

5610

U. S. COAST & GEODETIC SURVEY  
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DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT  
5616

Topographic } Sheet No. 2  
Hydrographic }

State New Jersey

LOCALITY

Vicinity of Sandy Hook

Navasink River

and

Shrewsbury River

1934

CHIEF OF PARTY

E. R. McCarthy

5610

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY  
R. S. PATTON DIRECTOR

DESCRIPTIVE REPORT  
to accompany  
HYDROGRAPHIC SHEET NO. 2

NAVESINK AND SHREWSBURY RIVERS  
NEW JERSEY

PARTY NO. 14

E. R. McCarthy,  
Lieutenant (j.g.) C. & G.S.  
Chief of Party.

1934

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

U. S. COAST & GEODETIC SURVEY  
LIBRARY AND ARCHIVES  
REG. NO.  
JAN 23 1935  
Acc. No. \_\_\_\_\_

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. 2

REGISTER NO. 5616

State New Jersey

General locality Vicinity of Sandy Hook

Locality Nevesink River and Shrewsbury River

Scale 1:10000 Date of survey July 23 to Oct. 10, 1934

Vessel Field Party No. 14

Chief of Party E. R. McCarthy

Surveyed by E. R. McCarthy, R. A. Philleo, T. R. Felts

Protracted by S. M. Green, Jr.

Soundings penciled by S. M. Green, Jr.

Soundings in ~~fathoms~~ feet

Plane of reference M.L.W.

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by L. B. BERES

Verified by L. B. BERES

Instructions dated May 10, 1934

Remarks: \_\_\_\_\_

DESCRIPTIVE REPORT  
to accompany  
HYDROGRAPHIC SHEET No. 2

AUTHORITY:

Instructions dated May 10, 1934.

LIMITS:

Navesink and Shrewsbury Rivers except for channel from Highlands Bridge to Branchport and open coast from South end of Sandy Hook to Galilee.

METHODS:

Soundings were taken with a bronze centered lead line graduated in fathoms and feet in depths over ten feet and with a sounding pole graduated to feet and half feet under this depth.

Positions <sup>were</sup> ~~was~~ fixed by sextant angles on three known points except in narrow creeks where it was obtained by relation to the topography.

In applying corrections to lead lines, it was assumed that the change in length occurred during the first hour as experiments indicated that this was the case.

EQUIPMENT:

For open coast work the launch "NANUK" a fifty foot Chesapeake Bay fishing boat was used and for work in the rivers a flat bottomed skiff with an outboard motor.

DISCREPANCIES:

The lines cross quite well except in the channel at the east end of the Shrewsbury (Navesink) River where the channel deepens suddenly. A slight shift on any of the crossings will make it good.

ONE SOUNDING WAS TAKEN IN ERROR SEE P 37 VOL # 6

COMPARISONS WITH PREVIOUS SURVEYS:

The sheet overlaps sheet 5234a (H. A. Cotton 1932) on the north edge of the outside area. The 1934 work shows from one to three feet greater depths than the 1932 work. According to local information the inshore area is subject to change after each storm and the difference is probably to be expected.

No original survey sheets were available but a comparison with the chart shows no change of major importance in either the Shrewsbury (Navesink) or South Shrewsbury (Shrewsbury) River.

\* The accepted names are in parentheses - same as chart.

R

(Navesink R.)

In the north river, the bight east of Barley Point shows a tendency to fill and some of the flats a tendency to shoal. The channel differs but little.

In the <sup>south</sup> north river, there is little change except a general shoaling all over the area but principally south of the islands in the east end of the river and also west of Gooseneck Bridge. There is a deeping in some areas probably due to dredging.

(1933-34) The work checks fairly well with that of the U. S. Engineers, the greatest difference being one foot. In all cases that taken by the Survey is the shoaler. The difference is probably due to tide reducers.

DANGERS:

There are no dangers to navigation in the area covered by the sheet. The wreck of a houseboat which was burned to the waters edge lies on the east side of the Shrewsbury River about one hundred fifty meters north of Lower Rocky Point but is aground and above the low water line. The wrecks of several old barges lie on the north and south side of Gunning Island, but are visible at all stages of the tide and either aground or in less than two feet of water. logged

PRINCIPAL CHANNELS:

There are two considerably used channels within the limits of the sheet, one, the main channel which after leaving Highlands Railroad Bridge follows southward to the South Shrewsbury River thence west into the river, thence south into Pleasure Bay to Branchport. The second channel leaves the main channel at the junction of the North Shrewsbury with Shrewsbury River and runs westward into Red Bank. (Shrewsbury R.)

Both channels are used in the summer by numerous pleasure craft. The maximum draft passing them is six feet to Highlands and not over three or four feet to Red Bank and Pleasure Bay.

Both channels are lighted and marked. The Buoys are usually placed in April and picked up in November before ice sets in. The main channel is easily followed; is very well marked but should not be attempted south of Highlands for a draft of over four feet. The Red Bank Channel is narrow and crooked to the Oceanic Bridge and should not be attempted by strangers without a local pilot. The buoys are supplemented by private markers which are replaced every year.

DIRECTIONS FOR MAIN CHANNEL:

Follow buoys as found taking care to follow close along the docks at Highlands to avoid the three foot spot in center of river and to avoid the end of the sunken jetty south of the horizontally striped buoy off the North Shrewsbury River. Use the east draw on

Seabright Bridge and either on Pleasure Bay Bridge. South of Pleasure Bay the channel is not marked but is used only by small boats of one or two foot draft.

**CONTROLLING DEPTHS ARE;**

6 feet to Seabright Bridge  
 6 feet to Pleasure Bay Bridge ← 5 feet according to sheet  
 5 feet to Branchport.

**DIRECTIONS FOR RED BANK CHANNEL:**

The entrance should not be attempted by a stranger as it is crooked, narrow and swept by a current of from 2 @ 3 knots (est). From the lighted buoy just inside the entrance the channel follows parallel to a sunken jetty on the south side and at the lighted buoy east of Barley Point turns sharply north-west to lighted buoy at Upper Rocky Point thence sharply west to pass well south of lighted buoy #4 (which is evidently out of place) and close by to southward of private marker northeast of lighted buoy #5, follow markers as found thence to Oceanic Bridge using northern channel. Pass close by Oceanic Steamboat wharf and thence sharply northwest and when in center of river head for buoy #7 and follow buoys as found. (After passing Steamboat dock, boats of not over four feet draft may head directly for buoy).

**Controlling depths;**

6 feet to Oceanic Bridge ✓  
 7 feet to Buoy '6' ✓  
 5 feet to Red Bank. ✓

This channel in 1934 had but few private markers and was used very little by boats of more than 5 foot draft.

A swash channel leads from westward <sup>(eastward)</sup> along the shore from Upper Rocky Point to Lower Rocky Point. Three feet limits the draft over the bar but six feet may be carried otherwise.

**OTHER CHANNELS:**

**Swimming River**

One foot may be carried to the Swimming River. Above Red Bank the largest boats using the Shrewsbury are skiffs with outboards.

**Fairhaven**

Six feet may be carried to the boat yard of the Fairhaven Boat Works.

Oceanic

Five feet may be carried to the new Rumson - Oceanic Steamboat dock.

Rumson Yacht Club

Five feet may be carried to the basin of the Rumson Yacht and Country Club. The best route is marked by buoys and private stakes.

Little Silver Creek

Two feet may be carried in the creek. It is little used.

Tom Neck Creek

One foot may be carried to the creek. It is little used.

Parker Creek

This creek is of no importance.

Oceanport Creek

Three feet may be carried to Gooseneck Bridge, two feet to the railroad drawbridge and one half foot into Oceanport. Skiffs are the largest boats that use the creek.

Coast Guard Channel

A privately marked channel leads from the Monmouth Beach Coast Guard Station to Rikers Basin. It is very narrow and poorly marked, but with local knowledge two feet may be carried to a small boat anchorage west of the station.

Blackberry Creek

Five feet may be carried into the creek but the best water is no longer marked. Some dredging was done here several years ago but since the depression it has not been maintained.

ANCHORAGES:

Small boats anchor anywhere outside of the five or six foot curve in mud bottom in both branches of the Shrewsbury. A large anchorage for yachts is maintained off the Monmouth Yacht Club at Red Bank and a smaller one at Fairhaven.

There are no anchorages in the outside area.

GEOGRAPHIC NAMES:

Names are shown in pencil on the sheet and are local names in constant use. Names for topographic features were obtained from the airphoto-topographic party.

The substitution of Shrewsbury or North Shrewsbury for Navesink River and South Shrewsbury for Shrewsbury River is recommended as the rivers are known by these names in this vicinity. There has been considerable local discussion in recent years as to the proper names for these two rivers and the general concensus of opinion is that the names as recommended are correct.

MISCELLANEOUS:

Boat yards capable of repairing and hauling out any size boat that may enter the rivers are to be found at Red Bank and Fairhaven. There are small boat yards at Galilee and at Branchport. Supplies and gasoline are obtainable in numerous places in the North Shrewsbury and in Pleasure Bay.

Fish trap stakes show a private red light from the outer end.

The line of steamboats which formerly carried passengers and freight from Red Bank and Branchport to New York are no longer in service.

Landmarks are forwarded with the topographic sheet.

Statistics and tidal notes and computations are attached.

Respectfully submitted.

*E. R. McCarthy*

E. R. McCarthy, Lieutenant (j.g.)  
U. S. Coast and Geodetic Survey,  
Chief of Party No. 14.



MEMORANDUM BY CHIEF OF PARTY:

The boat sheet was inspected every other day and the records weekly while work was in progress. The smooth sheet was inspected daily and all discrepancies cleared up before leaving the field.

The work on the outside was done by Mr. R. A. Phillio or myself and on the inside by Mr. T. R. Felts.

The smooth sheet was plotted by Mr. S. M. Green and was the first sheet plotted by him.

*E. R. McCarthy*

E. R. McCarthy, Lieutenant (j.g.)  
U. S. Coast and Geodetic Survey,  
Chief of Party No. 14.

STATISTICS

PROJECT 174 NEW JERSEY

SHEET #2

DAY	DATE	BOAT	MILES STATUTE	SOUNDINGS	POSITIONS	DAYS RUN
a	9-18-34	Naruk	24.1	620	140	40.3
b	10-1-34	Naruk	3.5	75	17	40.4
c	10-9-34	Naruk	3.2	113	16	45.9
d	10-10-34	Naruk	6.9	217	41	37.9
Totals			37.7	1025	214	164.5

STATISTICS

PROJECT 174 NEW JERSEY

SHEET #2

DAY	DATE	BOAT	MILES STATUTE	SOUNDINGS	POSTITIONS	DAYS RUN
a	7-23-34	skiff	10.7	597	119	16.0
b	7-24-34	skiff	15.4	779	156	20.0
c	7-25-34	skiff	12.5	519	97	17.0
d	7-26-34	skiff	6.3	289	68	12.0
e	7-27-34	skiff	12.5	562	113	17.6
f	7-28-34	skiff	8.1	381	76	13.8
g	7-30-34	skiff	7.5	325	71	11.5
h	7-31-34	skiff	13.5	559	120	16.0
i	8-1-34	skiff	7.8	352	74	12.0
k	8-2-34	skiff	7.1	325	73	15.7
l	8-6-34	skiff	6.4	320	81	11.0
m	8-7-34	skiff	8.0	410	102	18.0
n	8-8-34	skiff	7.6	362	77	19.0
p	8-9-34	skiff	6.5	290	60	17.0
q	8-10-34	skiff	11.4	512	102	18.5
r	8-13-34	skiff	8.0	360	75	12.8
s	8-14-34	skiff	9.1	413	83	16.7
t	8-16-34	skiff	2.8	127	30	8.2
u	8-17-34	skiff	16.1	764	148	23.0
v	8-20-34	skiff	1.2	68	14	10.0
w	8-27-34	skiff	3.2	185	48	8.0
x	8-29-34	skiff	11.0	548	112	14.0
y	8-30-34	skiff	9.3	441	99	15.0
z	8-31-34	skiff	8.1	399	107	12.7
a'	9-5-34	skiff	3.1	181	45	9.9
b'	9-6-34	skiff	4.8	262	67	8.9
c'	9-7-34	skiff	6.2	360	85	13.5
d'	9-10-34	skiff	1.1	68	16	2.8
e'	11-2-34	skiff	3.8	145	37	11.3
f'	11-5-34	skiff	4.1	171	45	6.8
Totals			233.2	11074	2400	408.7

VERIFIER'S REPORT H-5616

The records conform to the requirements of the General Instructions. ✓

The one, two, ~~three~~, and ~~five~~ fathom curves can be completely drawn within the limits of the sheet. ✓

The field plotting was complete to the extent prescribed in the Hydrographic Manual.

The shoreline was inked in the office and was taken from the air-photo compilation. Discrepancies on shoal areas are due to the fact that this area is subject to change each year after storms. The air-photo survey was made two years previous <sup>(1932)</sup> to the hydrographic work and therefore the hydrographic records were allowed to supersede the air-photo. ✓

The junction with H-5638 (1934) on the south is satisfactory. ✓

The junction with H-5234a on the north varies around the two fathom curve the 1934 work shows from one to three feet greater depths than the 1932 work on the overlap the shoaler depths were plotted. ✓

Remarks:

Positions 32 and 33p were replotted they had been plotted on the wrong signal. ✓

The plotting on the whole was very satisfactory and was very neatly done. ✓

Respectfully submitted

*L. B. Beres*  
L. B. Beres



## TIDE NOTE FOR HYDROGRAPHIC SHEET

June 14, 1935.

Division of Hydrography and Topography:

✓ Division of Charts: Attention Mr. E. P. Ellis

Tide Reducers are approved in  
10 volumes of sounding records for

HYDROGRAPHIC SHEET 5616

Locality Navesink River and Shrewsbury River, New Jersey

Chief of Party: E. R. McCarthy in 1934

Plane of reference is mean low water reading

- 1.7 ft. on tide staff at Seabright
- 11.1 ft. below B.M. 1
- 3.7 ft. on tide staff at Low Moor
- 3.9 ft. below B.M. 1
- 1.6 ft. on tide staff at Long Branch (Shorelands)
- 3.8 ft. below B.M. 1
- 2.1 ft. on tide staff at Goose Neck
- 4.1 ft. below B.M. 1
- 3.4 ft. on tide staff at North Long Branch (Pleasure Bay)
- 4.9 ft. below B.M. 1
- 1.3 ft. on tide staff at Irwins Yacht Basin, (Red Bank)
- 7.7 ft. below B.M. 1
- 1.1 ft. on tide staff at Rumson Steam Boat Dock (Oceanic Bridge)
- 8.2 ft. below B. M. 1

~~Condition of records satisfactory except as noted below:~~

- 2.4 ft. on tide staff at Normandie
- 10.4 ft. below B.M. 1
- 1.8 ft. on tide staff at Sandy Hook
- 9.4 ft. below B.M. 2

Height of mean high water above plane of reference is 1.9 ft. at Seabright; 1.2 ft. at Low Moor; 1.6 ft. at Long Branch (Shorelands); 1.4 ft. at Goose Neck; 1.3 ft. at North Long Branch (Pleasure Bay); 2.8 ft. at Irwins Yacht Basin (Red Bank); 2.7 ft. at Rumson Steamboat Dock (Oceanic Bridge); 3.2 ft. at Normandie; 4.7 ft. at Sandy Hook.

CONDITION OF RECORDS SATISFACTORY EXCEPT AS NOTED BELOW:

~~Condition of records of tides and currents.~~

Acting Chief, Division of Tides and Currents

Field Records Section (Charts)

HYDROGRAPHIC SHEET NO. 5616

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

Number of positions on sheet	2616.
Number of positions checked	..283
Number of positions revised	.....
Number of soundings recorded	12099
Number of soundings revised	.17. + 110 fractions added to delineate curves
Number of signals erroneously plotted or transferred	..none.

Date: JULY 12, 1935

Verification by L. B. BERES

Review by *G. Riegner*

Time: 60 hrs Ver. 6 hrs. (G.R.)

Time: 44½ hrs.

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 5616 (1934) FIELD NO. 2

Navesink River and Shrewsbury River, Vicinity of Sandy Hook, New Jersey  
Surveyed in July - Oct. 1934  
Instructions dated May 10, 1934; Aug. 8, 1934 (E. R. McCarthy)

Hand Lead and Pole Soundings.                      3 Point Fixes on Shore Signals.  
except in narrow creeks.

Chief of Party - E. R. McCarthy.  
Surveyed by - E. R. McCarthy, R. A. Philleo, T. R. Felts.  
Protracted by - S. M. Green, Jr.  
Soundings penciled by - S. M. Green, Jr.  
Verified and inked by - L. B. Beres.

1. Condition of Records.

The records are neat and legible and conform to the requirements of the Hydrographic Manual except as follows:

Information for plotting the submerged jetty in Navesink River, latitude  $40^{\circ} 22.6'$ , longitude  $74^{\circ} 02.2'$ , was incomplete as given in the sounding record. The length and end of the jetty were recorded without its direction.

The descriptive report is complete and comprehensive and satisfactorily covers all items of importance.

2. Compliance with Instructions for the Project.

This is an excellent survey and complies with the instructions for the project. A few cross lines on the outside work would have been desirable.

3. Shoreline.

The shoreline was transferred from air photo compilations T-5100 (1932), T-5279 (1932), and T-5281 (1932) and the topographic signals from graphic control sheets. T-6214a (1934), T-6214b (1934), and T-6215a (1934). The air photo survey was made two years before the hydrography and since the area is subject to change after storms, the hydrographic records were used in cases of discrepancies in shoal areas.

4. Sounding Line Crossings.

The few cross lines which were run, as well as the adjacent parallel lines are in general good agreement.



5. Depth Curves.

The usual depth curves can be satisfactorily drawn.

6. Junctions with Contemporary Surveys.

At the junction with H-5234a (1932) in the outside area on the north, the soundings of the present survey are from 1 to 3 feet deeper than those of the 1932 work. The area is subject to change after storms and the two years difference in time may account for the discrepancies.

The junction with H-5638 (1934) in the outside area on the south is satisfactory.

The junction with the U. S. Engineers survey of 1934 (Bps. 27849 to 27851) on the east inside coast between latitudes  $40^{\circ} 21.4'$  and  $40^{\circ} 23'$ , is satisfactory.

7. Comparison with Prior Surveys.

- a. H-53 (1835), H-54 (1840), H-62 (1836), H-103 (1840)  
H-106 (1840), H-526 (1855-6), H-1278 (1875), H-1538 (1882)

These surveys cover the area on the outside coast and most of them are not in good agreement with the present survey. Because this area is subject to constant change, the present survey should supersede the above surveys within the common area.

- b. H-1718 (1886), H-3777 (1915), H-4610 (1926)

These surveys, on a scale of 1:20,000 show a few soundings in the northern part of the outside coast area. In general the depths average from 1 to 2 feet shoaler than those of the present survey. Because of the changeable character of this area, the present survey should supersede the above surveys within the common area.

- c. H-60 (1840), H-107 (1840).

These surveys, on a scale of 1:10,000, cover the areas of Navesink and Shrewsbury Rivers.

A comparison between the above surveys and the present survey reveals numerous changes in depths and locations of shoals as well as changes in shoreline. While most of the changes are the results of natural forces, some changes have resulted from dredging operations.

Because of the time elapsed between the earlier surveys and the present survey, the general character of the area and the nature of the bottom, it is unnecessary to consider in detail, from the standpoint of information to be carried forward, the various changes noted.

The present survey has adequately covered the areas and should supersede the old work for charting purposes.

8. Comparison with Charts No. 543 (corrected to June 18, 1935), and No. 1215 (January 19, 1934).

a. Hydrography.

Within the area of the present survey the charts are based on surveys discussed in the foregoing paragraphs and the U. S. Engineers' surveys of 1923 (Bps. 19012 to 19017) and 1934 (Bps. 27,849 to 27,851). Most of the 1934 engineers' work falls in areas which were not developed by the present survey, but in those areas where a comparison can be made, the present survey shows, in general, shoaler depths by about 1 foot.

The 6 and 4 foot shoal spots (charted) in latitude  $40^{\circ} 22.6'$  longitude  $74^{\circ} 01.9'$ , and latitude  $40^{\circ} 22.9'$ , longitude  $74^{\circ} 01.0'$  respectively, are from U. S. Engineers blueprint 19016 (1923). Both the 6 and the 4 are single, unsupported, soundings on a line and both fall in depths of 11 feet, soft mud bottom, on the present survey which shows no indication of a shoaling at these points. The present development should have been close enough to more definitely disprove these soundings, however, it is possible the original soundings were incorrect and there is also a possibility of changes since the 1923 survey. For these reasons the 6 and 4 foot soundings should be discontinued on the chart. The Engineers' surveys of 1923 should be superseded by the present survey and their surveys of 1934 should be used in conjunction with it.

The jetty shown on Chart No. 543 in latitude  $40^{\circ} 22.6'$ , longitude  $74^{\circ} 02.2'$  (Navesink River) from blueprint 19,016 (1923) was found by the present survey to be submerged at the time of high water, or 2 feet above mean low water. (pos. 23 g (blue)).

The information given in the record is insufficient to complete the drawing of the jetty on the sheet; the length 30 meters, and the end position are given, but no direction. Inspection of the photographs of this locality do not reveal the jetty as the detail is generally indistinct. However, the jetty appears to be the same one shown on the chart and should be retained but shown as submerged.

b. Controlling Depths.

The controlling depth of 3 feet charted in Shrewsbury River and Pleasure Bay (Chart letter No. 475, 1934) is maintained by the U. S. Engineers, who survey the areas periodically. The present survey covered only a small part of this channel in the vicinity of latitude  $40^{\circ} 20'$ , between July and October 1934, and the soundings show 5 feet as the controlling depth in that section. This is slightly shoaler than the depths shown on blueprint 27,850 (1934). The latest information on file (Chart letter No. 630, 1935) gives this depth now as 6 feet.

c. Aids to Navigation.

The buoys in this area are usually placed in April and picked up in November before ice sets in. (See descriptive report page 2). The following is a comparison of the positions located on the present survey with the positions shown on the present chart:

1. With the exception of buoys No. 1 and 3 on the chart, the buoys east of Oceanic Bridge in Navesink River have been rearranged and renumbered since the 1934 survey. (N. to M. 30, 1935).
2. The two buoys west of the bridge agree with the present surveys' location of them, but have been renumbered.
3. The charted buoys in Shrewsbury River are in substantial agreement with the positions located on the present survey except Buoys No. 17 and 20. The positions of these buoys were charted from N. to M. 1934 (No. 17) on May 2, 1934. The present survey at a later date located Buoy No. 17 about 120 meters south and Buoy No. 20 about 360 meters SSE of the charted positions. The positions of both buoys still mark the channel but Buoy No. 20 would be better located if restored to the charted position. Attention is called to the fact that red FIR Buoy No. 18 was not located by the present survey.
4. The charted buoys marking the main channel between the bridge as Highlands and Sedge Island are in substantially the same position as located on the present survey with the following exceptions:

"FLR buoy, off Rocky Point, was located 100 meters north of the charted position.

"N12" buoy, was located 100 meters north of the charted position.

Buoys "N6A" and "C3A" near the Highlands bridge have been added to the charts since the date of the present survey. (N. to M. 40, 1934). Attention is called to the fact that black Buoy "C5" and Red buoy "N 14" were not located by the present survey.

9. Field Plotting.

The protracting of positions and the plotting of soundings were well done.

10. Additional Field Work Recommended.

This is a well executed survey and no additional work is required.

11. Superseding Old Surveys.

Within the area covered, the present survey supersedes the following surveys for charting purposes:

H-53 (1835) in part	H-526 (1855-56) in part
H-54 (1840) " "	H-1278 (1875) " "
H-60 (1840) " "	H-1538 (1882) " "
H-62 (1836) " "	H-1718 (1886) " "
H-103 (1840) " "	H-3777 (1915) " "
H-106 (1840) " "	H-4610 (1926) " "
H-107 (1840) " "	

12. Reviewed by - G. Risegari, October 17, 1935.

Inspected by - R. L. Johnston.

Examined and approved:

C. K. Green, *C. K. Green*  
Chief, Section of Field Records.

*F. S. Borden*  
Chief, Section of Field Work.

*L. O. Polbert*  
Chief, Division of Charts.

*G. Hude*  
Chief, Division of H. & T.

25 Jan 10, 1936  
L.M.Z.

Applied to Chart 369 - Jan 24, 1936 L.M.Z.  
Applied to Chart 1215 Feb 19, 1936 L.M.Z.

Partially applied to chart (drawing) of 543 - July 1, 1936 - J.F.W.

Applied to Chart 543 August 19, 1936 - H. E. MacEwen