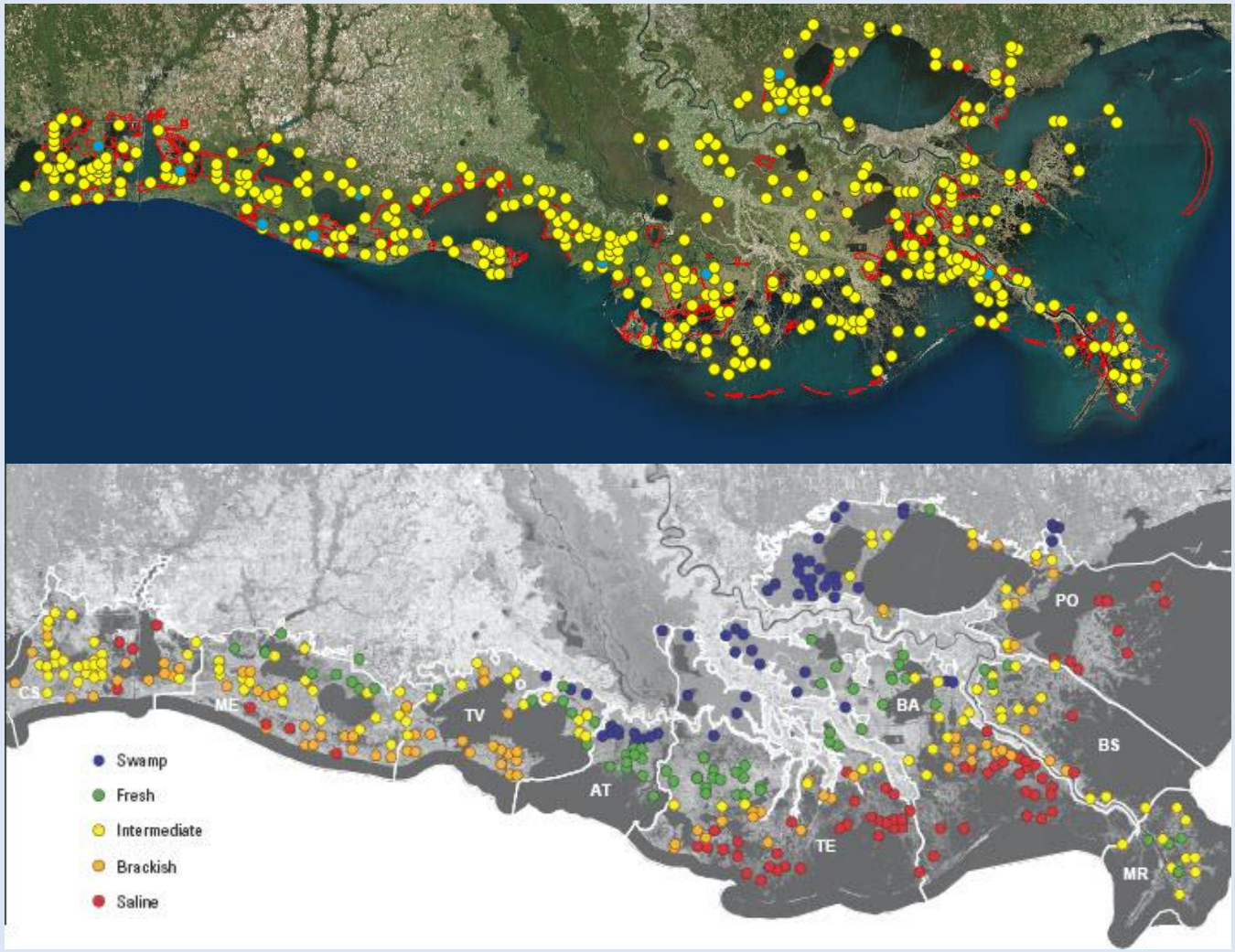
Coastwide Reference Monitoring System

Dona Weifenbach
Coastal Protection and Restoration Authority
and
Sarai Piazza
USGS
September 11, 2014

CRMS Design and Assessment



- Long-term dataset
- 10 real-time hydro

- Sites inside & outside of CWPPRA projects

- Sites in swamp, fresh, intermediate, brackish, and salt marsh

- Data used for future scenario modeling

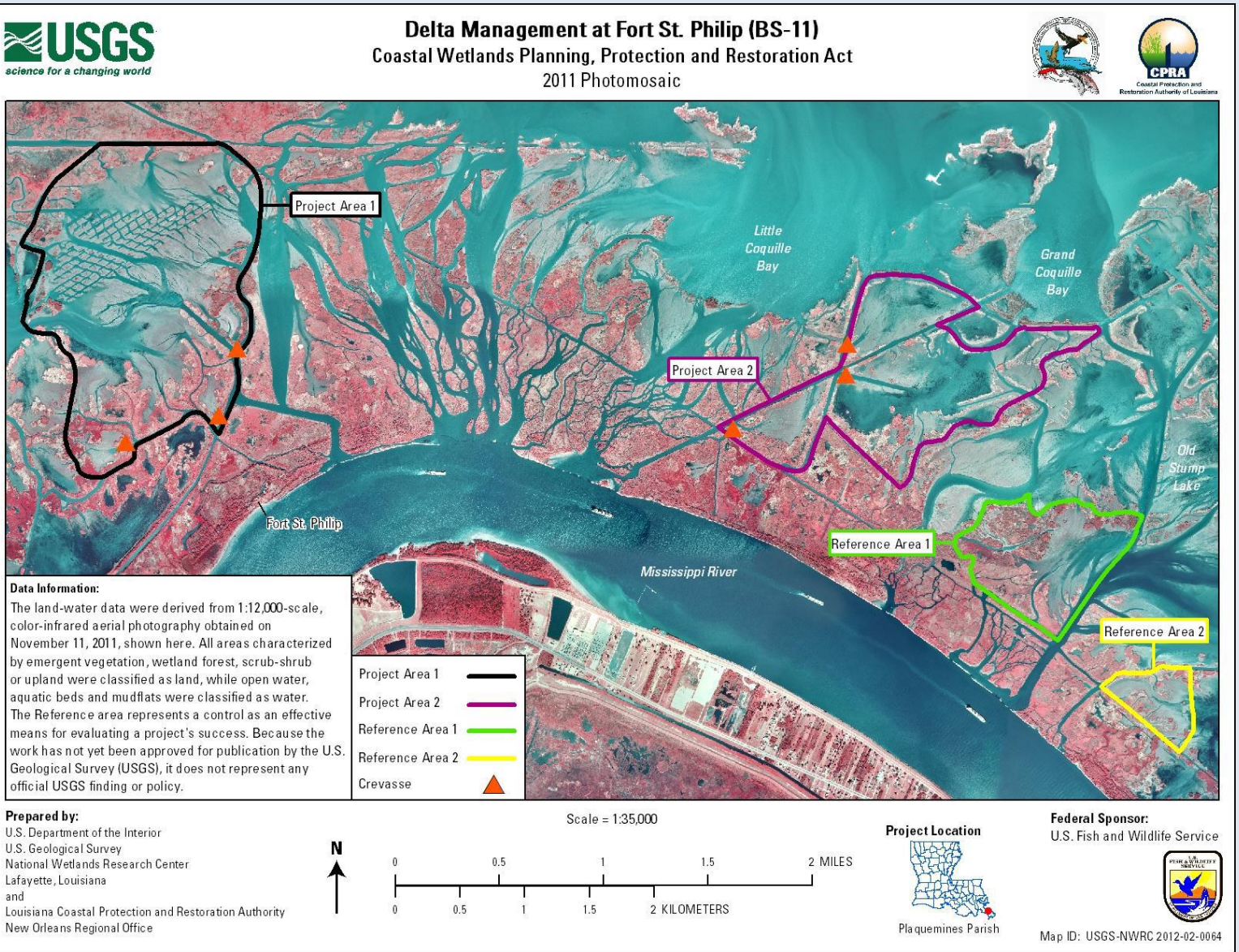
CRMS Website

- CWPPRA (1990) and CRMS (2006) data
- Programmatic documents
- Derived data & products from current data

NEW FEATURES THIS MONTH:

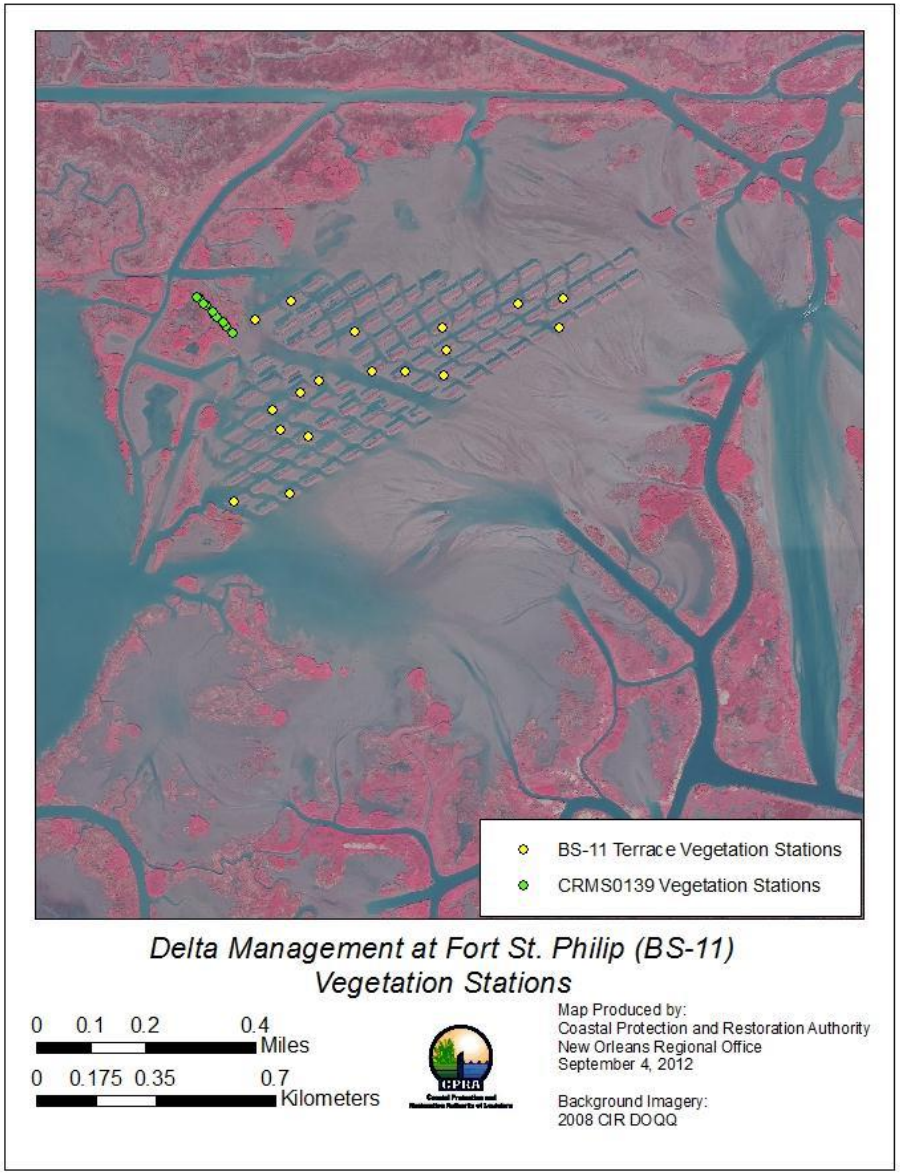
1) Data download from interactive hydro chart,
2) Chart depth of flooding,
3) Landsat TM land change layer,
4) Hydrologic Unit Codes (HUC) layer.

Delta Management at Fort St. Phillip



- Outfall management & sediment trapping near mouth of MS River, constructed in Fall 2006
- 2012 OM&M Report results: terraces are capturing sediment and project is building subaerial land

Delta Management at Fort St. Phillip



- Project Specific vegetation stations on terraces to monitor plantings. Data collected 2007 and 2011, again in 2016 and 2021
- CRMS site in project area
- Emerging mudflats being colonized

Report Carding

Coastwide Reference Monitoring System (CRMS)

Site Level Report Card

Site: CRMS0139
Year: 2013

7/24/2014

About the Interactive Report Card

Through the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) a comprehensive, standardized monitoring and assessment program has been developed to evaluate coastal restoration projects throughout the Louisiana coastal zone. The Coastwide Reference Monitoring System (CRMS) collects monitoring data for numerous ecological variables. Using CRMS data, indices have been developed to assess wetland hydrology, vegetation, and soils. This interactive report card provides summary information and displays index scores for individual CRMS sites, restoration projects, hydrologic basins, and the entire Louisiana coast.

Index Development

What is an Index?

An index combines and synthesizes scientific data to help inform or assess a topic of interest. Each index helps explain the condition of a particular aspect of the coastal wetland ecosystem. By comparing indices at various time and spatial scales we can understand the overall condition of coastal wetlands in Louisiana.

How were the indices developed?

CRMS Analytical Teams, made up of agency and academic personnel, developed indices based on the suite of parameters available from the 2006 to 2009 CRMS dataset. Three indices have been developed: a floristic quality (FQI), hydrologic (HI), and submergence vulnerability (SVI), and a landscape index is currently being refined. Wetland vegetation, hydrology, and soils are undeniably interconnected and form the basis for ecological processes that ultimately influence future land change and the sustainability of coastal habitats. Although these indices have been developed using 4 years of baseline CRMS data, the indices will be refined to better define ecological relationships as the data set becomes more robust overtime.

Because no regulatory thresholds exist for the ecological parameters of interest, it was not possible to assess index scores based on previously defined values that would indicate an acceptable or unacceptable score. Therefore, for the FQI and the HI, assessments were made relative to a baseline distribution of the index scores derived from 2006 to 2009 data at CRMS sites across the Louisiana coast. Because ideal thresholds were not available for the FQI and HI, scores were classified as 'good' (green) if they exceeded the 75th percentile of index scores calculated for all CRMS sites during the baseline period, 'poor' (red) if they did not exceed the 25th percentile, or 'fair' (yellow) if they were intermediate to the 25th and 75th percentiles (Figure 1).

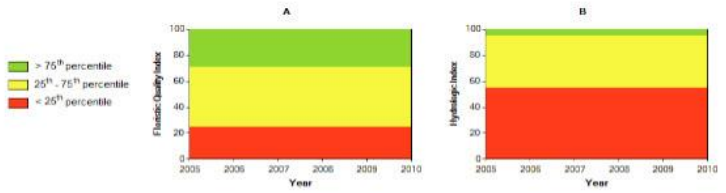
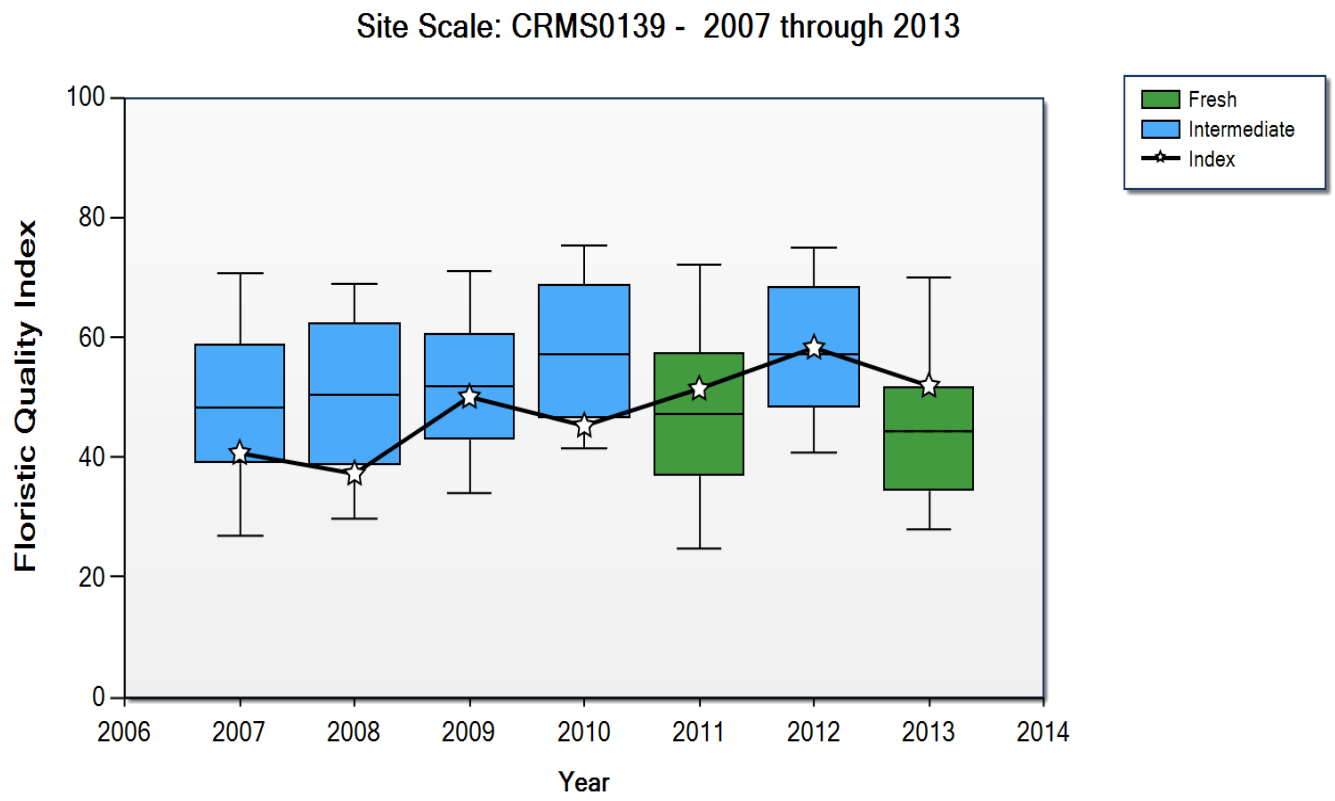


Figure 1. Example of how classifications change based on the assessment index and index score distribution. A) Floristic Quality Index distribution and B) Hydrologic Index distribution based on coastwide data from 2006 to 2009.

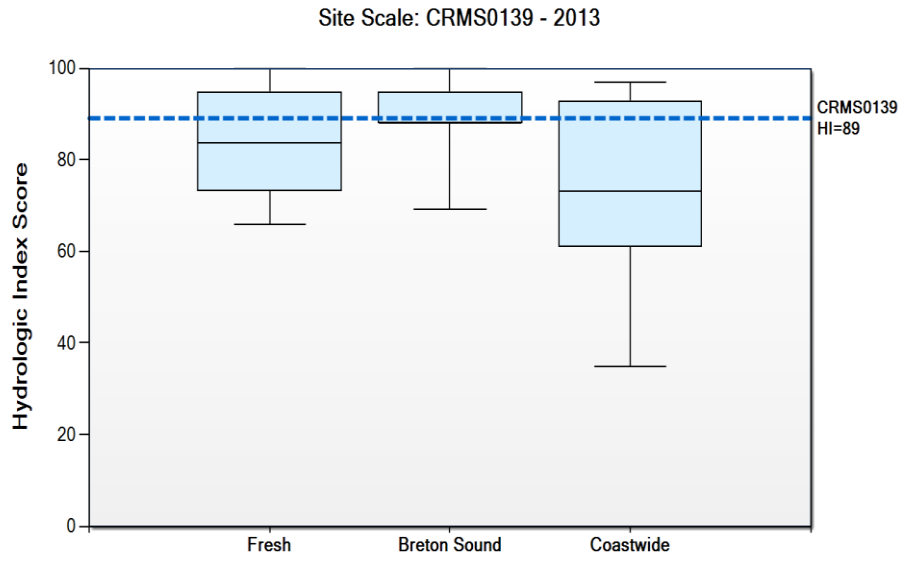
Vegetation Site Scale Assessment



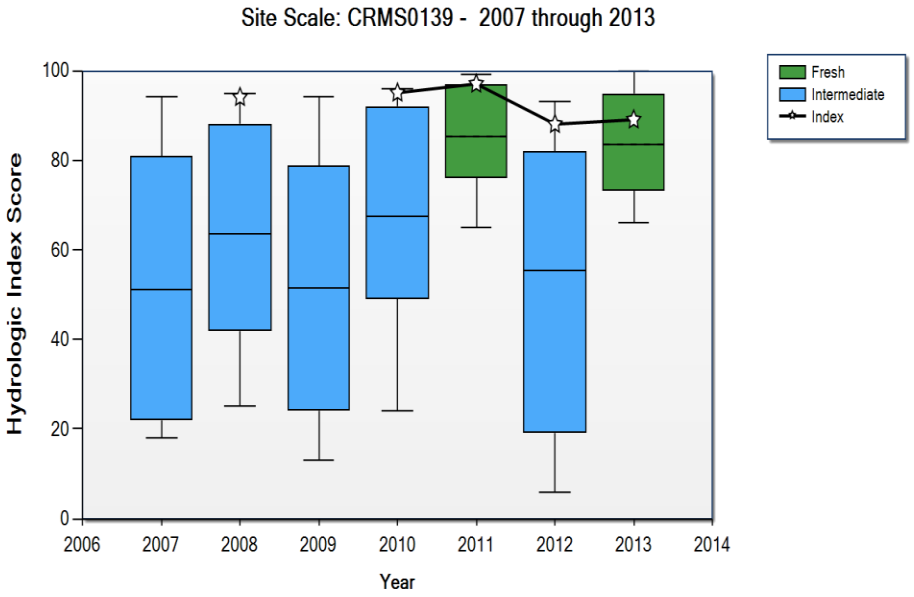
Annual site FQI scores in relation to the distribution of scores in similar marsh types each year.

- Based on species composition, CRMS site switched back and forth from fresh to intermediate marsh during wet years

Hydrologic Index Site Scale Assessment

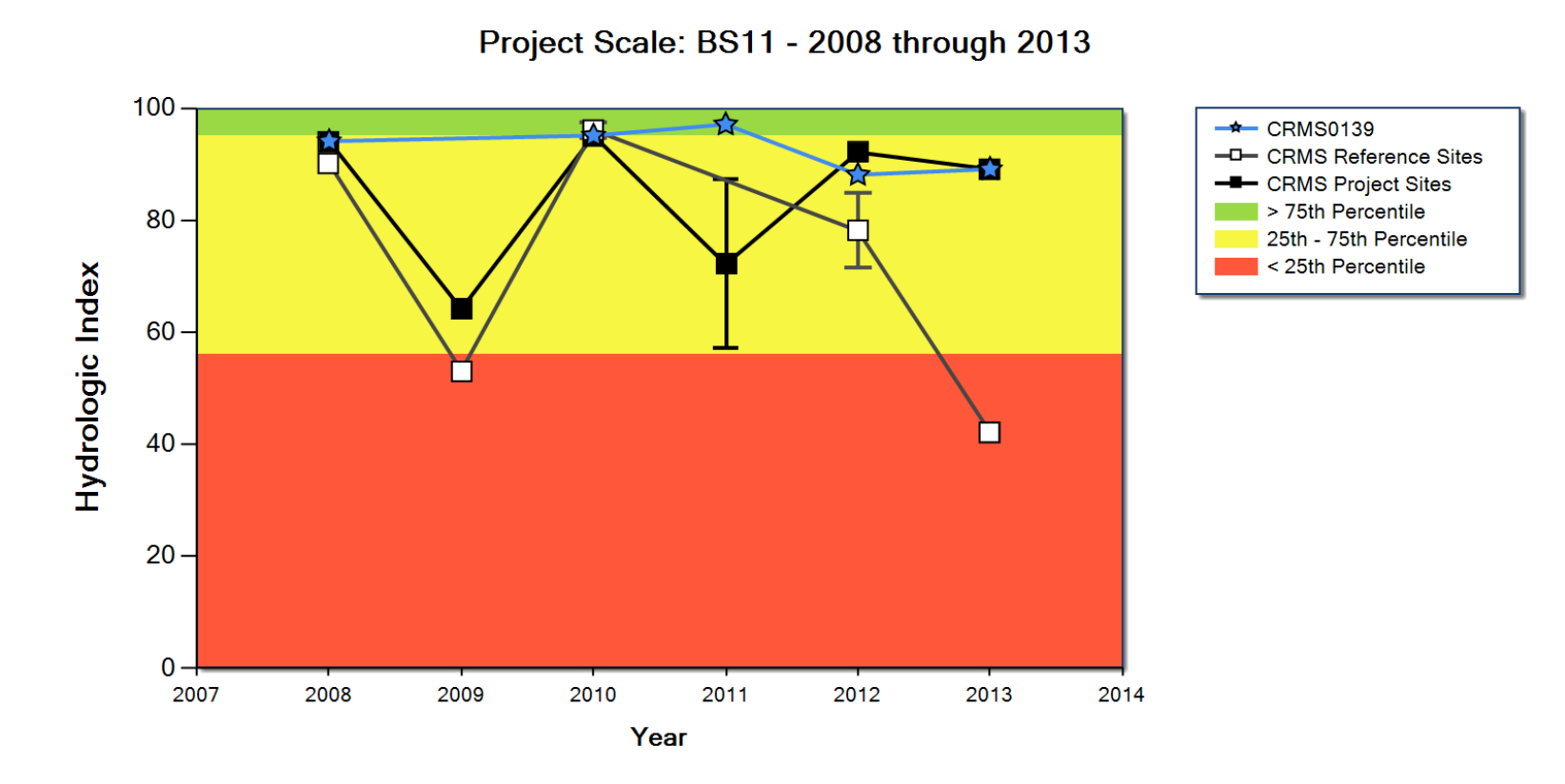


Site HI score relative to similar marsh type, basin, and coastwide scores.



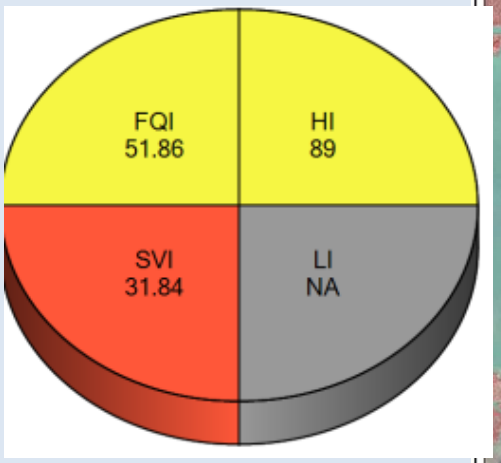
Annual HI scores in relation to the distribution of scores in similar marsh types each year.

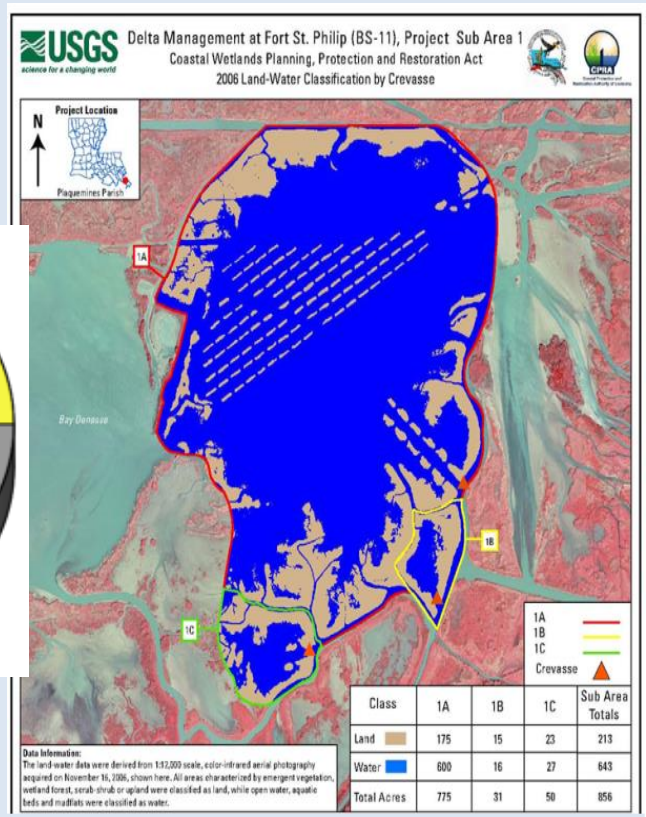
BS-11 Project Assessment

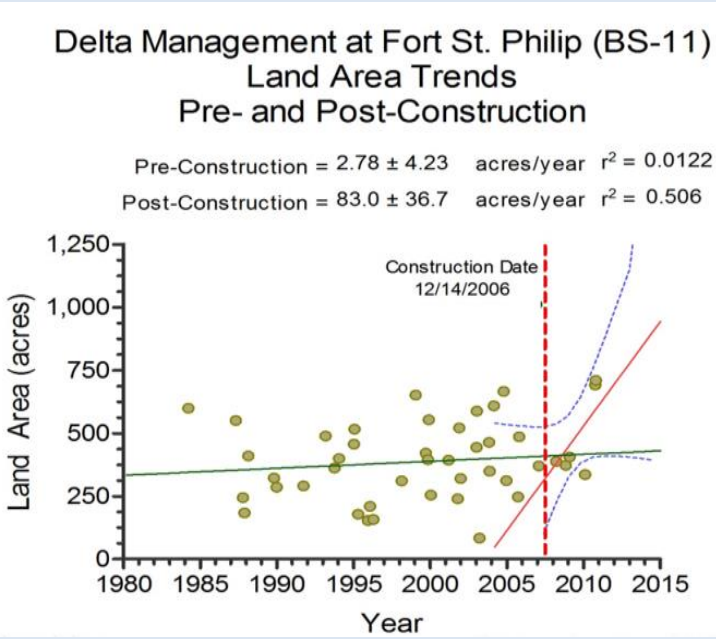


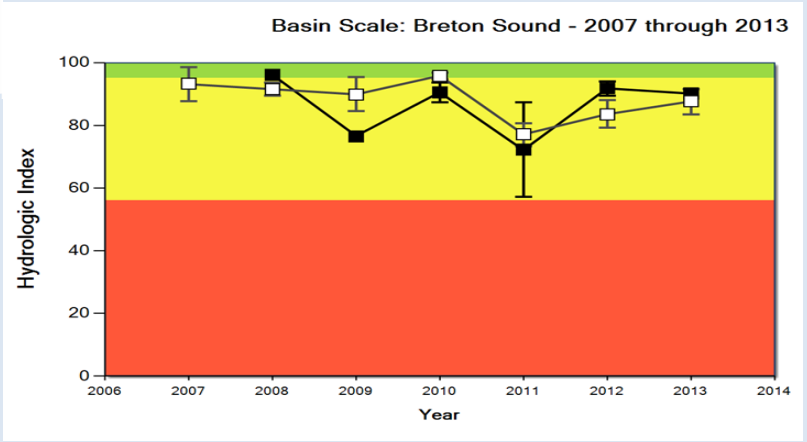
- HI for CRMS site compares against CWPPRA project and reference sites in that marsh type in the Breton Sound Basin

Overall Project Assessment









Layering CRMS data from different spatial scales helps resource managers evaluate projects

CRMS Implementation Status

Milestones

- OM&M Reports in progress for 2014
  - BA-20 Jonathan Davis Wetland Protection (NRCS)
  - BS-03 A Caernarvon Outfall Management (NRCS) **
  - CS-18 Sabine Refuge Shoreline Protection (USFWS)
  - CS-24 Perry Ridge Shore Protection (NRCS)
  - CS-28 Sabine Refuge Marsh Creation Cycle 3 (COE)
  - LA-08 Bioengineered Oyster Reef Demonstration (NMFS)**
  - PO-17 Bayou Labranche Wetland Creation (COE)
  - ME-04 Freshwater Bayou (NRCS)
  - PO-24 Hopedale Hydrologic Restoration (NMFS) **
  - PO-33 Goose Point/Point Platte Marsh Creation (USFWS)
  - TE-26 Lake Chapeau Sediment Input and Hydrologic Restoration (NMFS)
  - TE-28 Brady Canal Hydrologic Restoration (NRCS)**
  - TV-04 Cote Blanche Hydrologic Restoration (NRCS)
  - TV-09 Boston Canal Shoreline Protection (NRCS)
  - TV-14 Marsh Island Hydrologic Restoration (COE)

- Website training scheduled in Baton Rouge on Wednesday, October 1 in the LaSalle Building
- CRMS presentations at SOC, CEER, RAE, participated in monitoring workshops with GOMA and NAS
- Forested Floristic Quality Index publication in review, report card graphics being developed.

CRMS Implementation Status

Milestones

- Coast-wide Elevation Survey of all 390 CRMS sites April – August 2014. Three contractors were selected to perform the work concurrently by regional office. All sites surveyed to NAVD88 Geoid 12a.
  - East 137 sites, John Chance Land Surveys
  - Central, 114 sites, T. Baker Smith
  - West, 139 sites, C&C Technologies

- CRMS 2012 Coastwide Aerial Photography land/water products are available on the CRMS website

- Present CRMS contract expires July 31, 2015. Preparations for next contract are in progress.

http://www.lacoast.gov/crms2