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Studies of Circulation and Pollutant Transport
in Massachusetts Coastal Waters

CRUISE REPORT, WHITE HEATH 15-94

(June 7-8 1994)

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Vessel: USCG CUTTER WHITE HEATH
Cruise number: W15-94
Project name: Studies of Circulation and Pollutant Transport in
Massachusetts Coastal Waters
Funding Agency: Joint Funding Agreement (cost share) between the U.S.
Geological Survey and the Massachusetts Water
Resources Authority
Contract start/end
dates: July 15, 1989 - - June 30, 1994
Area of operation: Massachusetts Bay - see Figure 1
Ports: Boston - Boston
Cruise dates: June 7, and 8, 1994; day trips
Chief scientist: Michael Bothner
Scientific party: On June 7: Mike Bothner, Eric Brooks, Michael Casso,
Peter Gill, Carrie Friedman, Marinna Martini, Joe
Newell, Carol Parmenter, Rick Rendigs, and Bill
Strahle.
On June 8: Mike Bothner, Eric Brooks, Michael Casso,
Peter Gill, Carrie Friedman, Carol Parmenter, Rick
Rendigs, Jerry Fries (WHOI) and Rob Wheatcroft
(WHOI).
Ships captain: Chief Warrant Officer Vernon E. Shay, U.S.C.G.
Purpose of cruise:

The objective of the program is to make long-term measurements of currents and sediment transport in the vicinity of the proposed ocean outfall in Massachusetts Bay. Three cruises per year are conducted to recover and redeploy the instrumented moorings and to collect sediment samples at two locations (Fig. 1). This was the 15th cruise in this program which is a Joint Funding Agreement between the Massachusetts Water Resources Authority and the USGS.

Scientific equipment employed:

The BASS tripod and subsurface mooring deployed in February, 1994 and the Acoustic Doppler Current Profiler-tripod (deployed in April) were recovered on this cruise (Figure 2).

Sampling equipment included a teflon-coated Van Veen grab sampler and the 1993 USGS hydraulically damped gravity corer.

Navigation was accomplished by differential GPS using Coast Guard hardware. Loran C time delays were also recorded at each sampling site.

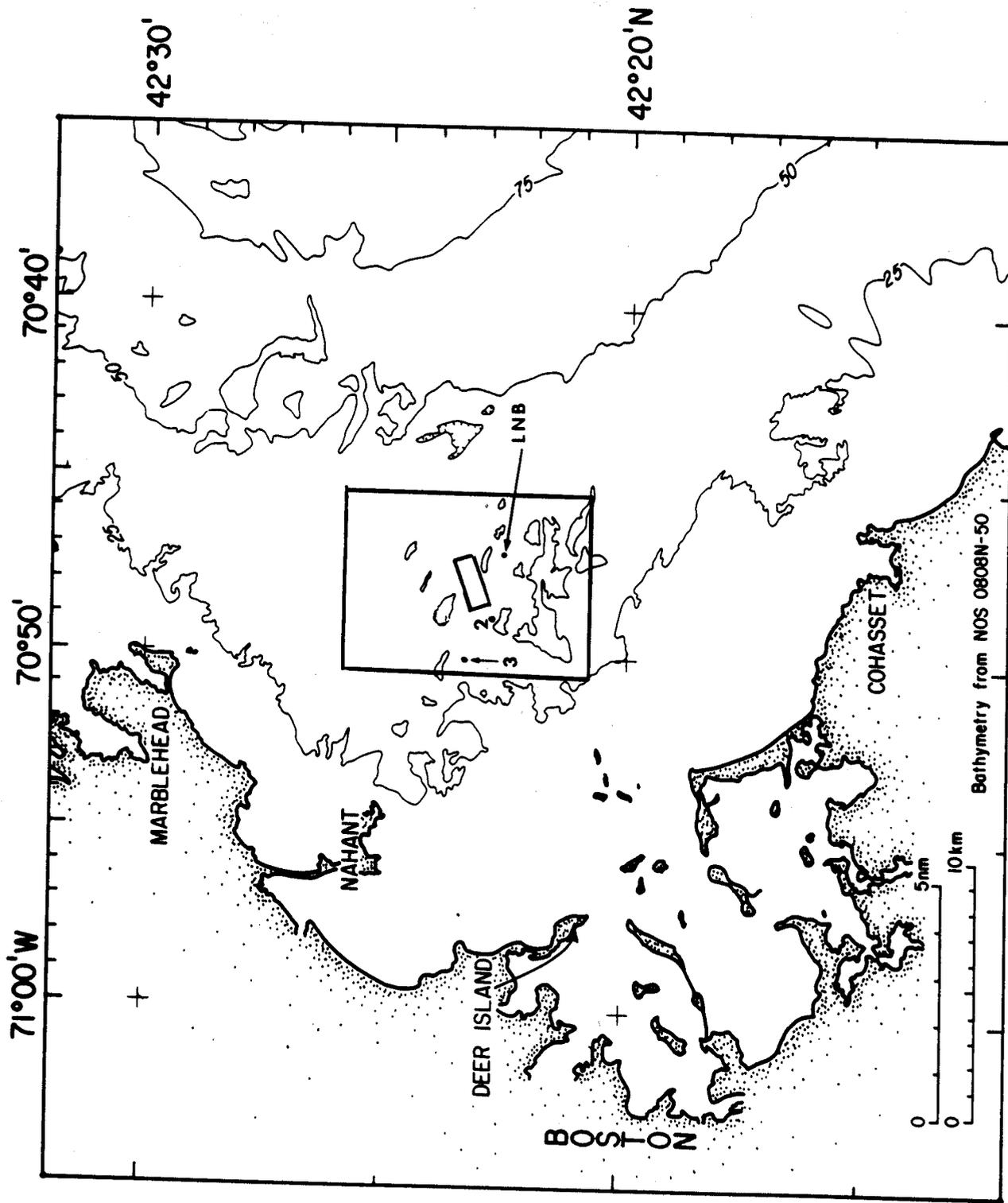


Figure 1. Larger box outlines area of sidescan sonar survey conducted by USGS in April 1989. Smaller rectangle is the proposed site for Boston's outfall diffuser. USGS moorings are located adjacent to the Large Navigation Buoy (LNB) at the approach to Boston Harbor. Sediment sampling locations are indicated by numbers 1 - 3.

U.S. GEOLOGICAL SURVEY LONG-TERM MONITORING STATION MASSACHUSETTS BAY

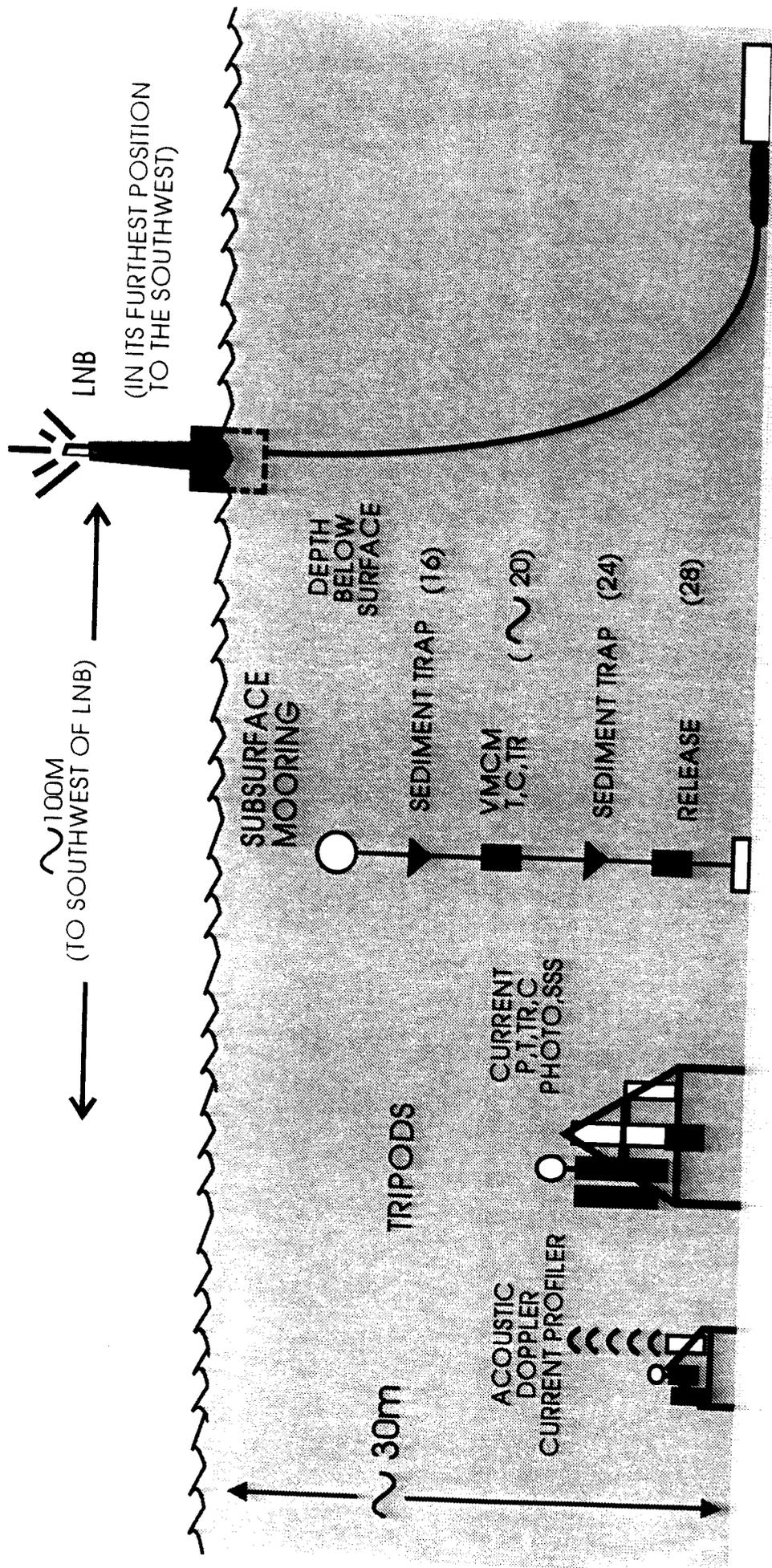


Figure 2. Schematic of long-term monitoring station near the new outfall in western Massachusetts Bay.

Tabulated Information:

Days at sea = 2.

Moorings recovered 3; and redeployed = 2

Sampling stations occupied = 2 (details of samples in Tables 1).

Remarks - June 7:

The first operation was to send release commands to the large tripod. The release operated properly, but the float did not appear at the surface. The ADCP tripod was successfully recovered and the subsurface mooring was recovered and redeployed without incident.

Operations switched to geochemical sampling. Four cores were collected at each of both stations without a misfire. Two cores from each station were cut on the Whiteheath, the other two were archived in the refrigerator to allow x-raying in Falmouth.

After the sampling, we returned to the mooring location and found the BASS tripod float at the surface. The BASS tripod was recovered without incident. Sediment traps and the insitu filtration system seemed to work satisfactorily based on initial field observations. Captain Shay recommended that the rope canister be longer so that the recovery line could be packed more loosely. B. Butman suggested that the cap to the rope canister be fixed with breakable rubber bands that would allow the cap to pull off and ascend with the ball allowing the rope to pay out of a wide open canister.

June 8:

Collected three cores at each of the two sampling locations for Rob Wheatcroft. Two grabs from Station 3 and one grab from Station 2 were also collected.

All operations were completed and we began offloading sampling equipment at 1230 hrs.

TABLE 1. NAVIGATION

STATION: 3 DATE: 07JUN94 TARGET POSITION: 42-23.3961N 070-49.8942W NAD83

TIME	SAMPLETYPE	SAMPLEQUALITY	WATERDEPTHft	LATITUDE	DEG-MIN	LONGITUDE	DEG-MIN	W	LORAN C X	BEARING	RANGE yd	
1250	HDC	OK	126	42	23.3985	70	49.8273	13957.8	25801.9	252	16	
1306	HDC	OK	125	42	23.4030	70	49.8175	13958.0	25802.1	213	15	
1320	HDC	OK	120	42	23.3958	70	49.8197	13958.0	25802.0	275	5	
1336	HDC	OK	123	42	23.3915	70	49.8053	13957.9	25801.9	288	25	
STATION: 3 DATE: 08JUN94												
0829	HDC	OK	122	42	23.3980	70	49.8273	13958.1	25802.0	295	14	
0845	HDC	OK	122	42	23.3925	70	49.8366	13958.1	25802.2	26	7	
0904	HDC	OK	122	42	23.3908	70	49.8443	13958.2	25802.2	55	17	
0925	G	OK	120	42	23.4018	70	49.8352	13958.1	25802.2	172	10	
0945	G	OK	124	42	23.3858	70	49.8439	13958.2	25802.2	35	23	

STATION: 2 DATE: 07JUN94 TARGET POSITION: 42-22.8740N 070-48.8966W NAD83

TIME	SAMPLETYPE	SAMPLEQUALITY	WATERDEPTHft	LATITUDE	DEG-MIN	LONGITUDE	DEG-MIN	W	LORAN C X	BEARING	RANGE yd	
1403	HDC	OK	104	42	22.8762	70	48.8807	13954.5	25792.5	259	22	
1423	HDC	OK	102	42	22.8652	70	48.8710	13954.6	25792.4	294	34	
1442	HDC	OK	100	42	22.8863	70	48.8729	13954.5	25792.6	235	38	
1502	HDC	OK	102	42	22.8773	70	48.8866	13954.6	25792.5	246	15	
STATION: 2 DATE: 08JUN94												
1004	G	OK	110	42	22.8715	70	48.8749	13954.6	25792.5	278	30	
1018	HDC	OK	116	42	22.8753	70	48.8929	13954.7	25792.6	244	5	
1041	HDC	OK	104	42	22.8725	70	48.9038	13954.7	25792.7	74	10	
1102	HDC	OK	110	42	22.8731	70	48.9050	13954.7	25792.6	81	11	

BASS TRIPOD TARGET POSITION 42-22.4383N 070-46.9693W
 DEPLOYED 0917 HRS. 6/7/94, MOST PROBABLE POSITION
 42-22.4396N 070-46.9573W

CTD CAST TAKEN AT 1030 HRS, 6/7/94, 42-22.4354N 070-46.9405

Subsurface mooring TARGET POSITION 42-22.3800N 070 47.0833W
 DEPLOYED 1005 HRS. 6/7/94, MOST PROBABLE POSITION
 42-22.4778N 070-47.0833W