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Virginia Institute of Marine Science

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A CLASSIFICATION OF BAYLOR BOTTOMS IN VIRGINIA

By

Dexter S. Haven
Virginia Institute of Marine Science
and
College of William and Mary

October 1979

Virginia Marine Resources Report #79-2

THE NEED AND PURPOSE OF VIMS BAYLOR GROUND SURVEY

1. We understand that the purpose of this overall effort of the full Shellfish committee is to build the production of oysters so that the potential of Virginia oyster bottoms is fully utilized. It is our understanding that the purpose of this review (by the Baylor Ground Committee) is to determine which areas might be leased and developed by the private sector. We have done a survey of the Baylor Grounds in Chesapeake and tributaries in Virginia.

2. We have defined the characteristics which make an oyster ground productive, or potentially productive.

3. We have developed a scheme classifying oyster grounds on a scale from I to V. Class I is defined as oyster bottom which can be exploited with no investment of capital or intervention by man. Bottoms in this class require neither seeding nor shelling. These fit the definition of "natural beds." Oyster bottoms in classes II-V are potentially productive but will require the investment of money in shelling and/or seeding programs.

4. No matter who is responsible for producing oysters on these bottoms (i.e. classes II-V), time, effort and money will be required. As one moves from class II to

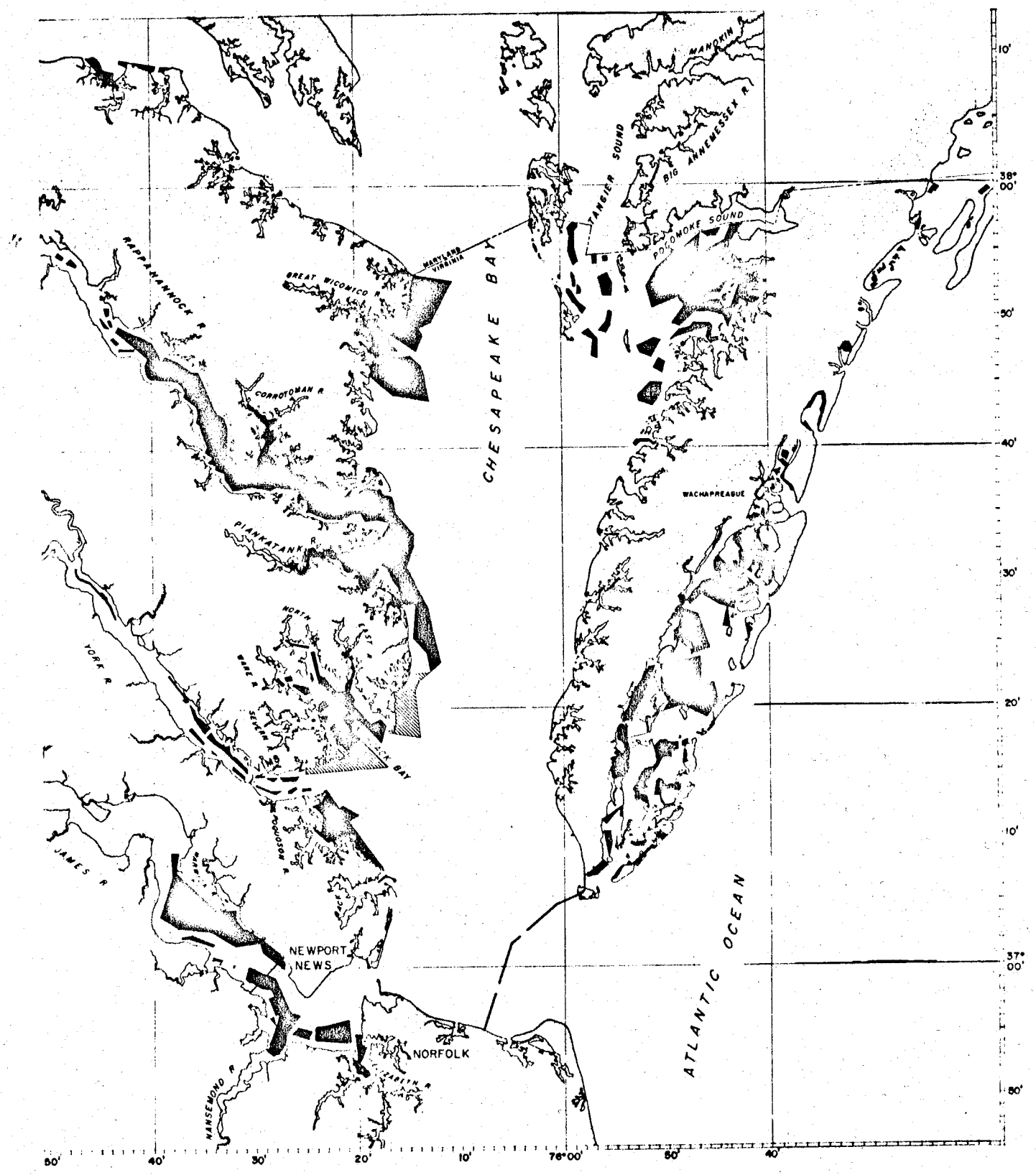
class V, the cost of maintaining and producing oysters increases. Obviously, class II would require the lowest investment and class V the highest. Some class V bottoms might not really be worth developing.

5. At present it is state policy to preserve natural rocks for public use to be managed by the VMRC on behalf of the public. Until this policy changes, if it ever does, you will most likely wish to reserve class I bottoms for public use alone.

6. If you want potentially productive grounds to be brought into production by private industry and private capital, you should seriously consider making the grounds in classes II, III and IV available for private leasing.

7. We have suggested above that you may wish to reserve class I for state management as long as you want a public oyster industry.

Map of Tidewater Virginia showing public oyster ground and public clam ground. From maps on file at the VMRC. The Baylor Bottoms are in black; public clam bottoms are shaded.


CHESAPEAKE BAY
ATLANTIC OCEAN
MARYLAND
VIRGINIA
TANGIER SOUND
MANOKIN R.
BIG ANNEMESSEX R.
POCOMOKE SOUND
RAPPAHANNOCK R.
GREAT WICOMICO R.
CORROTOMAN R.
PIANKATANK R.
YORK R.
JAMES R.
NANSEMOND R.
NEWPORT NEWS
NORFOLK
WACHAPREAGUE
38° 00'
50'
40'
30'
20'
10'
37° 00'
50'
40'
30'
20'
10'
76°00'
50'
40'

A SUMMARY OF THE FIVE CLASSES OF OYSTER BOTTOMS

Class	Functional Set	Shells in Bottom	Predators & Diseases Minimal	Depths O.K	Salinity Over 5°/oo	Oxygen in Water	Bottom Firm	Assigned Weight
I	X	X	X	X	X	X	X	6
II		X	X	X	X	X	X	5
III			X	X	X	X	X	4
IV				X	X	X	X(-)	3
V				One or all of IV missing				0

CLASS I

These bottoms produce oysters with no assistance from man.

Characteristics

1. Set functional. The unique criterion of class I, is defined as a strike which will support a reasonable level of harvesting. A set may typically occur every year, but the annual interval between sets may be as long as 15 years.
2. Substantial volumes of shell in or on the bottom originating from previously existing populations.

3. Low incidences of diseases and predators which allows the establishment of a standing crop.
4. Depths ranging from intertidal to about 30 feet.
5. A salinity averaging 5 parts per thousand or higher.
6. Adequate levels of dissolved oxygen.

CLASS II

These bottoms exhibit a lack of functional setting because of the shortage or absence of naturally occurring shell. They will produce, however, if the bottoms are seeded and/or shelled.

Characteristics

1. Shell substrate sparse or sometimes lacking, or presently unsuitable (soft).
2. Functional set may be lacking.

3, 4, 5 & 6. Same as class I.

CLASS III

These bottoms have non-functional setting levels and lack shell substrate. Often the bottoms are soft mud or sand. They may produce commercial volumes of oysters if planted with seed oysters.

Characteristics

1. Shell substrate lacking.

2. Setting levels low or zero most years.

3, 4, 5, & 6. Same as class I.

CLASS IV

These bottoms have moderate to high levels of disease and/or predators. They must be planted with MSX resistant seed or must "grow" oysters set in a MSX area, or predators must be controlled. Bottoms are often mud which must be shelled prior to planting seed.

Characteristics

1. Shell substrate generally lacking or sparse.
2. Setting is non-functional.
3. High levels of disease and predators.

4, 5, & 6. Same as class I.

CLASS V

These bottoms have little potential for oyster production even with a major replenishment program. They typically have at least three of the following adverse characteristics.

Characteristics

1. Shell substrate lacking.
2. Set non-functional.
3. Depths in excess of 30 feet.
4. Moderate to high levels of diseases and predators.

5. Low salinity levels.
6. Low levels of dissolved oxygen during the summer.
7. Mud or shifting sand substrate.

The Bayside of the Eastern Shore

(CLASS II)

These tidal systems which include Onancock Creek, Pungoteague Creek and Nassawaddox Creek have been surveyed. However, small scale charts have not yet been completed. These areas are classed as II.

The Seaside of the Eastern Shore

(CLASS I)

The Baylor bottoms on the Seaside of the Eastern Shore have not been surveyed. Work on these bottoms is expected to begin in April, 1980. However, our records of many years indicate that the bottoms receive a functional set each year. Therefore, the area is classed as I.

The Virginia Potomac River Tributaries

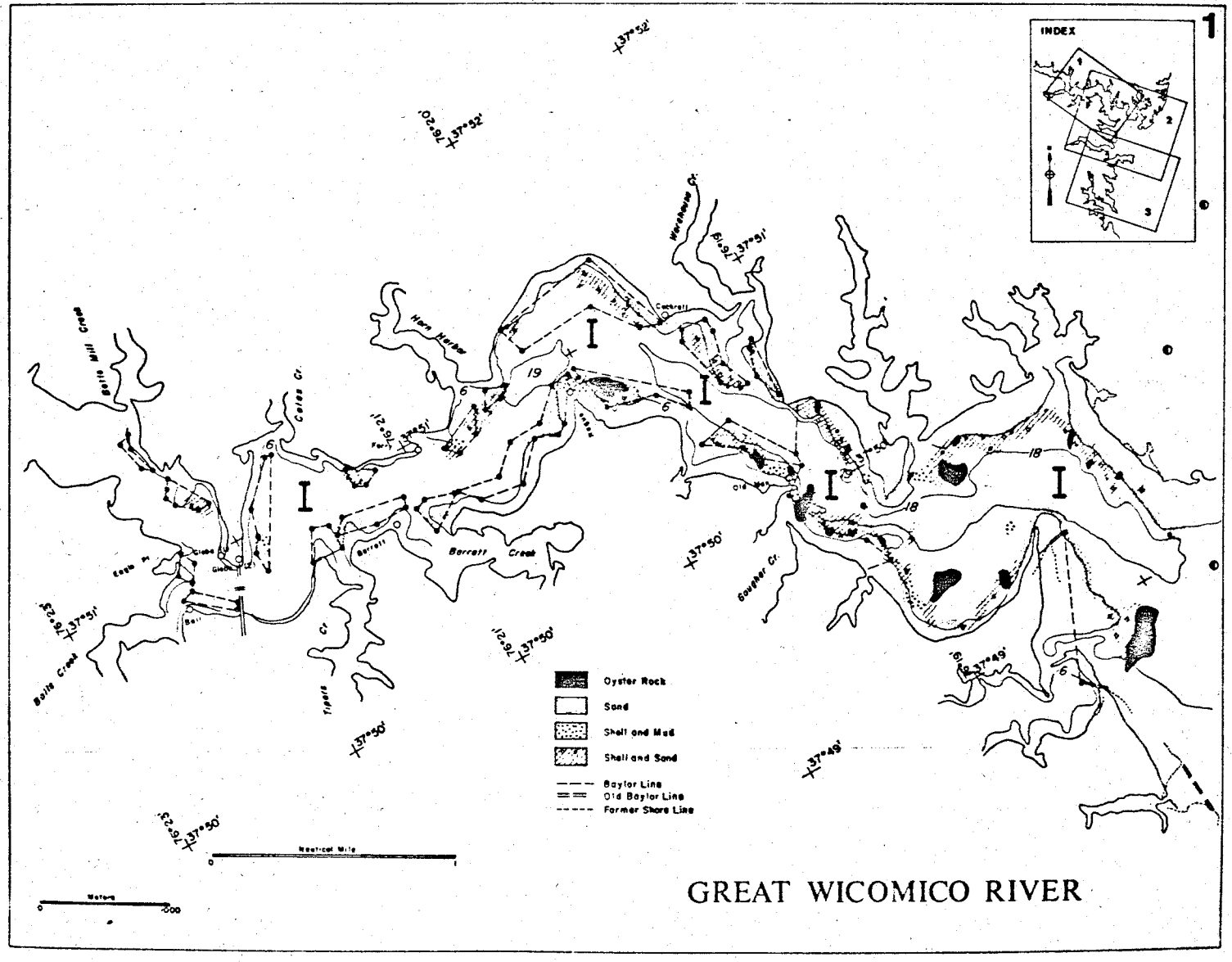
These tidal tributaries in Virginia have not been surveyed.

Pocomoke and Tangier Sounds

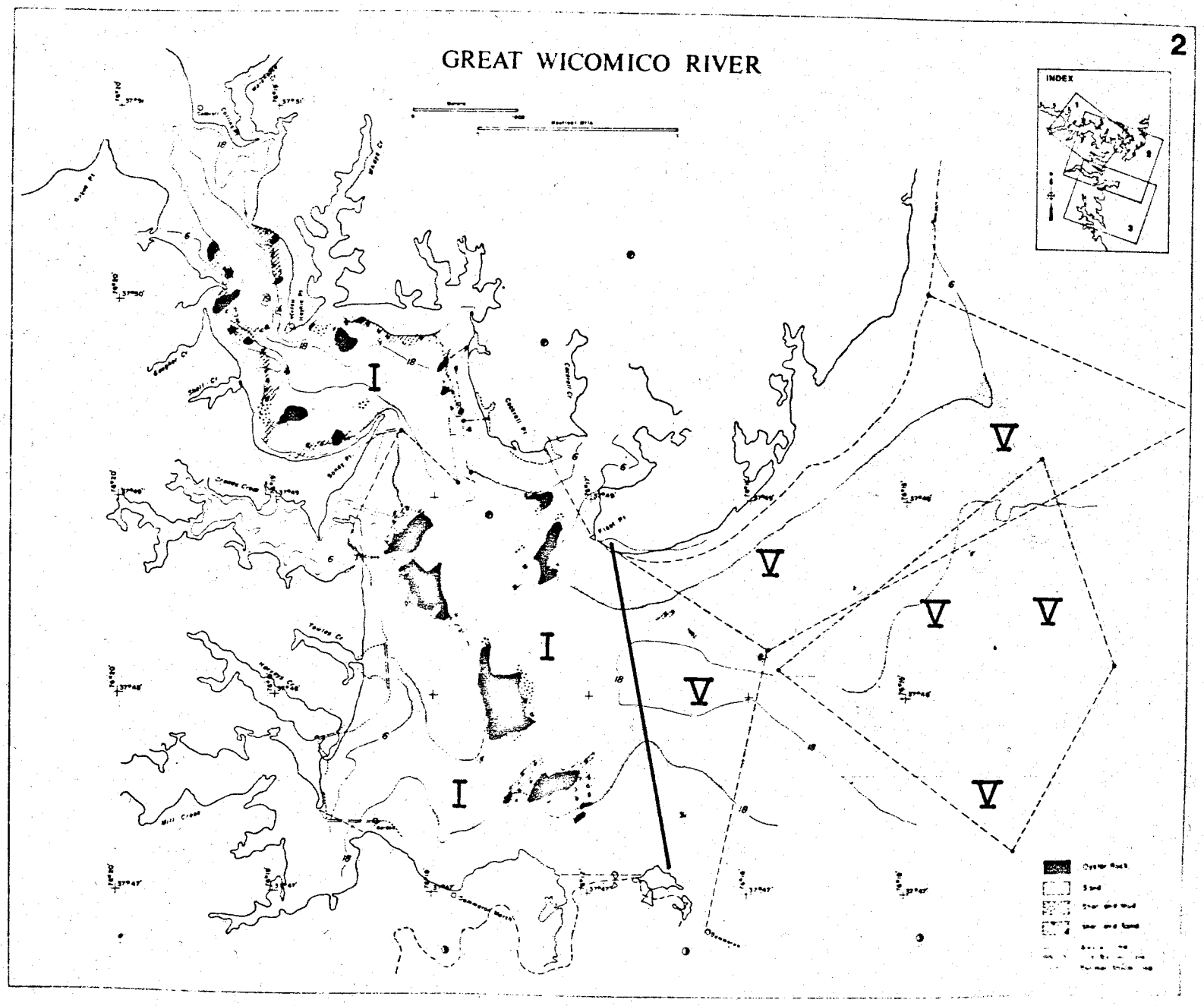
(CLASS I)

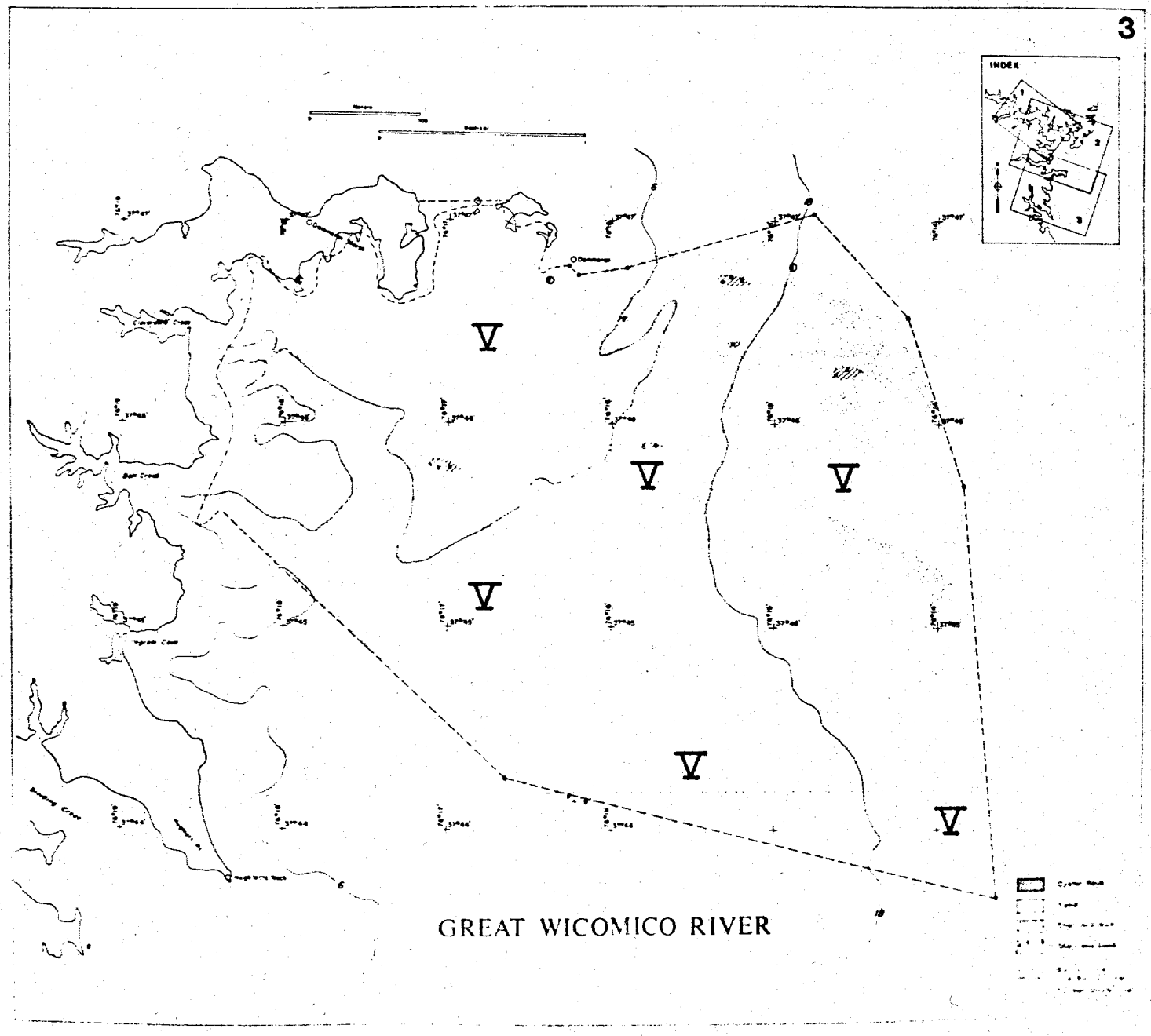
All field studies for this area has been completed, but small scale charts have not been prepared due to time constraints.

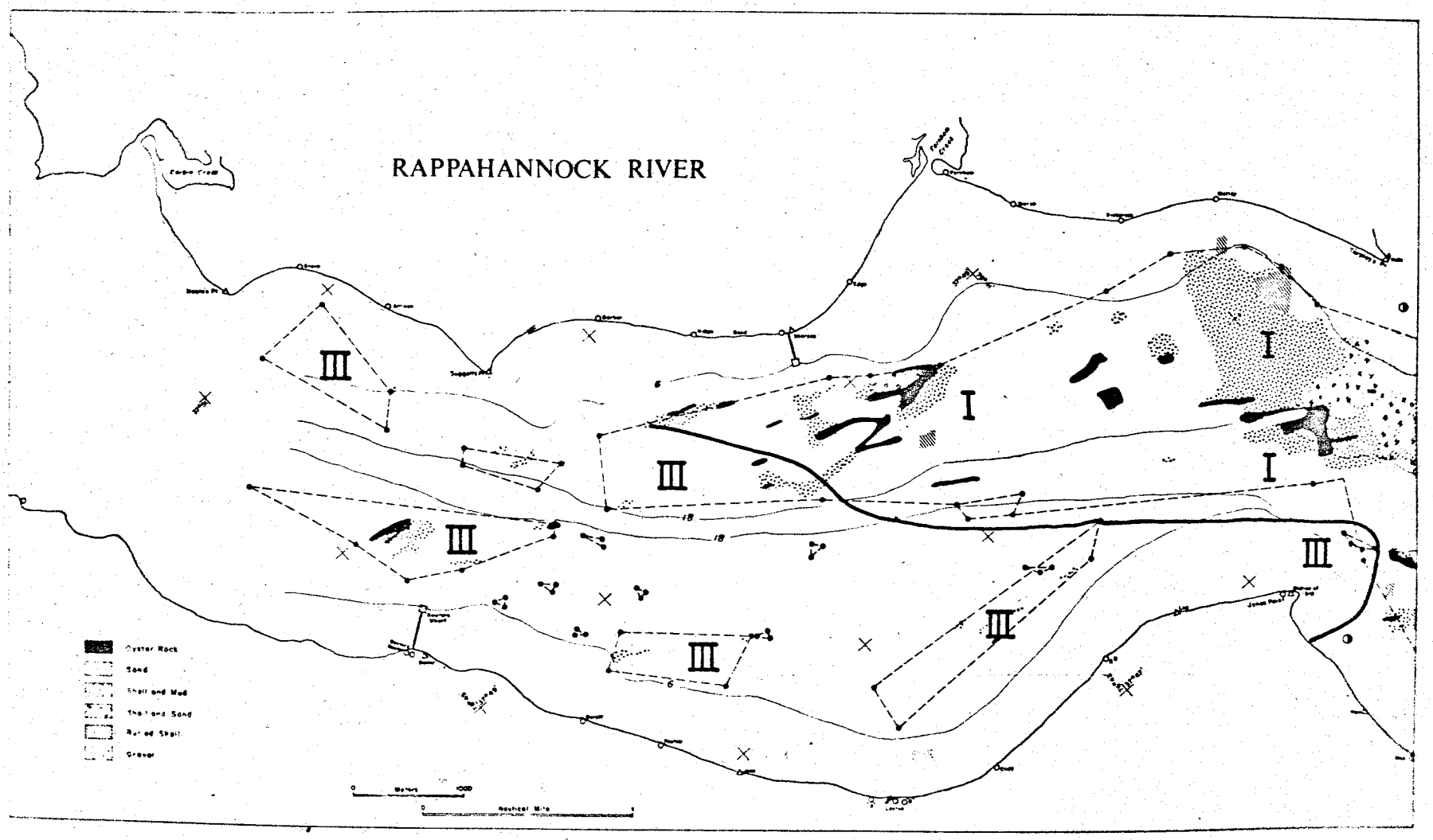
This area is poorly understood in respect to recruitment rates (setting). At present it is classed as I.

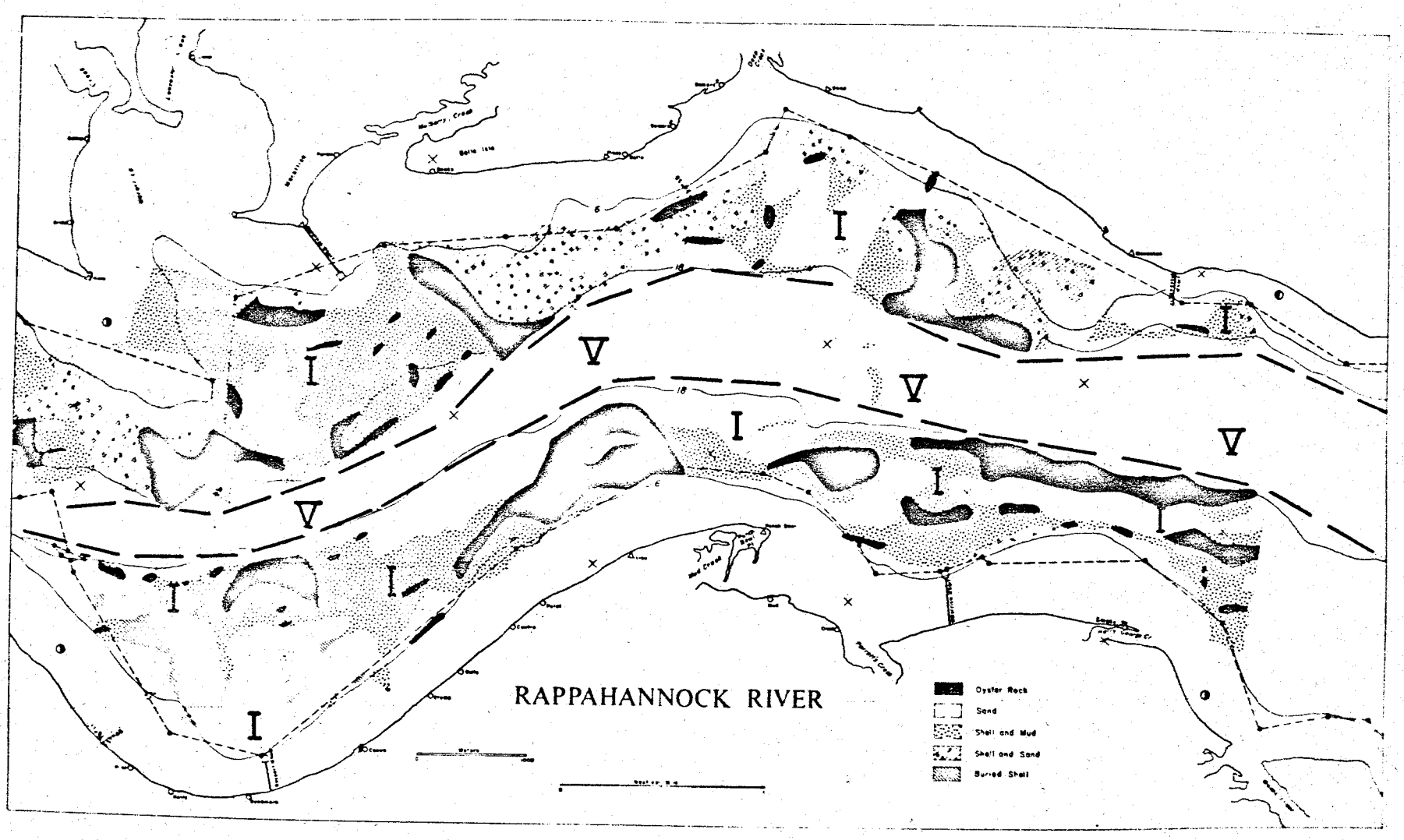


GREAT WICOMICO RIVER


GREAT WICOMICO RIVER
2
INDEX
I
V


3
INDEX
GREAT WICOMICO RIVER


RAPPAHANNOCK RIVER
I
III
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
Gravel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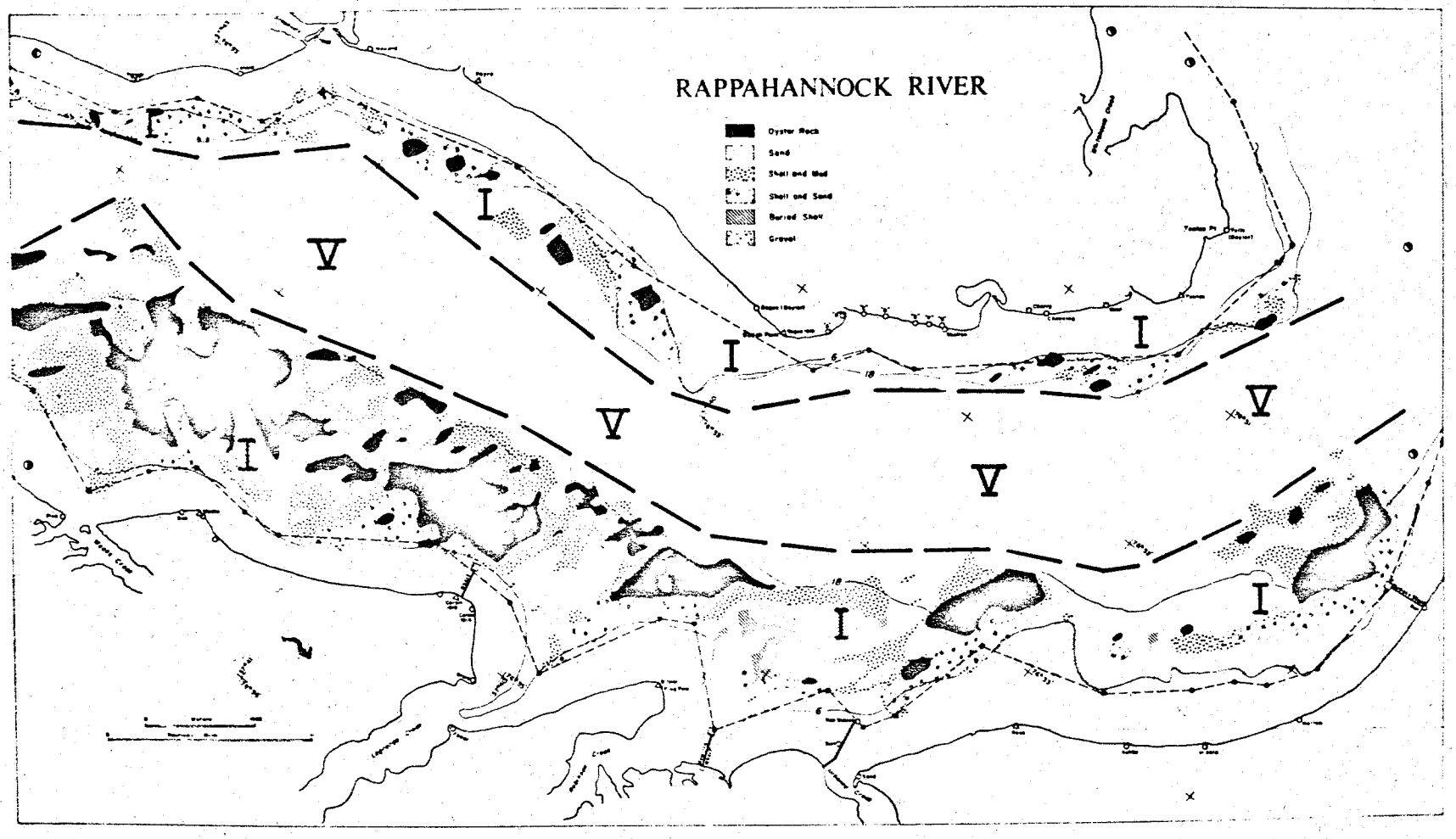
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell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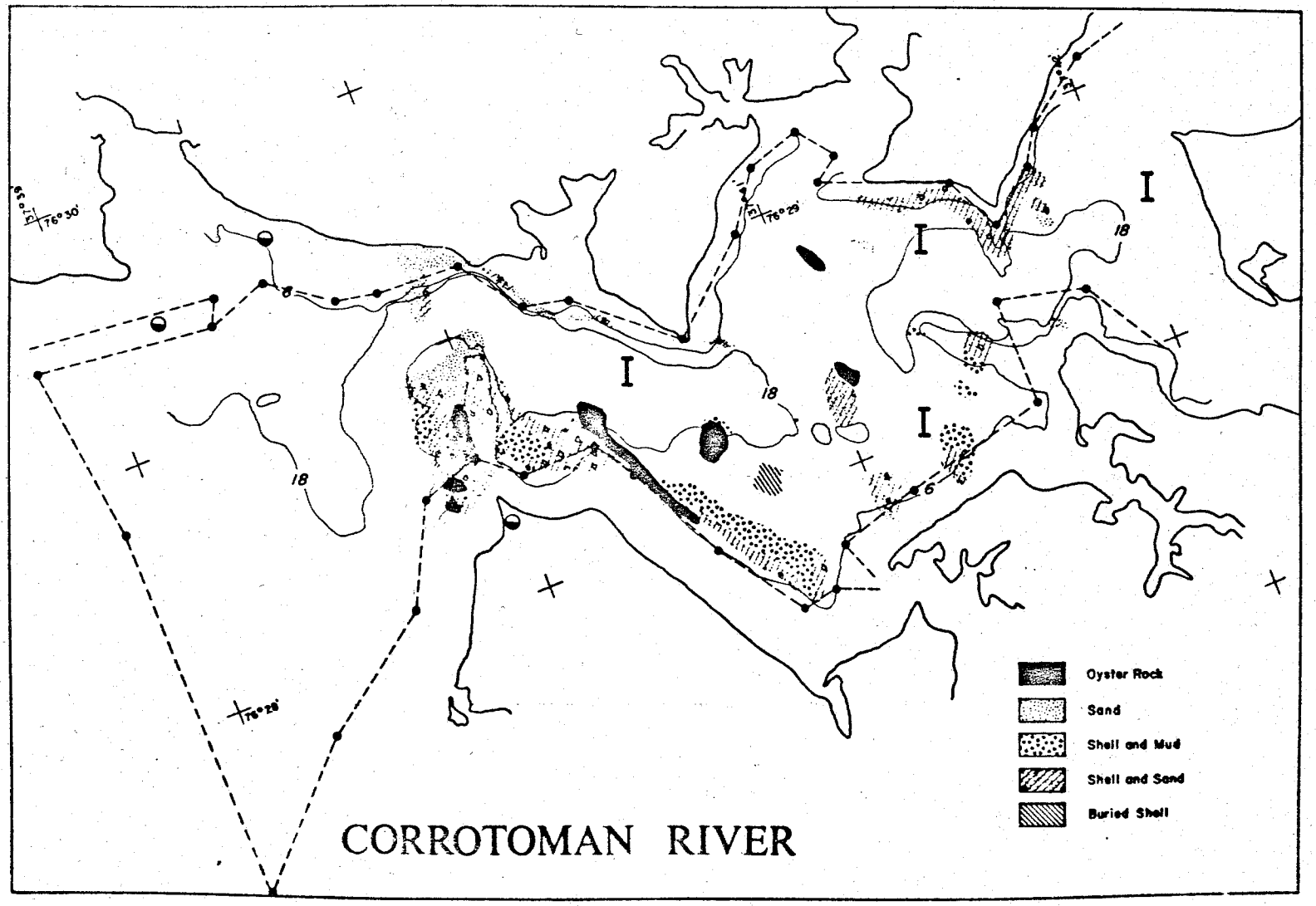
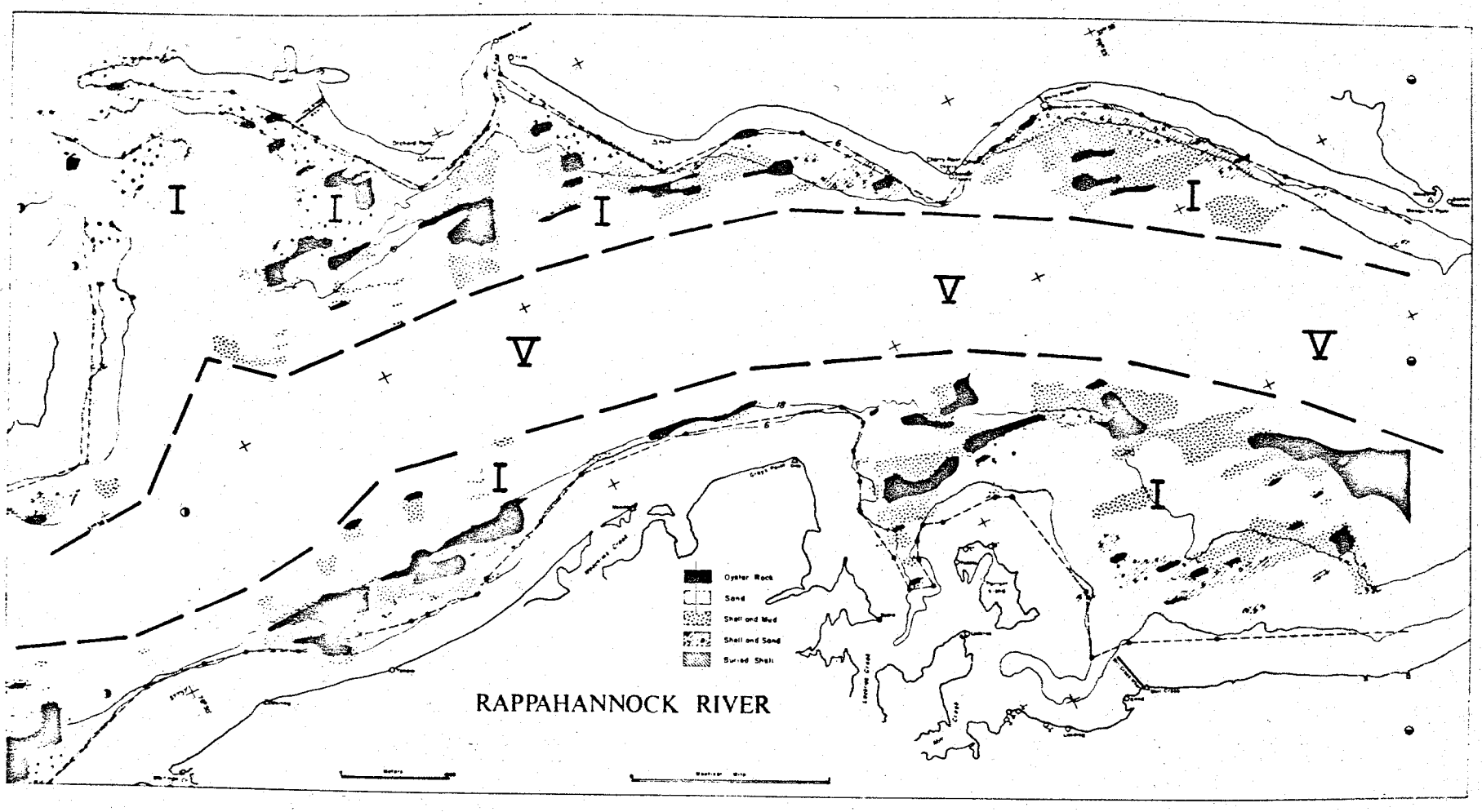
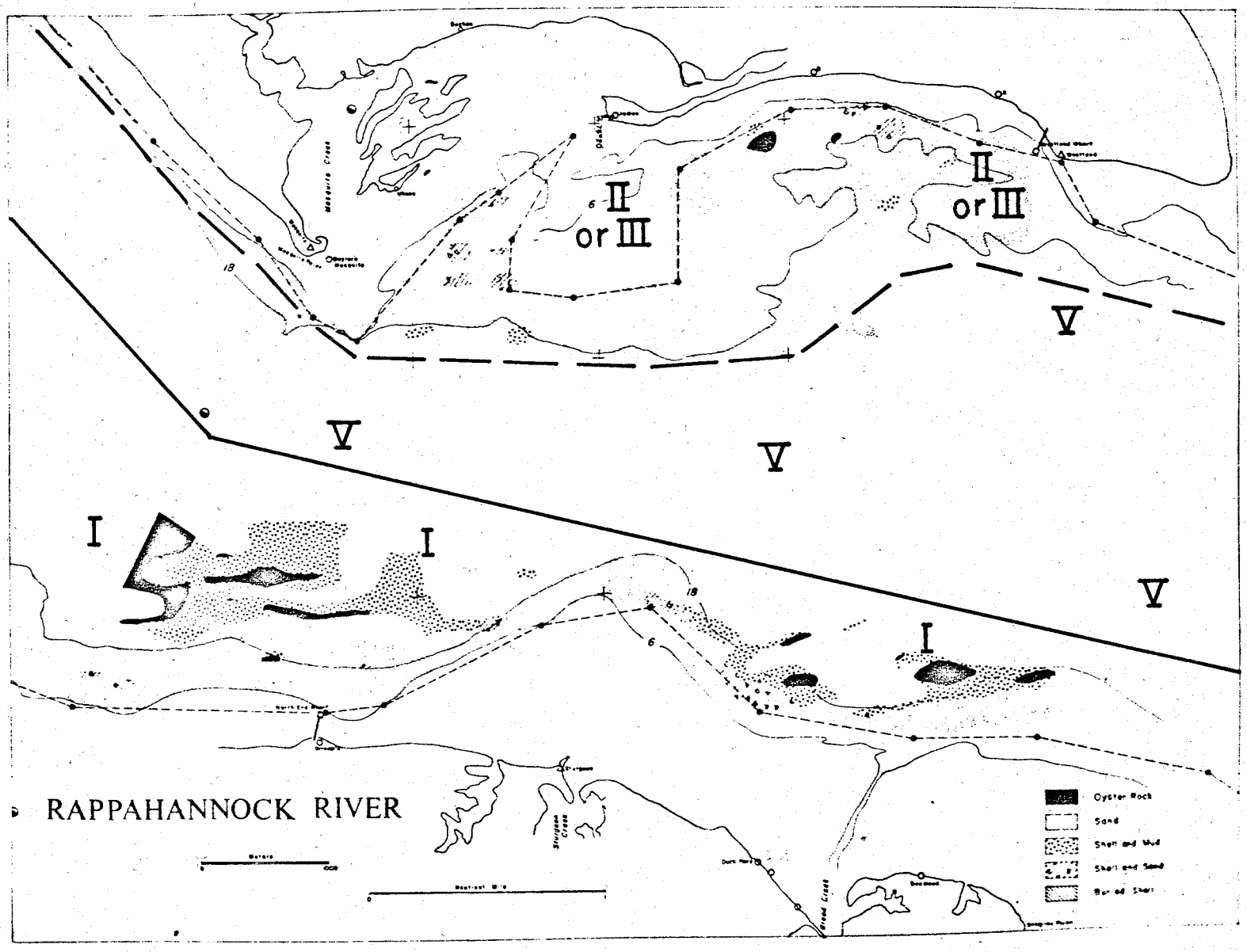
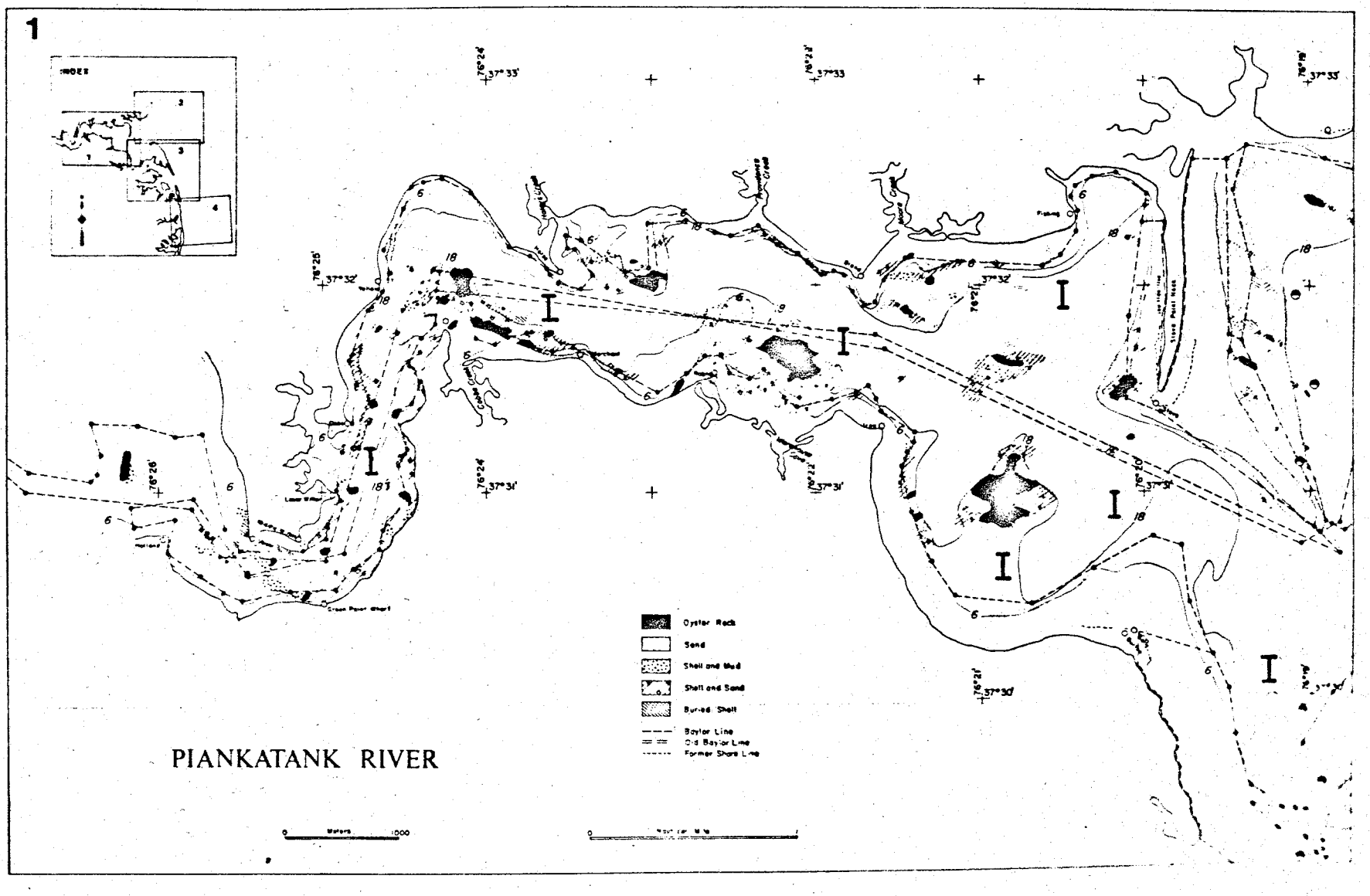
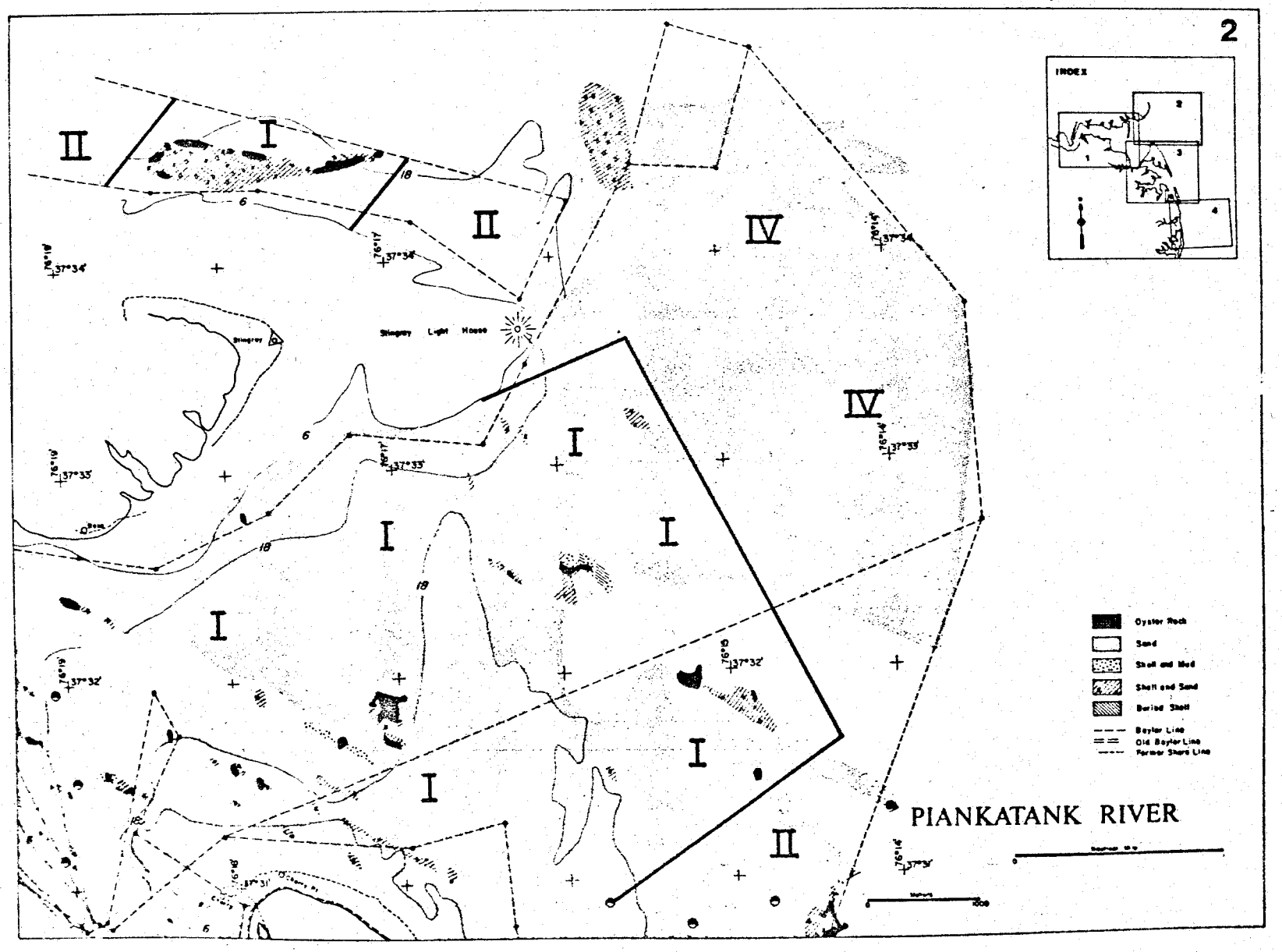
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
Gravel
I
V


76°30'
76°29'
76°28'
18
6
I
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
CORROTOMAN RIVER


I
I
I
I
V
V
V
I
I
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
RAPPAHANNOCK RIVER


II
or III
II
or III
V
V
V
V
I
I
I
18
6
18
RAPPAHANNOCK RIVER
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Bar ed Shell


1
INDEX
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
Baylor Line
Old Baylor Line
Former Shore Line
PIANKATANK RIVER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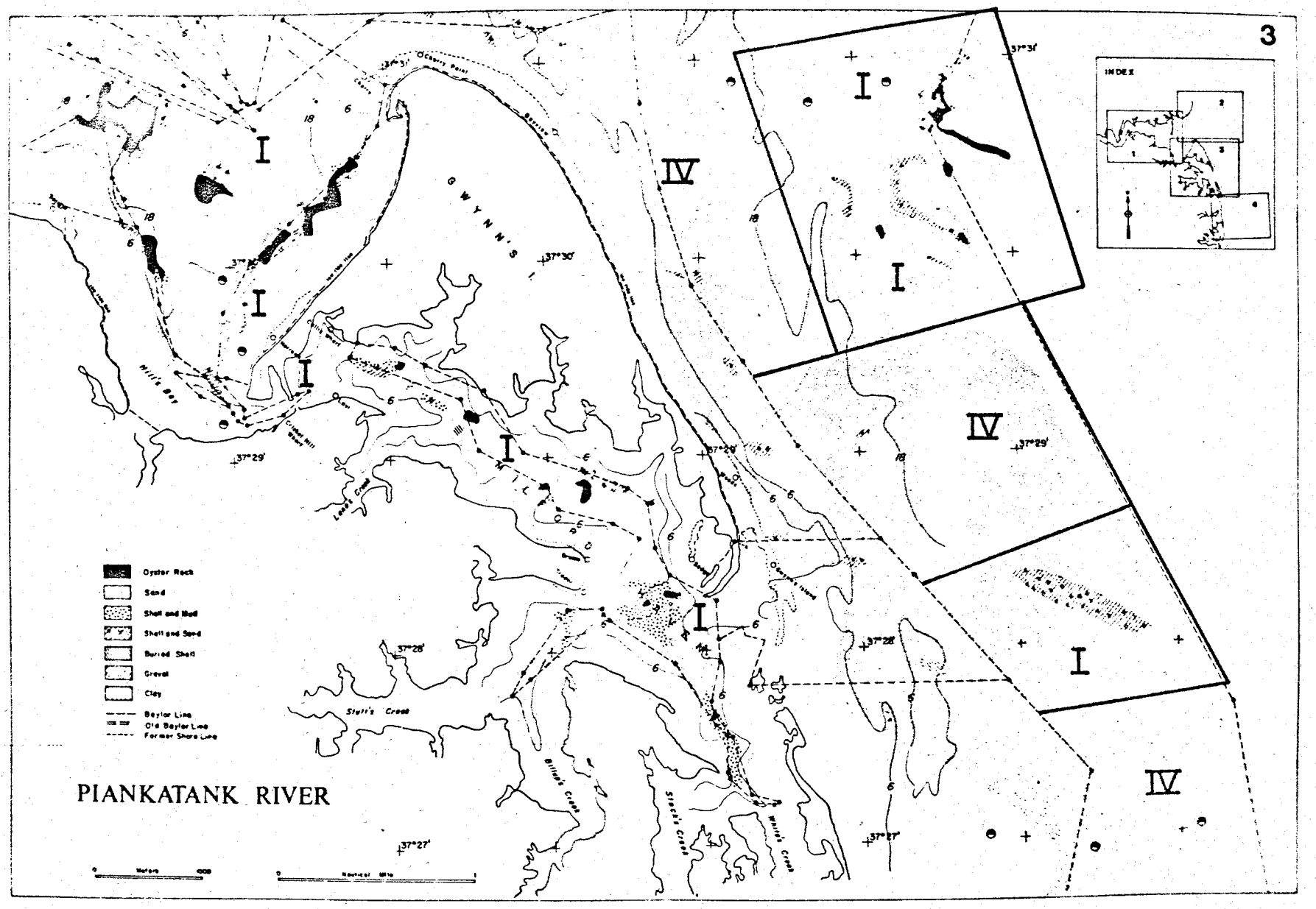
INDEX
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
Baylor Line
Old Baylor Line
Former Shore Line
PIANKATANK RIVER
Shingley Light House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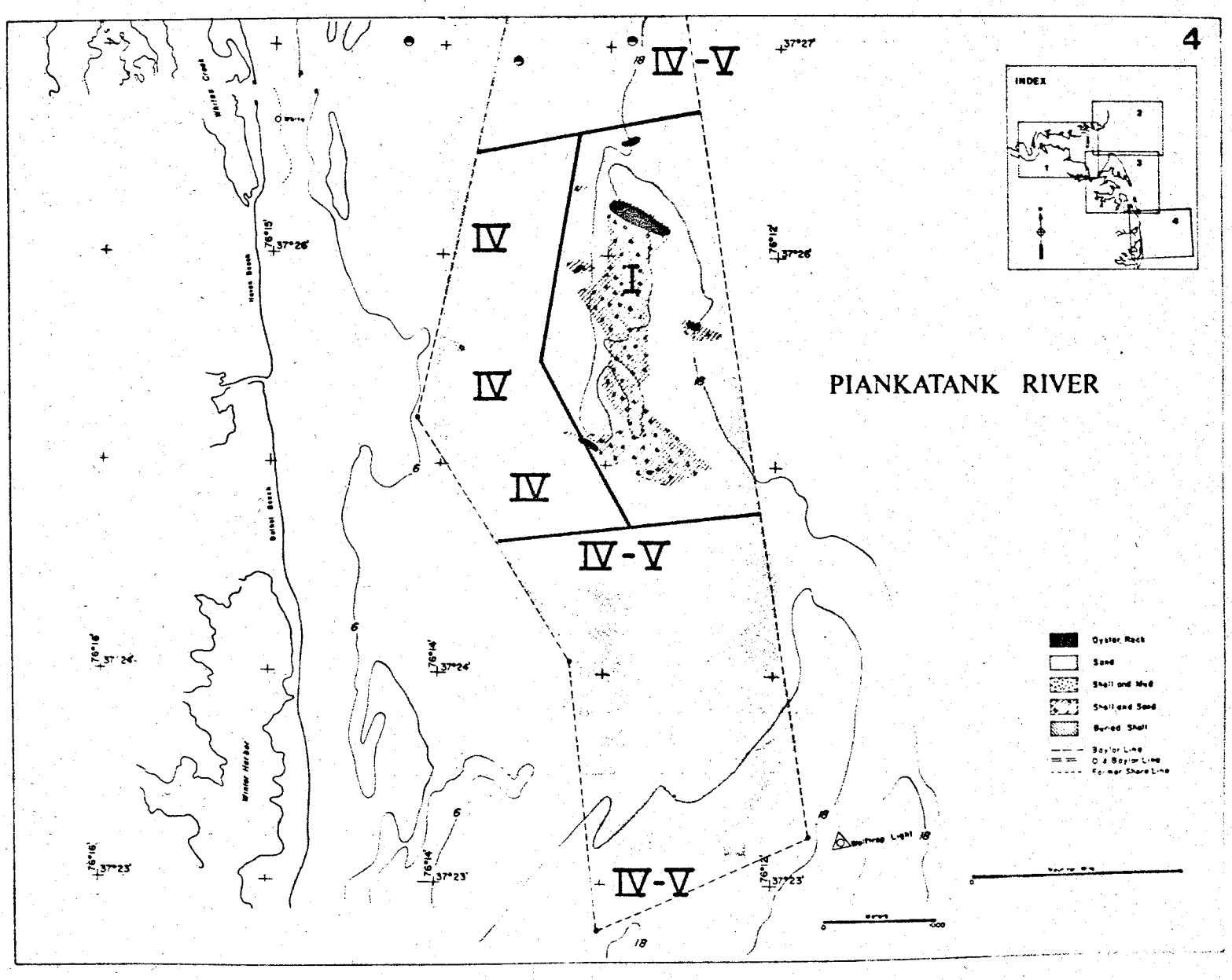
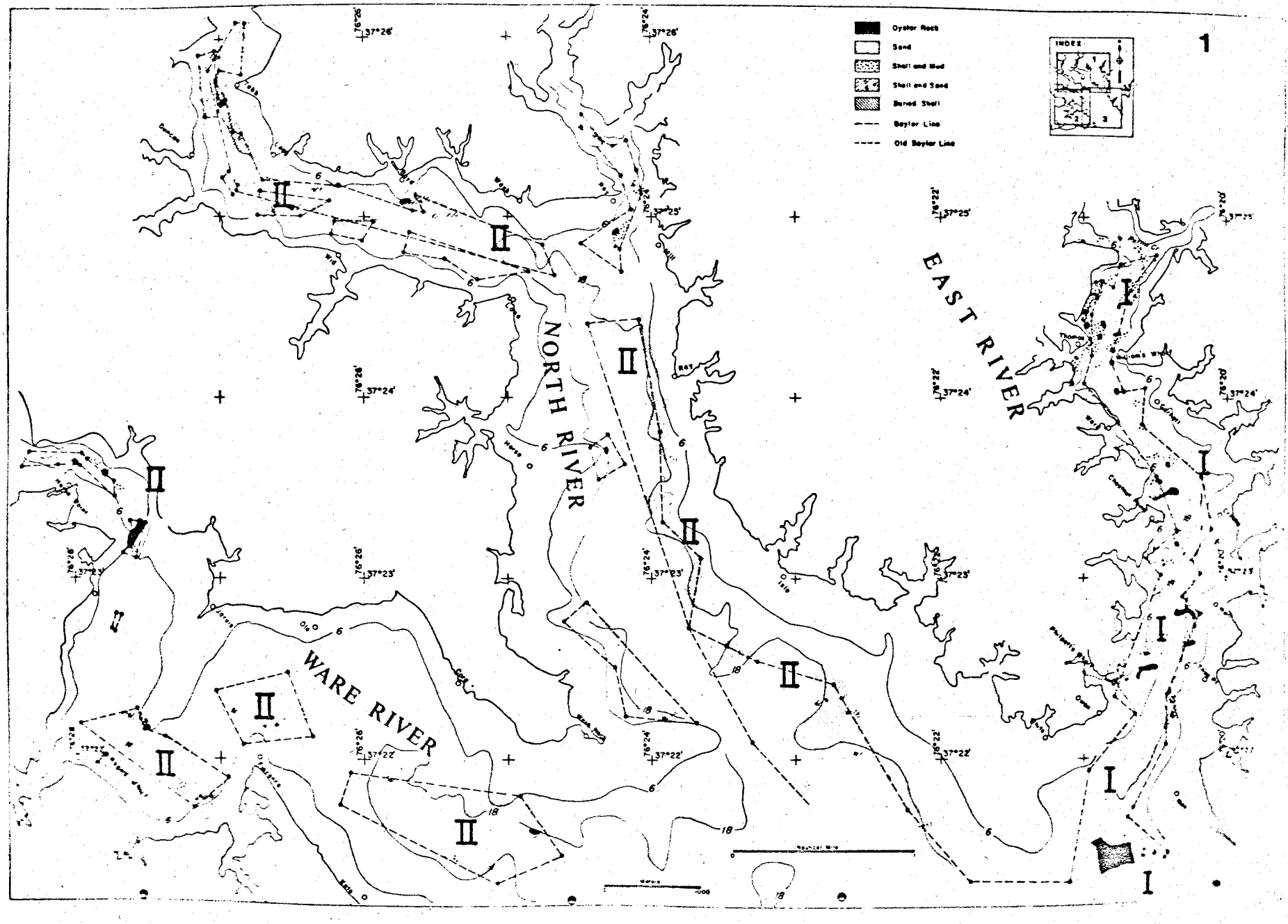
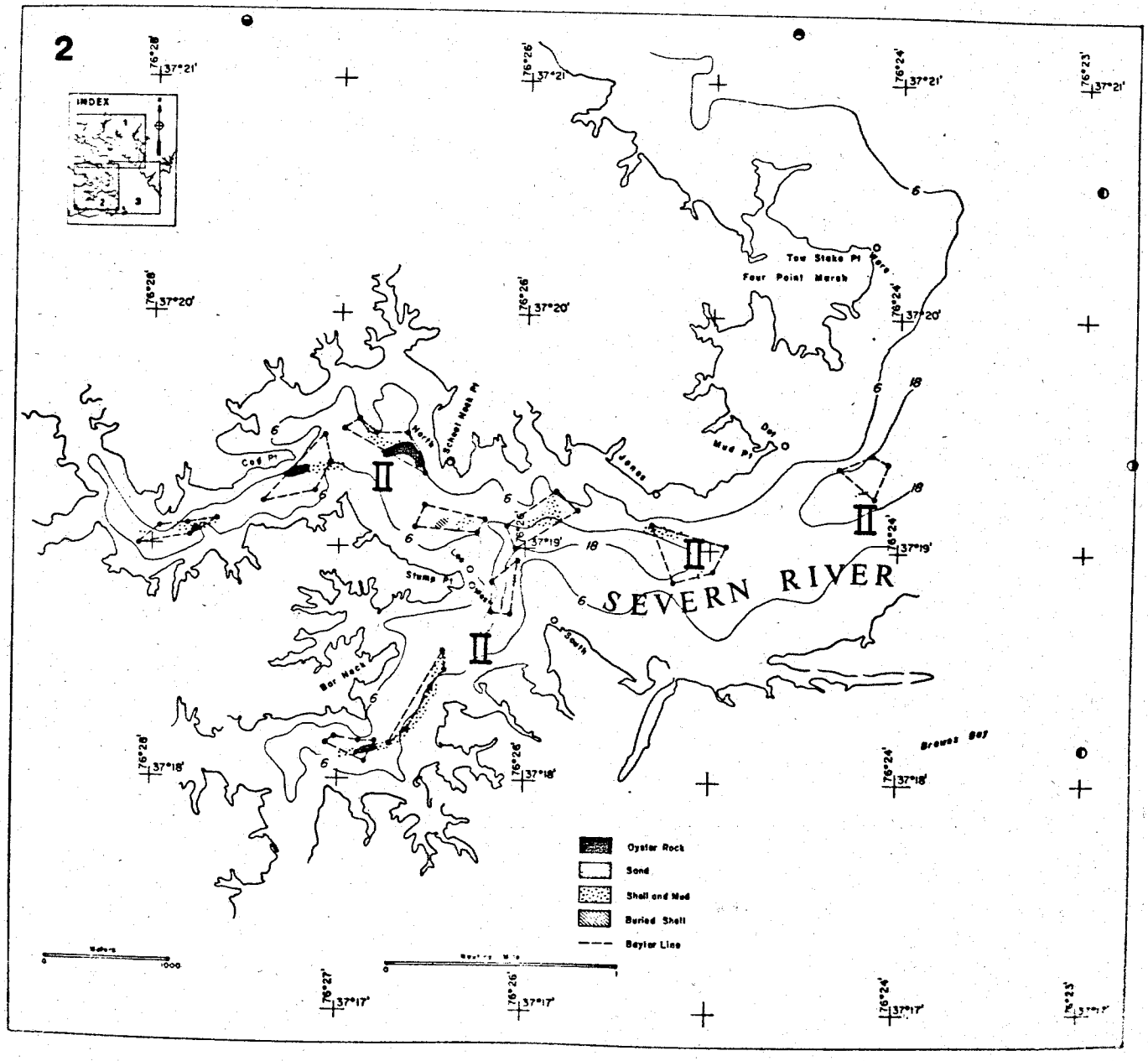
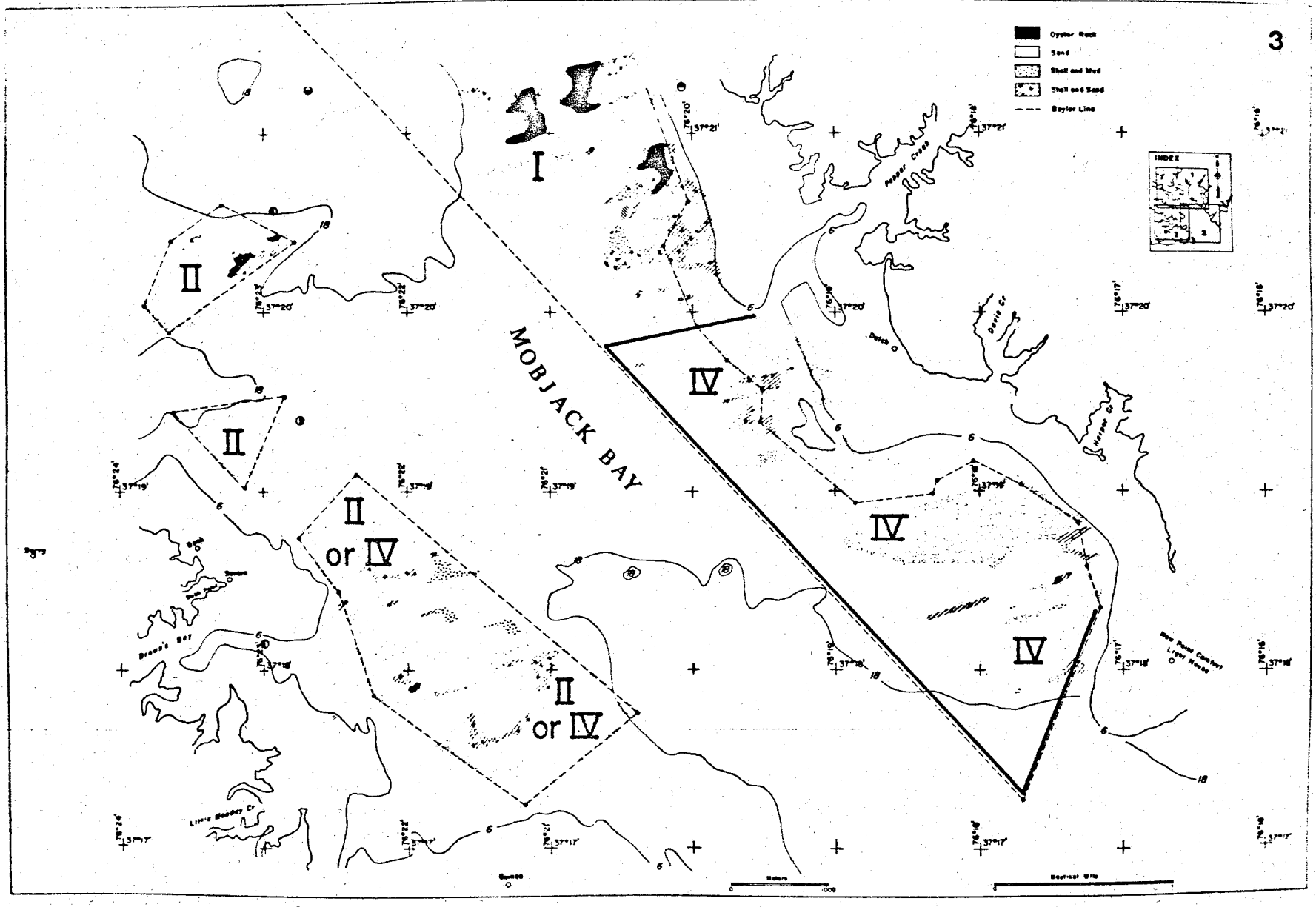
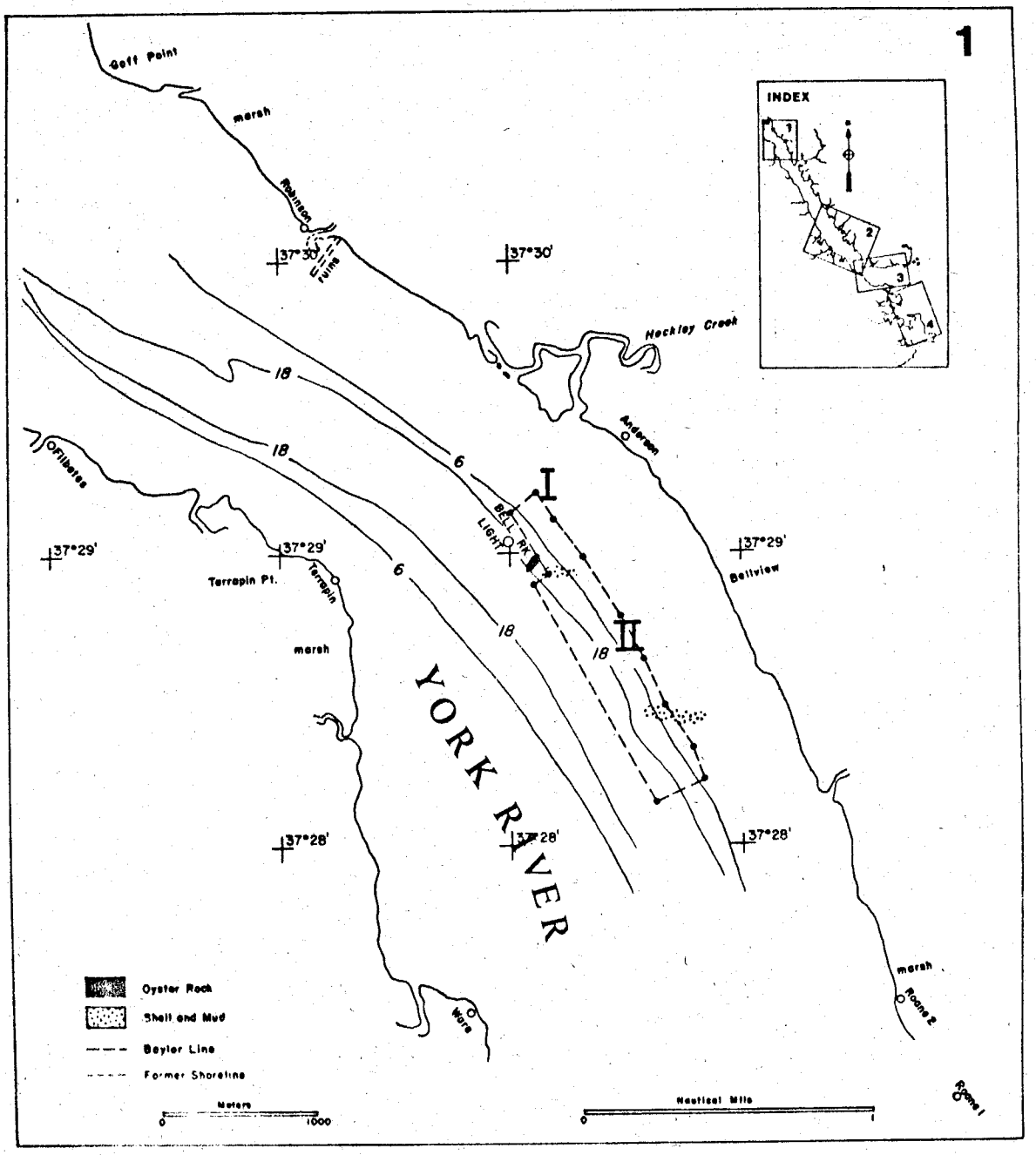
INDEX
PIANKATANK RIVER
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
Gravel
Clay
Baylor Line
Old Baylor Line
Former Shore Line
GWYNN'S I.
Hill's Bay
Stutt's Creek
Billup's Creek
Stock's Creek
White's Creek
Cherry Point
Bayview
I
IV
37°31'
37°30'
37°29'
37°28'
37°27'
Meters
Nautical Mile

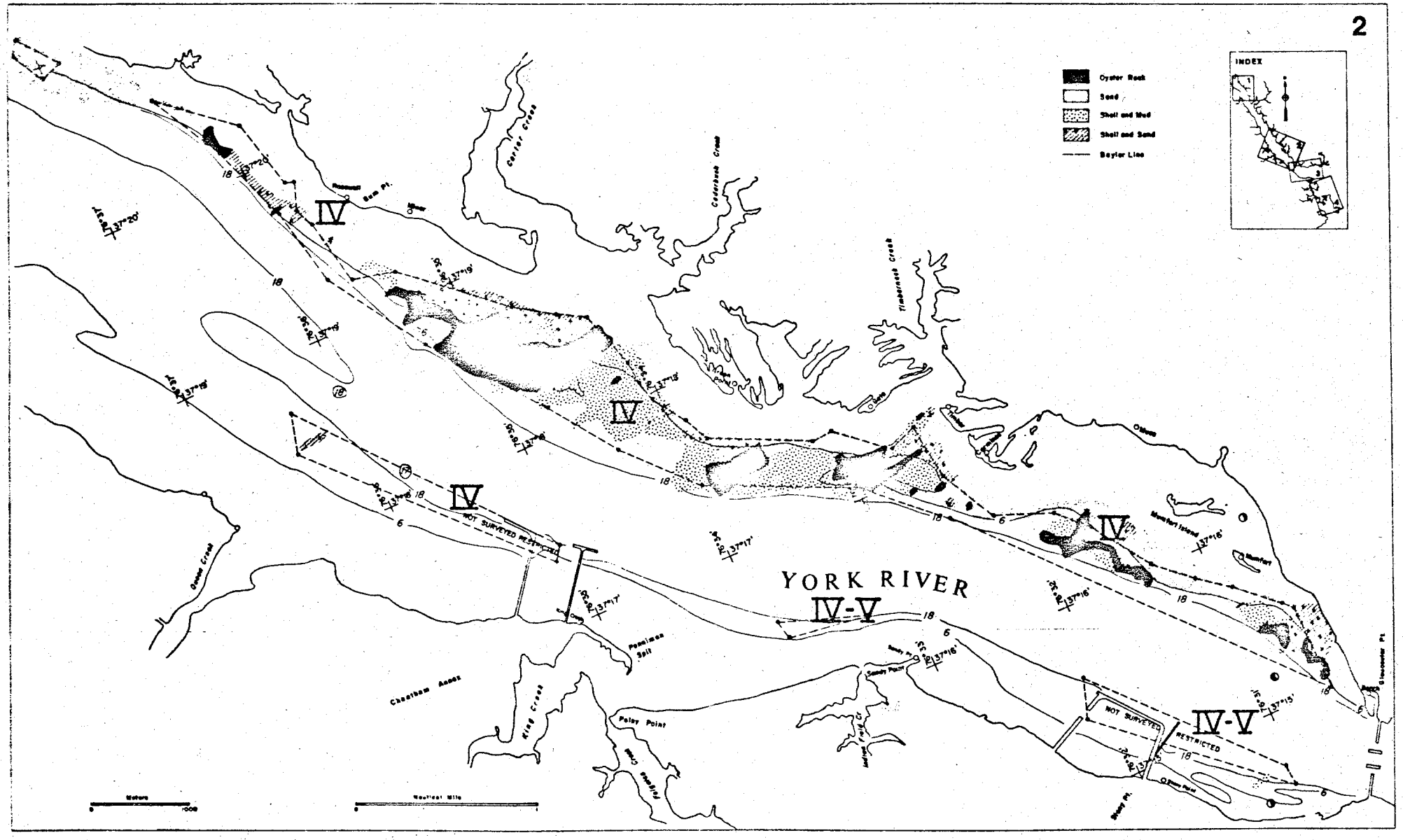

4
PIANKATANK RIVER
INDEX
IV-V
IV
I
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
Baylor Line
Old Baylor Line
Former Shore Line
Whites Creek
Winter Harbor
Wolftrap Light
37°27'
37°26'
37°24'
37°23'
76°15'
76°14'
76°12'
76°16'

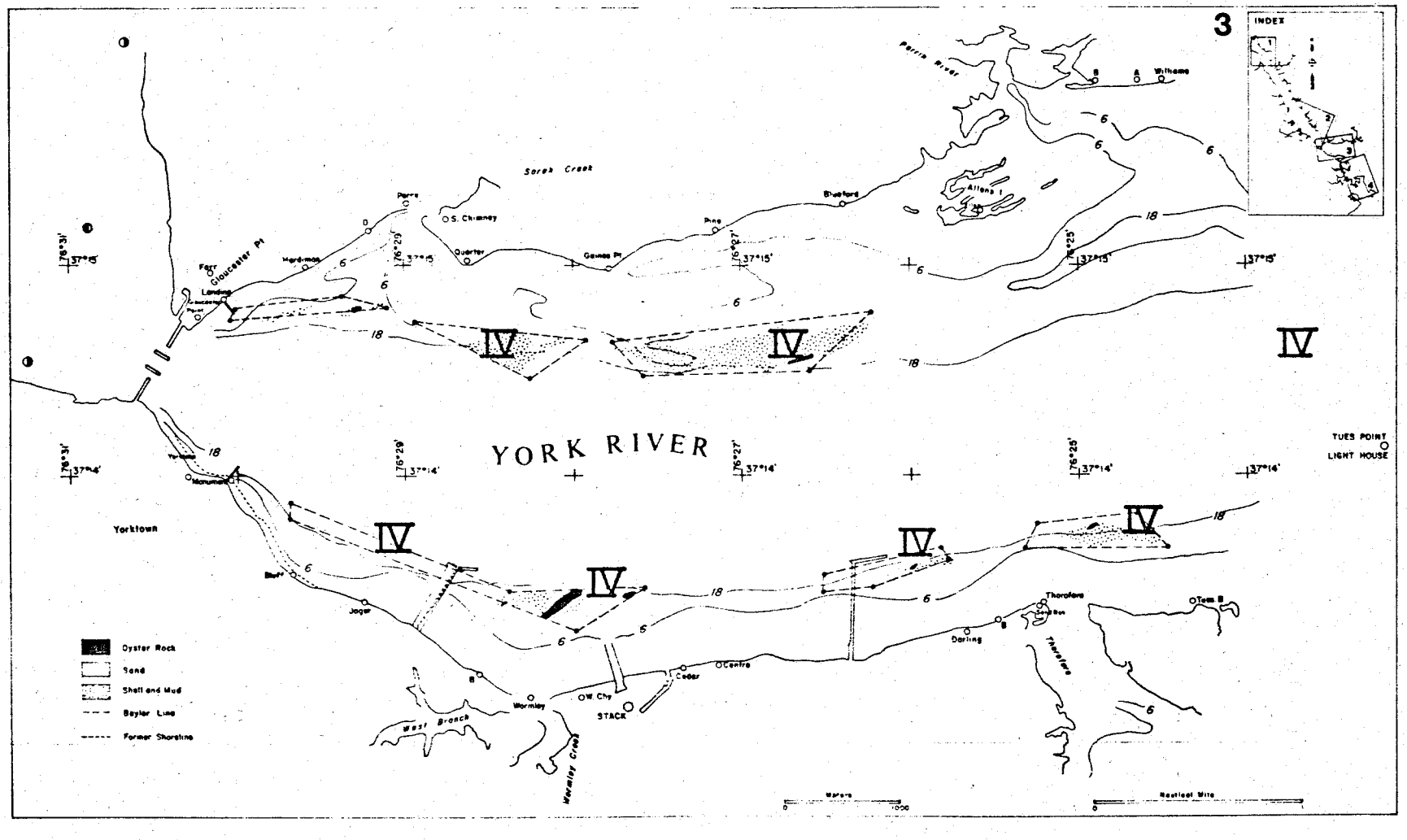

Oyster Rock
Sand
Shell and Mud
Shell and Sand
Buried Shell
Baylor Line
Old Baylor Line
INDEX
1
NORTH RIVER
EAST RIVER
WARE RIVER
I
II
6
18

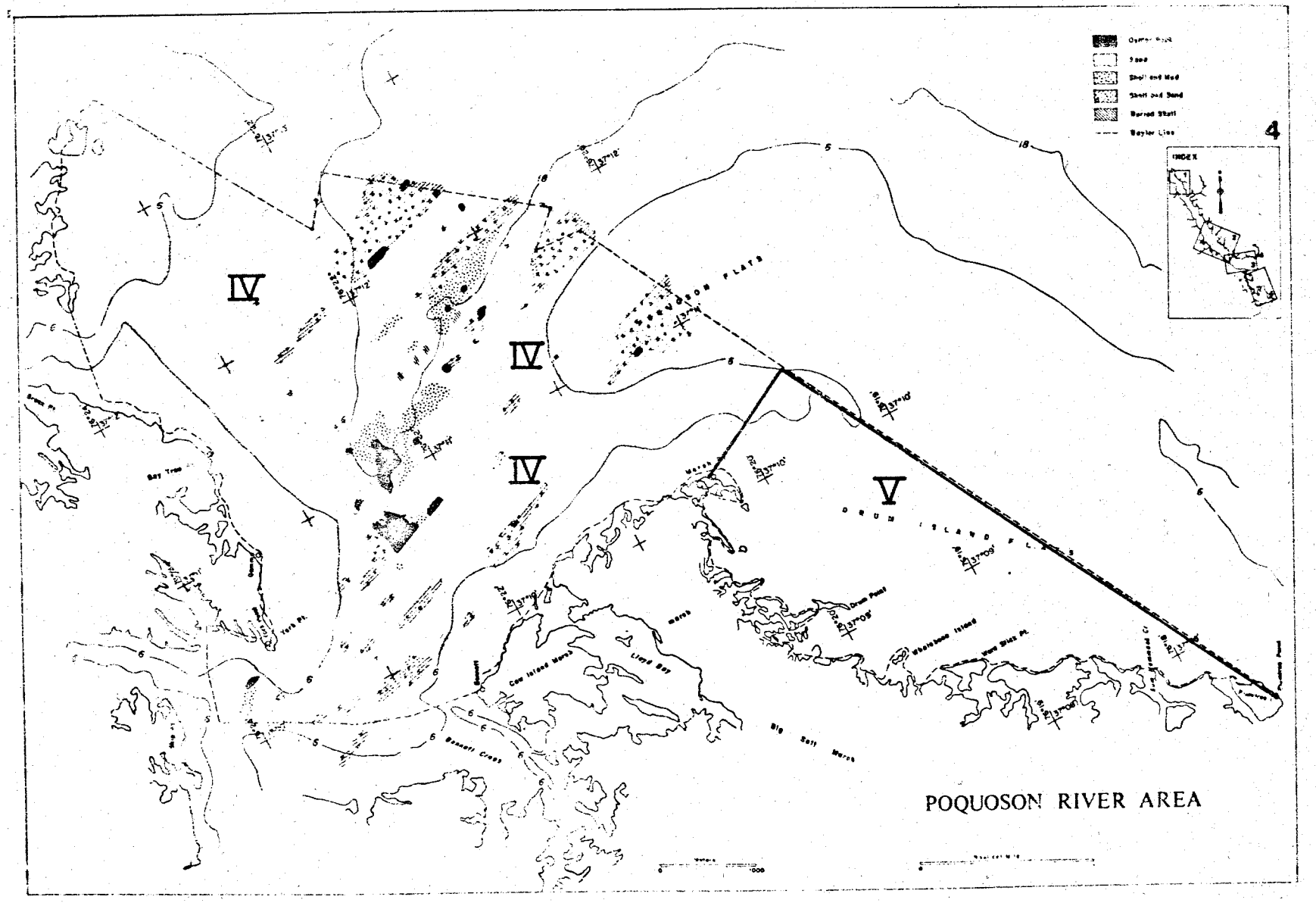

2
INDEX
Tow Stake Pt
Four Point Marsh
Cod Pt
North
School Neck Pt
Jones
Mud Pt
Stump Pt
Bar Neck
South
SEVERN RIVER
Browns Bay
Oyster Rock
Sand
Shell and Mud
Buried Shell
Baylor Line
Meters
1000
Nautical Miles
37°21'
37°20'
37°19'
37°18'
37°17'
76°28'
76°26'
76°24'
76°23'
76°27'


3
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Baylor Line
INDEX
MOBJACK BAY
I
II
II
II or IV
II or IV
IV
IV
IV
Pepper Creek
Davis Cr
Harper Cr
Dutch
Brown's Bay
Little Meadow Cr
New Point Comfort Light House
Meters
Nautical Mile


1
INDEX
Goff Point
marsh
Robinson
ruins
37°30'
37°30'
Hockley Creek
Anderson
18
18
6
6
18
18
I
II
BELL RK
LIGHT
Filbates
37°29'
37°29'
37°29'
Terrapin Pt.
Terrapin
marsh
Bellview
YORK RIVER
37°28'
37°28'
37°28'
marsh
Roane 2
Ware
Roane 1
Oyster Rock
Shell and Mud
Baylor Line
Former Shoreline
Meters
0
1000
Nautical Mile
0
1


2
INDEX
Oyster Rock
Sand
Shell and Mud
Shell and Sand
Baylor Line
YORK RIVER
IV
IV-V
NOT SURVEYED RESTRICTED
Carter Creek
Cedarbush Creek
Timberneck Creek
Mumfort Island
Mumfort
Pennimen Spit
Chantham Annex
King Creek
Poley Point
Sandy Point
Indian Field Cr.
Gloucester Pt.
Sheep Pt.
Meters
Nautical Mile


3
INDEX
YORK RIVER
Yorktown
Sarah Creek
Parrin River
Gloucester Pt
Farr
Landing
Hardiman
Perry
S. Chimney
Quarter
Gaines Pt
Pine
Bluebird
Allens I
Williams
Monument
Bluff
Jager
Wormley
W. Chy
STACK
Cedar
Centre
Darling
Thorofare
Tues B
West Branch
Wormley Creek
TUES POINT
LIGHT HOUSE
IV
18
6
Oyster Rock
Sand
Shell and Mud
Baylor Line
Former Shoreline
Meters
Nautical Mile


4
INDEX
IV
IV
IV
V
POQUOSON RIVER AREA

The James River

(CLASS I)

This system has been surveyed and systematically studied by VIMS since 1947. Setting has declined since 1960, but it still receives a functional set. However, small scale charts have not yet been completed. All Baylor bottoms in the James River are classed as I.