

2399

Diag. Chart No. 77-1

U. S. COAST AND GEODETIC SURVEY.

Henry S. Pritchett, Superintendent.

State: *Maryland*

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 2399

LOCALITY:

*Chesapeake Bay, vicinity
of Poole Island*

1898.

CHIEF OF PARTY:

C. C. Yates, Assistant

50902

U. S. Coast and Geodetic Survey
Henry S. Pritchett, Superintendent.

Descriptive Report
accompanying
Hydrographic Sheet of Chesapeake Bay
vicinity
Poole Island, Maryland.

By the parties in charge of
Assistant D. B. Wainwright U. S. C. & G. S.
from June 16th to July 13th, 1898.
and
Assistant Charles C. Yates, U. S. C. & G. S.
from July 14th to December 2^d, 1898.

Steamer Endeavor

1898

Report submitted by
Assistant Charles C. Yates, U. S. C. & G. S.

Instructions from the Superintendent

(A)

Treasury Department
Office of the Coast & Geodetic Survey
Washington D.C. May 19th 1898

D. B. Wainwright
Assistant C. & G. Survey
Washington D.C.

Sir:-

On completion of the hydrographic sheet on which you are now engaged, you will please report to Assistant H. B. Ogden for duty under his direction. You will continue in command of the Steamer "Endeavor" and will be employed still on the hydrography of Chesapeake Bay but you will receive detailed instructions for this work from Assistant Ogden.

x x x x x x x x x x x x x
x x x x x x x x x x x x x

Respectfully yours
(Signed) Henry S. Pritchett
Superintendent

(B)

U.S. Coast and Geodetic Survey
Office of the Superintendent
Washington D.C.
July 8th 1898

Mr Charles C. Yates
Assistant C. & G. Survey
Steamer "Endeavor"
Tolchester Beach, Md.

Sir:-

You will please relieve Assistant D. B. Wainwright in command of the steamer "Endeavor" and continue the work in which the vessel has been engaged under the direction of Assistant H. B. Ogden, receiving from him all detailed instructions.

x x x x x x x x x x x x x x x
x x x x x x x x x x x x x x x

Very respectfully
(Signed) Henry S. Pritchett
Superintendent

Instructions from Assistant H. B. Ogden

By authority of the preceding instructions from the Superintendent, frequent verbal and written instructions were received from Assistant H. B. Ogden.

These instructions covered almost every detail of the work and were of very great value and help to Assistant C. E. Yates who became Chief of Party on July 14th, 1898.

Most of the changes in the scheme and methods noted in this Report, were either made at Asst. Ogden's suggestion or after a consultation with him.

Officers of the Party

In order to better understand the conditions under which the work on the Sheet was executed, there is given on the following page, a list of the officers of the "Endeavor" with their ranks and occupations, who were attached to the Endeavor between June 16th and Dec. 2^d, 1898.

Name	Rank	Occupation	Attached to Vessel	Detached from Vessel
			1898	1898
D. B. Wainwright	Asst. U.S.C. & V.S.	Chief of Party and Observer to July 13 th	-----	July 13 th
C. C. Yates	Asst. U.S.C. & V.S.	Executive and Observer to July 13 th Chief of Party and Observer to Dec. 2 ^d	May 9 th	-----
* E. R. Frisby	Aid. U.S.C. & V.S.	Observer	July 19 th	Nov. 22 ^d
* G. S. Phelps	Aid. U.S.C. & V.S.	Observer	July 20 th	-----
* D. B. Wainwright Jr.	Yeo. 2 ^d Cl. U.S.N.	Observer	May 12 th	July 13 th
* Wm Bauman Jr.	Chief Yeo. U.S.N.	Draftsman	July 18 th	-----
J. C. Richards	Chief Mch. U.S.N.	Chief Engineer	-----	Oct 4 th
Harry Ely	Chief Mch U.S.N.	Chief Engineer	Oct 20 th	-----
* A. C. L. Roeltz	Yeo. 2 ^d Cl. U.S.N.	Recorder	May 10 th	-----
* C. E. Terry	Yeo. 2 ^d Cl. U.S.N.	Recorder	Aug 29 th	-----

* Note Without any wish to convey the slightest idea of depreciation, these officers previous to the date of their joining the Endeavor, were without the least practical knowledge of the particular occupations assigned to them. When the fact, here stated, is considered, it can be seen that the character and quality of the work, must have been to some extent affected, by the inexperience of these officers; especially at first.

List of records, sheets, etc, relating
to the resurvey of Chesapeake Bay, vicinity
of Poole Island, Maryland

- Volumes - I - VI - Steamer soundings
- " I - VIII - Launch "
- " I - V - Whaleboat "
- " I - II - Tides - Tolechester Beach
- " I - " - Poole Island
- " I - " - Worton Creek
- " I - " - Fairlee Creek
- " I - Angles -

Fair Journals or Duplicates of all the
above 25 volumes.

- 1 - Smooth hydrographic sheet - all complete,
except, the inking of soundings, contours
and title.
- 1 - Tracing, showing contours of 1898, from
above sheet.
- 1 - Box of 21 bottles, containing specimens of
bottom, of area covered by above sheet.
- 1 - Tracing, showing contours of 1846, from
the sheets of the original survey.

1 - Descriptive Report

Location of Survey

General location is shown by area inclosed by red lines, on the following section of the U.S.C. & G.S. Chart of Delaware and Chesapeake Bays, and can be described, as follows:-

Main Channel of Chesapeake Bay in the vicinity of Poole Island, Maryland, including Worton and Fairlee Creeks and excluding Back, Middle and Gunpowder Rivers. The northern boundary is a line joining Worton and Abbey Points. The southern boundary is a line running East and West from a point about $1\frac{1}{4}$ miles northeast of Bear Range Light.

(For section of Chart see next page)

Claremont

12^h 40^m
19 22
2.0 ft.

Havre de Grace

22^h 02^m
28 42
1.5 ft.

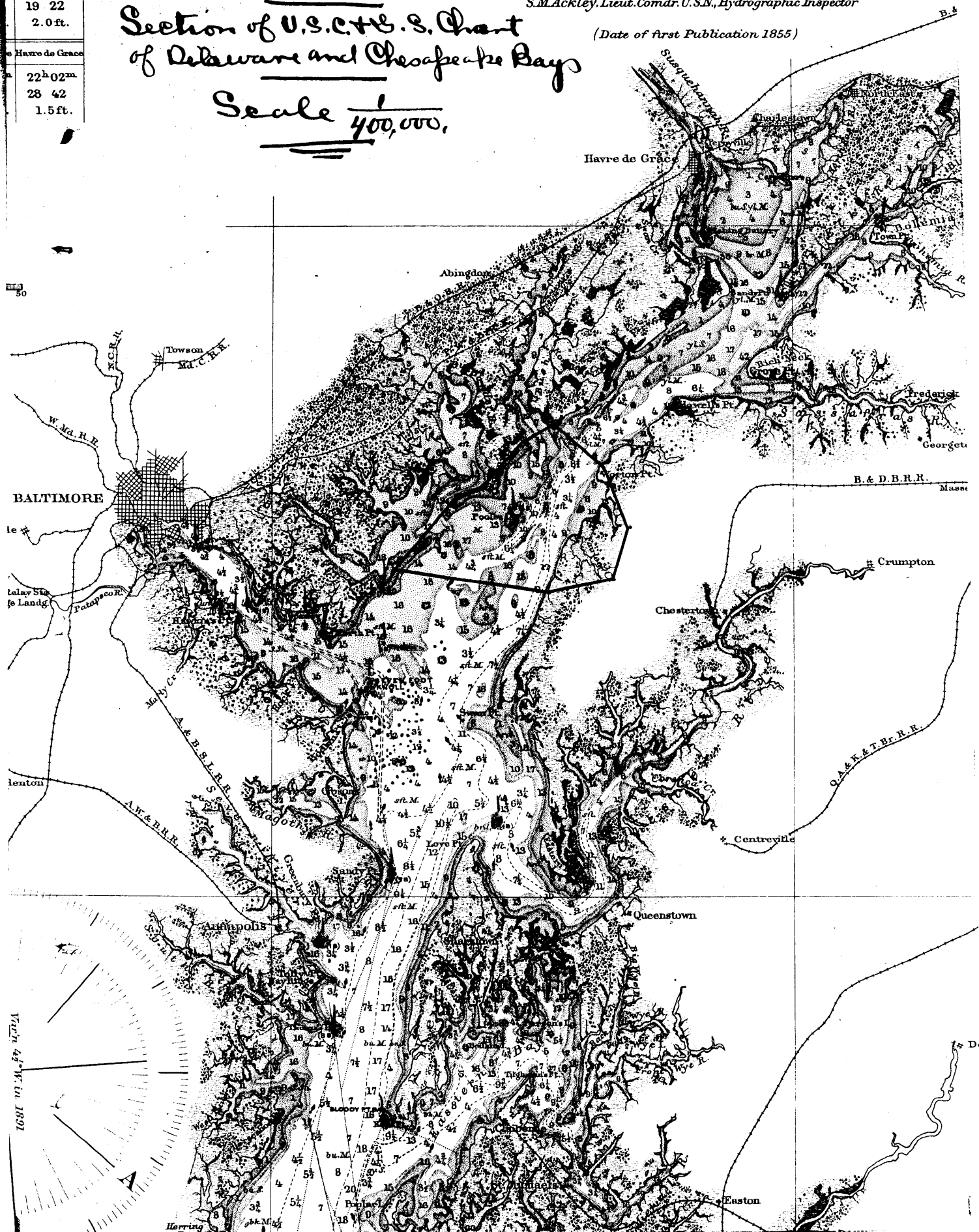
7

Published Jan. 1892 T.C. MENDENHALL, Superintendent
Verified: B.A. Colonna, Assistant in charge of Office
S.M. Ackley, Lieut. Comdr. U.S.N., Hydrographic Inspector

Section of U.S.C. & G.S. Chart of Delaware and Chesapeake Bays

(Date of first Publication 1855)

Scale $\frac{1}{400,000}$



Projection

The original projection, furnished by the Office, was in excellent condition when received, and all of the stations were found to fit perfectly, with angles taken to locate new signals.

It was expected that most of the work would be done by the steamer and as the number of the officers would only permit one hydrographic party at a time, Captain Wainwright decided to do the plotting himself and use the original projection as a steamer sheet, thus saving the extra time of the smooth plotting.

After Capt. Wainwright was detached from the steamer, all of the officers, except the commanding officer, were new to their work, and it was found necessary to alter the original scheme to suit the new conditions.

The old projection was then used as a "steamer sheet" and a new projection constructed. The shore line of the new projection was taken from tracings obtained from the original topographic sheets of 1897 and 1898.

Before starting the plotting on the new projection, several triangulation stations were occupied with a theodolite, and the horizontal directions of all the old and new signals ^{were} taken. All of the directions fitted and plotted the signals satisfactorily, and it was decided, that the new projection was as perfect as the old.

Scheme

The original scheme, as laid out, called for cross lines to be located on the sheet by an estimate of ^{the} eye, at approximately 300 metres apart, and longitudinal at approximately

400 metres apart, and, then, splits wherever needed.

The cross and longitudinal lines were not run at exactly right angles to each other on account of the general shape of area to be surveyed.

When Captain Wainwright left the "Endeavor" and took command of the "Blake", it was decided to abandon the plan of trusting to the judgment, for the distance apart of the lines, and to adopt a fixed scheme. This change was practically made necessary, by the fact, that the entire party of officers, except the chief of party, were entirely new to their work.

In laying out the fixed scheme, the distances apart of 300 metres for normals and 400 metres longitudinals were adopted as maximum distances; and then, the soundings previously taken and those on the published chart, were carefully studied, for indications of the scheme best adapted to the development of each particular locality.

As the work proceeded, however, so many "splits" and "splits within splits" were found necessary, by the remarkable character of the bottom, that all semblance of a fixed scheme, except as to general direction of the lines, has practically disappeared.

Tides

Tide stations were established at different times at Tolchester Beach, Poole Island Light House, Worton Creek and Fairlee Creeks.

The tide staff at Tolchester was fastened to a pile of the wharf and was connected by levels with a benchmark established by the hydrographic party of the "Blake" in 1897. The data furnished the "Office" by the "Blake", when considered on the ground, was manifestly absurd; but, after

making an assumption that a level backsight was a foresight, and a foresight was a backsight, it gave a datum plane of M.L.W. that was reasonable. This plane was adopted in the reduction of a portion of the soundings, and was found to agree within one tenth with the datum plane determined by simultaneous observations with Poole Island. The correction of one tenth was afterward applied to the soundings before they were plotted.

The Poole Island staff was fastened to a scantling driven 3 to 4 feet in the sand bottom, in about 5 feet of water. The zero of this staff was connected by levels with a bench mark on the Light House, at the beginning and at the end of the observations, and was found to have remained practically undisturbed in level.

Poole Island Light House, was one of the stations of the Chesapeake Bay Simultaneous Tidal Observations of 1898, and the datum plane of mean low water was obtained from the "Office", but as this agreed very nearly with that previously adopted, no corrections to the reduced soundings were found necessary.

The tide staff in Worton Creek was fastened to the Wharf at Gale's Landing. The reading of mean low water was determined by simultaneous observations with Poole Island.

Afterward this reading was used in connection with simultaneous observations with the Sassafraz River tide station, established by the party of H. L. Marandin, Assistant. C. & B. S.

It was also found necessary to establish a tide station in Fairlee Creek, on account of the considerable difference of level of the inside and outside water surface due to the narrow entrance to the creek.

The small range of tide in the vicinity of Poole Island made the reductions at any one tide station ^{except in Fairlee Creek} good for all parts of the sheet.

Descriptions of each tide station and benchmarks are entered in their respective tide books.

Currents

No special observations were taken of the currents. In the neighborhood of the shoals around Poole Island, the currents seemed to have a variable character, as to both direction and velocity.

In many places near "8 foot lumps", the velocity was frequently estimated as being at least 2 knots. The "lumps" could often be easily located by the rush of the water around and over them.

When soundings were taken over this area of "shoals and holes", it was found almost impossible to keep the boat on a straight line, even when running on a good range.

During thick weather these currents are particularly dangerous to vessels passing near and to the east of Poole Island, especially to those drawing over 7 feet at low water.

Soundings

Until July 14th, were taken to only the nearest foot, as had been the custom on the "Endeavor", for some time previous to that date. After the 14th, soundings were taken, as follows:—

To 4 fathoms	to the nearest	$\frac{1}{4}$ foot
" 10	"	" $\frac{1}{2}$ "
" 25	"	" 1 "

Sounding lines after the 14th, could be therefore expected to cross within a smaller percentage than those previous to that date. This should be especially true in depths less than 24 feet.

However, as most of the work before the 14th was done by the steamer, and therefore either in deep water or over an even bottom, the fact that soundings were taken to only the nearest foot, does not seem to have affected the crossings as much as might be thought probable.

Although, the leadsmen who did all of the soundings were experts of long standing, many soundings were lost on account of unexpected and sudden changes in the bottom.

A change from a regular run of soundings ranging from 8 feet to 14 feet to a jump to 7 fathoms and no bottom, was a very common experience. The next sounding frequently came back to 8 feet and would consequently, also, be lost. In fact, so many "no bottoms" occurred that it was considered impracticable and of little value to look them up. At first, one might think that the "no bottoms" must be miscasts, but they happened so frequently, and at times when it could be seen the greatest skill was being used, by the leadsmen, that no doubt exists as to their reality, although their relation to neighboring soundings would indicate otherwise. In one place to the northeast of Poole Island, a sounding of over 80 feet was obtained between two soundings of a little over 8 feet each. The existence of this 14 fathom hole was afterward verified.

Previous to July 14th, most of the soundings were taken "at will". In fact, the irregular bottom seemed to make this almost a necessity, but

after a time, with practice on the part of the recorders and leadsmen, most of the soundings and positions were taken on time. When on account of a very deep or unexpected sounding, the time was past before the sounding was taken, the actual time of the sounding was recorded and the intervals changed to suit the new depth.

When the pencil soundings on the smooth sheet were plotted, the soundings taken "at will", were found very troublesome to locate properly.

Whenever the bottom was regular, it was found that soundings could be taken at the following intervals of time or less:-

To	2 fathoms	at intervals of	15 seconds			
"	4	"	"	"	20	"
"	6	"	"	"	30	"
"	7½	"	"	"	40	"
"	10	"	"	"	60	"

The speed of the launch was so regulated, as to get about twice the number of soundings as could be plotted. The speed of the steamer was usually about 5 knots and when twice as many soundings as could be plotted were not obtained at this speed, the depths were so great as to make additional soundings of no importance.

During the first part of the work with the launch, the above rule was not strictly followed. All leadlines were carefully seasoned and remarked before they were used on the regular soundings, and consequently a correction for lead line was a very rare occurrence. Nevertheless, all leadlines were always tested before and after each day's work.

Signals

The lumber used in building signals was brought from Baltimore on the "Endeavor". The old triangulation signal at Δ Miller Island was found standing and only required a covering of boards and white wash. The new triangulation signals erected by the party of Assistant F. W. Perkins consisting of center pole and supports, were found at Lego, Abbey and Worton stations. The pole and surface marks of Handy had disappeared, but the marks in the ground were of such a character, as to make its location within a few feet, almost a certainty.

Several water signals were erected by "pumping" poles (30 to 35 feet long) about 10 feet into the bottom and fastening cages or barrels on top. These signals were found to be very satisfactory and remained standing until the ice carried them away in the winter. After the change in command on July 14th, no work was done on this sheet for about four weeks. During that time several severe storms occurred and a number of signals were blown down, and required rebuilding when the work was resumed.

Rough Plotting

Previous to July 14th, the number of officers, only made one hydrographic party possible. Up to that date, most of the work was done with the steamer; two officers doing nothing but observing and the third plotting on the smooth sheet and running the steamer. After July 14th, when all of the officers except the recorder and Chief of Party

were new to their work, the steamer^{work} was carried on by two officers; the right angle observer doing the plotting on a rough sheet and running the steamer. At first, the work of running the launch, was distributed between the two observers, the same as on the steamer, but toward the end of the work on the sheet, the right angle observer did the plotting, and ^{the} left angle observer took charge of the boat. In the Creeks, where the shoreline was used to locate the end of lines, the plotting was done with great ease on the rough sheet, and shortly after transferred to the smooth sheet, under the supervision of the officer who had charge of the sounding boat, doing the creek work. To one looking at the sheet or doing the plotting of positions in the "Office", it might appear in many cases, that a better selection of objects could have been made; but this is not always true, as frequently, haze, light fog, the Sun, etc, made other selections than those made, practically impossible.

Smooth Plotting

All of the smooth plotting, including the construction of the projection, the plotting of the soundings in pencil, and the drawing of the contours, was done by a draughtsman*, who was entirely unfamiliar, both in theory and practice, with any phase of the work he had to do. Although the draughtsman's work was carefully and neatly executed, and was inspected daily by the Chief of Party, it is thought, that the finding of a number of mistakes is to be considered natural, when the plotting of the sheet is reviewed by the Office. These will probably be found, in the selection.

* Draughtsman by trade, but not familiar with Survey work.

and positions of the soundings. This phase of the plotting was made very difficult by the remarkable uneven bottom. A large amount of the plotting of the soundings was done in Baltimore Harbor, while the steamer was lying near a number of coal wharves, undergoing repairs. The consequent coal dust, combined with such a mass of pencil figures, did not improve the appearance of the sheet.

The character of the bottom, hard, soft, etc has not been plotted. This will have to be done when the soundings are inked.

All soundings were plotted, as follows: -

To 4 fathoms	to the nearest	$\frac{1}{4}$ foot
" 10	"	$\frac{1}{2}$ "
" 25	"	1 "

Contours

After July 14th, the original smooth sheet was used as a steamer sheet and a new projection constructed. This put back the smooth plotting of soundings, so much, that it was decided to plot them roughly and in ink, on the steamer sheet, in order to determine the additional development necessary.

On account of a large portion of the sheet, covering an area of extremely uneven bottom, the drawing of contours was not only found difficult, but sometimes involved much uncertainty as to their positions. It was, therefore, decided, not to attempt the drawing of

contours on the smooth sheet (which was already very much crowded with pencil figures) but to make a *tracing for the Office, of the contours drawn on the rough steamer sheet. As stated above, the location of many of the contours was made very difficult by the holes, lumps and generally uneven bottom. To have made their location certain, it would have required from two to three times as many soundings as were obtained. The rough sheet of plotted soundings and contours was, therefore, submitted to the Inspector of Hydrography and Topography. He decided, that the areas involving the uncertain contours, were shown to be dangerous to navigation, by the soundings already obtained (i.e. to vessels drawing more water than the least depths on the numerous lumps already located.) and therefore must be shown as dangerous areas on the chart.

The character of the representation of these areas, on the chart, being thus determined, it was thought, that although additional soundings might add to the completeness of the survey, they would not add sufficiently to its practical value to warrant the cost of the additional soundings.

Bottom

In general, all the lumps and shoal places, surrounded by deeper water, present a bottom composed of broken shells; and, all of the holes and deep places have black mud bottoms. Where the depth is at an average, especially near the eastern shore, sand or yellow mud is frequently found.

*Tracing delivered to the Office on Aug 14th, 1899

Numerous lumps, with about 8 feet of water over them, are scattered all over the area surveyed. A number of these were investigated and without exception they were composed of broken shells. The depth on all of these lumps seems to be nearly a foot greater than at the time of the original survey. Captain D. B. Wainwright advances a theory, that, at that time, the lumps were composed of live beds of oysters or other shell growth, but since then they have died out and are now, consequently, disintegrating and washing away.

Knowledge of the Character of the bottom in this vicinity is practically of no value to navigators. Almost any sounding from 8 feet to 80 feet, with its corresponding typical bottom, can be expected at any one of a number of places.

Specimens of Bottom

21 specimens of the bottom were taken at different points of the area covered by the sheet. These specimens were put up in bottles, labeled, numbered and forwarded to the Office at the same ^{time} as this report.

The position, at which each specimen was obtained, was determined by sextant angles and at the same time a sounding was taken. These positions and soundings were recorded in Vols V & VI of the steamer soundings. As these books are not at hand, at the time of writing, the positions and depths are not to be found in the following table of the specimens.

Each bottle has been numbered on the cork, as well as on the label and can thus be identified with the record relating to it, which has a corresponding number.

Table of Specimens

No.	Appearance when obtained	dk	gy.	sp.	S
1		dk	gy.	sp.	S
2		bk	M.		
3	"	bk	M.		
4		gy	M.		
5		M. + brk	Sh.		
6		brk	Sh.		
" 7	"	bk	M.		
8		bk	M.		
9		gy	M.		
10		brk	Sh		
11		gy.	M		
12		gy	M.		
13		bk	M.		
" 14	"	gy	M		
15		brk	Sh		
16		bk	M		
17		dk.	gy	M.	
18		bk.	M		
19		gy.	sp.	S.	
20		fine.	S. + Sh		
" 21	"	gy.	M. + brk	Sh.	

Note:- wherever (O. or M.) occurs on the labels
M. alone should have been written

Lighthouse, Buoys & Sectors

The only light house on the sheet is that on Poole Island. It has two red sectors showing to the eastward. The limits of these sectors are plotted and were located on shore by small flags, at night, and then located by sextant angles afterward.

The buoys were all carefully located by sextant angles. Since the resurvey, two new buoys have been placed on the area covered by the sheet. One is a wreck buoy to the southward of Poole Island and the other is a red buoy marking the outer edge of the shoal making out between Norton and Fairlee Creeks.

This latter buoy was placed in its present position by the Light House Board upon the recommendation of the Chief of Party to the Superintendent. In the winter, all can and nun buoys are replaced by spar buoys, to keep them from being carried away by ice. A note to this effect should be placed on the Chart.

Commerce

The commerce in the part of the Bay covered by the sheet is very small.

It is chiefly, as follows:—

- 1- Steamer, 2 trips daily during the summer, between Baltimore & Tolchester Beach
- 1- Steamer, 1 trip each way, each day, between Baltimore and Port Deposit, stopping at Tolchester Beach both ways.

1- Steamer - 1 trip one way, each day, between Baltimore and points on the Sassafas River, stopping at Poole Island and at Gale's Landing and Buck Neck Landing in Worton Creek.

The Commerce passing through the Bay in the vicinity of Poole Island is somewhat greater. It consists chiefly of steamers running from Baltimore to Philadelphia, via the Delaware and Chesapeake Canal, and small sailing vessels plying between various small settlements, farms, etc., and Baltimore. These small vessels carry produce to Baltimore and return with household and farm stores. Considerable fishing for market is also done by small sailing vessels. Pleasure boats, sail and steam, are plentiful in this vicinity, especially during the ducking season. U.S. Torpedo boats occasionally pass through from the Delaware Bay bound for the Capes.

The courses followed by these various vessels are somewhat as follows:-

The excursion steamer plying between Baltimore and Tolchester Beach, makes nearly a straight line from North Point buoy to a point a little to the northward of Tolchester Beach. The steamer running to Port Deposit goes to the south of Front Range Light and comes ^{up} the main channel along the east shore. The steamer stopping at Poole Island and in Worton Creek and all the steamers from Baltimore with a light draft that will permit them to go to the Delaware Bay via the canal, take the western course as marked on the chart passing close to but to the east of Poole Island. The branch of this

Course marked on the Chart as passing to the west of Poole Island, is very rarely used by any class of vessels.

All vessels bound down or up the Bay, not stopping at Baltimore, follow the main Channel along the eastern shore.

There is practically no commerce, other than that of small sailing vessels, passing up or down the Middle, Back, Gunpowder and Bush Rivers.

Harbor Improvements

No recent harbor improvements have been made in this vicinity.

Wharves

The following wharves are marked on the sheet, and vessels, drawing the depth of water given along their outer ends, can come alongside.

Tolchester Beach

Poole Island

Gales Landing

Buck Neck Landing.

Shipyards, Weather Reports, Coal, Pilots etc

All these are to be found or obtained at Baltimore.

Weather

No special observations were made of the weather. The Chesapeake Bay squalls, however, are worth mentioning on account of their

violence, frequency and unexpectedness. During August and September of 1898, they came generally at night and on several occasions with such violence as to make two anchors necessary to keep the Endeavor from dragging anchor.

Water

No tests of the amount of salt in the water of the Bay in this vicinity, were made; but, it contains very little salt as it has only a slight brackish taste.

In general, it remains clear and is not clouded by the inflow from adjacent rivers.

While engaged on the Survey, the Endeavor made several trips up the Bay and it was noticed that the dividing line, between the clear water of the Bay and the clouded water from the Susquehanna River, seemed to be between the mouth of the Sassafras River and Poole Island. The region between these two points might therefore be considered the settling grounds of the material carried into the Bay by the river at its head. This may be the reason for the uneven bottom and ^{for} the changes that have taken place in depth since the survey of 1846.

Oysters

No oyster beds of any importance are found in the area covered by this sheet. During the

oyster season from the beginning to Dec. 23, the Endeavor was frequently in the neighborhood of Poole Island. The oysters farthest up the Bay, as far as could be

judged from the oyster boats, and information given by the oystermen, were in a small bed located near the eastern shore about one mile to the northward of Tolchester Beach. This is interesting, when it is remembered that it is said by the old inhabitants, that many years ago, oysters were plentiful much farther up the Bay. It seems probable that the dying out of the oysters is due to the stripping of the ^{trees from} watersheds of the Susquehanna and other rivers entering the Bay, thus causing more frequent and increased floods. This would freshen the water and result in greater deposits of silt, etc. in the Bay, which would be detrimental to oyster growth.

As indicated in another part of this report, this additional deposit, assumed to be carried down by floods, is the probable cause of the apparent decrease in depth, in the vicinity of Poole Island.

Contours of 1846

In order to compare the Survey of 1846 with the resurvey of 1898, a tracing was made of the contours of the original hydrographic sheets of 1846. This tracing was then reduced in scale to correspond to the tracing of the contours of 1898, previously mentioned.

An inspection of these two tracings, will show many changes in depths... Some of the changes are ^{probably} only apparent, as they occur in places where the soundings of 1846 are insufficient in number, or not properly distributed. No attempt will be made here to describe the changes in detail, as they can be much better

seen and understood, by a study of the tracings.* The average depth of 1898 seems to be less than the depth of 1846. This is especially seen in the Channel passing close to, but to the east of Poole Island, and in the main Channel along the Eastern Shore, near the mouths of Worton and Fairlee Creeks.

One of the causes of the "filling up" has been noted in another part of this report. An exception to the general shoaling has also been noted under the subtitle of Bottom, in the case of the "lumps" composed of shells.

Shorelines of 1846 & 1898

As a study in physiography, a comparison of the shorelines shown on the tracings of the contours of 1846 and 1898, might be considered very interesting.

Considerable changes, in the way of diminution in the size of the marsh islands along the western shore, are noticeably shown.

* Attention is called, to the 4 fathom and 5 fathom channels which extend from the Capes to abreast of Poole Island where they now "peter out". In 1846, their northern limit was near the mouth of the Passapatan River.

Title and Statistics for the Sheet

26

U.S.C. and Geodetic Survey

Henry S. Pritchett, Superintendent

HYDROGRAPHY

of

CHESAPEAKE BAY ~~MARYLAND~~

^{vicinity of}
~~Vicinity of~~ Poole Island, Maryland.

~~By the~~

By the parties in charge of

Assistant D.B. Wainwright, U.S.C. & G.S.

^{From June 16th to July 13th, 1898.}
Assistant Charles C. Yates, U.S.C. & G.S.

^{From July 14th to December 2^d, 1898.}

STEAMER ENDEAVOR

Begun June 16, 1898

Ended December 2, 1898

Scale $\frac{1}{20000}$

OBSERVERS

Assistants, D.B. Wainwright, U.S.C. & G.S. Charles C. Yates, U.S.C. & G.S.

Aids, E.R. Frisby, U.S.C. & G.S. G.S. Phelps, U.S.C. & G.S.

Yeoman, D.B. Wainwright Jr. U.S.N. and Carpenter Mate, Ole Andersen, U.S.N.

RECORDERS

Yeoman, C.E. Terry, U.S.N. and Yeoman, A.C.L. Roeth, U.S.N.

COXSWAINS

Quartermasters, L.T. Larssen, O.F. Anderson, Seamen, A. Nilsen, T.M. Pedersen

O. Johnson and, G.S. Hertzfelt

LEADSMEN

Boatswains Mate, E. Ward, Quartermasters, L.T. Larssen, and, O.F. Anderson

Tide Observers

Yeoman, C.E. Terry, U.S.N. Seamen, Sven Olsson, H.D. Beier, T.M. Pedersen

and, T. Andersen, U.S.C. & G.S.S. "Eagre"

Statistics

Date 1898		Letter	Number of—				Vessel
			Vol.	Angles	Sound ings.	Miles	
June	16	[Red] A	I	76	292	11.1	Steamer
"	17	B	I	92	463	12.0	"
"	20	C	I	232	1121	25.6	"
"	23	D	II	116	480	13.6	"
"	24	E	II	292	1119	33.0	"
"	25	F	II	70	252	7.0	"
"	29	G	III	130	599	14.7	"
"	30	H	III	82	410	9.6	"
July	9	I	III	246	914	27.8	"
"	11	K	IV	284	921	27.4	"
August	5	L	IV	116	379	10.9	"
September	9	M	IV	58	318	6.2	"
"	10	N	V	160	650	11.5	"
"	13	O	V	88	225	5.5	"
"	22	P	V	30	60	1.0	"
"	23	Q	V	70	292	6.5	"
November	19	R	V	* —	—	—	"
"	21	S	V	10	24	0.8	"
"	22	T	VI	204	733	15.5	"
"	29	U	VI	74	310	6.0	"
December	1	V	VI	74	148	6.2	"
"	2	W	VI	* —	—	—	"
Total		22	6	2504	9710	251.9	* Specimens of bottom

Statistics

[illegible]

Over—

Statistics

Date 1898	Letter	Number of—				Vessel
		Vol.	Angles	Soundings	Miles	
June 29	^[Green] a	I	48	509	4.7	Whaleboat
July 8	b	I	146	443	8.0	"
August 16	c	I	184	1224	14.3	"
" 31	d	II	150	761	7.3	"
September 12	e	II	120	672	7.3	"
" 13	f	III	135	1118	12.0	"
" 14	g	IV	32	361	3.6	"
" 16	h	IV	52	533	6.0	"
" 20	i	IV	55	403	4.4	"
" 21	k	IV	91	657	6.4	"
" 23	l	III	70	340	3.7	"
November 21	m	III	106	486	4.0	"
" 29	n	V	108	479	4.0	"
December 1	o	V	16	181	1.0	"
" 2	p	V	13	153	0.8	"
Total	15	5	1326	8290	87.5	

RECAPITULATION

Steamer	22	6	2504	9710	251.9	
Oil Launch	25	8	2978	14188	225.3	
Whaleboat	15	5	1326	8290	87.5	
Grand Total	62	19	6808	32188	564.7	Geographical
						36 ☐ Not Miles

Statistics of Field Work executed by

Assistant D. B. Wainwright U. S. C. & G. S.
 From June 16th to July 13th, 1898
 Assistant C. C. Yates U. S. C. & G. S.
 From July 14th to Dec. 2nd, 1898

Date of beginning field work June 16th, 1898Date of closing field work December 2nd, 1898 *

RECONNAISSANCE:

Area of, in square statute miles

Lines of intervisibility determined as per sketch submitted

Number of points selected for scheme

BASE LINES:

Primary, length of

Secondary, length of

Beach measurements, length of

Number of days employed in measurements of base

Number of days employed in re-measurements

TRIANGULATION:

Area of, in square statute miles

Signal poles erected, number of

Observing tripods and scaffolds built, number of

Observing tripods and scaffolds built, heights of

Days occupied in opening and verifying lines of sight, number of

Stations occupied for horizontal measures, number of

Stations occupied for vertical measures, number of

Geographical positions determined, number of

Elevations determined trigonometrically, number of

GEODESIC LEVELING:

Elevations determined by spirit-leveling of precision, number of

Lines of geodesic leveling, length of

LATITUDE, LONGITUDE, AND AZIMUTH WORK:

Latitude stations occupied, number of

Pairs of stars observed for latitude, number of

Average number of observations on a pair

Longitude stations, telegraphic, number of

Longitude stations, telegraphic, number of nights on which signals were exchanged

Longitude stations, chronometric, etc., number of

Azimuth stations, number of

Number of nights of observations for azimuth

Number of stars observed for azimuth

* Between these dates the Chesapeake Bay Simultaneous
 Tidal Observations were carried on and the hydrographic
 survey of Chesapeake Bay, vicinity of Kent Island
 practically completed. — C. C. Y—

GRAVITY DETERMINATIONS:

Number of pendulum stations occupied.....

MAGNETIC WORK:

Stations occupied for observations of the magnetic declination, number of.....

Stations occupied for observations of the magnetic dip, number of.....

Stations occupied for observations of the magnetic intensity, number of.....

TOPOGRAPHY:

Area surveyed in square statute miles.....

Length of general coast-line in statute miles.....

Length of shore-line of rivers in statute miles.....

Length of shore-line of creeks in statute miles.....

Length of shore-line of ponds in statute miles.....

Length of roads in statute miles.....

Topographic sheets finished, number of.....

Topographic sheets, scales of.....

Topographic sheets, limits and localities of:

HYDROGRAPHY:

Dates	June 16 th to June 30 th	July 1 st to July 13 th	July 14 th to Dec. 23	Totals
Area sounded in square geographical miles.....	9	4	23	36
Number of miles (geographical) run while sounding.....	146	63	356	565
Number of angles measured.....	1300	676	4832	6808
Number of soundings.....	6123	2248	23817	32188
Number of tidal stations established.....	1	---	3	4
Number of specimens of bottom preserved.....	---	---	21	21
Current stations, number of.....	---	---	---	---
Hydrographic sheets finished, number of.....	---	---	1	1
Hydrographic sheets, scales of.....	---	---	1/20,000	1/20,000

Hydrographic sheets, limits and localities of:

Main Channel of Chesapeake Bay, vicinity of Poole Island, Maryland, including Worton and Fairlee Creeks and excluding Middle, Gunpowder and Bush Rivers. Northern boundary is a line joining Worton and Abbey Points. Southern boundary is line running East and West from point about 1/4 miles northeast of Rear Range Light House.

PHYSICAL HYDROGRAPHY:

[illegible]

✓ Sheet 2399.

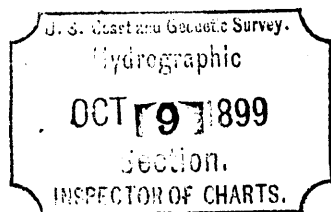
No. 18. TREASURY DEPARTMENT

The survey covering this sheet is an excellent one in every way. Attention is directed to the remarkable configuration of the bottom. The crossings could not be better and there are checks on the most abrupt changes in depth. —

The plotting of the soundings in pencil, however, was entirely inadequate to show character of Hgdy. The pencil marks had at the same time become so faint that no possible use could have been made of the sheet. In the pencil plotting an insufficient number of soundings were shown; the spacing was irregular; a large number of important soundings were not shown; it was not possible to draw curves in many places; ^{no bottoms were given.} The sheet is now practically a replotted one and shows from two to three times (in some places even four times) as many soundings as the pencil plotting.

W. C. W.

Oct. 6. 1899.



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Treasury Department,
OFFICE OF THE COAST AND GEODETIC SURVEY,

Washington, D. C., , 1

SUBJECT:
