# Subaqueous Soils and CMECS

## Coastal and Marine Ecological Classification Standard

2nd National Subaqueous Soils Workshop, August 9-12, Rhode Island

# What is CMECS?

- National standard for consistent descriptions of coastal and marine ecological features
  - Deep ocean to splash zone and upriver to tidally influenced areas
- Used in mapping and classifying geological, physical, biological, and chemical components of the environment
- In development by NOAA
- If approved as a FGDC (Federal Geographic Data Committee) standard will be required if federal funds are used on the project

# Why are we involved?

**2004:**

**MEMORANDUM OF UNDERSTANDING FOR THE MAPPING PARTNERSHIP FOR COASTAL SOILS AND SEDIMENT (MAPCOAST)**

"MapCoast understands the need to develop a common hierarchal system of coastal soil and sediment classification that encompasses all disciplines including biology, wetlands, geology, and pedology."

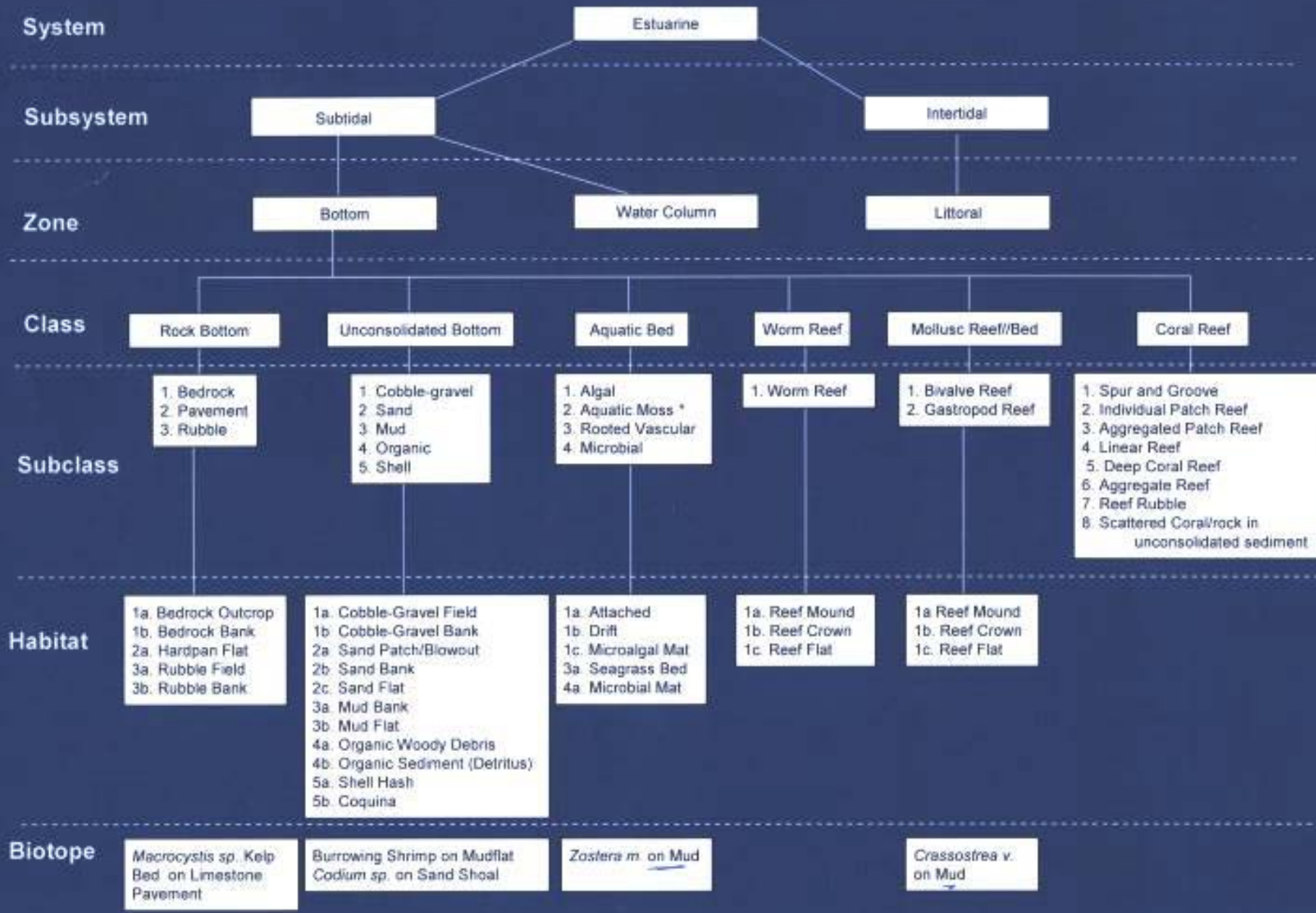
# Brief history of CMECS

**Version I: 2007**


http://www.csc.noaa.gov/benthic/cmecs/CMECS_doc.pdf

# Coastal and Marine Ecological Classification Standard (CMECS)

## Bottom Zone

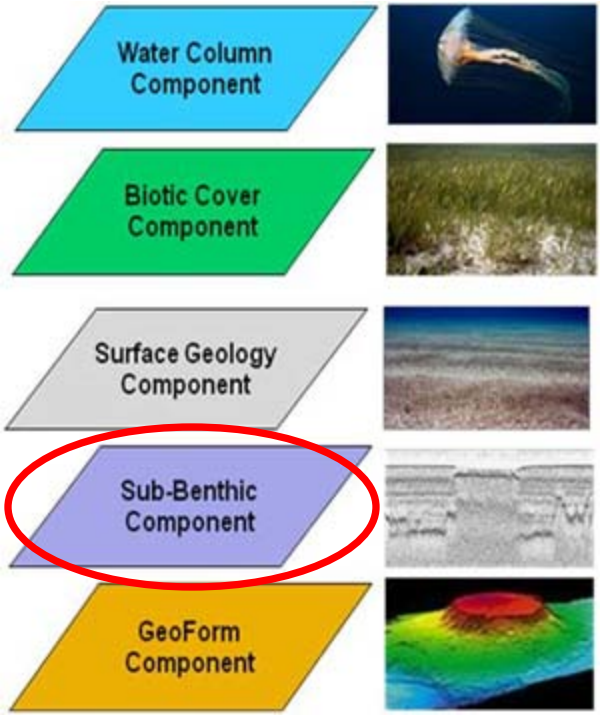


# Brief history of CMECS

**Version I: 2007**


**Version II**


**Version III: In Review by FGDC**

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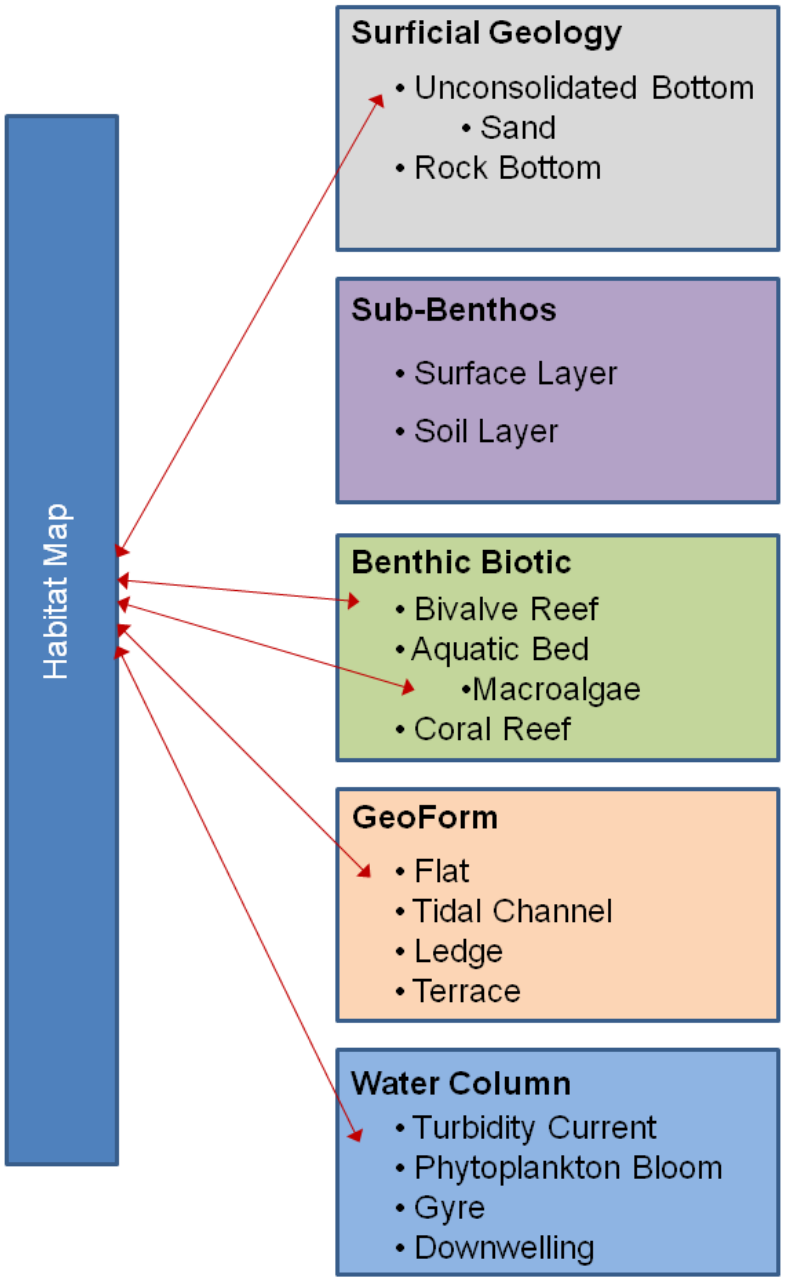
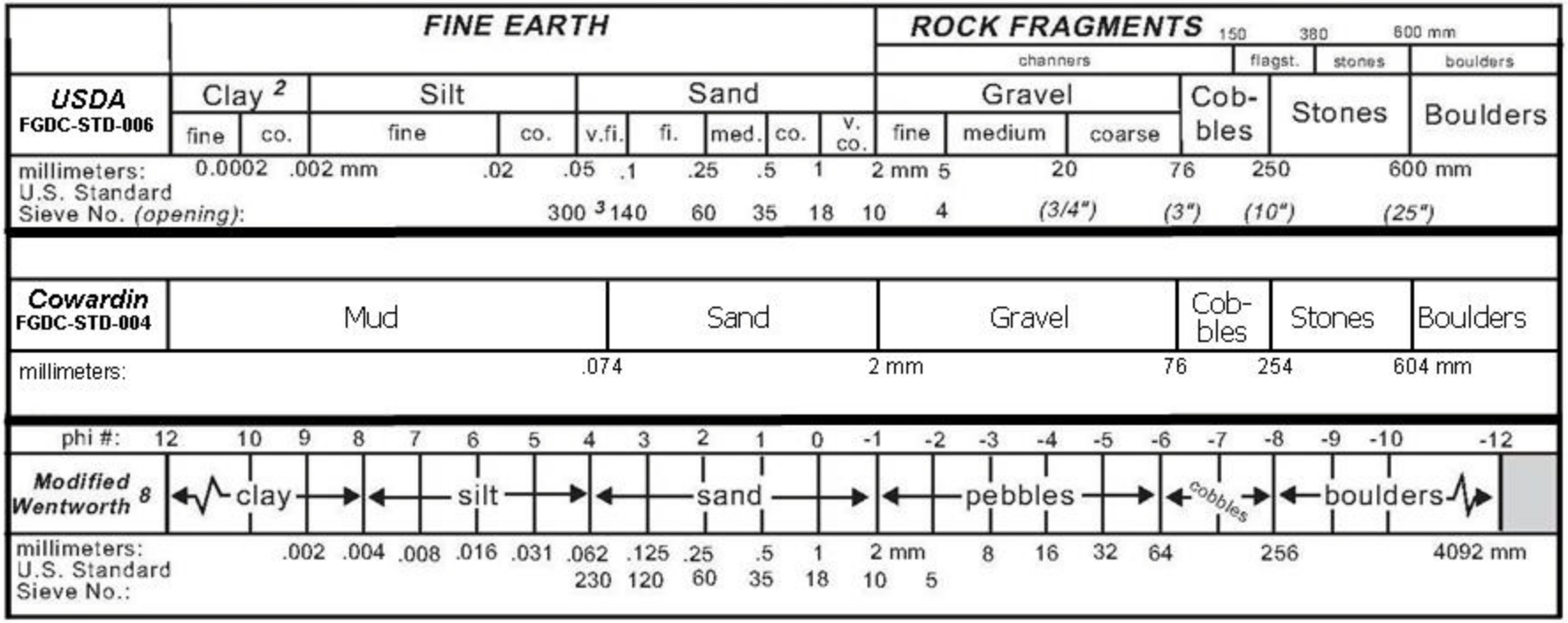
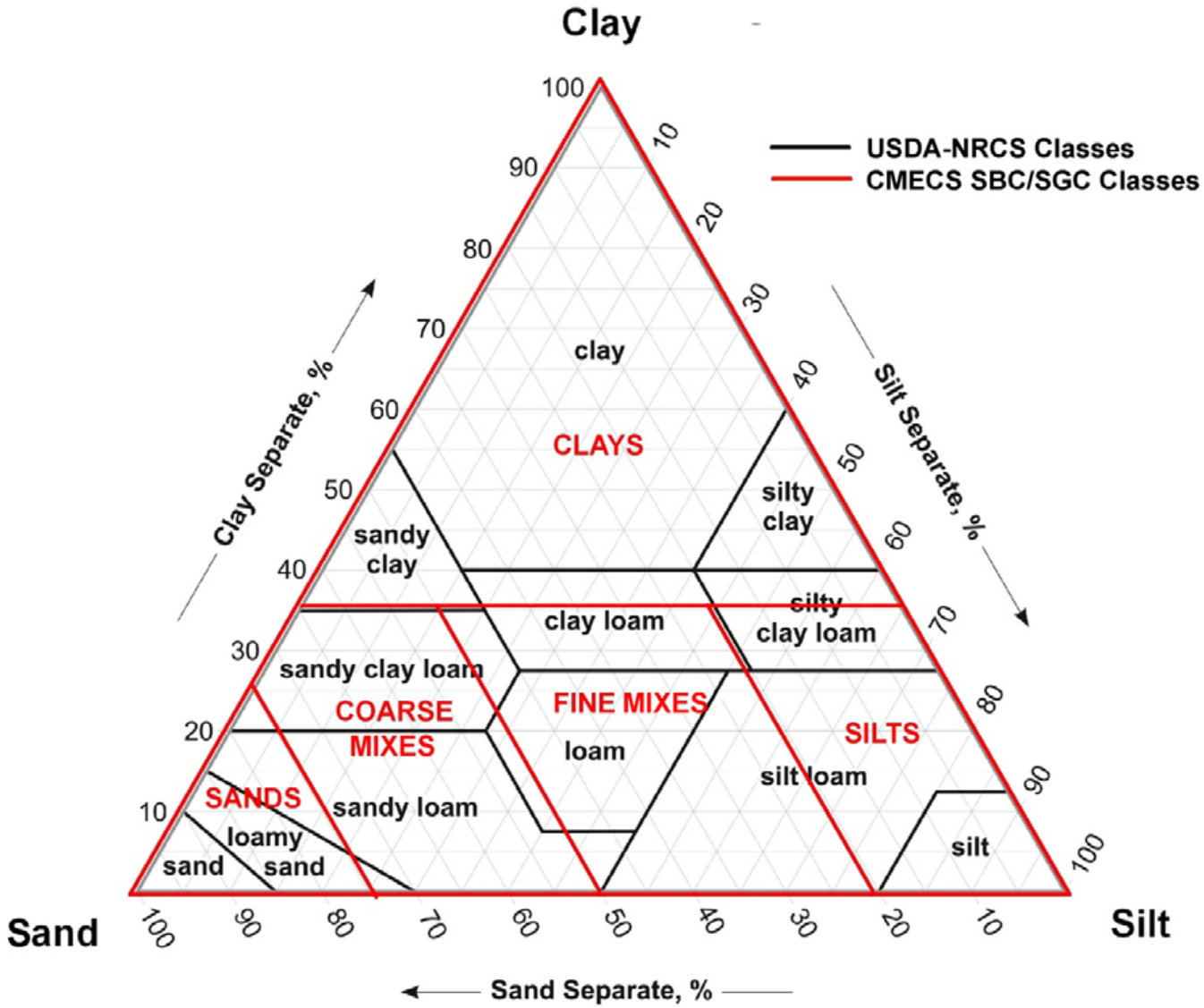
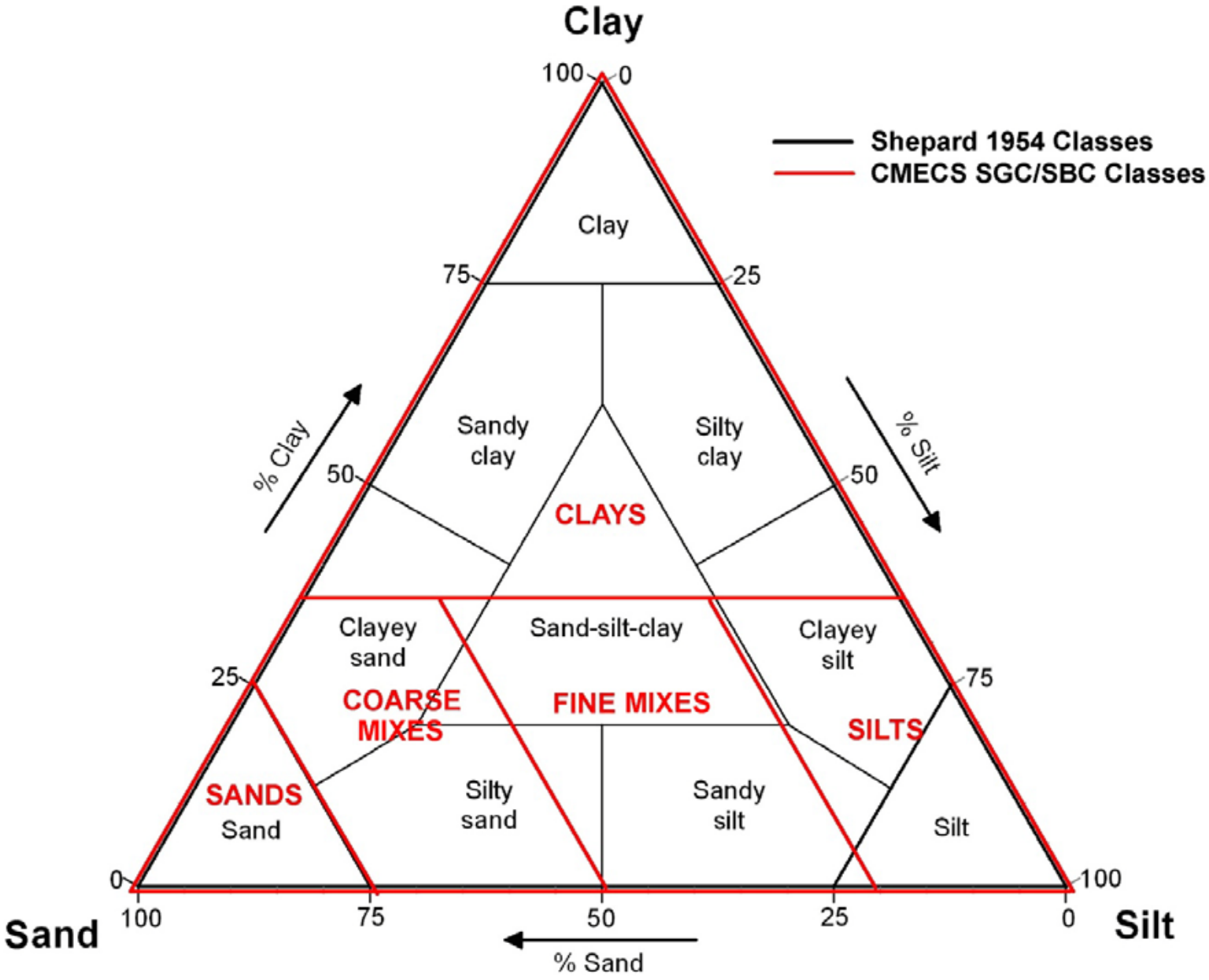

Habitat Map
Surficial Geology
• Unconsolidated Bottom
• Sand
• Rock Bottom
Sub-Benthos
• Surface Layer
• Soil Layer
Benthic Biotic
• Bivalve Reef
• Aquatic Bed
•Macroalgae
• Coral Reef
GeoForm
• Flat
• Tidal Channel
• Ledge
• Terrace
Water Column
• Turbidity Current
• Phytoplankton Bloom
• Gyre
• Downwelling




| | |
|---|---|
| **clay < 0.002 mm** | **> 9 phi** |
| **silt 0.05 to 0.002 mm** | **4.3 to 9 phi** |
| **sand 0.05 to 2 mm** | **4.3 to -1 phi** |
| **(very fine sand) 0.05 to 0.10 mm** | **4.3 to 3.3 phi** |
| **(fine sand) 0.10 to 0.25 mm** | **3.3 to 2 phi** |
| **(medium sand) 0.25 to 0.5 mm** | **2 to 1 phi** |
| **(coarse sand) 0.5 to 1 mm** | **1 to 0 phi** |
| **(very coarse sand) 1 to 2 mm** | **0 to -1 phi** |
| **pebble 2 to 76 mm** | **-1 to -6.2 phi** |
| **cobble 76 to 250 mm** | **-6.2 to -8 phi** |
| **stone 250 to 600 mm** | **-6 to -9.2 phi** |
| **boulder > 600 mm** | **< -9.2 phi** |


Clay
USDA-NRCS Classes
CMECS SBC/SGC Classes
Clay Separate, %
Silt Separate, %
Sand Separate, %
Sand
Silt
clay
CLAYS
silty clay
sandy clay
clay loam
silty clay loam
sandy clay loam
COARSE MIXES
FINE MIXES
loam
SILTS
silt loam
SANDS
sandy loam
loamy sand
sand
silt


Clay
100
0
Shepard 1954 Classes
CMECS SGC/SBC Classes
Clay
75
25
Sandy clay
Silty clay
% Clay
% Silt
50
50
CLAYS
Clayey sand
Sand-silt-clay
Clayey silt
25
75
COARSE MIXES
FINE MIXES
SILTS
SANDS
Sand
Silty sand
Sandy silt
Silt
0
100
100
75
50
25
0
Sand
% Sand
Silt

# Benefits of CMECS

- Standard method of description
  - Common language
  - References subaqueous soil taxonomy for sub-benthic component
- Can be used for detailed or broad mapping and classifying
- Can be used with various data collection methods

# But…

- Currently in FGDC review and public comment
- Subject to change (perhaps needed)
- Still not agreed upon