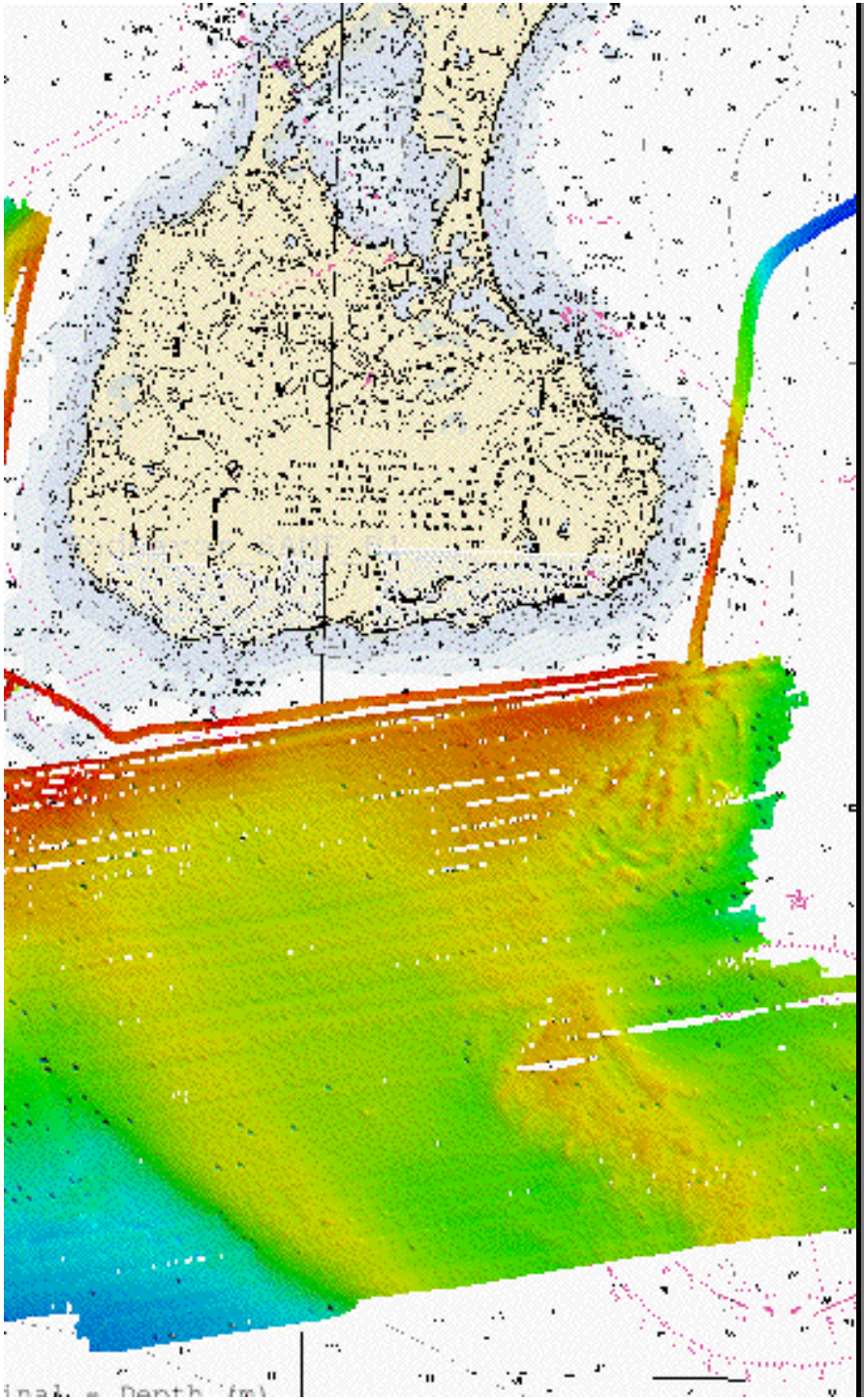


Rhode Island Ocean SAMP:

Fall 2008 Endeavor Cruise Results and Proposed Future Work

John W. King

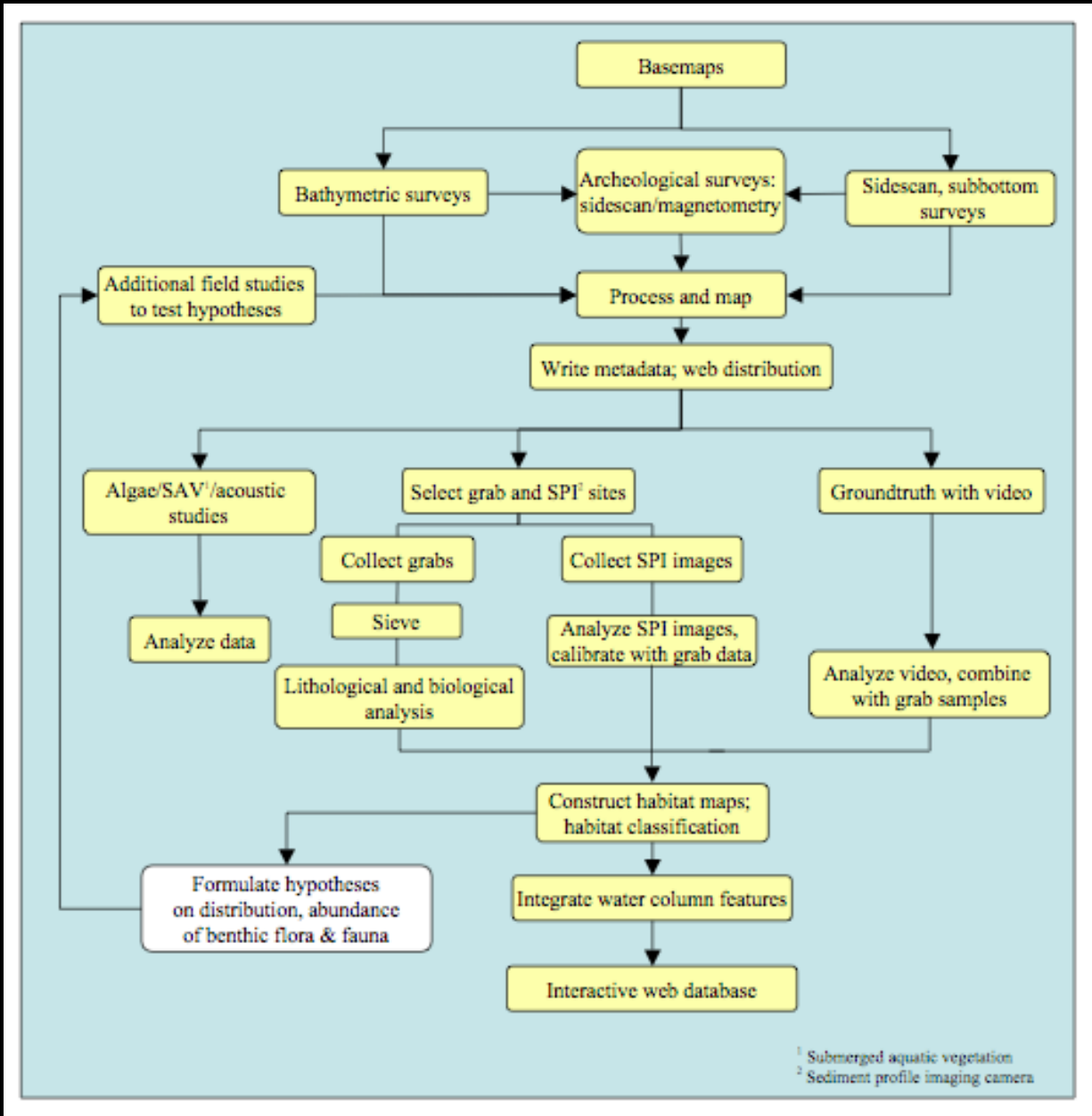
Graduate School of Oceanography

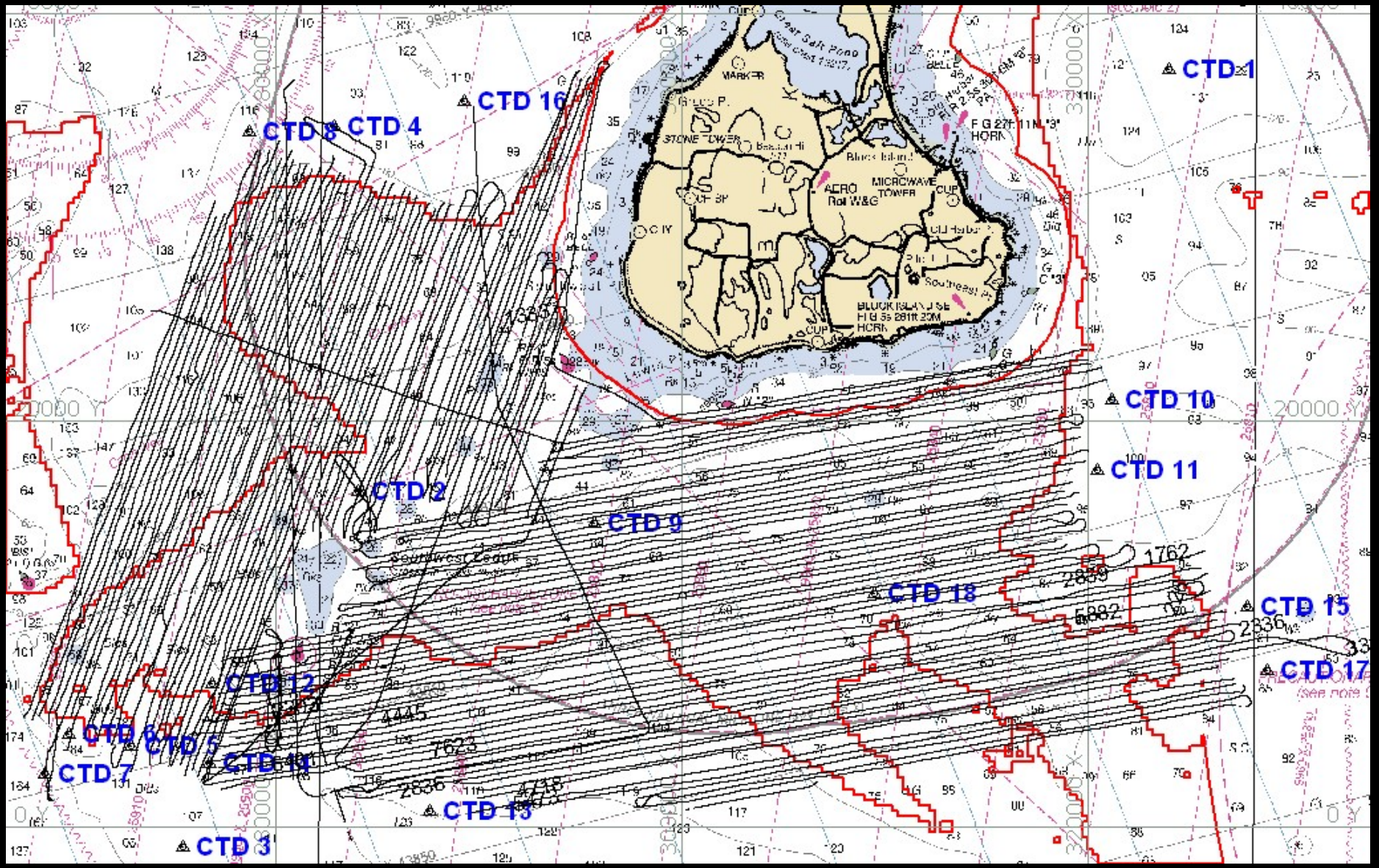
University of Rhode Island

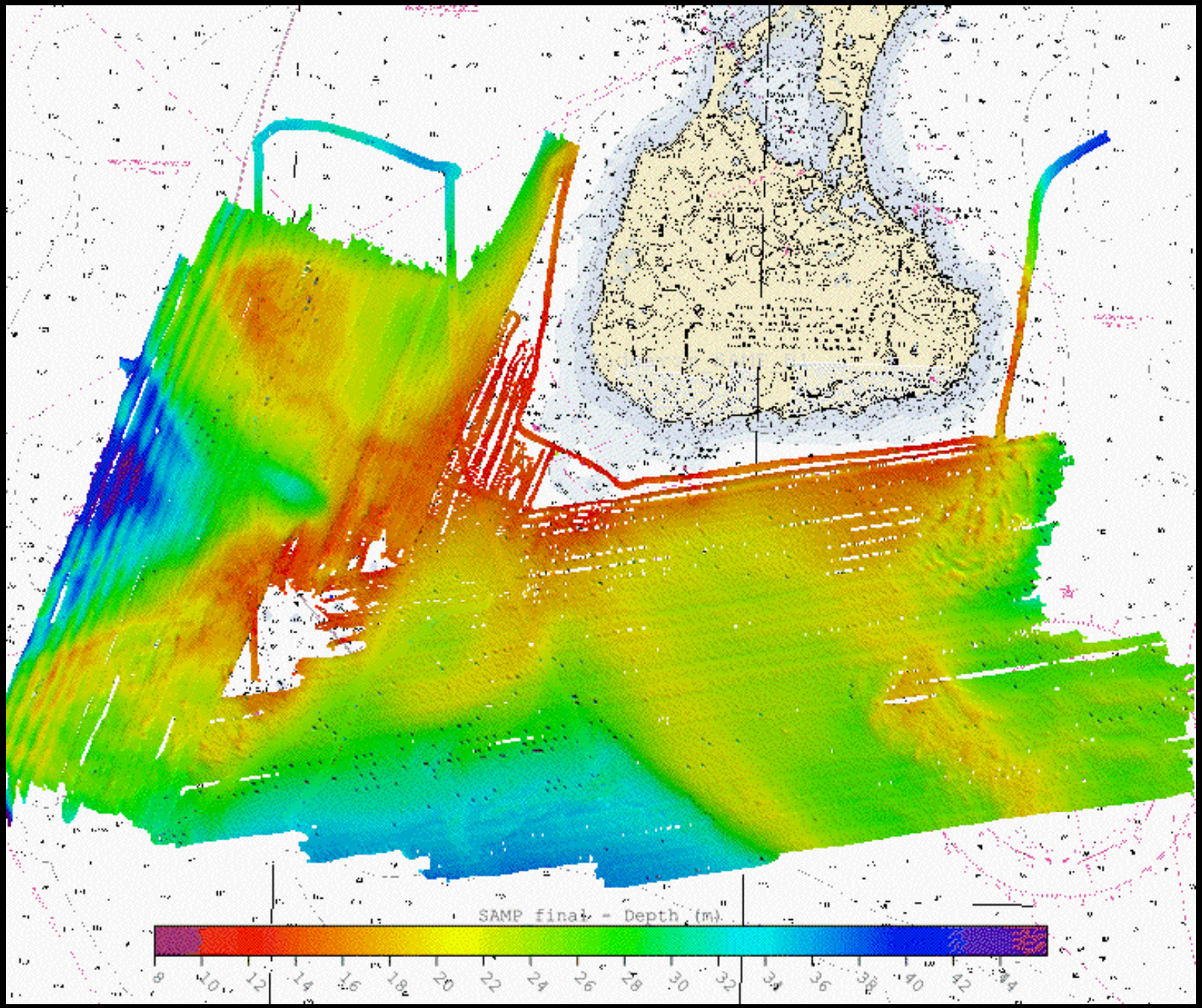
Project Team

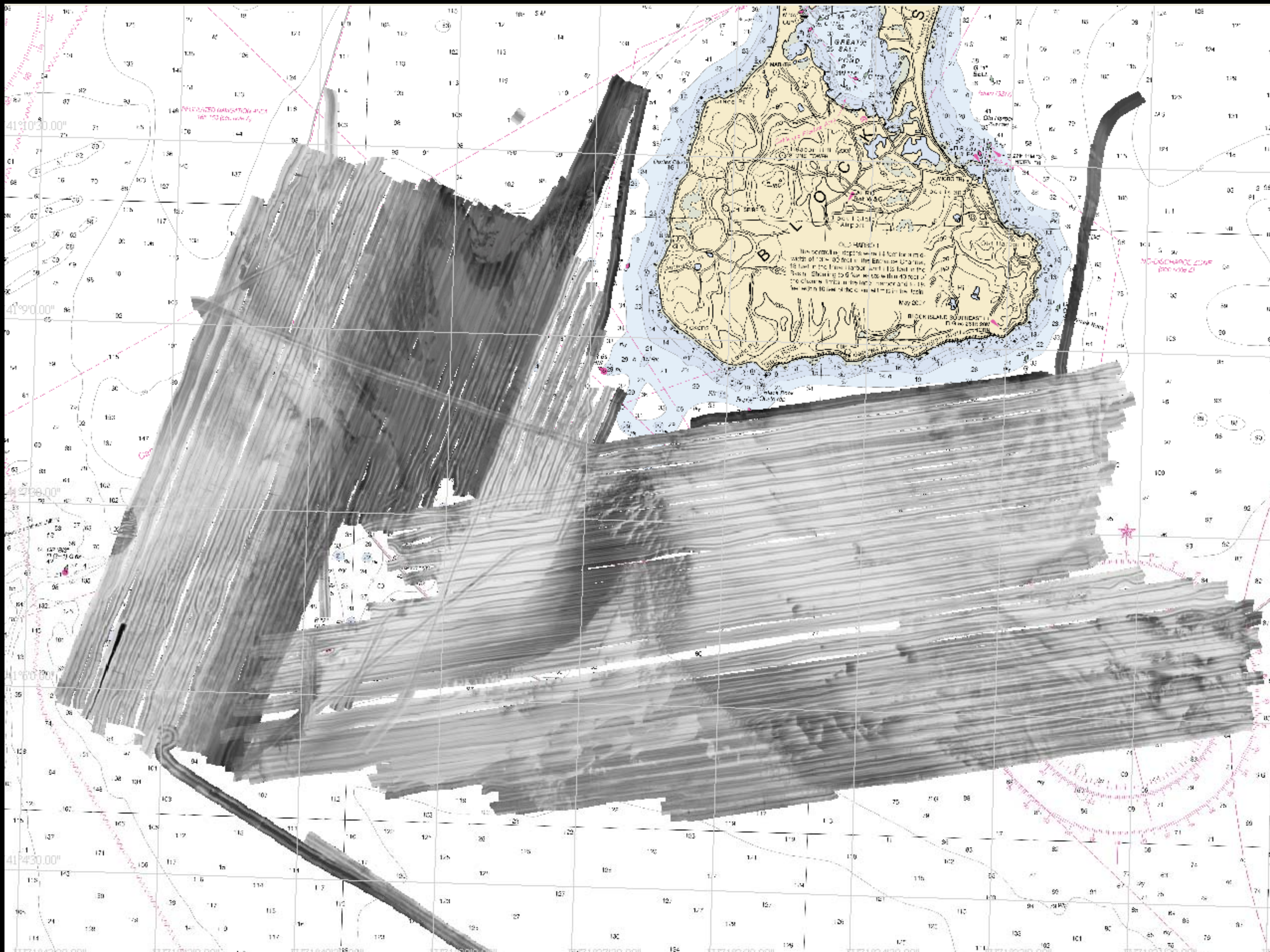
NAME	AFFILIATION	EXPERTISE
John W. King	Professor, URI Graduate School of Oceanography	Geology, Geophysics, Habitat Mapping
Jon Boothroyd	Professor, URI Department of Geosciences; Rhode Island State Geologist	Geology, Geophysics, Habitat Mapping
Rob Pockalny	Marine Research Scientist, Graduate School of Oceanography, URI	Geophysics, Geology, Mapping
Sheldon Pratt	Research Associate, Graduate School of Oceanography, URI	Benthic Biology, Habitat Mapping
Rod Mather	Professor, URI Department of History	Archaeology, Maritime Archaeology
Sam Debow	Manager, Operations, Graduate School of Oceanography, Special Research	Ship operations, Bathymetry and Sidescan Sonar Mapping

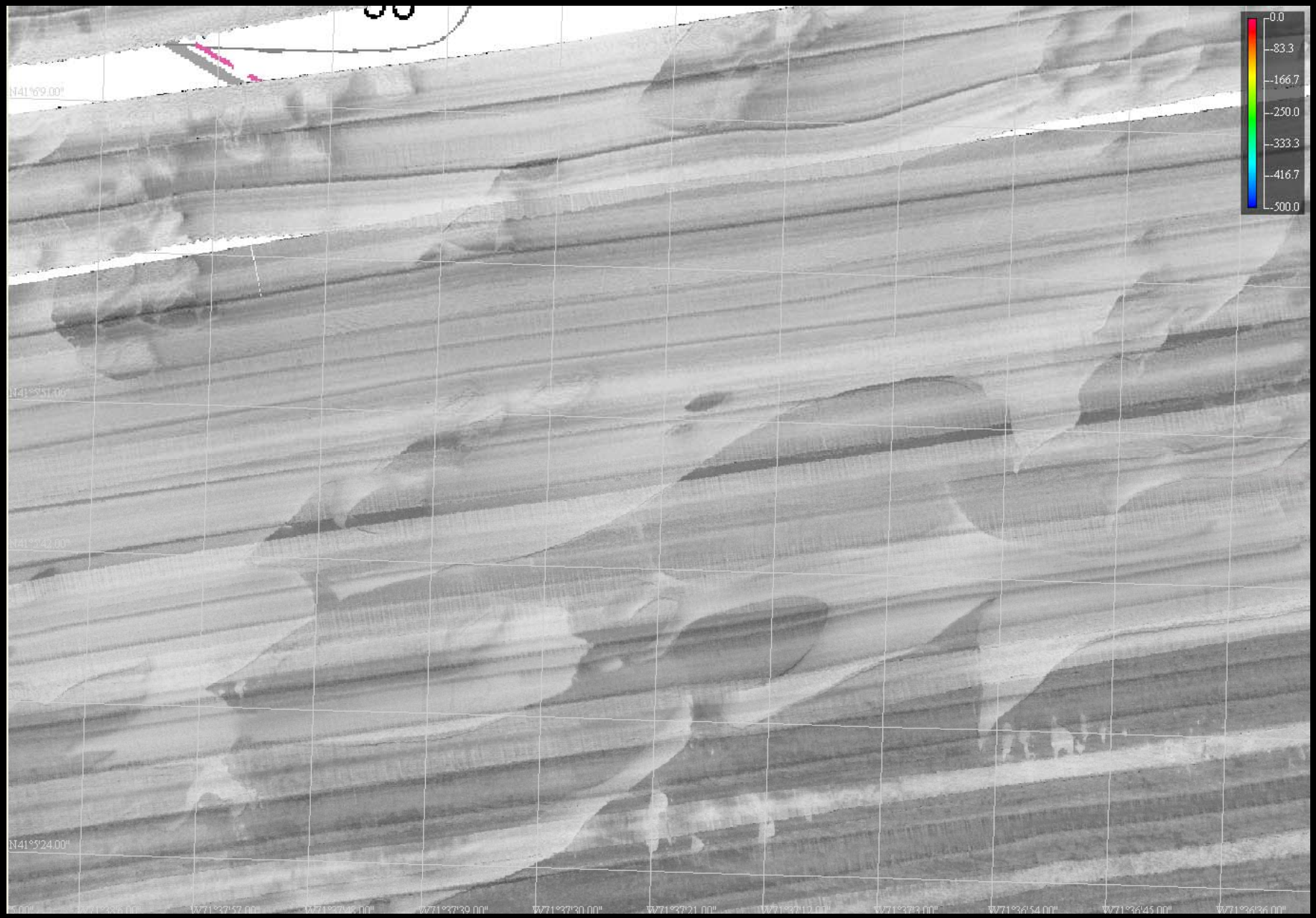
Baymap Project Protocol

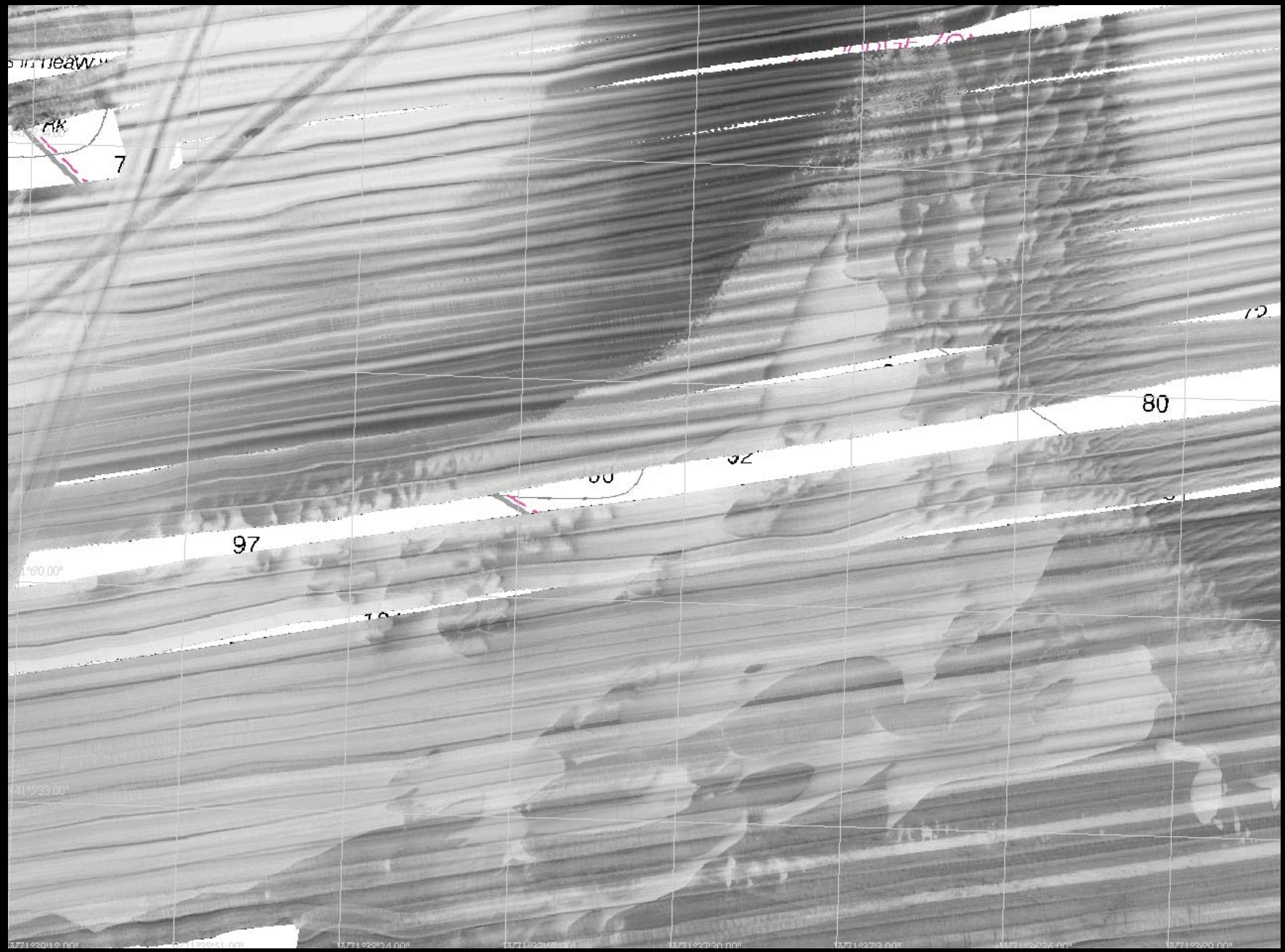


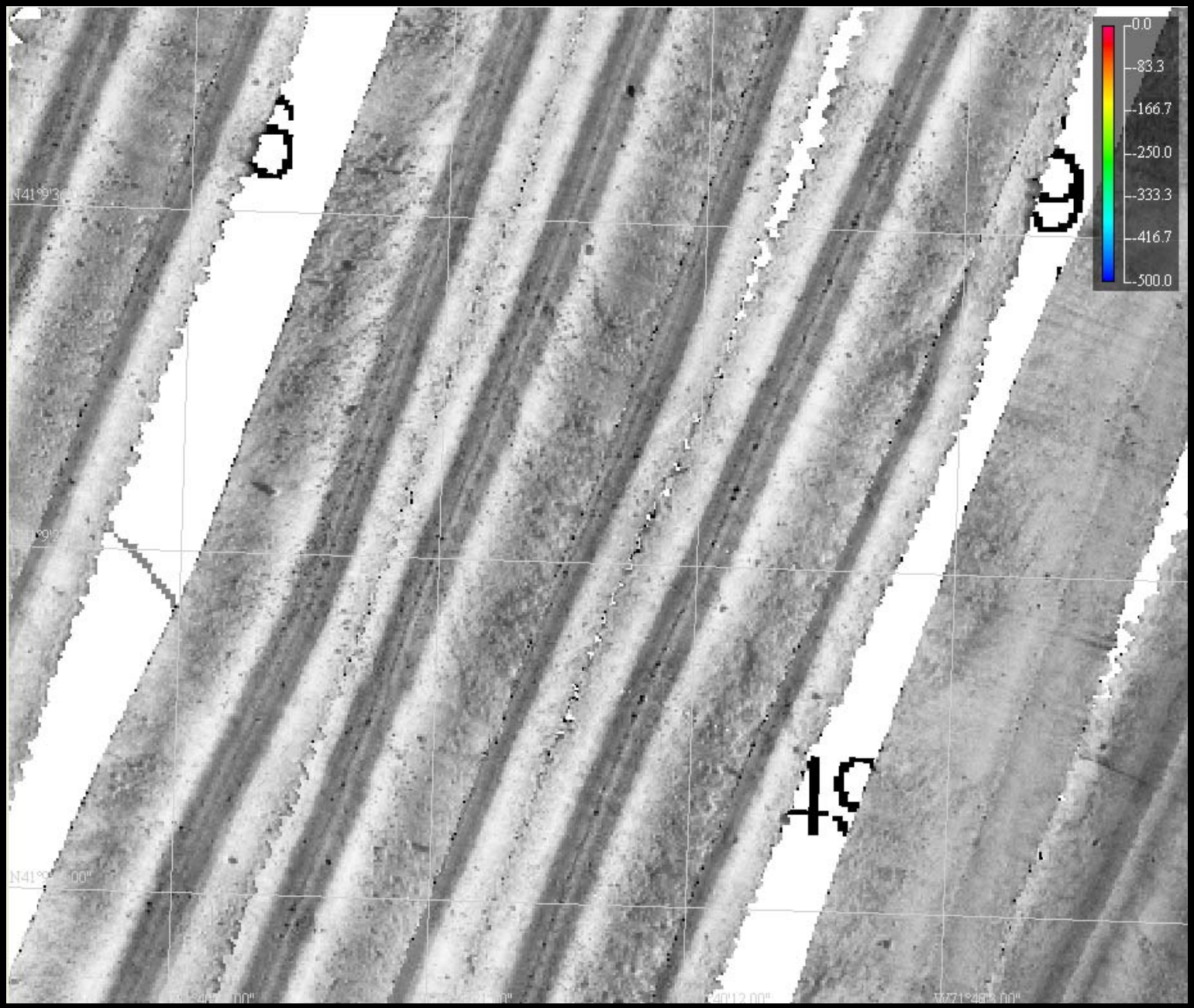

CTD 1
CTD 16
CTD 8
CTD 4
CTD 10
CTD 11
CTD 2
CTD 9
CTD 18
CTD 15
CTD 17
CTD 12
CTD 6
CTD 5
CTD 14
CTD 7
CTD 13
CTD 3
Great Salt Pond
STONE TOWER
Block Island
AERO
Rot W&G
MICROWAVE
TOWER
Old Harbor
Southeast Pt
BLOCK ISLAND SE
FI G 5s 28ft 20M
HORN
F G 27ft 11M "3"
HORN
Southwest Ledge
1762
2859
5882
2836
4445
7623
2836

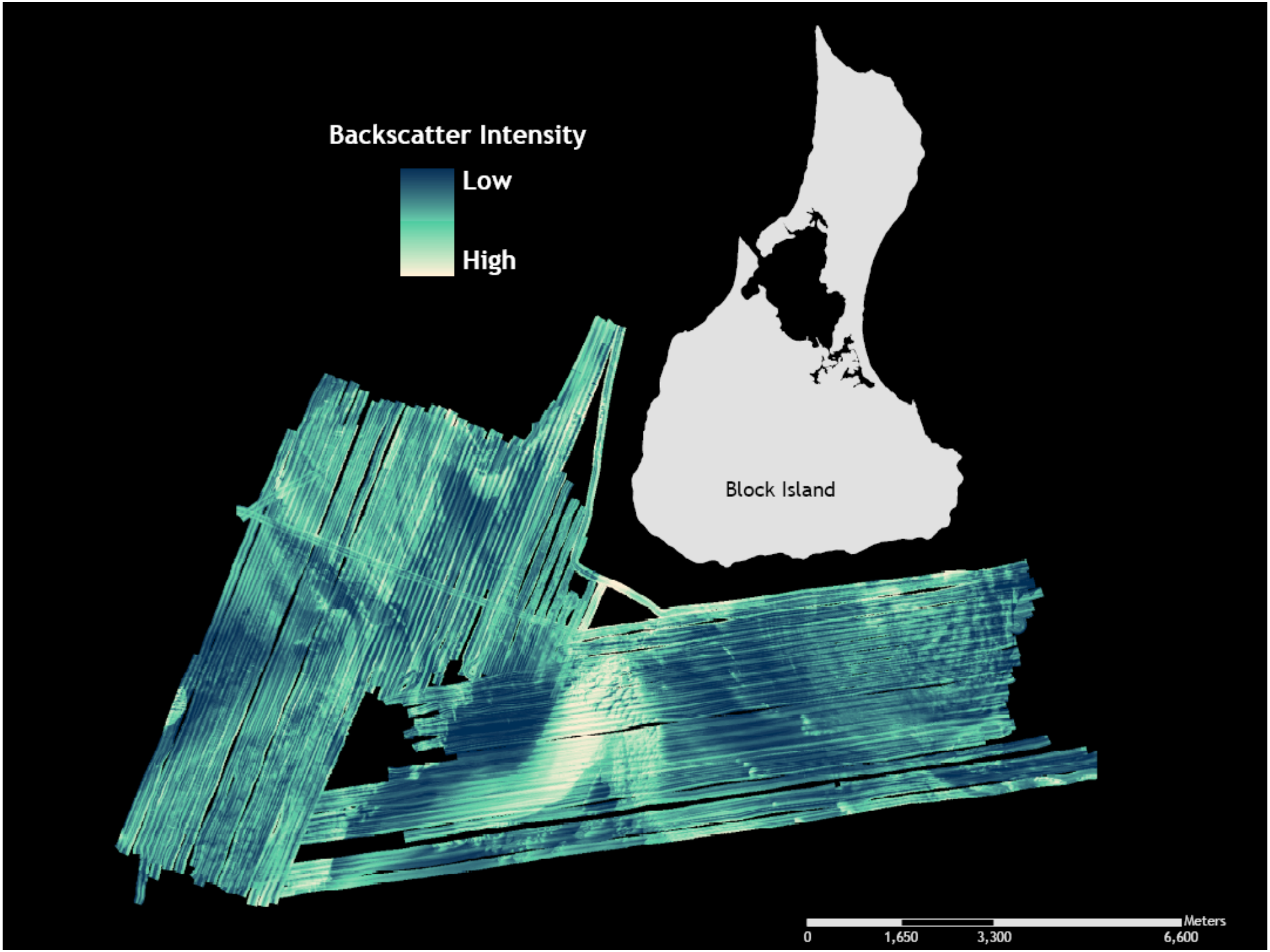

SAMP final - Depth (m)
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
38
40
42
44


41°10'30.00"
41°9'0.00"
41°7'30.00"
41°6'0.00"
41°4'30.00"
W71°43'30.00"
W71°42'0.00"
W71°40'30.00"
W71°39'0.00"
W71°37'30.00"
W71°36'0.00"
W71°34'30.00"
W71°33'0.00"
W71°31'30.00"

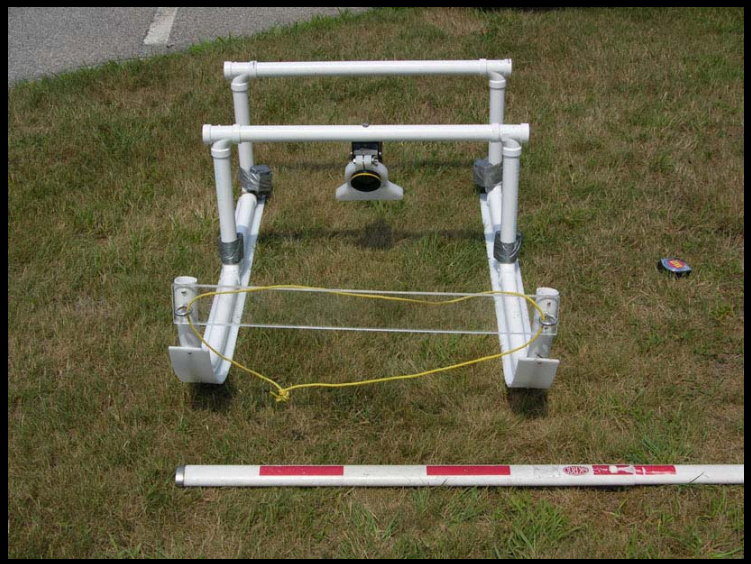

0.0
-83.3
-166.7
-250.0
-333.3
-416.7
-500.0
N41°39.00'
N41°38'51.00'
N41°38'42.00'
N41°38'24.00'
W71°37'57.00'
W71°37'48.00'
W71°37'39.00'
W71°37'30.00'
W71°37'21.00'
W71°37'12.00'
W71°37'3.00'
W71°36'54.00'
W71°36'45.00'
W71°36'36.00'


7
80
97


-0.0
-83.3
-166.7
-250.0
-333.3
-416.7
-500.0


Backscatter Intensity
Low
High
Block Island
Meters
0
1,650
3,300
6,600

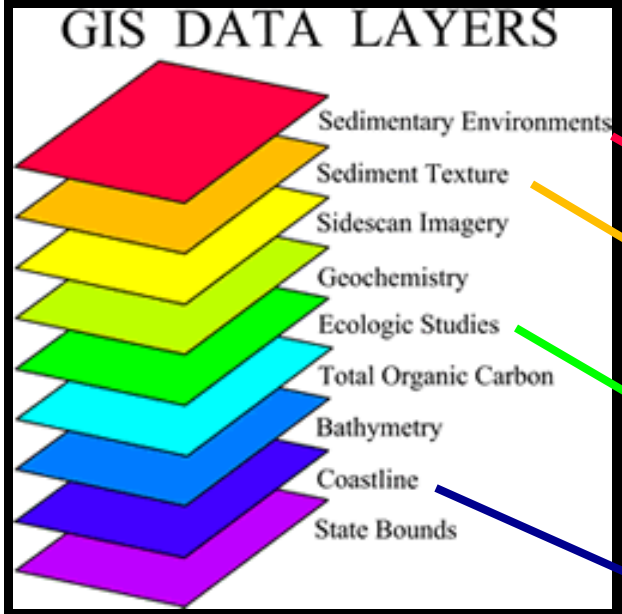
GROUNDTRUTHING: Benthic imaging equipment

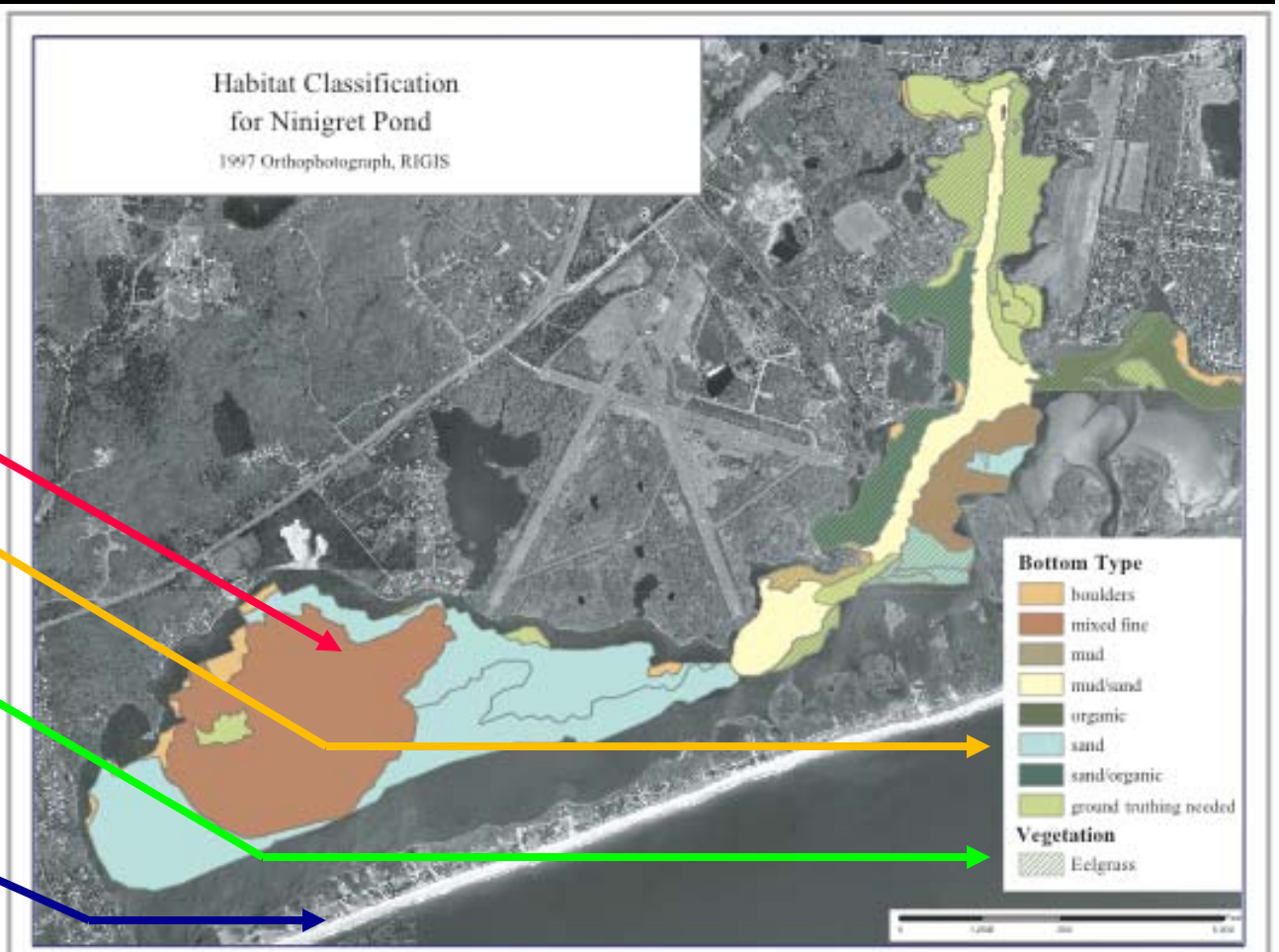


GROUNDTRUTHING: grab sampling

GROUNDTRUTHING: grab sampling

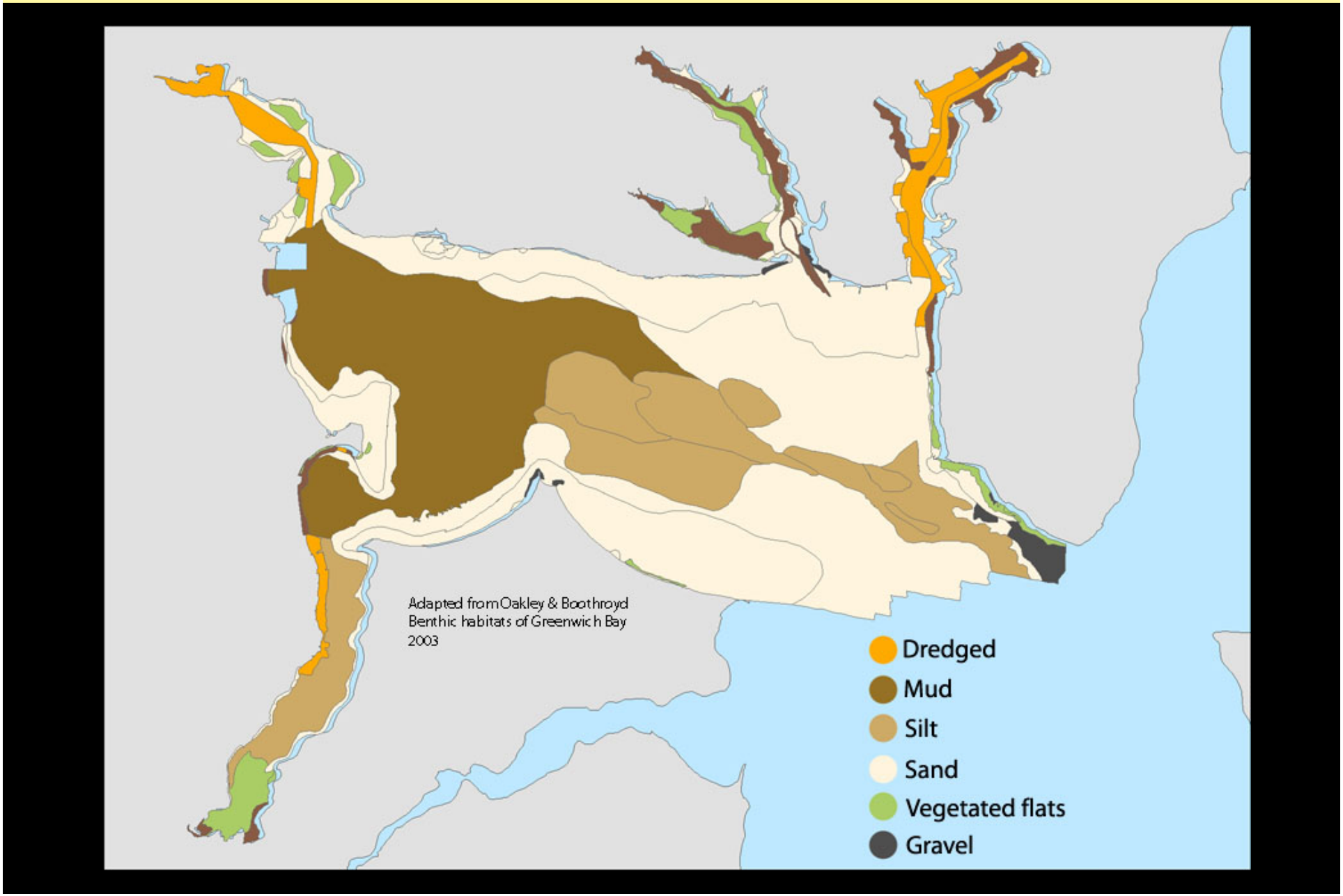
Creating a GIS Map Database

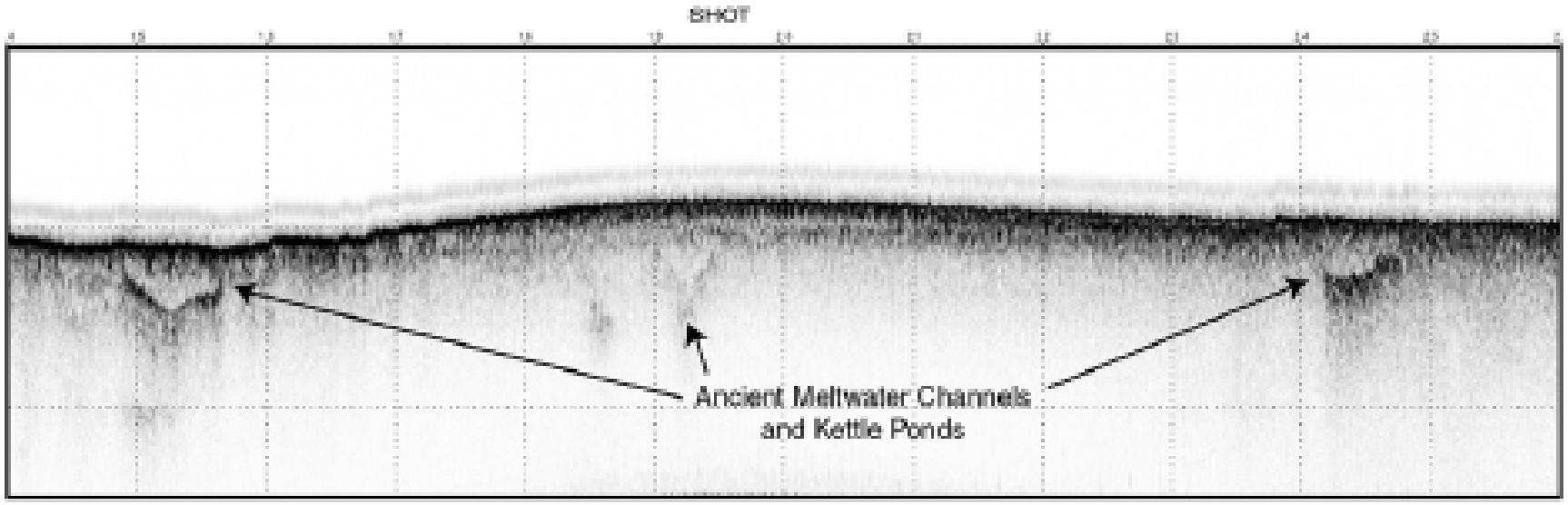




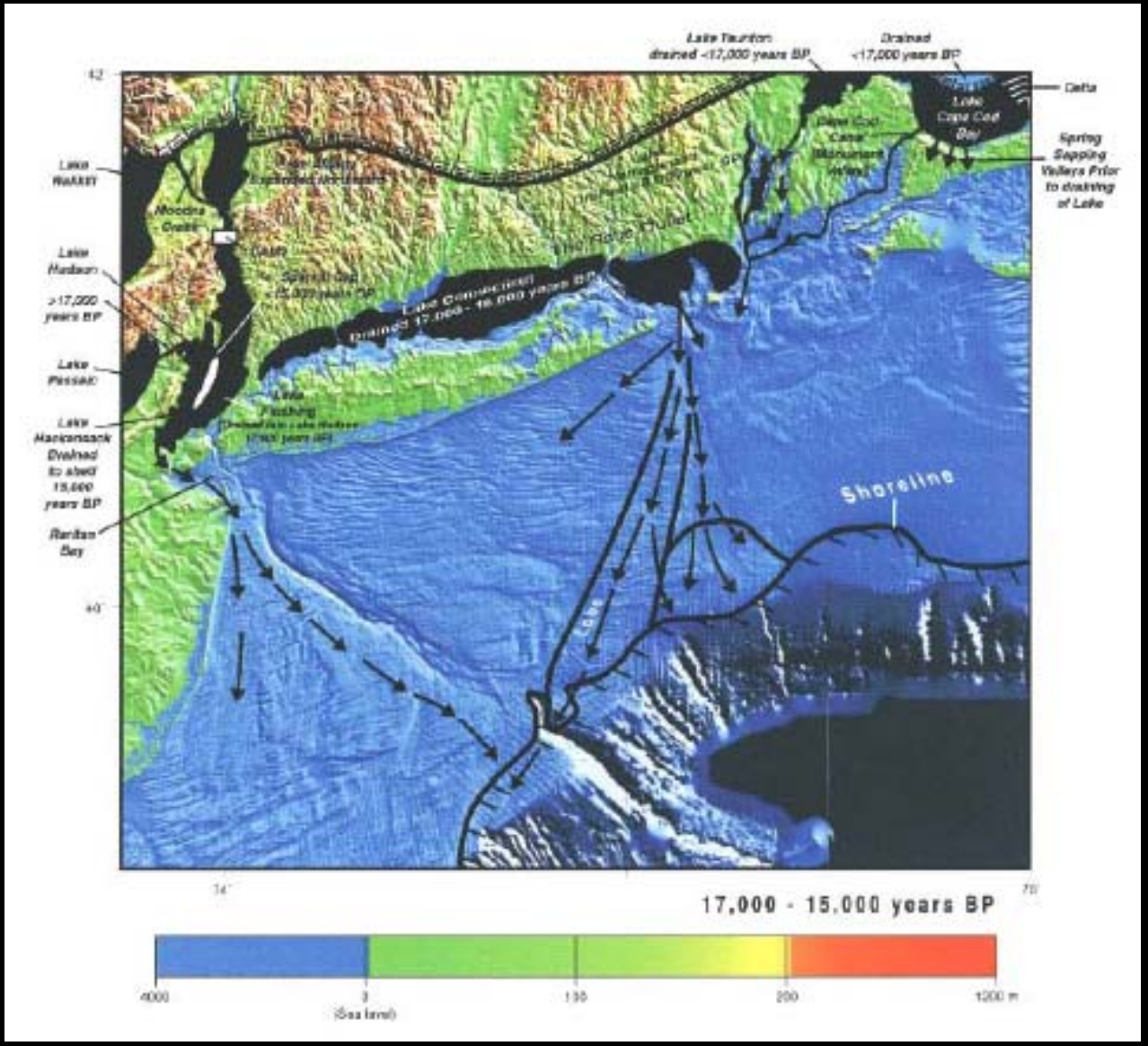
BOTTOM TYPE	ACOUSTIC	EELGRASS	HABITAT
organic	a6	-	0.5-1.5m, organic substrate, boat scars
sand/organic	a6	yes	0.5-1.5m, some sand/organic substrate, eelgrass
sand	a6	yes	0-0.5m, sandy substrate, eelgrass
sand	a5	-	0-0.5m, sandy substrate
boulders	a4	-	0-0.5m, numerous boulders
organic	a6	yes	0.5-1.5m, organic substrate, eelgrass/dom
mixed-fine	a1	-	1.5-3.0m, mixed-fine substrate

DEVELOPING AN INVENTORY: Sediment types

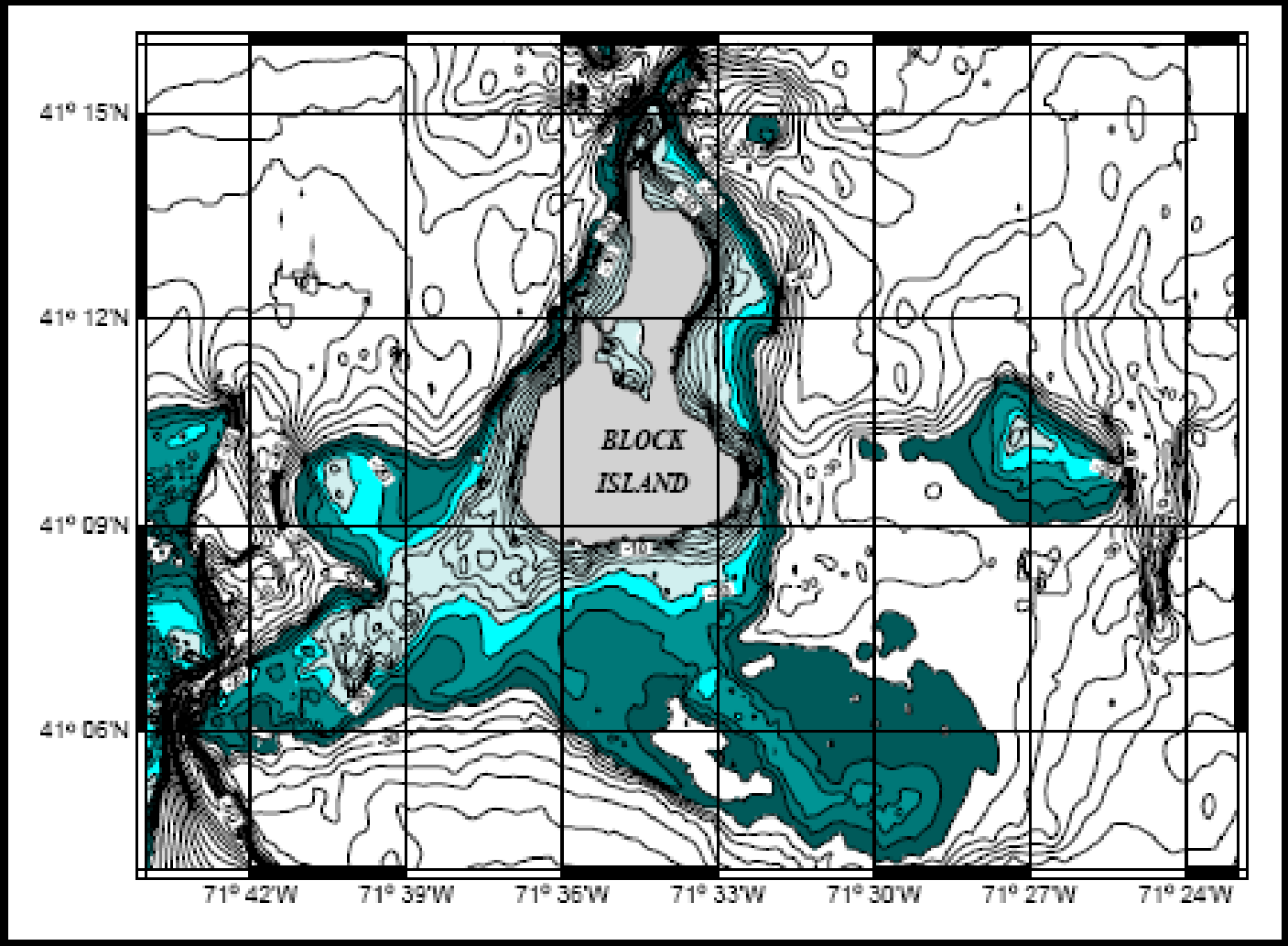




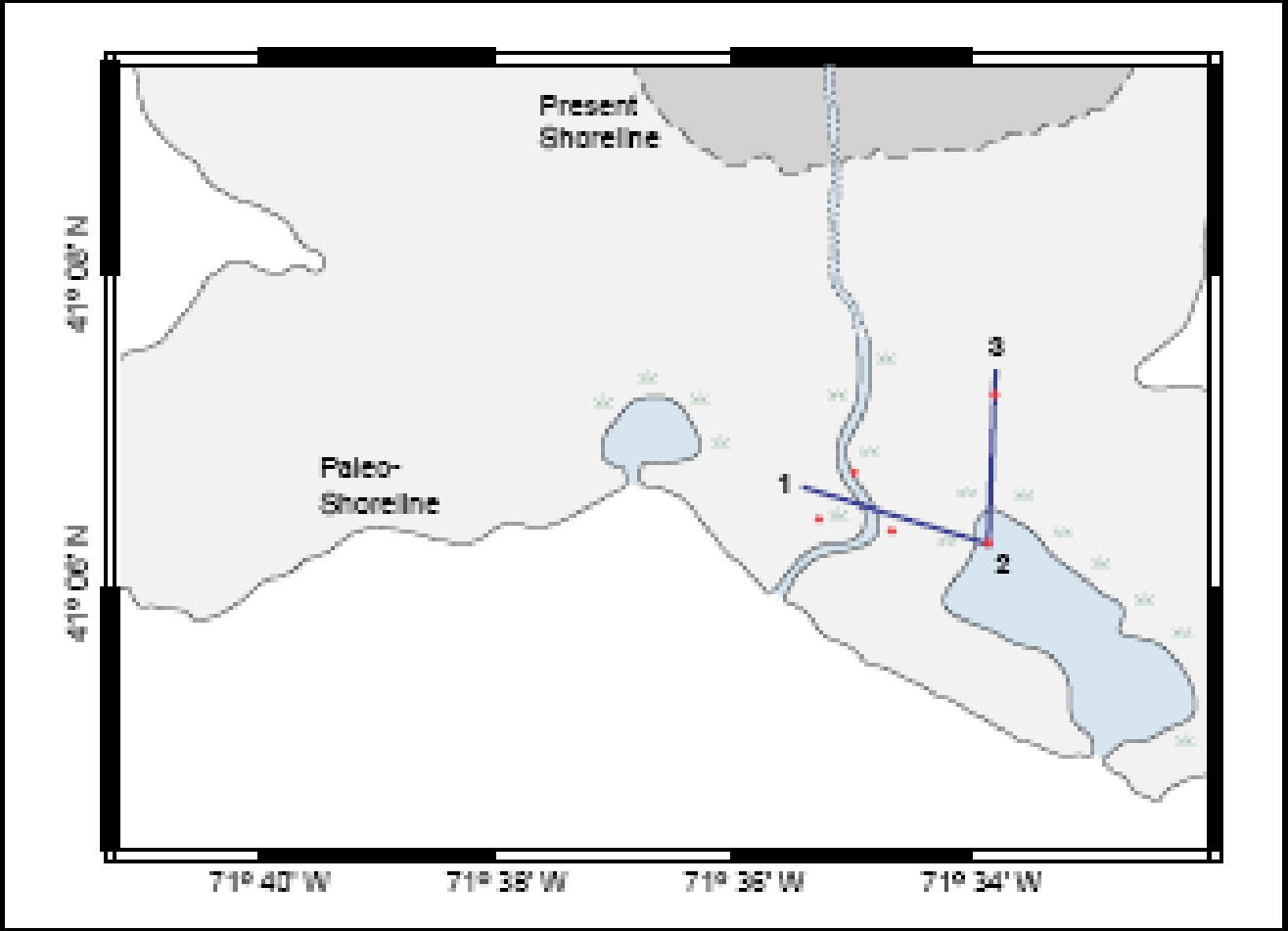
Subbottom profile showing geological features. Each dotted rectangle represents about 200 m horizontally, and 15 m vertically. 20x vertical exaggeration.



Topographic map for the time period 17,000 - 15,000 years BP.
(After Uchupi, et al.,2001)

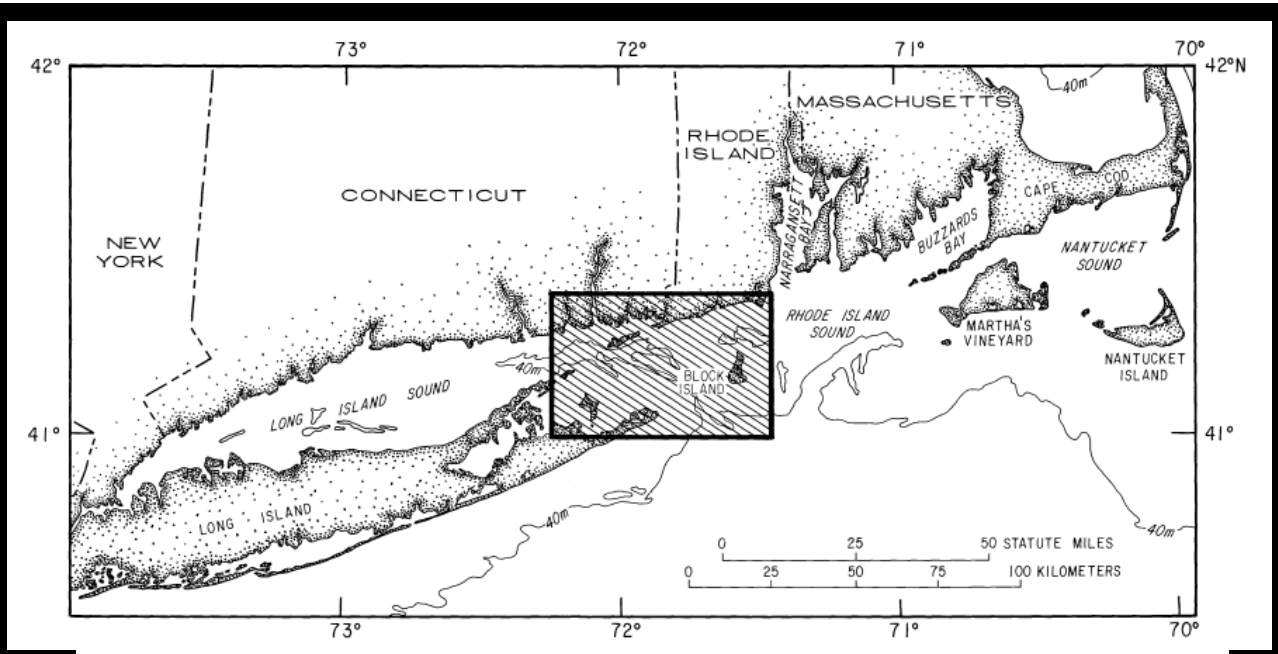


Bathymetric contour map. Areas between 18-26 meters depth are shown in shades of green, and represent retreating shorelines during the interval 10,000 - 8,000 years BP.



Possible paleo-geographic reconstruction off southern Block Island for the approximate period between 8,000 - 10,000 years BP, based on interpretation of subbottom profiles.

Mohegan Bluffs, Block Island complex



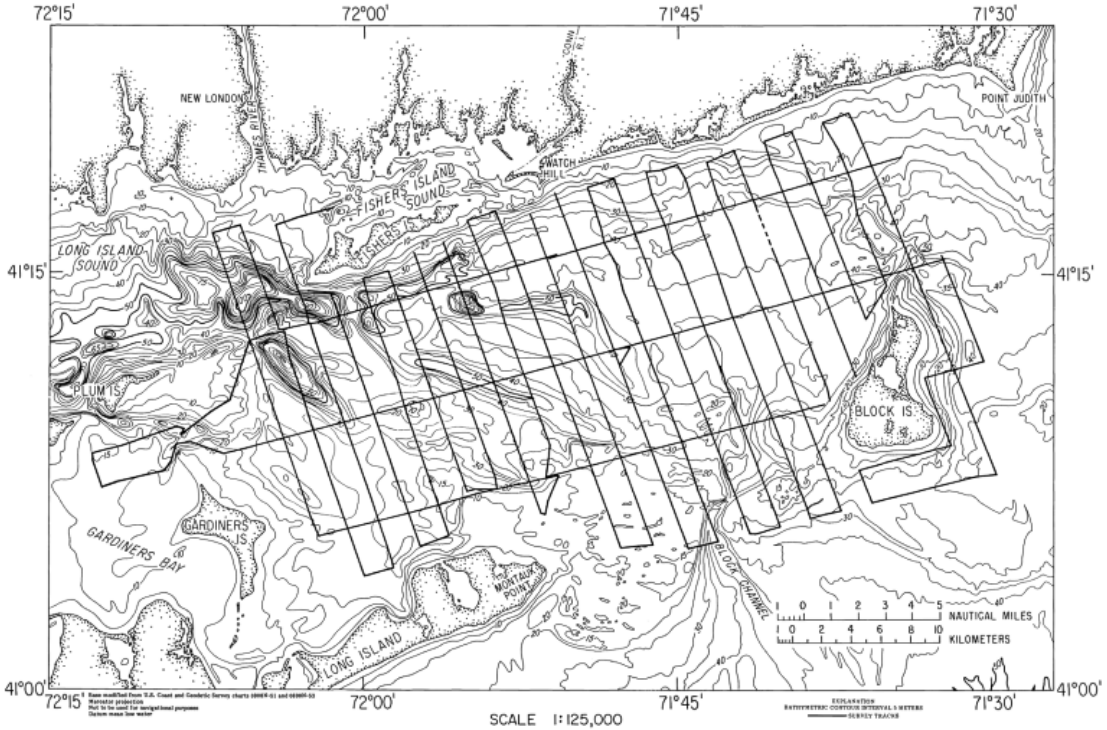
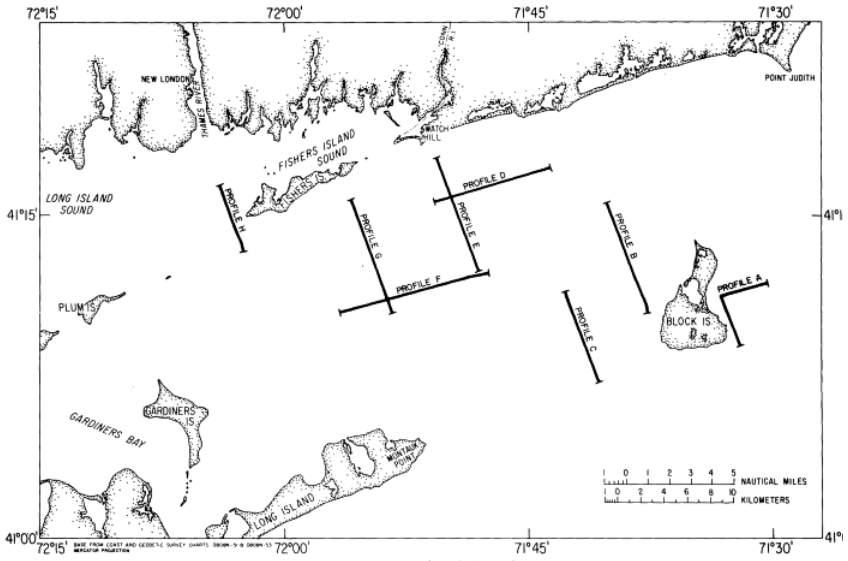


FIGURE 2.—SEA-FLOOR TOPOGRAPHY AND HIGH-RESOLUTION SUBBOTTOM PROFILES

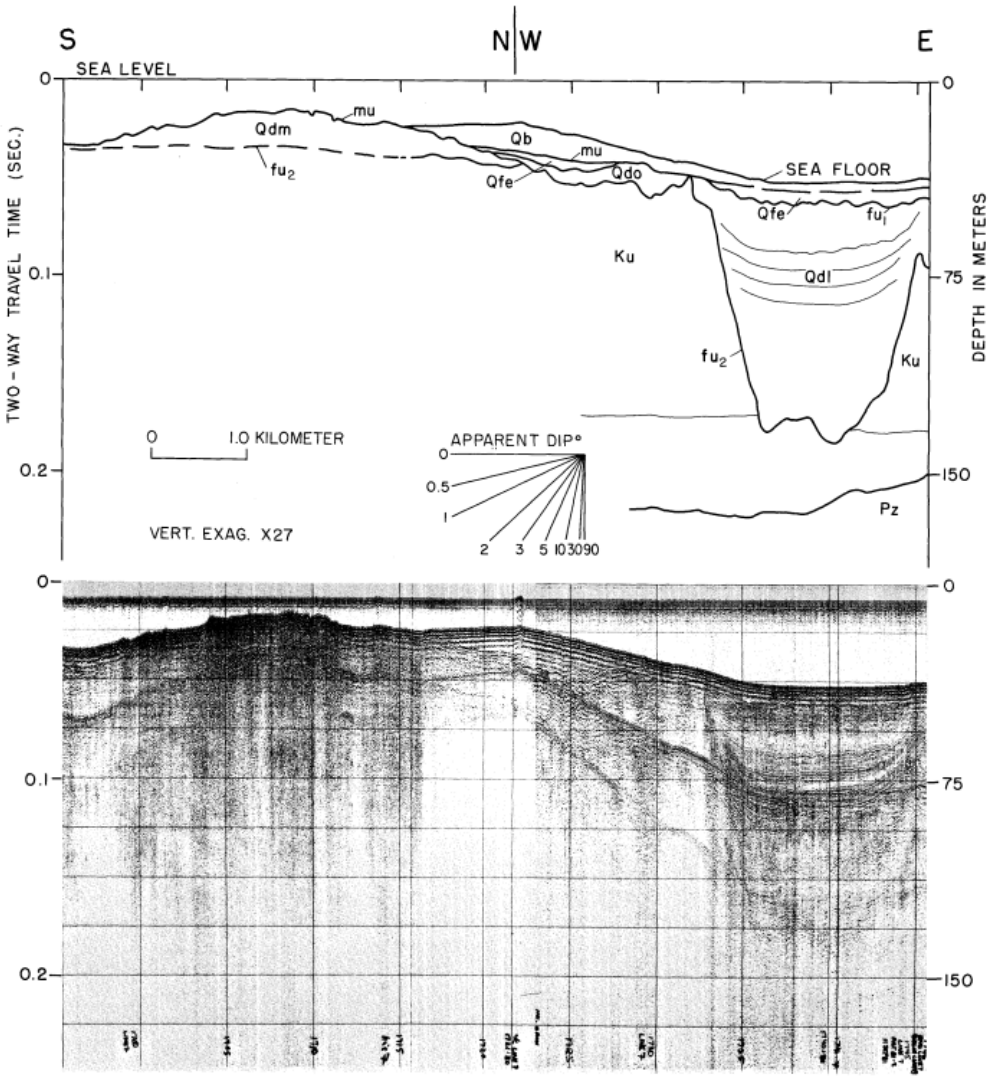


Location map for seismic profiles.

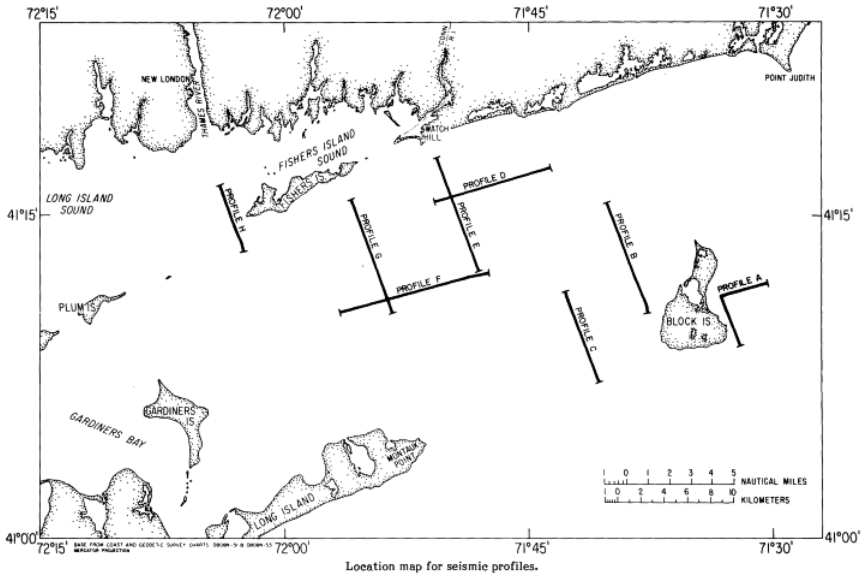
Key to Acoustic Units and Major Unconformities

Qb	Marine deposits
mu	Marine unconformity
Qfe	Fluvial and estuarine deposits
fu_1	Postglacial fluvial unconformity
Qdl	Glaciolacustrine deposits
Qdm	Glacial moraine deposits
Qdo	Glaciofluvial drift
fu_2	Late Tertiary–early Pleistocene fluvial unconformity
Ku	Coastal-plain strata
Pz	Bedrock

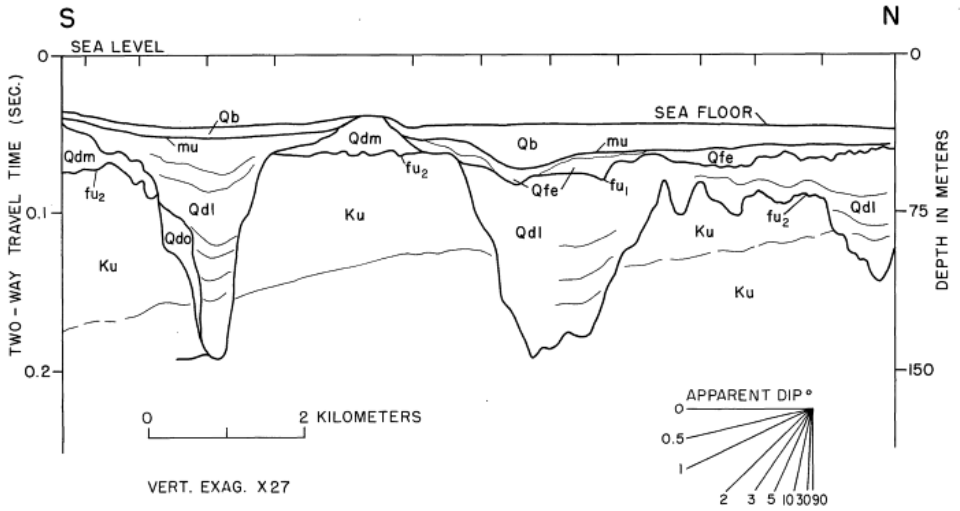
Horizontal scales are approximate.
Vertical scales are based on 1,500 m/s.
Reflectors are dashed where extrapolated.
Vertical exaggeration is abbreviated vert. exag.



SEISMIC PROFILE A



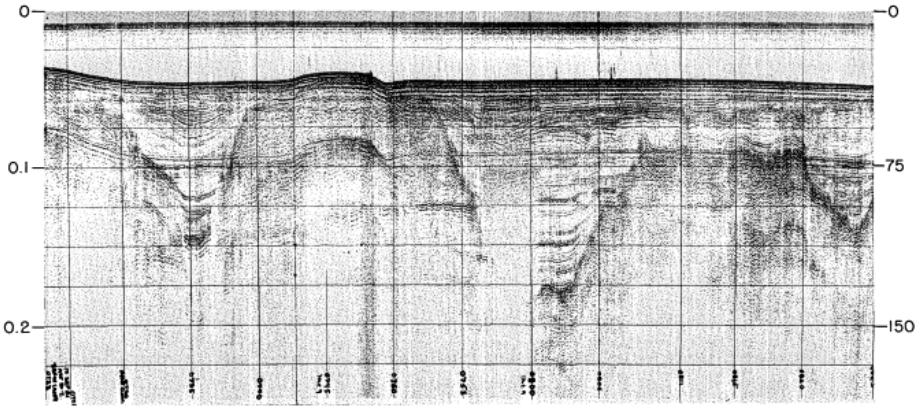
Location map for seismic profiles.



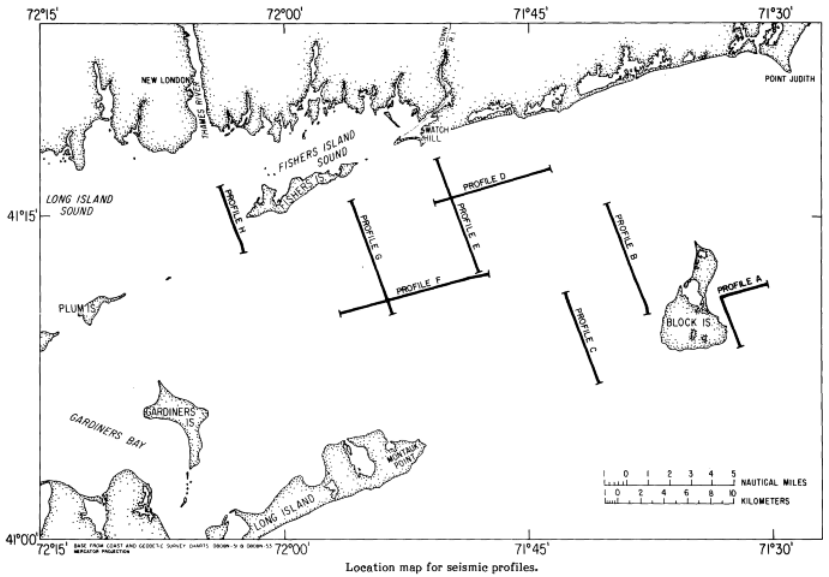
Key to Acoustic Units and Major Unconformities

Qb	Marine deposits
mu	Marine unconformity
Qfe	Fluvial and estuarine deposits
fu_1	Postglacial fluvial unconformity
Qdl	Glaciolacustrine deposits
Qdm	Glacial moraine deposits
Qdo	Glaciofluvial drift
fu_2	Late Tertiary–early Pleistocene fluvial unconformity
Ku	Coastal-plain strata
Pz	Bedrock

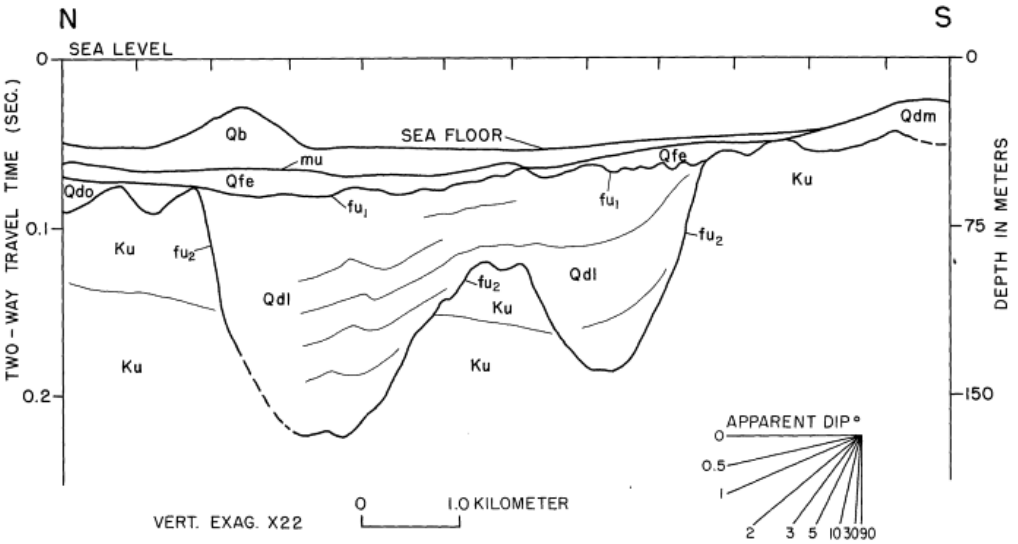
Horizontal scales are approximate.
Vertical scales are based on 1,500 m/s.
Reflectors are dashed where extrapolated.
Vertical exaggeration is abbreviated vert. exag.



SEISMIC PROFILE B



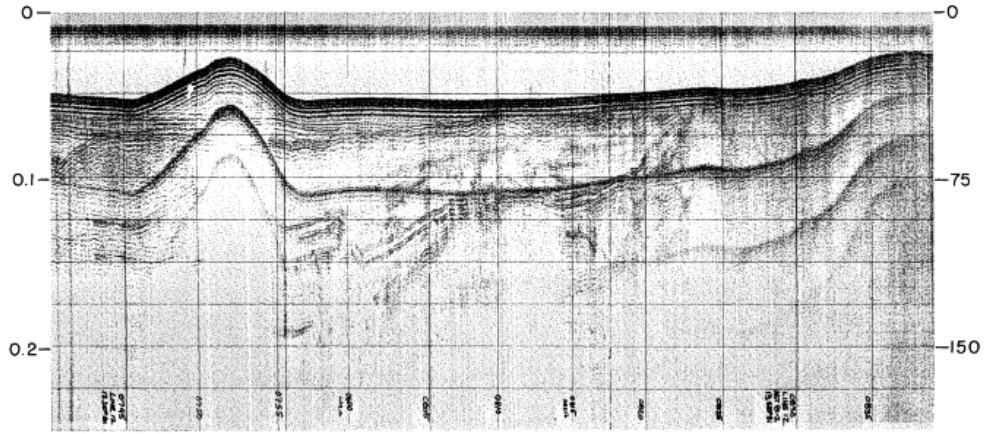
Location map for seismic profiles.



Key to Acoustic Units and Major Unconformities

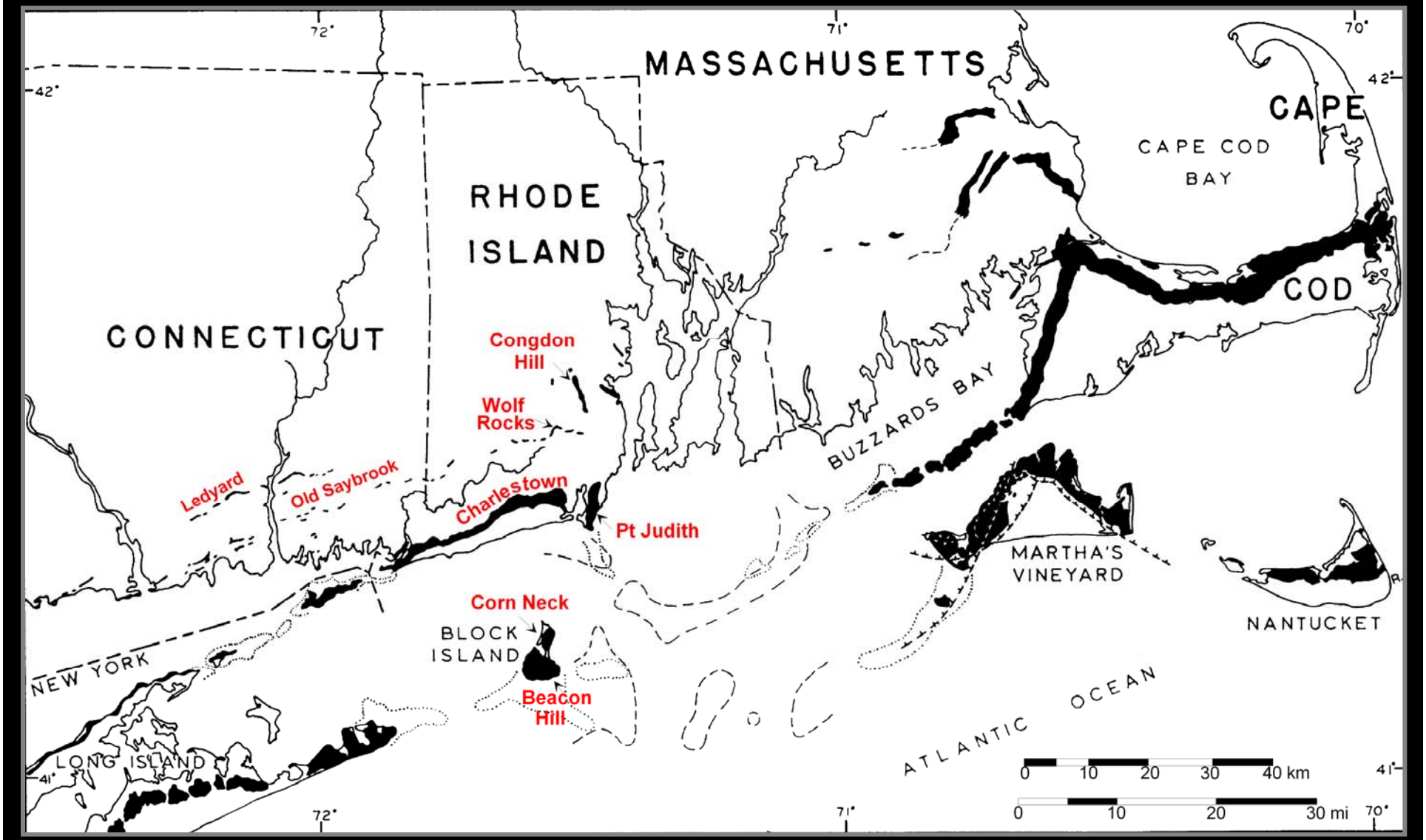
Qb	Marine deposits
mu	Marine unconformity
Qfe	Fluvial and estuarine deposits
fu_1	Postglacial fluvial unconformity
Qdl	Glaciolacustrine deposits
Qdm	Glacial moraine deposits
Qdo	Glaciofluvial drift
fu_2	Late Tertiary–early Pleistocene fluvial unconformity
Ku	Coastal-plain strata
Pz	Bedrock

Horizontal scales are approximate.
Vertical scales are based on 1,500 m/s.
Reflectors are dashed where extrapolated.
Vertical exaggeration is abbreviated vert. exag.



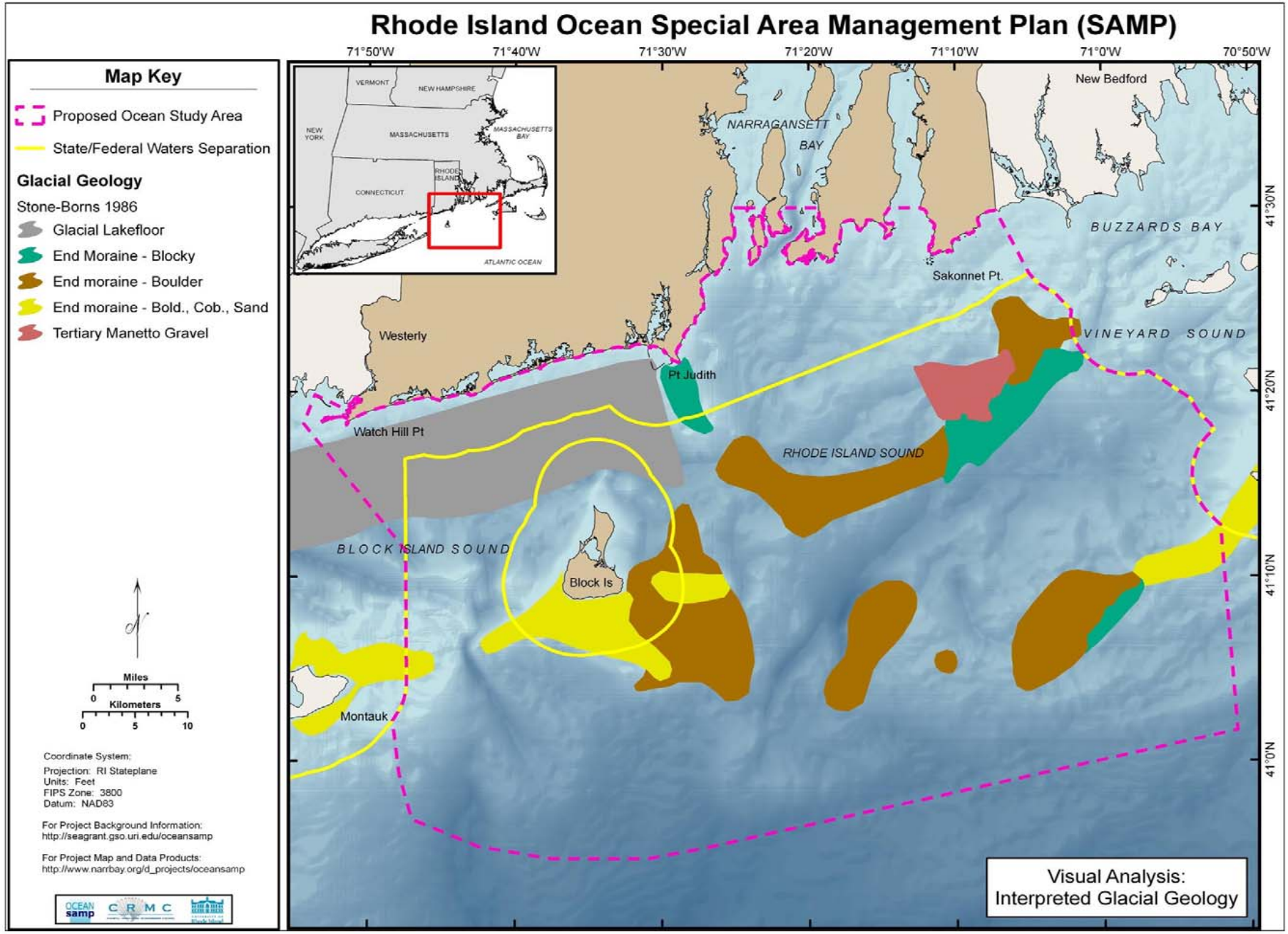
SEISMIC PROFILE C

End moraines of southeastern New England

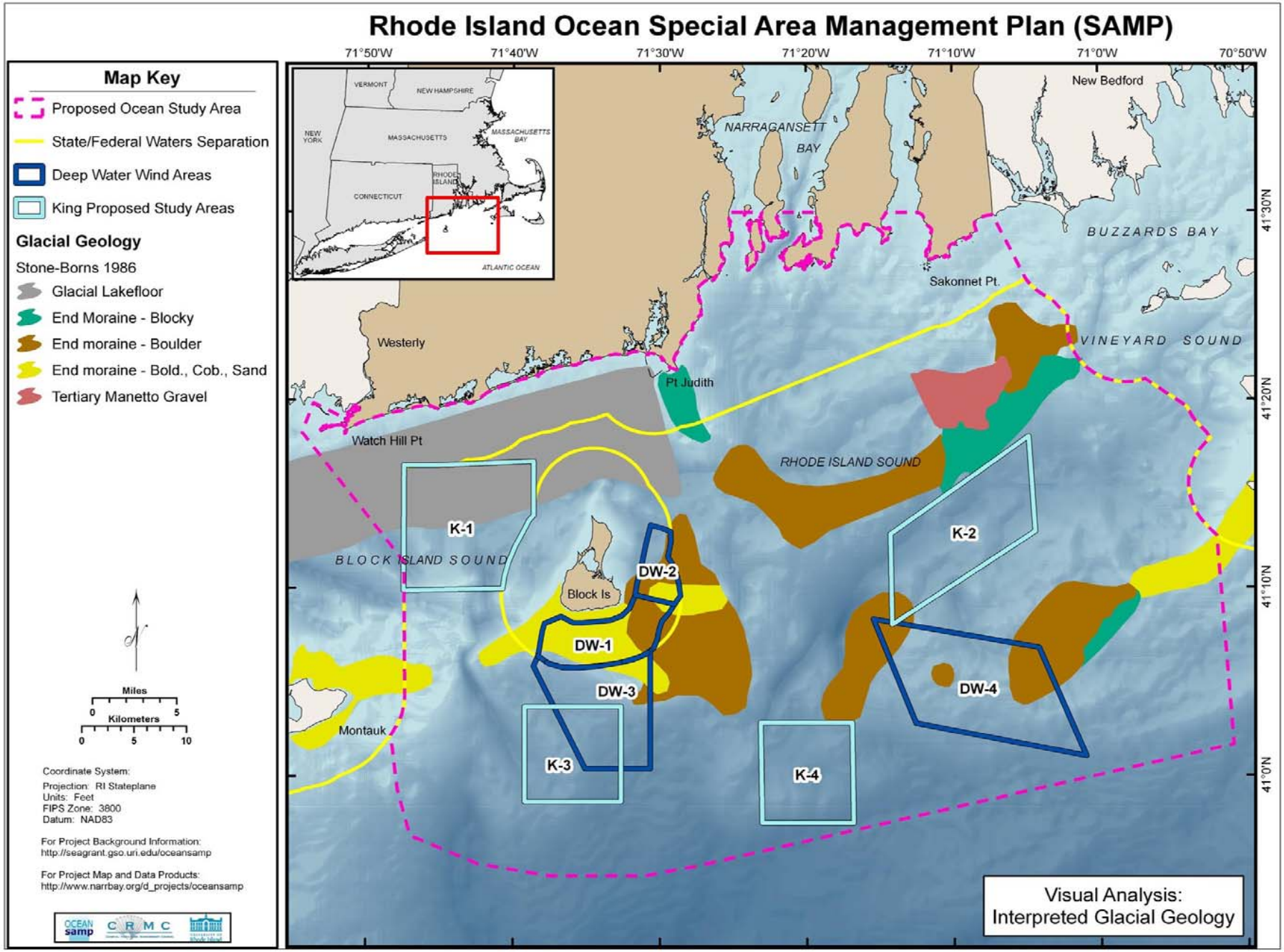


Schafer and Hartshorn, 1965; Sirkin, 1982

Rhode Island Ocean Special Area Management Plan (SAMP)



Rhode Island Ocean Special Area Management Plan (SAMP)



Estimated costs

ITEM	COST
1. Science Staff of 10 on Endeavor	Total Personnel: $ 8600 / day
2. Equipment and Insurance	$ 2500 / day
3. Supplies	$ 500 / day
4. RV Endeavor	$ 23,000 / day
5. Endeavor can do 5 - 6 sq. miles / day	$ 5760 - 6920 / sq. mile
6. Post-cruise processing and ground-truth studies: Geology, Biology, and Archaeology	$ 3000 / sq. mile
	Total: $ 8767 - $ 9920 / sq. mile