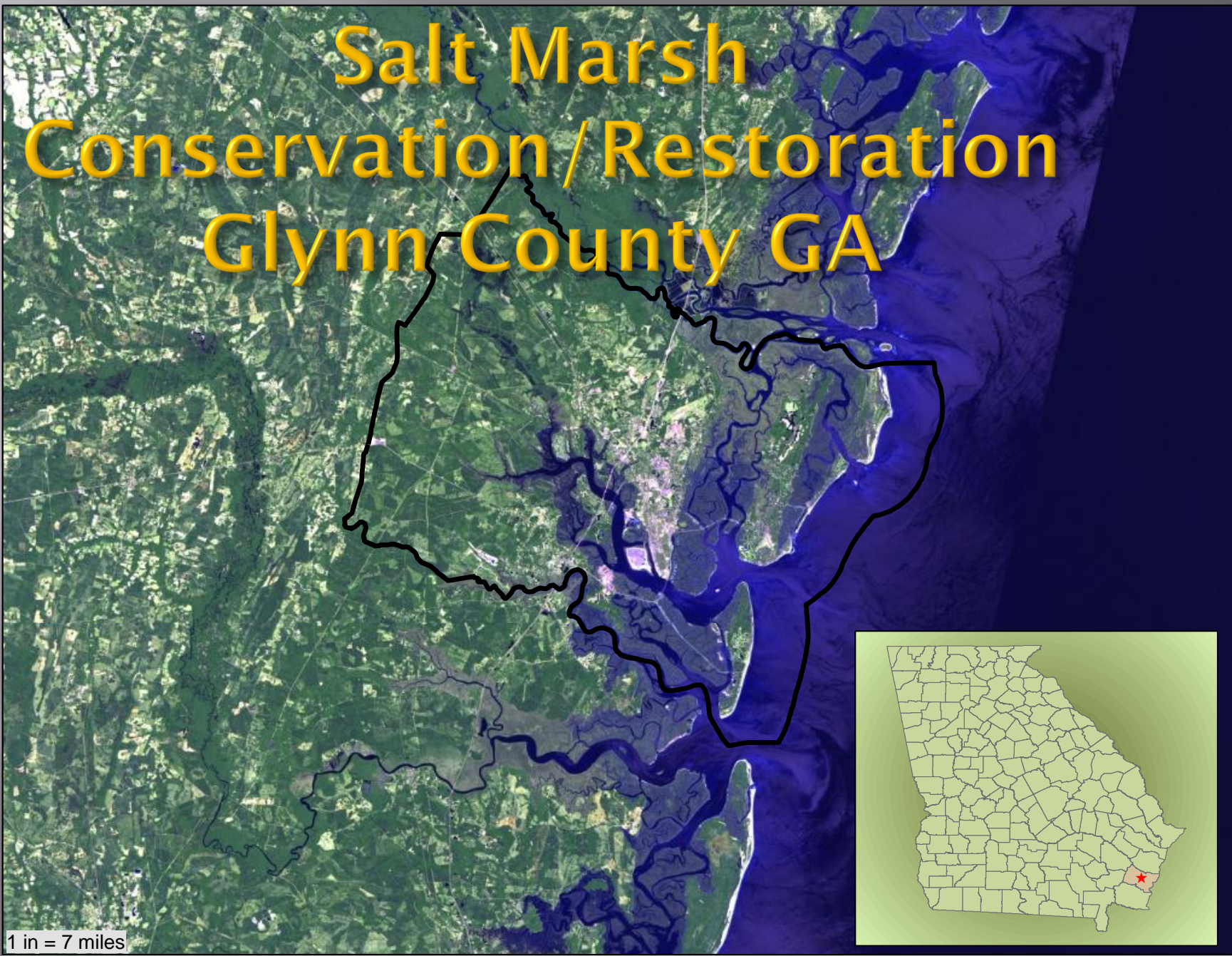


Salt Marsh Conservation/Restoration Glynn County GA



1 in = 7 miles

What?—Development and Salt Marshes have not mixed well

- ▣ Development has effected many of our salt marshes in unwanted ways
- ▣ Development will continue in Glynn County and the county is surrounded by salt marshes
- ▣ Development will continue to impact the salt marshes
- ▣ Salt marshes are viewed as our most important natural resource and deserve our protection
- ▣ Our track record is flawed

Types of effect

- ▣ Degraded/ Un-maintained Mosquito Control Ditches
- ▣ Roads/Causeways/Dykes/Dams/Bike Trails
- ▣ Insufficient size of bridges to allow flow
- ▣ Impoundment Walls
- ▣ Dredge dumped straight into marsh
- ▣ Channelization
- ▣ Mismanagement of water control structures such as flood gates

Mosquito Control Ditches





Southwest Jekyll Degraded Ditches



South Jekyll Ditched Marshes



South Jekyll ditch degradation



Bike Trails



Wooden sea wall presumably for impoundment on Little Saint Simons Island



Spoil adjacent to Jekyll Island Airport



Channelization

Oak Grove Island



Site East of Oak Grove Island



Glynn County, Georgia Map Showing Mosquito Migration Patterns and Breeding Sites

Wayne County

McIntosh County

4

8,000 4,000 0 8,000 Feet

Brantley County



Camden County

ATLANTIC OCEAN

Prevailing Winds During
Summer Months
East South East

Salt Marsh Mosquitos
can fly into winds up to
3 MPH and with the
wind faster than that.

Legend	
	Salt Water Breeding Sites
	Fresh Water Breeding Sites
	Historical Migration Patterns
	Glynn County Roads
	Upland
	Water
	Marsh
	Glynn County Boundary

Note: Mosquitos can travel eight miles per day
and can have a range of 20 miles.

This map is a product of the Glynn County Geographic Information System (GCGIS). The GCGIS expressly disclaims any liability that may result from the use of this map.

October, 2006





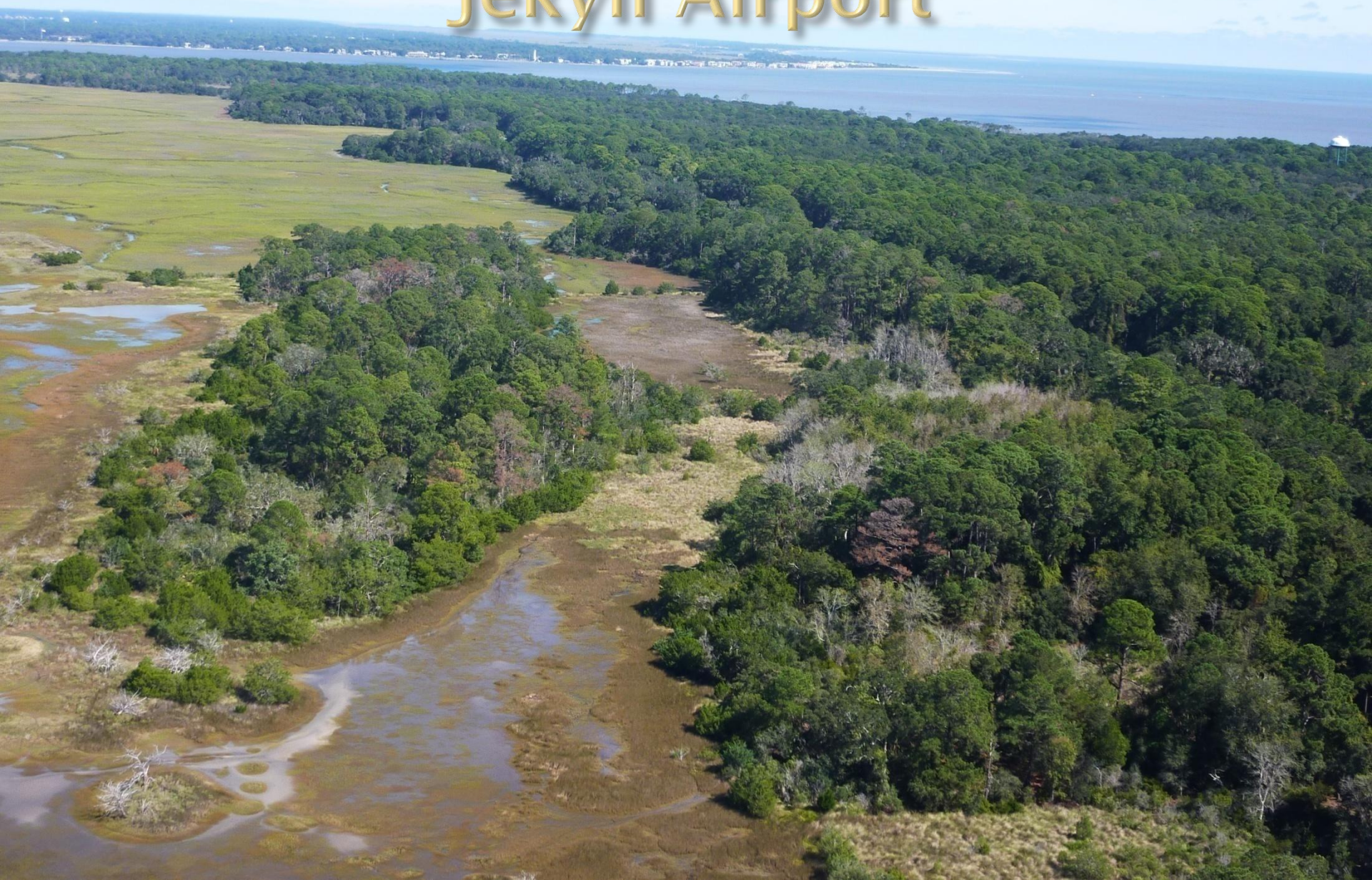


Oak Grove Causeway Looking West During Low Tide





Site cut off by old dykes North of Jekyll Airport



I-95 Spoil



Why do we have the problem?

- ▣ No one knows how to do it
- ▣ To correct the problem we have tried ditching
- ▣ Tide gates
- ▣ The ditches have worked well but need maintenance
- ▣ Never knew how many ditches how long or how deep
- ▣ How wide does the mouth of the ditch need to be
- ▣ How important is the sheet flow



Northern Most Marsh On Jekyll Island

An aerial photograph of a marsh on Jekyll Island, Georgia. The image shows a winding stream or ditch cutting through a large, flat marsh area. The marsh is covered in green vegetation, likely grasses and sedges. The stream is a light blue color, contrasting with the green. The marsh is bordered by a dense forest of tall, thin trees, possibly pines or cypresses. In the foreground, there is a sandy beach with some driftwood and debris. The overall scene is a natural, undisturbed landscape.

Ditches may have permanently fixed the problem as far as mosquito source reduction....Nature seems to have accepted our solution

North Jekyll Island ditch degradation





North Jekyll
Island ditch
degradation

Ditches on Southern End of the Sanchopan Marsh on LSSI are facilitating diurnal flow





2009 / 4 / 10

W:081 17° 19.39"
N:031 15° 27.12"

These marshes may breed mosquitoes

- ▣ These insects fly many miles with the wind
- ▣ Many sites could become breeders if they aren't already
- ▣ Some previously ditched but will breed again if not maintained
- ▣ Intercoastal waterway may be effected--\$\$\$\$\$

Jekyll Island Causeway



▣ Latham Creek





Span Bridge in South Interior of Jekyll Island



Span bridging the whole width of a marsh may not be necessary





Who makes the decisions to develop

- ▣ Elected officials rely on is the calculations of the developing engineers
- ▣ Corps of Engineers tried to attempt marsh mitigation on Andrew's Island – We just dug the land down to the average height above mean sea level that spartina alterniflora grows
- ▣ Oak Grove – no one could make a decision on a fix so the county just left one gate open

Sidney Lanier Bridge Mitigation Site



Southeast Andrew's Island Marsh Mitigation Project

Corp of Engineers cut the dredge down to the elevation of other spartina marshes and plugged with *Spartina* sp. grass





Initial Proposal/New Consideration

An aerial photograph of a coastal marshland. A winding river flows through the center-right of the image. The marsh is divided into a grid of rectangular plots by a network of ditches. The vegetation is a mix of green and brown, indicating different stages of growth or water levels. In the background, a sandy beach and the ocean are visible under a clear blue sky.

Maintain Current Ditches and maybe use ponds to harbor predatory fish to control larvae

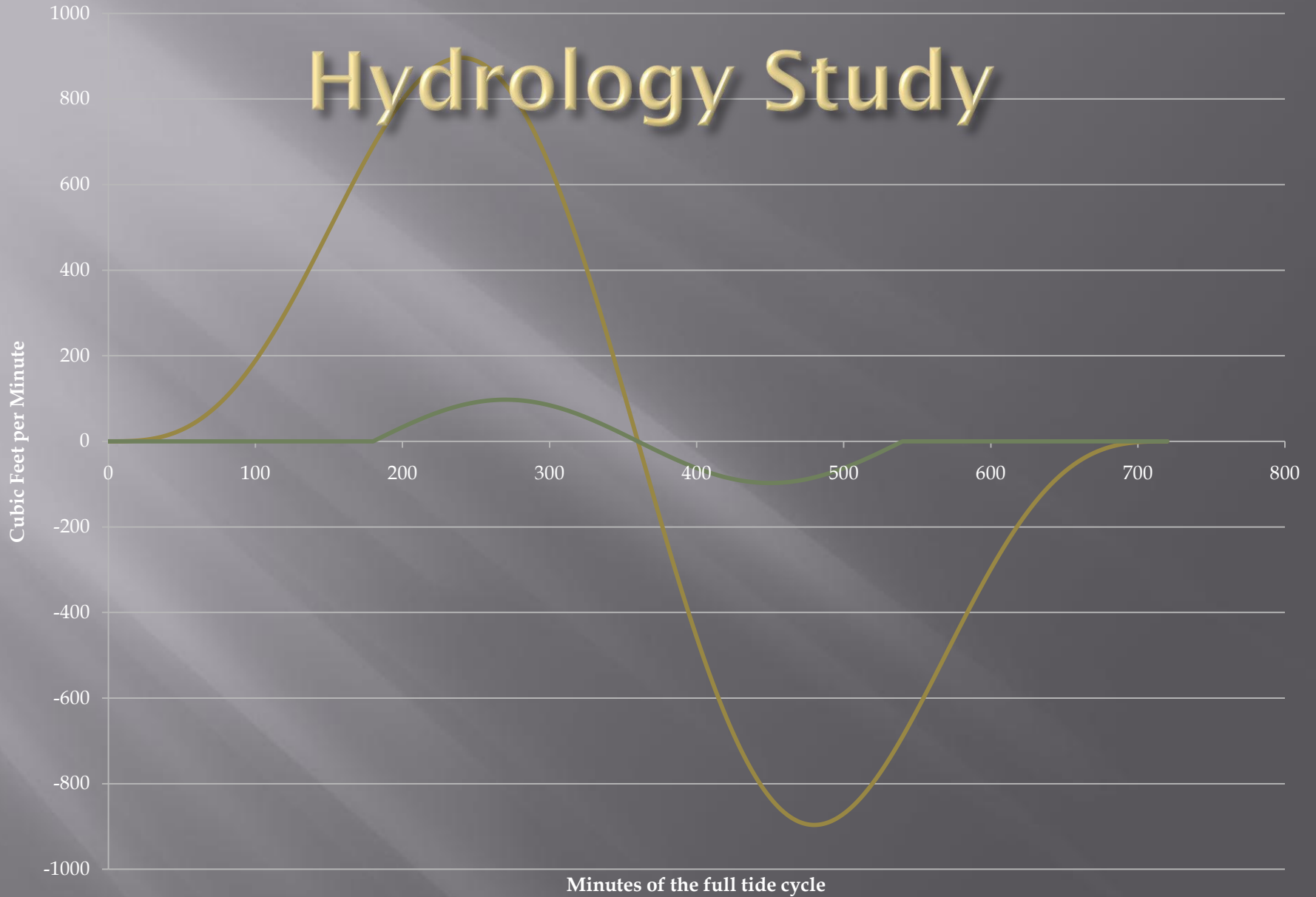
May have found a better way

Looking for a solution/options we modeled and may be onto something here that can accurately predict tidal volumes and therefore protect the marsh from future well intended but ill conceived modifications

Big and Small Projects –A “Few Real Winners”

- ▣ We would like to test our model on presently degraded models
- ▣ LSSI North Sanchopan, Jekyll Clam Creek bike trail, Oak Grove island
- ▣ Before and after data
- ▣ Years to monitor time it takes for recovery
- ▣ Looking at biota – So many disciplines involved
- ▣ Proper, accurate portrayal of the model will need many different sciences in order to be reputable for future reference

Hydrology Study



— Flow Rate through a 25 ft wide bridge

— Flow Rate through two 18" Culverts

Clam Creek Healthy marsh

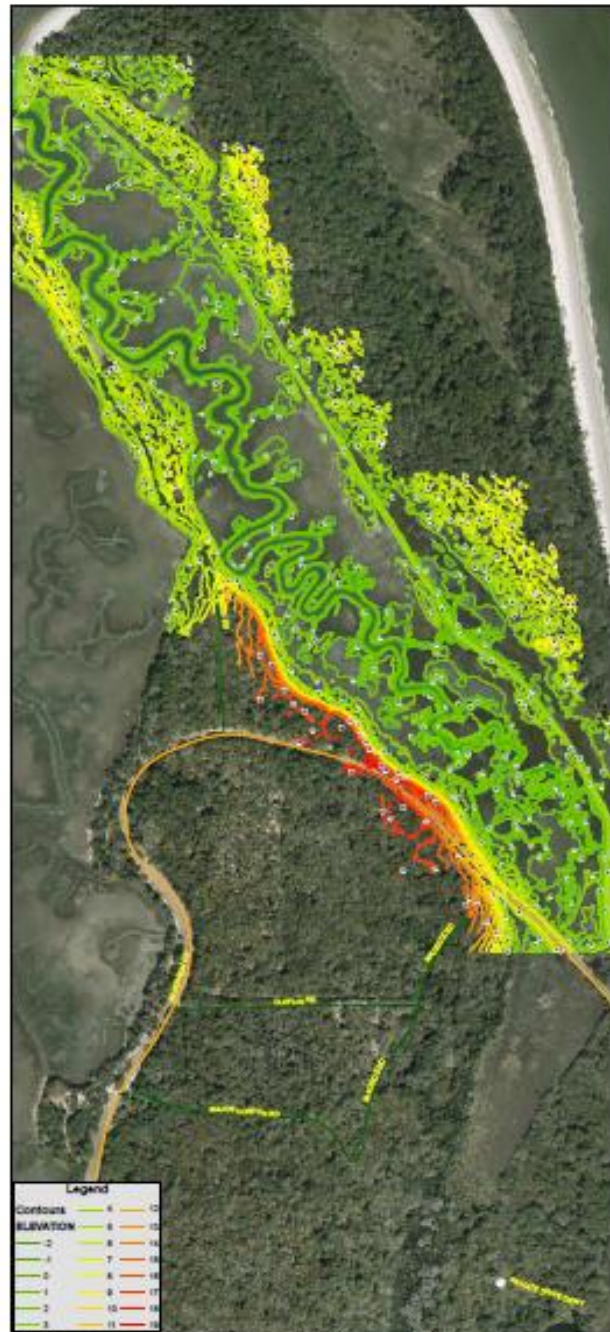
POSSIBLE BRIDGE
LOCATION

CLAM CREEK STUDY SITE

NO STEP





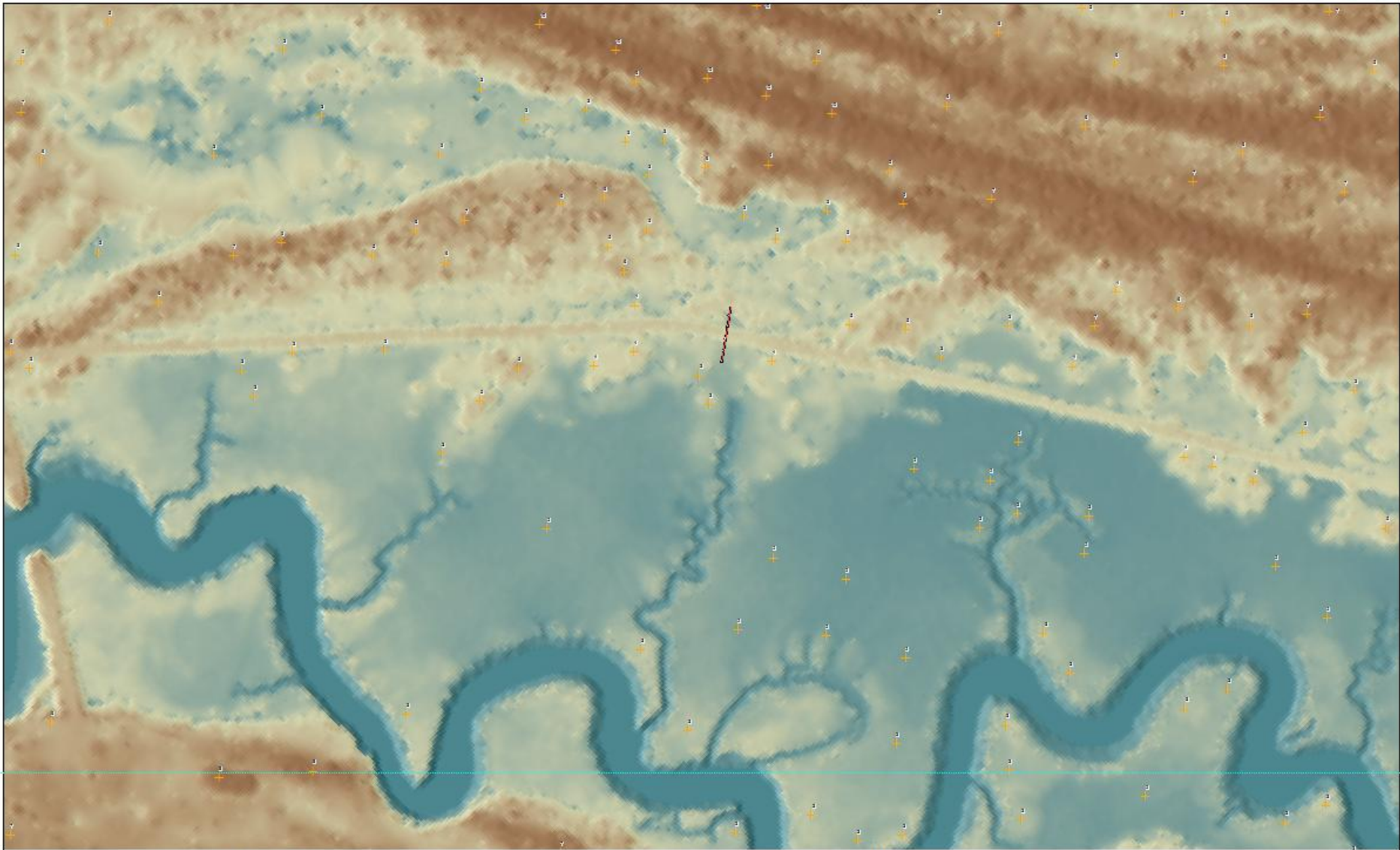


Clam Creek
Glynn County, Georgia

Thanks to staff of the Glynn County Planning Commission, Board of Commissioners, and the Glynn County GIS Department for their assistance in the creation of this map.







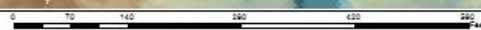
Legend

LIDAR spot water

Elevation

Color	Value
Light Blue	High
Dark Blue	Low

The topography depicted herein was derived from LIDAR data acquired in 2007. High data values are depicted in brown decreasing in elevation to blue color. The low relief areas are shown in a combination of elevation data and the drainage characteristics. The LIDAR approximation data is provided to give a better reference of elevation across the map.



1 inch = 70 feet



Glynn County, Georgia
Clam Creek

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DATE: 11/20/2009



Clam Creek Study Site





Y	X	Elevation
31.11796389	-81.41454444	3.15
31.11621944	-81.412825	3.01
31.11550278	-81.41350556	2.14

0 125 250 500 Feet

1 inch = 250 feet



Glynn County, Georgia
Autodata Logger Locations
Adjacent to Clam Creek



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02/03/2010

Bike path 18" above marsh















Mosquito Larvae in Marsh potential site for salt marsh hydration project

3.5 acres that breed after spring
tides due to poor drainage of salt
water



8/11/08

8/11/08











03/17/2010 03:34



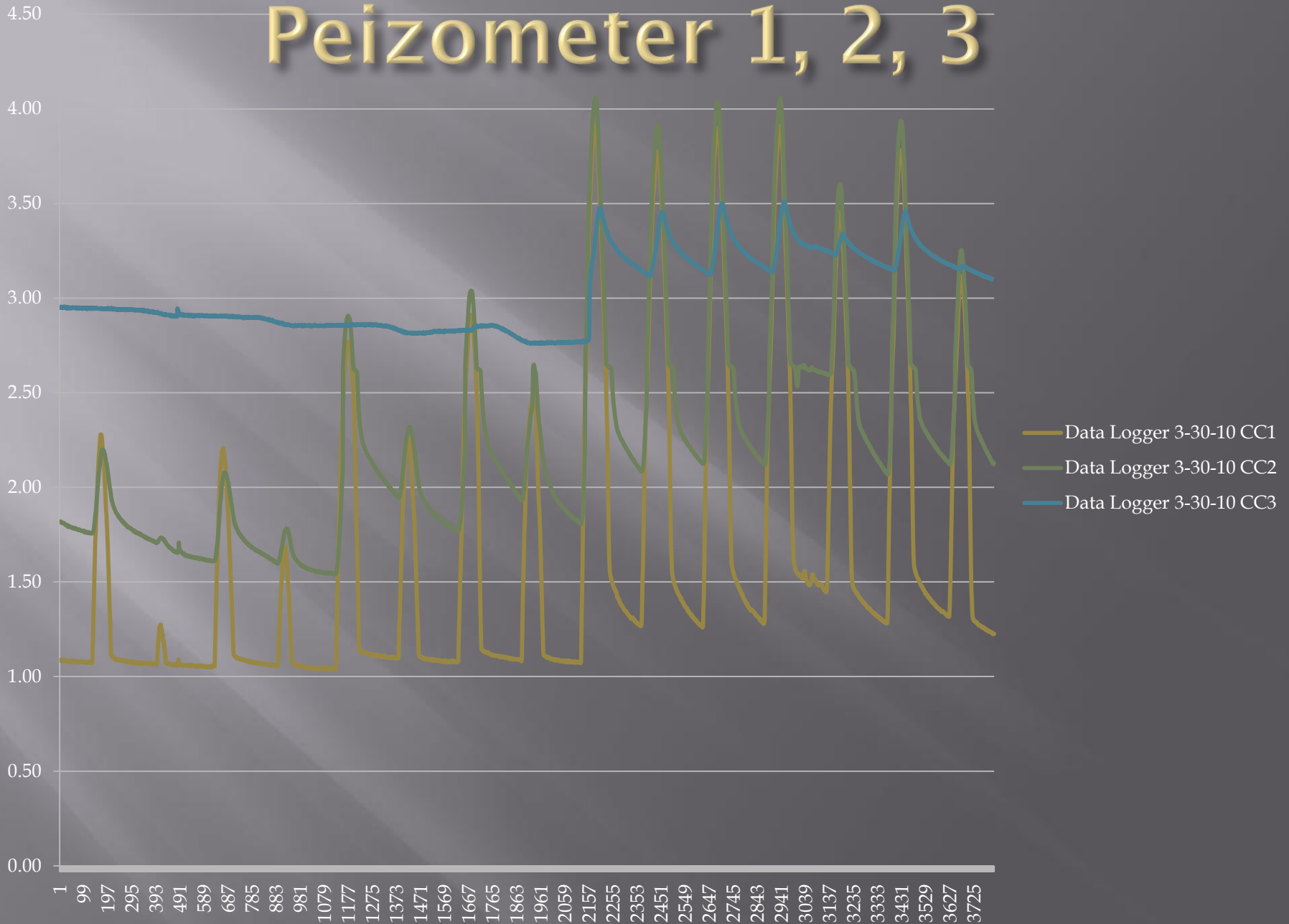
PUBLIC WORKS
WISGATS CONTROL

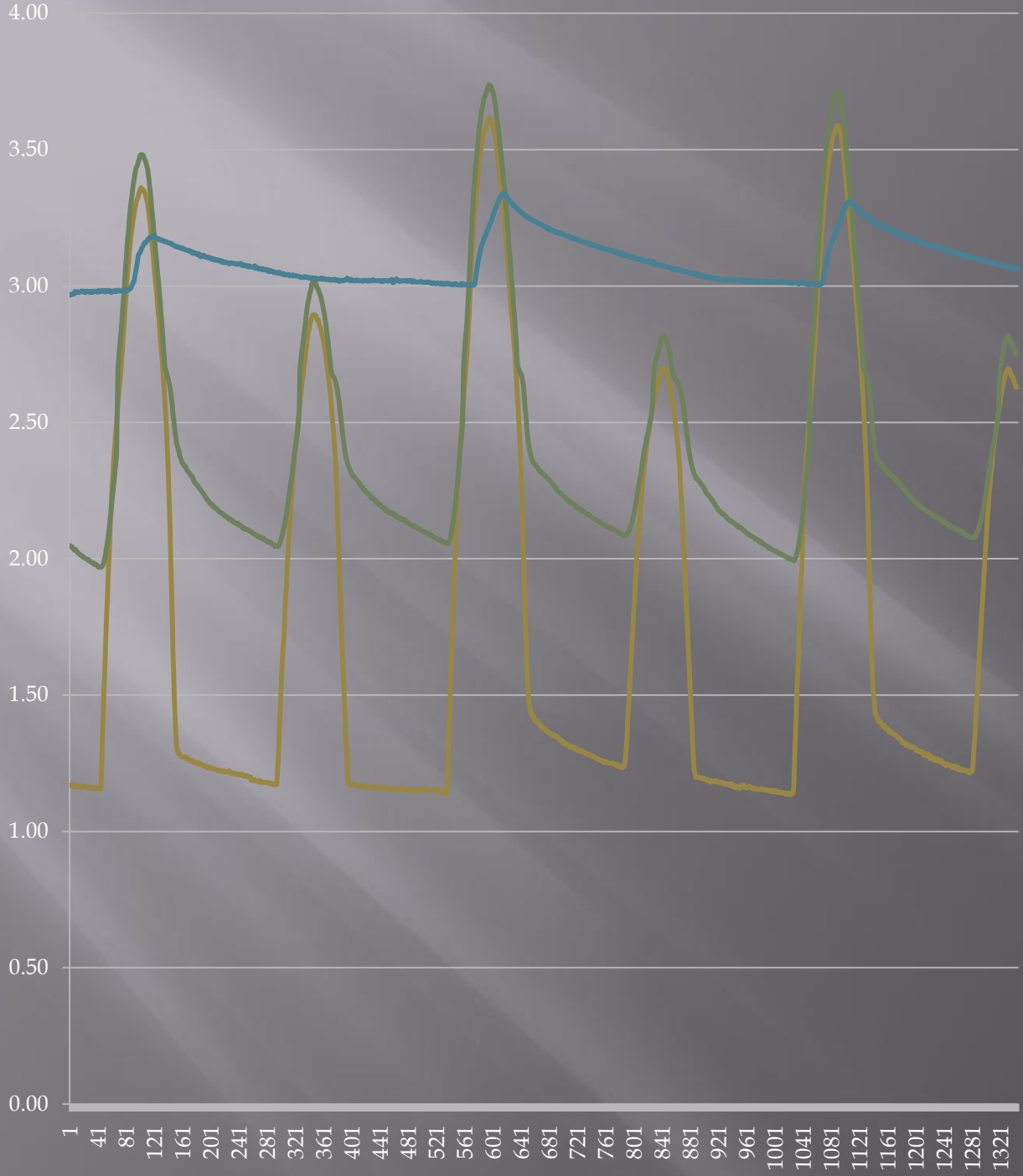
03/17/2010 03:53



03/20/2010

Peizometer 1, 2, 3





cc1 DATUM CORRECTED WSE *****
cc2 DATUM CORRECTED WSE *****
cc3 DATUM CORRECTED WSE *****

Fish Sampling



Also minnow traps



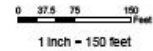




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Glynn County, Georgia
CIG (Coastal Incentive Grant)
for Clam Creek Pocket Marsh
Transect Lines - April 2010



Friday, May 21, 2010
 Transect Lines 04302010 - RSN

Marsh Sampling Data Sheet

Date 7-13-10 Time 7:59AM Low tide at _____

Latitude & Longitude _____

Location Clam Creek Jekyll Island

Transect # 1 Quadrat # 1 Quadrat size 0.5m²

Photo # 1-1 Investigators Ben Brewer-David Miller

VEGETATION:

<i>Spartina</i>	<i>Distichlis</i>	<i>Juncus</i>	<i>Other*</i>
# Live > 15cm <u>21</u>	_____	_____	Baetis 125 _____
# Live < 15cm <u>3</u>	_____	<u>N/A</u>	_____
# Dead stems <u>4</u>	_____	_____	_____
% cover <u>15</u> (in 0.5 m ² quad)	_____	_____	<u>60</u>

Height of 5 tallest in cm (*Spartina* only)

19.5", 20", 17", 17", 16.5"

Observations on leaf color within the quadrat (green, brown, purple):

Bright Green

FAUNA:

Periwinkles # >10 mm 8 # <10 mm 3 any dead? 0

Mud snails _____ # live _____ any dead? _____

Other snails type? _____ # live _____ any dead? _____

Crabs 2 # holes > 5 mm diameter 2 any dead crabs? 1

Mussels (0.5 x 0.5 m² quadrat) # live 1 any dead? _____

Other observations of fauna

GENERAL:

Is there a clear transition area along this transect? [] Yes [] No

If yes, approx. how far is this quadrat from the transition zone? 20' m

Other observations (soil firmness, presence of sulfide, other smells, conditions): Saturated very firm soil

POREWATER: Soil temp _____ Salinity 45 pH _____

ELEVATION: 2.233' msl (based on GPS reading)

Use 0.5m² quad for all percent cover counts and for flora and fauna rounding to the nearest 25 if need be.



2-1




5-1









3-2







CIG Grant

YEAR ONE GRANT CYCLE BUDGET

YEAR 1

Itemized Costs	Total Cost	CIG Funds Requested	Matching Funds (in-kind and other)
Personnel	\$20,691		\$20,691
Fringe Benefits	\$3,369		\$3,369
Equipment	\$3,000	750	\$2,250
Travel			
Supplies	\$2,828		\$2,828
Subcontract	\$28,387	\$28,387	
Construction			
Other			
<u>TOTAL</u>	\$58,275	\$29,137	\$29,138

DELIVERABLES



- Trained volunteer Task Force
- Protocol for all aspects of study (handbook)

Reports

All data

G.E.O.R.G.I.A.

Generating Enhanced Oyster Rafts in Georgia's Inshore Areas

Oyster Habitat Restoration Project In Progress

Please Do Not Disturb the Bagged Shell



Before



Installed Bagged Shell

The mesh bags of prepared oyster shell were installed here in April and will stay. This material will attract larval oysters, and in time, living oyster reef will replace the mesh bags of empty shell.

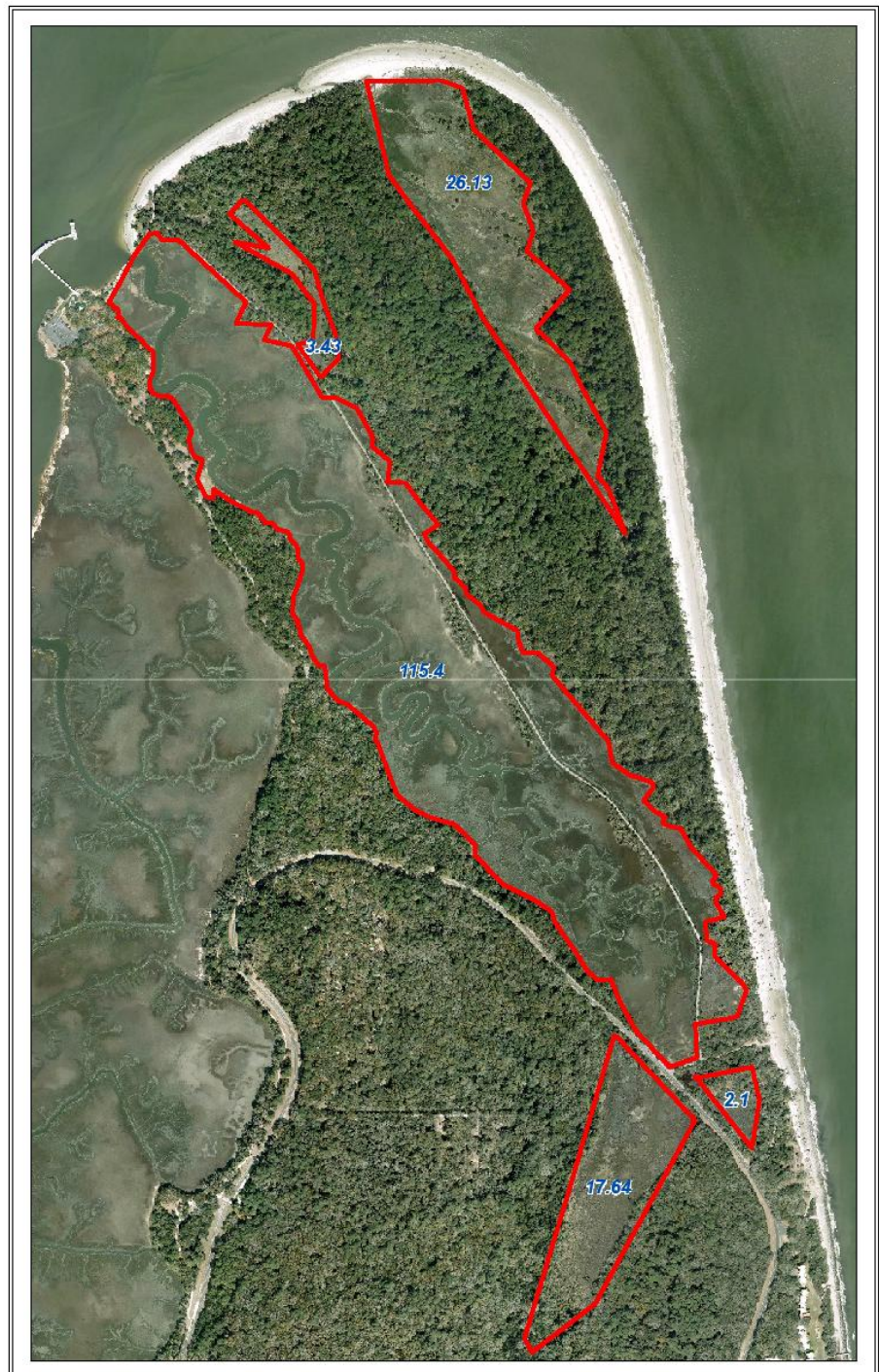
Oyster reefs provide important functions which include water quality filtration, sediment erosion control, and successful fish habitat. Oysters are filter feeders, and continuously clear pollutants from the water. One adult oyster can filter 2.5 gallons of water per hour. Imagine the filtering capacity this restored reef will have in the future... but only with your help.

If you have questions, require more information, would like to donate shell, or are interested in volunteer opportunities, please see our website or call us:

www.marx.uga.edu/shellfish
Savannah (912) 598-2348
or Brunswick (912) 264-7323



Future Plans More bridges or larger culverts



Food For Thought

- ▣ Does the mixture of natural and man-made irrigation channels work against our common goal of flooding and ebb tide cycles twice a day? Does the water just travel straight through the marsh from one entrance/exit to another
- ▣ Does the species of plant present at a given location hinder the transport of water across a marsh during the sheet flow part of the tidal cycle?
- ▣ Can we predict volume of water it takes to flood a given marsh and also predict the necessary size of the entrance/entrances of the channels allowing the flow to occur

Dykes/Roads-Little Saint Simons Is.



Remember to compare the two
bridges



Little Bridges

A wooden bridge made of planks spans a narrow waterway. The bridge is supported by wooden posts. A person's legs and feet in sandals are visible on top of the bridge. The water is calm and reflects the sky. The surrounding area is a marshy landscape with various plants and trees.

48 inches wide to flood
>100 acres of marsh

