

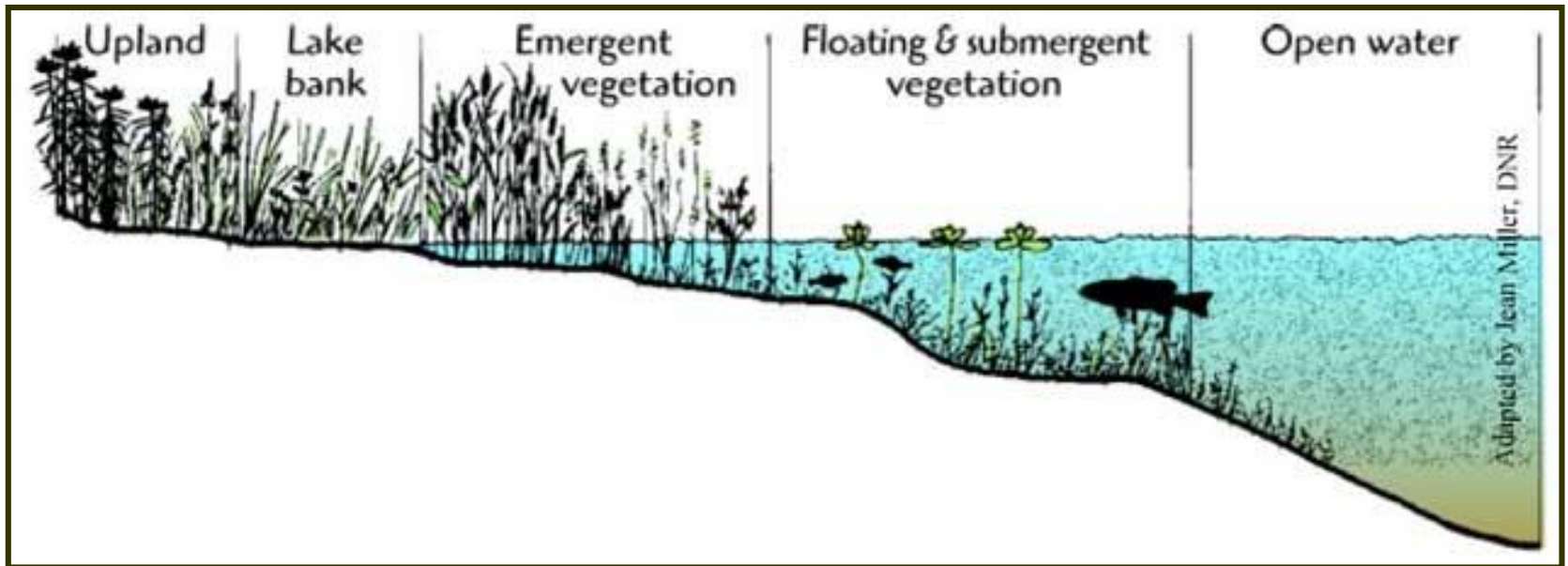
Living Shorelines

A photograph of a living shoreline. In the foreground, there is a grassy bank with a wooden post and a green sign that reads "CANOE LAUNCH". The middle ground is dominated by a dense stand of tall, golden-brown reeds or grasses that border a body of water. The background shows a line of trees with green and some autumn-colored foliage under a bright sky.

Protection of Community Infrastructure via Living Shorelines Local Site Assessments - Post Hurricane Irma

Thomas Ries
Environmental Science Associates

Native Shoreline Profile



Turf Grass = Shoreline Protection ?



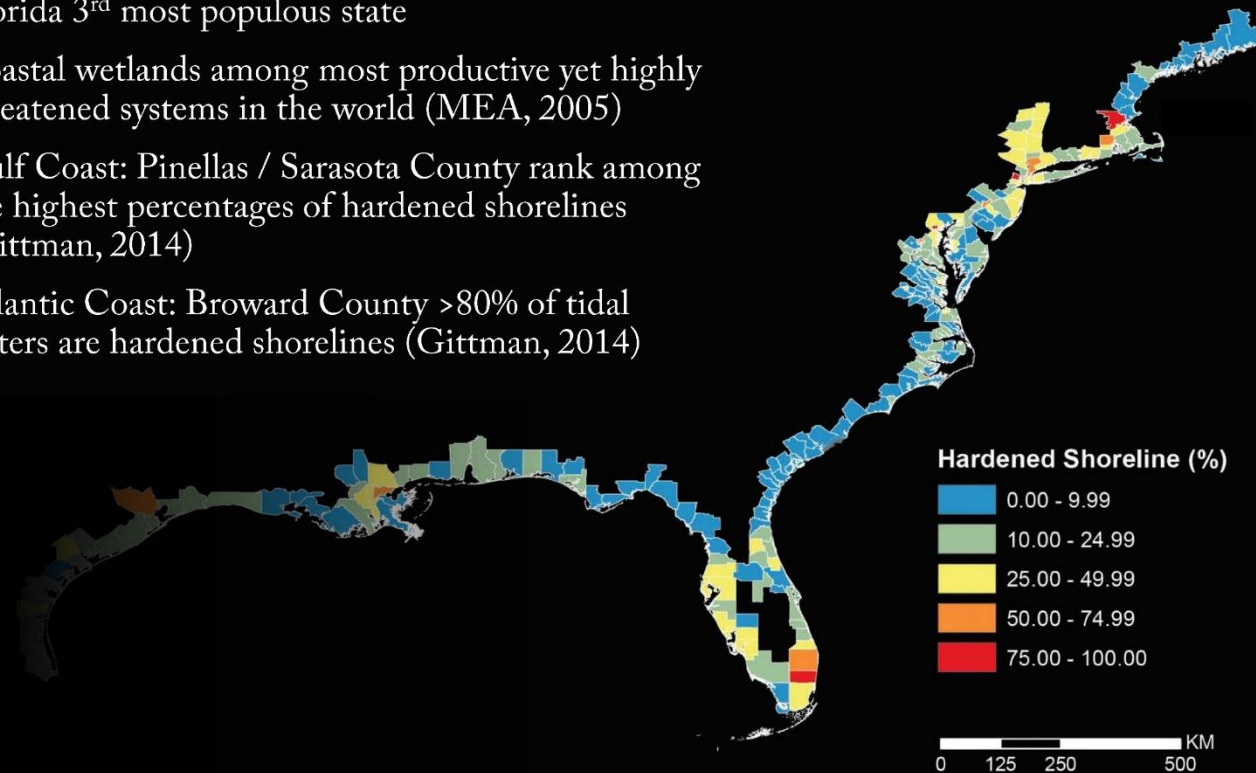


Seawalls Ultimately Fail



Loss of Wetlands Correlates to Population Density

- Near half U.S. lives in coastal counties;
Florida 3rd most populous state
- Coastal wetlands among most productive yet highly threatened systems in the world (MEA, 2005)
- Gulf Coast: Pinellas / Sarasota County rank among the highest percentages of hardened shorelines (Gittman, 2014)
- Atlantic Coast: Broward County >80% of tidal waters are hardened shorelines (Gittman, 2014)



Graphic modified from Gittman, 2014

Reef Walls Overview



North Carolina 2 adjacent properties



Photo/Study by: Dr. Rachael Gittman



Hurricane Irene Cat. 1

Photo/Study by: Dr. Rachael Gittman



Erosion Protection



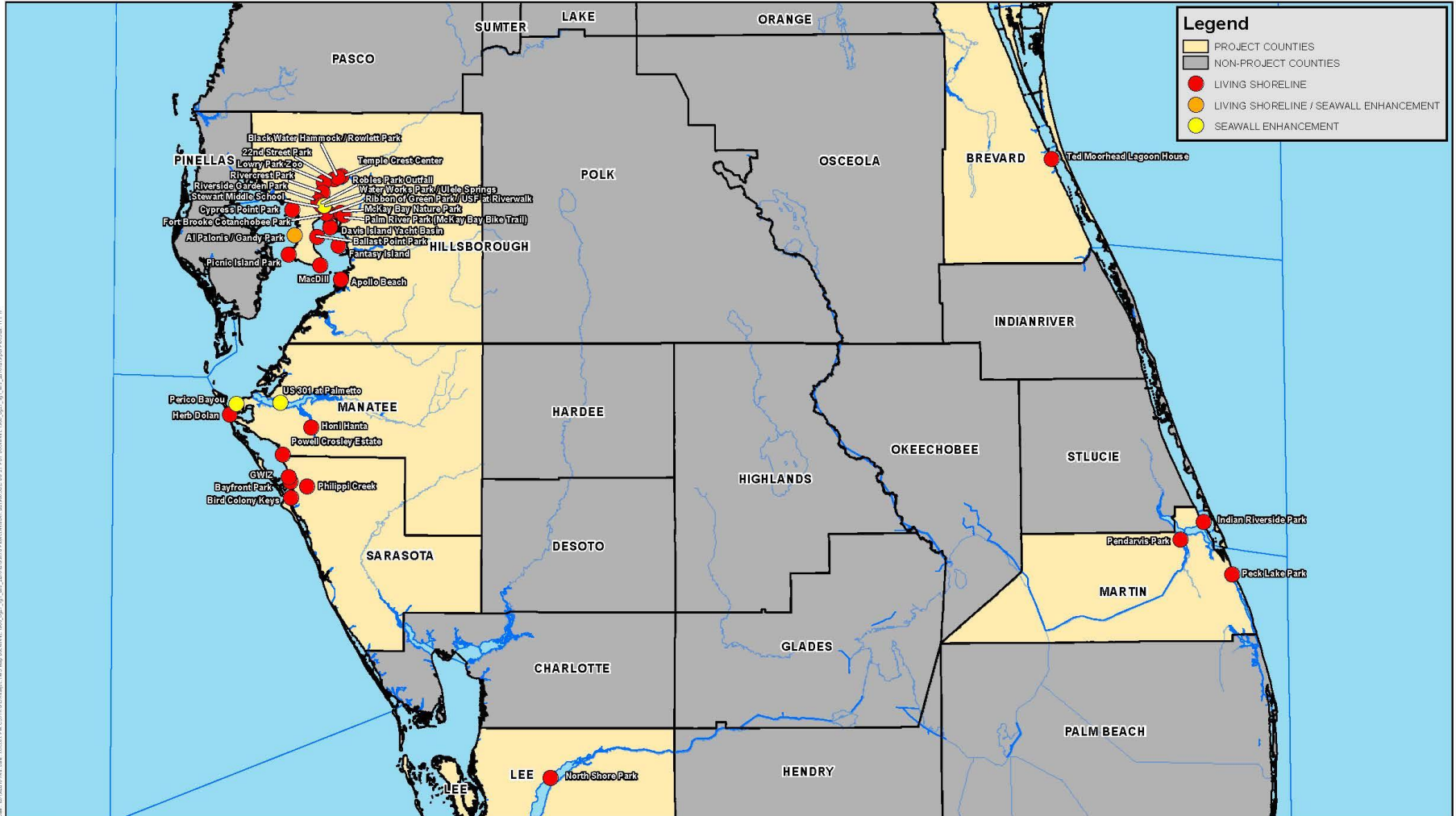


Figure 1 - Existing Living Shoreline Projects South Florida

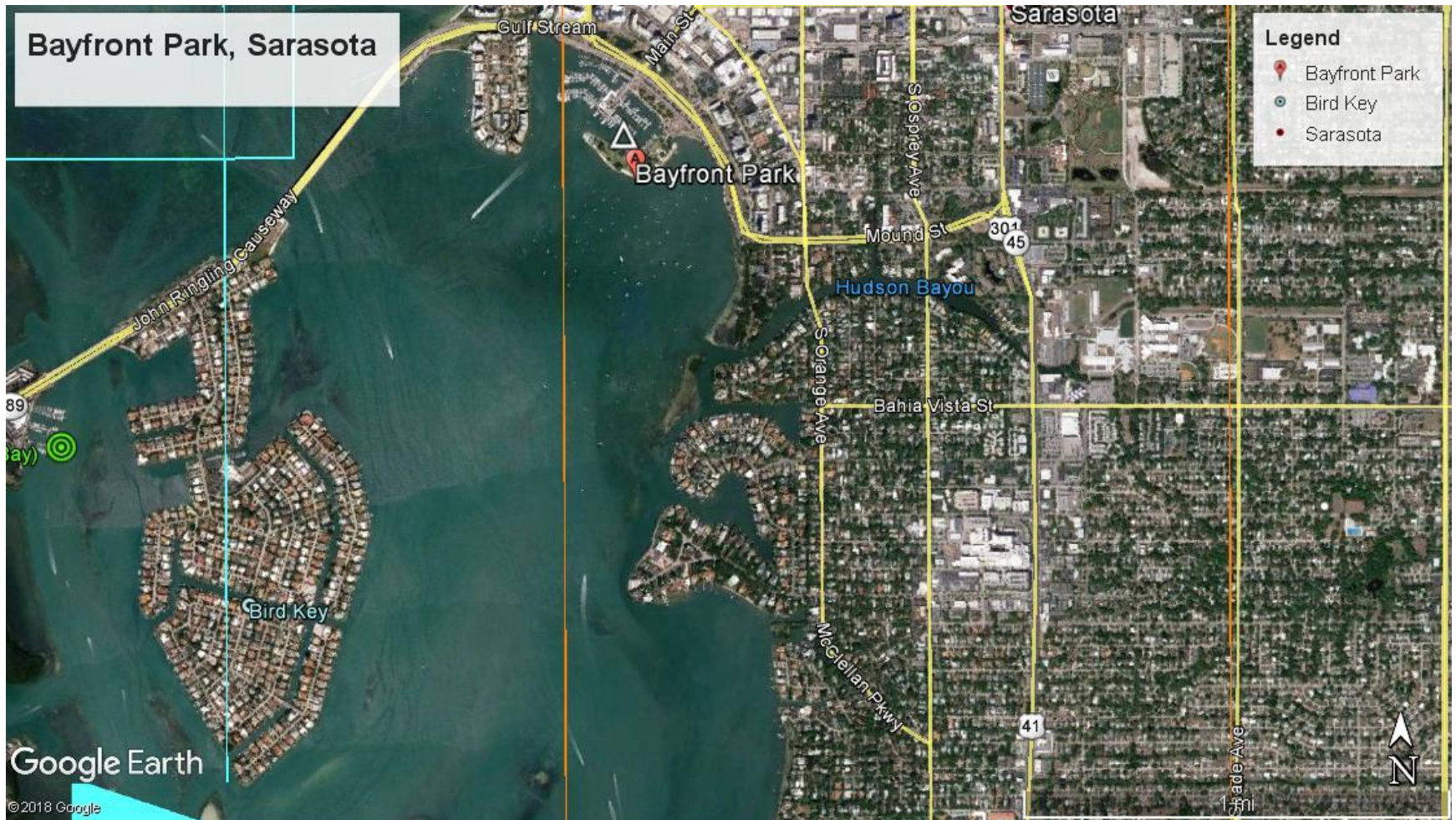


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Data Source: SCHEDA Ecological Associates Inc.
Imagery Source: NA
Coordinate System: NAD 1983 Florida State Plane West



Sarasota Bayfront Park



Sarasota Bayfront Park



Sarasota Bayfront Park



Sarasota Bayfront Park



Sarasota Bayfront Park



Sarasota Bayfront Park





Hurricane Irma

- August 30 – September 13, 2017
- Strongest Atlantic Hurricane
- 185 MPH Sustained Winds
 - Sept 10th Cat 3 – FL Keys 130 mph winds
 - Sept 11th Cat 2 – Sarasota Bay 75 mph winds
 - 75 fatalities in Florida alone
 - \$64.6B Total Damage Costs

Sarasota Bayfront Park



Sarasota Bay – Herb Dolan Park



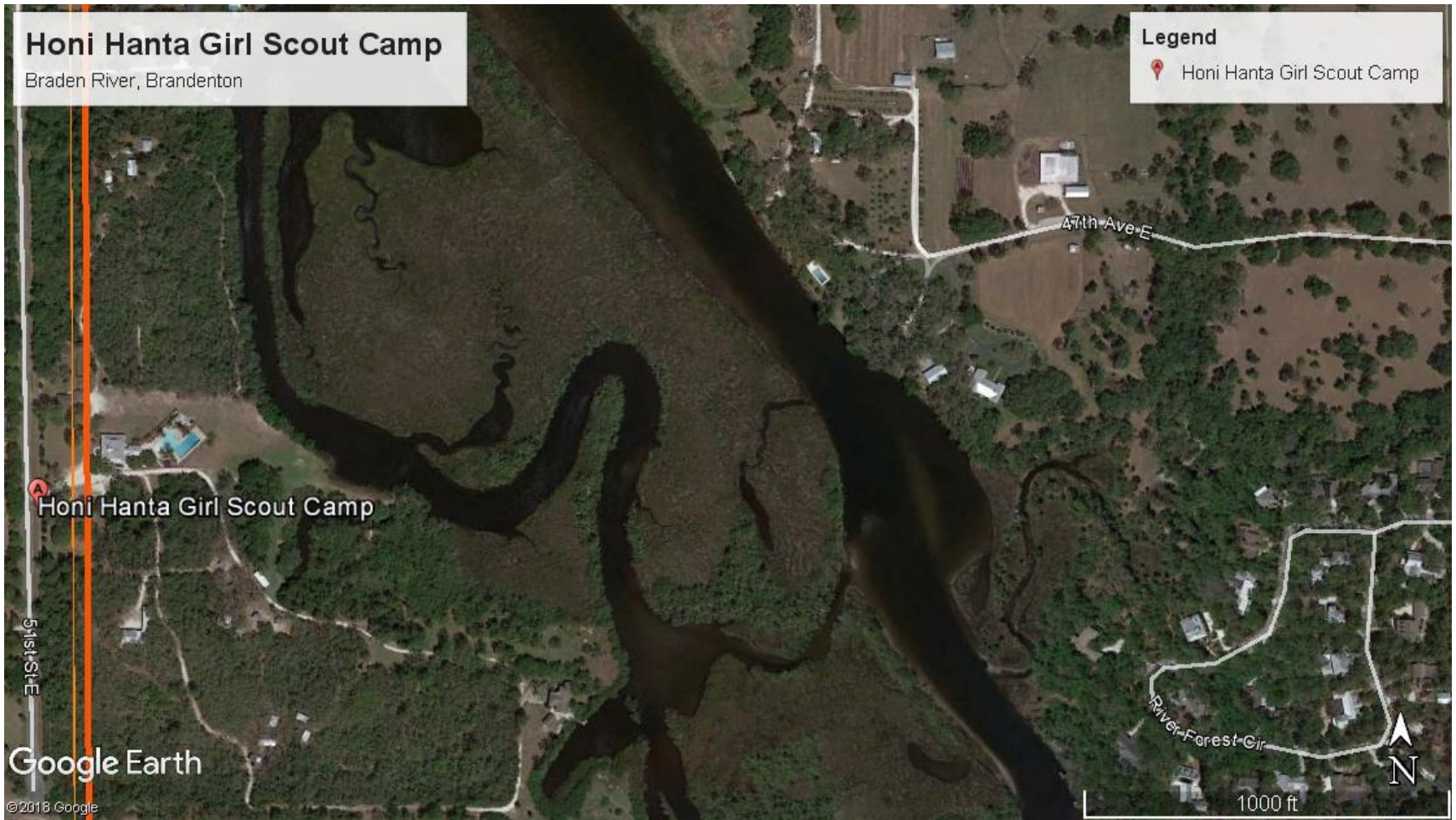
Sarasota Bay – Herb Dolan Park



Sarasota Bayfront Park



Honi Hanta Girl Scout Camp – Braden River







Stewart Middle School



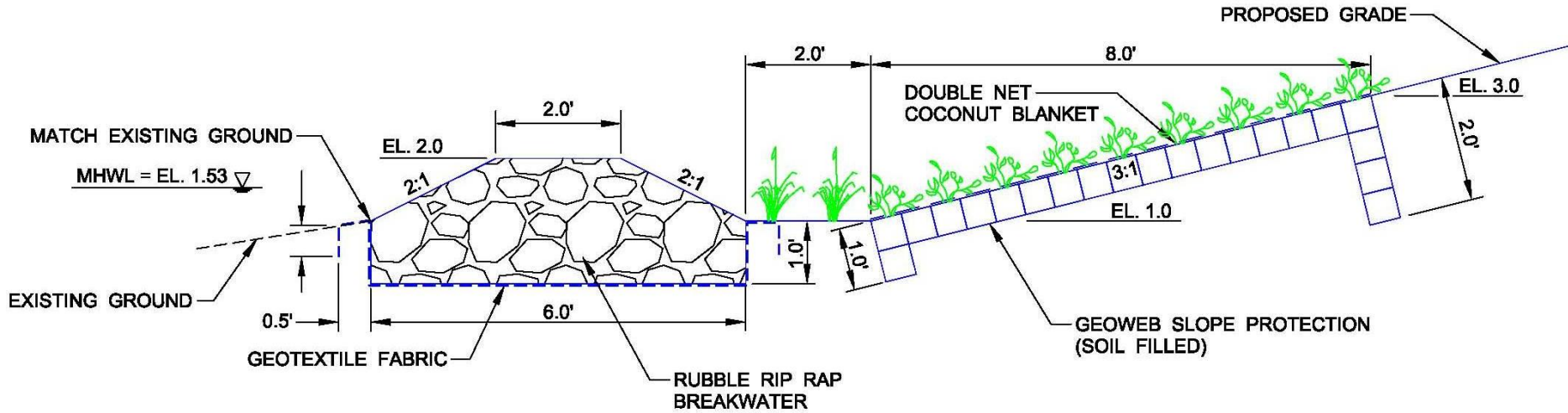
Stewart Middle School



Stewart Middle School



Stewart Middle School



BREAKWATER AND GEOWEB SLOPE PROTECTION DETAIL

3:1 SLOPE

NOT TO SCALE

Stewart Middle School



Stewart Middle School



US Fish & Wildlife Service

- Coastal Program
- 2019 Funding
- Critical Infrastructure
 - Power Plants
 - Sub-stations
 - Primary Transmission Lines

Tampa Electric Company

- Assessment of Primary Power Plants
- ID Major Transmission Lines
- Two Sites Identified
 - Hillsborough County E/W Line
 - Frog Creek Erosional Issues
- Living Shoreline Design Solution

Living Shorelines

A photograph of a pond surrounded by lush greenery and tall grasses. A sign on the left reads "CANOE LAUNCH". The word "Questions?" is written in a large, white, italicized font across the center of the image.

Questions?

Thomas Ries
Environmental Science Associates

Table 2. Cost Estimates for Shoreline Management Approaches (average cost per linear foot)¹

Nonstructural (planting grading/fill)	Hybrid (marsh + sill)	Breakwaters (offshore)	Structural (revetment)	Location	Date
\$100-200	\$250-400	\$450-600	\$500-1,200	Maryland	circa 2014
\$100-225	\$250-700	\$450-1,000	\$500-1,500	Delaware Estuary	circa 2012
\$45+	\$120-395	\$125-200	\$115-285 (low energy)	Northern Gulf of Mexico	circa 2008
\$50 - \$100	\$150-\$300	\$350-\$500	\$500-\$1000	Maryland	2007
\$45+	\$100+	\$150-\$250	\$115-\$1200	Florida	2008

Of greater long-term significance is the value of living shorelines. It is widely recognized (although difficult to quantify with precision) that aesthetics greatly affect property values and hence the tax base: just as a suburban lot with mature trees is more valuable than one without, so a waterfront lot with natural wetlands and shorelines is more aesthetically pleasing and hence potentially more valuable. This is a value of direct benefit to the property owner (and, indirectly, to the property taxing authority) as well as to nearby property owners and recreational users.

¹ "Living Shoreline Implementation: Challenges and Solutions," Rivers & Coast (newsletter of the Center for Coastal Resources Management), Vol. 9, No. 2 (Summer 2014). References for Table 2; http://www.seagrant.sunysb.edu/Images/Uploads/PDFs/LivingShorelines0513-Presentations/5_NYSC_Living_Shorelines_Maryland.pdf; http://www.delawareestuary.org/pdf/Living%20Shorelines/LivingShorelinesBrochure_feb2012.pdf; http://msucare.com/crec/envi/publications/living_shorelines_cost_estimates.pdf; <http://www.cbf.org/Document.Doc?id=60>; <http://www.gulfalliancetraining.org/dbfiles/Cost%20and%20Maintenance%20of%20Living%20Shorelines.pdf>