RE

61-6

Acting Regional Director, BCF, Region 3
Gloucester, Mass.

28 September 1961

Acting Laboratory Director, BCF
Woods Hole, Mass.

Report on New York Harbor

Replying to your memorandum of 15 September, we regret that we have no pertinent material in the files applicable to the New York Harbor study requested. It would seem appropriate to approach the New York State Conservation people in this regard.

Robert L. Edwards

jah

Director, BCF
Washington 25, D. C.

12 October 1961

Laboratory Director, BCF
Woods Hole, Mass.

Report of the Circulation and Fisheries in New York Harbor

In reference to your memo of 2 October 1961. The attached report is a brief summary of the (outer) New York Harbor fisheries and its hydrography. A bibliography of pertinent references in included.

Herbert W. Graham

Attachments
cc: Gharrett (Risoli material with this copy)
jah

OPTIONAL FORM NO. 10

Edw

UNITED STATES GOVERNMENT

Memorandum

TO : Dr. Herbert W. Graham, Lab. Director DATE: Sept. 15, 1961
BCF Biological Laboratory, Woods Hole, Mass.

FROM : Acting Regional Director, BCF, Gloucester, Mass.

SUBJECT: Report on New York Harbor

On September 12 Mr. Gharrett wrote you requesting information for report on Boston Harbor. Similar information which is needed for New York Harbor had been requested from the Milford laboratory, but Dr. Loosanoff has no material in his files which will be helpful to us.

We should appreciate your assistance in preparing the New York Harbor report with information that is already available to you and members of your staff.

The New York report will be needed earlier than the Boston report. We should like to have your comments not later than October 2. The November 1 deadline still holds for the Boston report.

Russell T. Norris

OPTIONAL FORM NO. 10

UNITED STATES GOVERNMENT

Memorandum

TO : Laboratory Director, BCF Biological Lab. DATE: October 2, 1961
Woods Hole, Massachusetts

FROM : Regional Director, BCF, Gloucester, Mass.

SUBJECT: Report on New York Harbor

As per our telephone conversation, I am returning to you copy of the memorandum from the Director on the above subject. Please supply as much material as you may be able to, as called for in the questionnaire.

By copy of this memorandum, I am asking Mr. Risoli to furnish directly to you such material as he has, especially in reference to Item A-2 of the questionnaire. You should note particularly the last paragraph of the Director's memorandum.

Should we not be able to supply all information requred, we will refer the Director to sources of information outside the Bureau, rather than try to get such information from the outside sources ourselves.

Inasmuch as we are past the deadline set for this information at the Washington office, it is necessary that we act quickly on this matter. I will need this report from Dr. Edwards (including what material he may receive from Mr. Risoli) by October 10.

John T. Gharrett

Attachment

cc -Mr. Risoli

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service
Bureau of Commercial Fisheries
Washington 25, D. C.

SEP 5 1961

Memorandum

To: Regional and Area Directors (Regions 1, 2, 3, and California)
Bureau of Commercial Fisheries

From: Director, Bureau of Commercial Fisheries

Subject: Request for information concerning fisheries, fishery resources, and aquatic environment in various harbors

The Bureau of Commercial Fisheries has been requested to provide information about the fisheries and the aquatic environment of certain harbors to be incorporated in general reports being prepared by another governmental agency. These reports will contain information on topography, geology, weather, industry, and human population of the area in addition to fisheries. Aside from our general policy of encouraging interagency cooperation, we believe the Bureau should provide this information since it will constitute a statement of the present available knowledge concerning these locations and will serve as a baseline for future studies of new and additional uses of these harbors.

It is therefore requested that you provide the following information concerning those harbors on the following list which lie within your region.

Woods Hole
~~Hartford~~
Oxford

Boston, Massachusetts Nov. 1	New Orleans, Louisiana
New York, New York Oct. 1	Seattle, Washington
Philadelphia, Pennsylvania Nov. 1	Portland, Oregon
Baltimore, Maryland Nov. 1	San Francisco, California
Savannah, Georgia	Los Angeles, California

Information on New York, Savannah, and San Francisco will be needed within one month. Information on the rest of the harbors will be needed within the next two months.

Each harbor report should contain a description of the commercial fisheries in the immediate vicinity, the general status of knowledge concerning these species, and any available information concerning the hydrography of the area as it pertains to fisheries. The report

should also contain a list of references to published material concerning these harbors and their fisheries. This information should be based upon the available knowledge of your staff members. If actual data or references to published material are not available on all phases requested, we would appreciate the names of persons who may have the information. The attached outline should serve as a guide to data required and format of report.

Since some information concerning these areas might be available from the staff of the Bureau of Sport Fisheries and Wildlife, especially the Branch of River Basin Studies, it has been agreed that the Bureau of Commercial Fisheries will obtain available information from the Bureau of Sport Fisheries and Wildlife and incorporate this in a single report for each harbor.

In many cases, knowledge of the fisheries and their environment will be incomplete. Therefore, it is suggested that a brief statement be included to describe the research program necessary to provide sufficient information to estimate the effect on fisheries of various uses of such harbors.

We recognize that this memorandum does not contain specific information concerning the use of the data requested. This is necessary because of the sensitive nature of the program involved.

Donald L. McKernan

Attachment

A. Description of commercial fisheries in the vicinity
   1. Commercial fisheries in the harbor and vicinity
      a. edible fin fish
      b. crustacean shellfish
      c. molluscan shellfish
      d. industrial fish
      e. other marine products
   2. Size and extent of fishery for each species
      a. location of fishing area, number of vessels, number of fishermen, market value
      b. types of gear
      c. location of landing ports for fish from area and relative contribution from area to total landings at each port

B. General status of knowledge of each species of fish and shellfish
   1. Migration into, through and out of area
   2. Seasonal pattern of fishery operations
   3. Spawning and feeding activities of species within the area
   4. Importance of area as nursery ground
   5. Location and abundance of known food organisms

C. Information on hydrography of area as it pertains to fisheries
   1. Geographical characteristics
      a. type of harbor or estuary
      b. size and nature of channels, inlets, side channels, etc.
   2. Water characteristics
      a. turbidity
      b. salinity regimes
      c. pollutant characteristics
   3. General pattern of water flow, special tidal patterns, floods, hurricane tides, etc.

D. References to published material concerning harbor and its fisheries
   1. By FWS and other Federal agencies
   2. By State and local agencies and laboratories
   3. By private institutions
   4. By universities and individual scientists

E. Sources of unpublished records and data
   1. Shellfish area charts and maps
   2. Pollution records, etc.
   3. Routine data collections on marine biology and hydrography
   4. Specific scientists with special knowledge of area

OPTIONAL FORM NO. 10

Edw

UNITED STATES GOVERNMENT

Memorandum

TO : Dr. Herbert W. Graham, Lab. Director DATE: Sept. 15, 1961
BCF Biological Laboratory, Woods Hole, Mass.

FROM : Acting Regional Director, BCF, Gloucester, Mass.

SUBJECT: Report on New York Harbor

On September 12 Mr. Gharrett wrote you requesting information for report on Boston Harbor. Similar information which is needed for New York Harbor had been requested from the Milford laboratory, but Dr. Loosanoff has no material in his files which will be helpful to us.

We should appreciate your assistance in preparing the New York Harbor report with information that is already available to you and members of your staff.

The New York report will be needed earlier than the Boston report. We should like to have your comments not later than October 2. The November 1 deadline still holds for the Boston report.

Russell T. Norris

REPORT OF THE CIRCULATION AND FISHERIES IN NEW YORK HARBOR

By Robert L. Edwards

The Commercial Fisheries operating in the vicinity of New York Harbor catch a wide variety of species as indicated below. The fleet is made up of mostly smaller vessels operating out of New York City, Long Island, and several small ports in northern coastal New Jersey. While the quantities landed (given below) far exceed the amount landed by the sportfishermen, sport fishing vessels number in the thousands and constitute an investment in equipment exceeding that of the commercial fishermen.

Of the many species taken commercially, three species - the scup, menhaden, and silver hake predominate. These species are fished in the lower bay as well as offshore of Long Island and Sandy Hook.

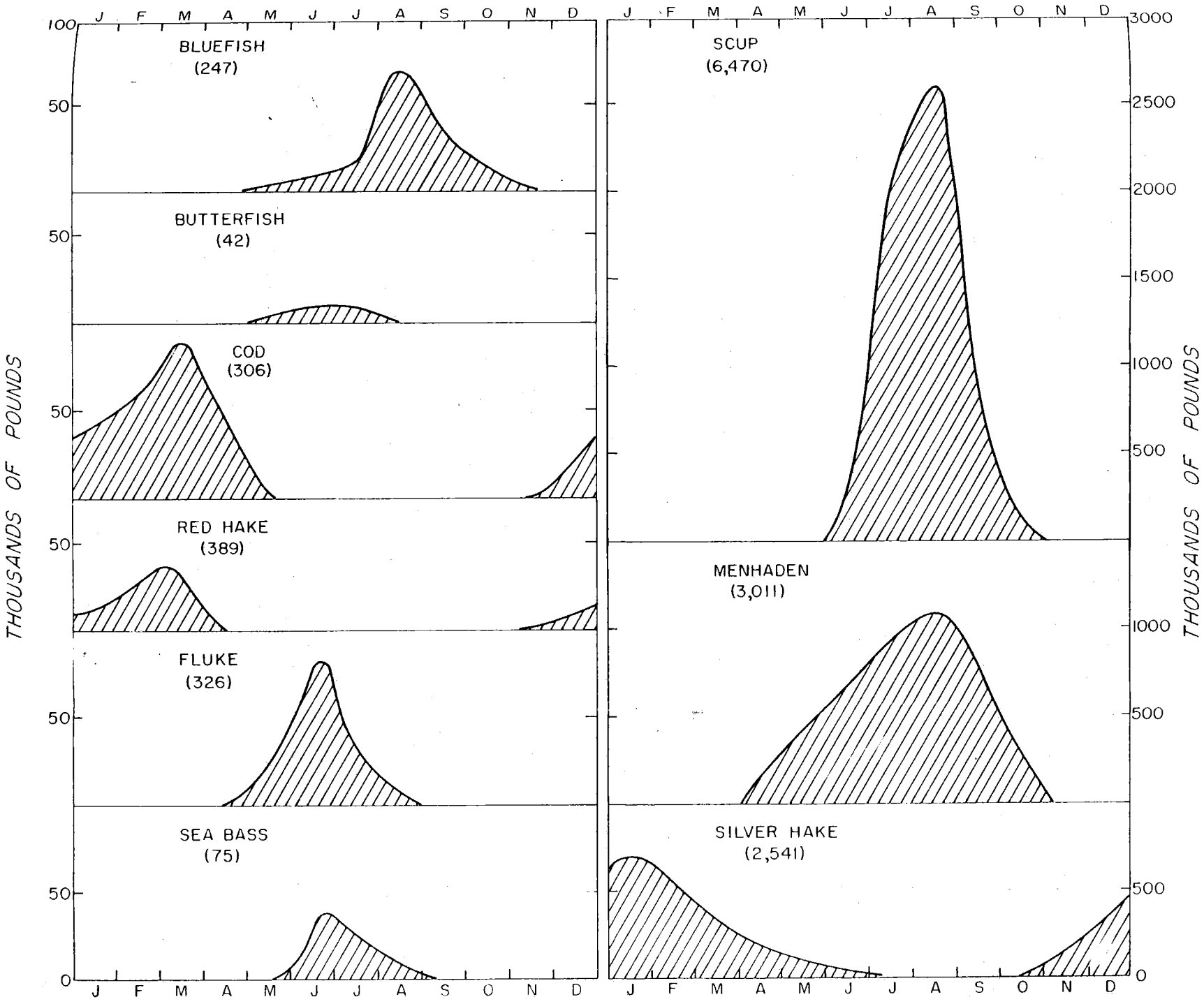
Scup landings exceed the combined landings of all other food fish. The scup as well is a prime sport fish. Sandy Hook Bay is one of the principal scup spawning and nursery grounds and almost certainly this stock supports most of the local fishery.

The menhaden migrates northward in the spring, and considerable amounts are harvested in this area - possibly more than indicated in the available statistics in as much as vessels landing their catch at Wildwood, New Jersey, and Amagansett, Long Island, do fish here occasionally.

The silver hake fishery is a winter fishery (see fig. 1).

Figure 1. Seasonal distribution of landings (and general abundance) of fishes, 1960 total landings in paranthesis.

Figure 1.--Seasonal distribution of landings (and general abundance) of fishes. Total landings for 1960 in parenthesis.


J F M A M J J A S O N D
BLUEFISH
(247)
BUTTERFISH
(42)
COD
(306)
RED HAKE
(389)
FLUKE
(326)
SEA BASS
(75)
SCUP
(6,470)
MENHADEN
(3,011)
SILVER HAKE
(2,541)
100
50
0
3000
2500
2000
1500
1000
500
THOUSANDS OF POUNDS

This species is usually taken by otter trawlers off the New Jersey Highlands.

Other species move in and out of the areas seasonally as shown in figure 1. The cod, red hake (ling) and silver hake are "winter" species, all the rest are "summer" or warm-water species.

The shellfish resources are significant. Surf clams are fished off Long Island by vessels operating out of southern New Jersey as well as Long Island. The offshore grounds off Long Island and New Jersey are excellent hard clam beds. New Jersey tidal flats have a small but consistent soft clam industry. The landings data are presented in table 1.

While the blue crab is locally abundant, it does not support a substantial fishery as does the lobster. However, many people fish for blue crabs as private individuals, and it constitutes a significant "sport" fishery.

Table 1.--Commercial landings from the New York Bight area

Species	Gear	Landings*	Remarks
+Bluefish	OT, HL	146	See fig. 1
Butterfish	OT	42	See fig. 1
+Cod	OT, HL	306	See fig. 1
Red hake	OT	389	See fig. 1
+Winter flounder	OT, HL	97	
+Fluke	OT, HL	326	See fig. 1
Menhaden	PS, TP	3,011	See fig. 1
+Scup	OT, TP, HL	6,470	See fig. 1
+Sea trout	HL, OT	2	
+Sea bass	HL, OT	75	See fig. 1
+Shad	GN	741	
+Striped bass	HL, OT	16	
+Silver hake	OT	2,541	See fig. 1
Sea herring	OT, TP	254	
+Bonito		20	
Black drum	OT	54	Irregular in occurrence
Lobster	OT, Pot	145	Statistics inadequate, may be largely offshore (deep-water) lobsters
Blue crab		13	
Hard clam	Dredge	740	
Soft clam	Shovel	36	Mostly New Jersey
Surf clam	Dredge	436	Mostly off Long Island
Squid	TP, OT	74	

* These commercial landings figures, in 1000's of pounds, are for the year 1960, and are landings made in ports of the New York Bight area. The statistics are not completely adequate for area fished, accordingly these figures should be regarded as maximums. The total area included is just slightly larger than that illustrated in the attached chart.

+ Indicates that species is also a sport fish of importance.

Gear indicated - OT = Otter trawl, HL = Hand line, TP = Trap, GN = Gill net, and PS = Purse seine

List of Useful References Pertaining to the Biology and Productivity of New York Coastal Area

Ryther, J. H., et al.

1958. The dynamics of a diatom bloom. Biol. Bull., 115: 257-268.

Ryther, J. H. and C. S. Yentsch

1958. Primary production of continental shelf waters off New York. Limnol. Oceanogr., 3: 327-335.

Alperin, Irwin M.

1958. The sportfisheries of Great South Bay. NYS Conservationist 13(1): 10-12.

Alperin, Irwin M. and J. C. Poole

1956. Long Island's fluke. NYS Conservationist 11(3): 16-17.

Buller, Raymond J. and Harlan S. Spear

1950. A survey of the sports fishery of the Middle Atlantic Bight in 1948. U.S. FWS, SSR: F 7: 1-20.

Burdick, G. E.

1954. An analysis of the factors, including pollution, having possible influence on the abundance of shad in the Hudson River. N.Y. Fish & Game Jour. 1(2): 188-205.

Curran, H. W. and D. T. Ries

1937. Fisheries investigation in the lower Hudson River. In: A biological survey of the lower Hudson watershed. (Supplement to 26th Annual Report, 1936 (1937). NYS Cons. Dept.: 124-245.

Greely, J. R.

1937. Fishes of the area with annotated list. In: A biological survey of the lower Hudson watershed. (Supplement to 26th Annual Report, 1936 (1937). NYS Cons. Dept.: 45-103.

Hamer, P. E.

1959. Thesis Rutgers Univ. Age and growth studies of the bluefish (Pomatomus saltatrix Linnaeus) of the New York Bight.

Loosanoff, V. L.

1957. Tentative program for rehabilitation of New England and New York oyster fisheries. Milford, Conn., mimeo., 23 p.

Moore, E., et al.

1938. A biological survey of the salt waters of Long Island, Part I. (Supplement to 28th Annual Report, 1938 (1939). A joint survey with the Bureau of Commercial Fisheries.

Nesbit, Robert A.

1954. Weakfish migration in relation to its conservation. U.S. FWS, SSR; F 115: 1-81.

Neville, W. C.

1940. Conservations of striped bass. In: A study of certain marine fishery problems of Suffolk County, Long Island, New York. Survey by U.S. [B.C.F.] in cooperation with Board of Supervisors.

Neville, W. C., C. C. Dickinson and J. R. Westman

1939. Miscellaneous species. In: A biological survey of the surf waters of Long Island, Part I. (Supplement to 28th Annual Report, 1938 (1939). NYS Cons. Dept.: 134-138.

Nichols, P. R.

1958. Effect of New Jersey-New York pound-net catches on shad runs of Hudson and Connecticut Rivers. Fish. Bull., U.S. FWS, vol. 58, 143: 491-500.

Perlmutter, Alfred

1939. An ecological survey of young fish and eggs identified from tow-net collections. In: A biological survey of the salt waters of Long Island, Part II. (Supplement to 28th Annual Report, 1938 (1939). NYS Cons. Dept.: 11-71.

Perlmutter, Alfred, William S. Miller and John C. Poole

1956. The weakfish, (Cynoscion regalis), in New York waters. N.Y. Fish & Game Jour. 3(1): 1-43.

Poole, John C.

1961. Age and growth of the fluke in Great South Bay and their significance to the sport fishery. N.Y. Fish and Game Jour. 8(1): 1-18.

Rathjen, Warren F. and Lewis C. Miller

1957. Aspects of the early life history of the striped bass (Roccus saxatilis) in the Hudson River. N.Y. Fish & Game Jour. 4(1): 43-60.

Schaefer, R. H.

1959. Thesis Rutgers Univ. A study of the growth and feeding habits of the whiting or silver hake, Merluccius bilinearis Mitchill, of New York Bight.

Talbot, G. B. and J. E. Sykes

1958. Atlantic coast migrations of American shad. Fish. Bull., U.S. FWS, vol. 58, 142: 473-490.

Westman, James R.

1946. Some studies of the life history and economics of the fluke. A report printed under sponsorship of the Islip Township (?), Islip, New York.

Westman, J. R. and W. C. Neville

1942. The tuna fishery of Long Island, New York. A survey conducted by U.S. [B.C.F.] in cooperation with the county executives and the Board of Supervisors, Nassau County, Long Island, N. Y. 31 p.

Westman, James R. and Ross F. Nigrelli

1955. Preliminary studies of menhaden and their mass mortalities in Long Island and New Jersey waters. N.Y. Fish & Game Jour. 2(2): 142-160.

Hydrography

The hydrography of the New York Bight has been studies by Ketchum, et al (1951). This particular study should be referred to by anyone wishing detailed information.

Bottom: The bottom is generally a sandy mud. It is relatively heavily littered with various trash ranging from garbage, construction refuse to hard junk of all descriptions.

Tidal cycle: The tidal excursion is relatively short, averaging less than 2 miles. The effect of tide, however, is felt far up the Hudson beyond Albany.

Hudson River outflow: The flow of the Hudson varies seasonally, peaking in the early spring, when the flow may be almost 10 times as great as in October, the period of least flow.

Salinities: The New York Bight salinities vary but little, being lowest during periods of greatest flow of the Hudson River. The effect of dilution is quickly lost, however, and salinities in excess of 30 °/oo usually occur east of Rockaway Inlet and south of Highlands, New Jersey (except close inshore).

Temperature: In the New York Bight the temperature pattern varies in a normal seasonal manner. Thermoclines (and haloclines) exist except during "spring" overturn periods (January-February-March) and "fall" overturn periods (October-November). The temperatures vary from somewhat less than 10° C. at their coldest (February-March) to in excess of 25° C. (September-October) at the surface and about 20° C. at the bottom.

Chart 1.

Currents: The general current picture is shown in ~~figure~~ 2. The Hudson River water (on the surface) is quickly caught up in the strong inshore shelf current moving west and south from Long Island and south along the New Jersey coast.

The following quote from Ketchum, et al (1951) is pertinent to the purpose of this report:

"The observation that only six to ten days are required, on the average, to flush the river effluents through the surveyed part of the New York Bight, shows that there is an active circulation within the area. This rapid flushing has obvious implications in connection with the dispersal of pollutants and helps to explain why there is no great accumulation of the pollution which is contributed daily in large quantities in the river effluents.

The flushing rate of the New York Bight was found to be independent of the rate of river flow. Although the river flow varied nearly ninefold, the maximum variation in flushing time was less than twofold. The effect of increasing river flow was to increase the concentration, and thus the total accumulation, of river water included within any part of the area. The observation that the rate of flushing of the Bight was independent of the volume of river flow is an important relationship, since it suggests that the tidal oscillations, which are also independent of river flow, are predominantly important in the flushing of such regions."

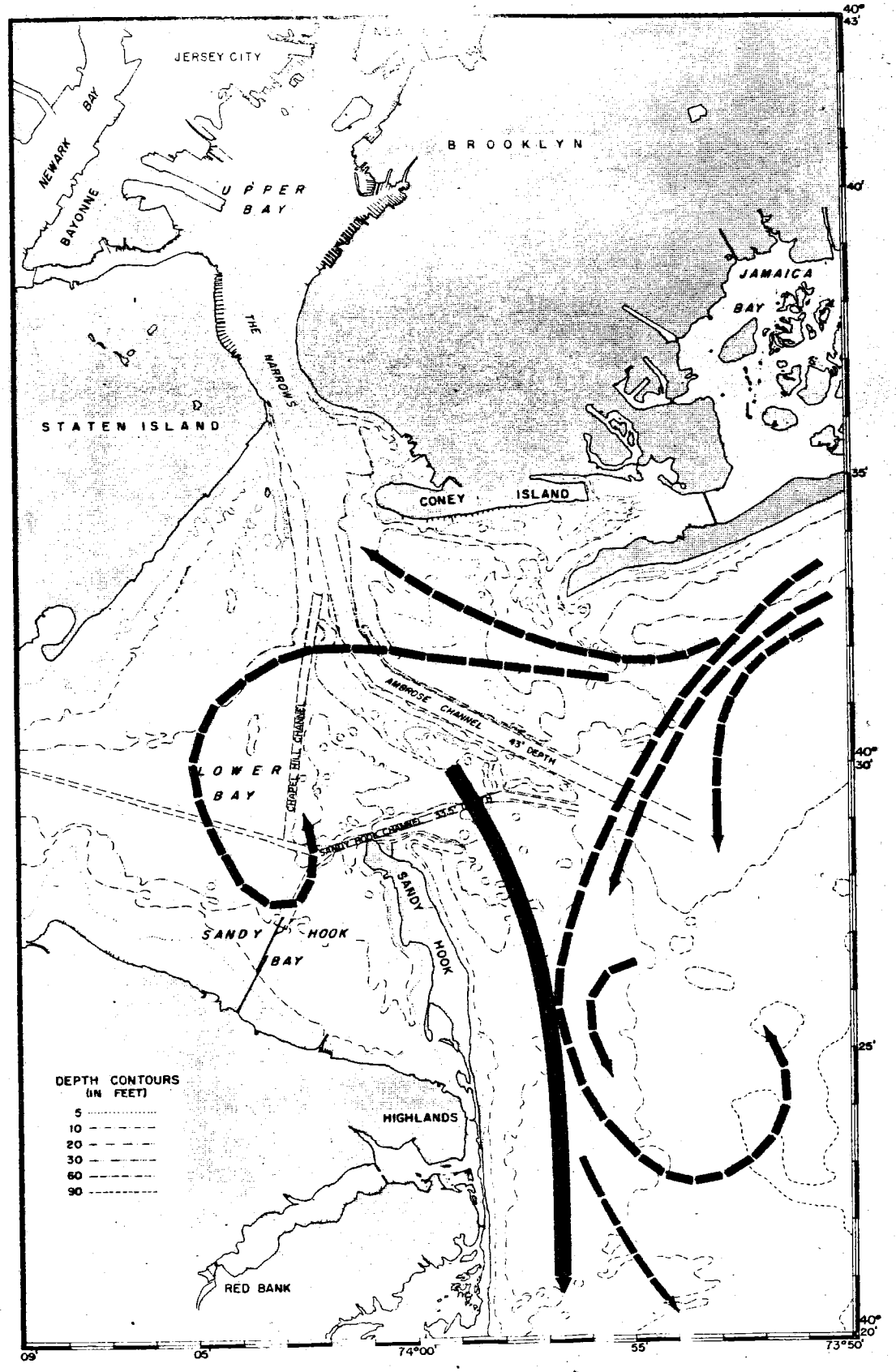


Chart 1.--Average current pattern. Tidal influx from east and at bottom. Surface flow strongly south along New Jersey coast.

USEFUL HYDROGRAPHIC REFERENCES

Ford, W. L.

1949. The field use of a salinity-temperature-depth recorder. J. Mar. Res., 8: 84-96.

Haight, F. J.

1942. Coastal currents along the Atlantic Coast of the United States. Spec. Pub. No. 230. U.S. Dept of Comm. C & GS, 73 pp.

Ketchum, B. H.

1950. Hydrographic factors involved in the dispersion of pollutants introduced into tidal waters. J. Boston Soc. Civ. Eng. 37: 296-314.

Ketchum, B. H.

1951. The flushing of tidal estuaries. Sewage and Industrial Wastes. 23: 198-209.

Ketchum, B. H., H. C. Redfield and J. S. Ayers.

1951. The oceanography of the New York Bight. Pap. Phys. Oceanogr. Meteorol., 12: 46 pp.

Ketchum, B. H., and W. L. Ford.

1952. Rate of dispersion in the wake of a barge at sea. Trans. Amer. Geophys. Union, 33: 680-684.

Redfield, H. C. and L. A. Walford.

1951. A study of the disposal of chemical waste at sea. Report of the Committee for Investigation of Waste Disposal. Nat. Res. Council, Publ. 201: 49 pp.

Webster, J. R. and R. J. Buller.

1950. Drift bottle releases off New Jersey. A preliminary report of experiments begun in 1948. Special Sci. Report. Fisheries No. 10.