U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey: Topographic-Photogrammetric
Field No.: Office No.: T-8761
Ph-7(46)A

LOCALITY
State: Delaware
General locality: Delaware Bay
Locality: Leipsic River to Lewis Ditch

CHIEF OF PARTY
Thos. B. Reed

DATE: June 7, 1948
DATA RECORD
T-8761

Quadrangle (II): Little Creek
Project No. (II): PH-7(46)A

Field Office: New Castle, Delaware
Chief of Party: E. L. Jones

Compilation Office: Baltimore Photogrammetric Office
Chief of Party: Thos. B. Reed

Instructions dated (II III):
25 March 1946, 19 July 1946

Copy filed in Descriptive Report No. T= (VI)
Division of Photogrammetry Office Files

Completed survey received in office: 24 June 1947

Reported to Nautical Chart Section:

Reviewed: 1 April 1948 Applied to chart No. Date:

Redrafting Completed:

Registered: 7 May 1948 Published:

Compilation Scale: 1:20,000 Published Scale: 1:24,000

Scale Factor (III): 1.0000

Geographic Datum (III): N.A. 1927 Datum Plane (III): MSL

Reference Station (III): MAHON 2, 1932

Lat.: 39° 11' 06.298" 194.2 m
Long.: 75° 24' 03.144" 75.5m
Adjusted Unadjusted

State Plane Coordinates (VI):

Delaware State Grid:

\[ X = 504,476.95 \text{ Feet} \quad Y = 431,594.04 \text{ Feet} \]

New Jersey State Grid:

\[ X = 1,791,876.88 \text{ Feet} \quad Y = 128,952.38 \text{ Feet} \]

Military Grid Zone (VI)
<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Time</th>
<th>Scale</th>
<th>Stage of Tide</th>
</tr>
</thead>
<tbody>
<tr>
<td>15565-67</td>
<td>3-21-46</td>
<td>1105</td>
<td>1:20,000</td>
<td>At mean high water</td>
</tr>
<tr>
<td>15588-90</td>
<td>&quot;</td>
<td>1225</td>
<td>1:20,000</td>
<td>0.1' above M.H.W.</td>
</tr>
</tbody>
</table>

Actual tide observations at Atlantic City, N.J. with corrections to Mahon River to St. Jones River.

Mean Range: 5.6'  Spring Range: 6.5'

United States Coast and Geodetic Survey nine lens camera, focal length 82". All negatives are on file in the Washington Office.

Field Inspection by: Lieut. Comdr. E. L. Jones  date: April to June 1946

Field Edit by: Donald G. Flippo  

Date of Mean High-Water Line Location (III): Same as date of photographs supplemented with field inspection obtained during April, May, and June 1946.

Projection and Grids ruled by (III) T.L.J.  date: 8-15-46

" " " checked by: T.L.J.  date: 8-15-46

Control plotted by: Leroy A. Senasack  date: 1-3-47

Control checked by: Frank J. Tarcza  date: 1-6-47

Radial Plot by: Frank J. Tarcza  date: 4-18-47

Detailed by: Ruth E. Rudolph  date: 4-30 to 5-2-47

5-19 to 6-5-47

Reviewed in compilation office by: J.W. Vonasek  date: 6-16-47

Elevations on Sheet checked by: J.W. Vonasek  date: 6-17-47
STATISTICS (III)

Land Area (Sq. Statute Miles): 44

Shoreline (More than 200 meters to opposite shore): 9 1/2 statute miles

Shoreline (Less than 200 meters to opposite shore): 52 statute miles (approximately)

Number of Recoverable Topographic Stations established:

Thirteen

Number of Temporary Hydrographic Stations located by radial plot:

one

Leveling (to control contours) - miles: 51.4

Roman numerals indicate whether the item is to be entered by, (II) Field Party, (III) Compilation Party, or, (VI) the Washington Office.

When entering names of personnel on this record give the surname and initials (not initials only).

Remarks:

Field Edit Corrections By:

Gladys S. Nottenburg  Jan. 1948
<table>
<thead>
<tr>
<th>STATION</th>
<th>SOURCE OF INFORMATION (INDEX)</th>
<th>DATUM</th>
<th>LATITUDE OR Y-COORDINATE</th>
<th>LONGITUDE OR X-COORDINATE</th>
<th>DISTANCE FROM GRID IN FEET, OR PROJECTION LINE IN METERS (FORWARD, BACK)</th>
<th>DATUM CORRECTION</th>
<th>N.A. 1927 - DATUM DISTANCE FROM GRID OR PROJECTION LINE IN METERS (FORWARD, BACK)</th>
<th>FACTOR DISTANCE FROM GRID OR PROJECTION LINE IN METERS (FORWARD, BACK)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAHON RIVER LT.</td>
<td>G-1751 Pg. 131</td>
<td>N.A. 1927</td>
<td>39° 11'</td>
<td>05.738''</td>
<td>176.9 (1673.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1933, r 1946</td>
<td></td>
<td></td>
<td>75° 24'</td>
<td>04.160''</td>
<td>99.8 (1340.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAHON 2, 1932, r. 1946</td>
<td>G-1249 Pg. 15</td>
<td></td>
<td>39° 11'</td>
<td>06.298''</td>
<td>194.2 (1656.1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75° 24'</td>
<td>03.144''</td>
<td>75.5 (1364.6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUB. STA. MAHON 2</td>
<td></td>
<td></td>
<td>39° 11'</td>
<td></td>
<td>224.7 (1625.6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75° 24'</td>
<td></td>
<td>38.6 (1401.5)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COLLEGE, 1932, r. 1946</td>
<td>G-1249 Pg. 15</td>
<td></td>
<td>39° 11'</td>
<td>05.541''</td>
<td>170.9 (1679.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75° 32'</td>
<td>43.214''</td>
<td>1037.2 (402.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUB. STA. COLLEGE Pt.'A'</td>
<td></td>
<td></td>
<td>39° 11'</td>
<td></td>
<td>68.3 (1782.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75° 32'</td>
<td></td>
<td>991.8 (448.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUB. STA. COLLEGE Pt.'B'</td>
<td></td>
<td></td>
<td>39° 11'</td>
<td></td>
<td>78.4 (1771.9)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>75° 32'</td>
<td></td>
<td>1157.8 (282.3)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ABBREVIATIONS FOR FIELD INSPECTION PHOTOS
Project Ph-7 (46)
10 May 1946

ROADS
Rd - road
X - abandoned (delete)
RR - railroad track
RR(2) - railroad, 2 tracks

SHORELINE
MHW - mean high water
MLW - mean low water
M - marsh
Mud - mud
S - sand
Rky - rocky
Rk - rock
Dk - dock
Jet - jetty
Bkhd - bulkhead

STREAMS, PONDS
D - large ditch
DX - small ditch (delete)
Gr - creek
P - pond

OBSTRUCTIONS TO NAV
Sh - shoal
Co - covers
Wk - wreck
Subm - submerged
Dol - dolphin
Pile - pile

VEGETATION
Gr - grass
Wh - woods, hard wood
Wd - woods, soft wood
Wh - woods mixed
B - brush
SH - scattered hardwood
SS - scattered softwood
O - orchard

BUILDINGS
d - dwelling
b - barn
Bo Ho - boat house

BUILDINGS (cont'd)
Ch - church
C.H. - courthouse
P.O. - post office
Sch - school
R R Sta - railroad station
Hosp - hospital

LANDMARKS & AIDS TO NAV:
TK - tank
TK(ELEV) - tank elevated
Stk - stack
Ft - fence
Lt - light
Rg - range
FRg - front range
Rg - rear range
Chm - chimney
Cp - cupola
S - stand pipe
G - gable

BOUNDARIES
Br - boundary
Cem - cemetery
F - fence

BRIDGES
Br - bridge
Culv - culvert
Cl - clearance
Hor - horizontal
Ver - vertical (above MHW)
Wo - wood
Conc - concrete

STATIONS:
BM - bench mark
T Sta - topo station
S Sta - substitute station
TBH - tidal bench mark
(d) - described
(dm) - described and marked
SYMBOLS
Project Ph-7 (46)
29 April 1946

MEAN HIGH WATER LINE (fast line)........................... =-
OFF SHORE EDGE OF MARSH (apparent shoreline).............. =-
GRASS IN WATER.......................................................... Gr.
IN SHORE LIMITS OF MARSH............................................ =-
MEAN LOW WATER LINE (definite)................................. =-
APPROXIMATE MEAN LOW WATER LINE............................ =-
INTERMITTANT DRAINAGE................................................ =-
PERENNIAL DRAINAGE.................................................... =-
CONTOURS................................................................. X 17 or X 17
PLANE TABLE ELEVATIONS FOR CONTOURS.........................
FLY LEVEL ELEVATIONS.................................................. C 12
BENCH MARKS, marked and described............................ O J-16, 1940 (cm)
TOPO STATIONS, natural object, described...................... T STN (at) BILL, 1946
TOPO STATIONS, marked and described............................ T STN (em) MINK, 1946
TOPO STATIONS, addition Hydro Control, not named........... T STN 8703
LANDMARKS................................................................. Landmark:
FIXED AIDS TO NAVIGATION, (official light list name)...... Cherry pr. Lt. 14
TRIANGULATION STATIONS.............................................. A SMITH, 1925
SUBSTITUTE STATIONS................................................... S STA or S S
BOUNDARIES: Refer to U.S.C.S. Bulletin 788 E for symbol, ink in purple or violet ink.
FIELD INSPECTION REPORT
T 8761 (39°07.5' / 75°22.5' / 7.5')
PROJECT Ph-7(46)
Sub-project A
Lt. Cdr. E. L. Jones, Chief of Party

1. Description of the Area:

This quadrangle is located on the western shore of Delaware Bay, east of Dover, in Kent County, Delaware.

About one-sixth of the quadrangle is water; while the remainder is fast land and salt water marsh. Fast land and salt water marsh areas are approximately equal in size.

Drainage is accomplished chiefly by the Leipsic, Dona, Mahon, and Little Rivers; the salt water marsh is partially drained by mosquito control ditches.

Elevations range from sea level to forty feet above M.S.L. in the southwestern portion of the area; and the land, gently sloping, is typical tidewater country.

The quadrangle is completely rural with Little Creek the only village in the area. Agriculture and fishing are the chief means of livelihood for the population.

2. Completeness of Field Inspection:

Field inspection was accomplished by two parties. The contour party was responsible for all interior inspection; while the shoreline party completed shoreline inspection.

Field inspection is believed to be adequate.

No telephone or power transmission lines of cross country or prominent nature were within limits of the quadrangle.

Woods were classified in accordance with paragraph 54 of the instructions for this project, dated 25 March, 1946.

Deletions are shown in green ink.

3. Interpretation of the Photographs:

Open land appears on the photographs from white to a light gray tone.

Woods appear as medium to drab gray with hardwoods a medium gray.

Smooth dark spots in the marsh area are ponds and, as a rule, approximately round in shape. Grass area of the marsh
ranges from light medium to medium gray; while areas under water appear almost black.

Along the shoreline, sandy areas, of course, appear white; medium gray areas just behind the MWHL are low brush and usually very small. Edges of these areas have been utilized extensively by the shoreline party in setting topographic stations, since they are easily identified and helpful in picking stations direct.

4. Horizontal Control:

Horizontal control was recovered and identified according to paragraphs 13-33, inclusive, of the instructions for this project, dated 25 March, 1946.

Work consisted of recovery and identification of control on photographs and was completed in April, 1946, as a training program under the direction of John M. Neal, Photogrammetric Engineer. The trainees were Frederick F. Kaiser, Air Photo. Observer, and Thomas W. Merriken, Jr., Photo. Aid.

The following is a tabulated list of information on horizontal control recovered and stations identified:

<table>
<thead>
<tr>
<th>STATION</th>
<th>ESTABLISHING AGENCY</th>
<th>RECOVERED</th>
<th>IDENTIF. ON PHOTO</th>
<th>METHOD OF IDENTIF.</th>
<th>QUAD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>COLLEGE</td>
<td>U.S.C. &amp; G.S.</td>
<td>yes</td>
<td></td>
<td>sub-sta.</td>
<td>8761</td>
</tr>
<tr>
<td>DEEPWATER, 1892</td>
<td>&quot;</td>
<td>lost</td>
<td></td>
<td></td>
<td>8761</td>
</tr>
<tr>
<td>MARSH, 1896</td>
<td>&quot;</td>
<td>lost</td>
<td></td>
<td></td>
<td>8761</td>
</tr>
<tr>
<td>MARSH, 1933</td>
<td>&quot;</td>
<td>yes</td>
<td>15589</td>
<td>sub-sta.</td>
<td>8761</td>
</tr>
<tr>
<td>MARSH RIVER LT., 1933</td>
<td>&quot;</td>
<td>yes</td>
<td>15589</td>
<td>picked direct</td>
<td>8761</td>
</tr>
</tbody>
</table>

5. Vertical Control:

Work consisted of B.M. recovery, the establishing of new 3rd order levels, and 4th order levels.

Matthew A. Stewart, Engineering Aid, began work on new 3rd order control in this quadrangle April 12, 1946. 8.4 miles of 3rd order levels were run and five 3rd bench marks were set. 3rd order control was completed April 27, 1946.

Elmer L. Williams, Engineering Aid, started B.M. recovery and establishing 4th order control April 8, 1946, and completed the work April 22, 1946.

* West of manuscript limits.
The 4th order control was established by wye levels. Spot elevations were used for control by the contour party, and are shown on the photographs by a dot in blue ink. The points are numbered consecutively from 10 to 123, inclusive; and each number is preceded by the prefix letters MA.

About 43 miles of 4th order levels were run by fly leveling methods. The maximum error of closure was 1.0 ft. All lines with an error of closure greater than 0.10 ft. were adjusted, prorating the error among the spot elevations established.

The following is a list of Bench Marks in this quadrangle:

<table>
<thead>
<tr>
<th>BENCH MARK</th>
<th>IDENTIFIED ON</th>
<th>QUAD</th>
<th>RECOVERED</th>
<th>USED IN 4TH ORDER CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td># E 3 1931</td>
<td>15590</td>
<td>T 8761</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>E 2 1931</td>
<td>15566</td>
<td>T 8761</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>D 2 1931</td>
<td>15565</td>
<td>T 8761</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>G 3 1931</td>
<td>15590</td>
<td>T 8761</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>B 1/</td>
<td>15590</td>
<td>T 8761</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>A 1/</td>
<td>15590</td>
<td>T 8761</td>
<td>&quot;</td>
<td></td>
</tr>
<tr>
<td>T 3 1931</td>
<td>15590</td>
<td>T 8761</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

THIRD ORDER BENCH MARKS set by M. A. Stewart 1946

- D 14 1946 | 15566 | T 8761 | yes |
- E 14 1946 | 15566 | T 8761 |
- F 14 1946 | 15566 | T 8761 |
- G 14 1946 | 15566 | T 8761 |
- H 14 1946 | 15566 | T 8761 |

6. Contours and Drainage:

Contouring was started April 9, 1946, and completed May 22, 1946, by Elmer L. Williams, Engineering Aid. The contour interval is 10 feet. Work, done directly on photos, no. 15565, 15566, 15567, and 15590, was held as near the center of the photographs as practical in order to minimize the effects of distortion. Plane table methods were used.

Drainage and form lines were sketched on photographs from time to time during stereoscopic examinations of the photos. Drainage was checked in the field as contouring was done.
Elevations are shown along the west limits of this quadrangle, which is the west limit of the project, at a maximum interval of 600 ft. as per instructions.

Elevations of all critical points are shown, together with elevations of other points deemed advisable by the topographer, for better topographic expression.

7. **Mean High Water Line**:

Delaware Bay is affected by the tide all along the shoreline of this quadrangle. Shoreline inspection was completed in the last part of April, 1946, by Frederick F. Kaiser, Air Photo. Observer, and Thomas W. Merriken, Jr., Photo. Aid.

The mean high water line as seen from offshore is indicated by a dashed red line at intervals where the line is indistinct on the photographs. At frequent intervals the MHWL was verified by actual measurements from points of detail.

8. **Mean Low Water Line**:

No special attempt was made to locate the mean low water line. If during shoreline inspection an area was visited at low water, however, the low water line and areas awash were indicated on the photographs.

9. **Wharves and Shoreline Structures**:

There were several wharves and other shoreline structures in this quadrangle, all of which have been delineated and noted on the photographs in red ink.

10. **Detail Off-shore from Mean High Water Line**:

Since shoreline inspection was done from a small boat, it was impractical to range far off-shore. In some sections, however, it was too shallow to approach in-shore closer than one to two hundred yards with an outboard motor.

11. **Landmarks and Aids to Navigation**:

There were no charted landmarks along the shore of this quadrangle.
Five non-floating aids to navigation were identified on the photographs and listed on the accompanying form 557. All aids were checked against the 1945 light list and are in agreement except as follows:

<table>
<thead>
<tr>
<th>NAME OF AID</th>
<th>NEW DESCRIPTION</th>
<th>1945 DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Little River FR</td>
<td>white steel post</td>
<td>white wooden post</td>
</tr>
<tr>
<td>Little River RR</td>
<td>white steel post</td>
<td>white wooden post</td>
</tr>
<tr>
<td>Leipsic River FR</td>
<td>red steel tower with</td>
<td>red post with</td>
</tr>
<tr>
<td></td>
<td>triangular day mark</td>
<td>triangular day mark</td>
</tr>
<tr>
<td>Leipsic River RR</td>
<td>white steel tower with</td>
<td>white post with</td>
</tr>
<tr>
<td></td>
<td>triangular slatted day mark</td>
<td>triangular slatted day mark</td>
</tr>
</tbody>
</table>

To determine the azimuth of the Little River and Leipsic River Ranges, a point was established on each range. The point on Leipsic River Range is approximately 3.5 miles northwest of the rear range and is shown on photograph 15588. The point on Little River Range is approximately northwest of the rear range on the road leading from Little Creek, Del. to Port Mahon. (Photograph 15590.)

On each range the point was determined by setting up a theodolite until the instrument was in line with both the front and rear ranges. After line was determined, the point was marked and measurements made to points of detail. In each case, a distance was measured so that a scale factor for that section of the photograph could be determined, if necessary.

These points on range were identified with the same accuracy as a horizontal control station.

12. Hydrographic Control:

Hydrographic control was established and identified on photographs by the shoreline party. In addition to existing horizontal control, thirteen recoverable topographic stations and one additional hydrographic control station were identified.
The following recoverable topographic stations were identified. Form 524 is submitted for each of these stations but Form M-2226-12 is not submitted.

<table>
<thead>
<tr>
<th>STATION</th>
<th>IDENTIFIED ON PHOTO</th>
<th>METHOD OF IDENTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIRA</td>
<td>15590</td>
<td>Picked direct</td>
</tr>
<tr>
<td>OAKS</td>
<td>15590</td>
<td>&quot;</td>
</tr>
<tr>
<td>JAPA</td>
<td>15590</td>
<td>&quot;</td>
</tr>
<tr>
<td>HATE</td>
<td>15590</td>
<td>&quot;</td>
</tr>
<tr>
<td>VANE</td>
<td>15590</td>
<td>&quot;</td>
</tr>
<tr>
<td>JULY</td>
<td>15589</td>
<td>&quot;</td>
</tr>
<tr>
<td>SAIL</td>
<td>15589</td>
<td>&quot;</td>
</tr>
<tr>
<td>KLUG</td>
<td>15589</td>
<td>&quot;</td>
</tr>
<tr>
<td>BOLT</td>
<td>D 1934</td>
<td>&quot;</td>
</tr>
<tr>
<td>Leipsic River RR</td>
<td>D 1934</td>
<td>&quot;</td>
</tr>
<tr>
<td>Leipsic River FR</td>
<td>D 1934</td>
<td>&quot;</td>
</tr>
<tr>
<td>Little River RR</td>
<td>15590</td>
<td>&quot;</td>
</tr>
<tr>
<td>Little River FR</td>
<td>15590</td>
<td>&quot;</td>
</tr>
</tbody>
</table>

13. Landing Fields and Aeronautical Aids:

Dover Army Air Base is located partially in this quadrangle; the south quad line divides the base. About two-thirds of the base is in this quad; the remainder is in quad 8762 to the south.

This base is used chiefly by fighter planes, both conventional and jet propelled types. A few light and medium bombers are based here.

Contouring and field inspection of the entire base was done by Elmer L. Williams, Engineering Aid.

A legend for field inspection appears on photograph 15565. All work on the base was done from this photograph.

Some leased land is to be returned in the immediate future, according to local sources. This information should be checked at time of field edit.
14. Roads:

Roads were classified in accordance with paragraph 49 of the instructions for this project with State and Federal Route numbers shown.

15. Bridges:

There was only one bridge over navigable water within limits of the quadrangle, a single-span swing bridge, crossing Little Creek at Little River. Clearance width of 21.0 feet between fenders and 3.0 feet above M.H.W. (estimated on pilling) were measured with a steel tape.

The List of Bridges over Navigable Waters of the United States gives clear width normal to channel as 24 feet and clear height of the lowest point of superstructure above M.W. as 4.5 feet.

Note: The swing mechanism of this bridge is out of order and has not functioned since 15 August, 1946.

16. Buildings:

All obscure buildings were delineated on the photographs in red ink. Public buildings were identified and named. All abandoned buildings and out buildings were deleted.

17. Boundaries:

Boundaries were verified and checked in the field and delineated on the photographs in purple ink.

Boundaries of the straining range shown on the photograph 15566 are not complete, in that there is no definite eastern boundary. The range extends for an indefinite distance northeastward into the marsh.

18. Geographic Names:

Geographic names for this quadrangle will be covered in a separate report on Geographic Names, Project Ph-7(46), by Lowell I. Bass, Phot. Aid. [Approved list attached to this report.]

-7-
19. Coast Pilot Information:

Coast Pilot information for this quadrangle will be covered in a special report, Project Ph-7(46)A, by George E. Varnadoe, Photogrammetric Engineer. Report not submitted.

Respectfully submitted,

[Signature]

E. L. Williams,
Engineering Aid

Approved and Forwarded
June 28, 1946

[Signature]

E. L. Jones,
Chief of Party
RADIAL PLOT REPORT

Project No. Ph-7-(46)A

DELAWARE RIVER

Surveys Nos. T-8761 to T-8764 incl.

1. GENERAL DESCRIPTION:

Surveys Nos. T-8761 to T-8764 inclusive (Little Creek, Frederica, Bowers S. E., and Mispillion River 7½ minute quadrangles respectively) are four of four topographic maps in Project No. Ph-7-(46)-A located on the western side of Delaware Bay in the State of Delaware, and lying between Fowler Beach and Leipsic River. These surveys are to be compiled in accordance with instructions dated 25 March 1946, and 19 July 1946, by graphic photogrammetric methods. The contouring will be compiled from data obtained by planometric methods.

2. LAYOUT:

The layout of the maps, horizontal ground control and photograph centers are shown on the attached sketch.

3. PHOTOGRAPHS:

U. S. Coast and Geodetic unmounted photographs at a scale of 1:20,000 were used in this radial plot.

4. MANUSCRIPTS:

The map manuscripts are all 7½ minute quadrangles, scale 1:20,000. Polyconic projections, Delaware State Grids and New Jersey State Grids (10,000 foot intervals) for Survey No. T-8761 and Polyconic Projections and Delaware State Grids (10,000 foot intervals) for Surveys Nos. T-8762, T-8763, and T-8764 were ruled with ruling machine and checked in the Washington Office.

5. CONTROL:

Fourteen of sixteen existing horizontal control stations were recovered and identified by the field inspection party. No new horizontal control stations were established. Four of the recovered stations fall just outside the area of this plot, but were used in controlling the plot. Nineteen photographs covering the area were used in this plot.

6. FIELD INSPECTION:

The field identification of the horizontal control was good except as noted in the following paragraph:
6. **FIELD INSPECTION: (cont'd)**

SANDY, 1933, was identified by a substitute point. The position of the substitute point could not be computed because no geographic position or azimuth was available for the object used to initial on. However, a new substitute point was identified by personnel of the Baltimore Photogrammetric Office which was plotted and "held" in the radial plot.

In addition, SANDY 1933, was identified in the compilation office from field notes and from its description. The station as identified in the compilation office could be "held" with the new substitute point.

7. **SUMMARY:**

The selection of substitute stations was good.

The distribution of the control stations was good, however, more control would have been desirable.

The number and distribution of photographs was very good.

**DETAILS OF RADIAL PLOTTING**

8. The scale of the projection sheets was determined in the Washington Office. The plot was made with celluloid templates.

9. In order to eliminate paper distortion when preparing the templet, the Washington Office constructed a master templet made on vinylite. Instructions in its use were given to the personnel of the compilation office by Commander O. S. Reading. The procedure is as follows:

The positions of the photograph center shown on the master templet, the fiducial marks in the outer corners of the outer chambers, and all marks in the inner chamber were transferred to each acetate sheet used in making the templates.

Each sheet was then placed over the photograph of which the templet was to be made. The center shown on the templet was held to the principal point of the photograph. Each chamber of the photograph was then oriented to its corresponding fiducial marks on the templet. In those chambers in which the fiducial marks coincided, all radials were traced. The templet was then adjusted to the next chamber and the fiducial marks in that chamber were examined. If upon examination the fiducial marks did not coincide, the amount of error was corrected by adjusting the radials between the fiducial marks. This adjustment was continued until the radials had been drawn in all chambers.

10. In order to supplement the horizontal control plotted on the projection sheets, all pass points previously established by radial intersection on Survey No. T-8759, that were common to Survey No. 8761, were transferred to the projection sheet for Survey No. T-8761.
11. By using these transferred pass points a good junction was insured between map manuscript T-8761, in this radial plot and map manuscript No. T-8759, to the north.

12. The positions of all of the horizontal control including the pass points were then transferred from the projections to their respective base grid sheets by carefully matching common Delaware State Grid lines. The base grid sheets were then joined by matching common Delaware State Grid Lines.

13. A combined radial plot was then made for the areas of Surveys Nos. T-8761 to T-8764, inclusive, using the acetate templets previously prepared. All of the horizontal control indentified on the office photographs was "held to" either tangentially or better. Satisfactory results were obtained.

14. The projection sheets for Surveys Nos. T-8761 to T-8764 inclusive were then placed over the templets as laid on the base grid sheets, and after matching common Delaware State Grid Lines, the pass points, Photo (Topographic) stations and photograph centers were pricked directly on the projection sheets.

15. The positions of all pass points, Photo (Topographic) stations and photograph centers are within 0.5 mm of their correct geographic positions.

REMARKS

16. Sufficient control on the map manuscripts to the north was transferred to the base grid sheets to insure a good junction between this radial plot and the radial plot previously made. Also all control just outside the area of this plot which could be plotted on the projection sheets was used in making the plot.

Respectfully submitted
26 April 1947

Harry R. Rudolph
Harry R. Rudolph, Supervisor

Approved and forwarded
12 May 1947

Thos. B. Reed,
Officer-in-Charge,
Baltimore Photogrammetric Office
## LIST OF HORIZONTAL CONTROL STATIONS

**PROJECT No. Ph-7-(46)A**

**SURVEYS NOS. T-3761 to T-3764**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of Station</th>
<th>Method of Identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>533</td>
<td>MAHON RIVER LT., 1933</td>
<td>Pricked Direct.</td>
</tr>
<tr>
<td>533A</td>
<td>MAHON 2, 1933</td>
<td>2 substitute stations pricked direct.</td>
</tr>
<tr>
<td>535</td>
<td>COLLEGE, 1932</td>
<td>2 substitute stations pricked direct.</td>
</tr>
<tr>
<td>551</td>
<td>KITTS HUMMOCK, 1933</td>
<td>No recovery.</td>
</tr>
<tr>
<td>552</td>
<td>MURDERKILL REAR RANGE LT., 1933</td>
<td>Pricked Direct.</td>
</tr>
<tr>
<td>556</td>
<td>SANDY, 1933</td>
<td>Substitute Station.</td>
</tr>
<tr>
<td>557</td>
<td>UNION, 1933</td>
<td>2 substitute stations pricked direct.</td>
</tr>
<tr>
<td>558</td>
<td>STONE, 1933</td>
<td>No recovery.</td>
</tr>
<tr>
<td>558A</td>
<td>STONE 2, 1933</td>
<td>Substitute Station pricked direct.</td>
</tr>
<tr>
<td>560</td>
<td>MISPILLION RIVER FLASHING LT., 1933</td>
<td>Pricked direct.</td>
</tr>
<tr>
<td>564</td>
<td>MISPILION RIVER JETTY LT., 1933</td>
<td>Pricked direct.</td>
</tr>
<tr>
<td>562</td>
<td>SLAUGHTER, 1933</td>
<td>Substitute station pricked direct.</td>
</tr>
<tr>
<td>563</td>
<td>DOCTOR, 1933</td>
<td>Substitute station pricked direct.</td>
</tr>
<tr>
<td>564</td>
<td>MARVEL, 1932</td>
<td>Substitute station pricked direct.</td>
</tr>
<tr>
<td>723</td>
<td>TT No. 4 W., 1926</td>
<td>Pricked direct as vertical control.</td>
</tr>
<tr>
<td>758</td>
<td>PRIMARY TRAVERSE STATION NO. 4, 1917</td>
<td>Pricked direct.</td>
</tr>
</tbody>
</table>
LAYOUT SKETCH for
Survey Nos. T-8761 to T-8764 incl.
Project No. PH-7-46-A
T-8761 (Little Creek Quadrangle) is one of four topographic surveys in Project No. Ph-7(46)A, and is located on the western shore of the Delaware Bay, east of Dover and extends from Leipsic River to Lewis Ditch. These surveys are to be compiled in accordance with instructions dated 25 March 1946 and 19 July 1946 by graphic photogrammetric methods.

26. **CONTROL:**

See radial plot report for layout of control in this area. A list of the stations on Form No. M-2388-12 is included in this report.

27. **RADIAL PLOT:**


28. **DELINEATION:**

The compilation is in accordance with the written instructions pertaining to Project No. Ph-7(46) dated 19 July 1946.

Photographs and field inspection were satisfactory for delineation of the manuscript.

Contours were traced directly from the field photographs.

29. **SUPPLEMENTAL DATA:**

General map, Bombay Hook National Wildlife Refuge, Kent County, Delaware. Filed in Div. Photogrammetry General Files.

30. **MEAN HIGH WATER LINE:**

No comment.

31. **MEAN LOW WATER LINE:**

No mean low water line was identified by the field party and none has been shown on the manuscript.

32. **DETAILS OFFSHORE FROM THE MEAN HIGH WATER LINE:**

None.
33. WHARVES AND SHORELINE STRUCTURES:
   No comment.

34. LANDMARKS AND FIXED AIDS TO NAVIGATION:
   Refer to Form 567 included with this report.

35. HYDROGRAPHIC CONTROL:
   One hydrographic signal site was located. Its description is
   lettered on the manuscript. (See heading No. 12 of field report.)

36. LANDING FIELDS AND AERONAUTICAL AIDS:
   See heading No. 13 of the field report.

37. DISCREPANCY OVERLAY:
   A discrepancy overlay has been prepared.

38. GEOGRAPHIC NAMES:
   Geographic names were taken from final name standards dated
   9 December 1946 furnished by the Washington Office. Approved list attached
   to this report.

39. JUNCTIONS:
   Junctions with Surveys Nos. T-8762 to the south and with T-8759
   to the north have been made and are in agreement.

   To the east is an all-water area and along the west is the west
   limits of the project.

40. BRIDGES:
   All bridge information for the area covered by this report as
   listed in the U. S. Engineers "List of Bridges Over Navigable Waters
   in the O.S." dated 1 July 1941; was verified in the field; all clearances
   were carefully measured with a steel tape, and the published descriptions
   and clearances were found to be correct except for the following dis-
   crepancies which were not reported to the Local District Engineer.
   (Letter to the local Dist. Eng'r. being prepared by the Review Section)
   Swing bridge at Little Creek over Little River

<table>
<thead>
<tr>
<th>Clear width normal to channel</th>
<th>Measured Clearance</th>
<th>Listed Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear height of lowest point of superstructure in feet</td>
<td>21.0</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>3.0 above M.H.W.</td>
<td>4.5 above H.W.</td>
</tr>
</tbody>
</table>

   See also side heading No. 15 of field report.
41. **BOUNDARIES:**

Identification of boundary lines of Little Creek (town) and legal description thereof were not furnished the compilation office. The boundary lines were, therefore, not shown on the map manuscript.

44. **COMPARISON WITH EXISTING TOPOGRAPHIC QUADRANGLES:**

T-8761 was compared with United States Geological Survey Bowers, Del.-N.J. quadrangle map, edition of 1936, reprinted 1945, scale 1:62,500 and found to be in good agreement, except the contours which are, in general, somewhat in disagreement with the U.S.G.S. quadrangle.

45. **COMPARISON WITH NAUTICAL CHARTS:**

T-8761 was compared with United States Coast and Geodetic Survey nautical chart No. 1213, published January 1942 (8th edition) (First edition 1913) corrected to 13 July 1946, scale 1:80,000, and found to be in good agreement.

The following topographic information shown on T-8761 is of sufficient importance to warrant immediate application to the chart:

None.

The following topographic details above the plane of mean high water are not shown on this manuscript but are believed to still exist and should be carried forward on the chart:

None.

Low water features are shown in part and will be completed by the hydrographic party.

Respectfully submitted:
6 June 1947

_Signed_  
Photogrammetric Aid  
Compilation and Compilation Report  
Harry R. Rudek

Signed  
Photogrammetric Engineer  
Photogrammetric Office Reviewer  
Joseph W. Hallmark

Approved and Forwarded:
June 1947

_Signed_  
Officer in Charge  
Baltimore Photogrammetric Office  
Isaacs
Field Edit Report of Map Manuscript T-8761
Project Ph-7 (46)
R.J. Sipe, Chief of Party

The field edit of this quadrangle was accomplished during the period 12 August to 26 August 1947 by Donald G. Flippo, Photogrammetric Aid. All work was done in accordance with the field edit instructions for project Ph-7(46) dated 24 August 1945 and supplemental field instructions.

I7. Boundary: Many discrepancies were found in the field inspector's location of the Bombay Hook Wild Life Refuge. A verified copy of this boundary compiled by the Division of Land Acquisition in 1937 has been submitted with Quadrangles T-8758 and T-8759 for correcting the refuge boundary. All other boundary lines in the quadrangle have been verified and Legal descriptions furnished.

I8. Geographic Names: In addition to the geographic names shown on the field edit print, the following additions are recommended.

Myrtle Gut and Joe's Hole are to be added. These were recommended by Mr. George Spinner of the Bombay Hook Wild Life Refuge.

46. Methods: All delineated features such as roads, structures, drainages, and contours were checked either visually by traveling on roads or trails or by planetable methods.

Delineation and some additions were made directly on the field edit sheet. Some additions and corrections were noted on the photographs with a reference to the photograph on the field edit print. A legend to the symbols and to the colored ink used during the field edit is on the field edit print.

47. Adequacy of the Compilation: Some small outbuildings were deleted according to the instructions for this project and several structures were added. Some access roads were shown for adding to the manuscript.

The relative position of compiled detail was found to be entirely satisfactory. With the addition of the field edit data to the manuscript, this map will be complete and accurate.

48. Accuracy Tests: One vertical accuracy test was run in this quadrangle as to instructions on the discrepancy overlay.

The field edit party has made no effort to verify the horizontal accuracy of this map.

49. Review of First Proof: The following named gentlemen has expressed his willingness to review the first proof of
this quadrangle.

Mr. Wilbert Rawley
Leipsic, Delaware

Respectfully submitted

[Signature]

Donald G. Flippo
Photogrammetric Aid
18 September, 1947
Division of Photogrammetry
Review Report of
Topographic Map Manuscript T-8761

Subject numbers not used in this report have been adequately covered in other parts of the Descriptive Report.

41. Boundaries: The Bombay Hook Migratory Waterfowl Refuge Boundary is shown on the map manuscript as following the center line of several streams. According to the Federal Register, Volume 2, Number 122, 1937 and the Bureau of Biological Survey General Map of the area the boundary line follows the north bank of the various streams with one exception.

In Boat Gut the boundary follows the center line of the water course from the junction of Muddy Branch to the junction with the Leipsic River. Appropriate notes have been inked on the map manuscript to indicate the position of the boundary. Notes have also been added to the drafting overlay.

43. Comparison with Previous Surveys:

<table>
<thead>
<tr>
<th>Survey</th>
<th>Scale (1:20,000)</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-63</td>
<td>1:20,000</td>
<td>1841</td>
</tr>
<tr>
<td>T-141</td>
<td>1:10,000</td>
<td>1841</td>
</tr>
<tr>
<td>T-150</td>
<td>1:20,000</td>
<td>1842</td>
</tr>
<tr>
<td>T-154.7b</td>
<td>1:20,000</td>
<td>1882-3</td>
</tr>
<tr>
<td>T-154.8a</td>
<td>1:20,000</td>
<td>1883-4</td>
</tr>
<tr>
<td>T-3087</td>
<td>1:20,000</td>
<td>1910</td>
</tr>
<tr>
<td>T-3088</td>
<td>1:20,000</td>
<td>1910</td>
</tr>
</tbody>
</table>

These surveys are superseded by the map manuscript in all common areas.

44. Comparison with Existing Topographic Surveys:

- Vineland, Del.- N. J., USGS, 1:125,000, 1866-96
- Bowers, Del.- N. J., USGS, 1:62,000, 1926, 1933-34

45. Comparison with Nautical Charts:

- Chart No. 1218, 1:80,000, 12-8-47

This map manuscript has not been applied to nautical charts.

48. Vertical Accuracy Test: The vertical accuracy test for this quadrangle meets the project specifications. This map complies with the national standard map accuracy requirements.
Reviewed By:

K. W. Maki
K. N. Maki
4-2-48

APPROVED BY:

S. W. Griffith  Schenkelberg
Chief, Review Section  Chief, Nautical Chart Branch
Division of Photogrammetry  Division of Charts

K. T. Adams  C. K. Green
Chief, Div. of Photogrammetry  Chief, Div. of Coastal Surveys
T-8761

AZ of RANGE:
Location of Pt on range
verified and plotted
Az < verified on
original manuscript
with 3-arm steel
protractor. Result =
124° 02' (same as above)

Cloth backs may have
distortion and shrinkage,
causing an increase in the
reading.

Maki
GEOGRAPHIC NAMES

- BAY GUT ✓
- BOAT GUT ✓
- BOMBAY HOOK NATIONAL WILDLIFE REFUGE ✓
- CATTAIL GUT ✓
- CEDAR GUT ✓
- DEEPWATER POINT ✓
- DELAWARE BAY ✓
- DEVERS GUT ✓
- DONAS LANDING ✓
- DOVER ARMY AIR BASE ✓
- DRUM GUT ✓
- DUCK CREEK ×
- EAST WEST CANAL ✓
- FLAT GUT ✓
- GREEN CREEK ✓
- HERRING BRANCH ✓
- INDIAN GUT ✓
- KELLY ISLAND ✓
- KENT ISLAND ✓
- LEIPSIC RIVER ✓
- LEVIS DITCH ✓
- LITTLE BOMBAY HOOK ✓
- LITTLE CREEK ✓ (village)
- LITTLE CREEK LANDING ✓
- LITTLE FORK ✓
- LITTLE RIVER ✓
- LONG POINT ROAD ✓
- MAHON RIVER ✓
- MARSHALL ISLAND ✓
- MORGAN BRANCH ✓
- MUDDY BRANCH ✓
- NEEDHAMS ISLAND ✓
- NORTH SOUTH CANAL ✓
- OLD CREEK ✓
- OLD ROMANS GUT ✓
- PICKERING BEACH ✓
- PIPE ELM BRANCH ✓
- PORT MAHON ✓
- POSTLES CORNER ✓
- RAGGED ISLAND ✓
- ST. JONES RIVER ✓
- SIMONS RIVER ✓
- TAYLOR GUT ✓

✓ MYROKE GUT (have no record of this name) ➔ See Field Ed. Report?

× Cornwall Community House ✓
× Oak Grove Community House ✓
× Friends Meeting House ✓
× White Oak School (colored) ✓
× Spencer Gut ✓
× U.S. No. 113 ✓ Dupont Highway ✓
× State No. 8 ✓
× State No. 9 ✓
× Meers Cemetery ✓

Names preceded by ✓ are approved. 3/15/48
L. Heck
NOTES FOR HYDROGRAPHIC PARTIES
DELAWARE RIVER
MAP MANUSCRIPT, SURVEY NO. T-8761
PROJECT NO. PH-7(46)

The 2½ millimeter circles, accompanied with a name and date, are the positions of the recoverable photo (topographic) stations. The hydrographic signal site is indicated by a dot with the description lettered on the manuscript.

T-8761 was compared with United States Coast and Geodetic Survey nautical chart No. 1218, published January 1942 (8th edition)(First edition 1913) corrected to 13 July 1946, scale 1:80,000.

The following topographic information shown on T-8761 is of sufficient importance to warrant immediate application to the chart:

None.

The following topographic details above the plane of mean high water are not shown on this manuscript but are believed to still exist and should be carried forward on the chart:

None.

Low water features are shown in part and will be completed by the hydrographic party.

Respectfully submitted
6 June 1947

[Signature]
Photogrammetric Aid

Approved and forwarded:

[Signature]
Officer in Charge
Baltimore Photogrammetric Office