

# Subaqueous Terrain Analysis

It is difficult to observe the terrain when it is covered by water

Features of the shoreline give some indication of the variability that may be encountered below the water.

bedrock outcrops

glacial till parent materials

glaciomarine parent materials

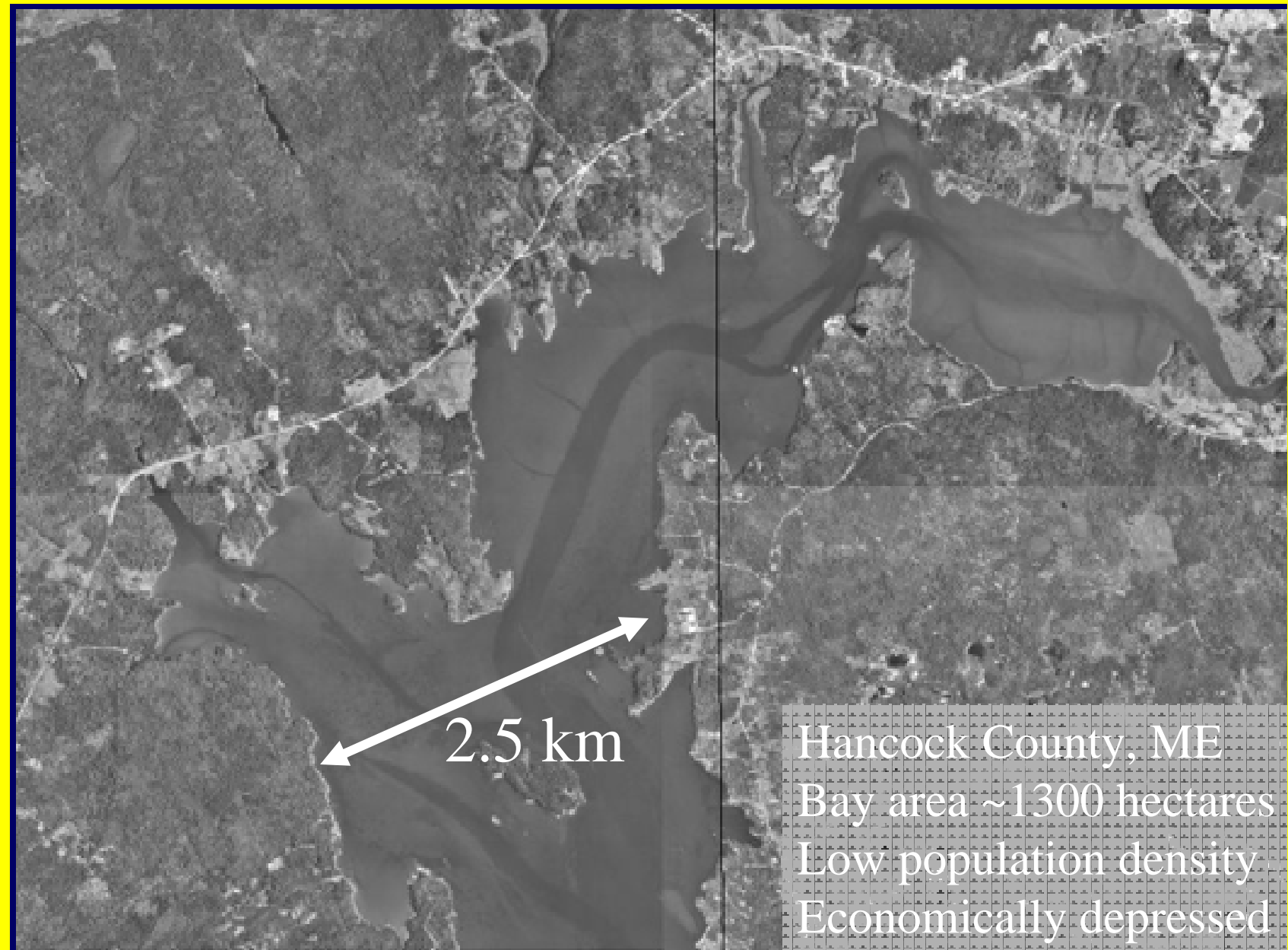
# Tools for Subaqueous Terrain Analysis

- **Electronic charts** = preliminary data.
- **Aerial photos** to delineate streams, estuary channels, shallow near shore areas, & coves.
- **Bathymetry** used to identify landscape features.
- **Vegetation coverages** to identify potential differences in soil units on similar landscapes.
- **Upland Soil Survey Maps** to identify the terrain that may be submerged.

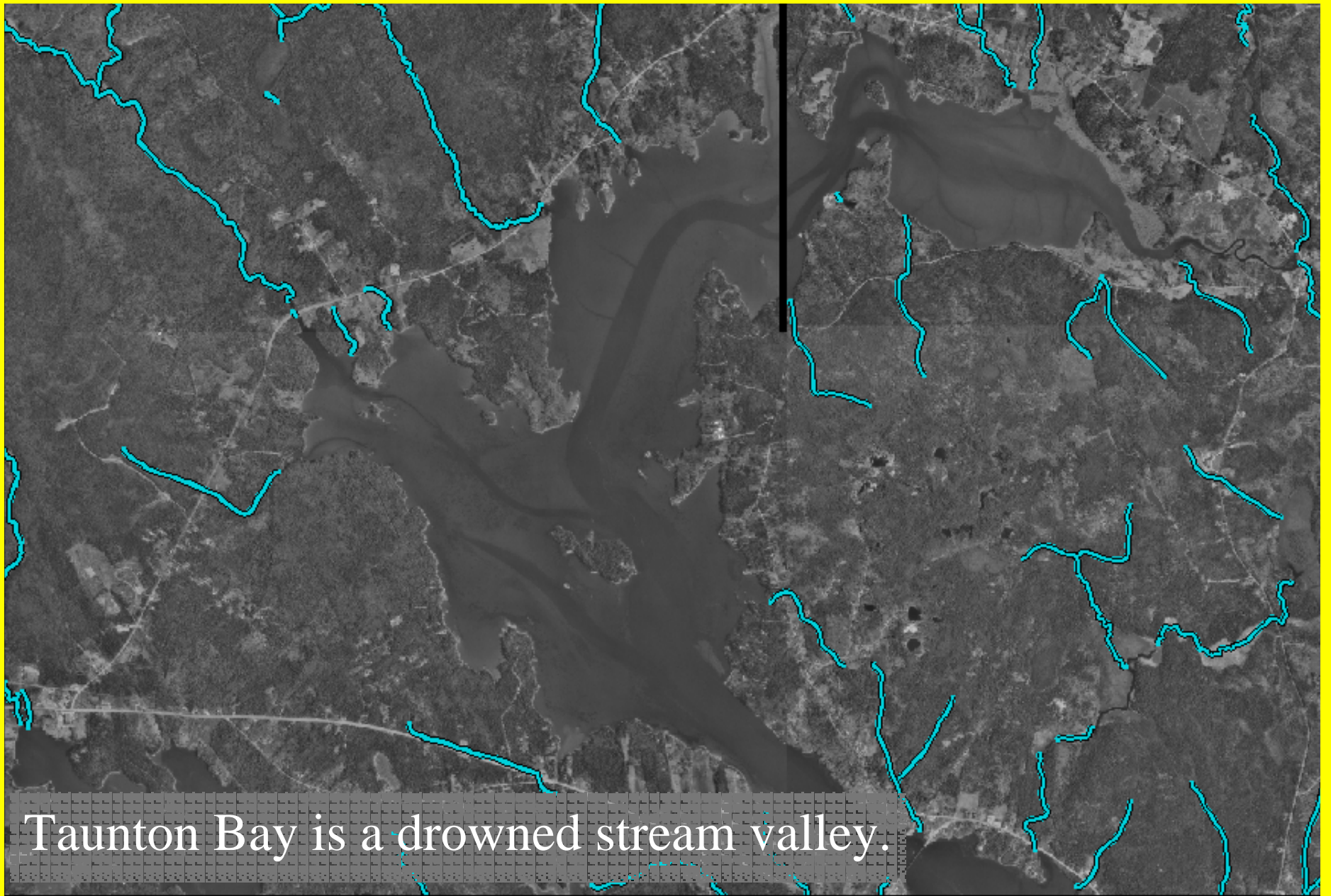
# Chart from Nobeltech Software



# Digital Orthophoto Quad (DOQ)

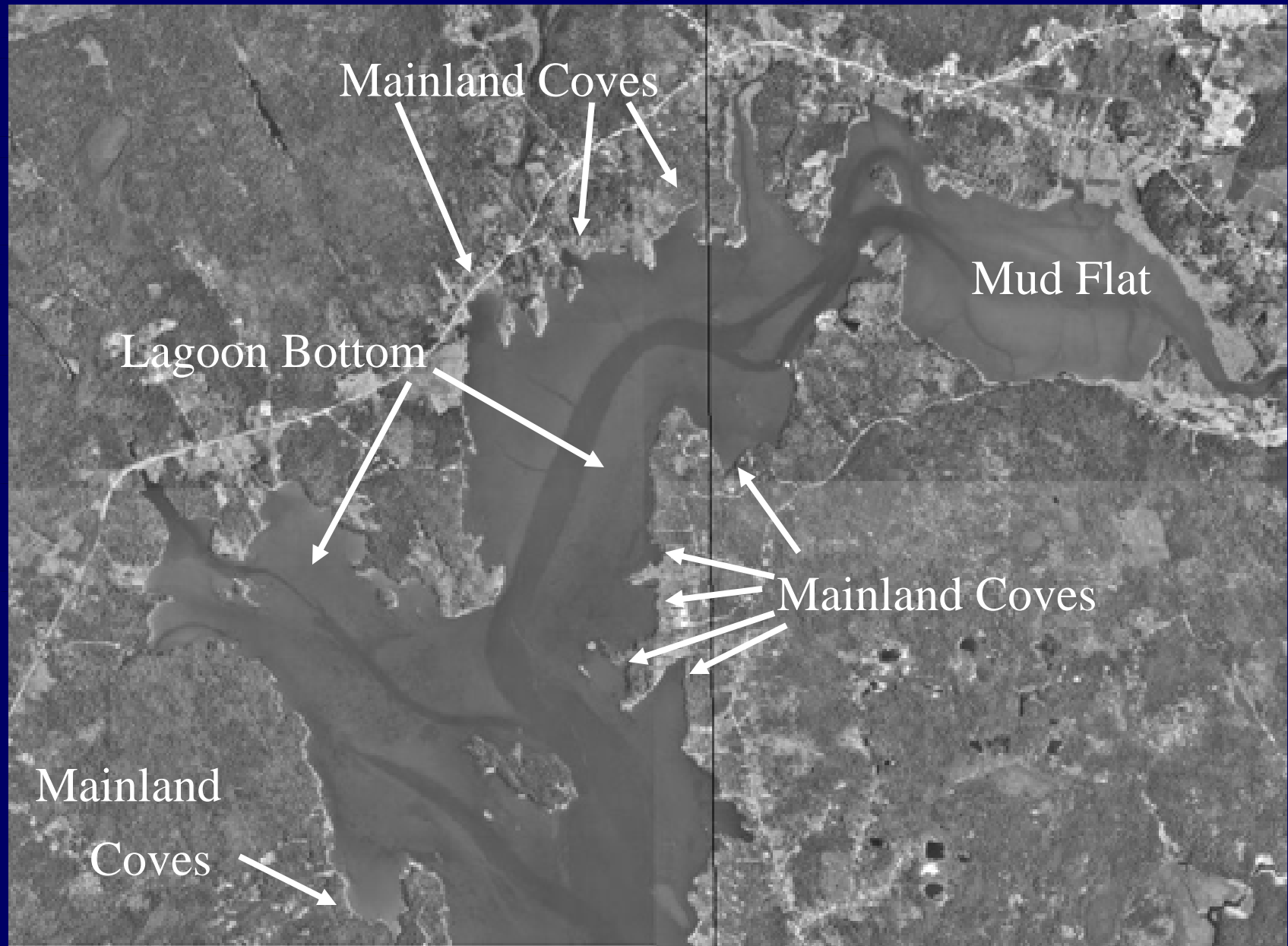


# Stream Channels Entering Bay



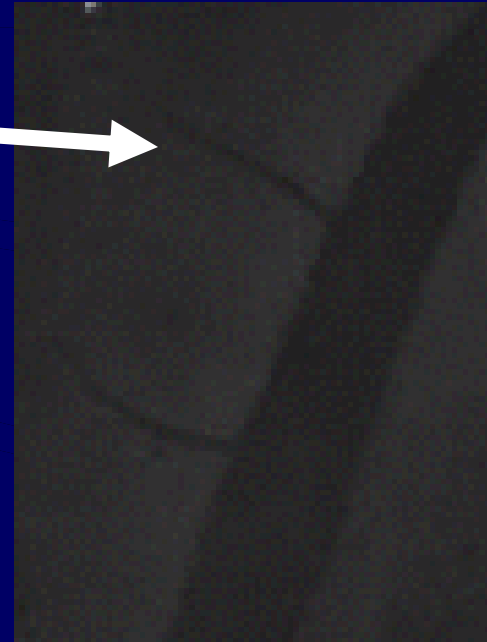
Taunton Bay is a drowned stream valley.

# Marking off Terrain Units



# Delineating Channels

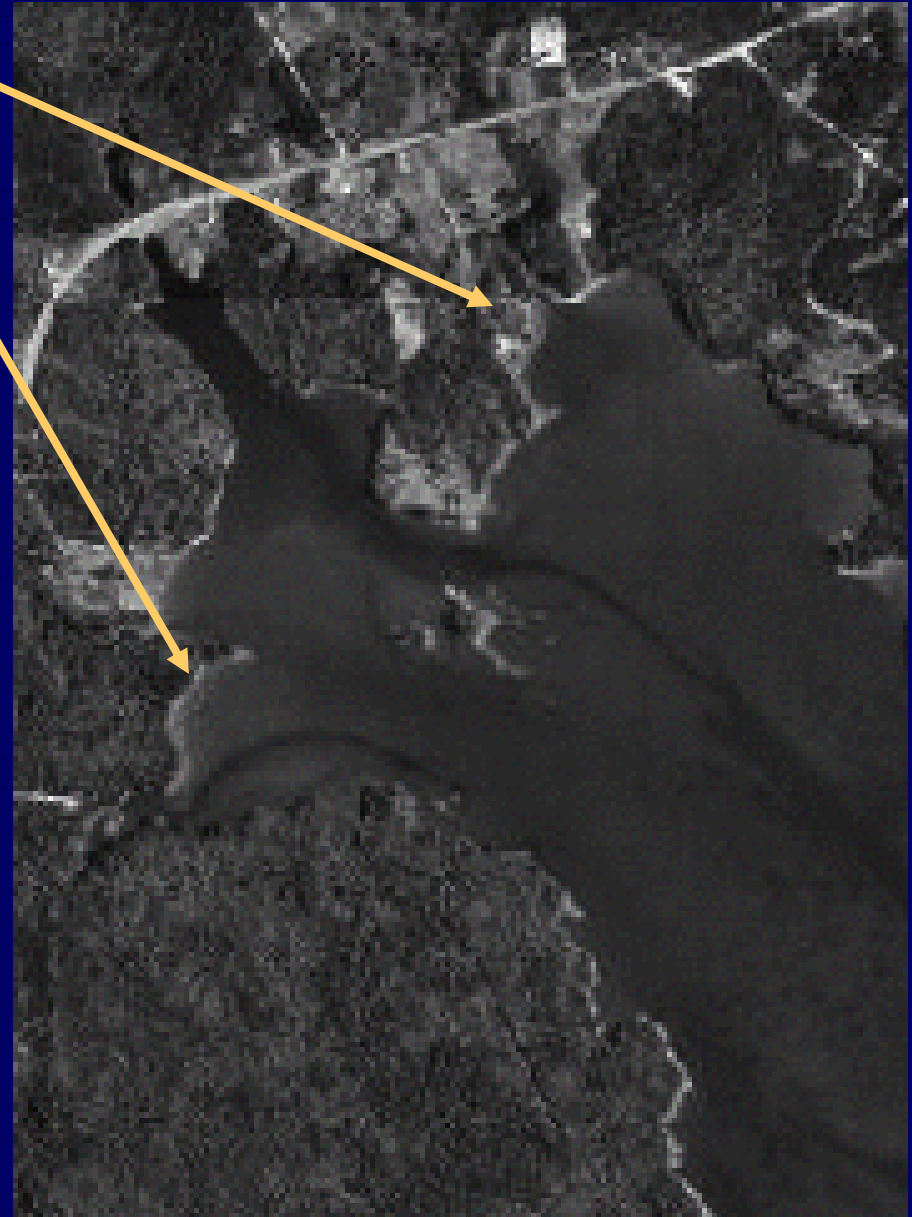
Old Stream Channels



Tidal Flushed Channels

# Submerged Alluvial Fans

- Coarser Materials than surrounding soils
- Deltaic Shape
- Thin outward
- Can be dissected by channel from stream





# Anthropogenic Channel

- Old granite mine area
- Granite culvert under the road
- Bay bounded by granite (quarry) walls
- Submerged alluvial fan located in original mainland cove.

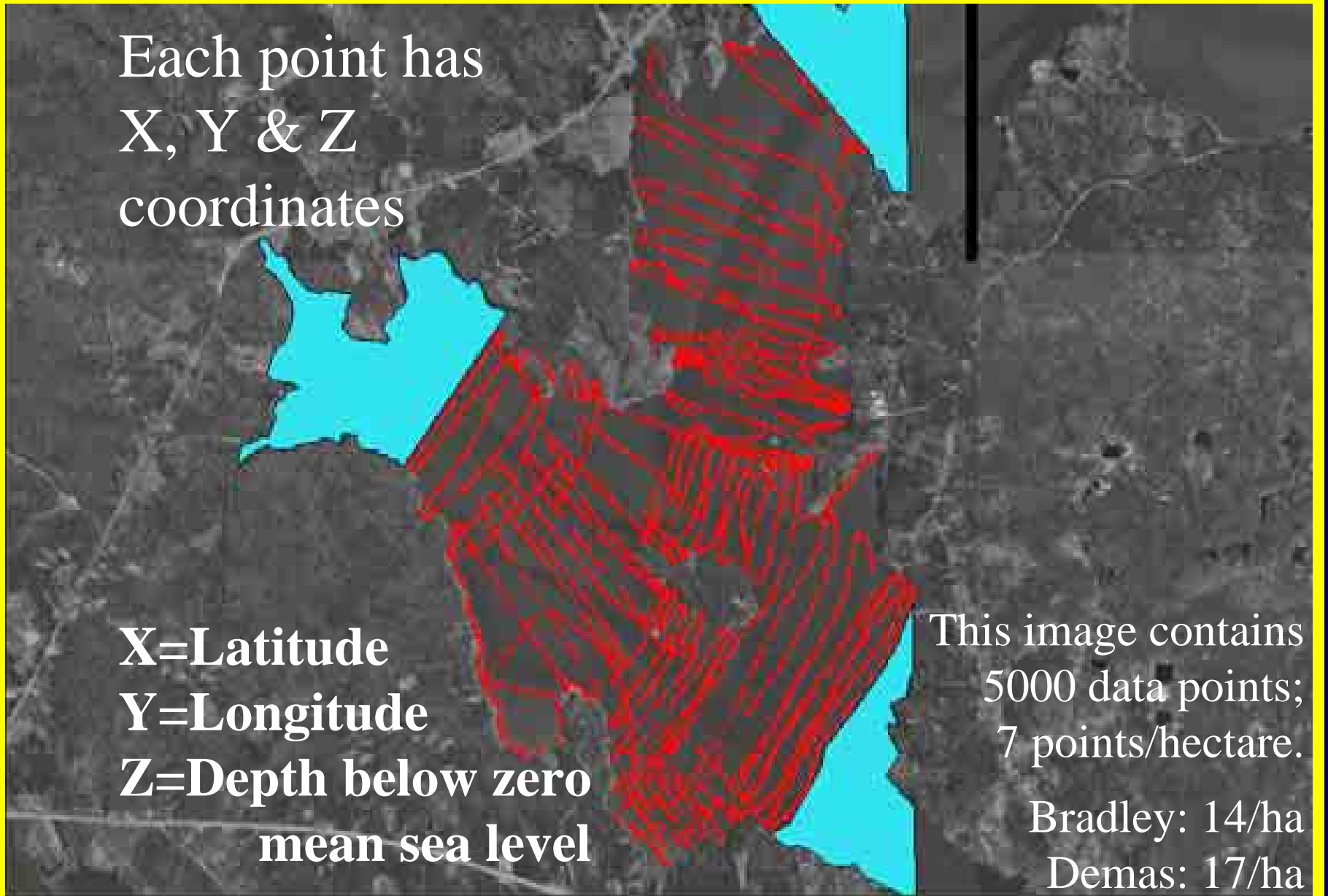


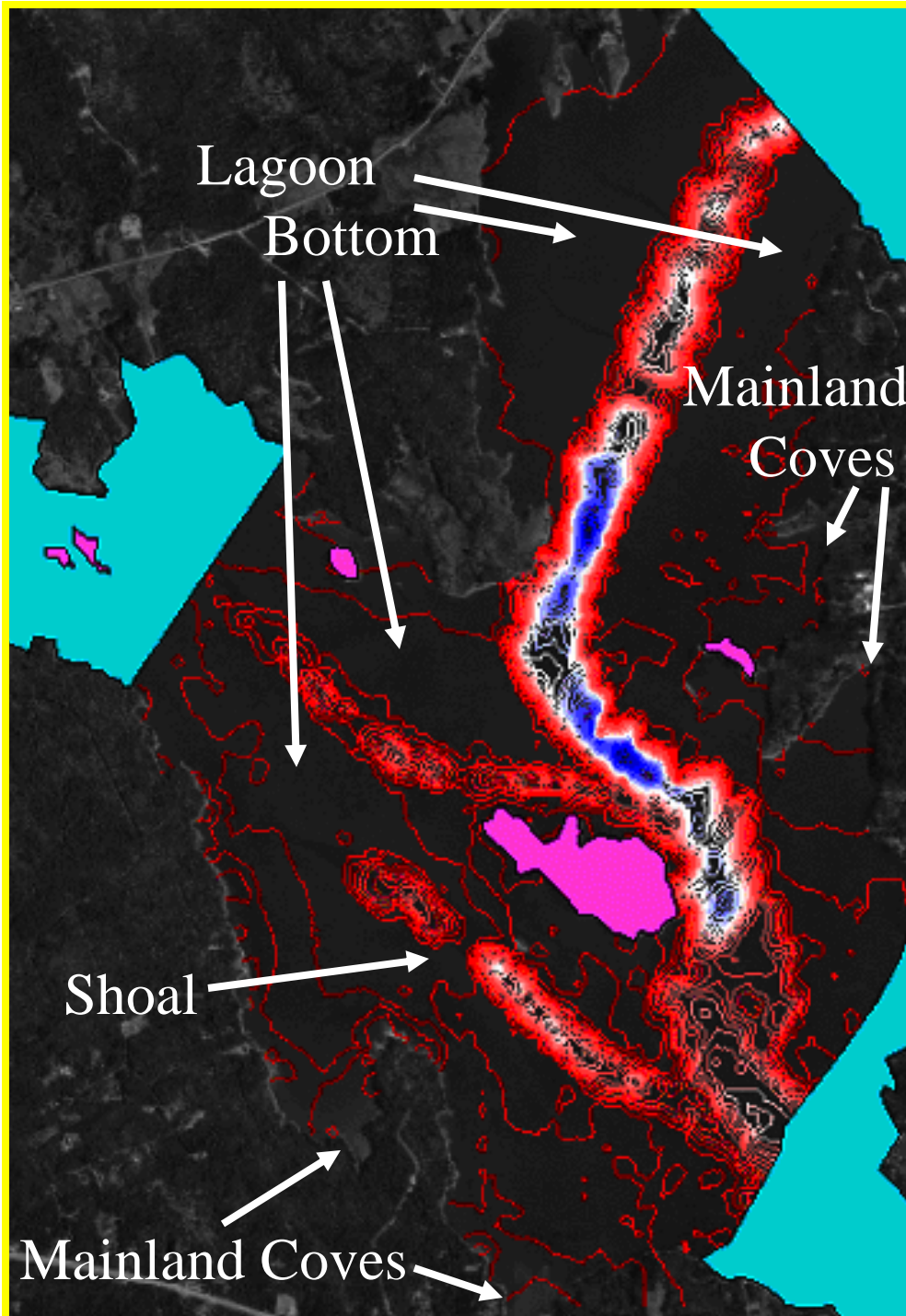
# Bathymetric Data Points

Each point has  
X, Y & Z  
coordinates

**X=Latitude**  
**Y=Longitude**  
**Z=Depth below zero  
mean sea level**

This image contains  
5000 data points;  
7 points/hectare.  
Bradley: 14/ha  
Demas: 17/ha



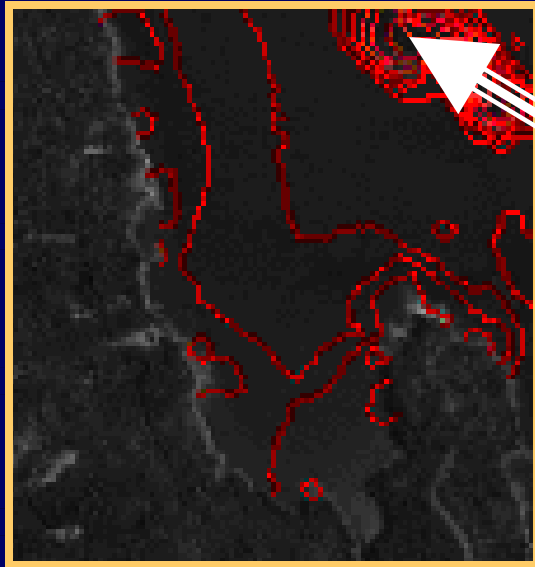


## 50 cm Contours

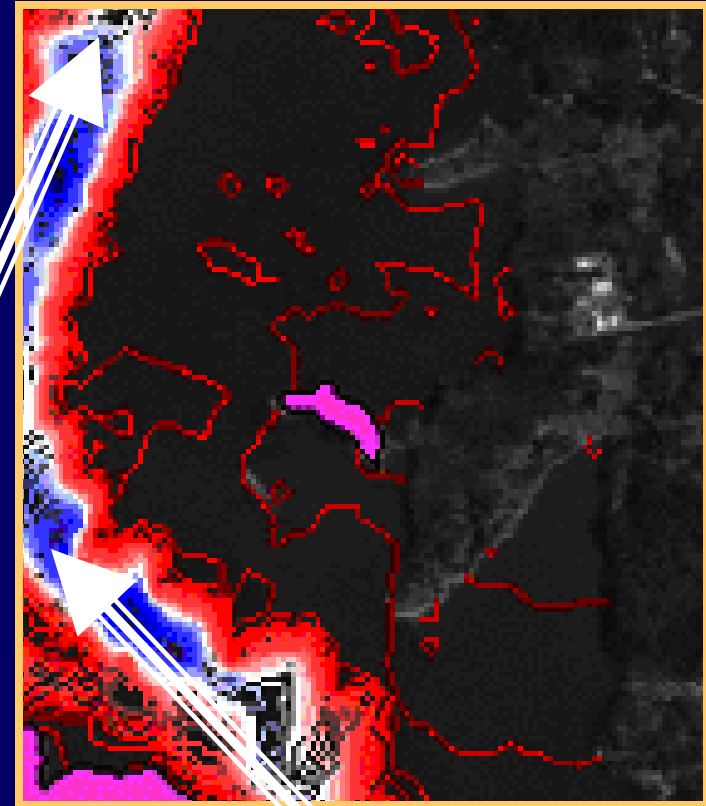
- Compare to aerial photos as a check for data collection
- Most of the relief is in the channels
- Fairly homogenous, level surface
- Taunton Bay is very shallow in general
- <1m depth at low tide everywhere except channels

# Using Contours to ID Terrain

Western Side

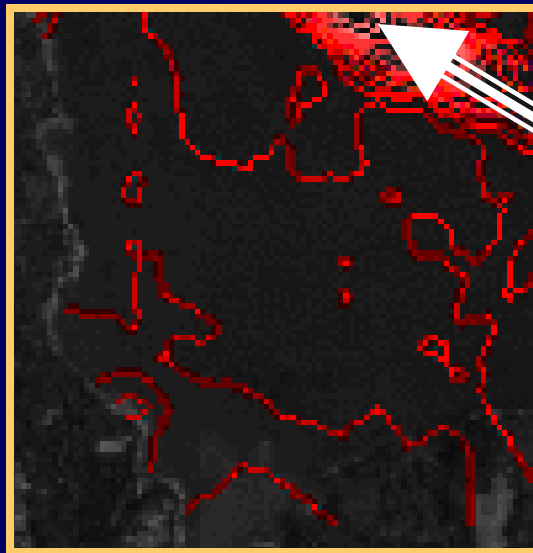


Eastern Side



*Water Flow*

SW  
Portion  
of Bay



Bay Inlet



# Vegetation Data from Department of Marine Resources (DMR)

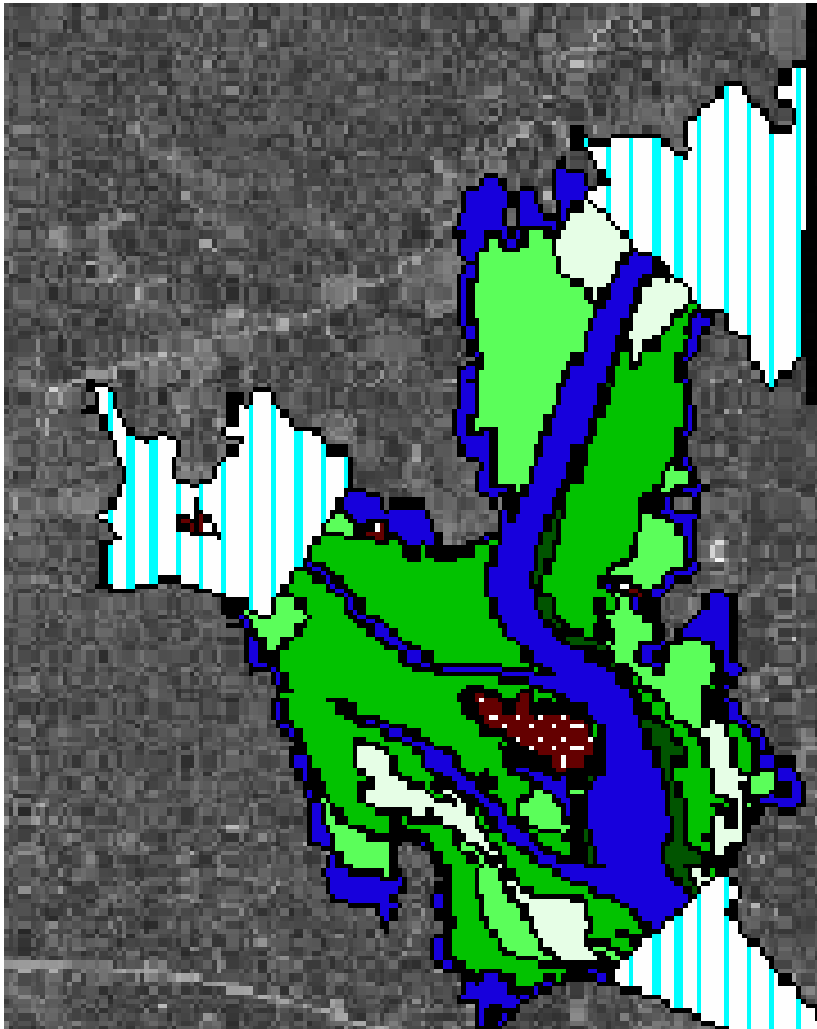
ME DMR investigating the SAV in Taunton Bay

Air photos (1996 & 2002)

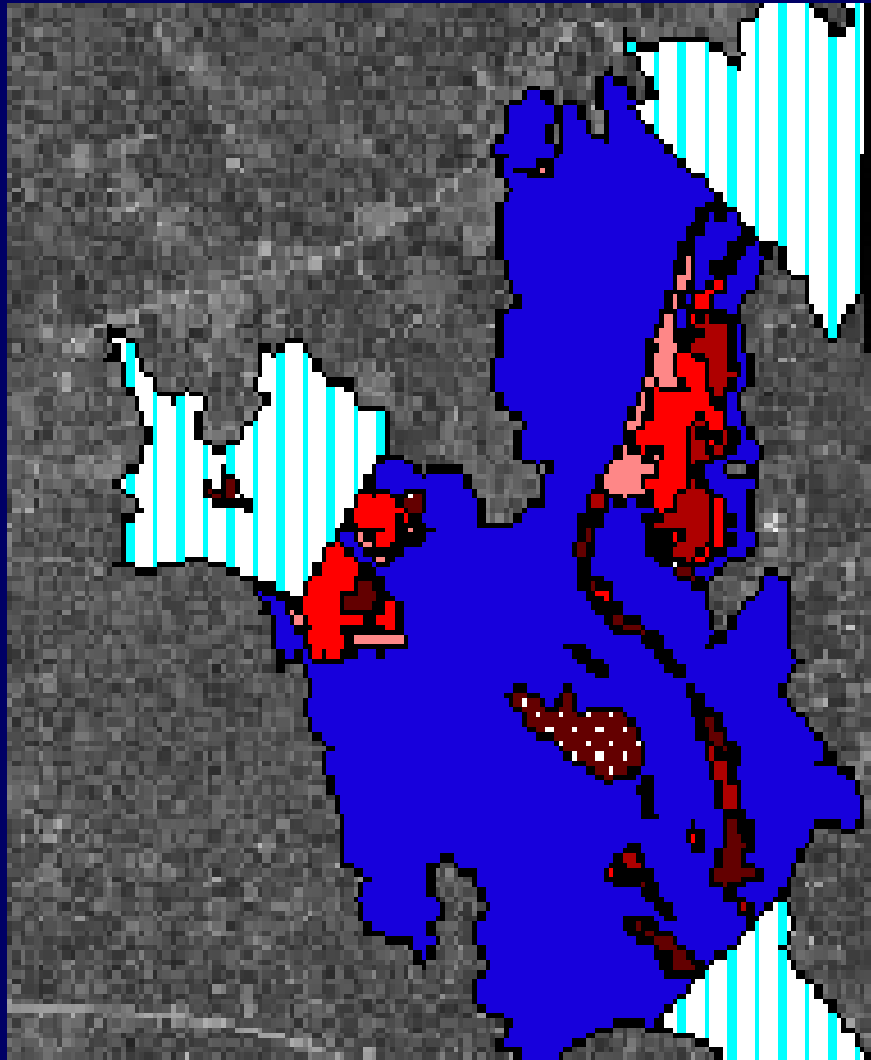
Ground Truthing

## '96 Eelgrass Coverage

- 0 to 10%
- 10 to 40%
- 40 to 70 %
- 70 to 100%



# '02 Vegetation Data from the DMR



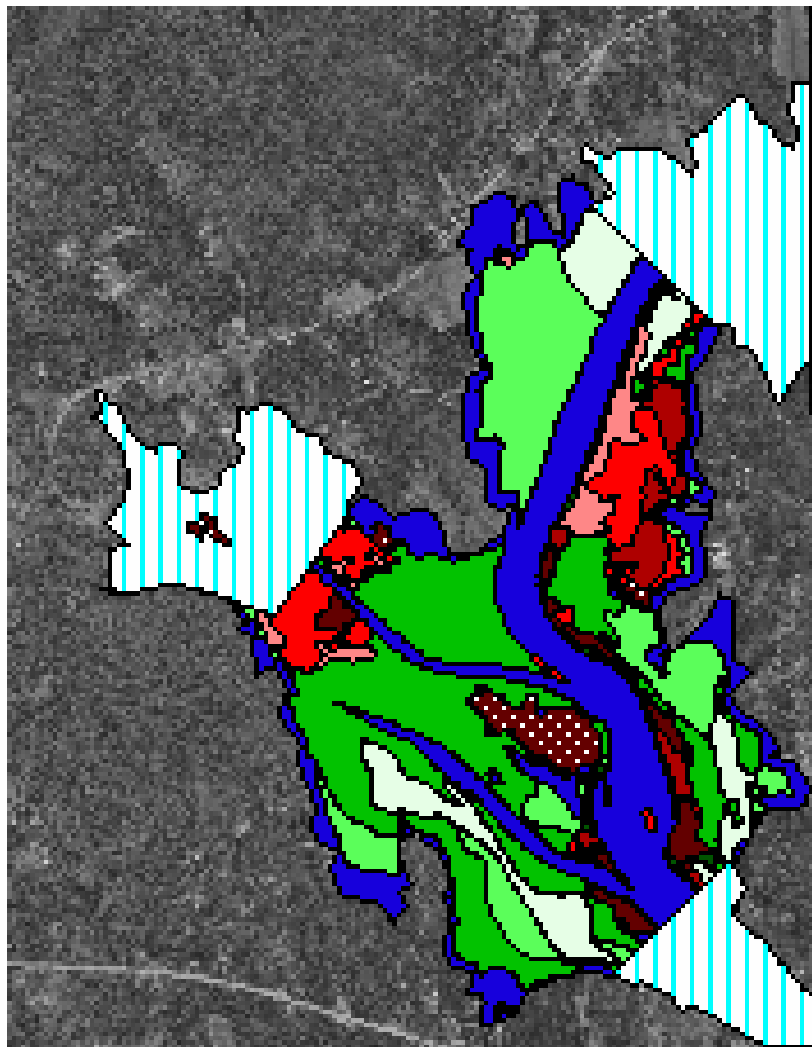
78% loss of Eelgrass  
(SAV) in 6 years!

Cause not known.

## '02 Eelgrass Coverage

- 0 to 10%
- 10 to 40%
- 40 to 70%
- 70 to 100%

# Units drawn from vegetation data



## '96 Eelgrass Coverage

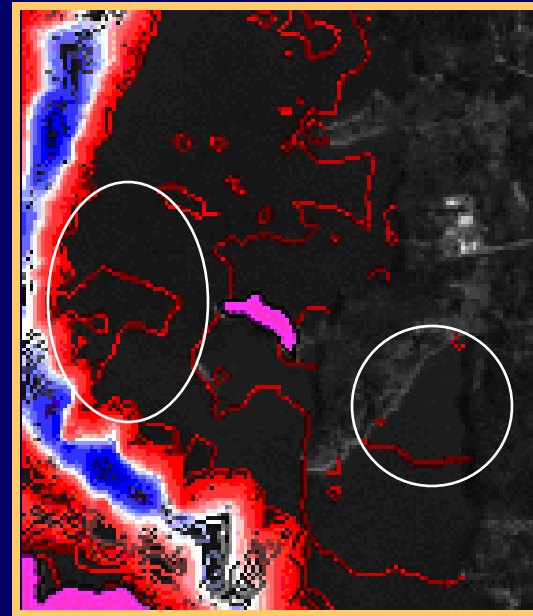
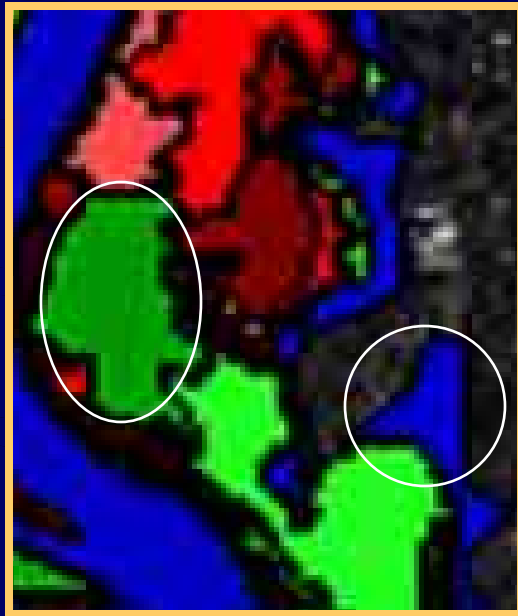
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## '02 Eelgrass Coverage

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# Comparing Bathymetry & Vegetation Analyses

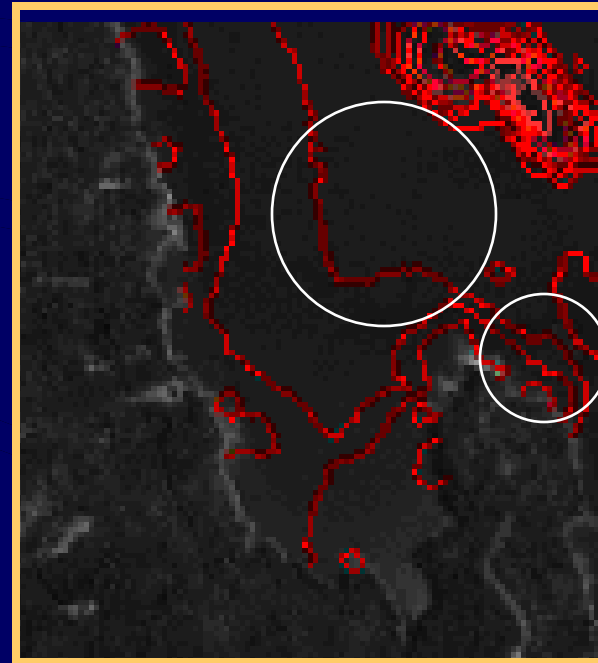
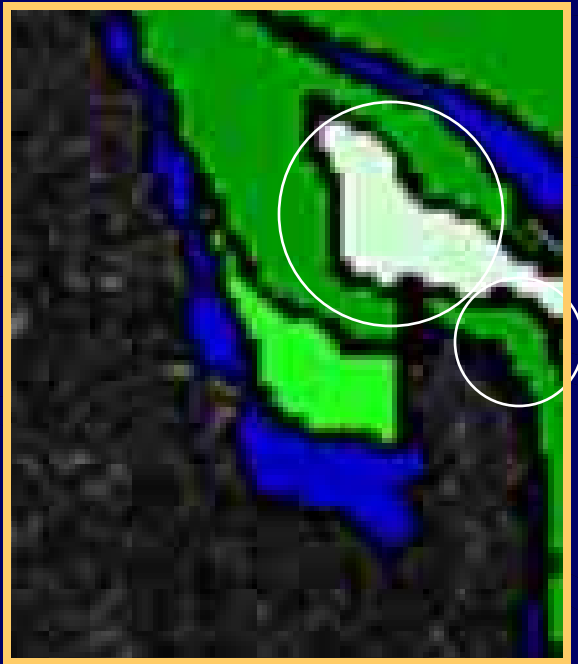
Eastern Side





# Comparing Bathymetry & Vegetation Analyses

## Western Side





# Estuary Landscape Taunton Bay, ME

- Submerged alluvial fans where streams enter bay.
- Re-submerged glaciomarine deposits.
  - Some with sub-aerial soil development.
  - Underlies entire bay system
- Extensive lagoon bottom areas.
- Channels differentiated by geomorphic history.
  - Drowned stream channels
  - Tidal inlet channels