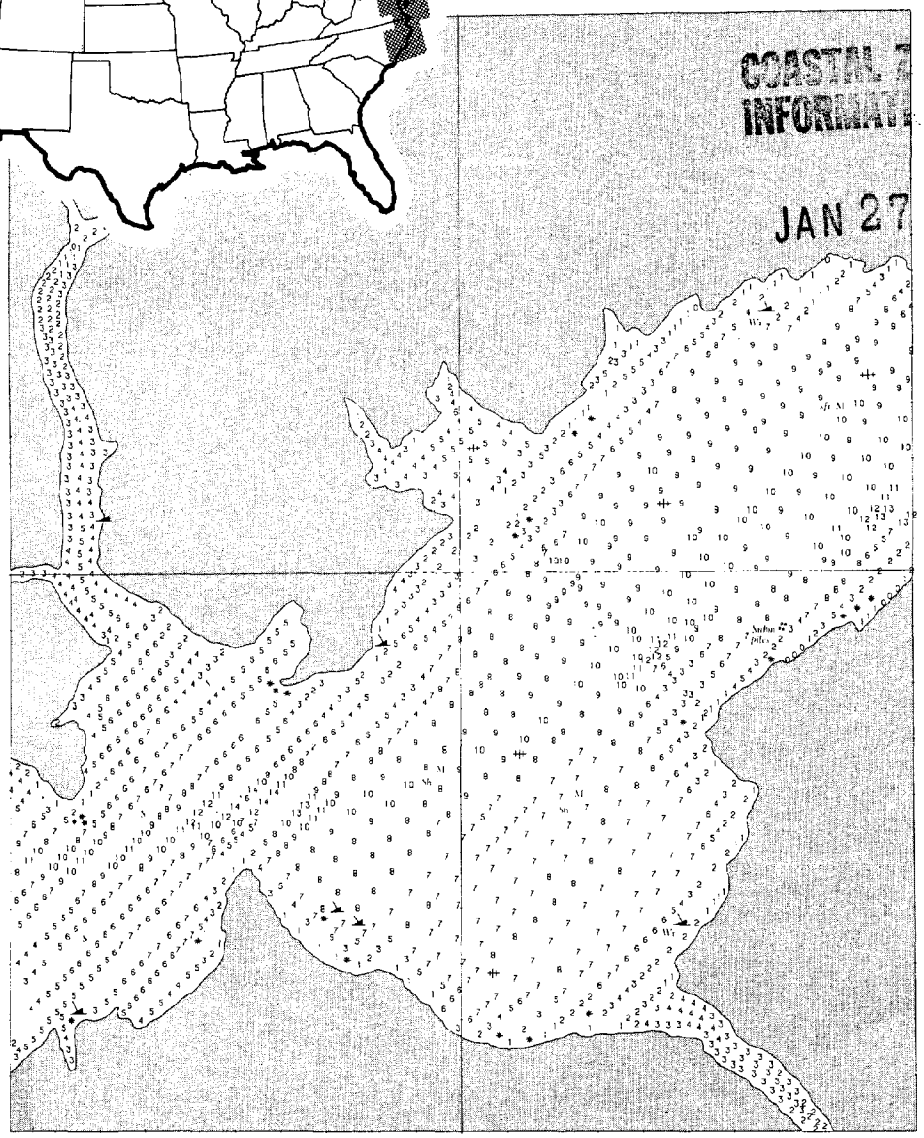
CATALOG OF

DIGITAL BATHYMETRIC DATA FOR THE UNITED STATES COASTAL REGIONS *

KEY TO GEOPHYSICAL RECORDS DOCUMENTATION NO. 8

Coastal Zone Information Center

* 34° – 45° North Latitude, Atlantic Coast



COASTAL ZONE INFORMATION CENTER

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DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL GEOPHYSICAL AND SOLAR-TERRESTRIAL DATA CENTER
BOULDER, COLORADO
APRIL 1977

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34° – 45° North Latitude,
Atlantic Coast

by Lt. Christopher Lawrence
NOAA Corps

National Geophysical and Solar-Terrestrial Data Center
Boulder, Colorado
April 1977

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COASTAL ZONE INFORMATION CENTER

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DIGITAL BATHYMETRIC DATA FOR THE UNITED STATES COASTAL REGIONS

INTRODUCTION

The National Geophysical and Solar-Terrestrial Data Center (NGSDC) is one of the six major facilities of the National Oceanic and Atmospheric Administration's (NOAA) Environmental Data Service (EDS). NGSDC data activities include seismology, geomagnetism, geothermics, marine geology and geophysics, solar-terrestrial physics, and other related disciplines. Under the auspices of the National Academy of Sciences, NGSDC is responsible for operating World Data Centers A for Solar-Terrestrial Physics, for Solid Earth Geophysics, and for Glaciology (with the University of Colorado). Its holdings include data from Federal and state agencies, universities, institutions, marine laboratories, and research centers both foreign and domestic.

This is the first in a series of catalogs that describe digital bathymetric and associated data available from NGSDC. It includes a brief history and description of the data, describes data products, gives ordering instructions and prices, and depicts geographical distribution and density of the data by area index charts. Only data currently available from NGSDC are described. Since additional data are being received on a regular basis, an updated version of this catalog is already being planned.

EXPLANATION

Description of Data

As part of a program by NOAA's National Ocean Survey (NOS) to automate the nautical chart production process, bathymetric (soundings), bottom characteristic, and danger to navigation data (collectively known as hydrography) have been coded from approximately 3200 survey sheets and transferred to magnetic tape. These data have been extracted from surveys dating between 1930 and 1965. Data from surveys conducted prior to 1930 are not included in this project; however, data from surveys conducted after 1965 will become available during the next several years. All data have been coded directly from hydrographic survey smooth sheets, which are plots of data carefully made to the same scale of the original survey sheets. The smooth sheet constitutes the official permanent record of a hydrographic survey.

In the past, hydrographic surveys of the National Ocean Survey were conducted almost exclusively for the purpose of publishing nautical charts and related navigational aids to mariners. The availability of hydrographic data in digital form on magnetic tape will greatly expand this purpose by offering a large amount of data (ultimately more than 40 million records) to the public in a medium much more versatile and manageable than paper copies of hydrographic surveys.

A hydrographic survey fulfills the following requirements:

1. An area has been systematically covered with accurately located depth measurements sufficient to insure that all dangers to navigation have been found.

2. All underwater features have been depicted, including channels, shoals, banks, and reefs, and the least depth determined on all critical dangers to navigation.

3. The positions of all fixed and floating aids to navigation have been accurately determined.

4. Simultaneous tide observations have been made from which soundings may be reduced to a plane of reference.

5. Bottom samples have been obtained with sufficient frequency to reveal the general characteristics of the submerged land.

6. Other miscellaneous operations have been completed, such as locating and describing landmarks to be charted, accumulating data to be published in the *U.S. Coast Pilots*, and measuring magnetic variation.

Data from all coastal waters of the United States including the Great Lakes, Alaska, Hawaii, and Puerto Rico will be available within the next several years.

Approximately 98 percent of the hydrographic survey data available from NGSDC are soundings; the remainder are bottom characteristics and dangers to navigation (e.g., coarse yellow sand, hard, mud, wreck, piling, rock, etc.). All data records contain the registry number of the survey sheet from which they were extracted, the year and month of the survey, the latitude and longitude to the nearest 0.01 second, and a cartographic code identifying the precise type of information (i.e., sounding in feet, sounding in fathoms, bottom characteristics, dangers to navigation, etc.).

All soundings have been taken by continuous record fathometers and are corrected for tide, vessel draft, velocity of sound in seawater, and other miscellaneous factors. Planes of reference adopted for the reduction of soundings are as follows: (a) for the Atlantic Ocean and Gulf of Mexico - the mean of the low waters (MLW); (b) for the Pacific Ocean - the mean of the lower low waters (MLLW); (c) for certain of the larger, navigable rivers and lakes special planes have been adopted. The lateral spacing of sounding

lines varies from 50 meters in channels and rivers to as much as 5 nautical miles for deep water offshore surveys (e.g., typical line spacing of soundings on inshore surveys is 50-100 meters).

Bottom characteristic data were collected primarily to aid mariners in determining anchoring conditions and to aid fishermen in determining suitable fishing grounds. Samples are collected by clam-shell-snapper-sampler devices, and descriptions consist of one to five words including color, consistency, texture, and in some cases, composition. In the case of multiple word descriptions of the bottom, each word has been coded separately and matched with the corresponding latitude and longitude of the position of that word on the smooth sheet. Each word has been assigned a four-digit number code that correlates with that word (e.g., the word "coarse" might be identified by the code "0557" and the word "sand" by the code "0558"). This digitization technique results in the possibility of several physical records for a single bottom sample site, each with a slightly different latitude and longitude. See table 1 for bottom characteristic descriptors.

Danger to navigation data (coded in table 1) may include rocks, pilings, wrecks, oil platforms, etc. These data are available on magnetic tape and as computer plots.

Data Covered by This Catalog

This catalog describes only that portion of the data currently held by NGSDC for the area from 34° north latitude to 45° north latitude on the Atlantic coast (see fig. 1). This represents approximately half of the data for this area that will become available over the next several years. Additional data for this area are being received on a regular basis from the National Ocean Survey and will ultimately be incorporated into an updated version of this catalog. All hydrographic data currently held by NGSDC are depicted in figure 2. The data for areas not described in this catalog are being processed and will be described in detail in later catalogs.

The data described in this catalog have not been updated and revised by surveys conducted after 1965 nor do they take into account corrections listed in publications of the United States Coast Guard. These data should under no circumstances be used for navigation.

Digital Data Products

Two types of digital data are available--simple master tape copies and data that have been computer-programed to conform to uniform grids.

The master magnetic tapes contain 80-character records and are 9-track, 1600 BPI, with a blocking factor of 5120 characters per block. In general, one magnetic tape contains data from 1 square degree of area; however, for certain localities with dense data, there may be several tapes for 1 square degree of area (see table 2).

Table 1. Cartographic codes (used on magnetic tapes to distinguish soundings, bottom characteristics, and dangers to navigation)

CODE	DESCRIPTION
0044	Vessel hulk (visible above survey datum)
0045	Vessel hulk (approximate position)
0085	Obstruction
0087	Privately maintained channel
0089	Sunken rock (depth unknown)
0090	Sunken wreck - depth cleared by wire drag
0091	Sunken rock - depth cleared by wire drag
0092	Sunken obstruction - depth cleared by wire drag
0094	Rock which covers and uncovers
0098	Wreck showing above sounding datum
0099	Wreck - masts visible above sounding datum
0100	Sunken wreck - dangerous to surface navigation
0101	Wreck over which depth is known
0102	Sunken wreck, not dangerous to surface navigation
0103	Kelp
0104	Rock (not dangerous to navigation)
0105	Pipe
0106	Stake
0107	Submerged ruins
0108	Submerged crib
0109	Crib (above sounding datum)
0110	Snags, stumps or submerged piles
0111	Platform
0126	Sounding (whole feet)
0127	Sounding (feet and tenths)
0128	Sounding (feet and fractions)
0129	Sounding (whole fathoms)
0130	Sounding (fathoms and tenths)
0131	Sounding (fathoms and fractions)
0132	Sounding (whole meters)
0133	Sounding (meters and tenths)
0134	Unqualified sounding (not corrected with final reducers)
0135	Minus sounding (whole feet)
0136	Minus sounding (feet - fractions)
0140	Minus sounding (fathoms - tenths)
0141	Minus sounding (feet - tenths)
0142	Minus sounding (fathoms - fractions)
0143	Minus sounding (whole fathoms)
0146	Tide rips (no limit lines)
0230	Marker
0290	Shoal sounding on isolated rock
0291	Rock which covers and uncovers
0540	Spicules
0541	Coal
0542	Manganese (nodules)
0543	Glacial
0544	Flinty
0545	Gritty
0546	Stiff
0547	Shale
0548	Rocky
0549	Ground
0550	Ooze
0551	Clay
0552	Silt
0553	Mud
0554	Very fine
0555	Fine
0556	Medium
0557	Coarse

Table 1 (Cont.)

CODE	DESCRIPTION	CODE	DESCRIPTION
0558	Sand	0579	Light
0559	Gravel	0580	Coral
0560	Shingle	0581	Red
0561	Quartz	0582	Yellow
0562	Coral head	0583	Dark
0563	Volcanic	0584	Blue
0564	Volcanic ash	0585	Chocolate
0565	Lava	0586	Orange
0566	Pebble	0587	Green
0567	Stones	0588	Violet
0568	Boulders	0589	Pumice
0569	Black	0590	Cinder
0570	White	0591	Oyster
0571	Gray	0592	Mussels
0572	Soft	0593	Sponge
0573	Hard	0594	Seaweed
0574	Sticky	0595	Grass
0575	Shells	0596	Globigerina
0576	Broken	0597	Small
0577	Brown	0598	Large
0578	Speckled	0599	Kelp

Table 2. Number of master tapes and records for each square-degree area

N. Latitude	W. Longitude	Number of tapes	Number of records	N. Latitude	W. Longitude	Number of tapes	Number of records
44°- 45°	67°- 68°	1	13,808	40°- 41°	71°- 72°	1	15,872
44 - 45	68 - 69	2	204,369	40 - 41	72 - 73	1	92,242
44 - 45	69 - 70	1	60,946	40 - 41	73 - 74	3	308,715
43 - 44	68 - 69	1	36,597	40 - 41	74 - 75	2	85,791
43 - 44	69 - 70	1	118,998	39 - 40	73 - 74	1	32,744
43 - 44	70 - 71	2	193,908	39 - 40	74 - 75	2	185,871
42 - 43	66 - 67	1	4,892	39 - 40	75 - 76	1	40,106
42 - 43	67 - 68	1	1,295	39 - 40	76 - 77	2	192,440
42 - 43	68 - 69	1	7,870	38 - 39	74 - 75	1	64,211
42 - 43	69 - 70	1	38	38 - 39	75 - 76	2	173,940
42 - 43	70 - 71	2	87,424	38 - 39	76 - 77	5	505,043
42 - 43	71 - 72	1	21,219	38 - 39	77 - 78	1	38,839
42 - 43	73 - 74	1	13,046	37 - 38	74 - 75	1	10,337
41 - 42	66 - 67	1	2,026	37 - 38	75 - 76	4	277,392
41 - 42	67 - 68	1	26,021	37 - 38	76 - 77	4	499,333
41 - 42	68 - 69	1	10,522	37 - 38	77 - 78	1	30,448
41 - 42	69 - 70	1	63,047	36 - 37	74 - 75	1	907
41 - 42	70 - 71	3	347,437	36 - 37	75 - 76	1	66,505
41 - 42	71 - 72	2	266,518	36 - 37	76 - 77	2	115,054
41 - 42	72 - 73	1	51,806	35 - 36	75 - 76	1	61,803
41 - 42	73 - 74	1	48,464	35 - 36	76 - 77	2	137,364
41 - 42	74 - 75	1	66	35 - 36	77 - 78	1	9,390
40 - 41	68 - 69	1	5,234	34 - 35	75 - 76	1	448
40 - 41	69 - 70	1	12,220	34 - 35	76 - 77	1	79,817
40 - 41	70 - 71	1	4,906	34 - 35	77 - 78	1	12,494

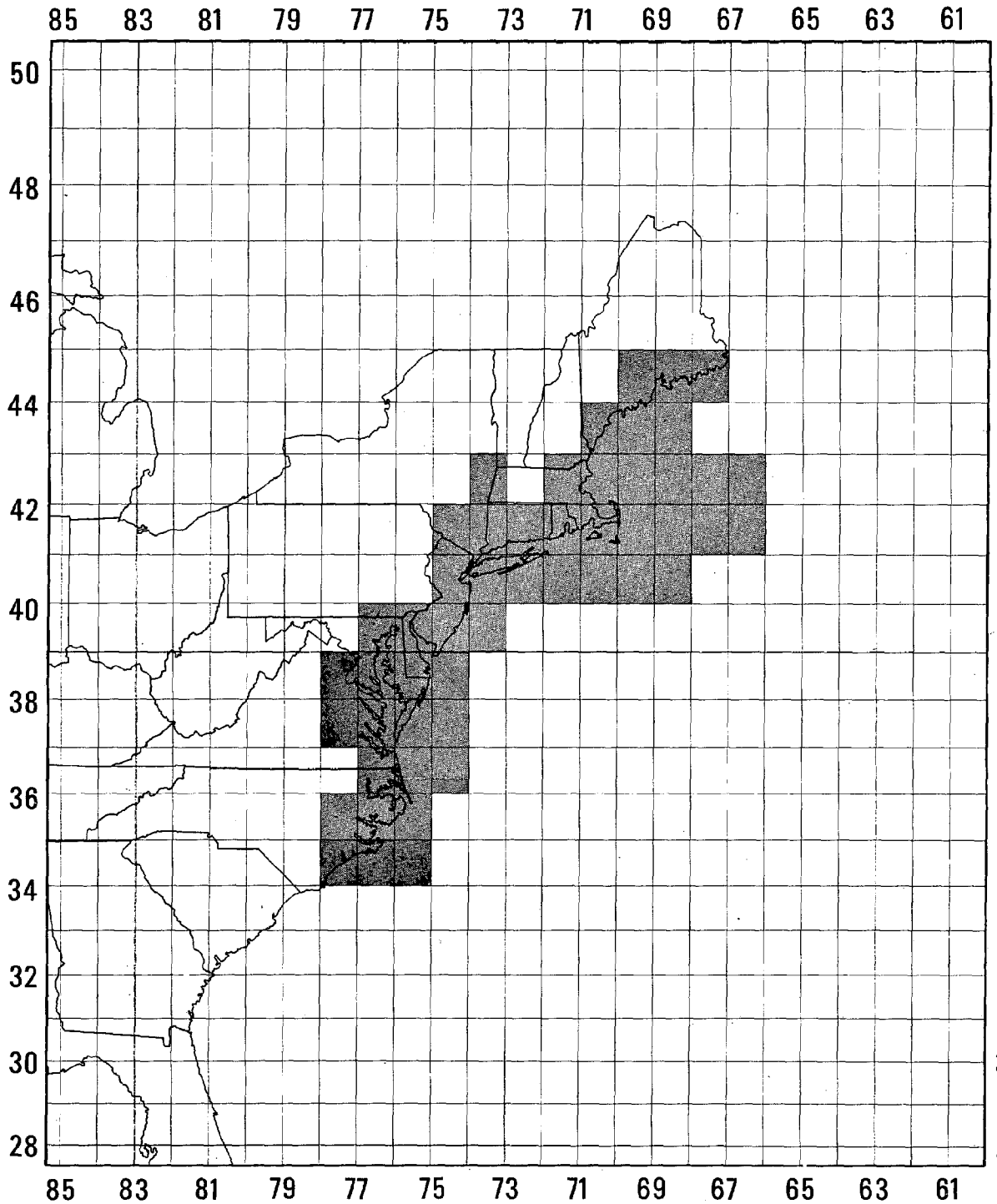


Figure 1. Distribution of hydrographic data described in this catalog

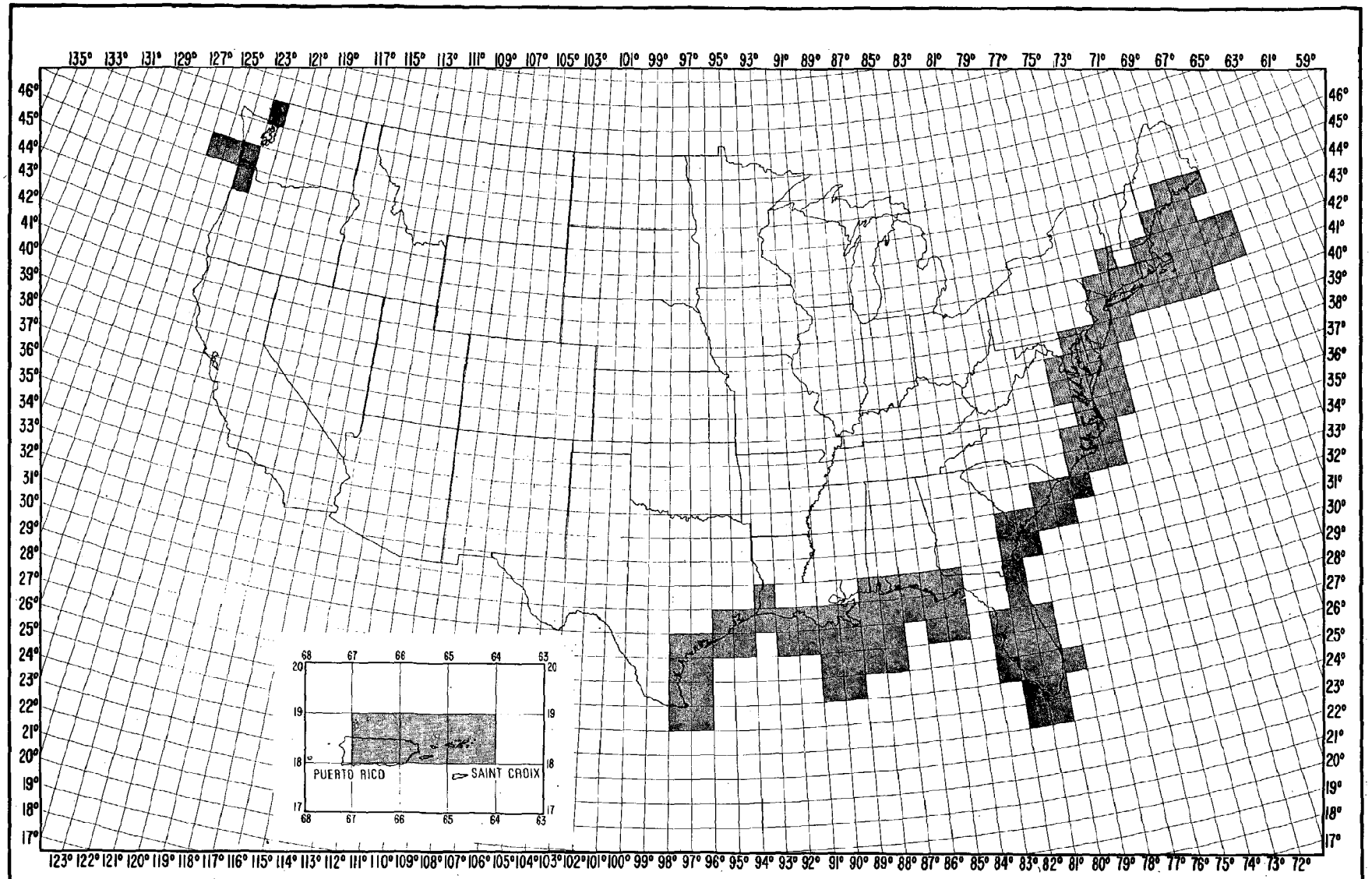


Figure 2. Distribution of all hydrographic data currently available from NGSDC

For modeling or statistical data studies uniformly gridded data are desirable. Upon request, data can be supplied which conforms to a uniform map grid. Figure 5 depicts a 10-minute square area with average depths plotted per 10-second square unit of area. Grid spacing may be specified by the requester. Data are generally quite dense; consequently, average depths per unit area (i.e., sum of all depth values per unit area divided by the total number of soundings in that area) are used for the gridded value rather than interpolated data values.

In addition to 9-track (1600 BPI), magnetic tapes are also available on 9-track (800 BPI) and 7-track (800 and 556 BPI) (see table 3). Requests for data contained on more than one master tape will be filled by packing the maximum number of records onto a single tape, if so desired.

Table 3. Estimated number of data records for various packing specifications

Blocking factor (char./block)	9-track		7-track	
	1600 BPI	800 BPI	800 BPI	556 BPI
80[1]	42176	39287	33741	32084
640	222757	160448	148026	120689
800	253805	175951	163886	131027
1280	320895	205776	195268	150346
1600	351902	218099	208852	158117
1920	376131	227168	218514	163759
2400	403944	237025	229440	169819
2560	411551	239624	232344	171405
3200	436198	247775	241516	176345
3840	454337	253525	248043	179800
4000	458147	254706	249391	180508
4480	468245	257798	252926	182352
4800	474050	259547	254933	183393
5120[2]	479248[3]	261098	256716	184314
5600	486102	263119	259045	184314
5760	488170	263724	252528	185869
6400	495551	265863	262217	187133
7040	501757	267639	264276	188179
7200	503158	268037	264738	188413
7840	508253	269476	266411	189259
8000	509414	269802	266790	189450

[1] Unblocked
[2] Blocking factor of master tapes
[3] BPI and track of master tapes

How to Order

Unless data exchange agreements exist with NGSDC, Federal regulations require that data services be reimbursed at charges determined by the cost for the services.

The data described in this catalog may be obtained from NGSDC at the following prices:

Tapes and Documentation - $60 for first master tape accessed: $10 for each additional master tape accessed. Minimum charge of $60 per output tape.

New plots - generally $100

Copies of existing plots - $20

For magnetic tapes please specify 9-track (800 or 1600 BPI) or 7-track (556 or 800 BPI) tape density and latitude-longitude limits of the desired area(s) requested. Plots are limited to a width of 32 inches (48 cm). There is no limitation on plot length.

Prices for tape or plotter products requiring additional programing will depend on costs involved. Discounts will be given for those requests involving a large number of similar plots. Checks should be made payable to "Commerce/NOAA/NGSDC." Address all orders and inquiries to:

National Geophysical and Solar-Terrestrial
Data Center
Code D621, EDS/NOAA
Boulder, Colorado 80302

Phone: (303) 499-1000, ext. 6376. (FTS 323-6376)

Sources for Additional Hydrographic Data

Requests for copies of hydrographic survey smooth sheets and their accompanying descriptive reports should be addressed to:

NOAA/NOS
Marine Surveys Division
Data Control Branch (C353)
6001 Executive Blvd.
Rockville, Maryland 20852

Please specify desired area of coverage by giving latitude and longitude limits or stating the shore locality desired.

Requests for nautical charts, bathymetric maps, and related indexes should be addressed to:

NOAA/NOS
Distribution Division (C44)
National Ocean Survey
Riverdale, Maryland 20840

Phone (301) 436-6990

SAMPLE DATA PLOTS

Various plotter products supplement data available on magnetic tape. Plots of soundings, bottom characteristics, and dangers to navigation can be constructed on several map projections and at specified scales. The maximum size of the area to be plotted is generally restricted to areas less than 15 nautical miles square because of the density of the data. Up to three colors may be requested on all plots. Figure 6 depicts a 4-minute square portion of figure 3 (index plot) and displays sounding data in feet. Figure 7, also a portion of figure 3, depicts a 2-minute square area.

In addition to data plots, various statistical plot products are also available. Data that have been programed by computer to conform to a uniform map grid are available both digitally and as a plotter product. Data points may be determined either by interpolation or by averaging all depths falling within a given area (see fig. 5). Bottom profiles are available with horizontal and vertical scales and beginning and ending latitudes and longitudes specified by the requester (see fig. 8). Units are metric. Plots depicting varied depth ranges can be constructed using different symbols and colors to give a contoured effect (see fig. 4). Four sample plots depicting bottom characteristic data are shown in figure 9.

Maximum width of plots is 32 inches (48 cm); however, there is no length limitation. Please specify latitude-longitude limits of the area for which plots are desired and the desired scale and projection (square, mercator, polyconic).

NOTE: The shoreline shown on the following sample data plots and on the square-degree area index plots has been applied by pantograph and is not available digitally.

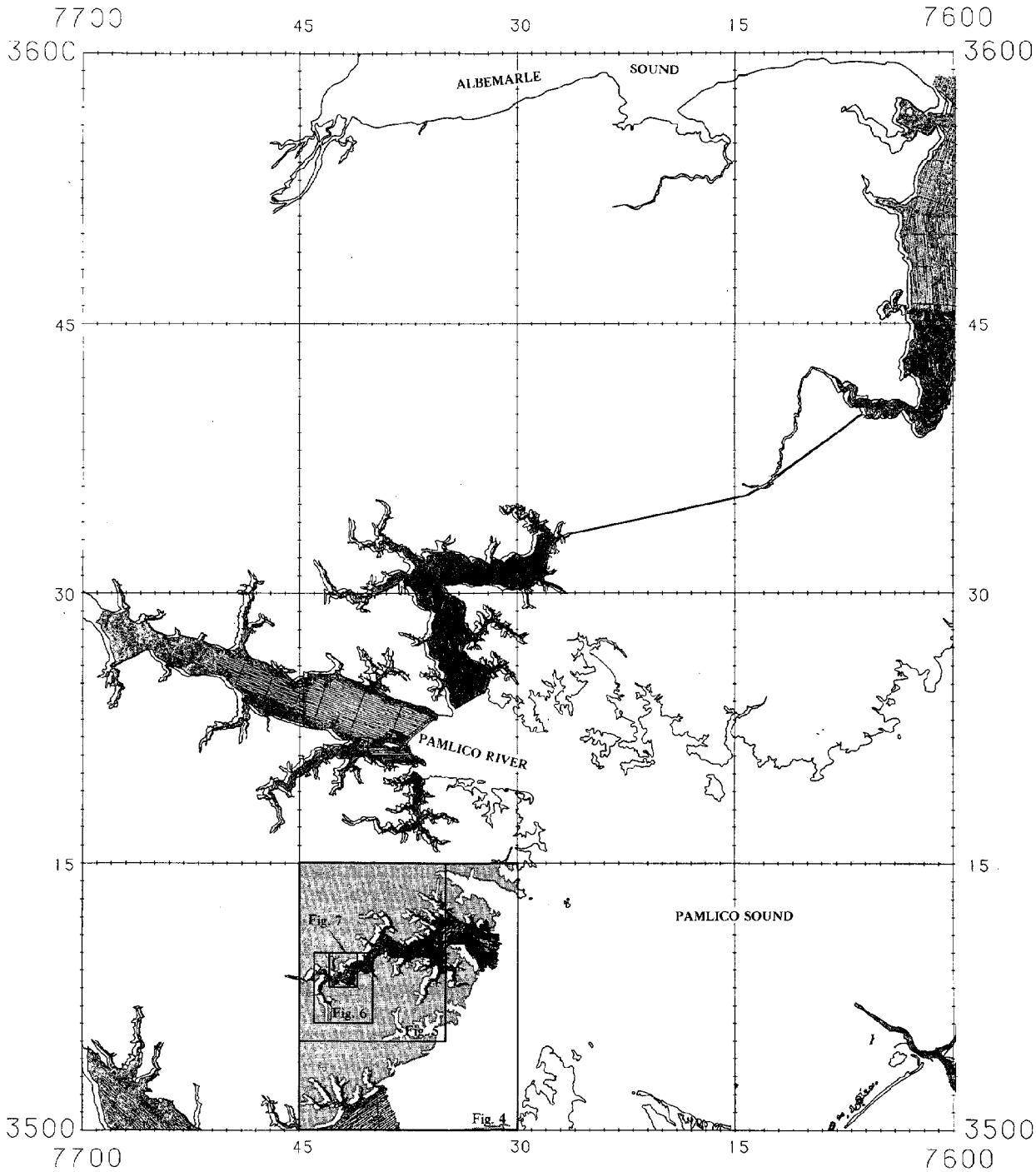


Figure 3. Index plot depicting distribution and density of hydrographic data available in a 1-degree-square area. Each sounding is displayed as a single dot. (Outlined areas refer to following figs. 4, 5, 6, and 7.)

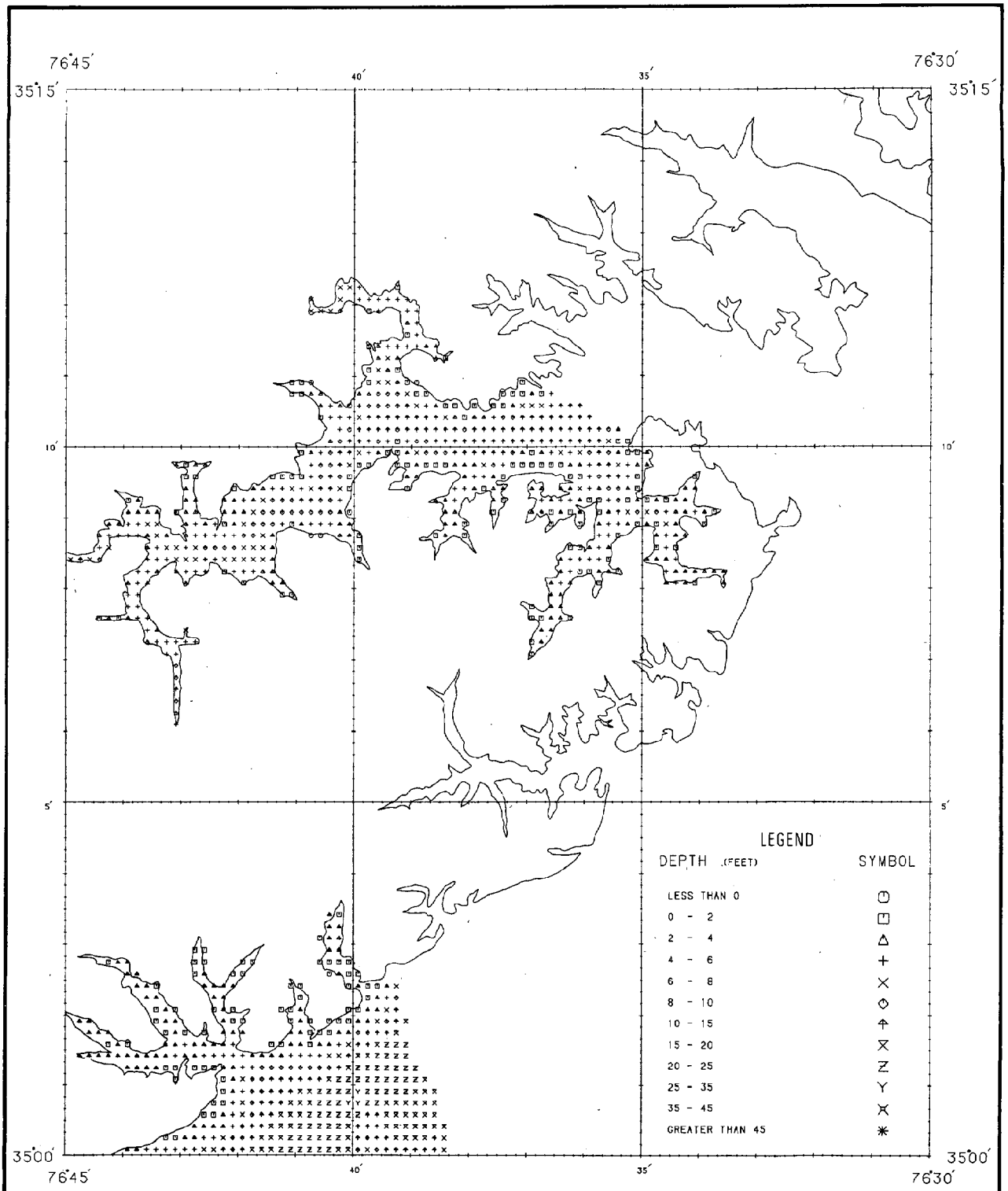


Figure 4. Fifteen-minute square area depicting varied depth ranges with symbols

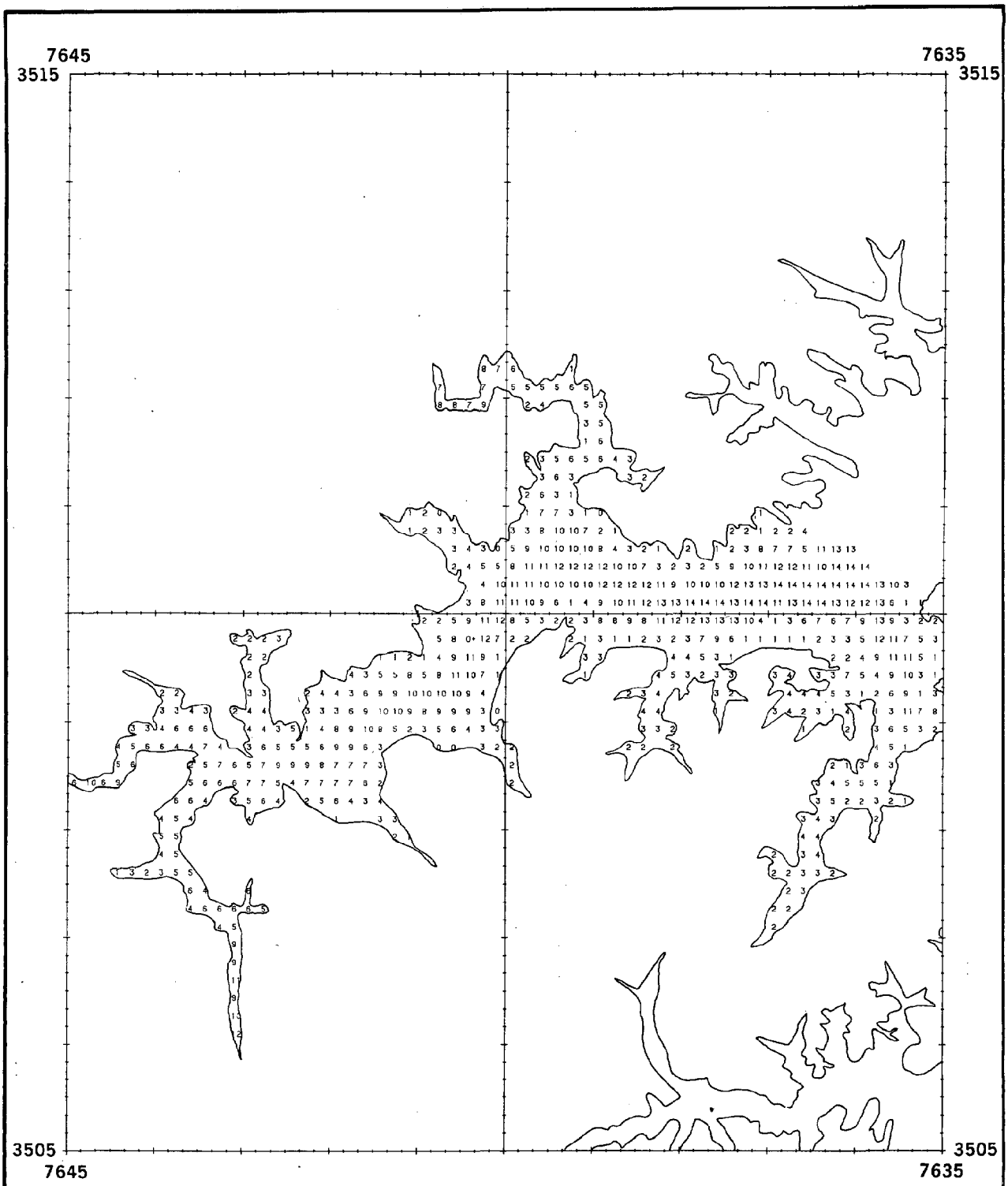


Figure 5. Ten-minute square area depicting data which have been computer programed to conform to a uniform grid

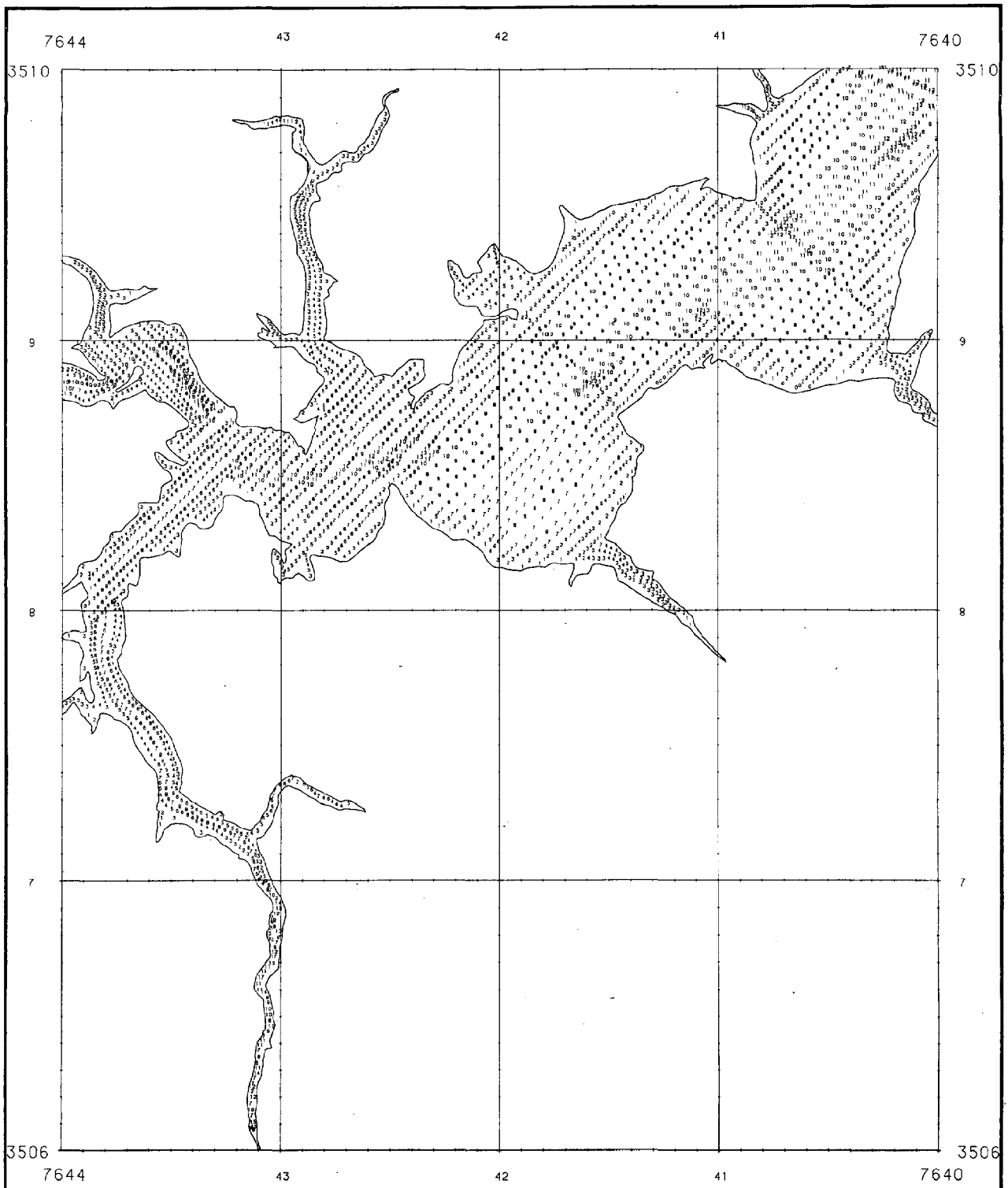


Figure 6. Four-minute square area depicting soundings in feet

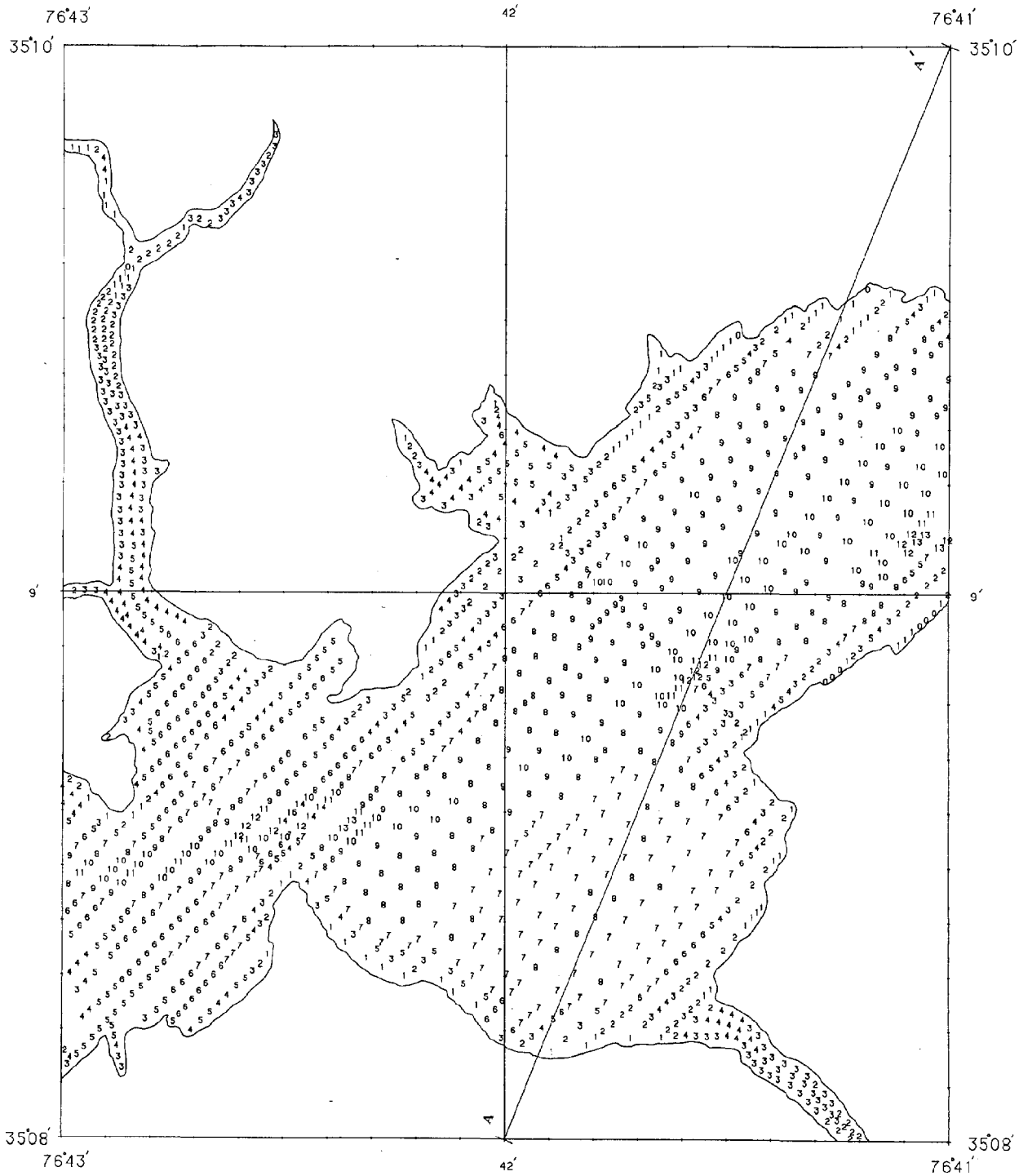


Figure 7. Two-minute square area depicting soundings in feet (bottom profile line A - A' is indicated in red.)

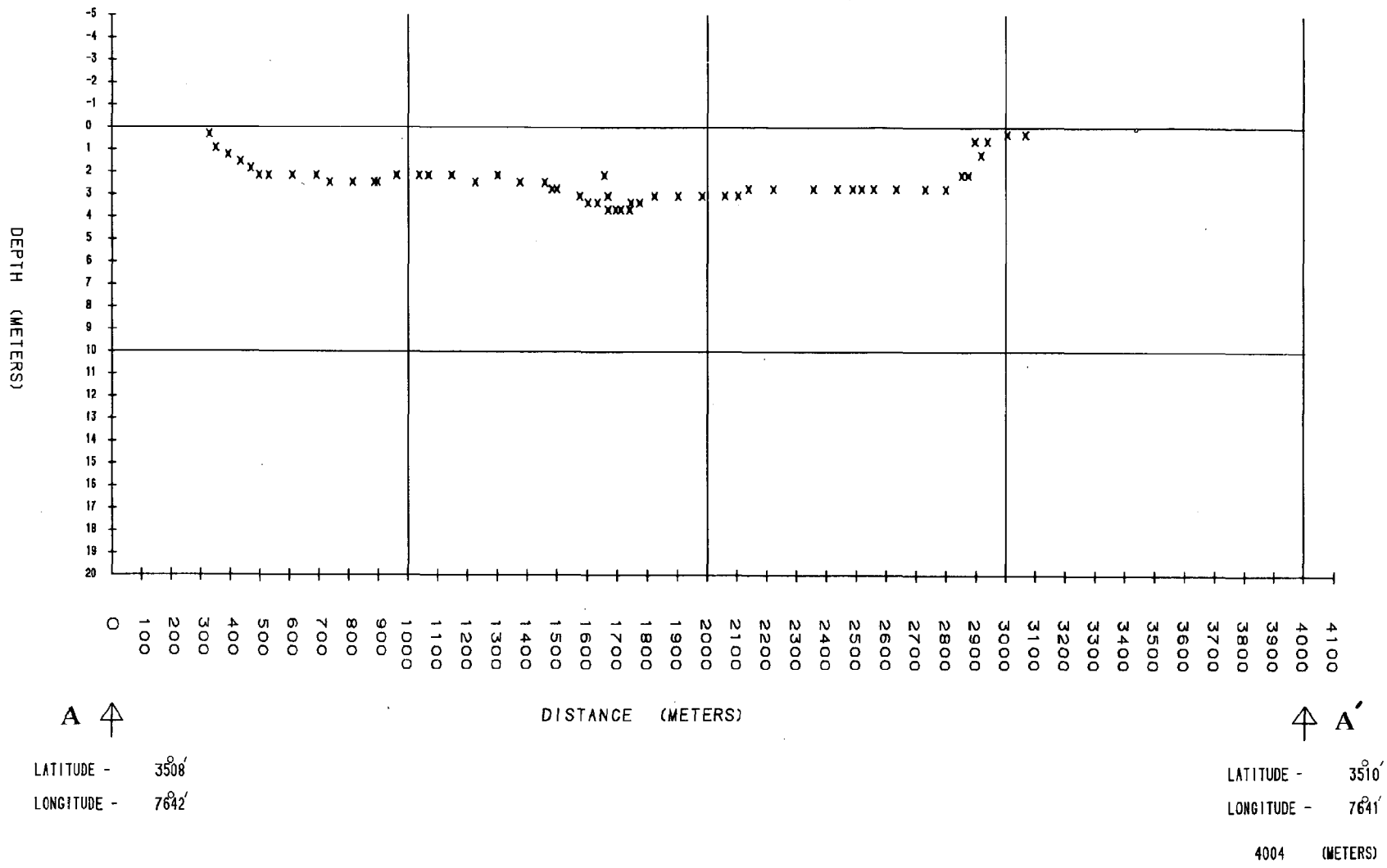


Figure 8. Bottom profile (A - A') constructed from data displayed in figure 7

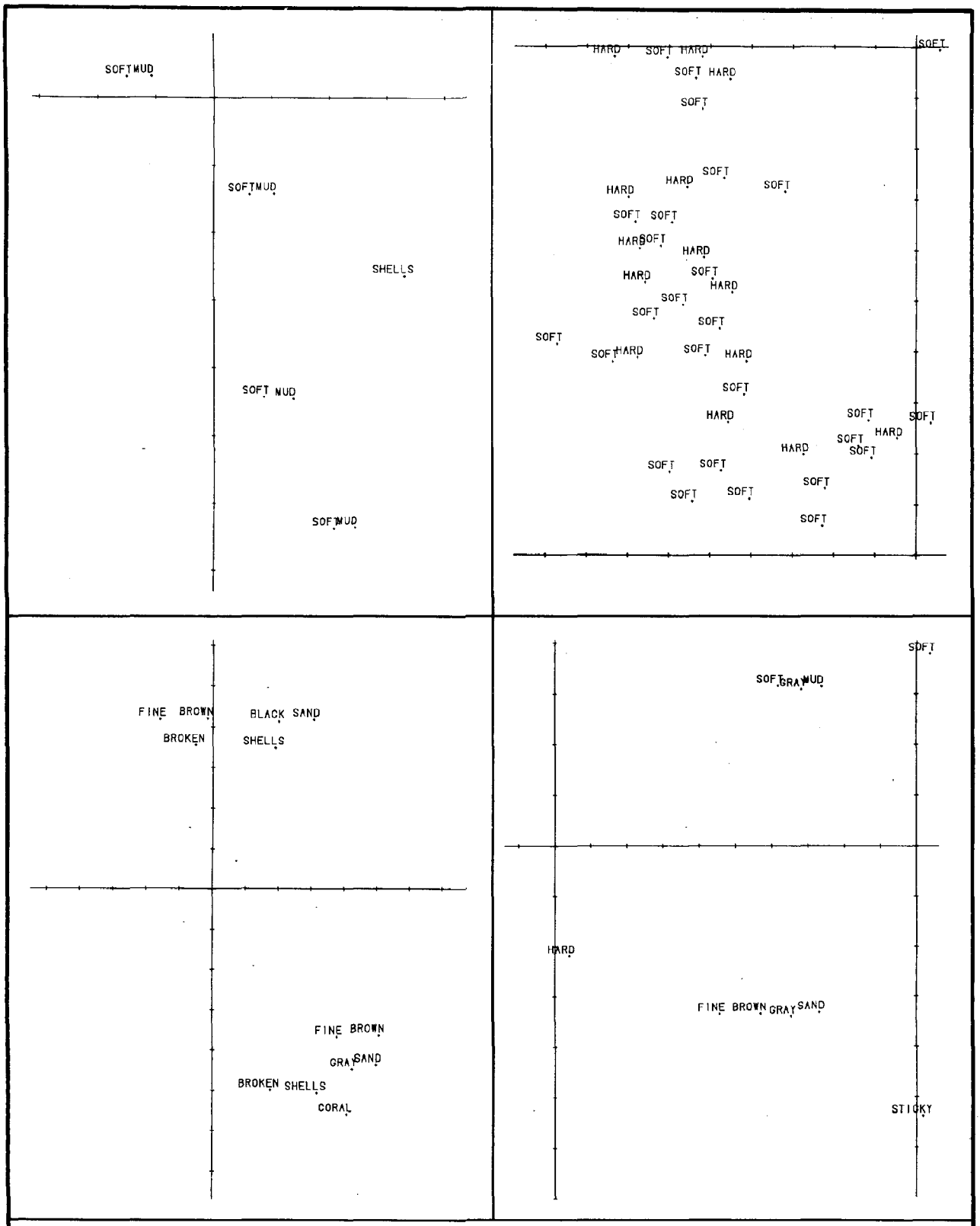
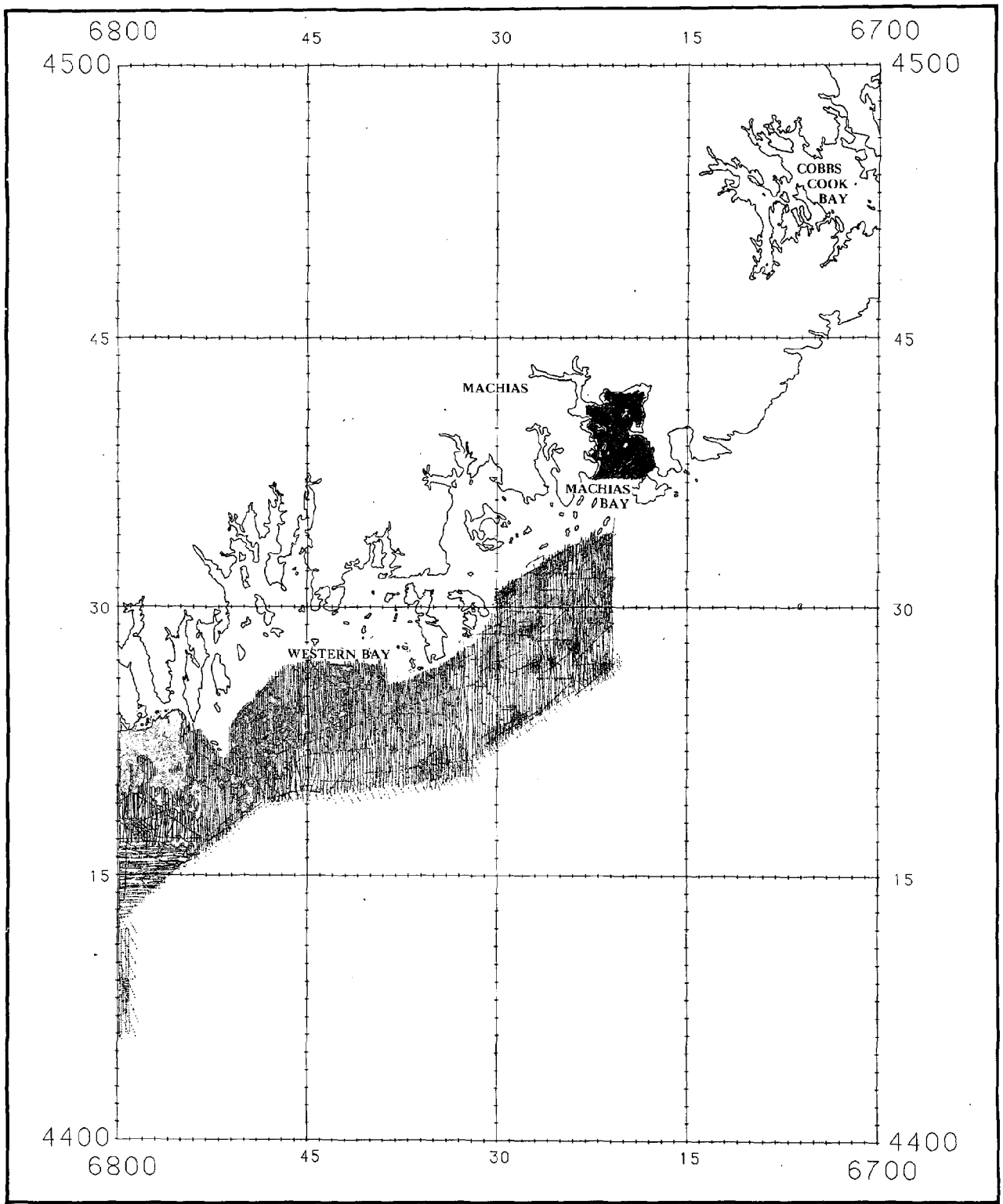


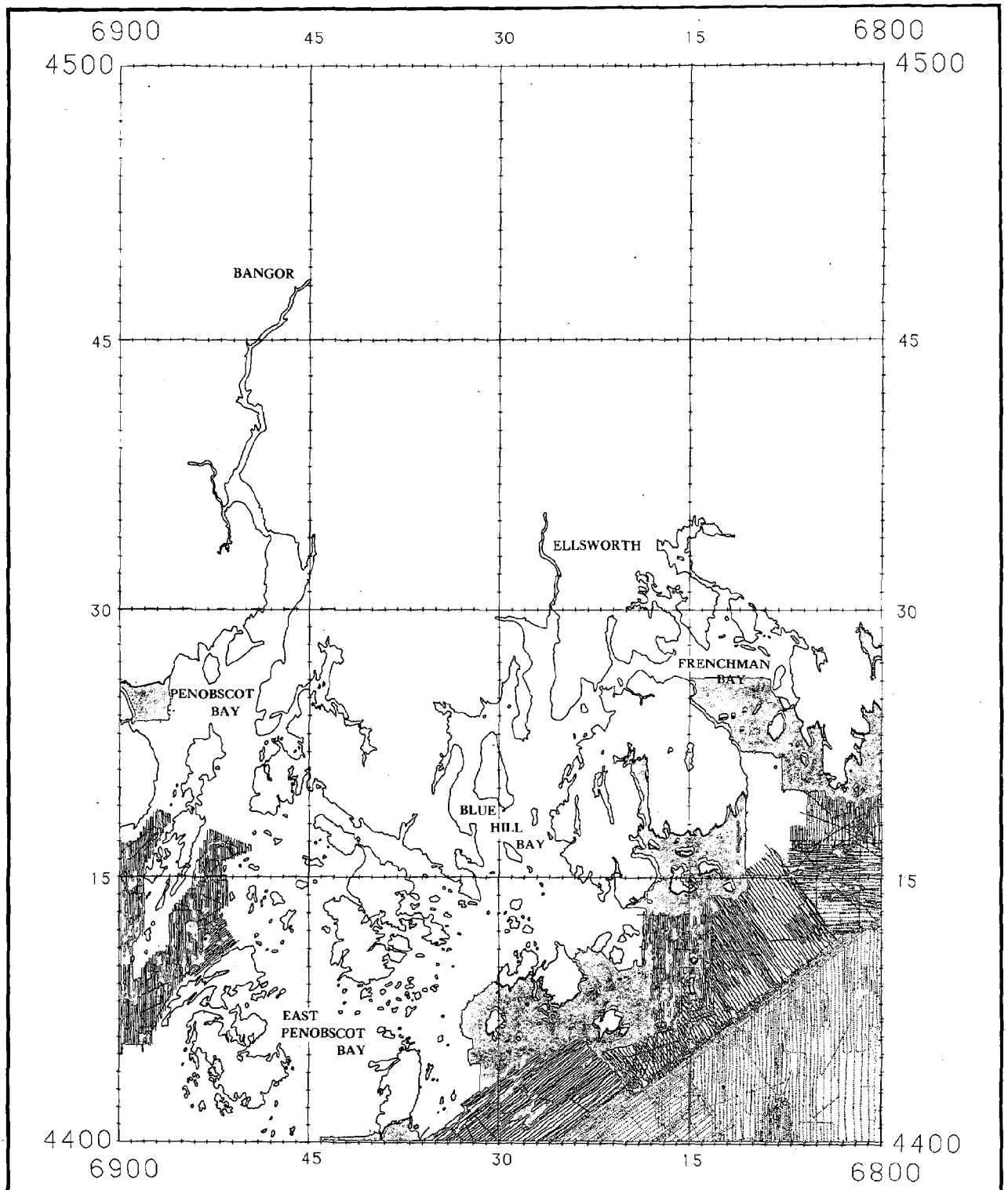
Figure 9. Four sample plots depicting bottom characteristic data. (The distance between tick marks in the vertical direction on all plots is one nautical mile.)

CATALOG:

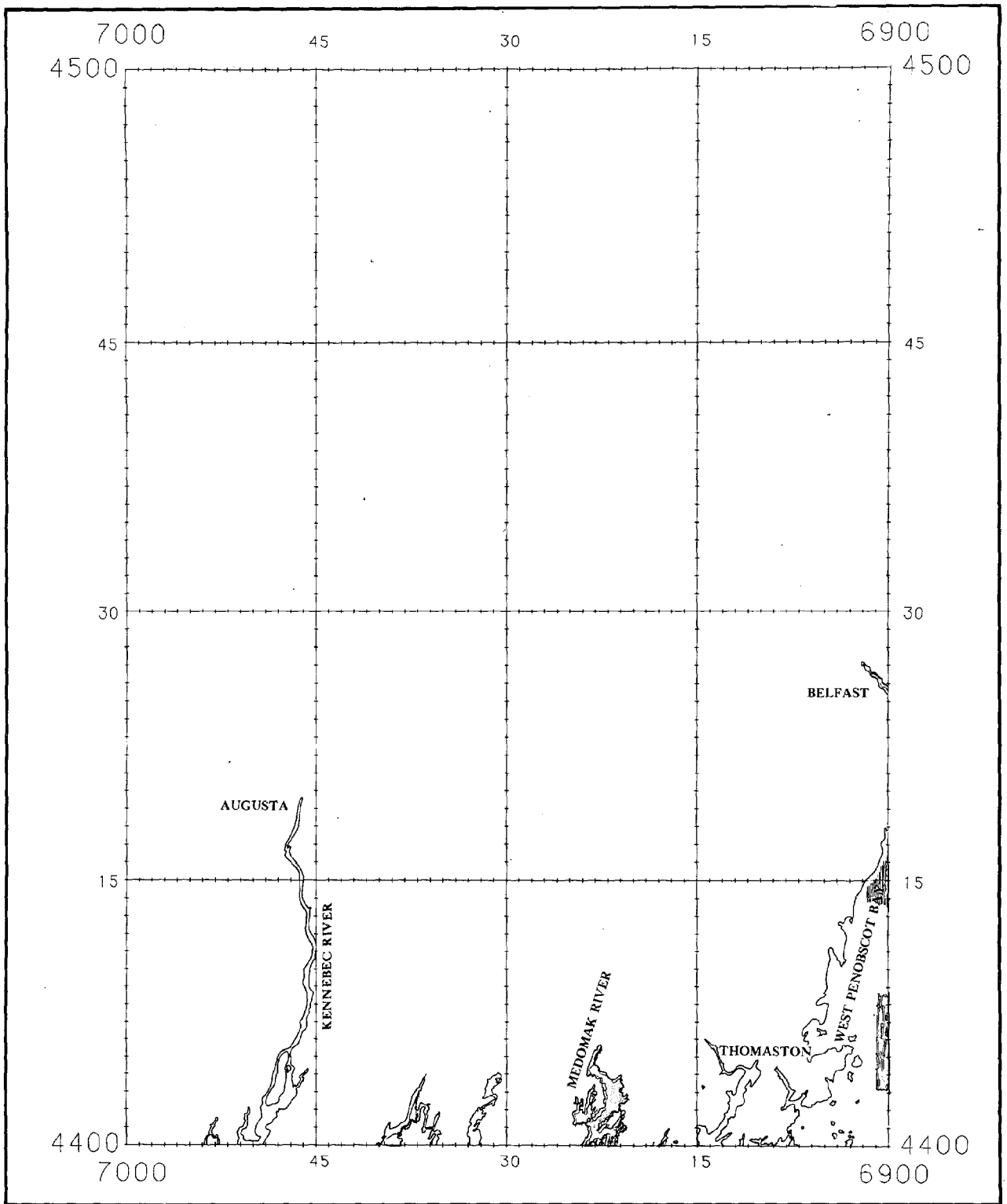
SQUARE-DEGREE AREA INDEX CHARTS



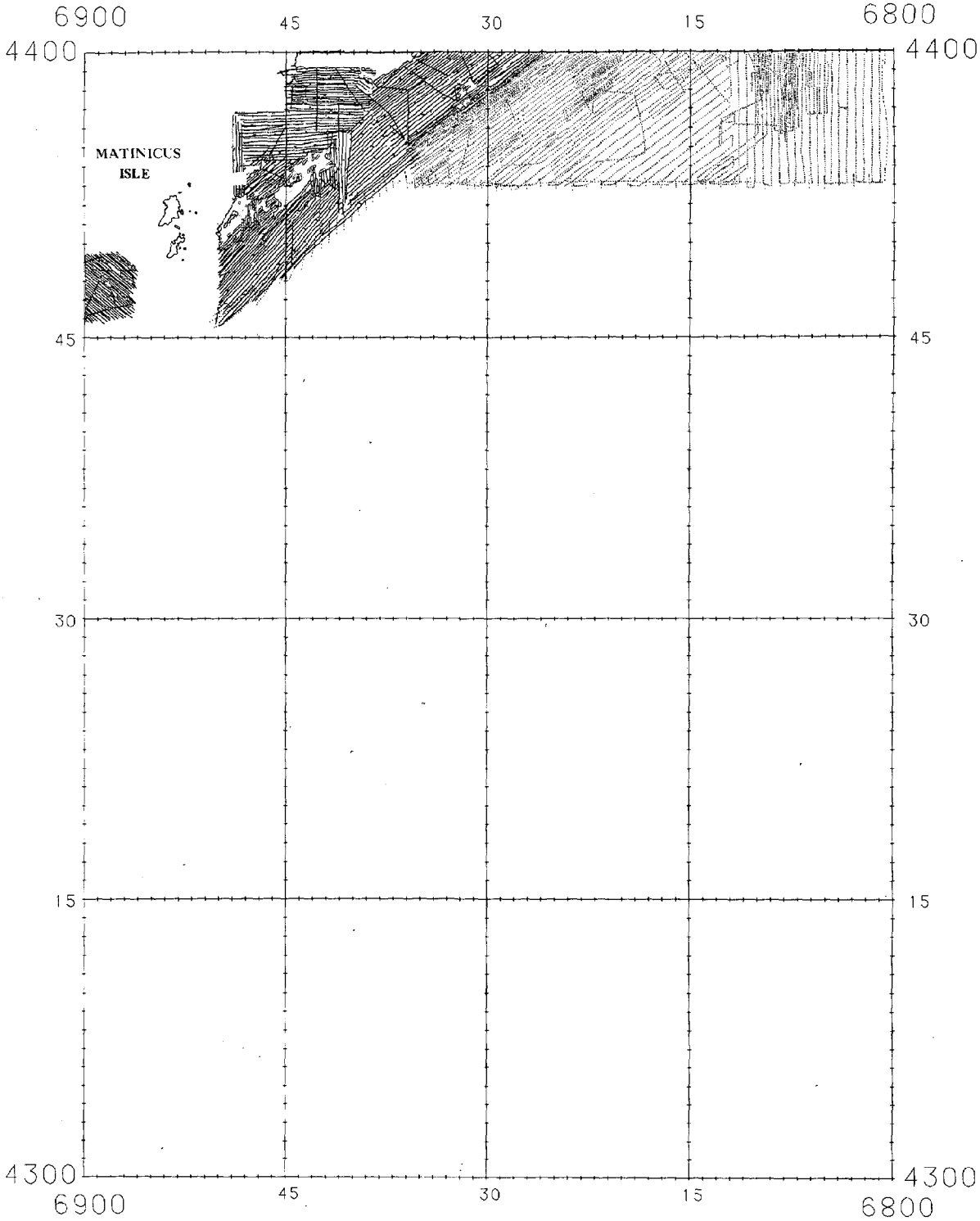
General Locality	Cobbs Cook Bay Frenchman Bay
Latitude	44° – 45° N.
Longitude	67° – 68° W.
Number of Soundings	59,575
Number of Bottom Characteristics	1,072
Number of Dangers to Navigation	299



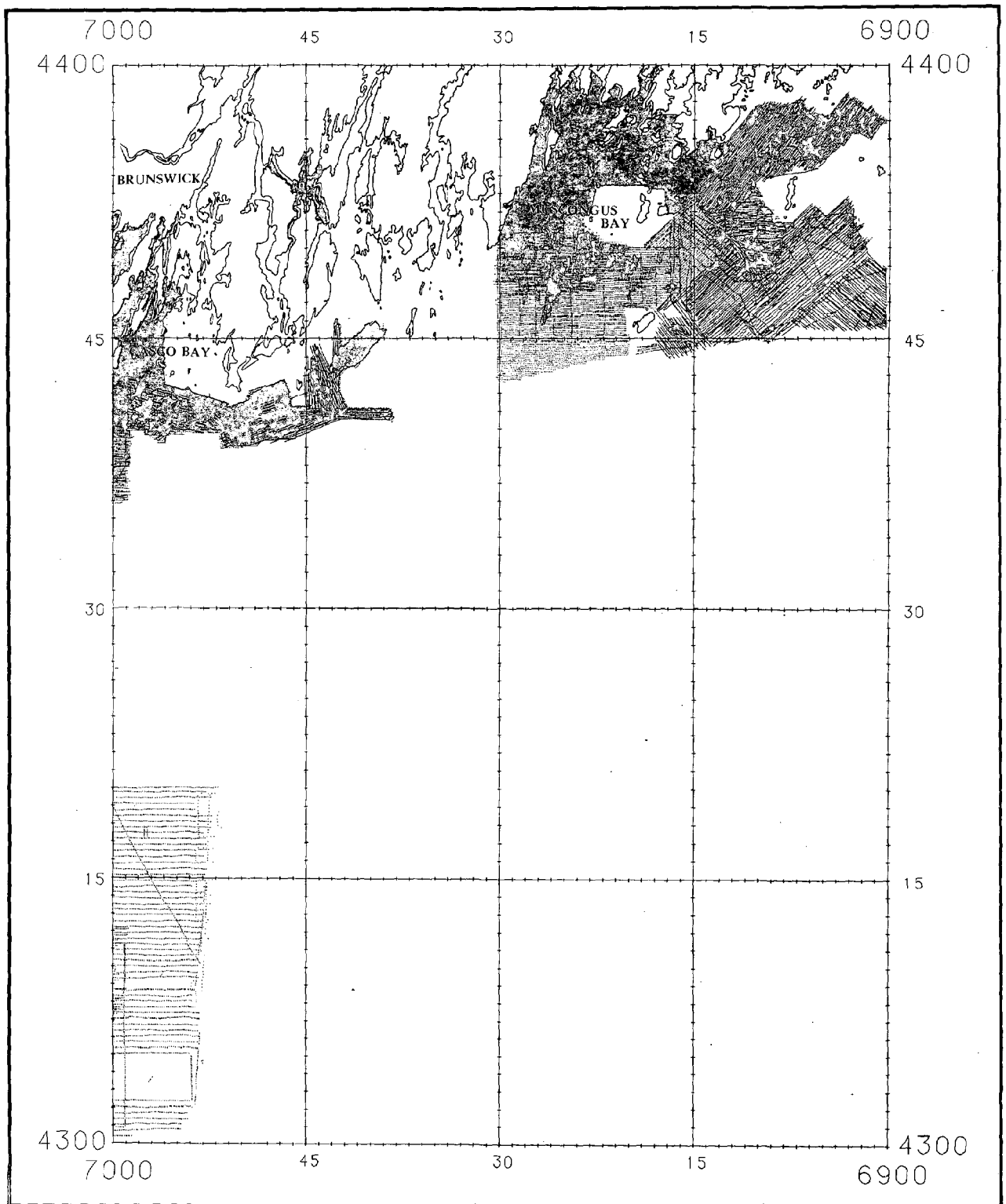
General Locality	Frenchman Bay Penobscot Bay
Latitude	44° – 45° N.
Longitude	68° – 69° W.
Number of Soundings	201,742
Number of Bottom Characteristics	2,078
Number of Dangers to Navigation	549



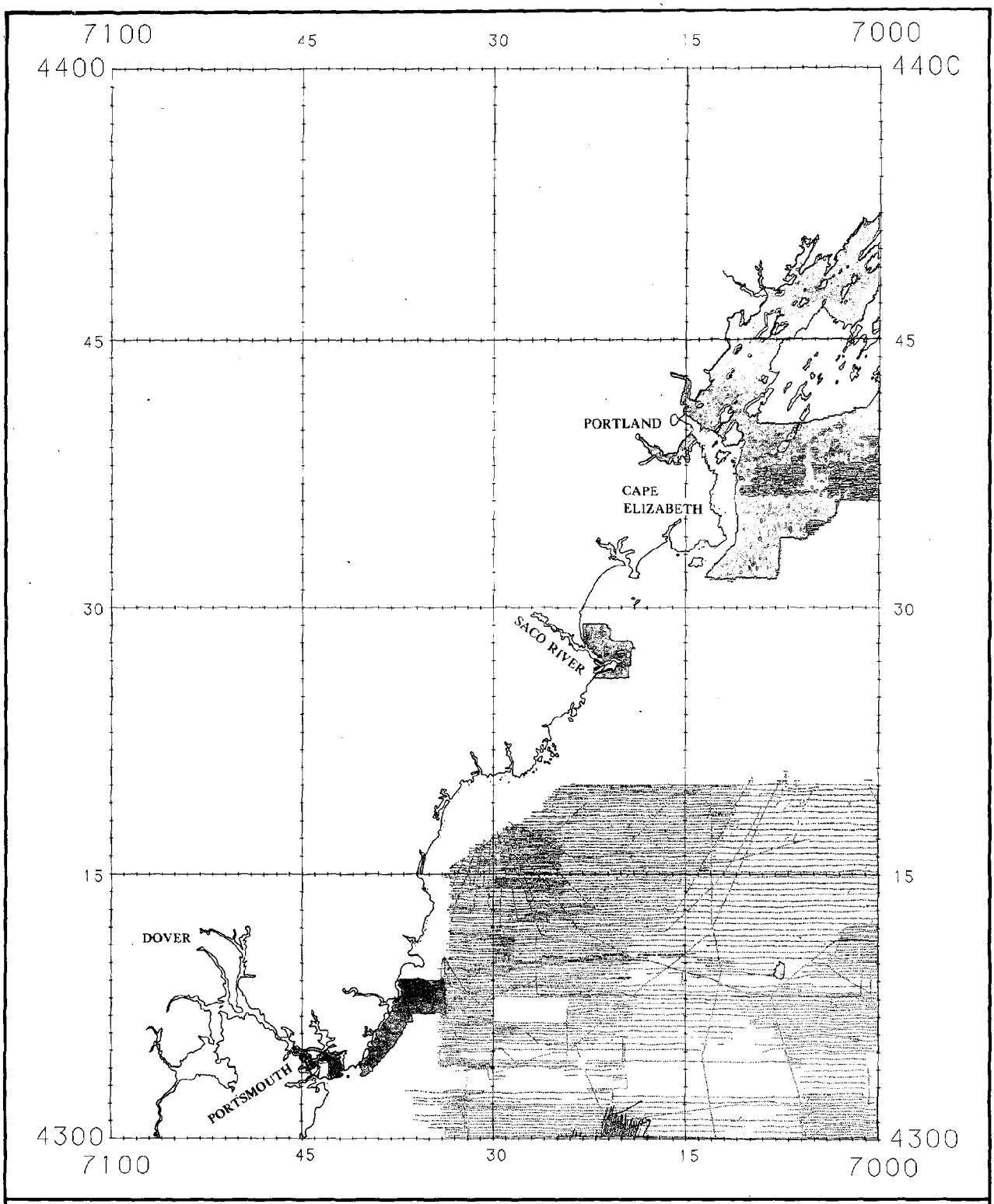
General Locality	Penobscot Bay Kennebec River
Latitude	44° – 45° N.
Longitude	69° – 70° W.
Number of Soundings	13,193
Number of Bottom Characteristics	245
Number of Dangers to Navigation	370



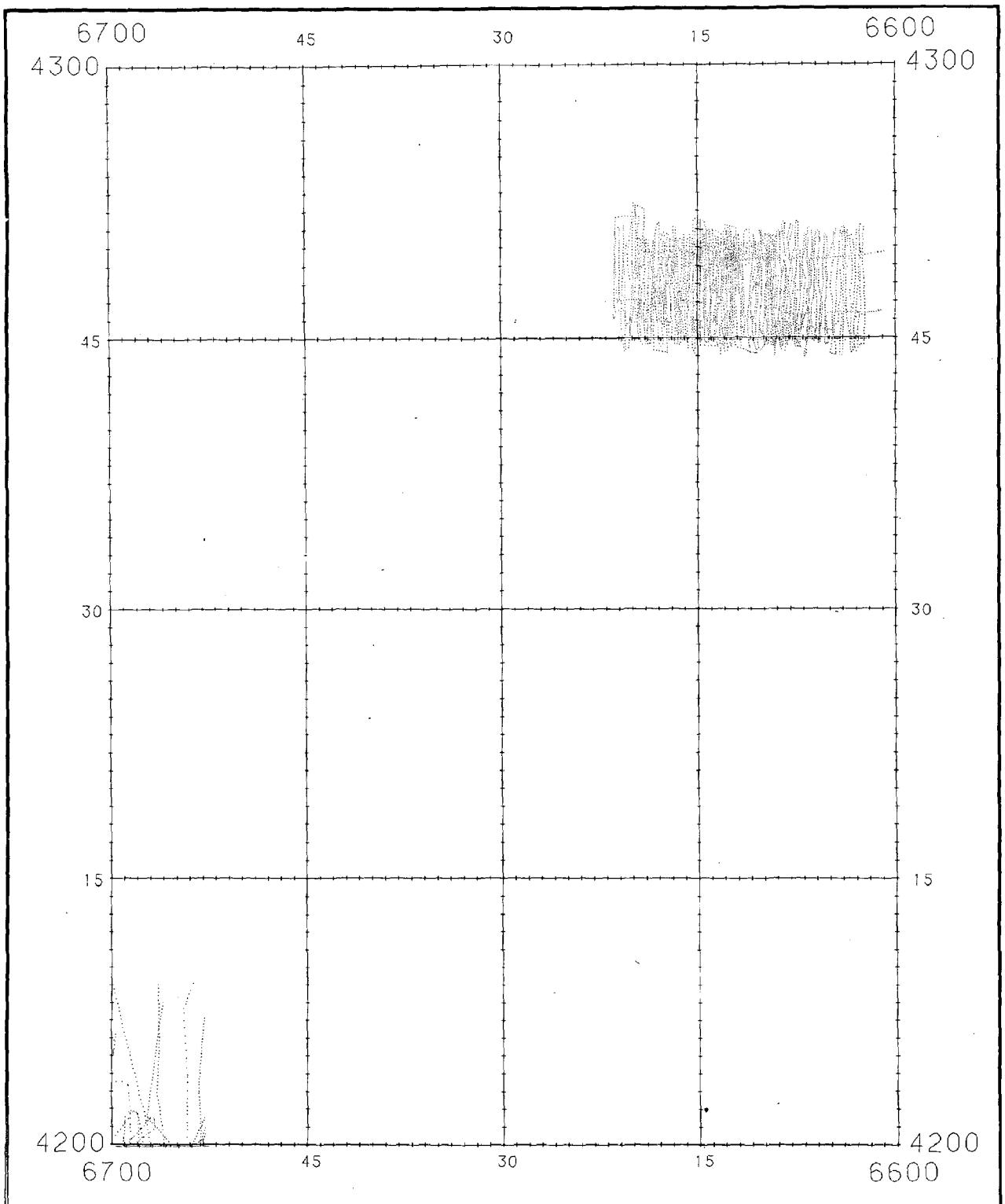
General Locality	Gulf of Maine Matinicus Isle
Latitude	43° – 44° N.
Longitude	68° – 69° W.
Number of Soundings	36,113
Number of Bottom Characteristics	459
Number of Dangers to Navigation	25



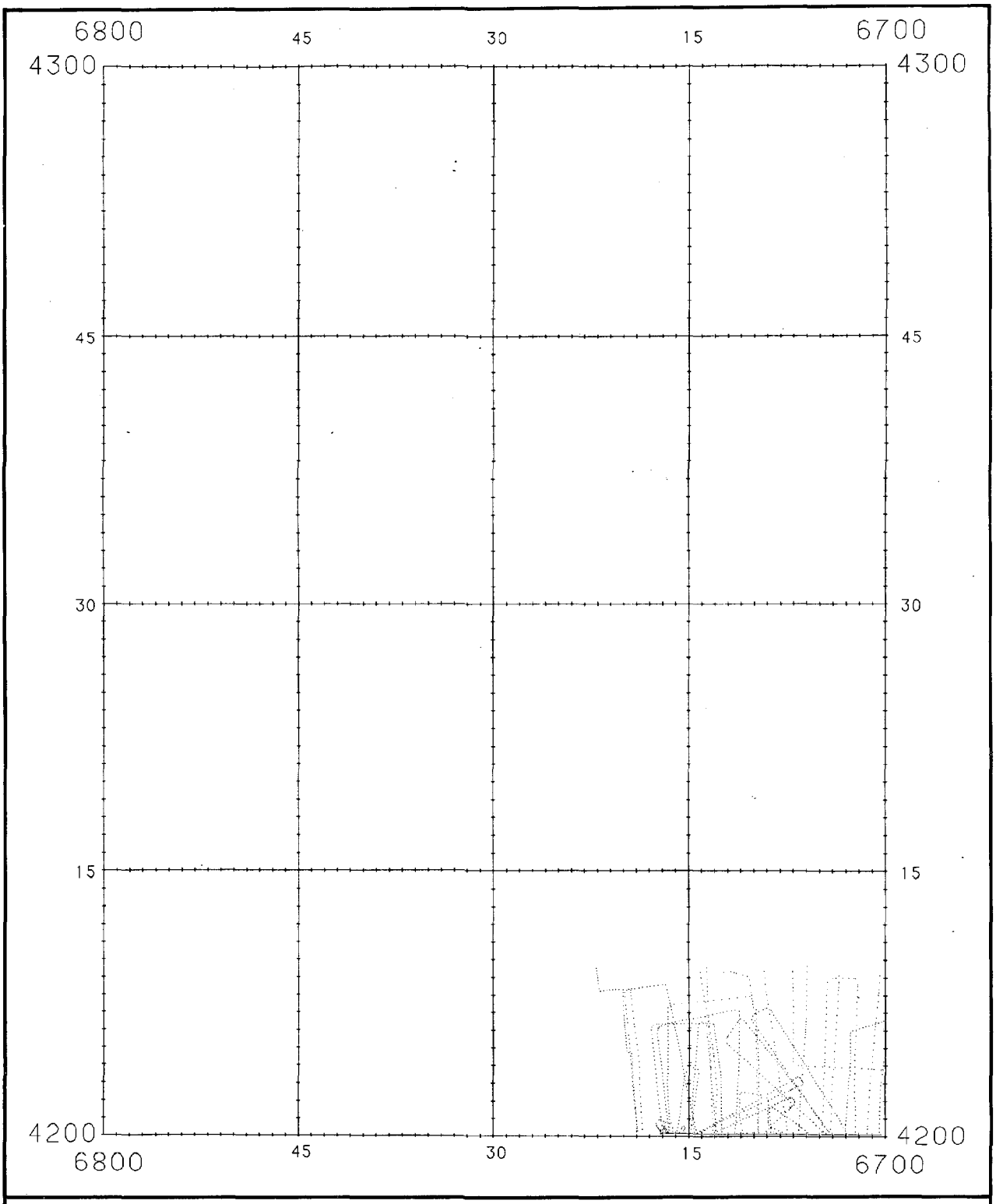
General Locality	Muscongus Bay Casco Bay
Latitude	43° – 44° N.
Longitude	69° – 70° W.
Number of Soundings	193,235
Number of Bottom Characteristics	1,796
Number of Dangers to Navigation	924



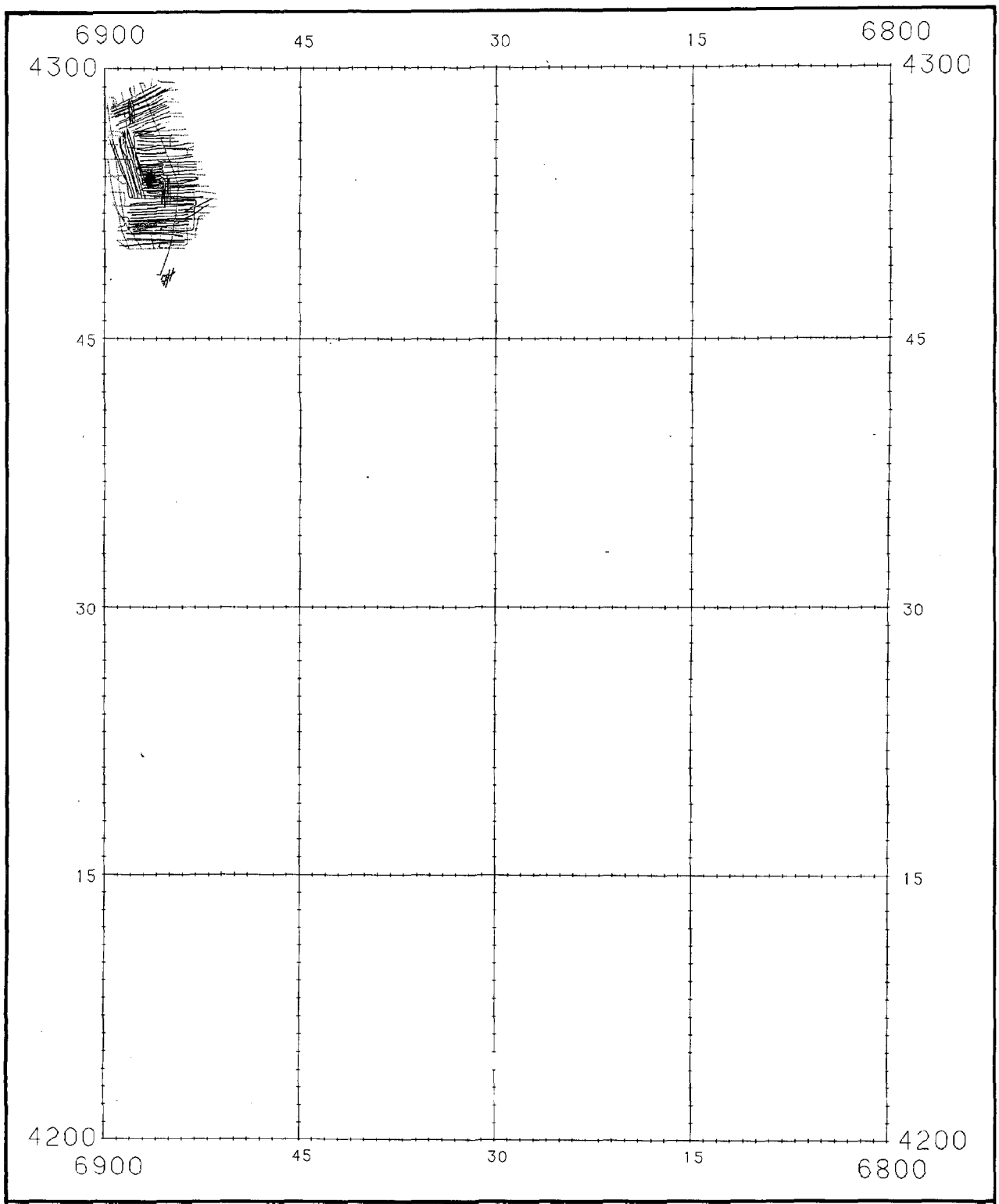
General Locality	Casco Bay Portsmouth
Latitude	43° – 44° N.
Longitude	70° – 71° W.
Number of Soundings	191,046
Number of Bottom Characteristics	1,787
Number of Dangers to Navigation	1,075



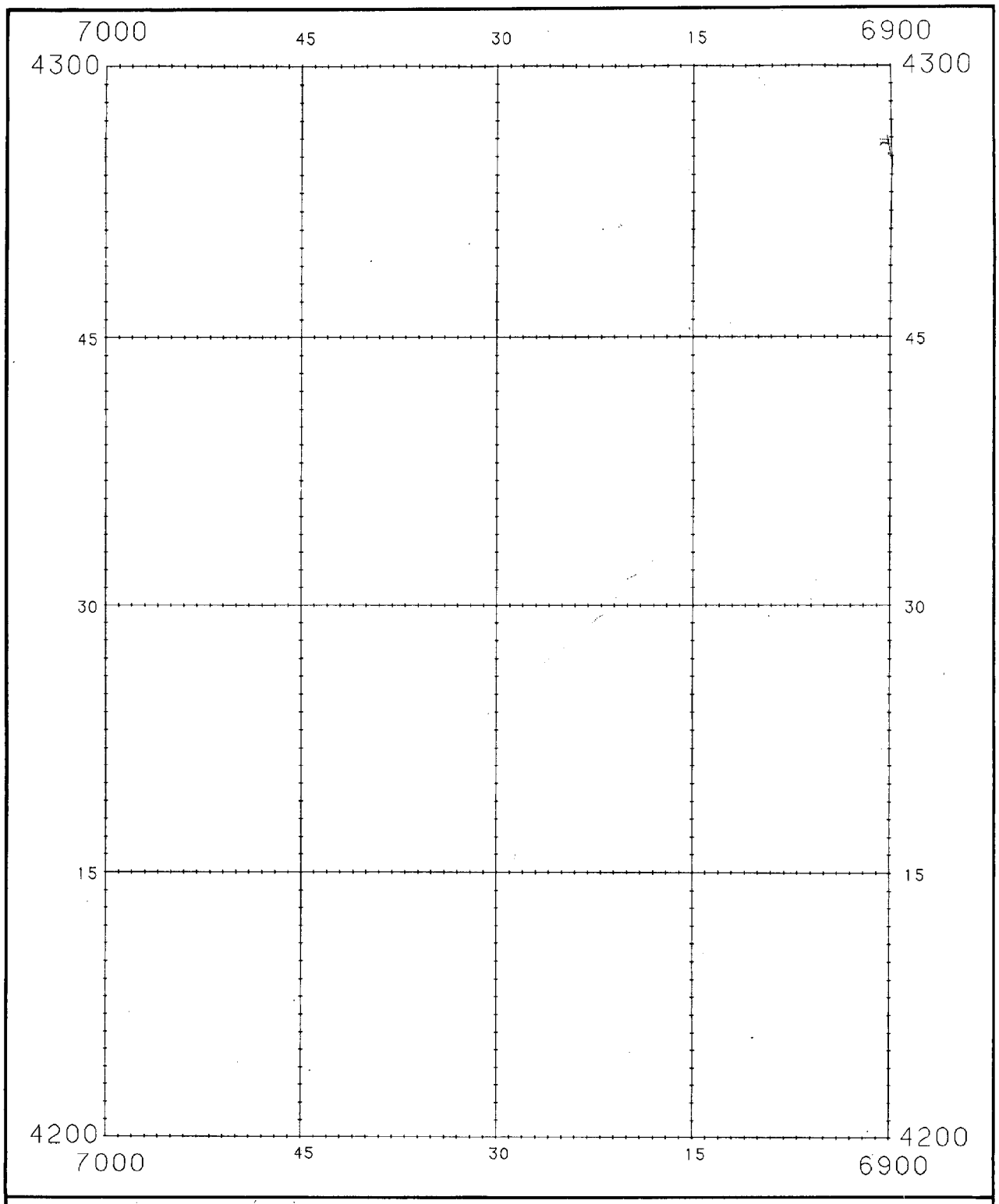
General Locality	Gulf of Maine
Latitude	42° – 43° N.
Longitude	66° – 67° W.
Number of Soundings	4,872
Number of Bottom Characteristics	20
Number of Dangers to Navigation	0



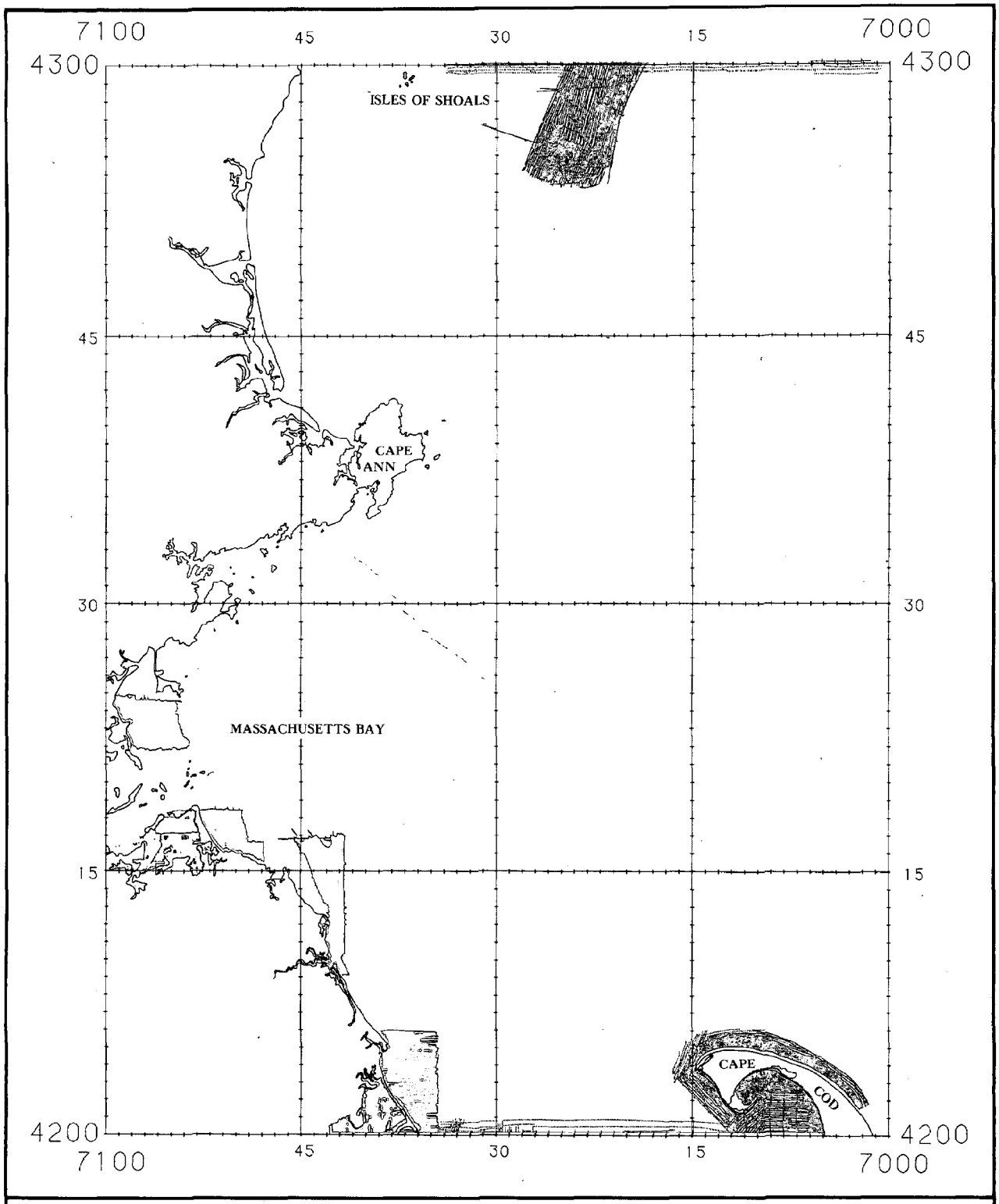
General Locality.....	Gulf of Maine
Latitude.....	42° – 43° N.
Longitude.....	67° – 68° W.
Number of Soundings.....	1,295
Number of Bottom Characteristics....	0
Number of Dangers to Navigation	0



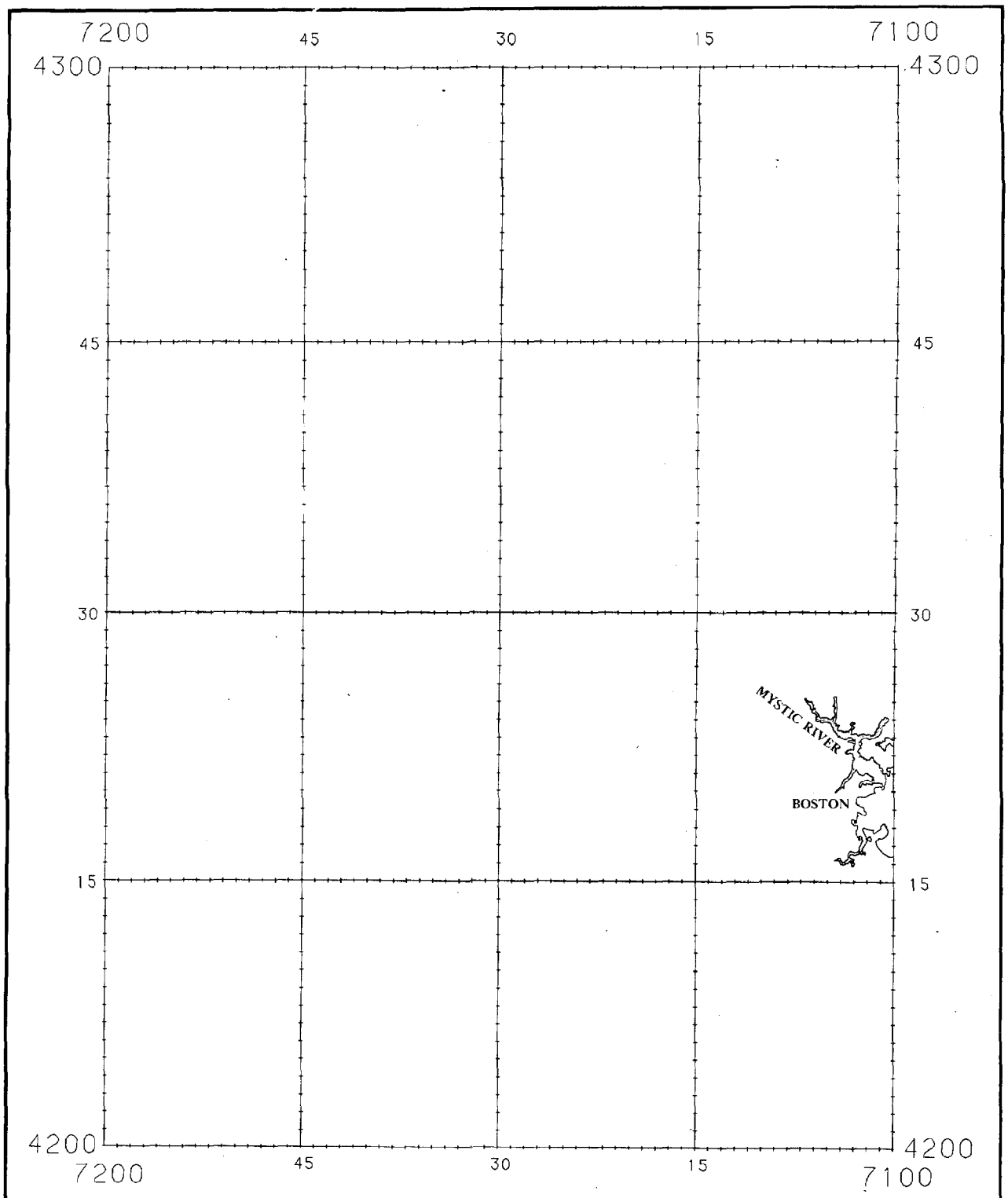
General Locality	Gulf of Maine
Latitude	42° – 43° N.
Longitude	68° – 69° W.
Number of Soundings	7,823
Number of Bottom Characteristics	47
Number of Dangers to Navigation	0



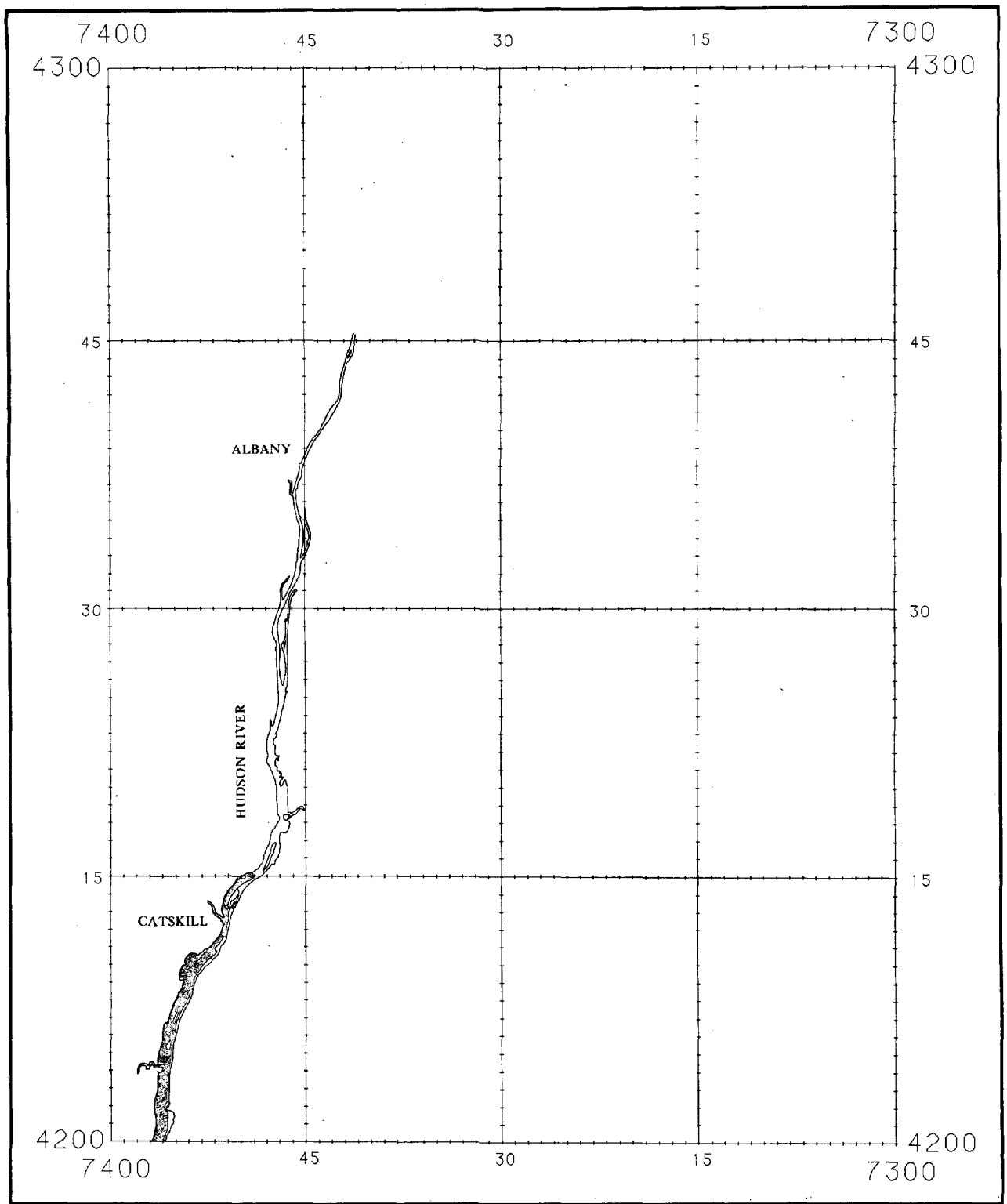
General Locality	Gulf of Maine
Latitude	42° – 43° N.
Longitude	69° – 70° W.
Number of Soundings	38
Number of Bottom Characteristics	0
Number of Dangers to Navigation	0



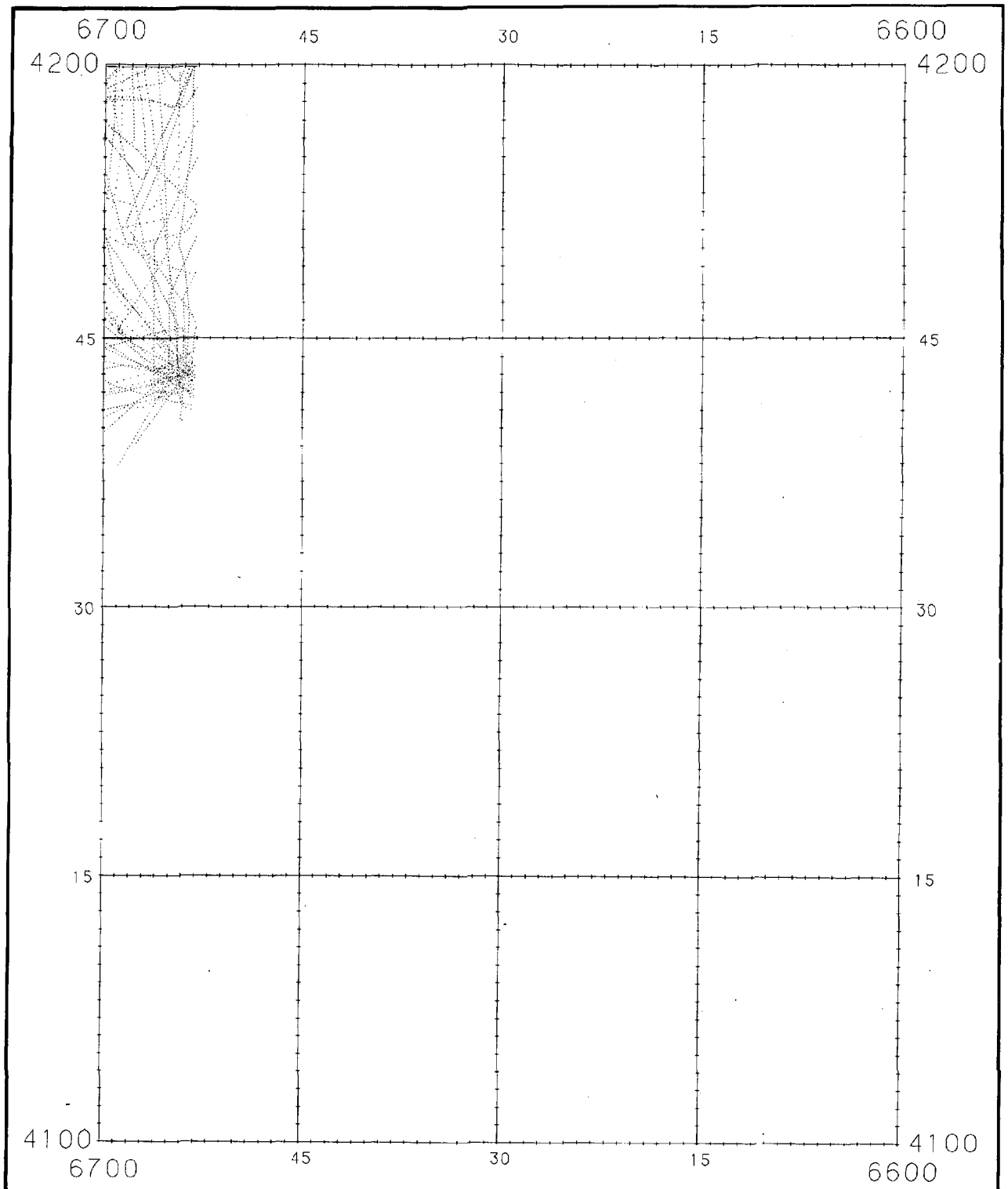
General Locality	**Massachusetts Bay** Cape Cod
Latitude	**42° – 43° N.**
Longitude	**70° – 71° W.**
Number of Soundings	**84,683**
Number of Bottom Characteristics	**1,261**
Number of Dangers to Navigation	**1,480**



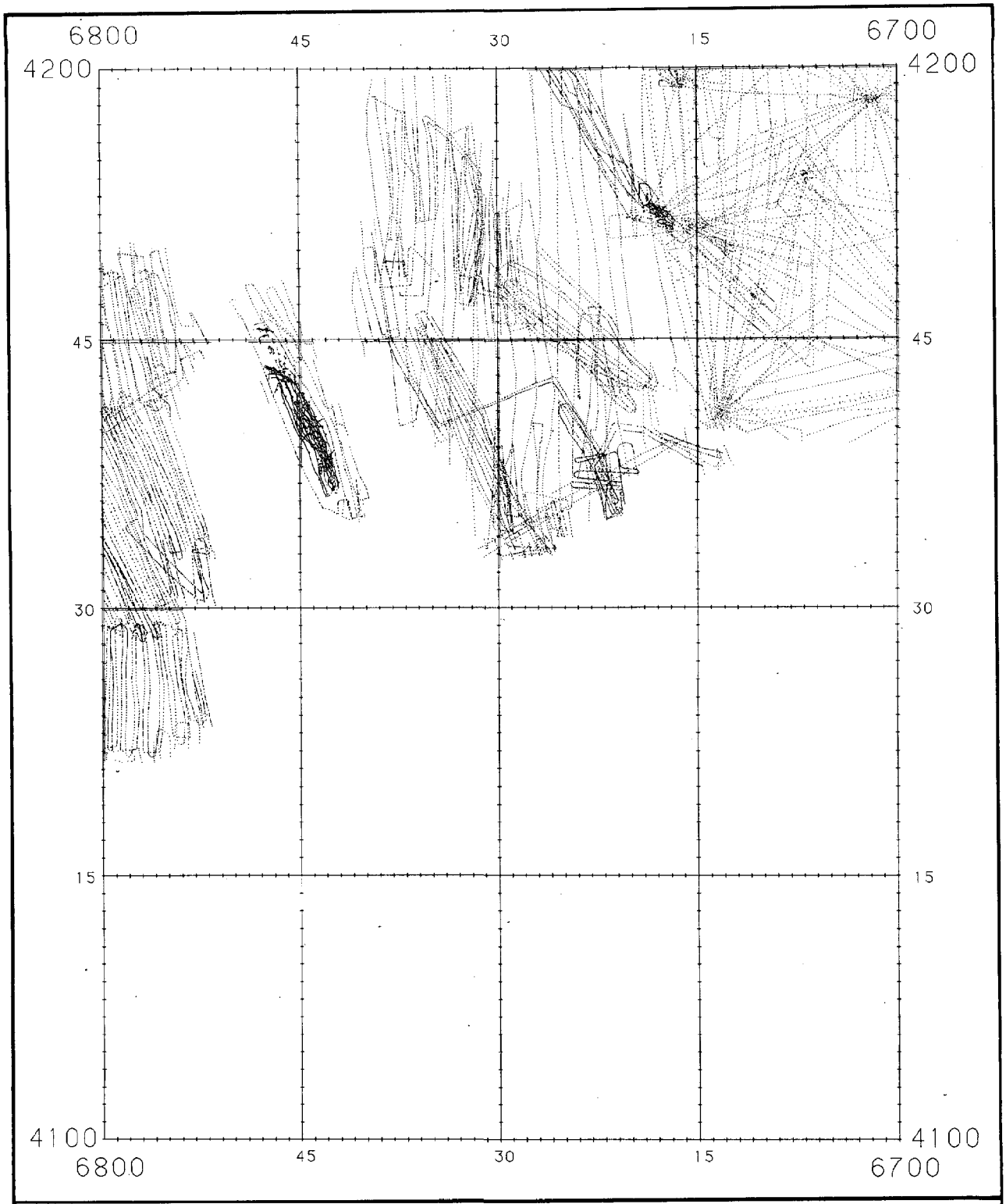
General Locality	Boston Harbor
Latitude	42° – 43° N.
Longitude	71° – 72° W.
Number of Soundings	20,976
Number of Bottom Characteristics	65
Number of Dangers to Navigation	178



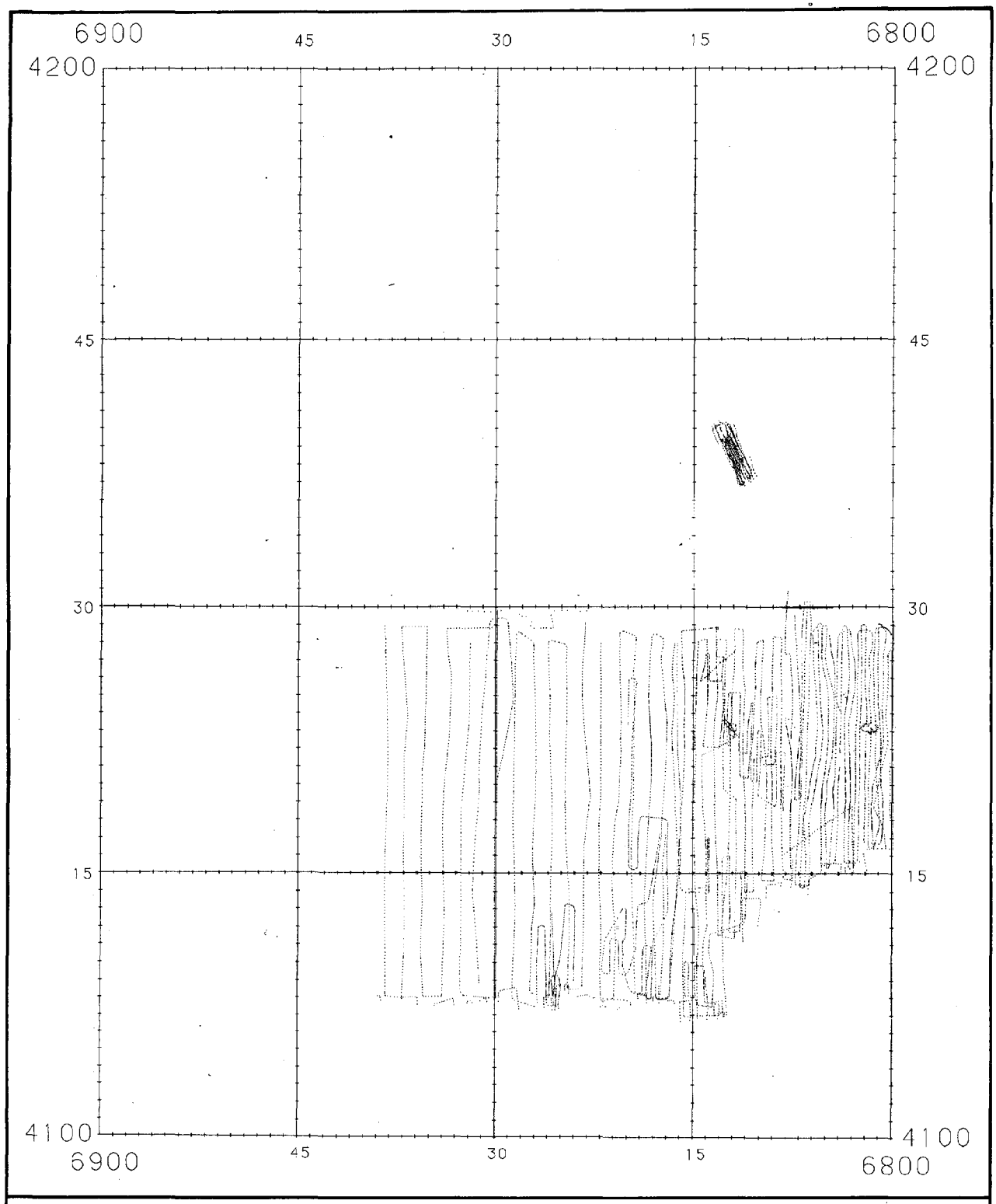
General Locality	Hudson River
Latitude	42° – 43° N.
Longitude	73° – 74° W.
Number of Soundings	12,458
Number of Bottom Characteristics	514
Number of Dangers to Navigation	74



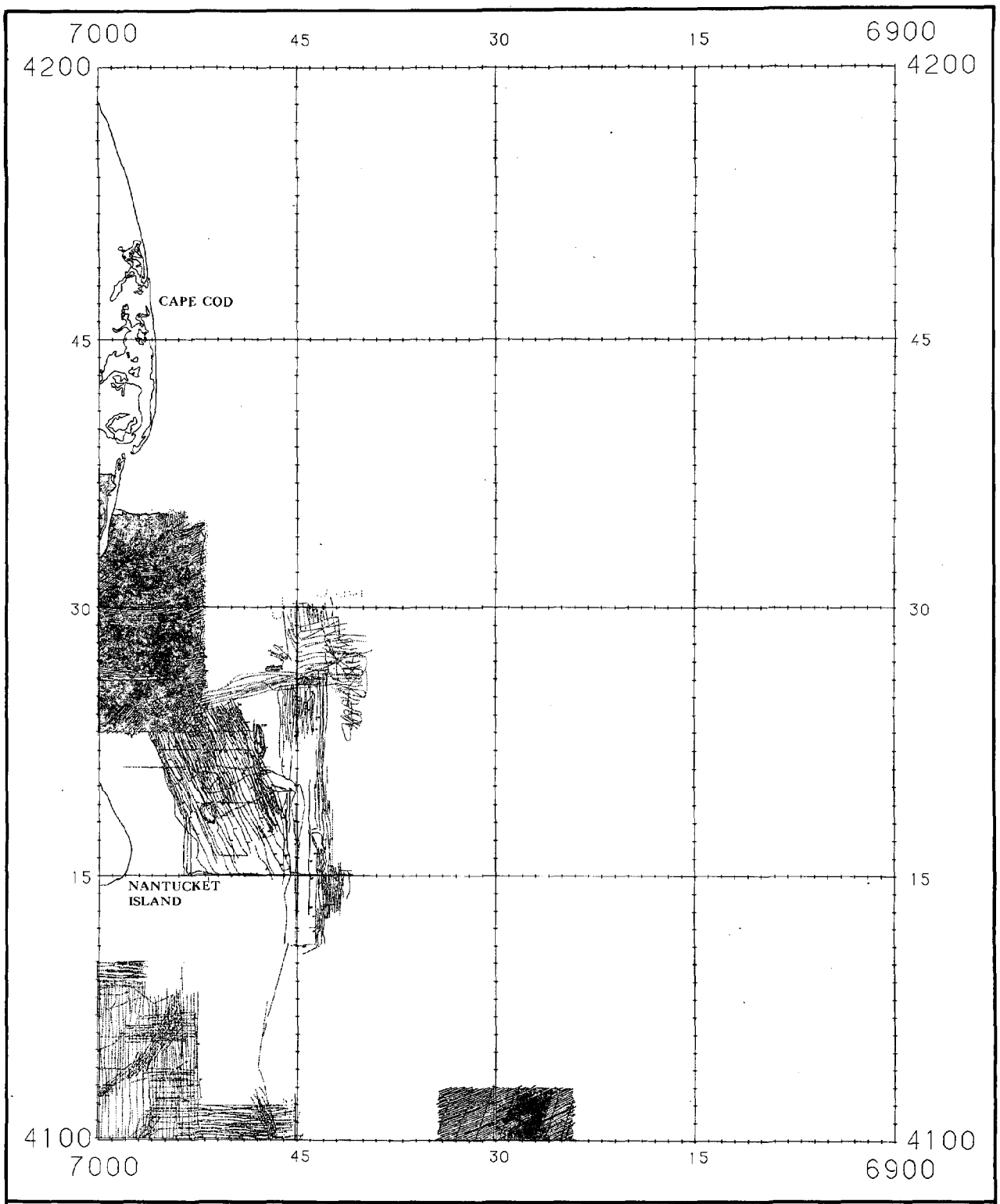
General Locality	Georges Bank
Latitude	41° – 42° N.
Longitude	66° – 67° W.
Number of Soundings	2,009
Number of Bottom Characteristics	17
Number of Dangers to Navigation	0



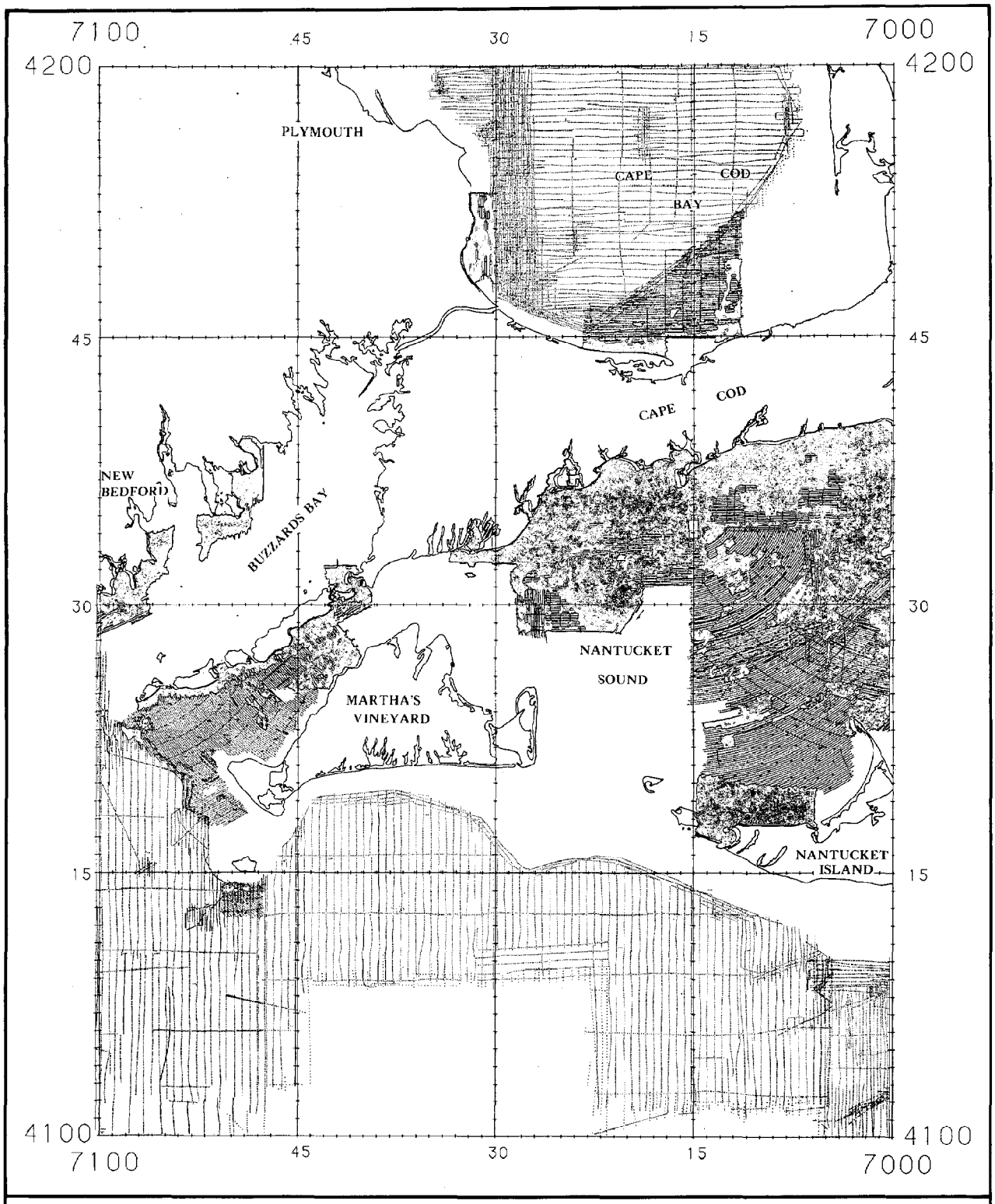
General Locality	Gulf of Maine Georges Bank
Latitude	41° – 42° N.
Longitude	67° – 68° W.
Number of Soundings	25,538
Number of Bottom Characteristics	482
Number of Dangers to Navigation	1



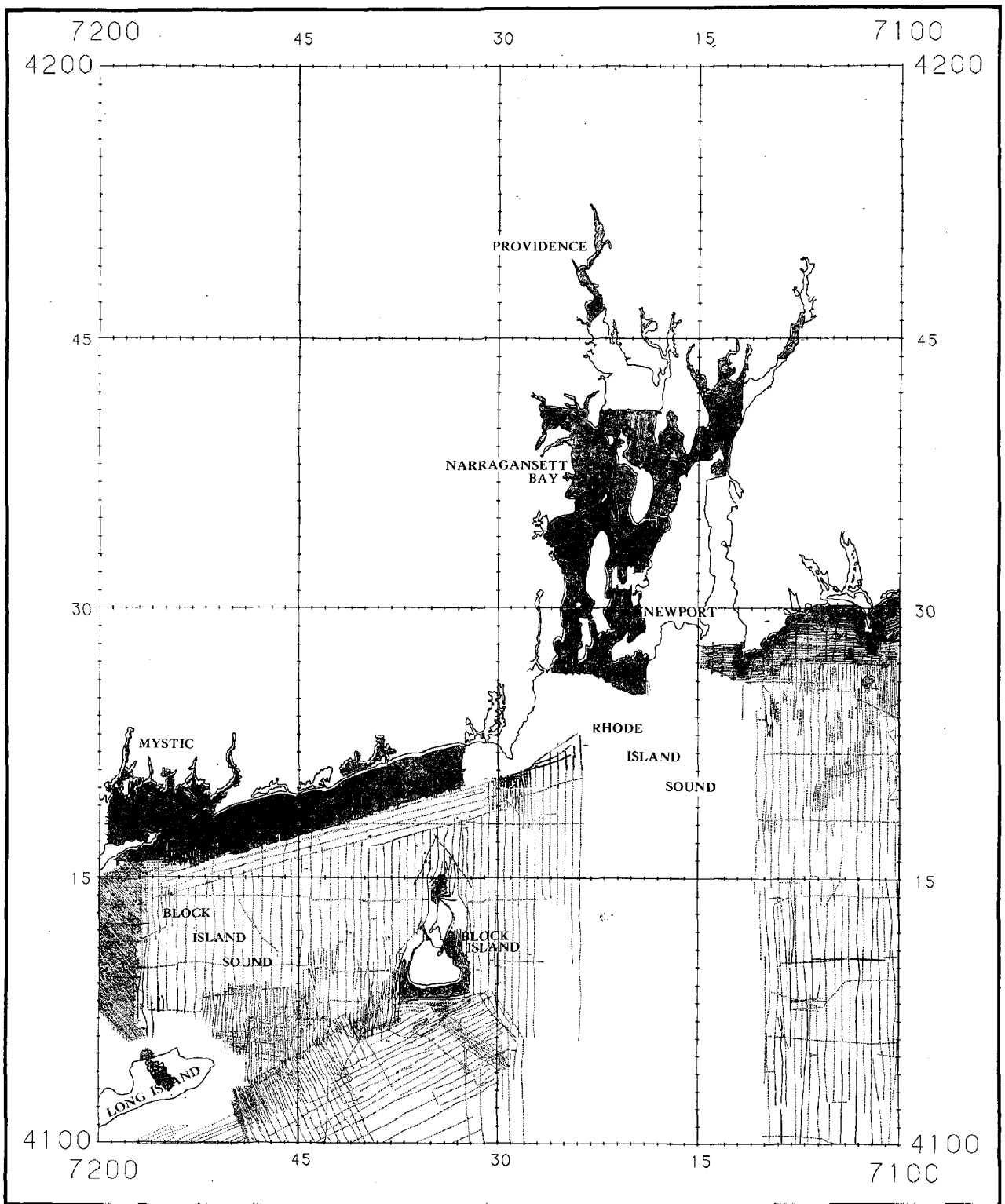
General Locality	Georges Bank Great South Channel
Latitude	41° – 42° N.
Longitude	68° – 69° W.
Number of Soundings	10,190
Number of Bottom Characteristics	332
Number of Dangers to Navigation	0



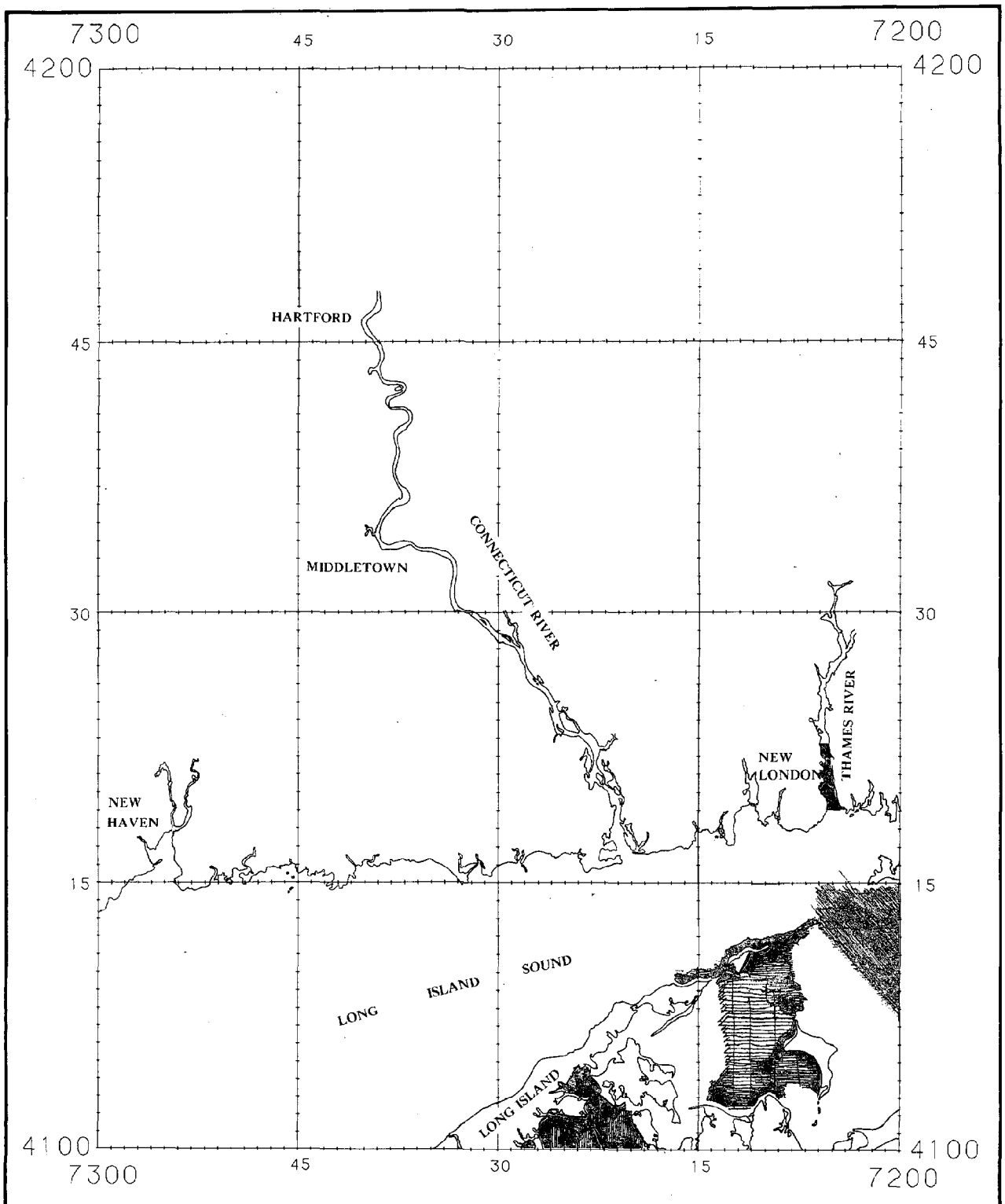
General Locality	Eastern Cape Cod
Latitude	41° – 42° N.
Longitude	69° – 70° W.
Number of Soundings	54,147
Number of Bottom Characteristics	1,290
Number of Dangers to Navigation	7,610



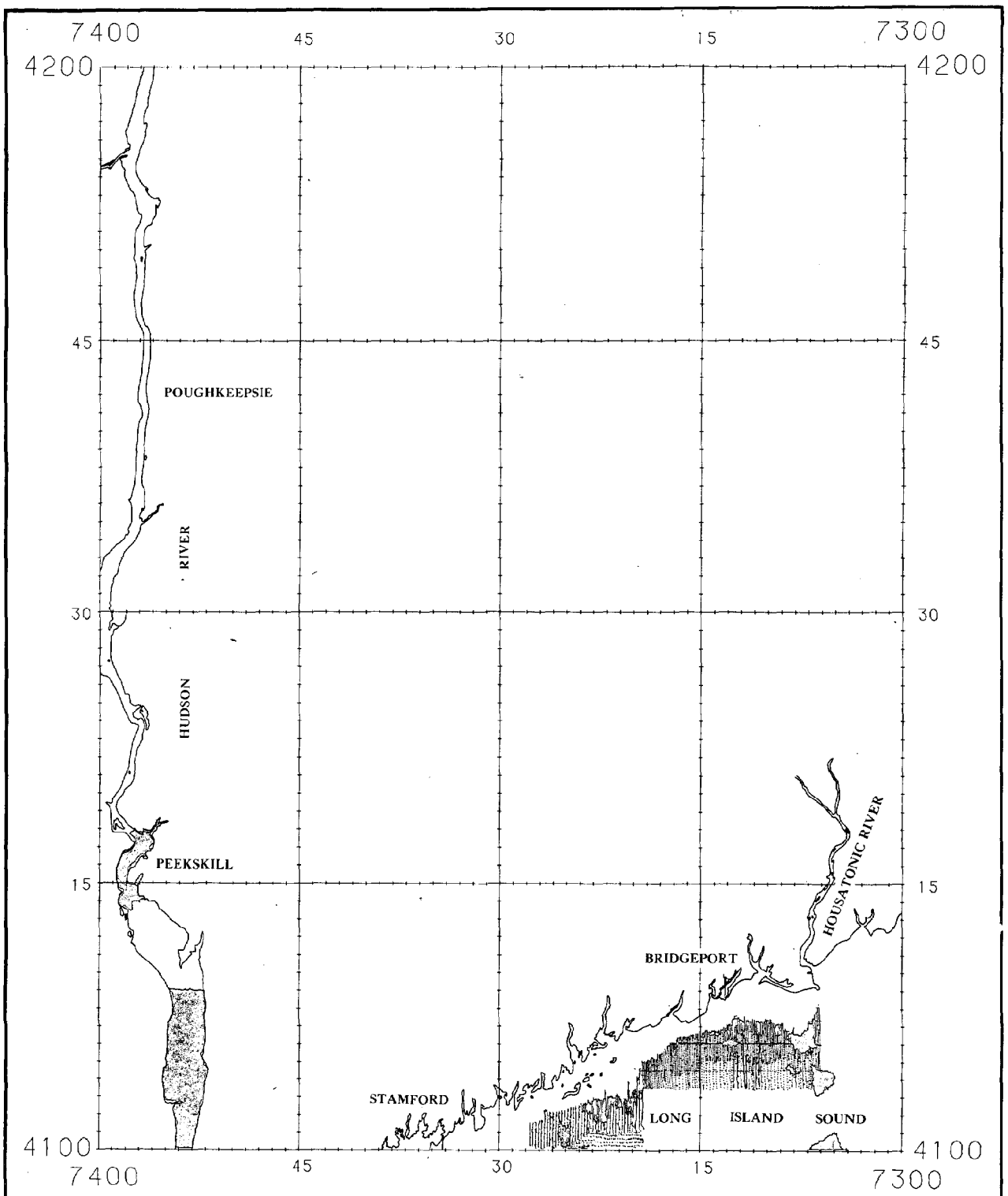
General Locality	Nantucket Sound Buzzards Bay
Latitude	41° – 42° N.
Longitude	70° – 71° W.
Number of Soundings	328,593
Number of Bottom Characteristics	9,218
Number of Dangers to Navigation	9,626



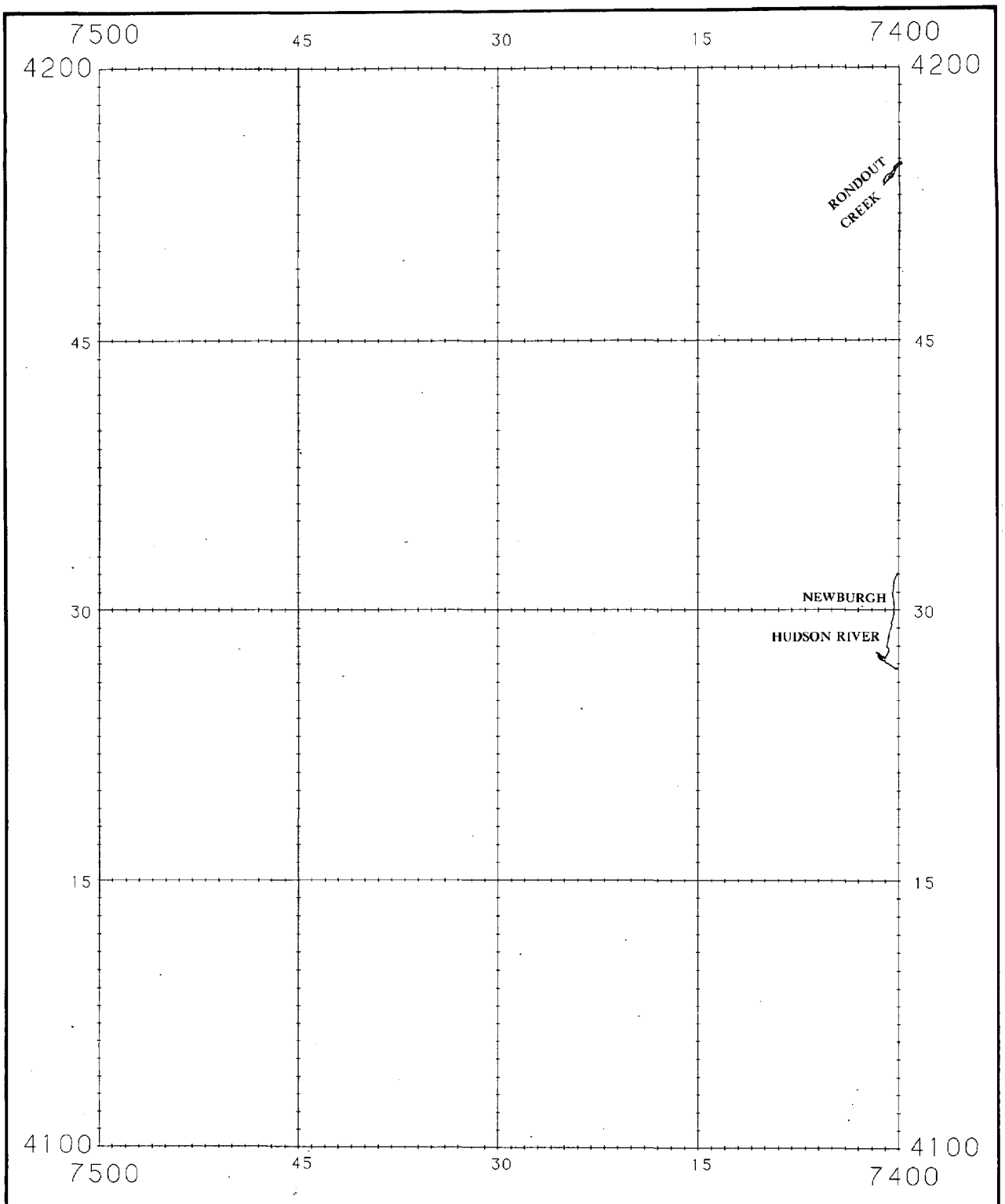
General Locality	Narragansett Bay Block Island Sound
Latitude	41° – 42° N.
Longitude	71° – 72° W.
Number of Soundings	258,303
Number of Bottom Characteristics	4,461
Number of Dangers to Navigation	1,872



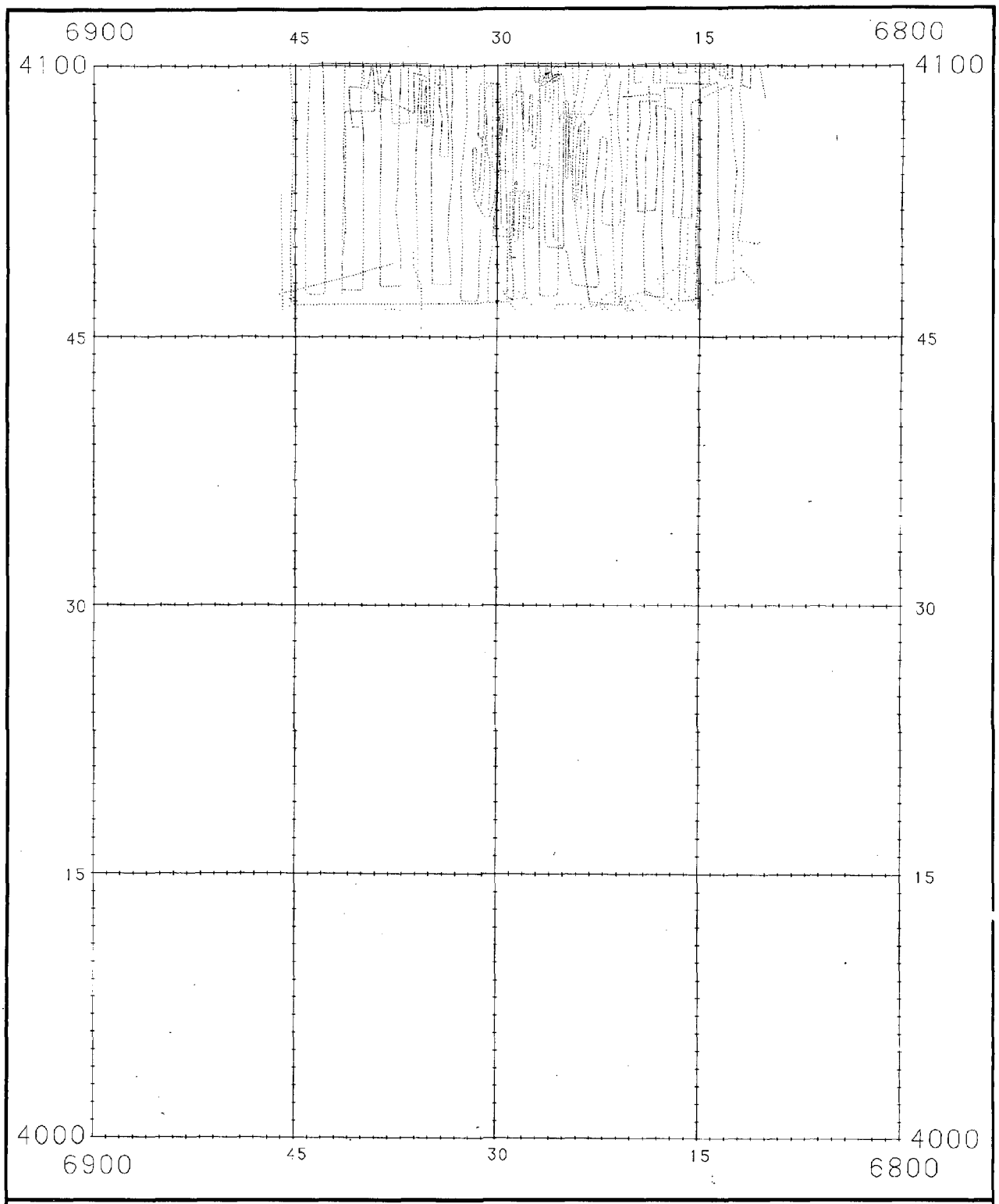
General Locality	Long Island Sound
Latitude	41° – 42° N.
Longitude	72° – 73° W.
Number of Soundings	48,096
Number of Bottom Characteristics	3,110
Number of Dangers to Navigation	600



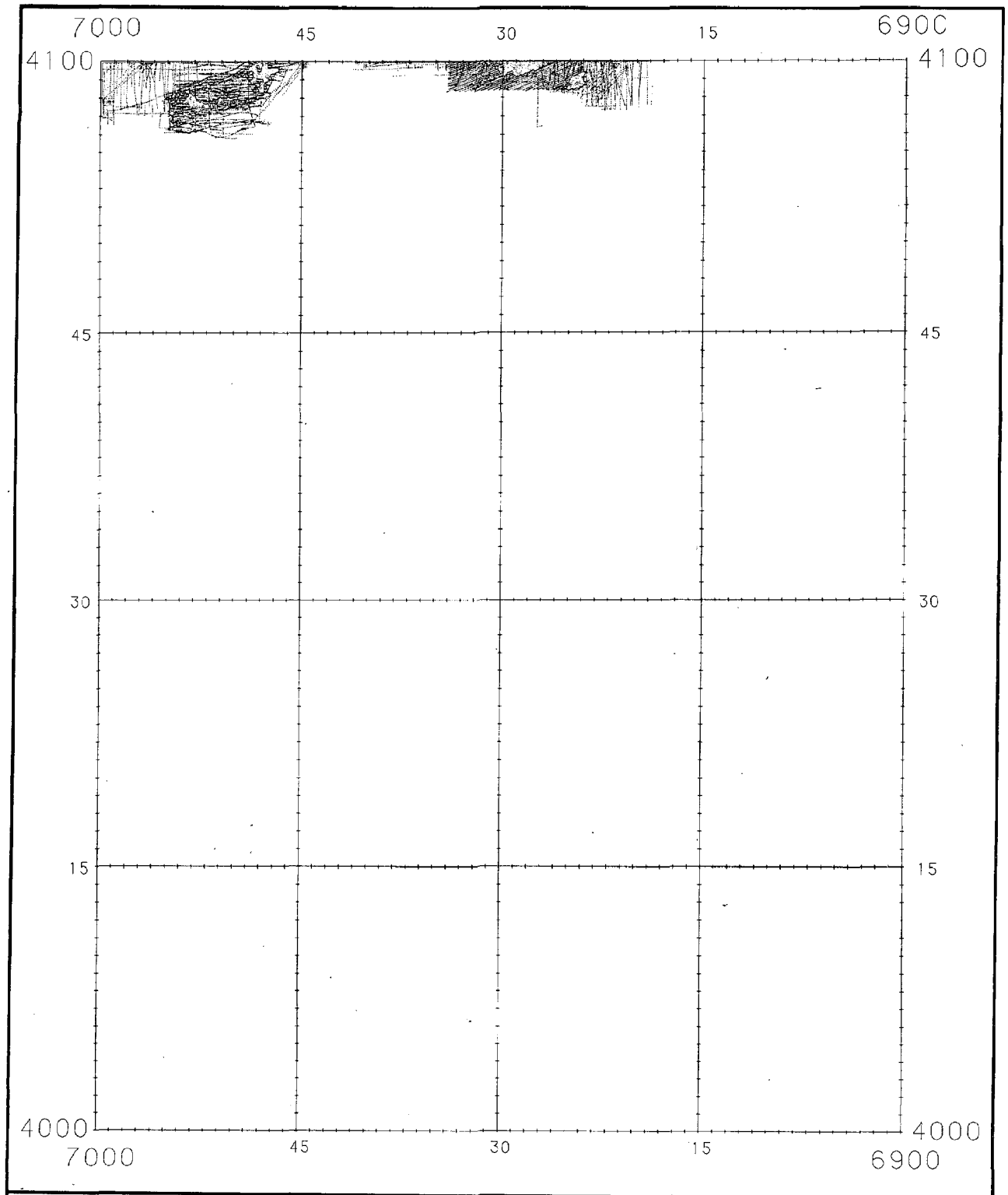
General Locality	Western Long Island Sound Hudson River
Latitude	41° – 42° N.
Longitude	73° – 74° W.
Number of Soundings	45,487
Number of Bottom Characteristics	2,810
Number of Dangers to Navigation	167



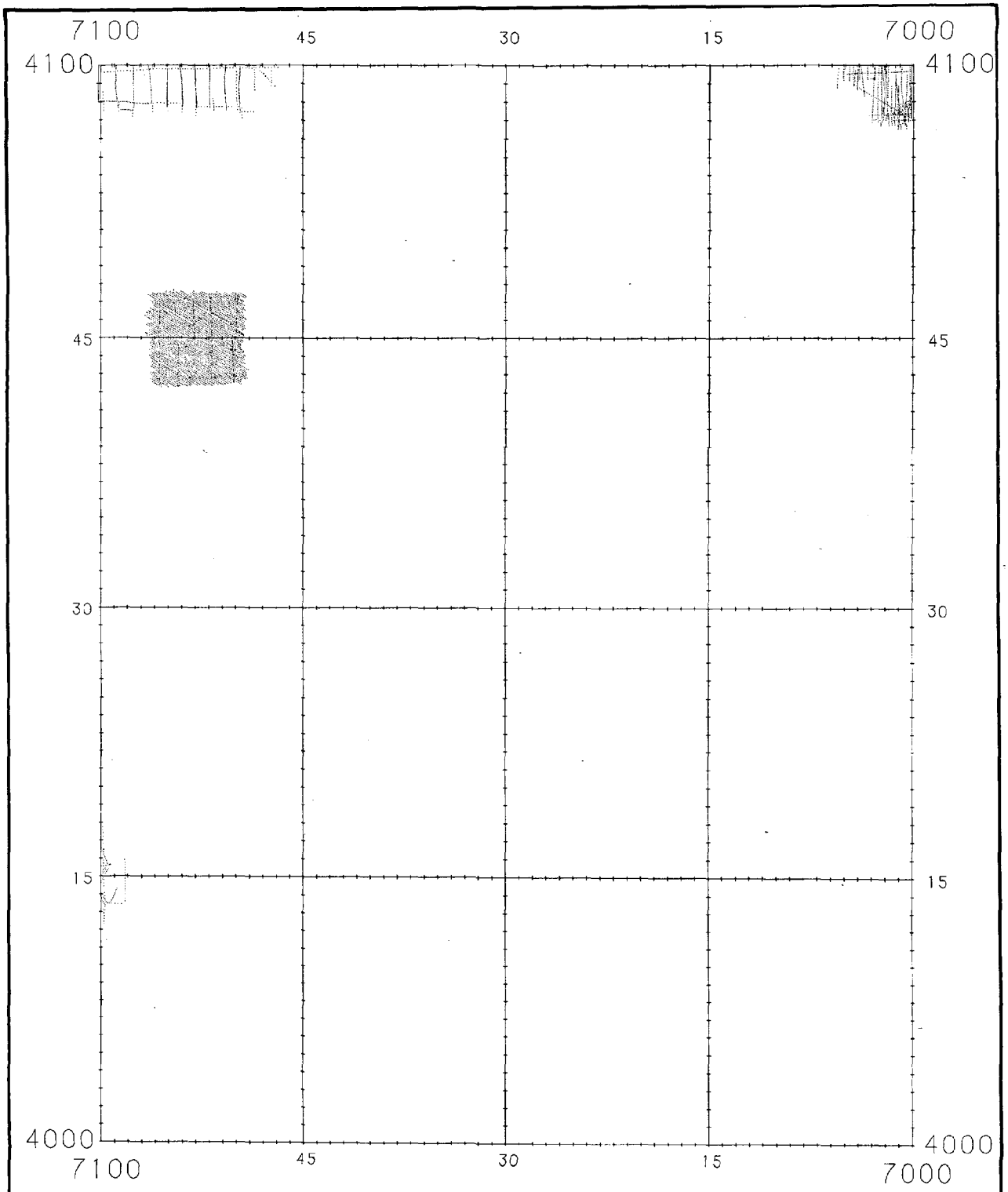
General Locality	Hudson River
Latitude	41° – 42° N.
Longitude	74° – 75° W.
Number of Soundings	66
Number of Bottom Characteristics	0
Number of Dangers to Navigation	0



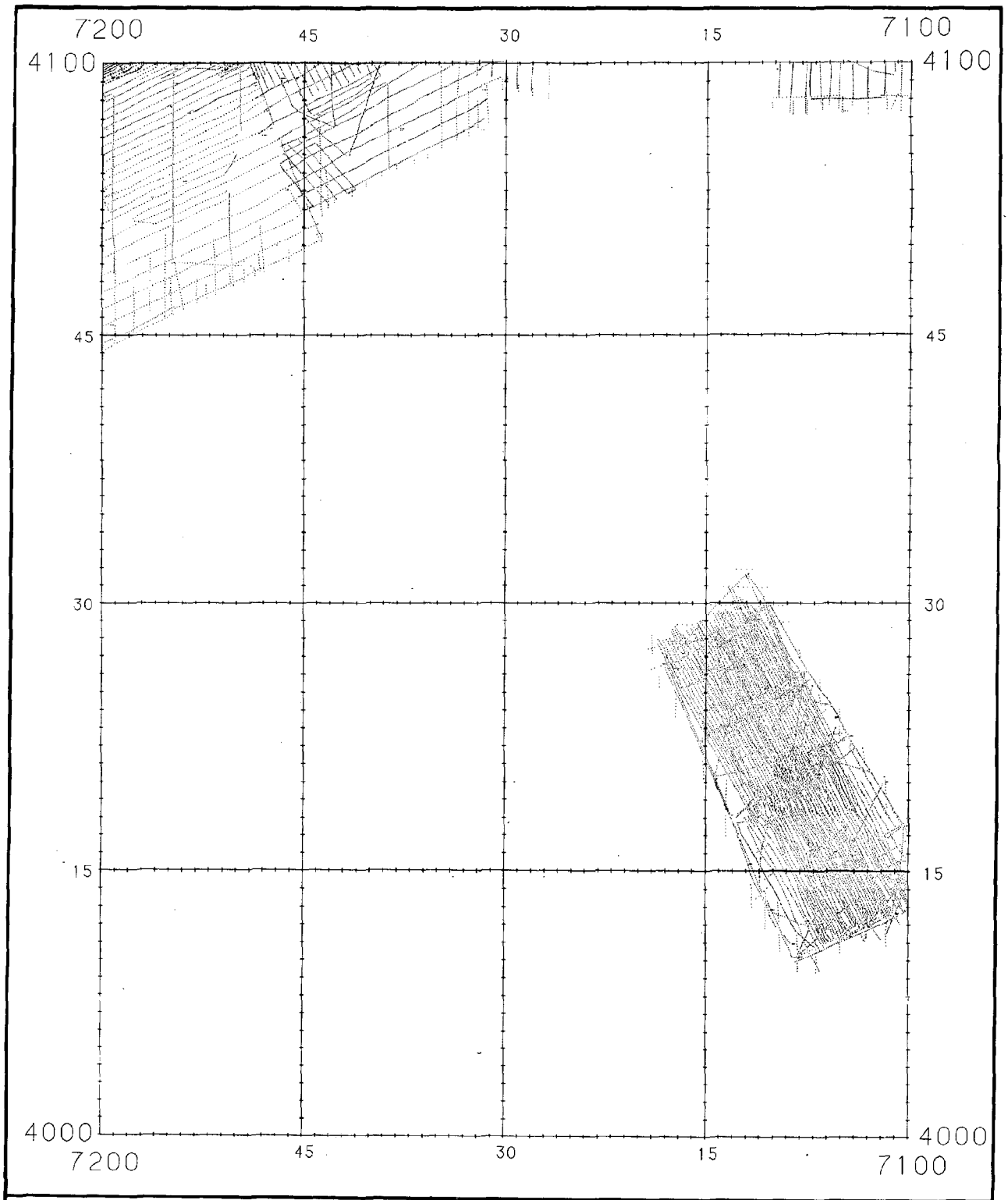
General Locality	Georges Bank
Latitude	40° – 41° N.
Longitude	68° – 69° W.
Number of Soundings	5,211
Number of Bottom Characteristics	22
Number of Dangers to Navigation	1



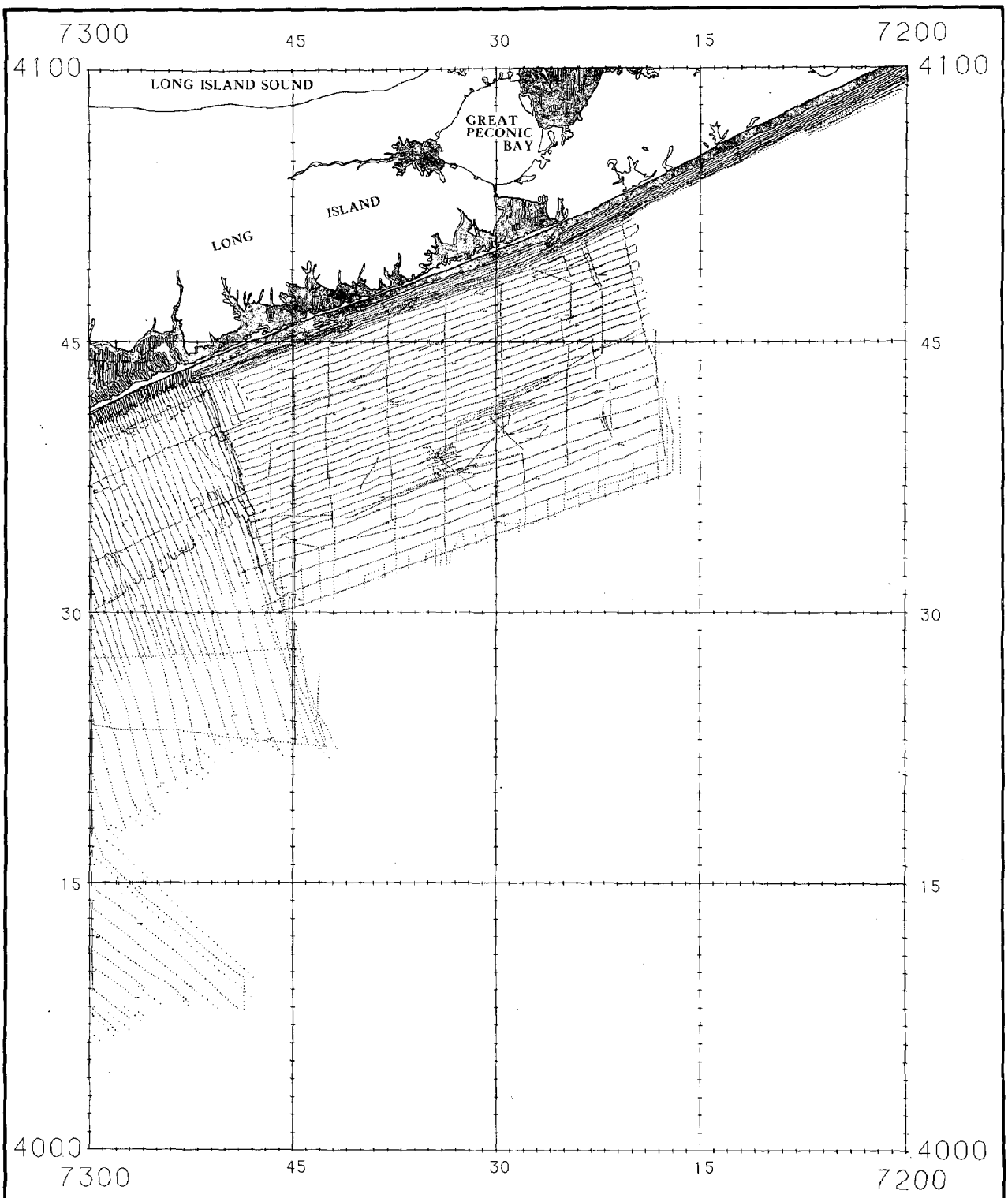
General Locality	Eastern Approaches to New York Harbor Davis Bank
Latitude	40° – 41° N.
Longitude	69° – 70° W.
Number of Soundings	10,330
Number of Bottom Characteristics	259
Number of Dangers to Navigation	1,631



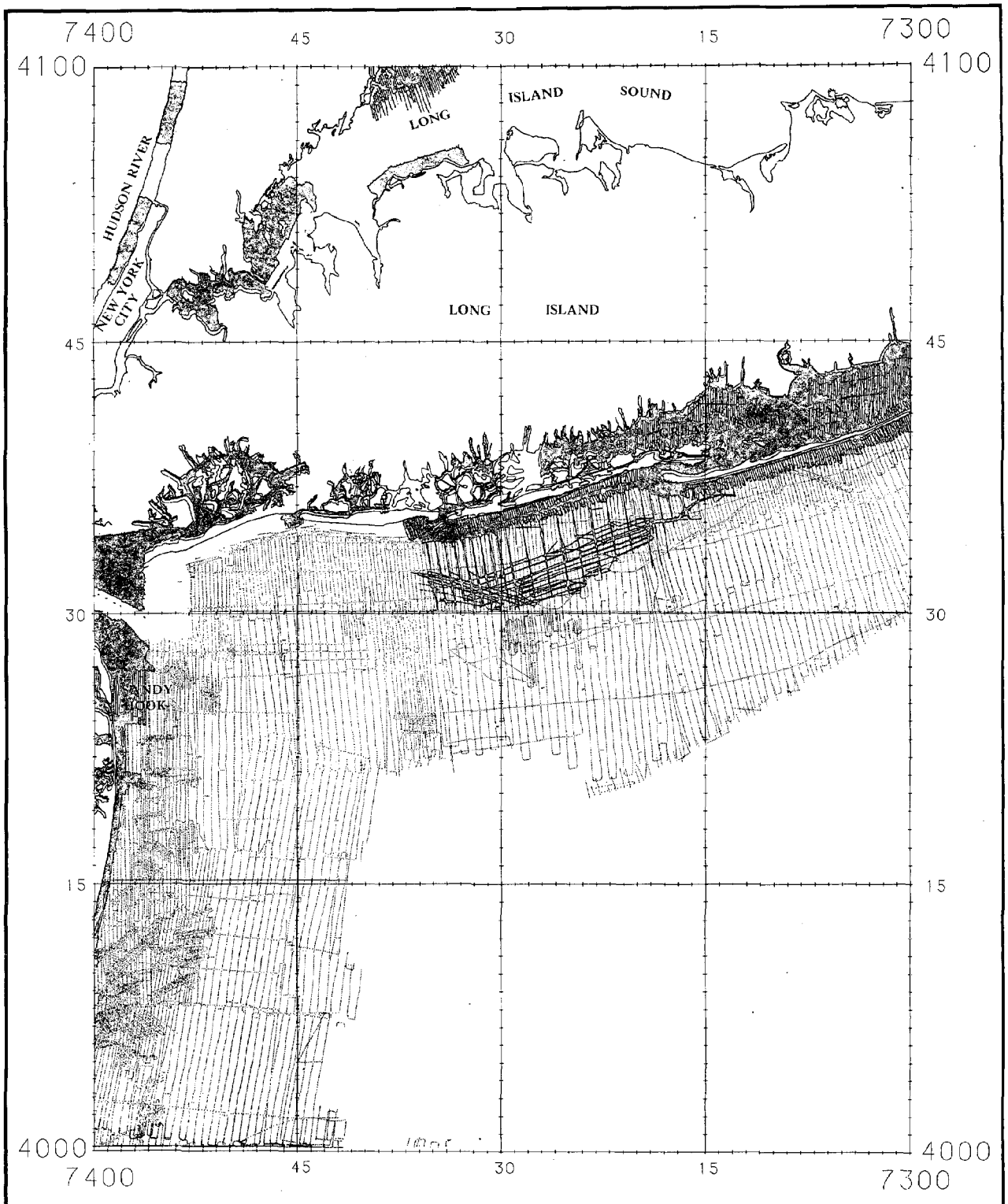
General Locality	Eastern Approaches to New York Harbor
Latitude	40° – 41° N.
Longitude	70° – 71° W.
Number of Soundings	4,129
Number of Bottom Characteristics	56
Number of Dangers to Navigation	721



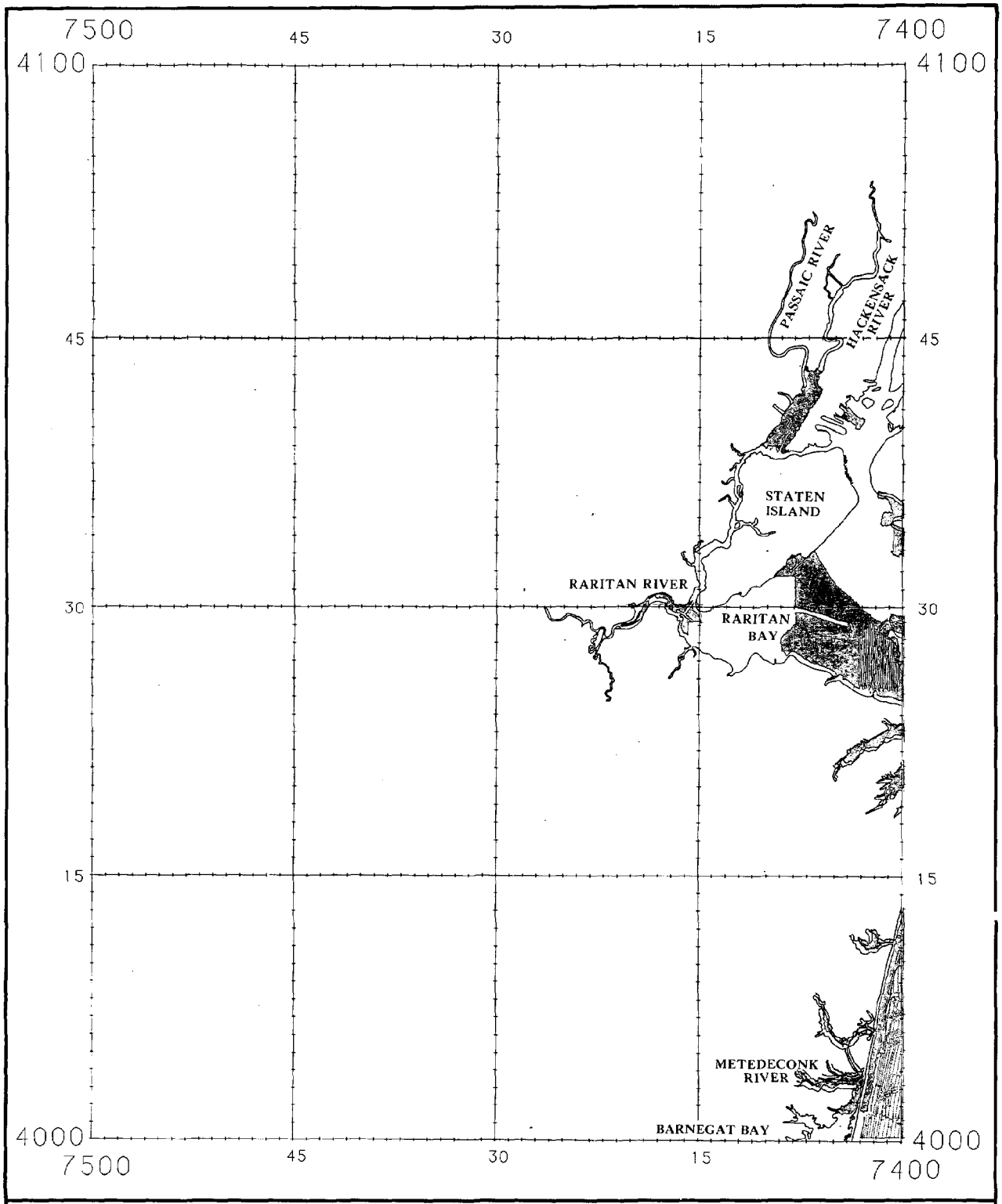
General Locality	Eastern Approaches to New York Harbor
Latitude	40° – 41° N.
Longitude	71° – 72° W.
Number of Soundings	15,682
Number of Bottom Characteristics	170
Number of Dangers to Navigation	0



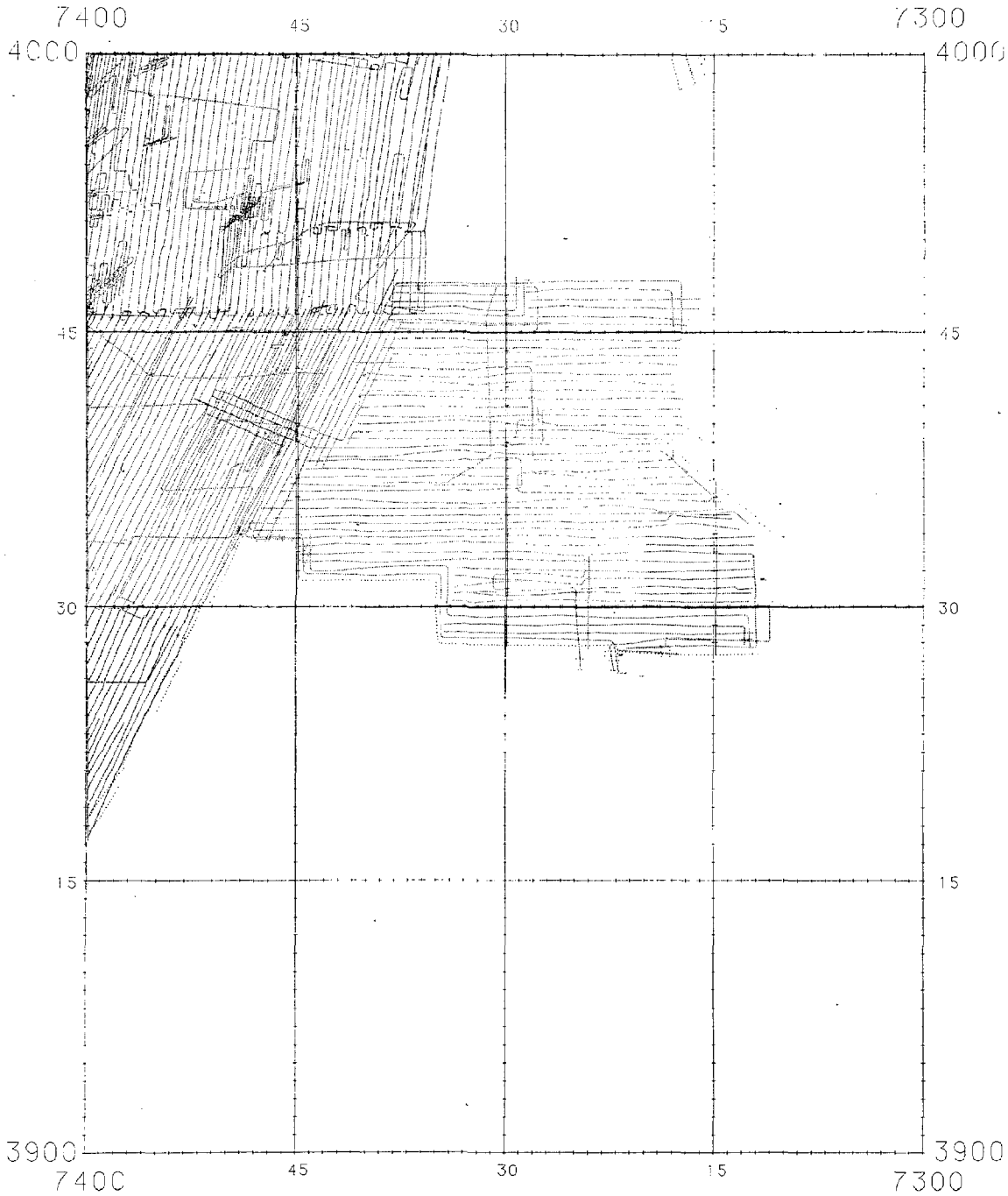
General Locality	Eastern Approaches to New York Harbor
Latitude	40° – 41° N.
Longitude	72° – 73° W.
Number of Soundings	88,869
Number of Bottom Characteristics	3,280
Number of Dangers to Navigation	93



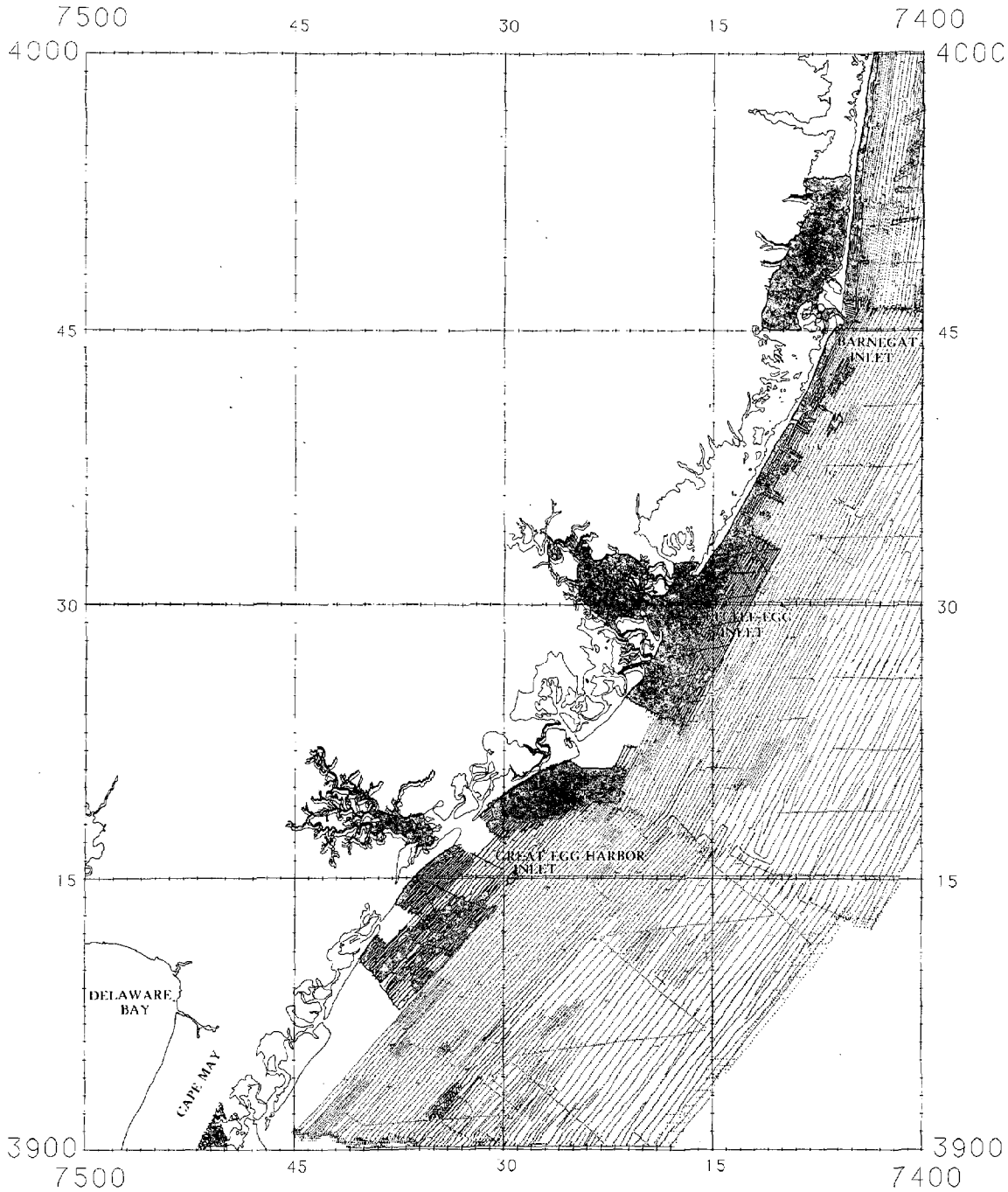
General Locality	Approaches to New York Harbor
Latitude	40° – 41° N.
Longitude	73° – 74° W.
Number of Soundings	295,506
Number of Bottom Characteristics	10,446
Number of Dangers to Navigation	2,763



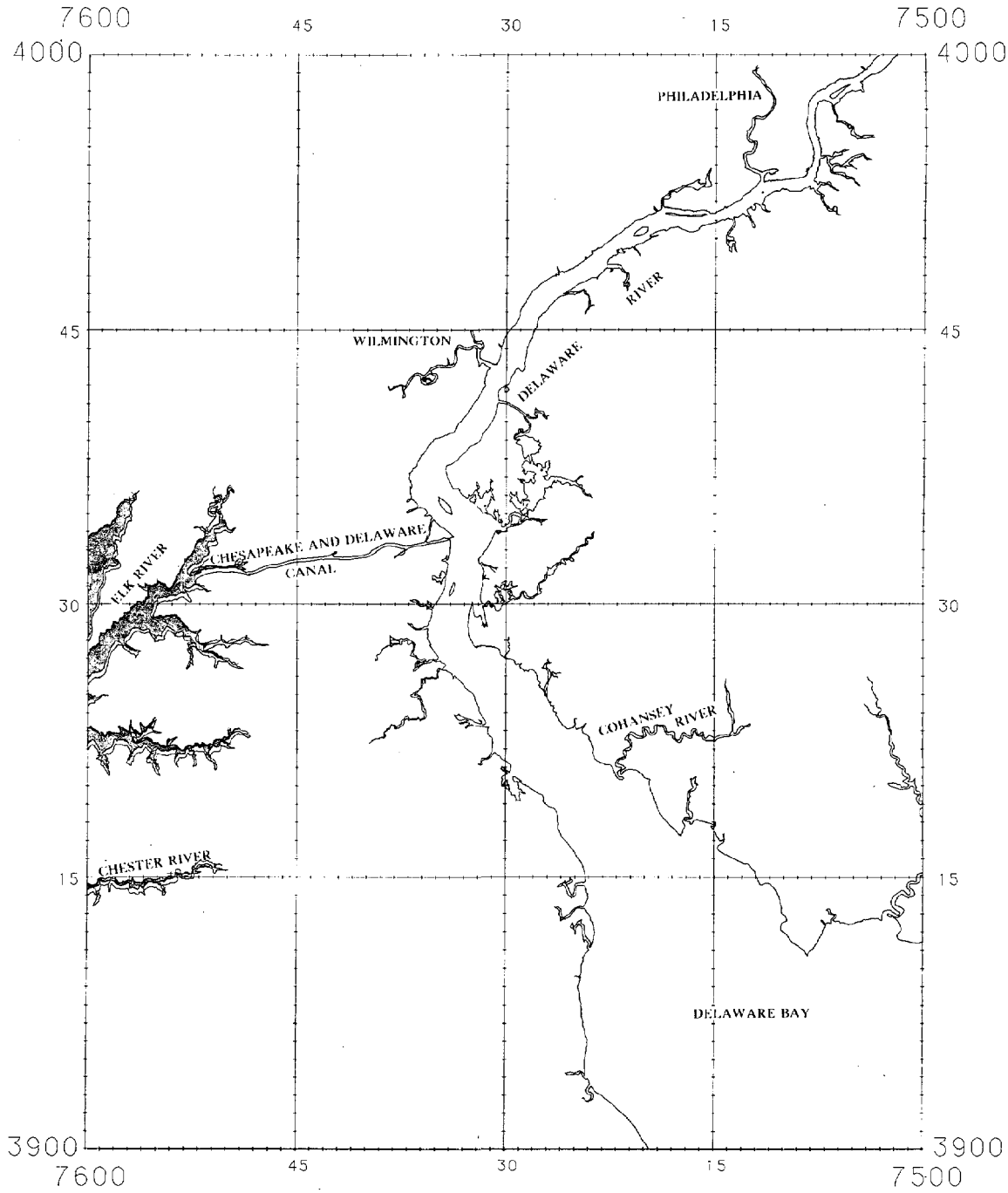
General Locality	Approaches to New York Harbor
Latitude	40° – 41° N.
Longitude	74° – 75° W.
Number of Soundings	79,112
Number of Bottom Characteristics	6,197
Number of Dangers to Navigation	482



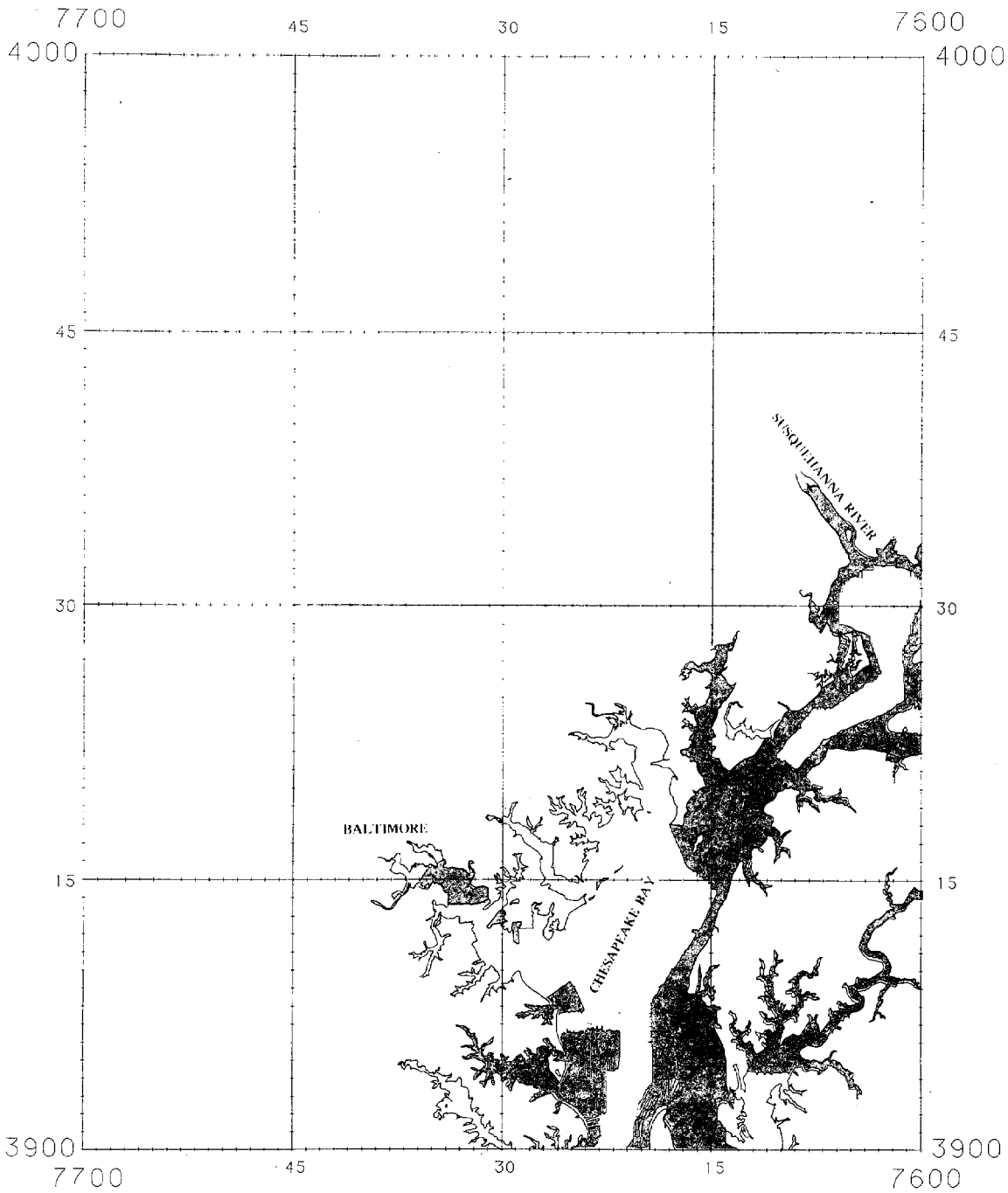
General Locality	New Jersey Coast – Southern Approaches to New York Harbor
Latitude	39° – 40° N.
Longitude	73° – 74° W.
Number of Soundings	32,744
Number of Bottom Characteristics	238
Number of Dangers to Navigation	0



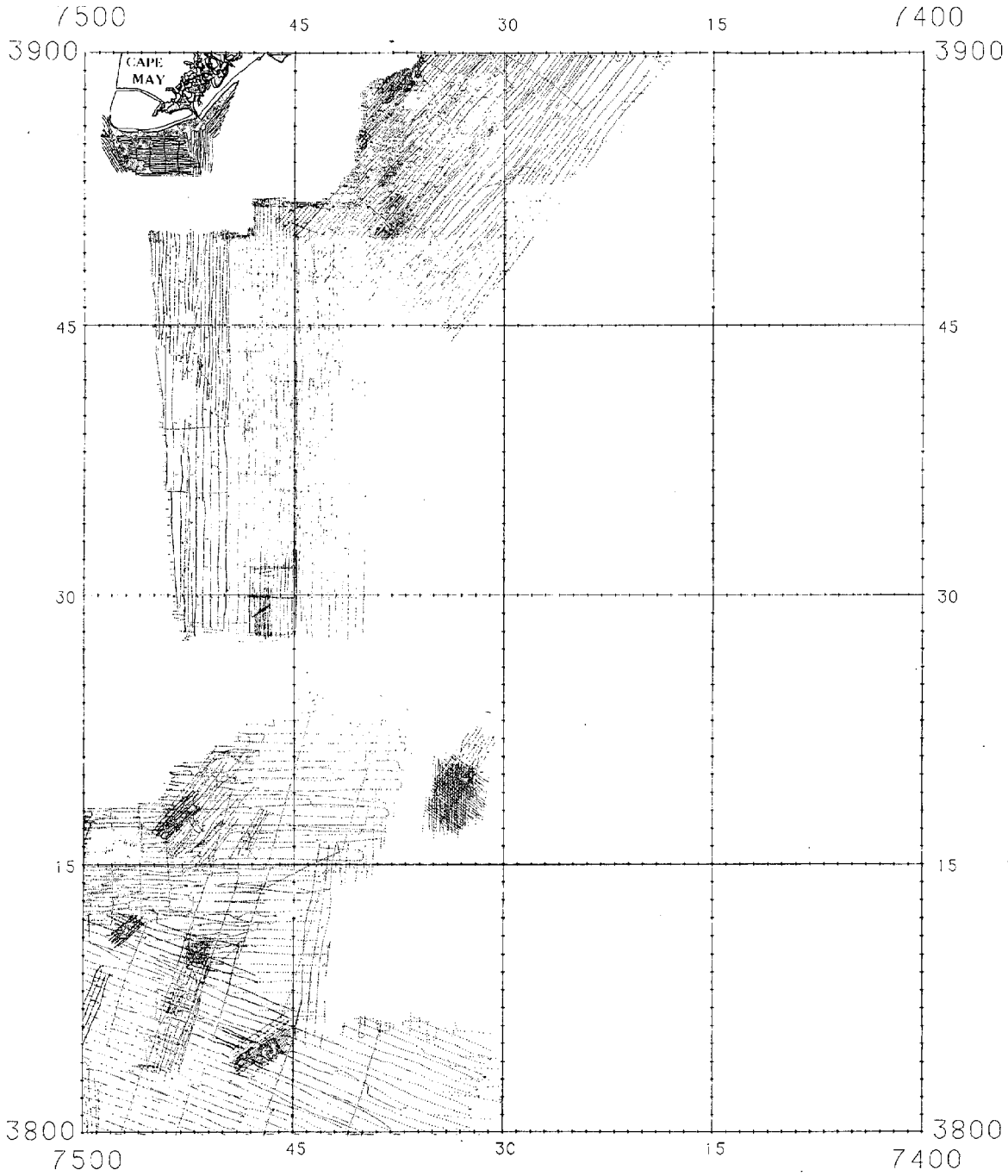
General Locality	New Jersey Coast
Latitude	39° – 40° N.
Longitude	74° – 75° W.
Number of Soundings	185,871
Number of Bottom Characteristics	5,294
Number of Dangers to Navigation	160



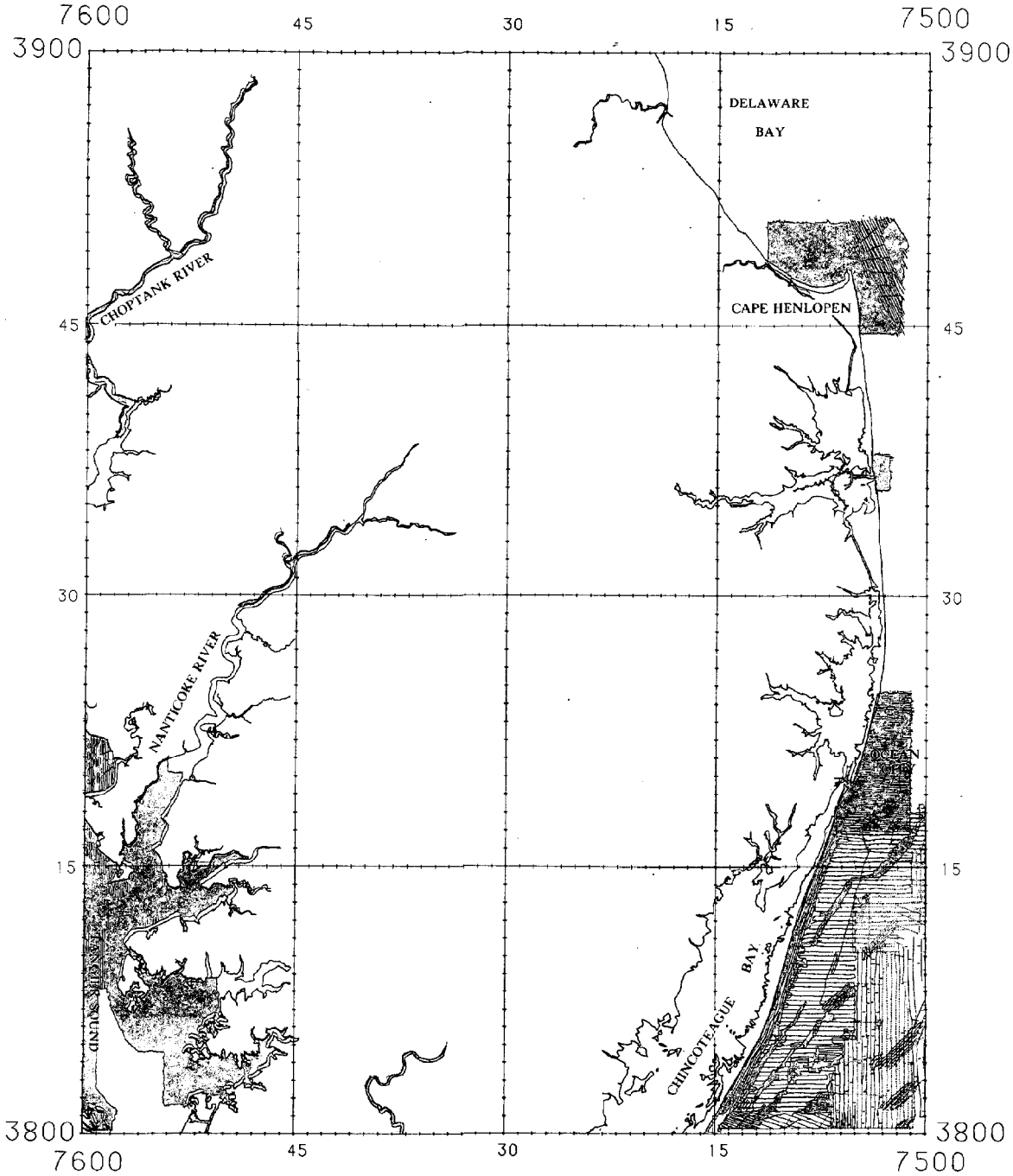
General Locality	Delaware Bay – Delaware River
Latitude	39° – 40° N.
Longitude	75° – 76° W.
Number of Soundings	40,106
Number of Bottom Characteristics	2,160
Number of Dangers to Navigation	80



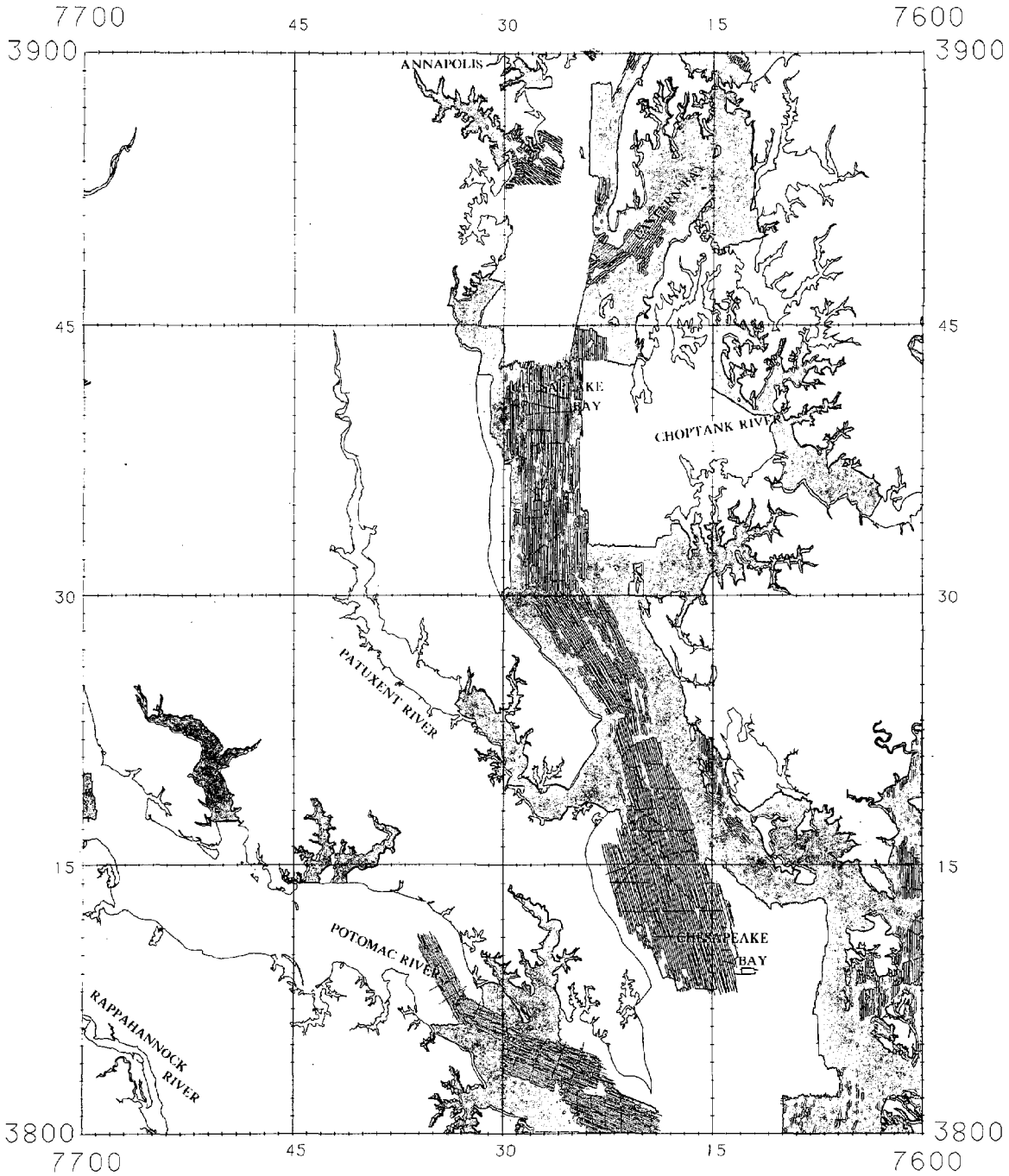
General Locality	Northern Chesapeake Bay
Latitude	39° – 40° N.
Longitude	76° – 77° W.
Number of Soundings	192,440
Number of Bottom Characteristics	9,094
Number of Dangers to Navigation	583



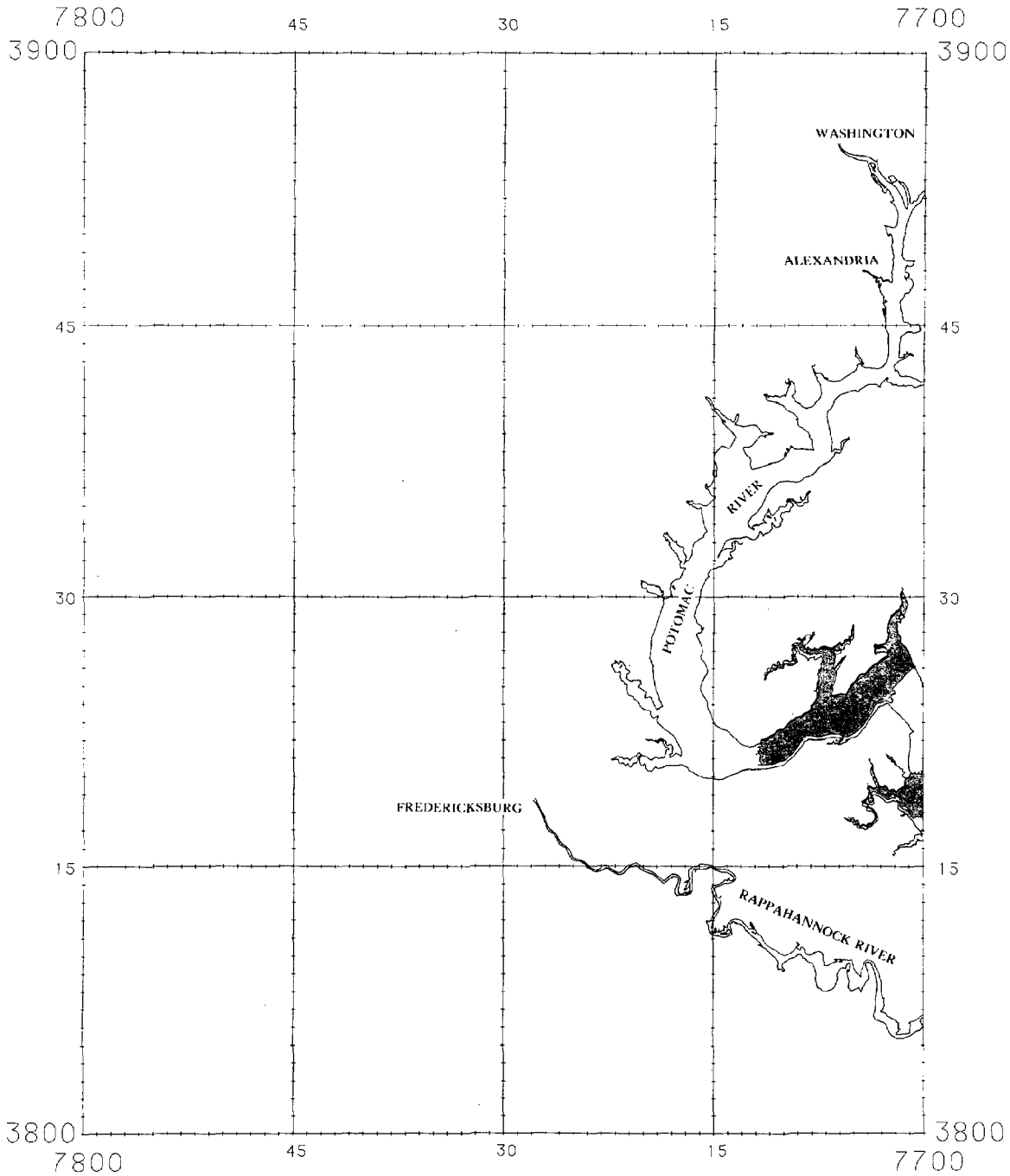
General Locality	Approaches to Delaware Bay — Cape May
Latitude	38° — 39° N.
Longitude	74° — 75° W.
Number of Soundings	64,211
Number of Bottom Characteristics	2,618
Number of Dangers to Navigation	84



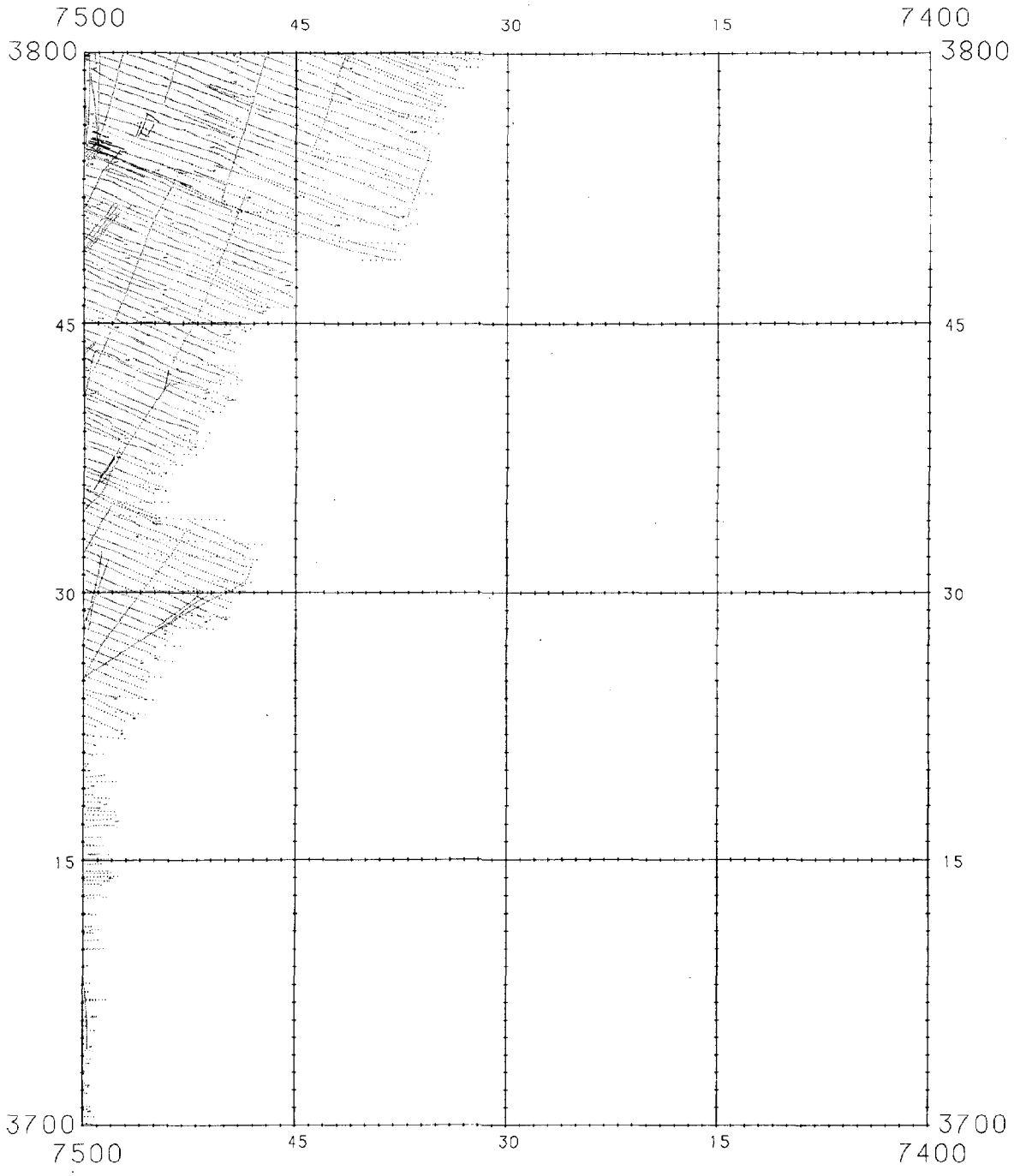
General Locality	Maryland Coast – Eastern Chesapeake Bay
Latitude	38° – 39° N.
Longitude	75° – 76° W.
Number of Soundings	173,940
Number of Bottom Characteristics	6,174
Number of Dangers to Navigation	134



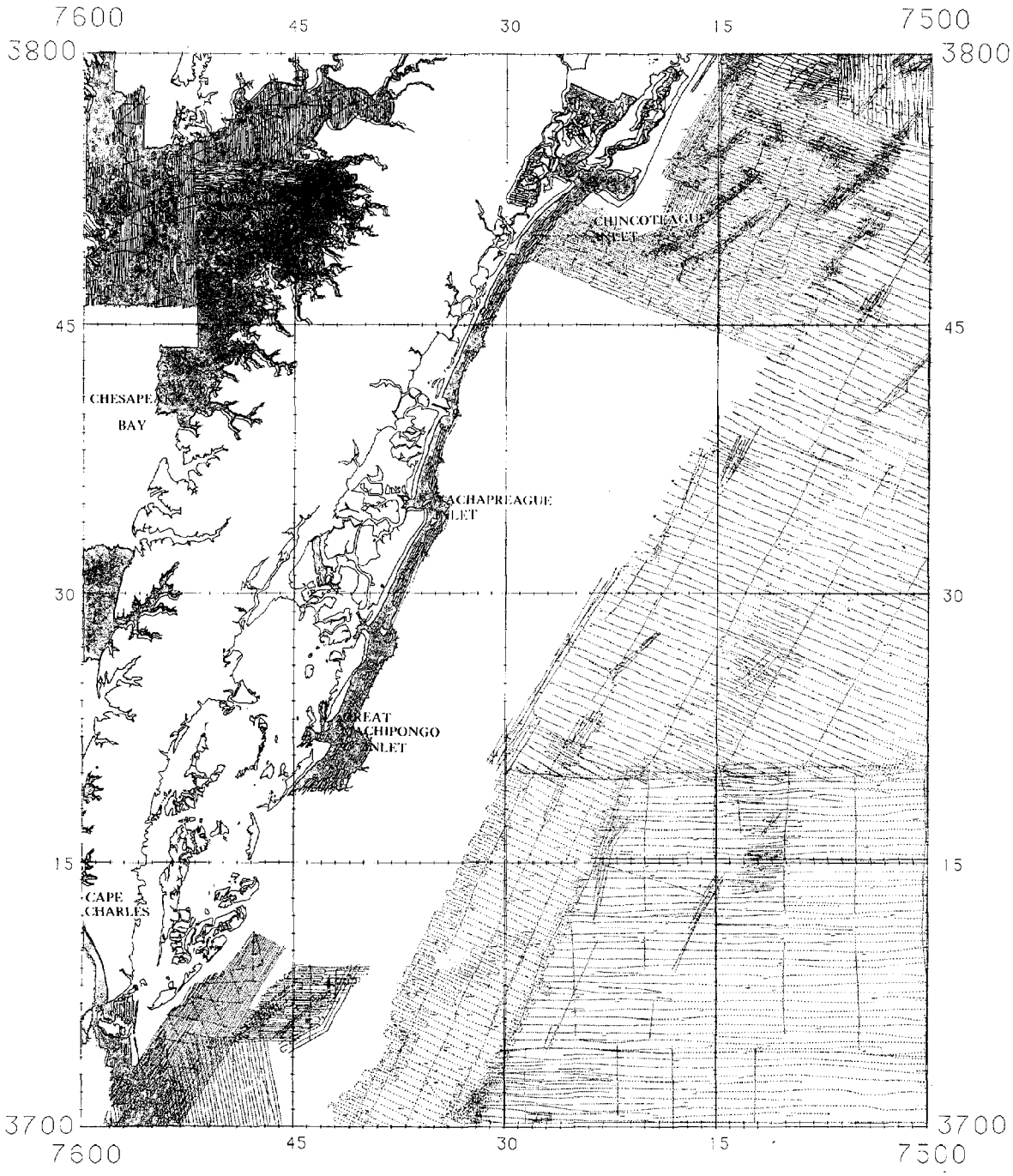
General Locality	Central Chesapeake Bay
Latitude	38° – 39° N.
Longitude	76° – 77° W.
Number of Soundings	505,043
Number of Bottom Characteristics	13,430
Number of Dangers to Navigation	1,096



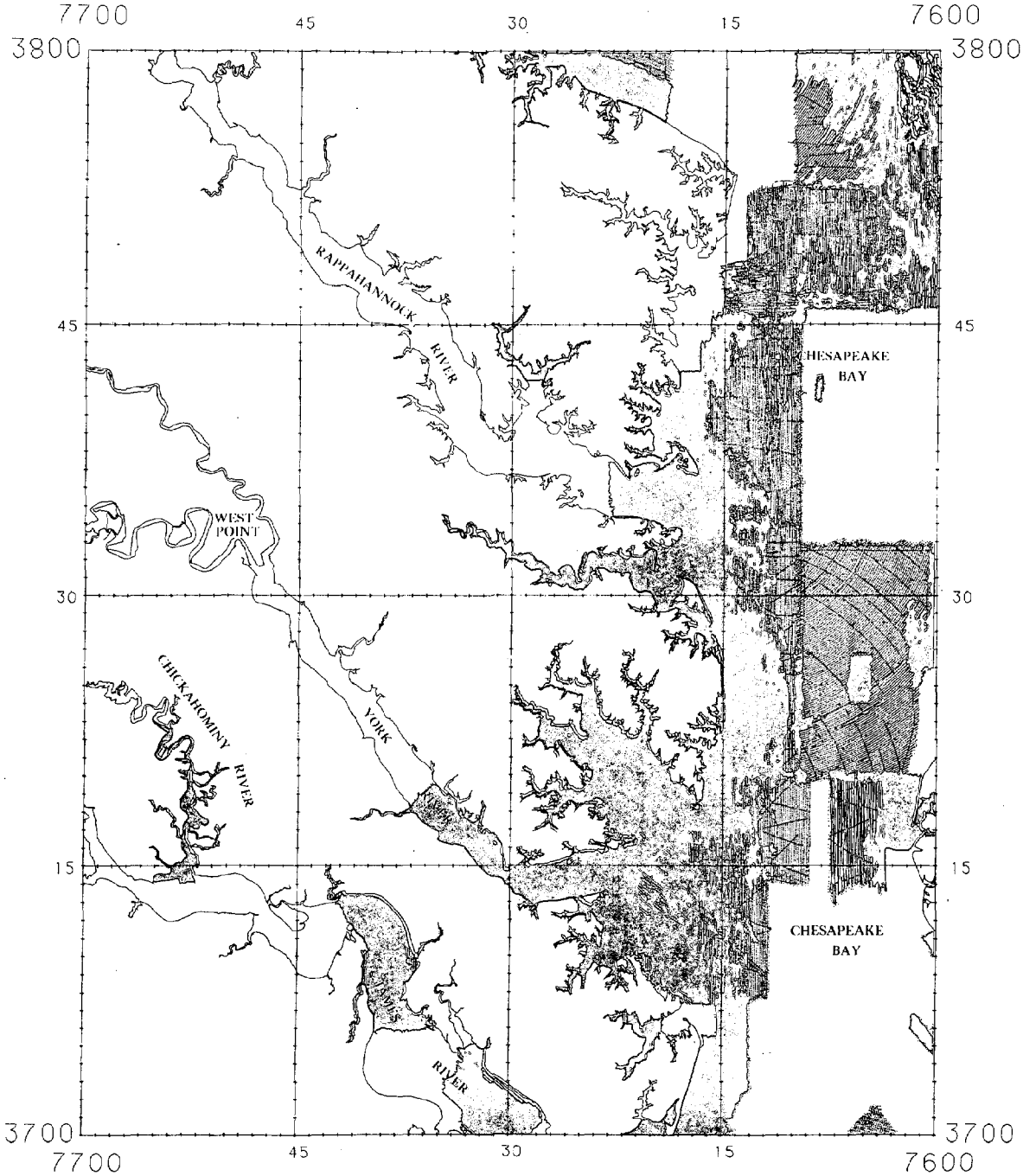
General Locality	Potomac River – Rappahannock River
Latitude	38° – 39° N.
Longitude	77° – 78° W.
Number of Soundings	38,839
Number of Bottom Characteristics	489
Number of Dangers to Navigation	46



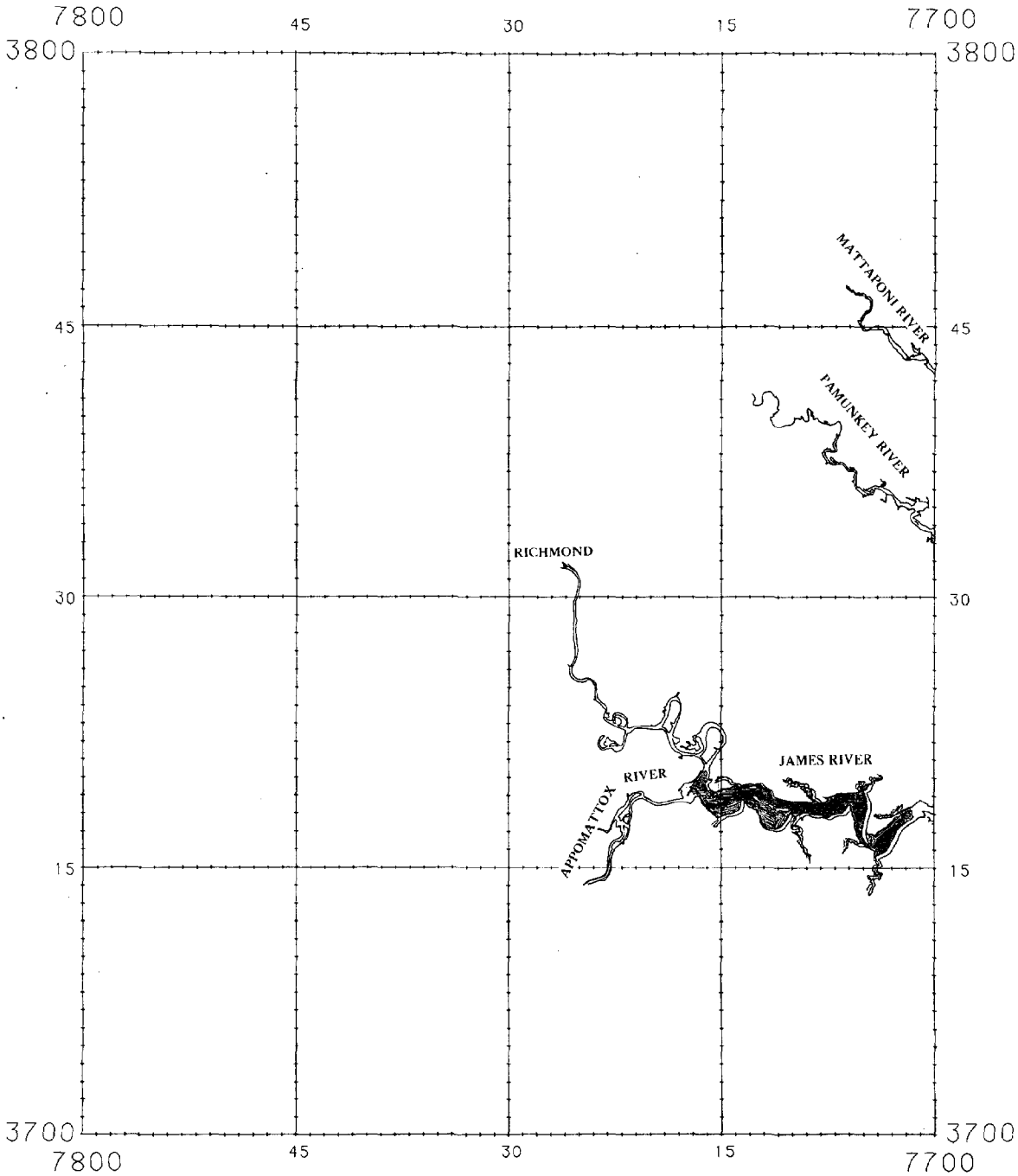
General Locality	Approaches to Chesapeake Bay
Latitude	37° – 38° N.
Longitude	74° – 75° W.
Number of Soundings	10,337
Number of Bottom Characteristics	350
Number of Dangers to Navigation	2



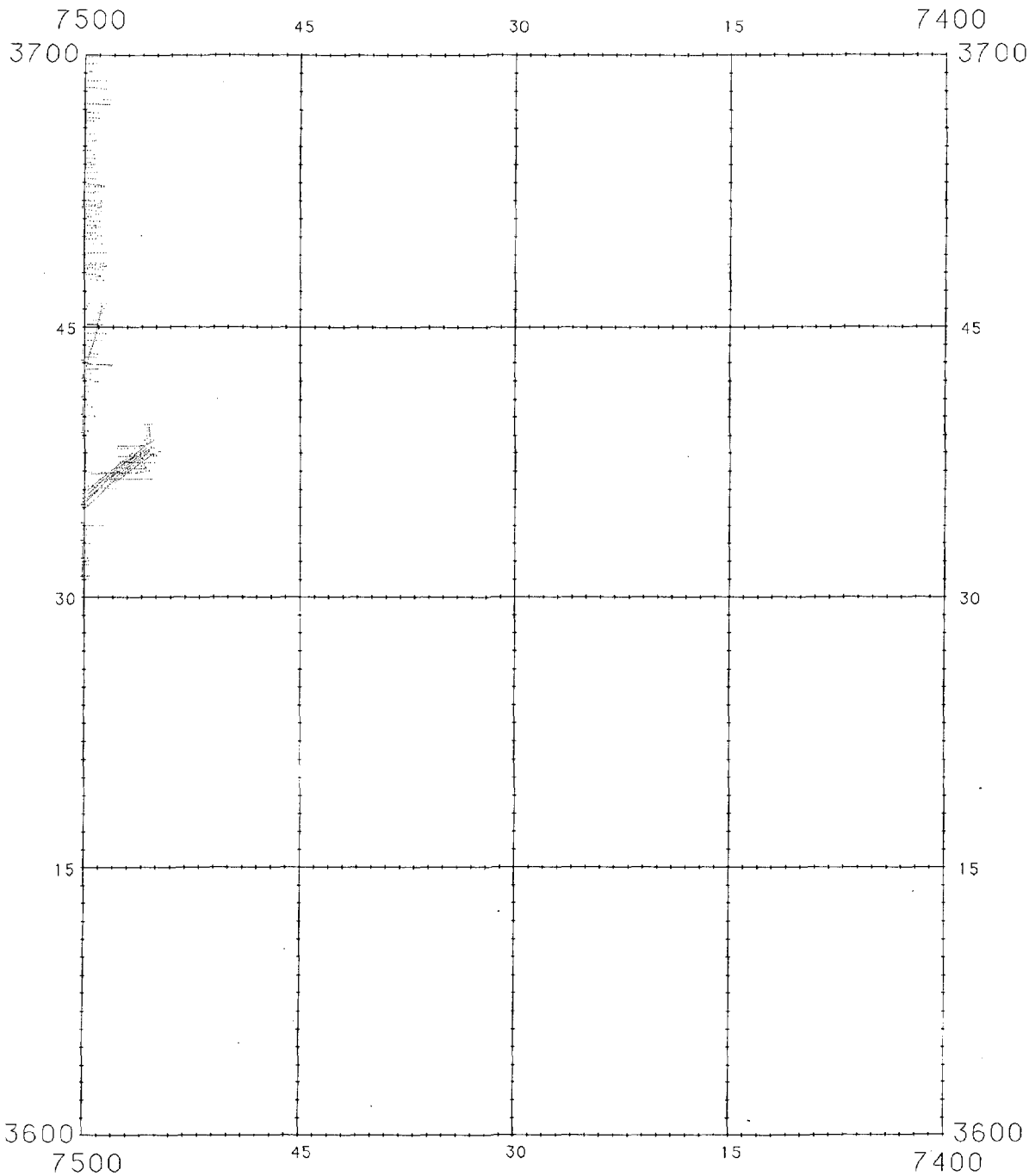
General Locality	Approaches to Chesapeake Bay — Eastern Chesapeake Bay
Latitude	37° – 38° N.
Longitude	75° – 76° W.
Number of Soundings	277,392
Number of Bottom Characteristics	9,063
Number of Dangers to Navigation	94



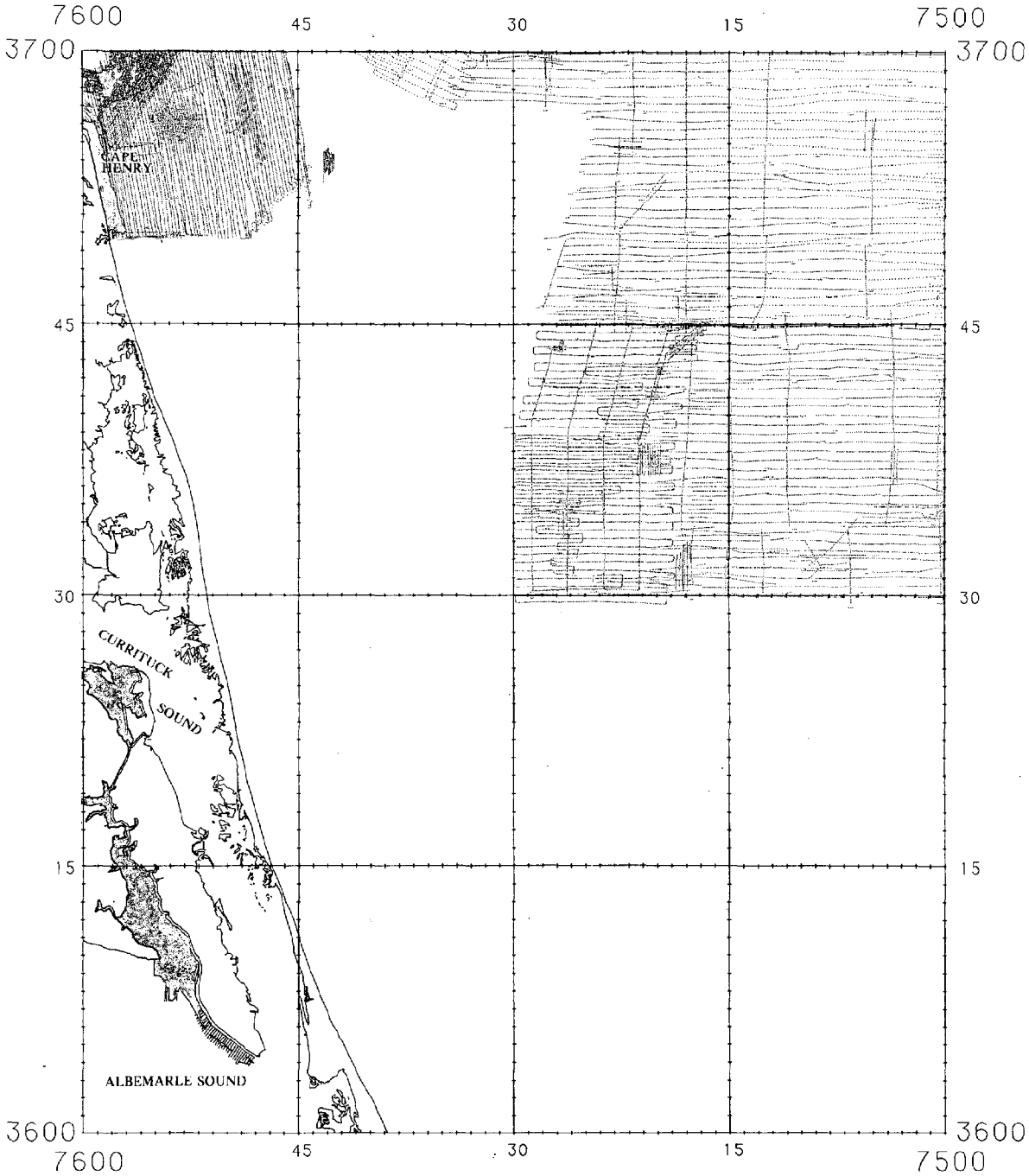
General Locality	Southwestern Chesapeake Bay
Latitude	37° – 38° N.
Longitude	76° – 77° W.
Number of Soundings	499,333
Number of Bottom Characteristics	7,328
Number of Dangers to Navigation	753



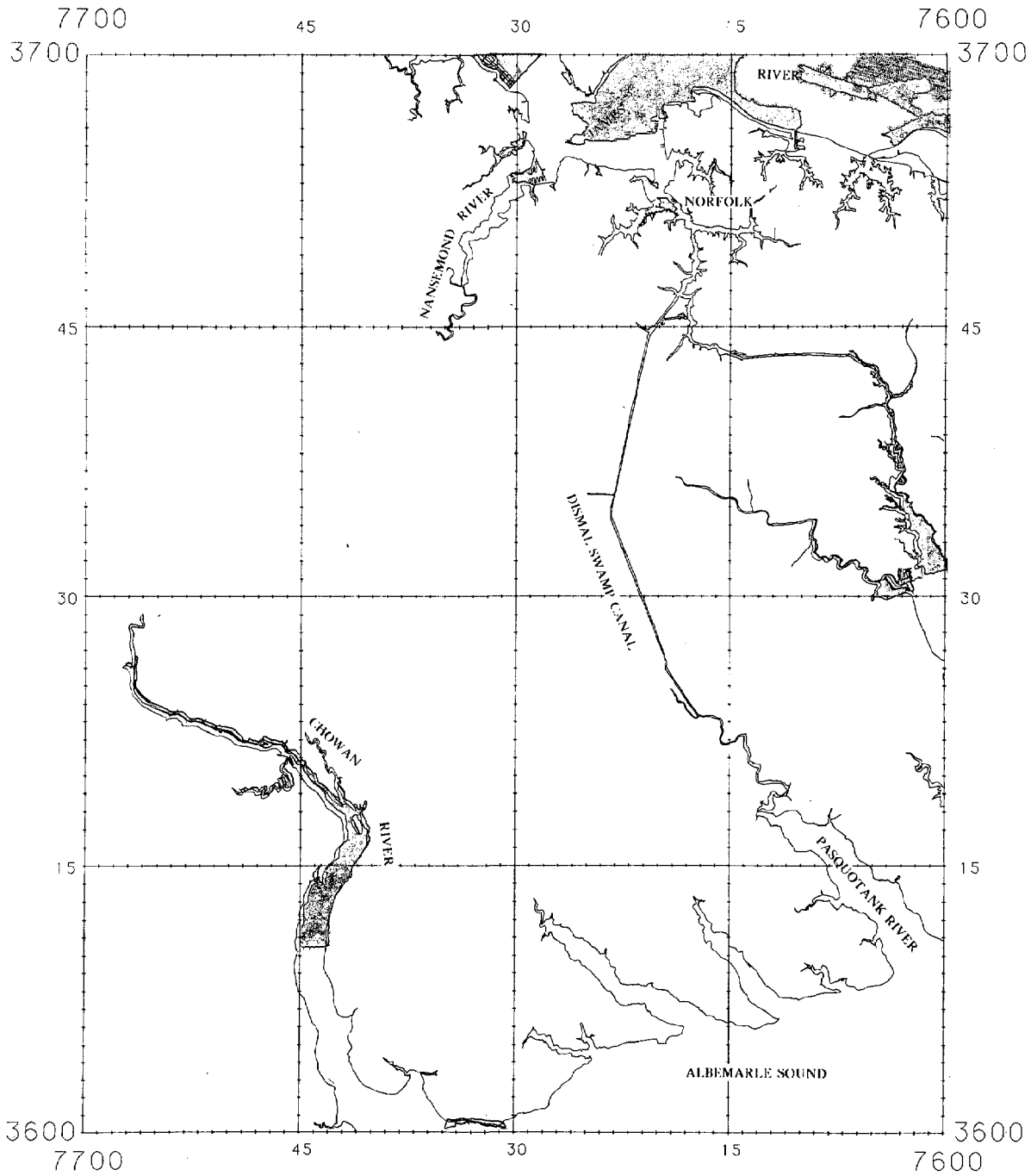
General Locality	James River — Pamunkey River — Mattaponi River
Latitude	37° — 38° N.
Longitude	77° — 78° W.
Number of Soundings	30,448
Number of Bottom Characteristics	558
Number of Dangers to Navigation	683



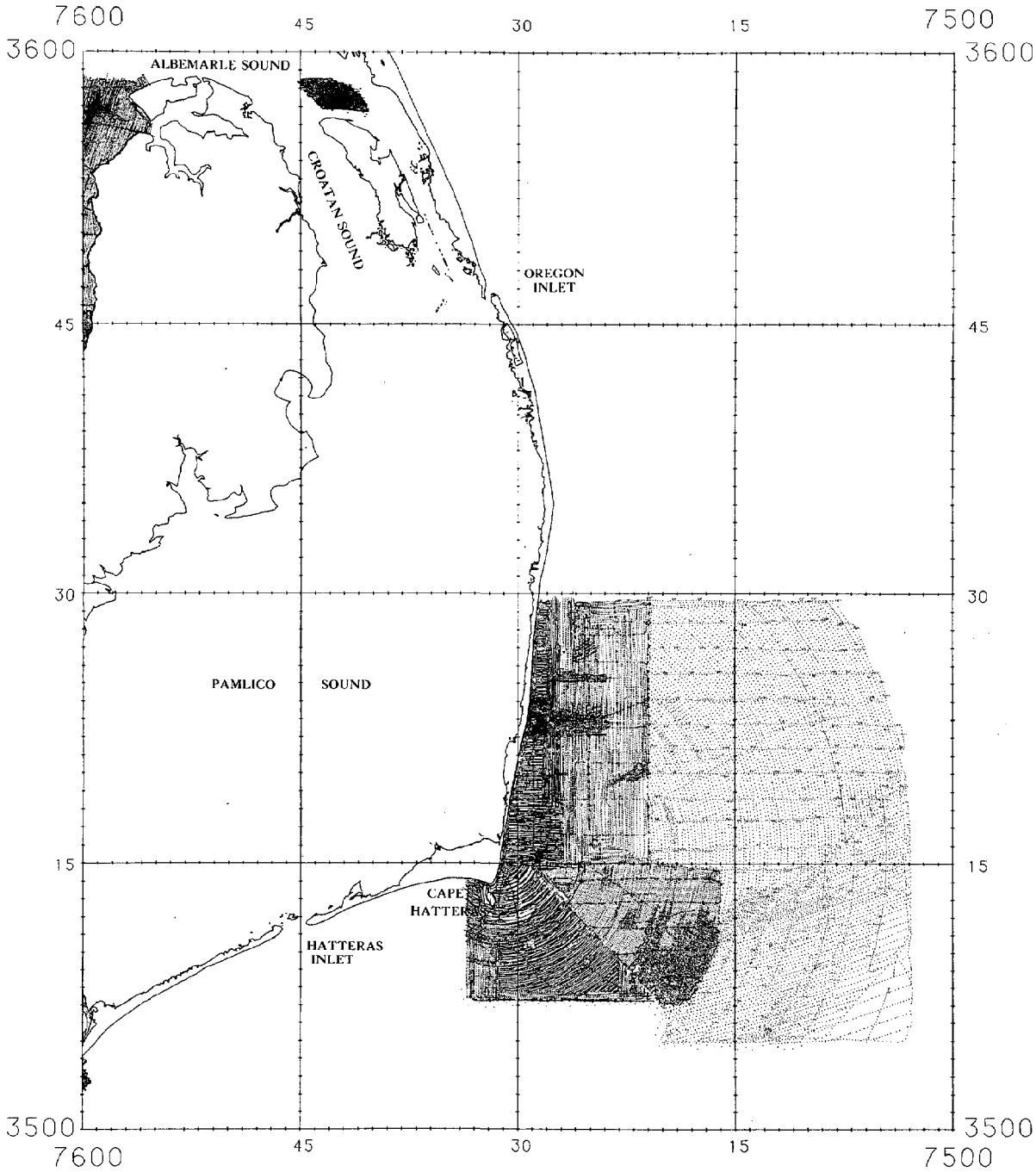
General Locality	Eastern Approaches to Chesapeake Bay
Latitude	36° – 37° N.
Longitude	74° – 75° W.
Number of Soundings	907
Number of Bottom Characteristics	49
Number of Dangers to Navigation	0



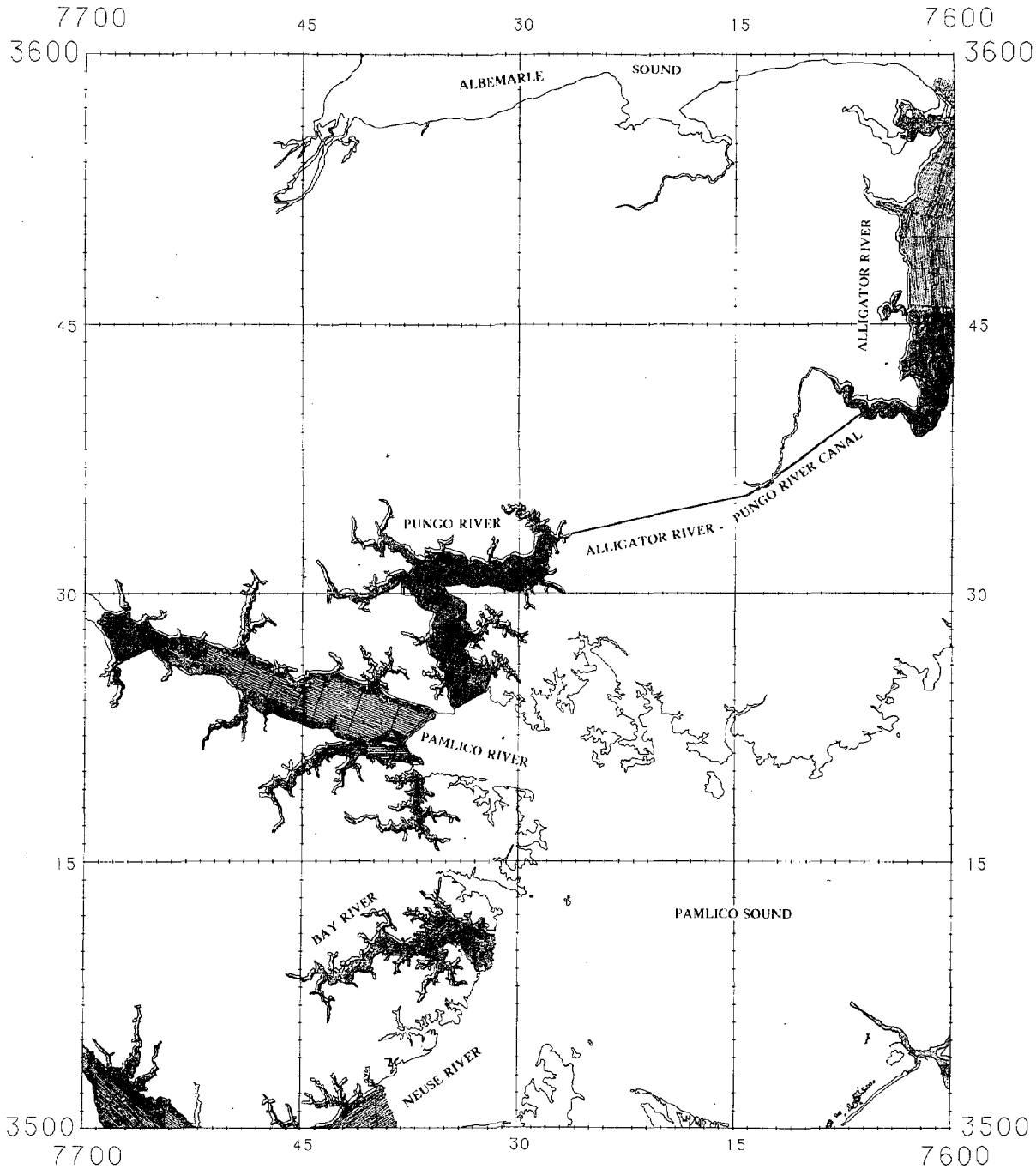
General Locality	Southern Approaches to Chesapeake Bay
Latitude	36° – 37° N.
Longitude	75° – 76° W.
Number of Soundings	66,505
Number of Bottom Characteristics	2,087
Number of Dangers to Navigation	169



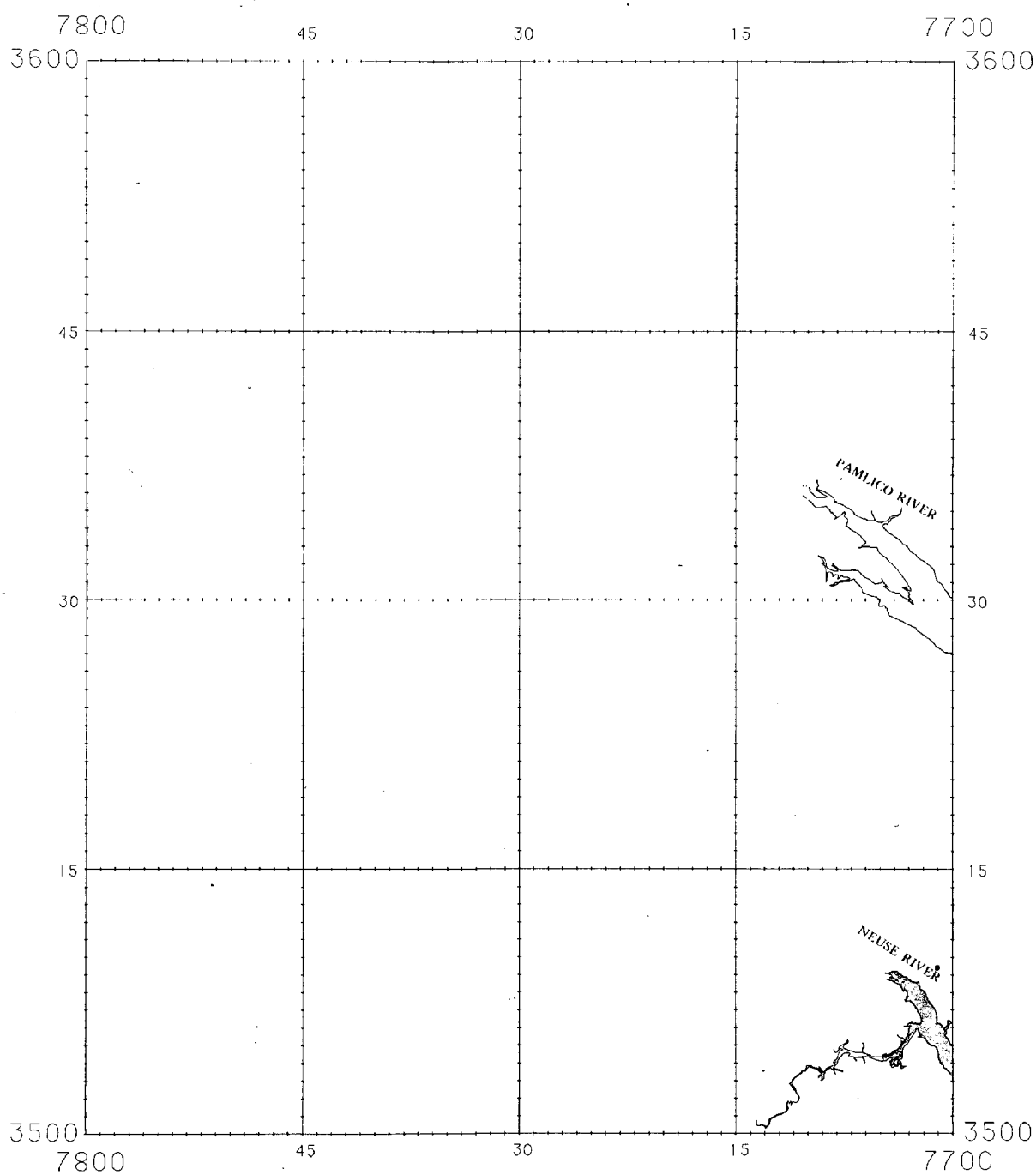
General Locality	Albemarle Sound — James River
Latitude	36° – 37° N.
Longitude	76° – 77° W.
Number of Soundings	115,054
Number of Bottom Characteristics	2,474
Number of Dangers to Navigation	724



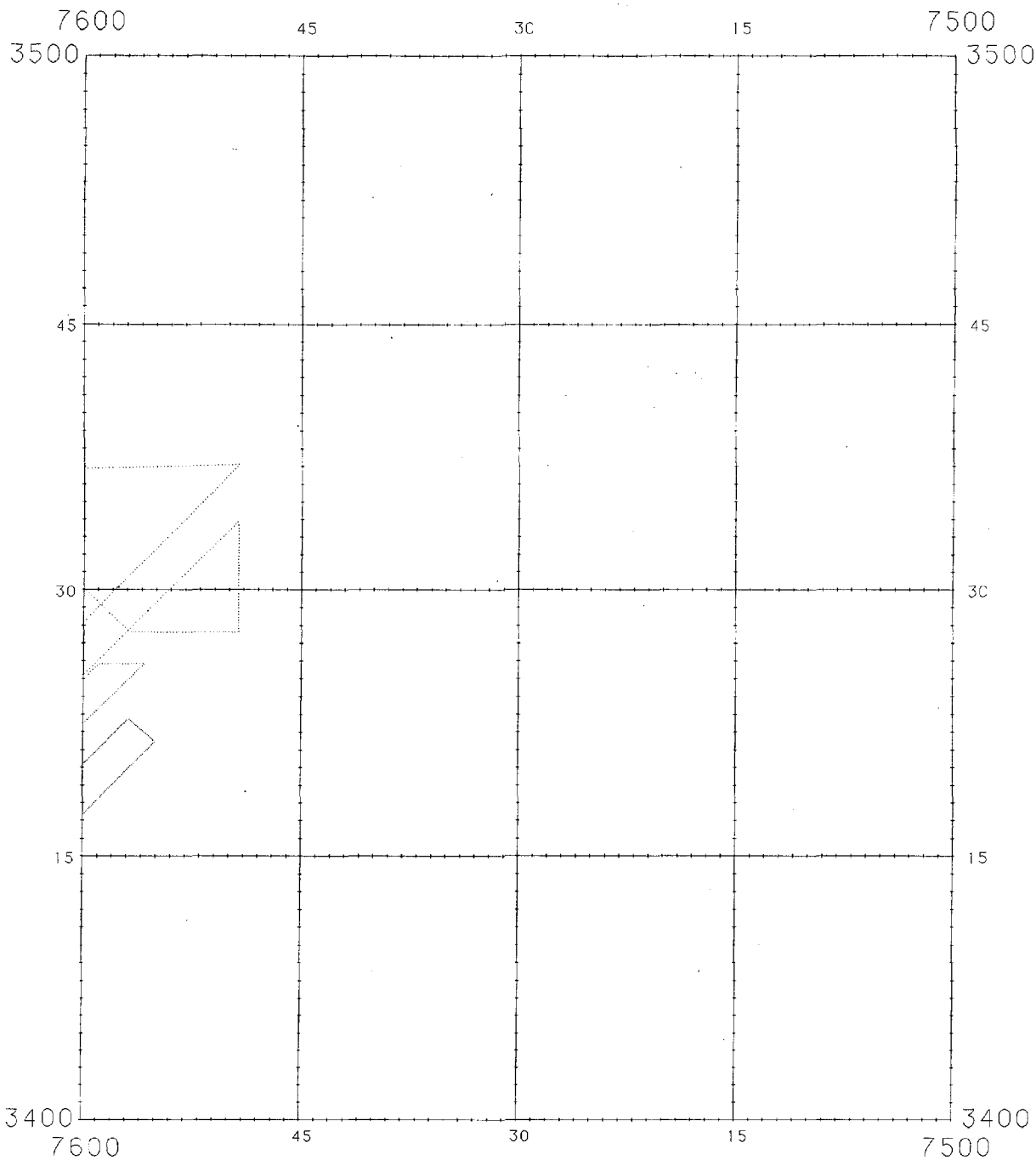
General Locality	Pamlico Sound – Cape Hatteras
Latitude	35° – 36° N.
Longitude	75° – 76° W.
Number of Soundings	61,803
Number of Bottom Characteristics	2,570
Number of Dangers to Navigation	101



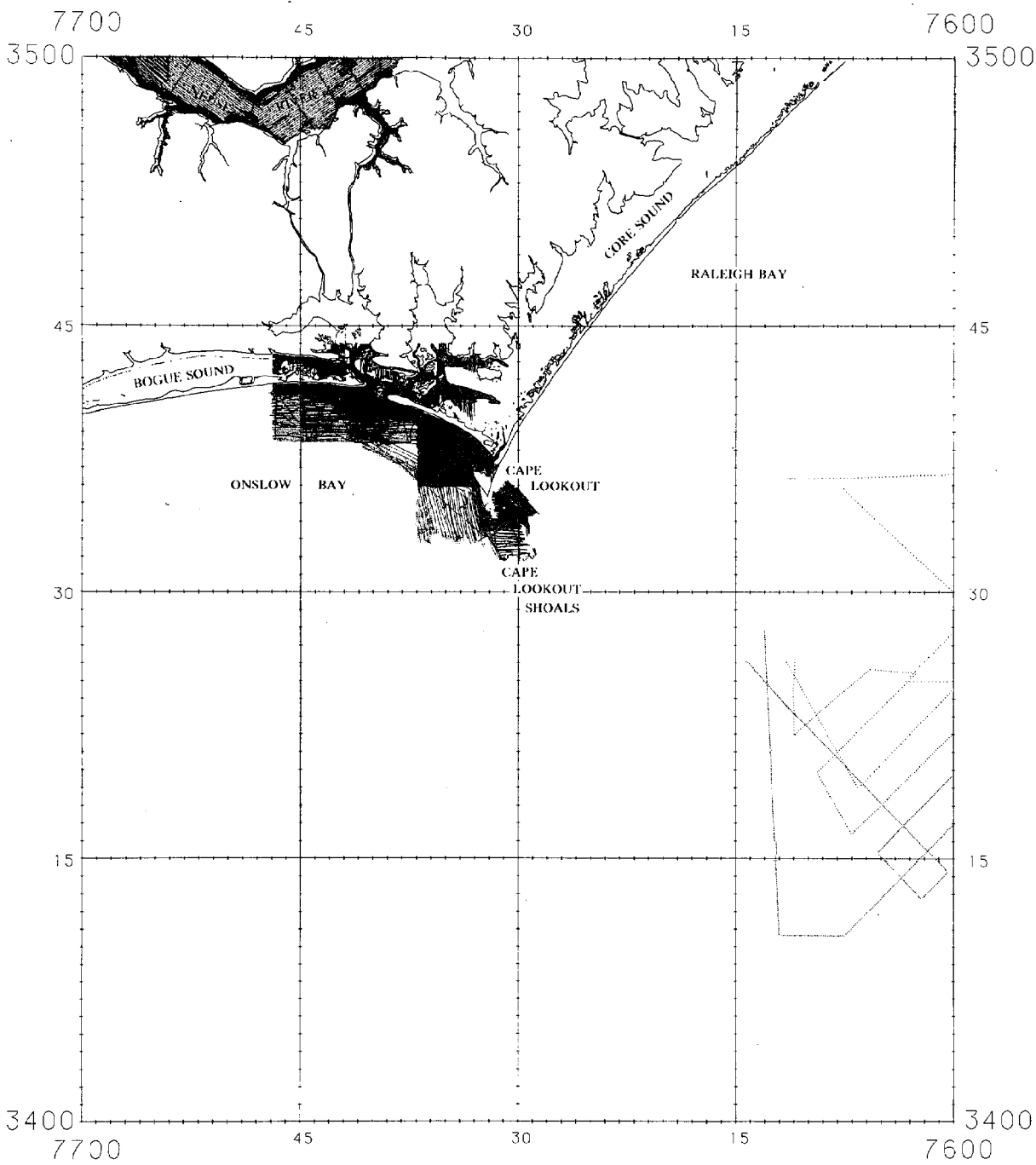
General Locality	Pamlico Sound – Pamlico River – Albemarle Sound
Latitude	35° – 36° N.
Longitude	76° – 77° W.
Number of Soundings	137,364
Number of Bottom Characteristics	7,468
Number of Dangers to Navigation	1,288



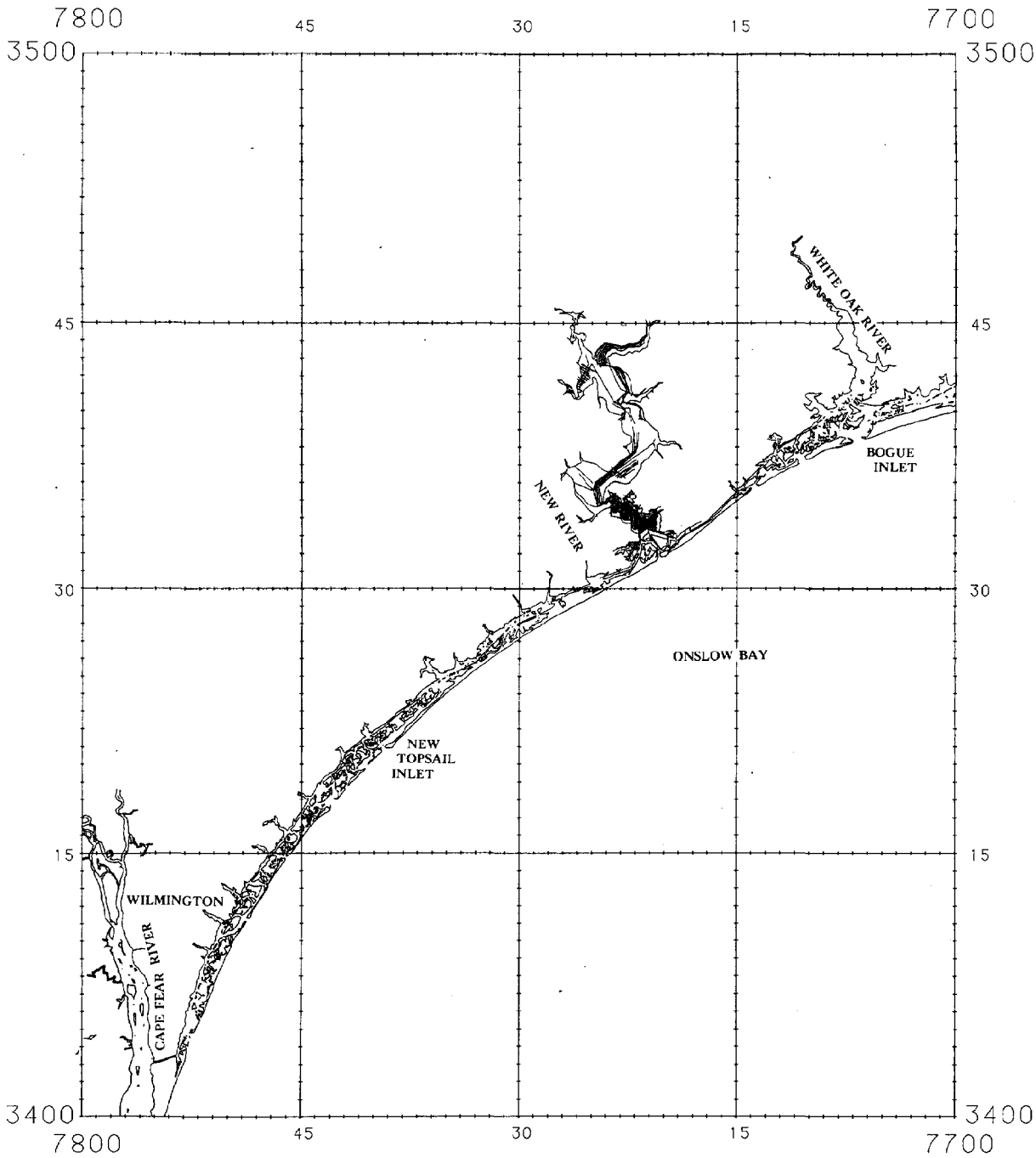
General Locality	Pamlico River — Neuse River
Latitude	35° — 36° N.
Longitude	77° — 78° W.
Number of Soundings	9,390
Number of Bottom Characteristics	159
Number of Dangers to Navigation	483



General Locality	North Carolina Coast — Raleigh Bay
Latitude	34° — 35° N.
Longitude	75° — 76° W.
Number of Soundings	448
Number of Bottom Characteristics	0
Number of Dangers to Navigation	0



General Locality.....	Raleigh Bay – Cape Lookout – Onslow Bay
Latitude.....	34° – 35° N.
Longitude.....	76° – 77° W.
Number of Soundings.....	79,817
Number of Bottom Characteristics....	1,683
Number of Dangers to Navigation	137



General Locality	Onslow Bay – New River
Latitude	34° – 35° N.
Longitude	77° – 78° W.
Number of Soundings	12,494
Number of Bottom Characteristics	728
Number of Dangers to Navigation	4

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