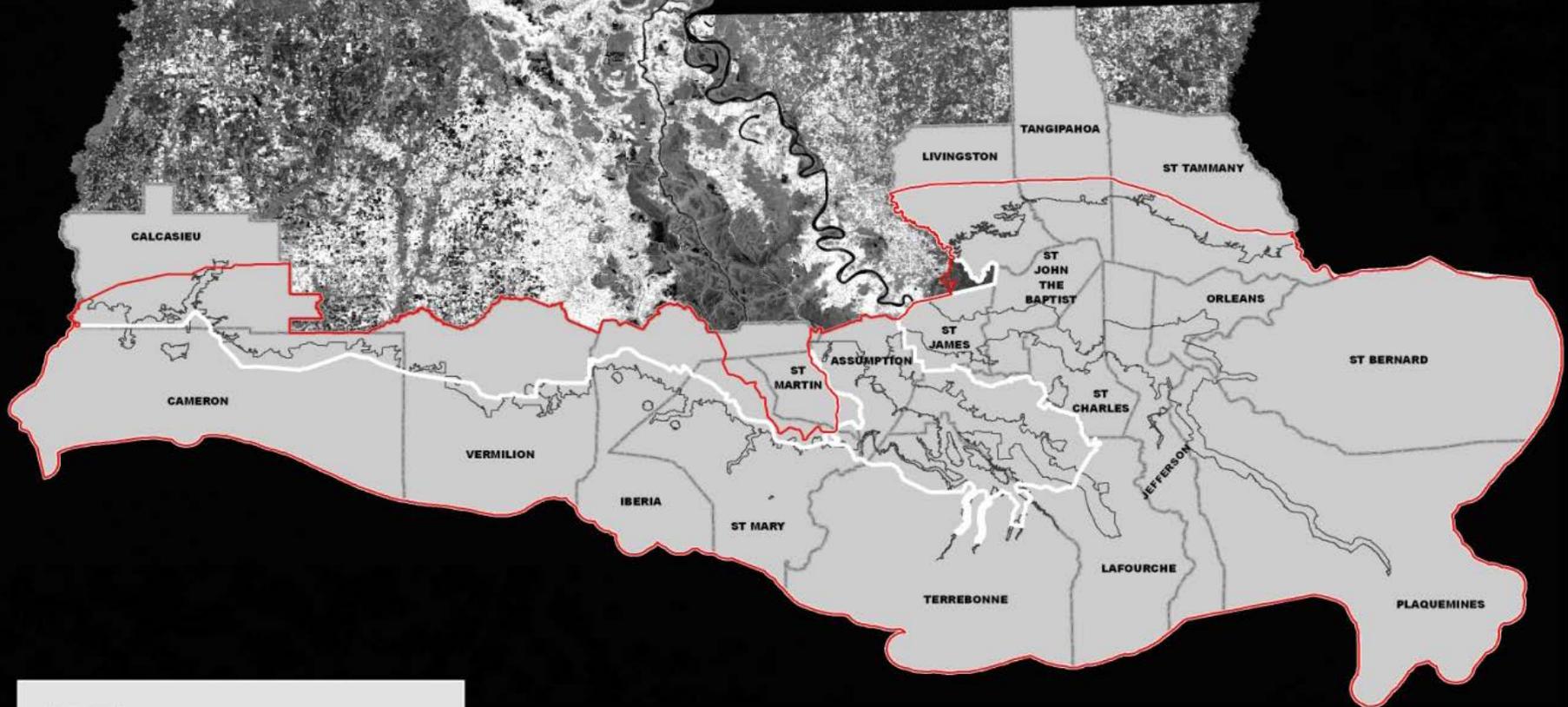


OFFICE OF
**Coastal Protection
and Restoration**

Coastal Forest Conservation Initiative Spatial Decision Support System

- **CFCI SDSS Presentation**
 - Tool Background/Theory/Purpose
 - Development/Technical Requirements
 - Structure/Components
 - User Interface
 - Application

Coastal Forest Conservation Plan Area of Interest



Legend

-  Coastal Forest Initiative Area of Interest
-  Coastal Zone Boundary
-  Conservation Plan Boundary
-  Coastal Parishes



Coastal Forest Conservation Initiative Spatial Decision Support System

• Tool Background

- Proximity Based
- Euclidean Distance/Distance Decay
- LUCIS Model Framework
- Raster vs. Vector Based (30 meter grid)
- PCA Selects Criteria
- Priority Scale of 1-5 or Low to High (Natural Breaks - Jenks)

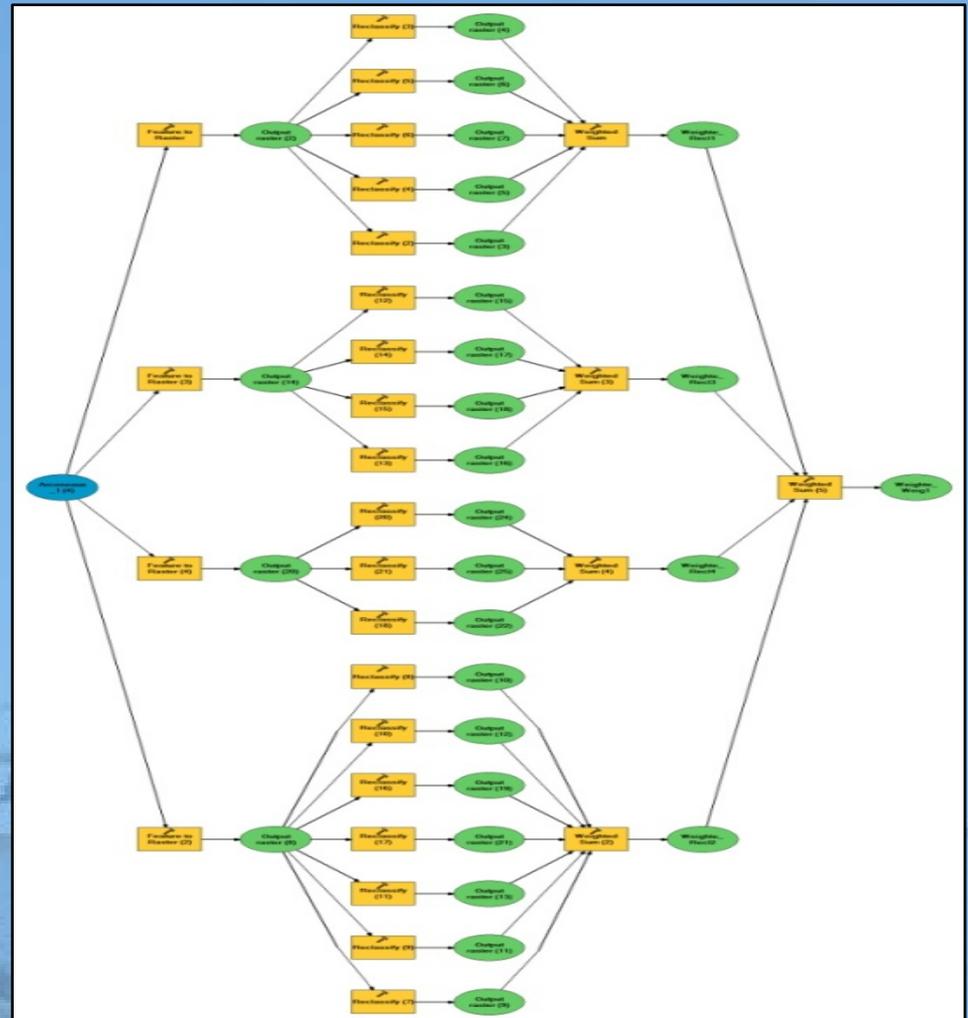
Coastal Forest Conservation Initiative Spatial Decision Support System

- **Technology**
 - **.NET Framework 3.5**
 - **Language C#**
 - **ArcGIS/ArcObjects 9.3 (updating to 10 now)**
 - **Spatial Analyst Extension**
 - **Adobe Photoshop for UI design**

Coastal Forest Conservation Initiative Spatial Decision Support System

• Tool Development

- Convert feature class to raster
- Reclassify rasters
- Raster calculator
- Save rasters
- Error handling
- Print
- Delete rasters
- Extracting datasets



Coastal Forest Conservation Initiative Spatial Decision Support System

- **Issues**
 - **Saving**
 - **Scratch Workspace**
 - Geoprocessing tool
 - **Save & Output folders**
 - **Print**
 - **Modality**
 - **Attribute table/Map Layout**

Coastal Forest Conservation Initiative Spatial Decision Support System

- **Tool Structure**
 - **1st Tier Assessment**
 - **Transparent and Consistent Metric**
 - **2 Components: Coastwide Analysis & Tract Specific Analysis**
 - **Coastwide Component**: develops priority surface for entire coast based on selected parameters
 - **Tract Specific Component**: develops priority rating for each tract based on subjective rating of input variables

Coastal Forest Conservation Initiative Spatial Decision Support System

• Input Parameters

- Based on Synthesis Report, Stakeholder Input, DNR/CPRA Input
- Parameters/Datasets Selected for Each Component/Tier using PCA
- Component/Tier Priority Determined and Assigned to Input Data Layer
- One Layer May Consist of One or More Datasets

Coastal Forest Conservation Initiative Spatial Decision Support System

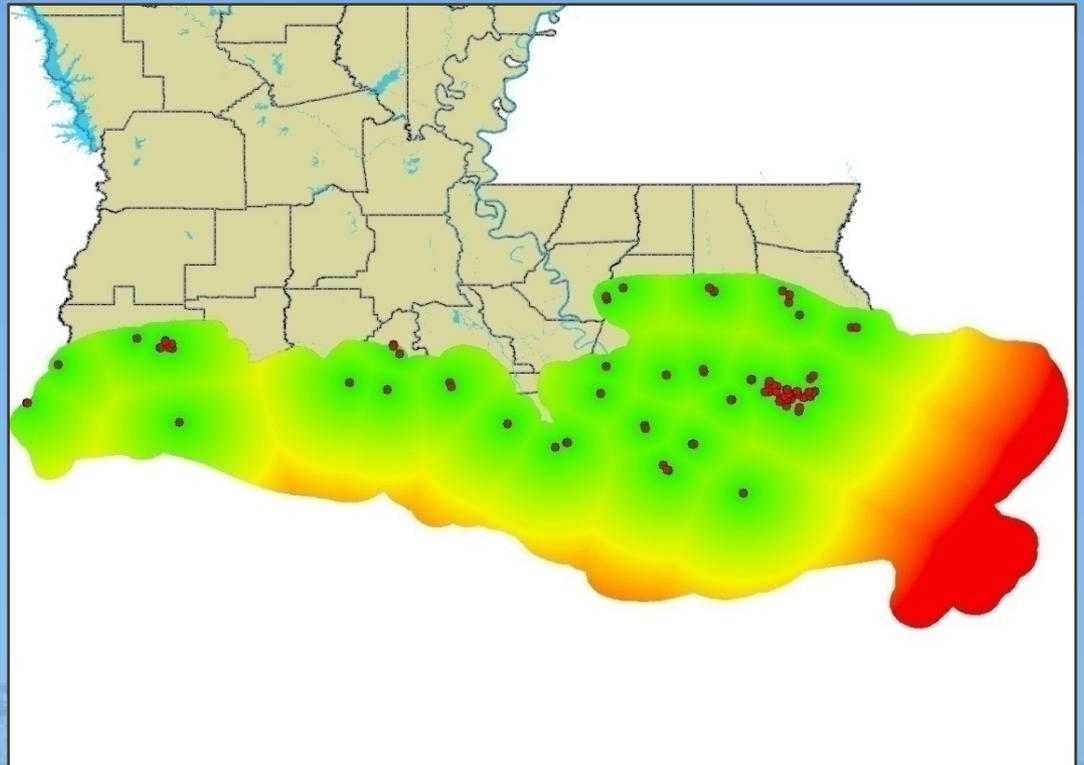
• Data Layers

- Airfields/airports
- DEQ Data
- Evacuation Routes
- Highways
- Hospitals
- Bridges
- Pipelines/Powerlines/Pipeline Crossings
- Ports
- Railroads
- Tunnels
- Control Structures
- Levees
- Banks/Barriers/Ridges
- Elevation/Flood Zone Data
- Waterbottoms
- Scenic Rivers
- Historical Trees
- Breeding Bird Routes
- Seabirds
- Shorebirds
- Natural Heritage Program
- Cities/Urban Areas
- Marsh
- Rivers/Streams
- Scrub Wetland
- Sea Grass
- Swamp
- Water bodies
- DOTD Wells
- Drinking Water Surface Intakes
- Surveyed Areas
- Historic Preservation Sites
- Archaeological Sites
- Public Lands
- Recreation Points
- Schools
- Oyster Beds

Coastal Forest Conservation Initiative Spatial Decision Support System

- **Data Prep**

- Vector to Raster Conversion
- Euclidean Distance
- Natural Break Symbology
- Raster Reclassification



The background of the slide is a photograph of a coastal forest. In the foreground, there are large, gnarled tree trunks and roots, likely mangroves, extending into a body of water. The water is a light blue color. In the distance, several more trees are visible against a clear blue sky. The overall scene is a natural, coastal environment.

Coastal Forest Conservation Initiative Spatial Decision Support System

Coastwide Analysis Tool

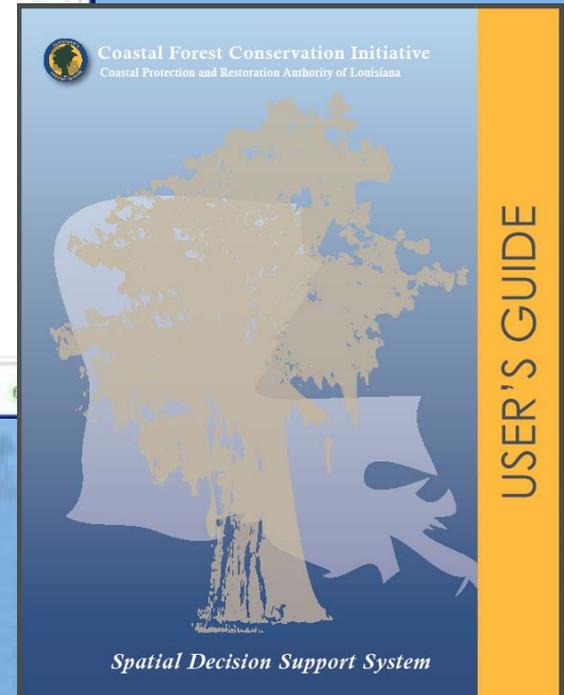
Coastal Forest Conservation Initiative Spatial Decision Support System

The screenshot displays the ArcMap interface for the CFCI Coastwide Analysis. The main window shows a map of Louisiana with a 'COASTAL FOREST PARCEL MAP' overlay. A central dialog box titled 'CFCI Coastwide Analysis' is open, featuring a 'Set Up' section with a vertical list of criteria: Strategic Location, Ecological Quality, Degree of Threat, Desirability of Conservation, and Final CMUA. To the right of this list is a 'Weights 0 to 1' section with input fields for each criterion. A 'generate' button is located at the bottom of the dialog. A 'Description' panel on the right provides a detailed explanation of the tool's function, stating it combines MUA results into a single CMUA for land suitability prioritization. Below the dialog is a legend for map features like 'Secondary Roads' and 'Water Bodies', along with a north arrow and a scale bar (1 inch = 287,900 feet). The ArcMap interface includes a 'New Data Frame' panel on the left with a tree view of layers such as 'DOC_Eco', 'DOC_Water', 'DOC_Access', 'DOC_Cultural', 'DOC_Raster', 'Degree Of Threat', 'Ecological Significance', 'Strategic Location', 'Desirability Of Conser', 'Strategic Location', 'Coastwide Analysis', 'Tract Analysis', and 'Base Data'. The status bar at the bottom indicates the current layer is 'Elevation/Flood Data'.

Coastal Forest Conservation Initiative Spatial Decision Support System



Print, Help, & Description



Coastal Forest Conservation Initiative Spatial Decision Support System

CFCI Coastwide Analysis



Q.E.C., Inc - Gulf Engineers & Consultants

-  **Set Up**
-  **Strategic Location**
-  **Ecological Quality**
-  **Degree of Threat**
-  **Desirability of Conservation**
-  **Final CMUA**

Pipe Crossings

Ports

Railroads

Proximity to Storm Protection Features

Control Structures

Levees

Banks / Barriers

Banks / Ridges

Proximity to Critical Storm Surge Zones

Elevation / Flood Data

Other Proximity Considerations

Scenic Rivers

Waterbottoms

[help ?] [print map] **exit** ▶▶

Description

Other considerations related to proximity might include relative proximity to restoration projects, environmentally protected areas, wastewater assimilation facilities or riparian buffer, which may provide secondary benefits.

Coastal Forest Conservation Initiative Spatial Decision Support System

CFCI Coastwide Analysis



G.E.C., Inc. - Gulf Engineers & Consultants

Final CMUA

Weights 0 to 1

- Strategic Location:
- Ecological Significance:
- Degree of Threat:
- Desirability of Conservation:

generate
cancel

Description

This tool combines the MUA results from each category into a single CMUA providing a comprehensive prioritization of the suitability of lands for participation in the CFCI. The Project Selection Criteria Section of the Synthesis Report has the overall CFCI selection criteria divided into four categories which include Cost Effectiveness, Landowner Cooperation, Community Support, and Components. This tool allows program managers to look at all influential aspects of a potential tract

[help ?] [print map] **exit**

The background of the slide is a photograph of a coastal forest, likely a mangrove. It features several large, gnarled trees with dense green foliage. In the foreground, there are large, weathered tree trunks and roots extending into a body of water. The sky is a clear, bright blue. The overall scene is a natural, serene coastal environment.

Coastal Forest Conservation Initiative Spatial Decision Support System

Tract Analysis Tool

Coastal Forest Conservation Initiative Spatial Decision Support System

CFCI Tract Analysis



Set Up

-  **Set Up**
-  **Cost Effectiveness**
-  **Landowner Cooperation**
-  **Community Support**
-  **Components**
-  **Final CMUA**

Scratch Workspace

Select the scratch workspace folder:

Personal Geodatabase

Select the personal geodatabase to use:

Inputs

Applicant Tract:

 
 Save raster datasets



Description

[help ?] [print map] 

Coastal Forest Conservation Initiative Spatial Decision Support System

CFCI Tract Analysis



Cost Effectiveness

Likelihood of conversion:
 Medium-High

Partnership opportunities:
 Low

Absence of hazardous waste contamination:
 Medium-High

Restoration needs:
 Medium

Target for reforestation or conversion to forested use:
 High

Low
Medium-Low
Medium
Medium-High
High

Description

Parcels that have been targeted for reforestation or conversion to forested land use by other conservation agencies or programs have increased opportunities for partnership and cost-sharing and are consequently more feasible for program acquisition than parcels that have not been so targeted. Targeted reforestation or forest conversion parcels should be assigned a higher numerical score than parcels that have not been targeted.

[help ?] [print map] exit▶▶

Coastal Forest Conservation Initiative Spatial Decision Support System

CFCI Tract Analysis



CFCI
G.E.C., Inc - Gulf Engineers & Consultants

Final CMUA

Weights 0 to 1

Cost Effectiveness:

Landowner Cooperation:

Community Support:

Components:

generate
delete

Description

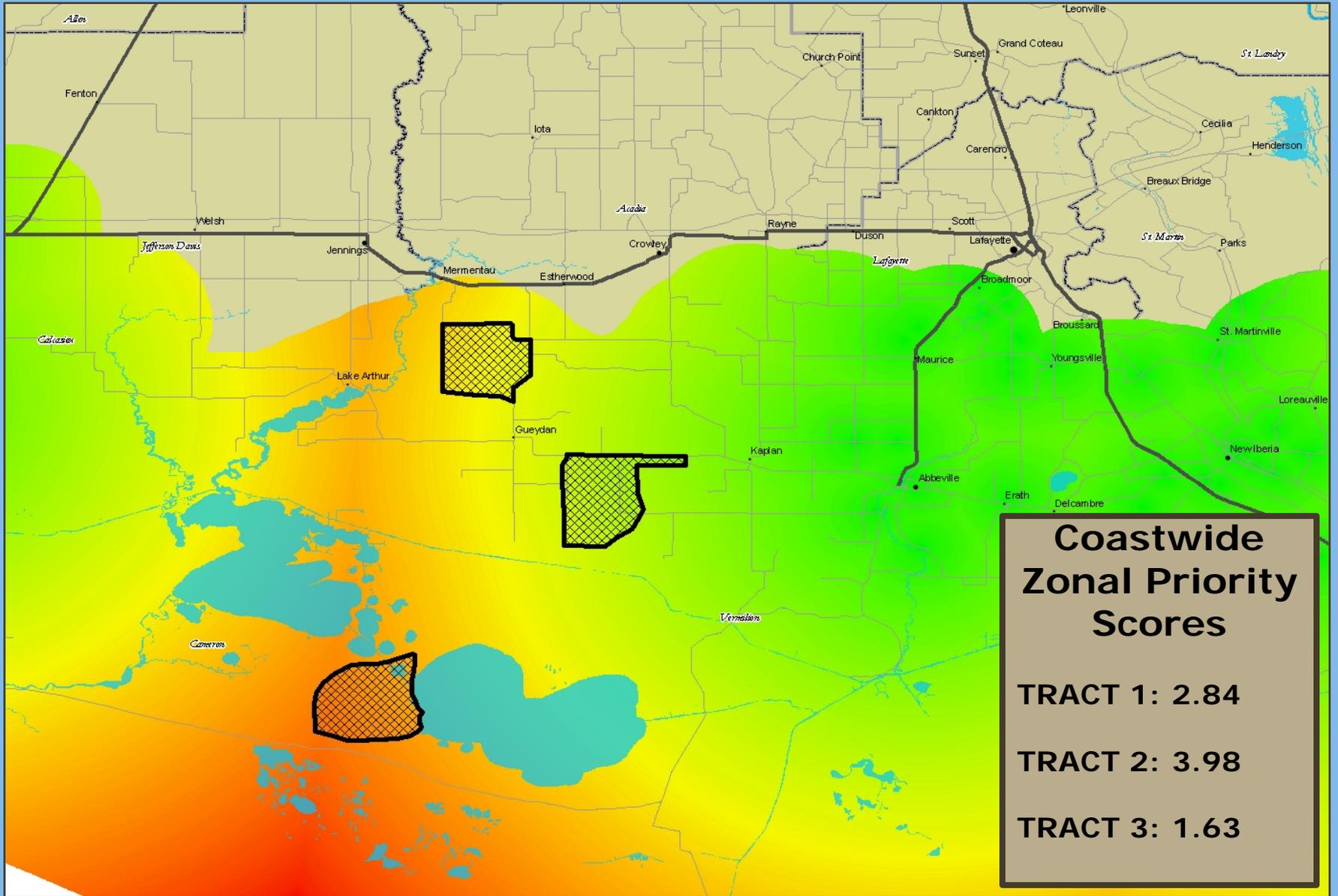
This tool combines the MUA results from each category into a single CMUA providing a comprehensive prioritization of the suitability of lands for participation in the CFCI. The Project Selection Criteria Section of the Synthesis Report has the overall CFCI selection criteria divided into four categories which include Cost Effectiveness, Landowner Cooperation, Community Support, and Components. This tool allows program managers to look at all influential aspects of a potential tract

[help ?] [print map] **exit**

Coastal Forest Conservation Initiative Spatial Decision Support System

Sample Output





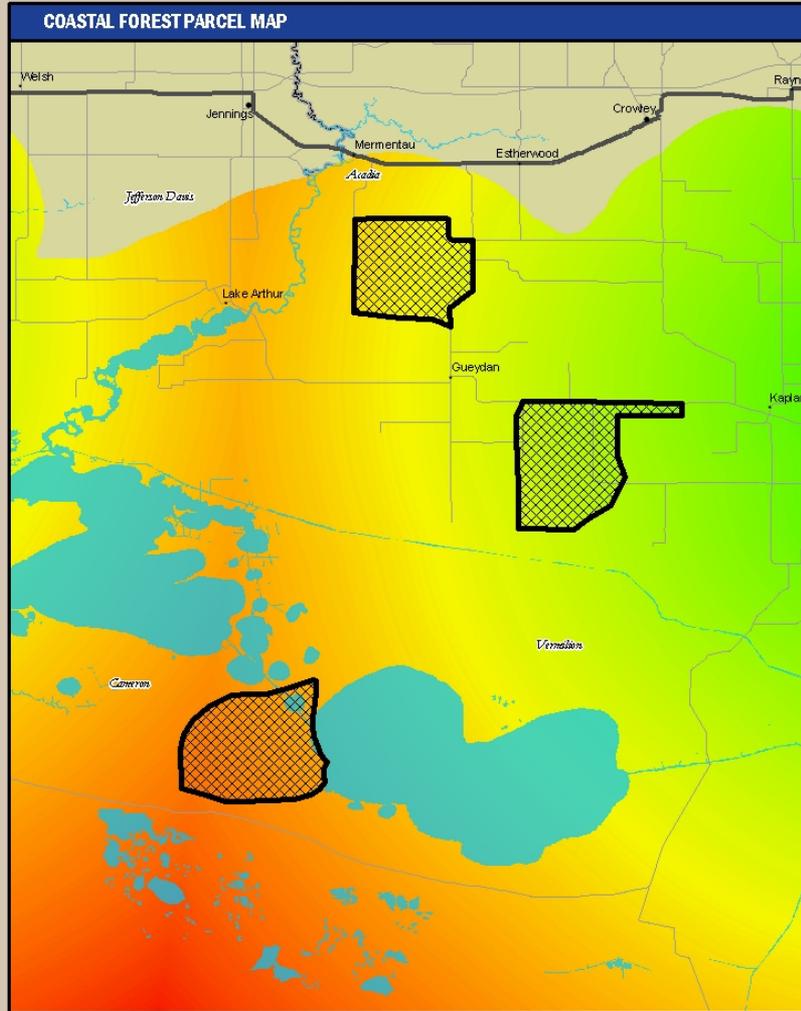
**Coastwide
Zonal Priority
Scores**

TRACT 1: 2.84

TRACT 2: 3.98

TRACT 3: 1.63

All features are graphical representations only and may not reflect true location or dimension. This map is for internal use only. Please contact CPRA staff for information on the CFCI program and use of maps/images.



0 2 4 8 12 16 Miles

1 inch = 27,958 feet

LA CFCI

Louisiana Coastal Forests Conservation Initiative



PARCEL INFORMATION

BKVBLKEQRHGJUEHGQERGOIERHGQEROGHE
 JSEBHFJWEGJQRIGBHWBTOWERGHBWERNHG
 JNVKUSDVJHSDFGQIDFOGHODFJGOIDSEFG
 GNDRGIOEURHGOJREOJGORTJORTJHGQJRTOW
 GJNEDGIUDHGOJDFOGSODFJGQSDFJG
 JAODDFGJODFJGQDFSHGQPSOPFOHPDFJGOHJ
 KHGPOFIGJHOIFDGJHOEDJHOJGIFHOPIFGOHI

OWNER INFORMATION

FHASL: KASDHFKDSAG
 FHASL: KASDHFKDSAG

LEGEND



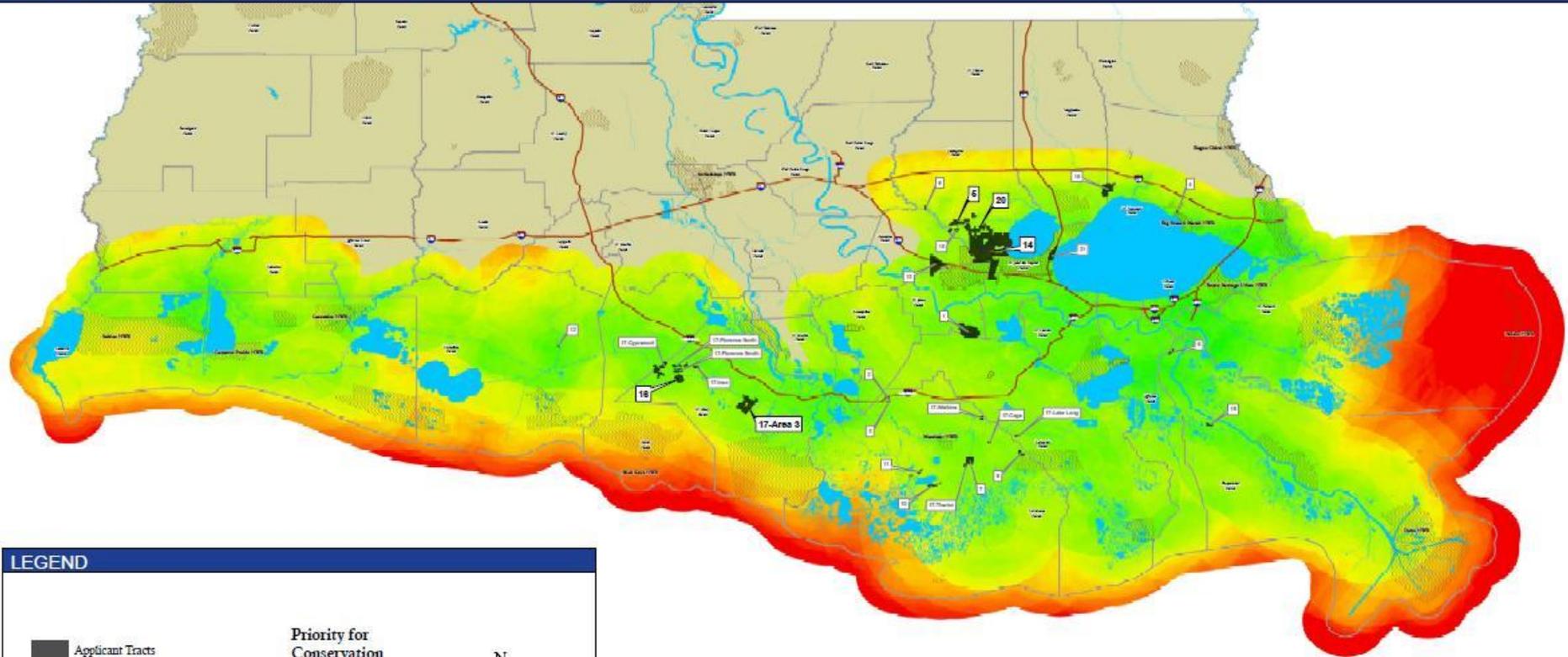
Coastal Forest Conservation Initiative Spatial Decision Support System

• Application

- Applications submitted in Summer of 2010
- 21 applications received ranging from 4-30,000 acres.
- Properties were screened with Coastwide Tool, Tract Tool, & combined SDSS Score
 - Evaluation committee review followed
- Levees and water control artificially enhanced properties so data removed
- All tracts and variables were evenly rated
- Low quality properties received low scores
- Some criteria dropped due to concerns over data quality

Coastal Forest Conservation Initiative Spatial Decision Support System

COASTAL FOREST PARCEL MAP



LEGEND

- Applicant Tracts
- Interstates
- Waterbodies
- Parishes
- Wildlife Management Area/Refuge

Priority for Conservation

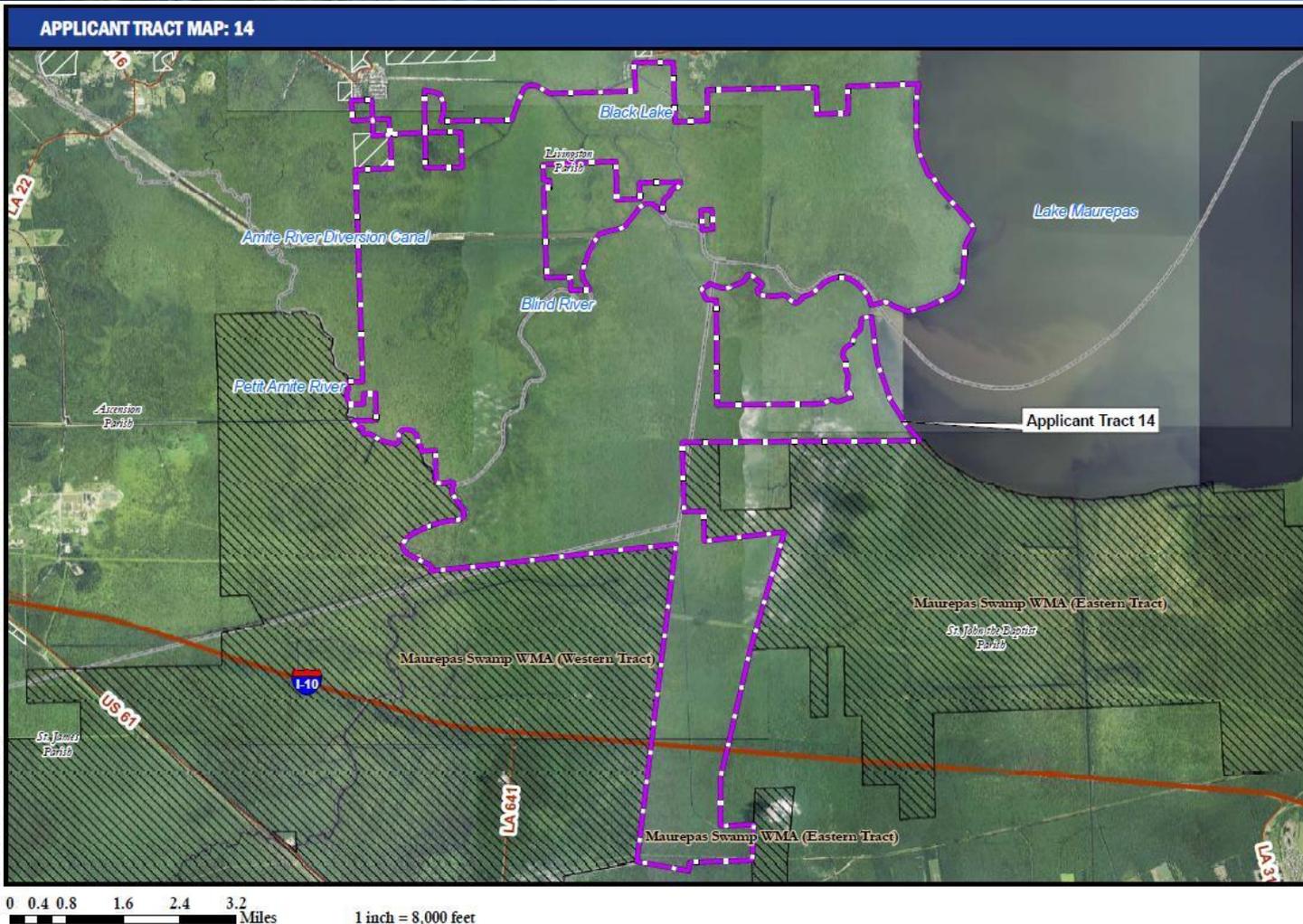
- Low
- Medium-Low
- Medium
- Medium-High
- High



0 12.5 25 50 75 100 Miles

1 inch = 46,000 feet

Coastal Forest Conservation Initiative Spatial Decision Support System

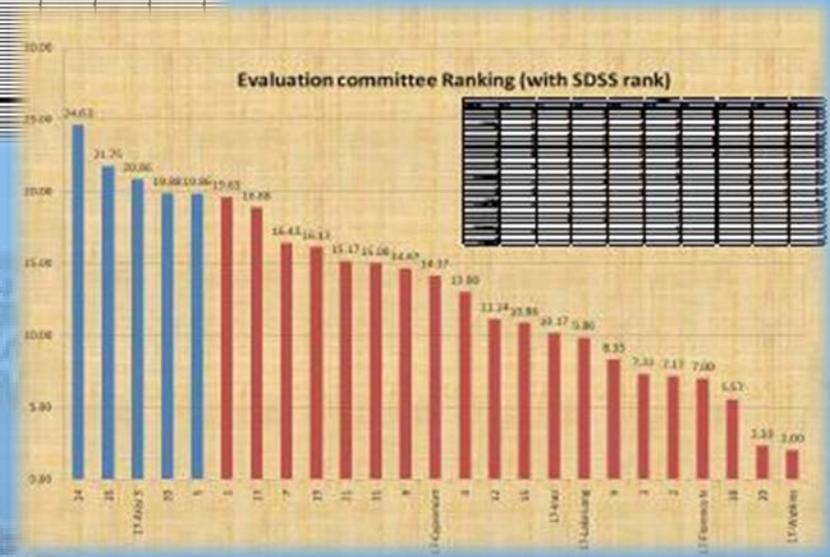


Map Created October 2010 by GEC, Inc. with 2010 NAIP image
Map ID: 278500205-2284

Coastal Forest Conservation Initiative Spatial Decision Support System

This table displays the results of numerous model runs, organized by tract and evaluated against various criteria. The data is presented in a grid format with alternating row colors for readability.

- Numerous iterations of model runs were conducted to evaluate each tract on a variety of criteria and combinations of criteria



Coastal Forest Conservation Initiative Spatial Decision Support System



Coastal Forest Conservation Initiative Spatial Decision Support System

• Summary

- **CFCI SDSS is Functional, Scalable, and Flexible Tool**
 - **Produces Objective Results in Transparent Manner**
 - **Potential to Assist in a Number of Land Planning Capacities**
 - **Complex Geoprocessing Procedures Occur Behind the Scenes**
 - **Tool Based on Sound Theory Accepted in Academics & Industry**
 - **Best Data Available was Utilized and Redundancy Reduced**
 - **Data Availability = Primary Limitation**
 - **Tool is Not the Final Answer**

Questions/Comments

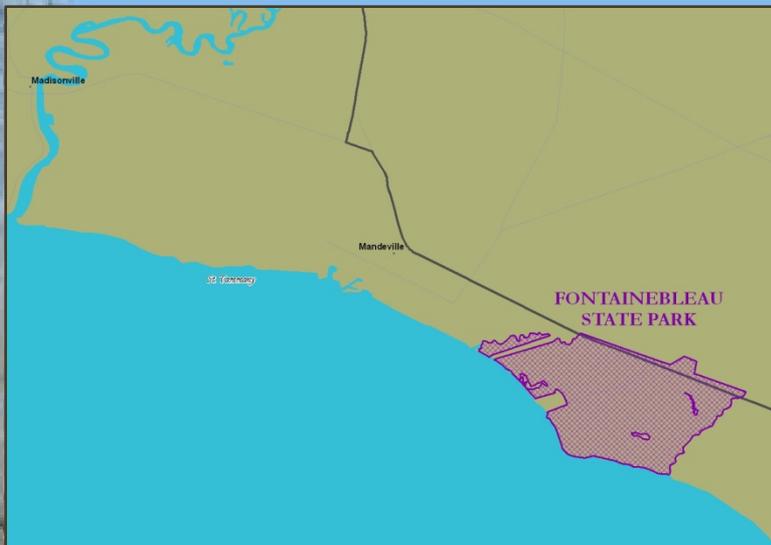
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sward@gecinc.com



Coastal Forest Conservation Initiative Geospatial Decision Support Tool

- **Sample SDSS Run**

- **St. Bernard State Park – St. Bernard Parish**
 - **Adjacent to Mississippi River**
- **Fontainebleau State Park – St. Tammany Parish**
 - **Adjacent to Lake Pontchartrain**



Coastal Forest Conservation Initiative Geospatial Decision Support Tool

- **Strategic Location: Proximity to Coastal Places/Critical Infrastructure**

Fontainebleau



St. Bernard



Coastal Forest Conservation Initiative Geospatial Decision Support Tool

- Strategic Location: Proximity to Storm Protection Features

Fontainebleau



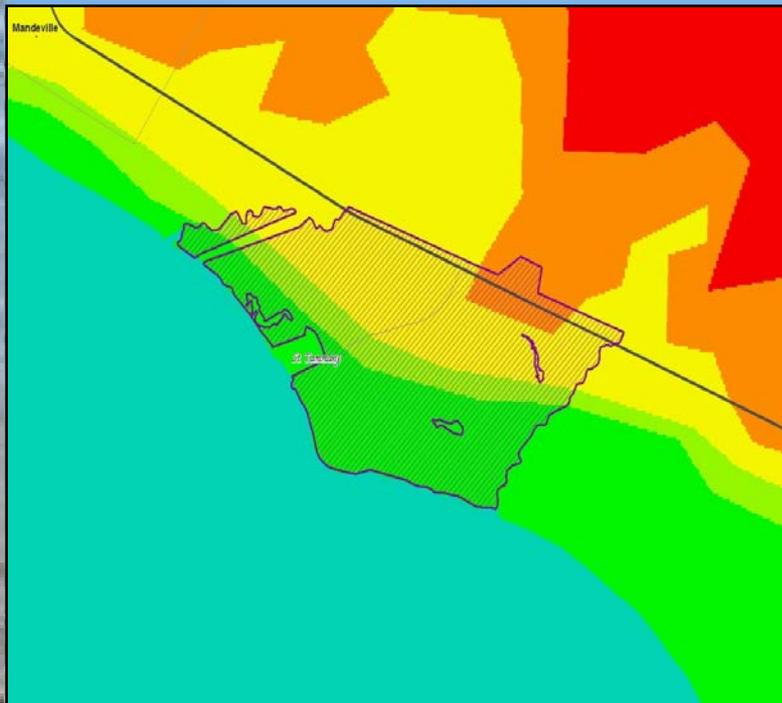
St. Bernard



Coastal Forest Conservation Initiative Geospatial Decision Support Tool

- **Strategic Location: Proximity to Critical Storm Surge Zones**

Fontainebleau



St. Bernard



Coastal Forest Conservation Initiative Geospatial Decision Support Tool

- Strategic Location: Other Proximity Considerations

Fontainebleau



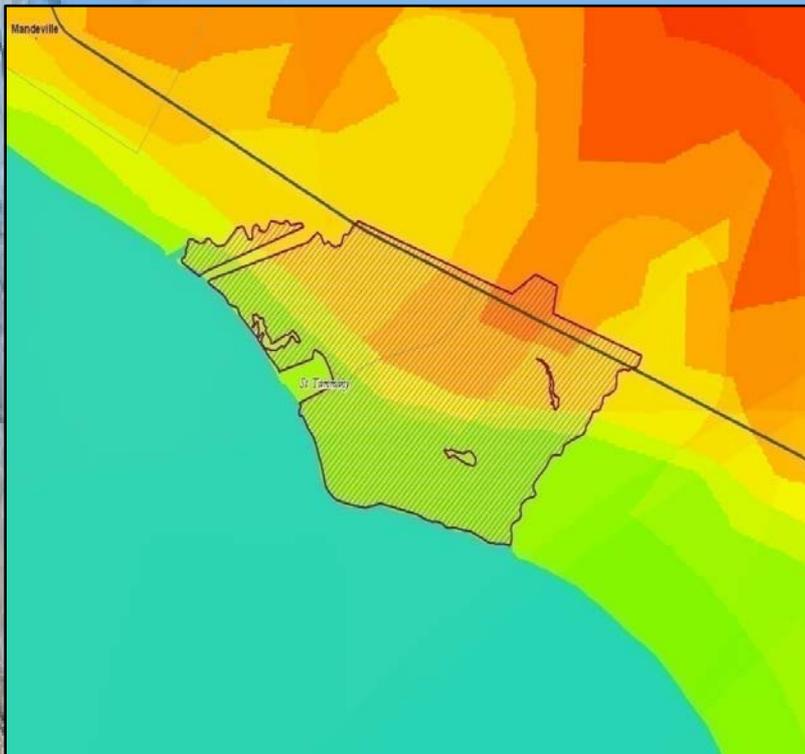
St. Bernard



Coastal Forest Conservation Initiative Geospatial Decision Support Tool

- Strategic Location: Final CMUA

Fontainebleau



St. Bernard



Coastal Forest Conservation Initiative Geospatial Decision Support Tool

- Coastwide Analysis Output

Fontainebleau



St. Bernard

