UPDATE ON THE TAMPA BAY CRITICAL COASTAL HABITAT ASSESSMENT

CHIMMP Meeting
September 15, 2015

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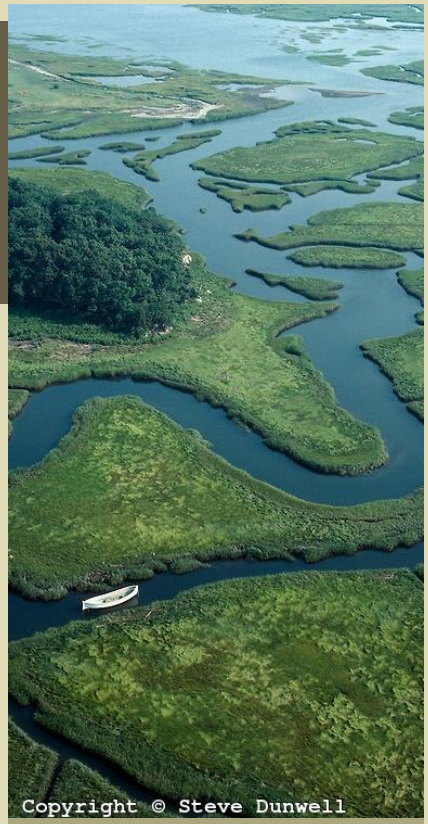
Tampa Bay Estuary Program



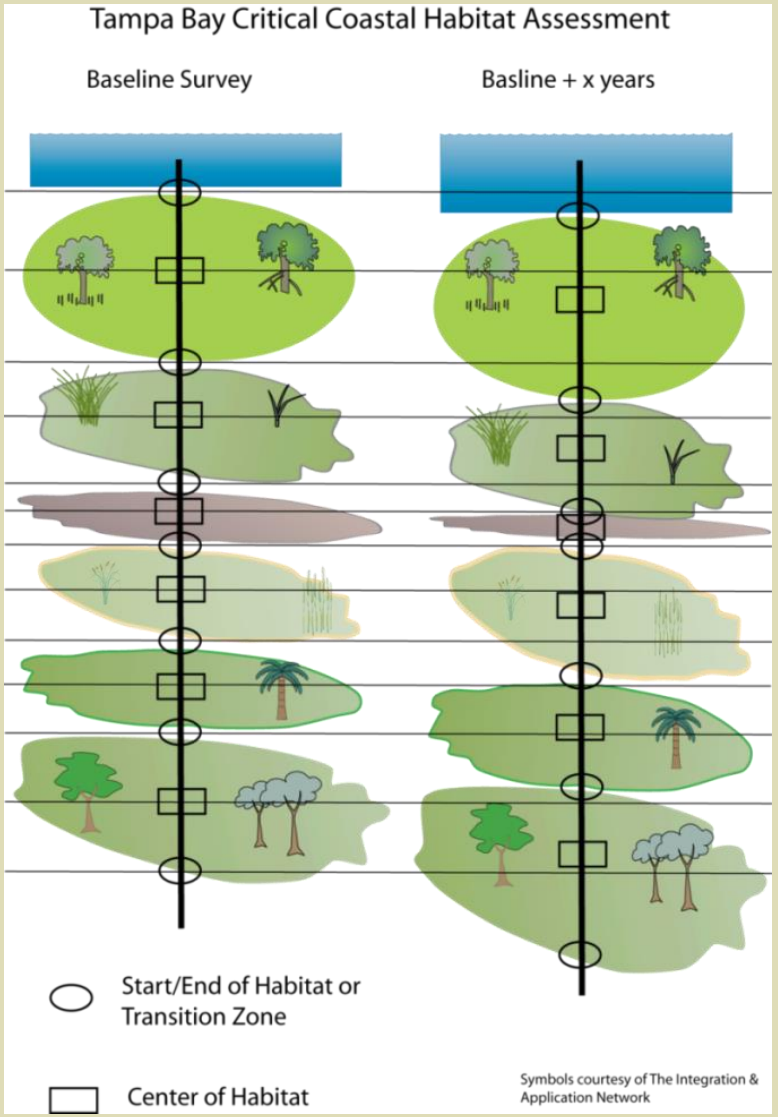
TAMPA BAY Estuary Program

PURPOSE OF PROJECT

- ***Develop a long term monitoring program to assess the status, trends, and ecological function of the mosaic of critical coastal habitats to:***
  - *Detect changes due to natural, and indirect anthropogenic impacts including sea level rise and climate change, and*
  - *Improve future management of habitats*

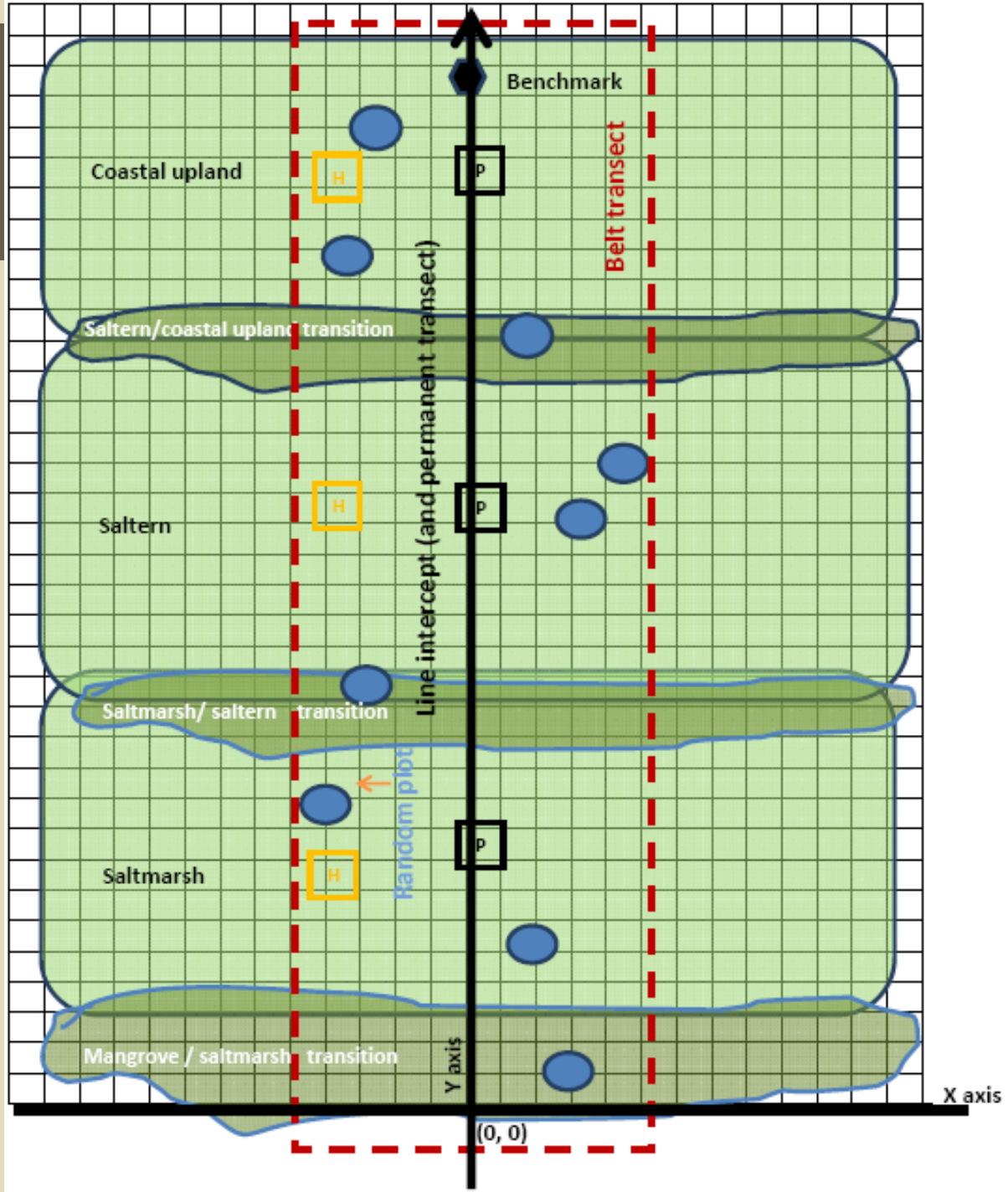
HYPOTHESIS TESTING

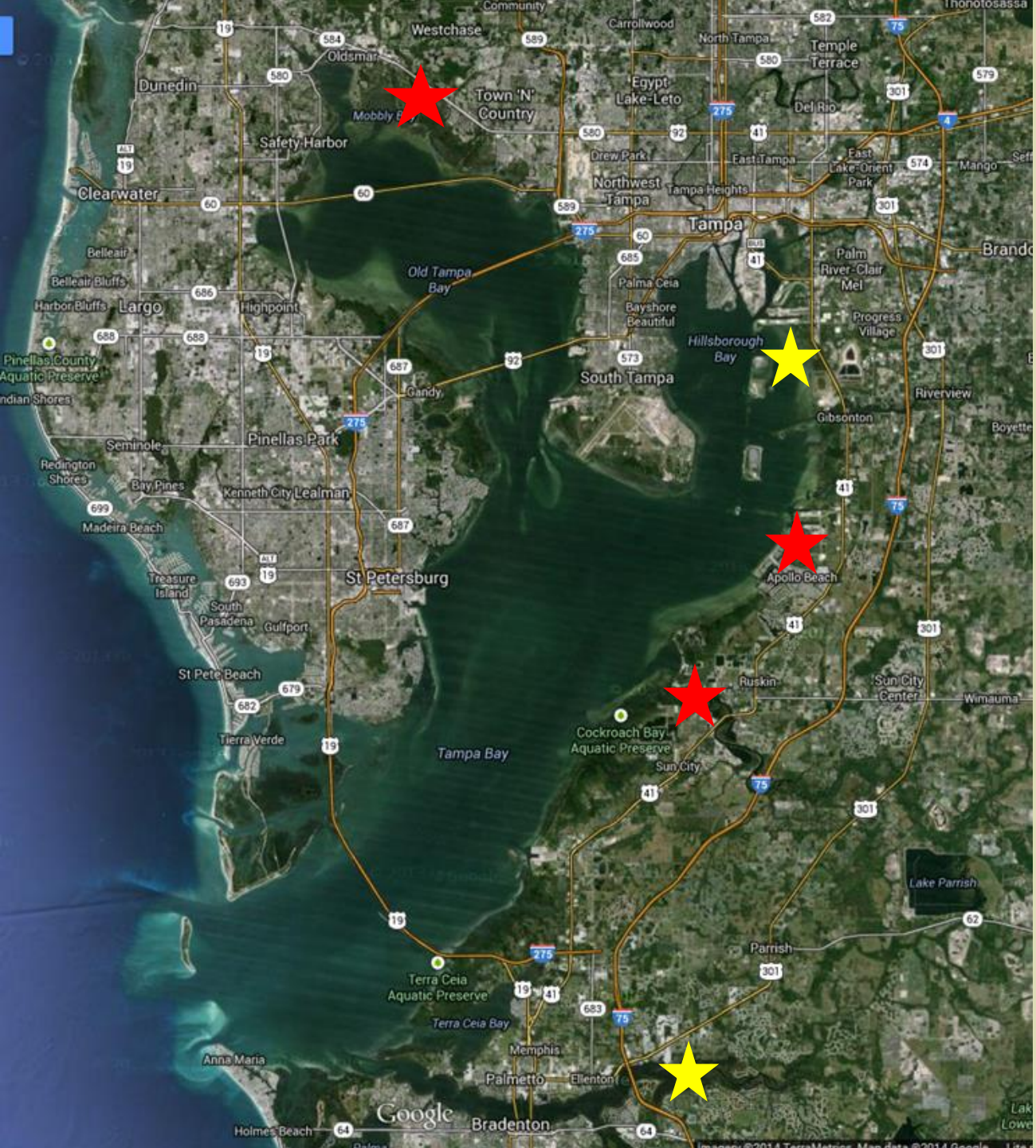
- H_0 = sea level rise has no effect on emergent tidal wetlands in Tampa Bay
- H_1 = sea level rise is causing measurable changes in emergent tidal wetlands in Tampa Bay
  - Landward expansion of mangroves into monotypic marshes
  - Landward expansion of salt marshes into salt barrens
  - Landward expansion of salt barrens into coastal uplands
  - Corresponding physical and chemical evidence



VEGETATION SAMPLING APPROACH

- Natural emergent tidal wetland zonation
  - Coastal upland
  - Salt barren/high marsh
  - Low marsh
  - Mangrove
  - Open water
- Minimal historical disturbance/alteration
  - No mosquito ditching or dredge/fill
- Protected from future impacts
  - Located in State/County Parks or conservation areas



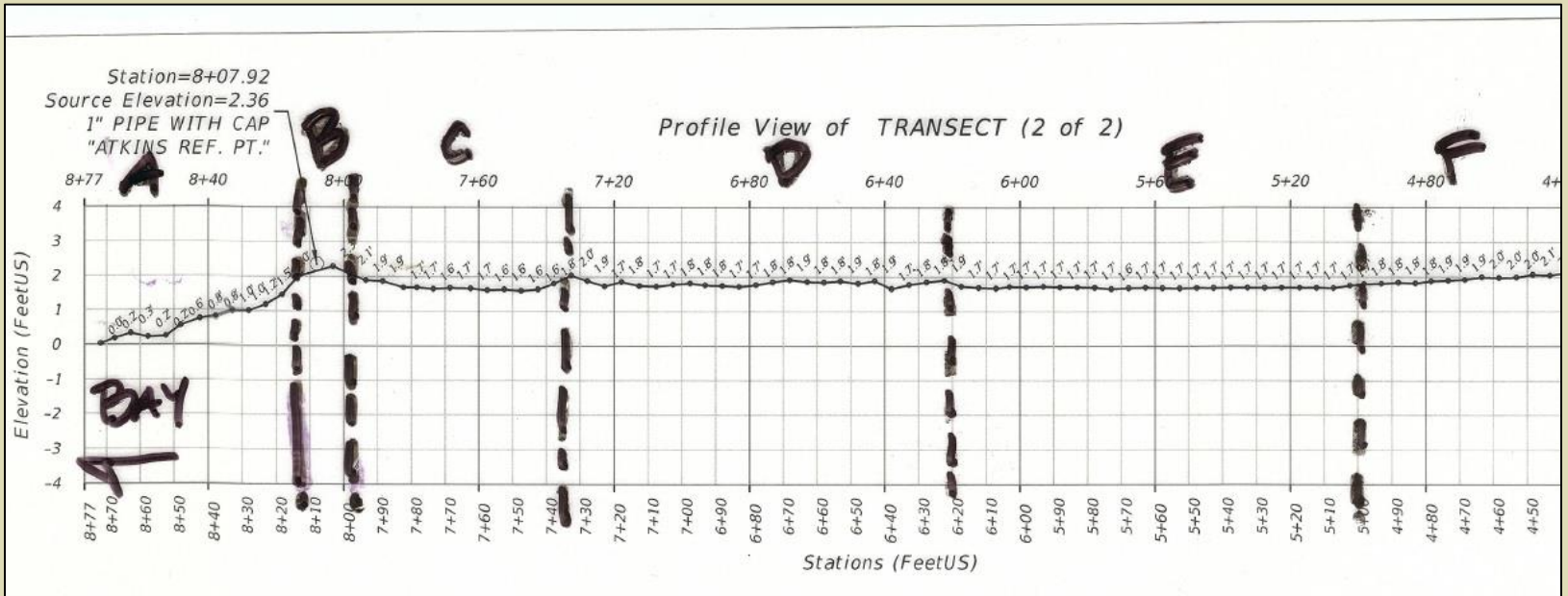


TAMPA BAY SITES

- Old Tampa Bay
  - Upper Tampa Bay Park
- Middle Tampa Bay
  - Archie Creek
  - TECO Big Bend
- Lower Tampa Bay
  - Little Manatee River
  - Manatee River

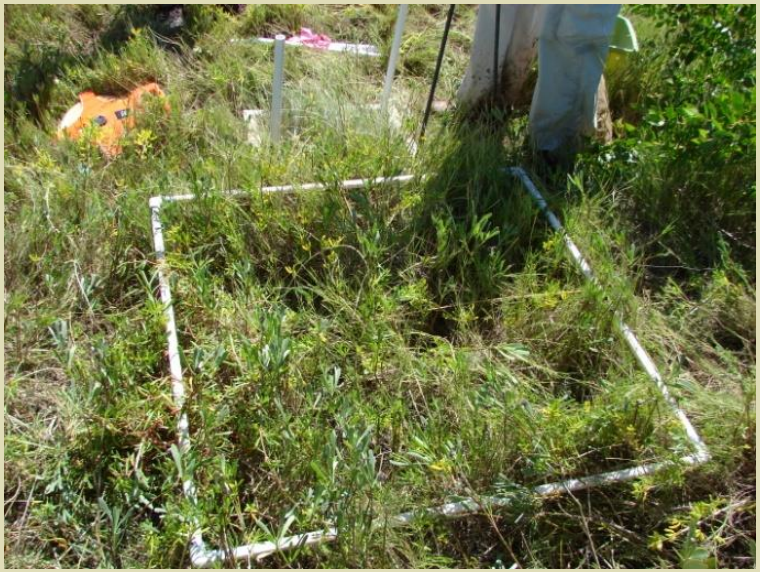
SURVEY CONTROL

- Establish permanent transect
  - Establish permanent benchmarks
  - Elevation of site control
  - Collection of horizontal data for benchmarks using RTK



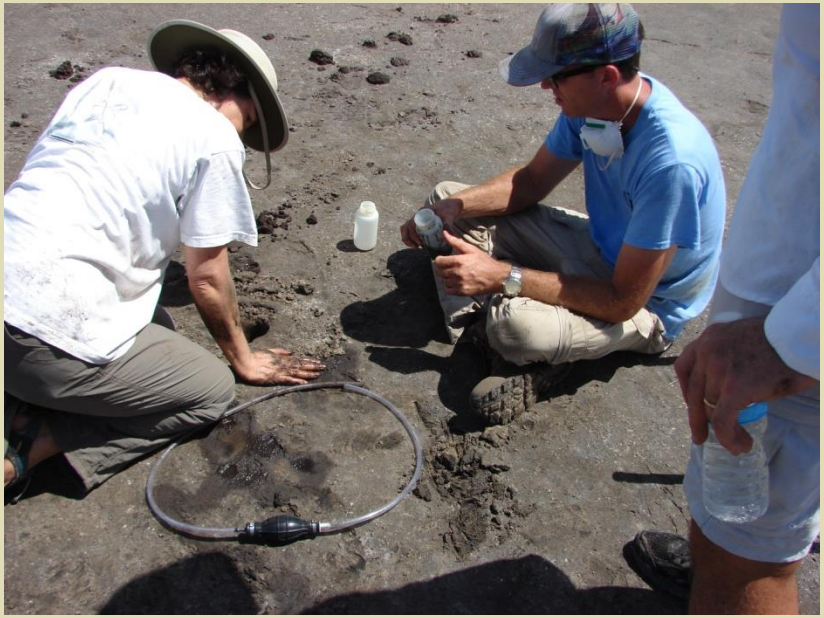
VEGETATION SAMPLING

- Sample Plot Selection
  - Vegetation along transect centerline
  - Vegetation within $1m^2$ plots
  - Photos (zones, transect, quadrats)
  - Tree composition



SEDIMENT/WATER SAMPLING, EROSION MONITORING

- Soil composition (% organic content)
- Interstitial salinity
- Feldspar horizons
  - Measure sediment accretion and/or erosion



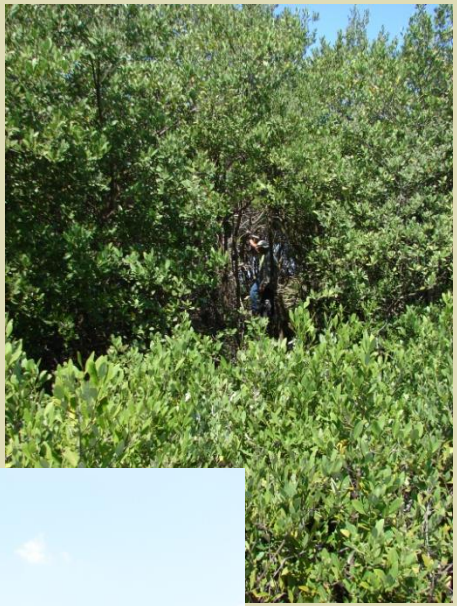
FAUNAL SAMPLING

- Qualitative observation of faunal species
  - Fiddler crabs and burrows
  - Invertebrates
  - Mammal activity

PILOT SITE- TBEP YOUTUBE VIDEO

- https://www.youtube.com/watch?v=_AH8_FJGWUd8

UPPER TAMPA BAY PARK



TECO/BIG BEND

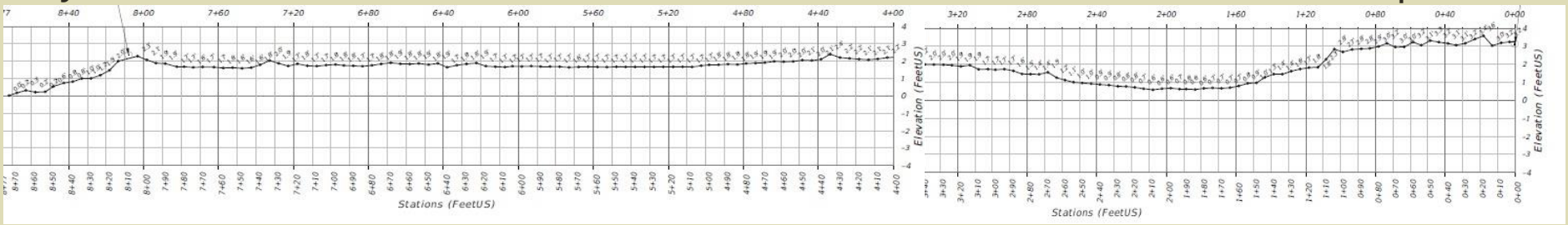
LITTLE MANATEE RIVER

SITE ELEVATION PROFILES

- Similar elevation profiles across sites (bay segments)
- Small differences in elevation across site
- Ecotones follow minor changes in elevation (0.1 ft)

Bay

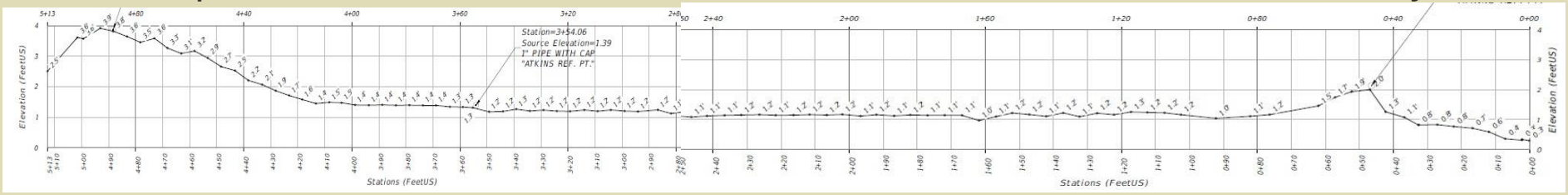
Coastal Upland



Upper Tampa Bay Park (2.7 ft. elevation change across site)

Coastal Upland

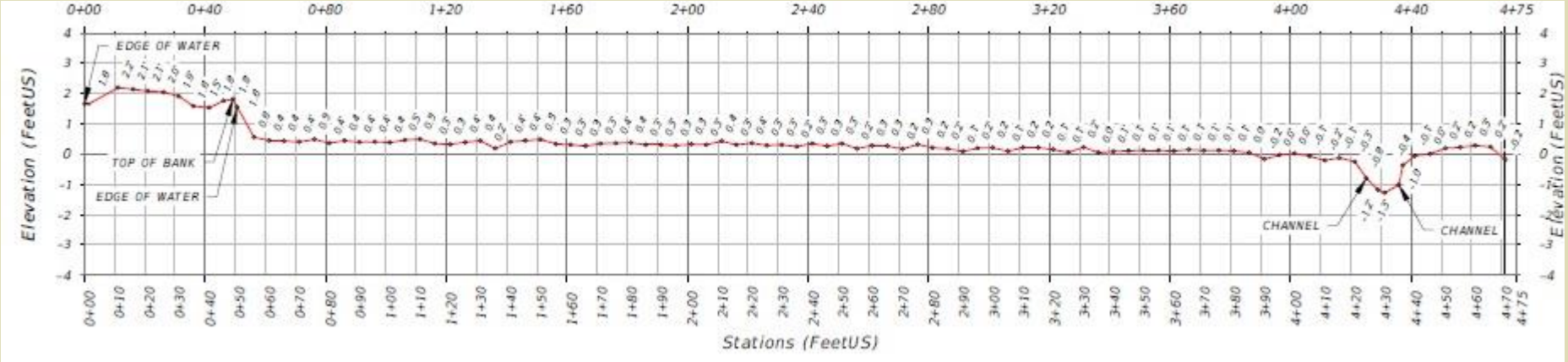
Bay



TECO Site (3.6 ft. elevation change across site)

SITE ELEVATION PROFILES

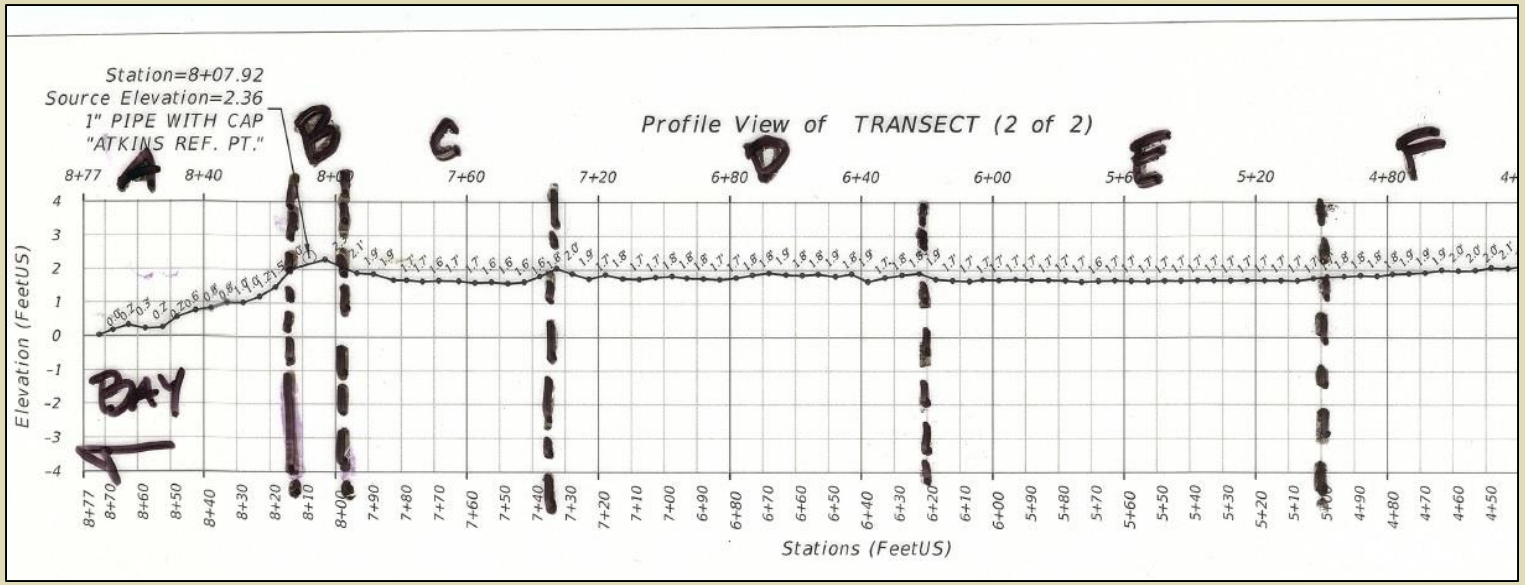
Upland LMR



Little Manatee River Site (3.5 ft. elevation change across site)

ELEVATIONS ARE CRITICAL

- Elevation differences of as little as 0.1 foot often determine habitat zonation
- Elevation-driven habitat zonation is remarkably consistent around the bay



LOCAL HYDROLOGY IS ALSO IMPORTANT

- Localized freshwater inflows can alter elevation-driven habitat zonation
- The distribution and extent of oligohaline *Juncus roemerianus* salt marshes in Tampa Bay are determined and maintained by freshwater inflows from:
  - major tributary rivers
  - minor localized creeks and pond seepage

CHANGES IN HABITAT ZONES

September 2014

September 2015

CHANGES IN HABITAT ZONES

Mangrove encroachment into high marsh and saltern

HABITAT MIGRATION IS HAPPENING NOW

- There is clear evidence that Tampa Bay tidal habitats are actively migrating and evolving:
  - Landward expansion of mangroves into salt marshes
  - Landward expansion of salt marshes into salt barrens

- Oligohaline *Juncus roemerianus* salt marshes are potentially the most threatened critical habitat due to:
  - Sea level rise
  - Increasing surface water withdrawals
  - Urban development

EXPANSION OF PROGRAM

- TBEP/FWRI Project: EPA Wetland Development Grant!
  - Expand monitoring to 5 additional sites in Tampa Bay
  - Include “less pristine” sites
    - Hydrologic modifications
    - Restoration
    - Test whether these habitats react differently than more natural sites
    - Allow monitoring in western portions of Tampa Bay

- Multi-media Training Manual
  - Photos, videos, and written manual
    - Will facilitate broader application
    - Expand to other regions in the state/ Gu

QUESTIONS?

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