



3780 Wire Drag

Diag. Chart No. 1207-2

Form 504
 DEPARTMENT OF COMMERCE
 U. S. COAST AND GEODETIC SURVEY

State: *Massachusetts*

11-5013

DESCRIPTIVE REPORT.

Hydrographic Sheet No. *3780*

LOCALITY:

Boston Bay

Chasset to

Norfolkhead

1915

CHIEF OF PARTY:

J. H. Heck

3780 Wire Drag

TITLE

Hyd. 3780

Boston Bay

Cohasset to Marblehead

Survey by Wire Drag Party No. 1

May 10 to October 1

1915

Chief of Party- N. H. Heck, Assistant

Scale 1/25,000

Officers in charge of boats or plotting

W. V. Hagar, A. S. Milliken, P. C. Benedict, Geo. C. Olsen, B. C. Freeman

Soundings and effective depths of drag in feet at Mean Low Water.
Color scheme for effective depths same as given in Special Publication No. 21.

Automatic Tide gauge of Metropolitan Water and Sewerage Board at Nut Island

Their staff was claimed by them to have zero 0.64 below Mean Low Water

(This can be determined by examination of seasons observations.)

Highest tide observed	staff reading	12.4
Lowest tide observed	" "	- 1.1

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Descriptive Report
Hyd. Sheet ~~X~~ 3780
Boston Bay

Wire Drag Party No. 1
Chief of Party - N. H. Heck, Assistant.
May 10 - Oct. 1
1915

The area to be covered on this sheet was intended to include all area between the 25 fathom curve and the outlying islands and shores of Boston Bay. The program was not entirely completed- principally because of the great number of uncharted shoals found. This work being the more important did not leave time to complete the deep water work.

During one months work six shoals per square mile were found.

Description of sections will go from south to north as the southern part is complete.

The area bounded as follows was found to be free from shoals of less depth than the maximum drag depth-48 feet at Mean Low Water. Black Can no. 1 (east of Minots Ledge) to Thieves Ledge (eastern extension) to Graves Whistling Buoy to East Point Nahant, thence eastward to line passing about a mile north of the dumping ground buoys, thence south along eastern border of sheet. This area was covered with long drags up to 24000 feet in length.

The area between south edge of sheet and line between Minots Ledge and Boston L. V. (to edge of shoal area).

This area has a different character from that of the rest of the sheet except that near the north shore. The pinnacles and ridges rise from comparatively deep water in some cases to dangerous depths. A great number of shoals were found principally the 25 foot pinnacle and ridge with least depth of 24 feet between Collamores Ledge and Black Can no. 1. 21 feet was found nearly on this line where $6\frac{3}{4}$ fathoms was charted. -----

The section bounded by the line, Minots Ledge to $5\frac{3}{4}$ fm. shoal two miles to north to eastern edge of Ridge of which Thieves Ledge is a part- to Black Can 3 to Hardings Ledge to Black Rock to Minots Ledge L. H.

This area is all of similar character. The bottom is fairly flat and nearly all rocky with small pinnacles or ridges extending only a moderate amount above the general bottom. The rocky character of the bottom extends over larger areas than any other place in my experience.

The net result is to make the region one to be navigated with care especially during northeasterly gales. At ordinary times it can be safely navigated by vessels using proper regard for the shoals as they now appear on the charts. A detailed description of individual shoals would be of little value- a summary of the net effect of the shoals discovered on the effective depth will be more useful.

In the vicinity of Minots Ledge to the northwest a 24 and 25 foot pinnacle were found. About half way between the line Minots Ledge to Black Rock and the line Thieves to Ultonia Ledge an extensive shoal area was developed- about 4 miles long by a mile wide. The eastern part of this ridge has several places with depths from of $5\frac{3}{4}$ fms. The western part has depths from 25 to 28 feet at different places. The development was carried only to the line Black Rock to Hardings Ledge west of which line no dragging was done. Vessels have no occasion except stress of weather for using the undragged area and it should be avoided by much as possible.

North eastward of Hardings Ledge there is another well defined shoal area. Near the ledge 28 feet was found. About two mile from the spindle $5\frac{3}{4}$ fms was found at several places, and 7 fms. was found a mile further to the eastward.

The ridge including Thieves and Ultonia Ledges was not found to be very different from charted. The development of the western part of this ridge seems to have been especially good in previous surveys and few changes were found. East of Thieves Ledge buoy 31 feet was found and the area with seven fathoms or less is quite extensive. The principal change west of the buoy is the 24 foot pinnacles a short distance west of the buoy.

The area between that just described from Thieves Ledge to the ridge of which Graves Ledge is a part, is generally deeper with sharp pinnacles. In the channel approaching Nantasket Roads and the Narrows the south side is generally shoal. Less depths than charted were found in the vicinity of the Bell Buoy off Point Allerton and 23 feet was found to the eastward of Point Allerton Beacon.

A depth of 26 feet was found in the channel. where $4\frac{1}{2}$ fms. was charted.

On Boston and Martins Ledges changes from charted depths were found, on the latter the least depth being 14 instead of 17 feet as charted. The ledge of which Tewkesbury Reek is the least depth extends to the north with a depth of 27 feet about 300 meters north northwest from the Reek.

An extension of Martins Ledge to the eastward with 25 feet makes it necessary for deep draft vessels to give this buoy a good berth.

About 600 meters southeast of Boston Ledge a 33 ft. pinnacle was found and east north east from this a 42 ft. reek of small extent. South of Martins Ledge depths of 39 to 42 feet were found on a shoal of small extent. A 45 foot pinnacle and a 37 ft. were found between Martins and $3\frac{1}{2}$ fathom Ledges. The $4\frac{1}{2}$ fathom shoal SSE from Graves Lighthouse was found to be more extensive than charted. Eastward of Graves Lighthouse a 36 ft. shoal and a ridge with a least depth of 45 feet were developed.

BROAD SOUND.

The eastern part of Broad Sound is generally deep. Only two pinnacles were found, lying between Graves L. H. and Nahant, with depths of 44 and 45 feet respectively. The western part is generally shoal with small rocks projecting only slightly above the general bottom. To the northward and nearly parallel to the line Graves L. H. and Green Island there were found a succession of shoals with depths of 40 to 42 feet. In the immediate approach to South Channel 32 feet was found where $5\frac{1}{2}$ fathoms was previously charted. This loses importance however as the depth in this channel is only 30 feet at mean low water, though it is very close to this depth, and besides is in the outer approach where the sea and swell are greater than in the channel.

The western part of Broad Sound is adequately covered by my special report dated Sept. 23 and there seems little need for repetition as no shoals were found that affect the main channels.

east
Northward of Flip rock a depth of 36 feet was found where greater depths were charted.

EASTWARD OF EGGG ROCK

This is generally deep water with abrupt pinnacles. About a mile eastward of Egg

Reck a 42 ft. pinnacle was found where 14-16 fathoms was charted.

South of Great Pig Rocks several dangerous shoals were found. 21 feet was found where $5\frac{1}{2}$ fathoms were charted. Two pinnacles with 31 feet were found where $7\frac{1}{2}$ fathoms and 9 fathoms were previously charted.

GENERAL RESULTS WITH THE EFFECT ON NAVIGATION.

The principal entrance channels to Boston can be safely approached by vessels of any draft keeping on recommended channels. Vessels approaching from the eastward should not pass too close to Pig Rocks. Vessels beating into Broad Sound should follow the chart carefully.

Vessels approaching the Narrows or Nantasket Roads and passing northward of Thieves Ledge can safely carry the depth that can be taken through the Narrows. Vessels from Provincetown or Cape Cod (not making Boston Light vessel) or from the Cape Cod Canal (especially the latter) are most affected by the results of the season's work. In passing between Thieves and Ultonia Ledge due regard must be paid to the 24 foot shoal found on Thieves Ledge. The reduced depths over the entire area should be considered especially in heavy seas. At other times the chart as corrected is a safe guide, though care should be taken not to pass too close to bottom. This was one of the most difficult areas ever encountered to pass the drag close to bottom without catching at charted depths and there is always the possibility that a slight projection above the wire might have been slipped over. However with ordinary care the chart is now a safe guide.

The shoals discovered east of Minets Ledge are of especial importance with reference to the approach from the Cape Cod Canal.

(Hyd. - 3780)

STATISTICS

COAST OF MASSACHUSETTS

BOSTON BAY.

Date.	Day.	Volume.	Angles.	Miles.	Drag Length.	Soundings		Remarks.
						Number.	Angles.	
1915.								
May 10.	A	1	136	7.5	3600	3	7	
11.	B	"	180	5.5	3600	8	16	
12.	C	"	156	5.5	3950	0	0	
13.	D	"	174	6.0	3950	0	0	
15.	E	"	240	8.5	3900	0	0	
18.	F	"	168	7.0	6100	0	0	
20.	G	"	192	7.2	6250	0	0	
21.	H	"	180	6.5	9000	0	0	
24.	J	2	144	6.5	6000	2	4	End launch of W.D.
25.	K	"	150	8.0	6000	0	0	Party No. 2. co-
29.	L	"	210	6.0	4000	6	12	operated with 3000 ft.
June 1.	M	"	228	4.7	4000	2	4	
4.	N	"	96	2.0	4000	7	16	
5.	O	"	108	3.0	4000	2	6	
8.	P	"	78	2.0	4000	15	34	
9.	Q	"	96	2.2	4000	19	40	
10.	R	3	36	0.8	4000	15	31	
11.	S	"	204	5.5	4000	3	6	
12.	T	"	90	2.0	4000	13	27	
14.	U	"	156	2.8	4000	5	11	
16.	V	"	150	4.0	4000	5	10	
18.	W	"	150	3.5	4000	8	17	
19.	X	"	54	1.8	3200	0	0	
22.	Y	"	168	3.2	4000	12	25	
24.	Z	4	102	2.8	4000	0	0	
25.	A'	"	192	3.0	4000	11	25	
26.	B'	"	210	3.0	3600	8	17	
					2400			
28.	C'	"	180	4.8	3600	1	3	
29.	D'	"	156	2.5	4000	16	38	
			4434	127.8		151	394	End of Fiscal year.
July 3.	E'	"	234	6.0	4000	1	2	
7.	F'	"	216	3.5	4000	9	22	
8.	G'	5	72	2.0	4000	15	36	
10.	H'	"	186	3.0	4000	11	24	
12.	J'	"	264	4.3	4000	5	10	
					2800			
13.	K'	"	138	3.0	4000	26	56	
14.	L'	"	126	2.3	4000	12	26	
15.	M'	"	162	3.5	4000	4	11	
17.	N'	"	54	1.0	3200	7	14	
19.	O'	"	0	0.0	5000	5	15	
20.	P'	"	108	3.4	4500	2	6	
Carried forward, ...				5994	159.8	248	616	

E.M.

Date.	Day.	Volume.	Angles.	Miles.	Drag Length.	Soundings. Number.	Angles.	Remarks.
		Brought forward,	5994	159.8		248	616	
July	22	Q'	6	240	4.0	4500	4	11
	23	R'	"	174	2.3	4000	15	43
	24	S'	"	150	3.3	5000	10	29
						3000		
	26	T'	"	136	2.0	4000	10	25
						3000		
	27	U'	"	150	3.5	3000	8	21
	28	V'	"	144	3.0	5000	4	12
Aug.	7	W'	"	150	4.0	5000	7	21
	10	X'	"	174	3.0	6000	0	0
	11	Y'	7	48	1.0	2000	3	11
	12	Z'	"	132	5.5	24000	0	0
	13	A''	"	180	4.0	4000	10	24
	14	B''	"	108	1.2	4000	12	27
	16	C''	"	174	3.0	4000	9	19
	17	D''	"	60	1.7	4000	0	0
	19	E''	"	174	3.5	4000	4	9
	20	F''	"	84	2.0	4000	2	5
	21	G''	"	78	1.0	4000	12	26
	23	H''	8	132	2.0	4000	0	0
	24	J''	"	132	3.3	4000	8	18
	25	K''	"	36	0.8	2000	0	0
	26	L''	"	144	4.0	4000	8	17
	27	M''	"	156	3.5	2000	0	0
	28	N''	"	108	2.0	4000	3	6
	31	O''	"	96	1.0	4500	1	2
Sep.	2	P''	"	216	7.5	5000	0	0
	3	Q''	"	138	4.0	5000	0	0
	4	R''	9	108	2.0	4000	8	16
	7	S''	"	30	0.5	3000	20	40
	9	T''	"	150	3.5	3000	6	12
						2000		
	10	U''	"	132	2.8	3000	13	26
	11	V''	"	138	3.5	3000	7	14
	13	W''	"	240	4.5	2000	10	20
	15	X''	"	168	3.0	1500	6	12
	16	Y''	"	72	2.0	1200	5	10
	17	Z''	"	210	7.0	4000	0	0
	20	A'''	10	126	1.5	3500	7	28
	23	B'''	"	174	2.5	3000	16	64
	30	C'''	"	282	4.5	3000	8	16
Oct.	1	D'''	"	246	4.3	2000	0	0
						1500		Covered splits
						1200		" "
Totals,			11,604	277.5		484	1200	

E.M.

Plane table positions

Object and description	Latitude	D.M.	Longitude	D. P.	Height	Remark Desc. fig. etc.
Cliff house, Cohasset	42° 14'	499	70° 45'	958	40 ft	

Plane table positions

Object and description	Latitude	D.M.	Longitude	D. P.	Height	Remark Bore.
Cliff house, Cohasset	42° 14'	499	70° 45'	958	40 ft	fig. stf.

VEC.
Dec. 8, 1915

L. P. J.

HYDROGRAPHIC SHEET 3780.

Boston Bay, Massachusetts, by Assistant N. H. Heck,
in 1915.

TIDES.

	Nut Island ft.
Approximate low water or plane of reference on staff	0.6*
Lowest tide observed " "	-1.1
Highest " " " "	12.4
Mean range of tide	9.0

*The best determined mean low water computed in Section of
Tides reads 1.2 ft. on staff, and is therefore 0.6 ft. higher
than that to which the soundings have been reduced.

Applied to compilation of chart 246 7/13/45 G.H.S.

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A