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COAST AND GEODETIC SURVEY

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C. & G. SURVEY, LIBRARY AND ARCHIVES

SEP 13 1908

Acc. No.

Treasury Department, U.S. COAST AND GEODETIC SURVEY

Superintendent

State: PORTO RICO.

DESCRIPTIVE REPORT.

Hydrographic Sheet No. 2938a, 2934, 2935

LOCALITY: 2936, 2937, 2938

North and West Coasts of Porto Rico, from San Juan Harbor to Pt. Jiguero.

1908

CHIEF OF PARTY:

P. A. WELKER Assistant.

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U. S. SURVEY,
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Sep 26 1919
Acc. No.

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with
Hydrog

Div. of CLT. Nos. 901-1 & 903

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: Porto Rico

DESCRIPTIVE REPORT.

Sheet No. 2934

LOCALITY:

North Coast
of
Porto Rico

1908

CHIEF OF PARTY:

P. A. Welker

POST-OFFICE ADDRESS: See file at office.

TELEGRAPH ADDRESS:

EXPRESS OFFICE:

Department of Commerce and Labor

COAST AND GEODETIC SURVEY Steamer "BACHE".

Hyannisport, Massachusetts.

September 15th., 1908.

Mr. O. H. Tittmann,

Superintendent, Coast & Geodetic Survey,

WASHINGTON, D. C.

Sir:-

1. In obedience to "Instructions and Memoranda for Descriptive reports, 1887"; I beg leave to submit the following report on Hydrographic Sheets Nos. 2938a, 2934, 2935, 2936, 2937 and 2938.

2. The first mentioned is on a scale of 1 : 80000 and the remainder are on a scale of 1 : 20000. The work represented upon the six sheets was executed during the months from March to May, 1908, and comprises a hydrographic survey of the north and west Coasts of Porto Rico from near the entrance to San Juan harbor on the north coast to Point Jiguero on the west coast, extending out from shore to a distance of approximately five nautical miles.

3. In the execution of the work the plan called for in your instructions of December 4th., was followed as near as practical.

4. The method of locating positions of soundings used in the survey was by simultaneous sextant angles and the three point problem. The signals had been located by means of triangulation, the plane table, and the sextant. Lines were run at various distances apart, according to the necessity shown by indications in the soundings. Where close development was necessary, lines were run from 25 to 200 meters apart, while in the very deep water, only occasional soundings were taken, at an average of about a mile apart.

Mr. O. H. Tittmann, No. 2.

5. The region covered by the survey is without a harbor that might be designated as a safe anchorage for vessels under even ordinary conditions, although there are two localities where vessels can approach the shore and anchor temporarily, under favorable conditions; these are at Arecibo, on the north coast, and at Aguadilla, on the west coast. Almost the entire coast of the region is bold and rocky, with numerous outlying reefs and rocks, and it is exposed to the heavy swell and surf caused by the prevailing north-east trade winds. Even landing places for small ^{all} boats are scarce and at times the shore should be approached with great care. The swell and surf is sometimes tremendous, even during times when there is little or no wind; this is generally the case after a norther has been prevailing, possibly at a great distance from the immediate locality. The heaviest surf and largest swell that I have ~~never~~ ever noticed in this locality was at a time when the weather was very pleasant, with very light wind, during the winter of 1907. At that time the breakers at the entrance to San Juan harbor ~~was~~ ^{were} so heavy that numerous vessels remained outside for several days, as it was not considered safe for entering. The region surveyed may be navigated in perfect safety within one half mile of the shore. In many ~~many~~ instances the steamer worked within 400 meters of the shore. The outlying rocks and reefs are well defined and may be approached very close as deep water is found around them. At Pt. Borinquen a shoal makes out in a west north-westerly direction for a distance of about six miles, with an average depth of ~~about~~ 32 fathoms of water upon it. At this point the currents and winds from the north and south, meet, causing a rough sea at most all times. Mariners, as a rule, give this Point a wide berth, passing well off shore in deep water, on account of the rough sea, but so far as depth of water is concerned, it is perfectly safe to run a vessel within one mile of the point or the light house.

6. There are a few places along the coast for small boats^s to land, under favorable conditions, namely, at the mouth of the Manati River, at Pt. Las Tunas, at the mouth of the Rio Grande de Arecibo (near the city of Arecibo) at Aguadilla

Mr. O. H. Tittmann. No. 3.

At Pt. Cerro Gorda, mouth of Cibuco River, Pt. Nuevo, Pt. Chivato, and around the end of Pt. Cardena, near Añasco . It is impossible to land, however, at any of these places when there is much swelling running.

7. The appearance of the shore is undulating east of Arecibo, with a range of high hills in the interior. West of Arecibo, the coast is rugged and bold; in many places the cliffs rise perpendicularly to an elevation of two hundred feet.

8. There are extensive sugar plantations and mills scattered over the region, the smoke stacks of which, with the churches and houses along the coast, make valuable land marks.

9. The inhabitants are mostly laborers upon the plantations and are very poor. The wages vary from forty to seventy-five cents per day.

10. There is but a limited amount of imports, the natives subsisting mostly upon fruits and vegetables raised in this locality.

11. At Arecibo and Aguadilla there are no wharves, freight and passengers being transported in small boats and landed upon the open beach. When fresh breezes prevail, a heavy surf runs, and it is impractical to land. Both are connected with the principal cities of the island by rail-road, telegraph, and telephone. Provisions, coal, water, lumber, and ice, can be obtained in each city in limited quantities.

12. The general character of the bottom on the region sounded, is of a fine grey sand, mixed with mud, interspersed with reefs of rock and coral. The water is very clear, and shoal spots can be seen by keeping a sharp lookout, the indications at a distance being usually a change in the color of the water.

13. During the season, while engaged upon this work, the weather was almost continuously fair, except for a few tropical showers of short duration, but on account of prevailing strong trade winds, causing rough seas, there were few days available for close development of shoals, which required launch work; this work, however, was of no great importance, as the shoals are close to shore, where

Mr. O. H. Tittmann, No.4.

vessels would not navigate. The steamer, with few exceptions, was engaged upon all days when the weather was favorable.

14. There are no facilities for hauling out vessels anywhere upon the island of Porto Rico. The nearest dry-dock is at St. Thomas, Danish West Indies.

15. In accordance with instructions, the season was closed on May 30th. Some additional launch work on shoals and inshore work on the North Coast is required before the Survey can be considered as completed.

16. The following is a summary of the work accomplished on the six sheets:-

Number of miles (geographical run while sounding	1110.8
Number of double angles (positions) measured	2997
Number of soundings.	11514
Area sounded in square (geographical) miles.	421.6

Very respectfully,

P. A. Walker

Assistant, C. & G. Survey,
Commanding, "BACHE".

POSITIONS DETERMINED BY

SEXTANT ANGLES.

H. S. NO. 3

Name of			In		In
Sig.	Description.	Lat.	Meters.	Long.	Meters.
Mart.	Tripod.	18° 28'	1382	66° 15'	1523
Palm	Lone palm tree.	18° 28'	283	66° 16'	994
Roof.	Red roof on house near beach.	18° 28'	964	66° 17'	1235
Large.	Roof of largest house at Ceno Gordo.	18° 28'	1753	66° 20'	840
Tree.	Tallest tree in this vicinity.	18° 29'	36	66° 21'	1000
Red.	E. end of red house on prominent hill.	18° 29'	198	66° 23'	1327
Fin.	East end of red roof.	18° 29'	650	66° 24'	560
Shack.	Bright roof of a prominent hill.	18° 28'	362	66° 25'	131
Straw.	Roof of thached shack	18° 29'	644	66° 25'	607
Rock.	Prominent rock.	18° 29'	963	66° 26'	540
Hill.	Red roof of prominent house on top of high conical hill.	18° 25'	1674	66° 27'	186

(Handwritten signature)

V.E.C.
Aug. 5, 1908.

HYDROGRAPHIC SHEET 2934.

North Coast of Porto Rico, Port Tortuguero to
Point Fraile, by Asst. P. A. Welker, 1908.

TIDES.

	Arecibo ft.
Mean low water, or plane of reference on staff	2.5
Lowest tide observed " "	1.7
Highest " " " "	5.0
Mean rise and fall of tides	1.0

Coast and Geodetic Survey
AUG 5 1908
TIDAL DIVISION.

*Dr. Eng. H. J.
P. A. Welker*

*Soundings plotted by Tidal Party
checked & verified by H. L. Swenson*

Hyd Sheet No 2934

Sept 10 1908.

The ground is well covered to within
4000 of the shore.

The soundings were plotted correctly and
the records kept in a satisfactory manner.

J. L. Simons

Department of Commerce and Labor

N 2934

Jan 10, 10

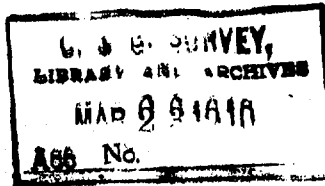
The papers that were with
this sheet, including the report
of the verifier, have become
detached and cannot be found.

G.P.F.

1/24/10

The work should be
extended to the shoreline.

G.P.F.



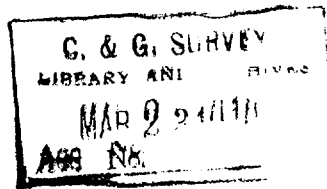
Hyd Sheet No 2935

Sept 12 1908

The ground within the limits this survey is fairly well covered.

The records were well kept & the soundings plotted correctly.

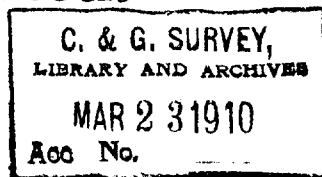
H. L. Simmons



1/24/10

The work should be completed to the shoreline.

J. P. P.



POSITIONS DETERMINED BY
SEXTANT ANGLES.

C. & G. SURVEY,
LIBRARY AND ARCHIVES
MAR 23 1910
Acc. No.

H. S. NO. 4

Name of Sig.	Description	Lat.	In meters	Long.	In meters.
Hill .	Shack painted red with iron roof on top of high conical hill.	18° 25'	1674	66° 27'	186
Hut.	Shack on hill	18° 28'	738	66° 29'	1453
Point.	Rocky point of land.	18° 28'	1367	66° 30'	67
Brush.	Bare tree on side hill.	18° 28'	1441	66° 31'	240
Tree.	Prominent lone palm tree on hill.	18° 28'	1726	66° 31'	1194
Rock.	Centre of rock offshore	18° 29'	1088	66° 34'	884
Square.	Bright roof of sq. house.	18° 27'	1352	66° 36'	584
Fin.	Red roof of house.	18° 29'	640	66° 36'	310
Stone.	Centre of rock offshore.	18° 29'	1250	66° 36'	420
Gab.	East gable of lge. white house with red roof.	18° 27'	1059	66° 37'	500
Top.	Indefinite, no further use.	18° 29'	886	66° 37'	720
Small.	E. end of small house	18° 29'	933	66° 37'	971
Lone.	Lone shack in cultivated field on hill	18° 29'	636	66° 39'	610
Scar.	Centre of red roof small house.	18° 29'	386	66° 40'	72

(H.M.C.)

Hyd Sheet No 2936

Sept. 14, 1908.

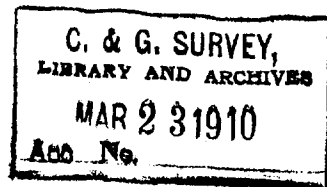
The records were kept in a satisfactory manner.

Soundings were plotted correctly.

The ground is well covered.

H. L. Simms

1/22/10 The work was not carried to the shoreline. G.P.A.



POSITIONS DETERMINED BY
SEXTANT ANGLES.

H. S. NO. 5.

C. & G. SURVEY,
LIBRARY AND ARCHIVES

MAR 23 1910

Acc No.

Name of	Description	Lat.	In	Long.	In meters.
Sig.			Meters		
Bar.	White stack at Barbara sugar mill.	18° 28'	250	66° 42'	670
Pipe.	Iron Stack.	18° 27'	812	66° 42'	200
Veg.	Red chy. at Las Vagas sugar mill	18° 27'	1570	66° 42'	1237
White.	Large white brick chimney.	18° 28'	900	66° 44'	450
House.	E. end of house on high ridge.	18° 28'	440	66° 44'	1133
Red.	E. end of red house.	18° 28'	1459	66° 45'	1595
New.	E. end of new house.	18° 29'	476	66° 46'	1058
Long.	E. end of long shed.	18° 27'	1363	66° 49'	248
Cas.	E. end of house	18° 28'	1780	66° 49'	223
Post.	Small brick chy.	18° 29'	684	66° 51'	1710
Shed.	Small shed near Noya.	18° 29'	580	66° 53'	433
Bright.	E. end of red roof of small ho	18° 28'	1450	66° 54'	1310
Shanty.	Very prominent shanty on top of ridge.	18° 29'	550	66° 56'	980

St. J. B.

Hyd Sheet No 2937 Sept, 14, 1908.

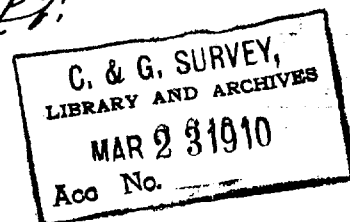
The ground is fairly well covered beyond the 60 ft curve with the exception of the 114 ft spot, about two miles north of a "Topographic Tray," which should have been crossed by more lines.

The soundings were plotted correctly and the records well kept.

H. L. Simons

1/22/10 Work should have been completed to the shoreline

G. P.



POSITIONS DETERMINED BY
SEXTANT ANGLES.

C. & G. SURVEY,
LIBRARY AND ARCHIVES

MAR 23 1910

Acc No. _____

H. S. NO. 6

Name of	Description	Lat.	In Meters	Long.	In Meters
Shanty.	Very prominent shanty on top of ridge.	18° 29'	550	66° 56'	980
Large.	E. end of long gray house.	18° 29'	704	66° 57'	615
Riv.	Point at mouth of river.	18° 29'	1093	66° 57'	1070
Stone.	Centre of rock off shore.	18° 29'	1365	66° 58'	230
Shed.	E. end of large shed in open field.	18° 29'	980	66° 58'	1355
Sharp.	Indefinite, no further use.	18° 30'	1445	67° 01'	263
Small.	Small hut on beach.	18° 30'	1165	67° 01'	1120
Rock.	Center of rock offshore.	18° 30'	1728	67° 02'	465
Tree.	Very prominent tree on ridge.	18° 30'	1135	67° 03'	570
Palm.	Very prominent palm tree on ridge.	18° 30'	1130	67° 04'	660
Shack.	Shack near A Ped.	18° 30'	1053	67° 05'	280
Twin.	Indefinite, no further use.	18° 30'	1540	67° 06'	744
Nob.	Sharp pointed bunch of timber.	18° 30'	983	67° 08'	28
Peak.	Most prominent peak on point.	18° 30'	1019	67° 08'	280
Tan.	Indefinite.	18° 30'	1140	67° 08'	300
Black.	E. end of two rocks.	18° 30'	558	67° 08'	1240
Hut.	No further use.	18° 30'	300	67° 08'	1460
Pot.	Most prominent dome shaped rock on point.	18° 29'	1486	67° 09'	360

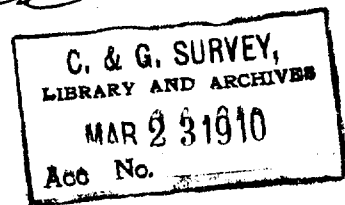
(H. M. Co.)

Hyd Sheets No 2938 & 2938^a Sept 15 1908

The area out to the 60 ft curve is not sufficiently developed especially in the vicinity of Aguadilla and off Pt. Jiguero. Beyond the 60 ft curve the ground is fairly well covered.

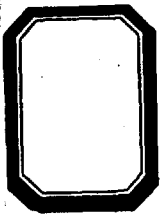
The records were kept in a satisfactory manner and the soundings were plotted correctly.

H. L. Simons



2938^a

C. & G. SURVEY,
LIBRARY AND ARCHIVES
SEP 28 1909
Acc No.



Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: _____

DESCRIPTIVE REPORT.

H.A. c Sheet No. *2938^a*

LOCALITY:

190

CHIEF OF PARTY:

2938^a

in regard to additional work on Original Hydrographic Sheet 2938^a.

COAST AND
GEODETIC SURVEY

SEP 27 1909

Northwestern Coast of Porto Rico.

Scale 1:80000.

C. & G. SURVEY,
LIBRARY AND ARCHIVES

SEP 28 1909

Acc No.

Assistant in Charge by the party on the Steamer BACHE commanded by

Assistant W. C. Hodgkins.

REFERRED TO:

1909.

Assistant in Charge

ON ORIGINAL DOCUMENT

This new work consists of six deep soundings northwest of Point Borinquen, properly belonging on the general sheet showing the work of the present season in the Mona Passage but falling outside the limits of that sheet, and of two whaleboat lines run close alongshore; one from the town of Isabela westward to Punta Gorda Δ and the other from a point about a mile westward of Cofre Δ to Noya Δ .

The latter line was intended to connect with the former near Isabela, but the increasing heavy sea stopped the work at Noya Δ .

The intervening space is of no practical importance, as the coast is exposed to the prevailing sea and swell and has no harbors or even coves worthy of mention.

Respectfully submitted,

W. C. Hodgkins

Assistant.

To the Superintendent,

Coast & Geodetic Survey,

Washington, D. C.

STATISTICS

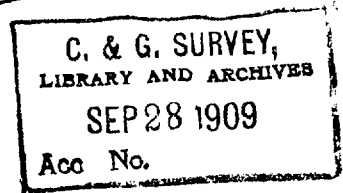
2938a

H. S. NO. 2

Date.	Letter	Vol.	Miles	Soundings	Angles	Boat Used.
May 22,	A	1	10.5	76	54	Bache.
" 23,	B	1	17.5	74	82	"
TOTALS.			28.0	150	136	

By P. A. Welker, Asst.

XPE

2938^aSTATISTICS. SHEET "A".

Date.	Letter.	Vol.	Angles...	Soundings.	Miles.	Boat.
April 28/	L'	8	12	6	6.4	Str. BACHE.
May 4.	N'	8	14	7	37.7	Str. BACHE.
June 3.	E''	12	4	2	1.4	Str. BACHE.
TOTAL.	3	3	30	15	45.5	Str. BACHE.

By W. C. Hodgkins, Asst

Hyd Sheet No 2938th

Nov. 30, '09.

The plotting of the work of the north shore
of Porto Rico by Asst Hodgkins has been verified
and found correct.

H. L. Simons

