

4903

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DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY E. Lester Jones, Director	
C. & G. SURVEY L. & A. JUL 5 1928 Acc. No.	
State. South Carolina	
DESCRIPTIVE REPORT	
Hydrographic Hydrographic	Sheet No. 1 4903
LOCALITY	
Wando River	
Vicinity of Charleston	
Beresford Creek and Junction with Wando River	
19 28	
CHIEF OF PARTY	
R. F. A. Studds	

4903

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET

- No. 1 -

February 10 to March 16, 1928.

Wando River, Vicinity of Charleston, S.C.

Launch ELSIE, R.F.A.Studds, In Charge.

Instructions dated: December 17, 1927.

INTRODUCTION

This is the first of five sheets on a scale of 1 to 5,000, covering a survey of the Wando River. The sheets begin at a junction with the limit of H2190 and T2163 in the vicinity of Beresford Creek, and end in the vicinity of Woodville, about 1 mile from Ward's Bridge, which marks the end of the river.

The five sheets join each other and are laid out so that they will include the creeks bordering the river.

GENERAL

The party operated from the Launch ELSIE, using Charleston as a base for supplies. As the Launch was not sufficiently large to accommodate all members of the party, it was necessary during cool weather to make daily runs from Charleston or Cainhoy. In warm weather some of the men could be housed on deck and therefore, the Launch anchored on the working grounds.

The ELSIE was used in sounding a few channel lines, but a sufficiently slow speed could not be obtained and consequently small boats were used for practically all of the hydrography.

SURVEY METHODS

CONTROL was furnished from a scheme of third order triangulation extended up the Wando River from the line Francis Marion - Remly, in the vicinity of Charleston. Hydrographic signals were located by theodolite cuts from the main scheme stations and the cuts were plotted directly on the boat and smooth hydrographic sheets. One station, "But", was located by a sextant fix.

TOPOGRAPHY was not done on a separate topographic sheet, but was executed directly on the boat hydrographic sheet. It was planned to use the topography on the Geological Survey Quadrangles, "Melgrove" and "Fort Moultrie". Paragraph 5, Instructions 10-LE dated December 17, 1927, contained the provision that any necessary revision of these quadrangles could be executed on the boat or smooth hydrographic sheets. It was found that the shoreline disagreed to such an extent that it was necessary to rerun it entirely.* This was done by a combined use of the plane-table and sextant, and by references from the hydrographic survey.

Topographic features, other than the shoreline, were not verified, as it is believed the Geological Survey is sufficiently accurate to chart these. The mouth of Beresford Creek was surveyed, but the remainder of the creek was transferred from the Geological Survey maps.

HYDROGRAPHY. Diagonal lines in the Wando River, did not give a sufficiently close development and this system was abandoned in favor of crosslines. The channels as located by these crosslines were developed by running lines parallel to their axes. Because of the short length of some of the lines, more fixes than are usually taken, were necessary.

Soundings taken in Beresford Creek and its tributaries were located by noting the time abeam recognizable features, such as bends, points, indentations, etc. Only sufficient soundings were taken that would indicate the depths in the creeks. No effort was made to develop any channel or shoal.

TIDES. For the reduction of soundings in the area confined to this sheet, a portable automatic tide gauge was installed at Cainhoy on the Wando River. A comparison was made between this gauge and the primary tide gauge maintained at Charleston, S. C.

Because of the remoteness of the gauge from the area surveyed and because of the difference in lunitidal intervals between the two gauges, a time correction of 17 minutes earlier was applied to the readings on the Cainhoy gauge and a ratio of ranges of 0.9 was used.

RESULTS

Sufficient overlap of shoreline was run to insure a good connection with the survey of 1894, shown on original Topographic Sheet T2163. The shoreline shown by a solid black line is the portion surveyed by this party. Shoreline represented by a broken black line has been transferred from Geological Survey maps and shoreline in blue pencil is from Topographic Sheet T2163. A careful transfer was made of the topography from the boat to the smooth hydrographic sheet, due consideration being given to the distortion of the former.

The hydrography appears to cover the area adequately. The survey overlapped soundings shown on original Hydrographic Sheet H2190 to some extent and a comparison was made of the two sheets. There seems to be some slight differences in depths and this is thought to be due to changes in the river, during the elapsed years between the two surveys. The differences are unimportant and the depth curves can easily be adjusted.

Twenty feet seems to be the maximum draft that can be carried within the limits of this sheet. The controlling depths lie about 350 meters south of the west side of Beresford Creek entrance.

* Apparently Mr. Stokes should have stated that the shoreline of Wando R. and the mouth of Beresford Cr. was re-surveyed. E.O.E.

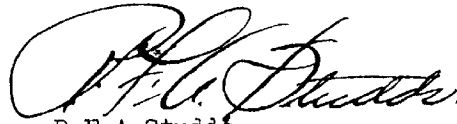
Several disagreements are noted in "crossings". The first 25' sounding between Position 6E and Position 7E, the 17' sounding on Position 2F, and the first 19' sounding between Positions 25 and 26G, appear to be one fathom too deep. In each of these cases the shoaler sounding closeby should be accepted. Notes have been entered in the sounding records giving the opinion of the Chief of Party. The disagreements of a few feet in soundings obtained along channel lines are due, in all probability, to the effect of sounding with and against the current. Sounding with the current or at slack water proved to be too costly and best results were sacrificed in order to make a more rapid progress. If channel depths for charting were selected from lines run with the current or at slack water, a more nearly correct indication of the bottom would probably be shown.

CONCLUSION


The extent of regular traffic on the Wando River consists of a few small freight boats and a tug operated by the Tuxbury Lumber Company for towing logs. This latter has a draft of 8 feet and makes four round trips weekly, running both day and night.

Beresford Creek, insofar as could be determined, is used only by shallow draft oyster boats and small launches.

There are no settlements within the area of this sheet.


R.F.A. Studds,
Jr. H&GE, USC&G Survey.

Approved:


R.F.A. Studds,
Chief of Party,
USC&G Survey.

H Y D R O G R A P H I C S H E E T

-No. 1-

STATEMENT OF CHIEF OF PARTY

(in accordance with Paragraph 174, Special Publication 143)

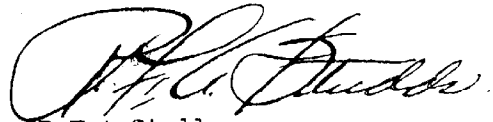
This sheet and its accompanying records have been inspected and are approved.

In the compilation of the chart for this area, two sources of information are available. Hydrography and shoreline are given on this sheet and both shoreline and land features can be obtained from Geological Survey maps.

It is noted by the Chief of Party, from a comparison of the two surveys of the area on this sheet and on adjoining sheets, that at some points common to the two surveys the shoreline agrees and at other points there are large disagreements. These latter do not always occur at points where erosion or accretion is liable to have happened. For this reason it is believed that the shoreline on the Geological Survey maps has been erroneously located and the difference between the two surveys is not due to a difference of control, which would cause the entire survey to be shifted.

In correlating the two surveys, therefore, it is recommended that the shoreline on this sheet be accented and the adjacent topography transferred from the Geological Survey maps. In regard to this latter, it is suggested that the inner limit of the topographic feature, e. g. marsh, woods, etc., be held rigid and the feature extended or retracted at the river edge, as the condition might be.

The point of shoal extending out from the east side of the entrance to Beresford Creek appears to be quite dangerous and could well be marked with a black or horizontally striped buoy.



R.F.A. Studds,
Jr. H&GE, USC&G Survey,
Chief of Party.

STATISTICS FOR HYDROGRAPHIC SHEET, FIELD NO. 1

Date	Letter	Volume	Positions	Soundings	Miles, Statute.
1928					
Feb. 10	A	1	16	62	1.8
15	B	1	45	271	6.9
16	C	1	91	576	15.9
20	D	1	33	160	5.3
21	E	1,2	88	408	8.2
24	F	2	17	79	2.0
27	G	2	84	391	5.9
Mar. 1	H	2	23	147	3.8
8	J	2	16	64	1.4
13	K	2	21	101	1.9
16	L	2	15	81	1.7
TOTALS.....			449	2340	54.8
Area.....			0.5 sq. st. miles.		

HYDROGRAPHIC SHEET

- N O. 1-

TIDAL DATA

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The tide station used for the reduction of soundings on this sheet was established by this party at Cainhoy, South Carolina, Latitude 32° 55.7' N.; Longitude 79° 49.9' W.

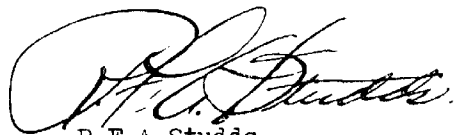
A comparison was made with the Primary Tide Station at Charleston, South Carolina, maintained by the Washington Office

A mean difference of Lunitidal intervals between the stations was 52', the interval being greater at Cainhoy. A difference of 0.8 foot in range was found, the range also being greater at Cainhoy.

For the reduction of soundings within the area of this sheet a correction of 17' earlier was applied to the tides at Cainhoy and a ratio of ranges of 0.9 was used.

The data for the Cainhoy gauge is as follows:

	Referred to zero of staff.	Referred to Plane of Reference.
Highest Tide Observed	11.5	8.0
Mean High Water	9.5	6.0
Mean Tide Level	6.5	3.0
Mean Low Water (Plane of Reference)	3.5	0.0
Lowest Tide Observed	1.4	-2.1



R.F.A. Studds,
Jr. H & G E,
Chief of Party, USC&G Survey.

Sec. of Field Records.

E.A.L.

July 24, 1929.

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
2 volumes of sounding records for

HYDROGRAPHIC SHEET 4903

Locality: Wando River, Vicinity of Charleston, S. C.

Chief of Party: R. F. A. Studds in 1928

Plane of reference is mean low water, reading
3.6 ft. on tide staff at Cainho, Wando River.

~~ft. below B.M.~~

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

Paul C. Whitney

Chief, Division of Tides and Currents.

Section of Field Records
Report on Hyd. Sheet No 4903
Beresford Creek & Junction with Wando River, South Carolina
Surveyed in 1928

Instructions dated Dec. 17, 1927 (Lieut. R. F. A. Studds)

Chief of party - R. F. A. Studds

Surveyed by - R. F. A. Studds

Protracted and plotted by - L. C. Johnson

Verified and inked by - H. G. Erskine

1. The records conform to the requirements
2. The plan and character of development conform to the requirements of the General Instructions.
3. The plan and extent of the survey satisfy the specific instructions.
4. With a few exceptions, the sounding line

crossings are satisfactory, in the work in Kando River. There are no cross lines in the creek work.

5. The information is sufficient for drawing the usual depth curves in the Kando River. In Beresford Creek and adjoining creeks, the curves can only be partially drawn.

6. The junction on the western edge of the work in Kando River with the old work, H. 2190, is satisfactory. There are some differences here, but the curves can be made to join up. On the eastern limit the junction with the contemporary sheet, H. 4904 is satisfactory.

7. The usual amount of field plotting was well done by the field party. It was necessary to accept the field plotting of lines in Beresford Creek and adjoining creeks. ✓

8. Character and scope of surveying —

In the Kando River the ground is well covered and the work controlled by three point fixes. Shoal development is sufficient with the exception of the bare shoal noted at pos 10D, in Lat. $32^{\circ}52.3'$ and Long. $79^{\circ}52.33'$.

North of the mouth of Beresford Creek, there

Section of Field Records

Report on Sheet # H-4903
Chief of Party, R. F. A. Stubbs
Projected by, L. C. Johnson
Verified & inked by G. G. Eustine

Surveyed in 1978
Surveyed by, R. F. A. S.
Soundings plotted by, L. C. J.

1. The sounding records were complete and legible except that the location of the beginning of lines at the mouth of Bensford Creek was not very definite.
2. The projecting was very good. Over fifty-five percent of the positions were checked (due to the short lines and sounding in creeks) and less than one-half of one percent of the total were erroneously plotted. In some places the boat and survey sheets disagreed as to location of positions. This was probably due to the distortion of the boat sheet.
3. The soundings were plotted very accurately. Three-quarters of one percent had to be re-plotted.
4. The sheet was clean and legible.
5. The drafting conformed to the General Instructions.
6. A twelve foot curve at the mouth of Bensford Creek was not inked (Lat. $37^{\circ}52'40''$ Long $79^{\circ}52'30''$). The crossing of lines 1B-2B and 24B-25B places fifteen foot soundings inside of the "natural location" of the twelve foot curve. As mentioned in 1 above, the location of

the beginning of lines at the mouth of the creek is not definite and in all probability 1B should be shifted to the west.

7. On STANDARD #470 the name "Sauden Creek", (marking the same creek as Sauden Creek on H-4903), is circled in red and has the following note; "Erase, see same name near Yellowhouse Hwy to westward. G.L.F. C.P. 3/24/28". The name has been left in pencil on H-4903.
(erased)

Respectfully submitted
Frank G. Estline

August 21, 1929

is no definite control, the location of soundings is very approximate and the work should be considered as more in the nature of reconnaissance.

9. No additional work is recommended.

Reviewed by P. L. Johnston

Sept. 25, 1929.

Approved:

A. M. Sobieralski

Chief, Section of Field Work.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4903

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. 1

REGISTER NO. **4903**

State South Carolina

General locality ~~Vicinity of Charleston~~

Locality Beresford Creek and Junction with Wando River

Scale 1:5,000 Date of survey Feb. 10 to Mar. 16, 1928.

Vessel Launch ELSIE

Chief of Party R. F. A. Studds

Surveyed by R. F. A. Studds

Protracted by L. C. Johnson

Soundings penciled by L. C. Johnson

Soundings in ~~fathoms~~ feet

Plane of reference Mean Low Water

Subdivision of wire dragged areas by -

Inked by F. G. Erskine

Verified by F. G. Erskine

Instructions dated December 17, 1927

Remarks: Sheet 1 of 5 Sheets of Wando River.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4903 -

The following statistics will be submitted with the
cartographer's report on the sheet:

Number of positions on sheet . 449 .
Number of positions checked 251 .
Number of positions revised . 2 . .
Number of soundings recorded . 2340 .
Number of soundings revised . 18 . .
Number of signals erroneously
plotted or transferred 0 . . .

Date: - August 21, 1929 - - - - -
Cartographer: - Frank G. Perkins - - - - -