

6018

U. S. COAST & GEODETIC SURVEY  
LIBRARY AND ARCHIVES

AUG 13 1934

Acc. No. \_\_\_\_\_

Form 504  
Rev. Dec. 1933  
DEPARTMENT OF COMMERCE  
U.S. COAST AND GEODETIC SURVEY  
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. T. (T-5027)  
Hydrographic }

5018

State CALIFORNIA

LOCALITY

SACRAMENTO - SAN JOAQUIN DELTA

BYRON

1934

CHIEF OF PARTY

L. P. RAYNOR

6018

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

U. S. COAST & GEODETIC SURVEY  
LIBRARY AND ARCHIVES

HYDROGRAPHIC TITLE SHEET AUG 14 1934

REG. NO.

6018

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. T (T-5027)

REGISTER NO. 6018

State CALIFORNIA

General locality SACRAMENTO & SAN JOAQUIN DELTA

Locality BYRON

Scale 1:10,000 ✓ Date of survey JUNE, 1934 ✓

Vessel HELEN F. (LEASED LAUNCH)

Chief of Party L. P. RAYNOR ✓

Surveyed by L. P. RAYNOR ✓

Protracted by T. M. MEANS

Soundings penciled by T. M. MEANS

Soundings in ~~fathoms~~ feet

Plane of reference MLLW ✓

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

Inked by \_\_\_\_\_

Verified by \_\_\_\_\_

Instructions dated Sept 2 1933 et al, 19

Remarks: HYDROGRAPHIC SIGNALS PLOTTED BY

T. M. MEANS CHECKED BY S. S. WHITEHEAD ✓

DESCRIPTIVE REPORT

of

HYDROGRAPHIC SHEET T (T-5027)

AUTHORITY, LIMITS, DATES:

The AUTHORITY for this work is contained in the following letters:

1. 22 LE 1990 March 17, 1933
2. 22 AHH 1990 August 12, 1933
3. SUPPLEMENTAL INSTRUCTIONS  
PROJECT 98 HT Sept. 2, 1933
4. 26 RS 1990 Nov. 9, 1933
5. 22 AHH 1990 Nov. 16, 1933
6. 22 MEN 1990 Dec. 2, 1933

The work on this sheet covers Old River from Latitude  $37^{\circ} 52' 30''$  to Latitude  $37^{\circ} 56' 15''$ ; Indian Slough, with the dredger cut running along west side of Orwood Tract as far north as the Santa Fe R.R.; Middle River, south of  $37^{\circ} 56' 15''$  to  $37^{\circ} 55' 15''$ ; practically all of Woodward Canal and North Victoria Canal; as well as a small section of Victoria Canal and North Canal. The work was done on June 14, 15, 18, 19, 20, 23, and 28, 1934.

SURVEY PARTIES:

With the exception of June 15, when N. G. Korneeff, Observer, was in charge, the hydrographic work was done under the direct supervision of the Chief of Party with the usual launch complement. Signals were located and placed by a party in charge of J. LeConte, Observer, with launch engineer and three hands.

SURVEY METHODS:

Signals were located by:

- A. Taking boat sheet in the field and spotting topographic detail such as tule points, shed gables, syphons, and by measurement along the levee with tape or stadia from spottable detail.
- B. By sextant three-point fixes using objects previously located by the photo compilation party and shown in blue on the boat and smooth sheets.
- C. By using the boat sheet on the planetable and locating by standard topographic methods. These are also shown in red and indicated on the boat sheet with letter, (P).

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Boat positions were located by:

- A. Standard method of three-point fix with sextant, or
- B. By bearings read on pelorus #24874 used with compass of same number, in conjunction with distances as read by range finder #7277.

Depths were obtained with line using 9# lead or with sounding pole graduated in fathoms and feet up to 4 fathoms and turned end for end after each sounding. Spacing was done on time using clock with automatic sounding device for most of the work. Depths were read to the nearest tenth of a foot and reduced to the nearest  $\frac{1}{2}$  ft. in the sounding records. Smooth sheet was plotted in one-half feet up to  $9\frac{1}{2}$  feet and even feet beyond 10 feet as authorized in Instructions of December 2, 1933. *(In Office, half-foot only were plotted in actual depths only which is in accordance with the liberty allowed in the instructions - H.P.M.)*

Smooth plotting was done on an aluminum sheet coated with tanned gum arabic on which the photo compilation had been printed.

TIDAL DATA:

Portable automatic tide gage was maintained at the Borden Highway over Old River from June 12 to July 10 for determination of the datum plane as well as to furnish the tide reducers. The highest tide observed was 6.4 feet on June 13, 25, 27, and lowest tide was 1.7 feet on June 29. A portable automatic gage had been previously maintained at the Santa Fe R.R. bridge over Old River at Orwood and datum determined. A tide observer was hired to record the tides while the hydrography on this sheet was being accomplished. The corrections to be made to the time of tide at each tide station are shown on the boat sheet with appropriate notes.

The tables for each staff showing the reduction to be entered for various readings follow:

Old River, Orwood		Old River, Borden Highway.	
Staff Reads:		Staff Reads:	MLLW 1.89
2.5 to 3.0	add $1\frac{1}{2}$ ft.	0.6 to 1.1	add 1 ft.
3.0 to 3.5	" 1 ft.	1.1 to 1.6	" $\frac{1}{2}$ ft.
3.5 to 4.0	" $\frac{1}{2}$ ft.	1.6 to 2.1	zero
4.0 to 4.5	zero	2.1 to 2.6	subtract $\frac{1}{2}$ ft.
4.5 to 5.0	subtract $\frac{1}{2}$ ft.	2.6 to 3.1	" 1 ft.
5.0 to 5.5	" 1 ft.	3.1 to 3.6	" $1\frac{1}{2}$ ft.
5.5 to 6.0	" $1\frac{1}{2}$ ft.	3.6 to 4.1	" 2 ft.
6.0 to 6.5	" 2 ft.	4.1 to 4.6	" $2\frac{1}{2}$ ft.
6.5 to 7.0	" $2\frac{1}{2}$ ft.	4.6 to 5.1	" 3 ft.
7.0 to 7.5	" 3 ft.	5.1 to 5.6	" $3\frac{1}{2}$ ft.
7.5 to 8.0	" $3\frac{1}{2}$ ft.	5.6 to 6.1	" 4 ft.
8.0 to 8.5	" 4 ft.	6.1 to 6.5	" $4\frac{1}{2}$ ft.
		6.5 to 7.1	" 5 ft.

GENERAL NOTES:

Old River, Middle River, and Indian Slough were natural waterways, on both banks of which levees from 10 to 15 feet in height have been built for reclamation purposes. The other waterways are dredger cuts from which material has been taken for use in levee building, usually having in mind less regard for the interest of navigation than the need for spoil to build the levees. As the levees shown in this sheet are on a somewhat more solid foundation than those in the lower part of the Delta, the necessity for rebuilding due to settlement is less urgent. For this reason the depths in the dredged cuts are now much more uniform and less subject to change than is the case lower down the rivers.

NAVIGATION, LANDINGS, CHANNELS:

A large tonnage of sugar beets is barged up the Old River and through the Grant Line Canal to the Holly Sugar Factory, a few miles north of Tracy. In return, refined sugar and lime is barged down the river from the same factory. Middle River and Victoria Canal are also used in this industry but to a lesser extent. Tugs towing the barges have a draft of about 9 feet maximum.

Small fishing and pleasure craft use all of these waterways. Landings are made alongside the bank at nearly any place desired, usually at the warehouses and sheds on the levee. Woodward Island products are all shipped by boat, there being no truck connections to the island. Landings are made where desired. Just above the Borden Highway Bridge over Old River is a private boat livery where small boats and skiffs can be rented for fishing purposes and one or two small launches can be accommodated. Channels are indicated by the depth curves drawn on the boat sheet ~~and in this sheet~~ and ~~Middle River on the same sheet~~. Old River is a comparatively deep stream throughout but has a shoal area near the junction with Indian Slough where the controlling depth appears to be 8 ft in the west. However 9 ft may be carried on the east side in this vicinity. *From*

Middle River, within the limits shown on this sheet has a depth well over 12 feet in the channels adjacent to both the Upper Jones Tract and Woodward Island. Both canals between Woodward and Victoria Islands, as well as those between Victoria Island and Union Island, show controlling depths of 2 fathoms or over. Indian Slough adjacent to the Orwood Tract has a controlling depth of 6 1/2 feet near its junction with the dredger out running along the west side of the tract, which has a controlling depth of 6 feet at MLLW. Slightly deeper water is found in the channel adjacent to the Byron Tract.

*11 1/2 feet in West Branch  
18 " in East Branch  
except at junctions on  
the north.  
13' North Canal.  
12' Victoria "  
10' Woodward "  
9' N. Victoria "  
The depths mentioned  
by the field party may  
probably be found with  
local knowledge - J.M.M.*

OVERHEAD CLEARANCES: BRIDGES, POWER LINE POLES:

The horizontal clearances of the Borden Highway Bridge over Old River were measured and found to be 102 feet, east span; 102 feet west span. The vertical clearances was 11 1/2 feet for both draw spans. The horizontal clearance for the Santa Fe R.R. Bridge over Old River, at Orwood, was found to be 99 feet, vertical clearance 10 1/2 ft. above MHW.

This is a single leaf bascule bridge and is shown on sheet 5015 but included in this report as the junction of the sheets is near this bridge.

The horizontal clearance at the single leaf bascule R.R. bridge at Middle River is 99 feet, the vertical clearance is 11 feet above MHW. This bridge also is shown on sheet 5015 but is included in this report for the reasons as given above.

*This note removed from H-6015 as bridge and note are already shown on H-6001 - J.P.M.*

The vertical clearance between the triangulation stations, Middle River, "Middle Latticed Steel Pole, 1932" and Middle River, "West Latticed Steel Pole, 1932" was found on July 13, by range finder to be 149 feet above MHW; the clearance at center of channel of the line between triangulation station Middle River, "Middle Latticed Steel Pole" and the "East Pole" was found to be 159 feet above MHW.

The clearance in the south channel of the overhead power line supported by triangulation stations "Indian Slough, North and South Wooden Poles" is 119 feet above MHW; and in the north channel adjacent to the Orwood Tract, 125 feet above MHW.

The clearance of the power lines supported by the two wooden poles on the west side of Orwood Tract and which were located by triangulation is 125 feet above MHW.

DEVIATION TABLES, RANGE FINDER DATA:

Complete swing on each 15° rhumb was taken on June 12, 1934 in Old River, approximate latitude 37° 55' N. bearing being taken on the right hand or west of three latticed steel poles located by triangulation just below Middle River Post Office. The magnetic bearing of the pole was found to be N.36° 50' E. as a mean of the 24 bearings taken. Its true azimuth was found to be N.55° 50' E. and on the assumption, from a study of the charts, that the magnetic declination was 18° 40' east, the magnetic bearing is N.37° 10' E. which agrees with the above. The deviation and total correction table was computed on the basis of a bearing of 37° as it is not possible to read the pelorus to less than one degree in the regular hydrographic work.

From a slightly different position in Old River, bearings were again taken on June 28, using the same object. The magnetic bearing as determined from the mean of compass bearings was 36° 19' while by using 18° 40' E. as the variation it was found to be 36° 47'. 37° was used as the magnetic bearing in computing the deviation and total correction tables.

For work from June 12 to 19 the tables are derived from observations on June 12; for the rest of the work, the observations on June 28 were used. The deviation tables properly applying are shown on the front page of each sounding volume.

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The range finder #7277 was tested frequently throughout the working period and results are contained in a special volume, "Range Finder Tests," which will be submitted later. The constant use of the range finder by the observer and its frequent testing have made its use very satisfactory for distances below 60 meters and distances up to 75 meters have been observed with the required degree of accuracy. The distances across the various sloughs as determined by range finder and by measurement of the photo compilation checked very well.

DISCREPANCIES:

1. The 17 ft. sounding on position 85 C appears to plot between two 15 ft. soundings on line 42 B-43 B. The 17 ft. sounding actually plots 2 meters toward center line from 42 B-43 B.
2. The 9 ft. sounding on position 4 D appears to plot between two 7 ft. soundings on line 25 A-26 A. Actually plots 1-2 meters toward center line from 25 A and 26 A.
3. The zero sounding (reduced) on line ~~19 F to 20 F~~ <sup>20 F to 21 F</sup> is unquestionably a recorder's error, for the record shows depth of 1.2 feet which is manifestly wrong as the boat used draws about 2 feet and would have been aground. A new recorder was being used at this time. (North Canal, Eg 0 SVS 2). *Sounding omitted from sheet AK-5*
4. When compared with sheet 5035 <sup>H-6019</sup>, the line 19 F to 20 F appears to disagree with line 17 B to 18 B on 5035. Line 19 F to 20 F is 7 meters offshore, while line 17 B to 18 B is 10 meters offshore. *Considered in overlap. Hurn.*

The compilation near ISM 5 was found to be slightly in error and was relocated by planetable. The white print used as a planetable sheet is with the smooth sheet.

*Note - The print is filed as Air Photo Letter no. 24 and is shown correctly on this sheet - Hurn.*

LANDMARKS:

A list of Landmarks was submitted with the photo compilation data of this sheet.

GEOGRAPHIC NAMES:

Notes on Geographic Names were given in the descriptive report of the photo compilation of this sheet.

*Inspected and compared applied in field - Hurn. HB*

*L. P. Raynor*

L. P. Raynor  
Chief of Party.

STATISTICS

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DATE 1934	VOL.	DAY	MILES MILE	POSITIONS	SOUNDINGS
June 14	1	A	14.1	125	956
" 15	1	B	18.8	138	1462
" 15	2	B	2.5	15	196
" 18	2	C	19.0	140	1047
" 19	2	D	10.0	92	713
" 19	3	D	7.0	53	478
" 20	3	E	14.0	127	1094
" 23	3	F	4.0	34	345
" 28	3	G	<u>1.6</u>	<u>29</u>	<u>177</u>
TOTALS			91.0	753	6468

HYDROGRAPHIC SIGNALS: 178



Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in  
3 volumes of sounding records for

HYDROGRAPHIC SHEET 6018

Locality Byron, San Joaquin Delta, Calif.

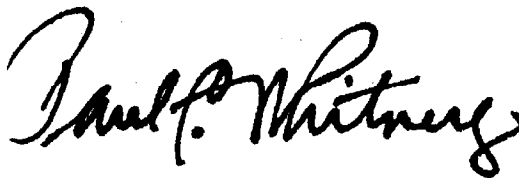
Chief of Party: L. P. Raynor in 1934

Plane of reference is mean lower low water, reading  
2.0 ft. on tide staff at Borden Highway Bridge (Old River)  
18.7 ft. below B. M. 1  
4.3 ft. on tide staff at Orwood Bridge (Old River)  
13.4 ft. below B.M. 1  
3.3 ft. on tide staff at Borden Highway Bridge (Middle River)  
14.6 ft. below B.M. 1

Height of mean higher high water above plane of reference

is approximately 3.5 ft.

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents

GEOGRAPHIC NAMES

Survey No. T-5027

H-6018

Date Nov. 23, 1934

Chart No. \_\_\_\_\_

HMS

*Names underlined in red approved Nov. 23, 1934* Diagram No. \_\_\_\_\_

*H. Bacon*

\* Approved by the Division of Geographic Names, Department of Interior.

Ø, Not Approved by the Division of Geographic Names, Department of Interior.

R, Referred to the Division of Geographic Names, Department of Interior.

Status	Name on Survey	Name on Chart	New Names in local use	Names assigned by Field	Location	
	<u>Upper Jones Tract</u>	Local usage and reliable maps				
	<u>Woodward Island</u>	"				
	<u>Victoria Island</u>	"				
	<u>Orwood Tract</u>	"				
	<u>Byron Tract</u>	"				
	<u>Byron-Bethany Irrigation District</u>	Official name				
	Camp numbers check against reliable maps of the area					
	<u>Old River</u>	Local usage and reliable maps				
	<u>Middle River</u>	"				
	<u>North Victoria Canal</u>	"				
	<u>Indian Slough</u>	"				
	<u>Victoria Canal</u>	"				
	<u>San Joaquin County</u>	"				
	<u>Contra Costa County</u>	"				
	<u><sup>no hull</sup> Union Island</u>	<i>OK/NB</i>				
		<i>For authorities consulted see</i>			<i>DR-T-5027</i>	
					<i>HMS</i>	

*v 27/11*

## Verification Report H 6018

### Records

The records are neat and legible. They conform to the requirements of the Hydrographic Manual *except as noted in the review - H. Krum*

### Protracting

The protracting was well done. Comparison with the boat sheet showed good agreement. ✓

### Drafting

The field drafting was well done. ✓

### Crossings

The crossings are in good agreement ✓

### Curves

The usual depth curves could be drawn except in places where only portions of curves were drawn because there was not sufficient space to include them. ✓

### Junctions

<sup>1934</sup> This sheet joins H 6001<sup>1934</sup> on the north, H 6017<sup>1934</sup> on the east and H 6019 on the south. H 6019 is not yet verified but the other two overlaps were made and show fair agreement.

### Comparison with other data.

The only necessary changes in shoreline (mentioned under Discrepancies in the Descriptive Report) were made in the field. ✓

Respectfully submitted,

R. B. Krum.

October 25, 1934.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 6018.

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

Number of positions on sheet	....753
Number of positions checked	....4
Number of positions revised	...1.
Number of soundings recorded	6468...
Number of soundings revised	....7..
Number of signals erroneously plotted or transferred	.....none

Date:..... October 30, 1934 .....

Cartographer:..... R. B. Krum .....

Verification of plotting	R. B. Krum	Time: 5 hrs.
Verification & taking of notes and charts		
Verification of taking by	R. B. Krum	Time: 47 hrs.
Review by	H. W. Murray	Time: 3 $\frac{3}{4}$ "

Section of Field Records

REVIEW OF HYDROGRAPHIC SURVEY NO. 6018 (1934).

Byron, Sacramento-San Joaquin Delta, California.  
Instructions dated March 17 and Sept. 2, 1933 (L. P. Raynor).  
Surveyed in June, 1934.

Hand Lead and Pole Soundings.    Control - (3-Point Control on Shore Signals.  
(Compass Bearings.  
(Range Finder Distances.)

Chief of Party - L. P. Raynor.  
Surveyed by - L. P. Raynor.  
Protracted by - T. M. Means.  
Soundings penciled by - T. M. Means.  
Verified and inked by - R. B. Krum.

1. Condition of Records.

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

- a. No list of signals used was noted in the records (Par. 139).
- b. On the cover label and title page of the sounding records, the position numbers and day letters were in blue ink instead of red as used on the sheet. These were changed to the proper color in the office (Par. 138).

2. Compliance with Instructions for the Project.

The plan, character and extent of the survey satisfy the instructions for the project with the exception that in one or two localities more sounding lines would have been desirable in order to clearly define the depth curves and controlling depths.

3. Sounding Line Crossings.

Sounding line crossings are satisfactory.

4. Depth Curves.

The usual depth curves may be satisfactorily drawn.

5. Junctions with Contemporary Surveys.

The junctions with H-6001 (1933-34), H-6017 (1934) and H-6019 (1934) are satisfactory.

6. Comparison with Prior Surveys.

There are no prior surveys made by this Bureau within the limits of the present survey and there is no record in this office of any surveys made by the U. S. Engineers.

7. Comparison with Chart.

There is no published chart covering the area of the present survey.

8. Field Plotting.

Field protracting and plotting of soundings were accurate and conform to the requirements of the Hydrographic Manual.

9. Additional Field Work Recommended.

a. For Future Consideration.

In order to clearly define the depth curves and controlling depths, more sounding lines would be desirable in the following areas:

- |     | <u>Latitude</u> | <u>Longitude</u> |  |
|-----|-----------------|------------------|--|
| (1) | 37°55'.0        | 121°33'.9        | To determine the extent of the 7½ ft. shoal in <sup>mid</sup> channel and as to whether a deeper channel may be found on the east.                                       |
| (2) | 37°56'.2        | 121°31'.9        | To determine if the deep narrow channel indicated by the plotted 25 ft. sounding extends sufficiently westward so as to connect with the western branch of Middle River. |

10. Superseding Previous Surveys.

There are no prior surveys to be superseded.

11. Power Line Crossing Clearances.

The following clearance discrepancies are noted between those shown on T-5027 (Authority - Chart Letter No. 738, 1933) and the present survey:

	<u>Latitude</u>	<u>Longitude</u>	<u>T-5027(1933)</u>	<u>H-6018 (1934)</u>
a.	37°56'.2	121°31'.8	125 ft.	(159 ft. East Span. (149 " West " )
b.	37°56'.1	121°35'.1	125 ft.	(125 ft. North Slough. (119 " South " )
c.	37°55'.7	121°33'.5	125 ft.	139 ft.

In all of the above cases, the hydrographic determinations (range finder) were shown on the smooth sheet.

12. Reviewed by Harold W. Murray, November 5, 1934.

Inspected by A. L. Shalowitz.

Examined and approved:

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

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

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

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

*Applied to drawing of Chart 5527  
June 11, 1935 - J.P.W.*