

4304

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

E. Lester Jones, Director

C. & G. SURVEY

L. & A.

JAN 8 1928

Acc. No.

State: Hawaiian Is.

DESCRIPTIVE REPORT

Topographic
Hydrographic

Sheet No.

4304

LOCALITY

Hawaiian Islands

Lanai Island W. Coast

Kaunapau Harbor

1927

CHIEF OF PARTY

F. G. Engle

GOVERNMENT PRINTING OFFICE

DESCRIPTIVE REPORT
to accompany
Topographic Sheet #K., Kaumalapau Harbor, Lanai Island, T.H.

F.G. Engle, Chief of Party

Director's instructions dated July 29, 1927.

EXTENT:

This sheet includes the shore-line on the west coast of Lanai Island from approximately Latitude $20^{\circ} 47'$ to Latitude $20^{\circ} 48'$ and the topography for one-half mile inland.

GENERAL DESCRIPTION:

Kaumalapau Harbor, situated on the west coast of Lanai Island, is a small bight about 300 meters wide and indents the coast 250 meters. It is marked on the south side by a flashing white light. The north side is marked by a flashing red light on the outer end of a masonry breakwater. Kaumalapau is the best harbor on the island. A breakwater and concrete wharf have been constructed here and steamers may go alongside the dock. Pineapples are shipped from here in large quantities by the Hawaiian Pineapple Co., the owners of the island. Steamers call regularly and there is radio telephone communication with Honolulu. Supplies may be purchased in limited quantities and transportation and telephone communication may be obtained to the other parts of the island.

The shore-line shown on this sheet is rocky and for the most part steep. Back of the shore the ground slopes gradually toward the sea and although grass covered, it presents a barren appearance on account of the limited rainfall. The central part of the island is devoted to the cultivation of pineapples.

LANDMARKS and AIDS to NAVIGATION:

The most conspicuous landmarks are the two lighthouses and the radio masts. These were all located by triangulation. The inner part of the harbor is marked by two red nun buoys. The positions of the nun buoys and mooring buoys were determined by plane-table cuts.

SURVEY METHODS:

The six triangulation stations shown furnished control for this work and the survey was accomplished by the usual plane-table methods. A traverse was run along the shore-line from triangulation station KAU to triangulation station RED with a closing error of 1 meter which was adjusted. A traverse was also run from triangulation station RED to triangulation station MANUI with a closing error of 3 meters which was adjusted. Elevations were obtained by vertical angles and rod readings. Positions inland were obtained by traverse and the ends of all traverse lines were checked by three point fix.

Statute miles of shore-line - - - - - 1.8
Statute miles of roads - - - - - 1.1

Respectfully submitted,

Approved and forwarded,

B. F. Eagle H.H.C.
Chief of Party

J. C. Partington
Topographer

Inspected and found adequate

E. D. Tullis

Mar. 8, 1928

P

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

tl

TOPOGRAPHIC TITLE SHEET

The finished Topographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

4304

U. S. Coast and Geodetic Survey.

Register No. ^k 4304

State . . . Hawaiian Is.

General locality . . . West coast Lanai, Island P.H. . . .

Locality . . . Kaunapau Harbor

Chief of party . . . F.G. Engle

Surveyed by . . . J.C. Partington

Date of survey . . . October 1927

Scale . . . 1:5,000

Heights in feet above . . . Mean high water

Contour interval . . . 20 . . feet.

Inked by . . . J.C.P. . . . Lettered by . . . J.C.P.

Records accompanying sheet (check those forwarded): Photographs,

Descriptive report, ☒ Horizontal angle books, Field computations,

Data from other sources affecting sheet

Remarks:

4304a

4304a

| | |
|--|------------------------------|
| Form 604 | |
| DEPARTMENT OF COMMERCE | |
| U. S. COAST AND GEODETIC SURVEY | |
|, Director | |
| <div>U. S. & G. SURVEY L & A AUG 9 1928 REC. NO.</div> | |
| State: Hawaiian Is. | |
| DESCRIPTIVE REPORT | |
| Topographic Hydrographic | Sheet No. ^c 4304a |
| LOCALITY | |
| West Coast of Lanai | |
| Kaumalapau Harbor | |
| 1928 | |
| CHIEF OF PARTY | |
| K. T. Adams | |

GOVERNMENT PRINTING OFFICE

C. & G. SURVEY

L & A

AUG 8 1928

Acc. No.

Department of Commerce ~~and Marine~~

COAST AND GEODETIC SURVEY

E. Lester Jones, Director

~~Special Agent~~

State: Ter. of Hawaii

DESCRIPTIVE REPORT.

Topographic Sheet No. C.

LOCALITY:

Lanai Island

Kaunalepau Harbor

1928

CHIEF OF PARTY:

K.T. Adams, H. & G. E.

FACTS ABOUT THE ISLAND OF LANAI

Island of Lanai—140 square miles, 90,000 acres.

Located 65 miles south-east of Honolulu.

Estimated pineapple land—15,000 to 20,000 acres.

Option on Lanai taken September 6th, 1922.

Option exercised December 5th, 1922.

Population at that time—about 150.

Present population—1000. (Increase from 500 to 1000)

Elevation of Lanai City—1,650 feet.

Building of Lanai City commenced August, 1923.

Number of schools—2. Attendance—150.

Seven miles of asphalt macadam road to Lanai City, 8 in. to 12 in. thick and 20 ft. wide, widened at turns.

Maximum grade of road to Lanai City—about 6 per cent.

Water supply lifted 750 feet by electric pump from tunnels in bottom of Maunalei Gulch.

Water brought in 6 in. redwood pipe through three ridges by three tunnels, aggregating 5,300 feet in length.

Capacity old Kaiholena reservoir—500,000 gallons.

Capacity new Kaihoelena reservoir—3,390,000 gallons.

Electric power generated by 100 KW oil engine generator set, generated at 440 volts, transmitted at 2,300 volts.

Capacity moving picture theatre—450.

Kaunalapau Harbor development work commenced September, 1923.

Length of breakwater—300 feet.

Tonnage of rock in breakwater—116,000.

Minimum depth of Kaunalapau Harbor—27 feet.

Depth of Kaunalapau Harbor entrance—65 feet.

Length of wharf—400 feet.

Length of boat landing—80 feet.

Number of cattle on ranch at present time—4,000.



Kaunalapau Harbor, Lanai, H.I.

DESCRIPTIVE REPORT

To accompany Topographic Sheet No. "C" -----Scale 1/2500

Lanai Island, Ter. of Hawaii

Kaunalapau Harbor

Date of Instructions:- April 7, 1928.

Date of Survey:- June 27-29, 1928.

Chief of Party:- K. T. Adams, H. & G. E.

Topographer:- F. B. Quinn, Jr. H. & G. E.

Limits:- This sheet includes the shore line of Kaunalapau Harbor and the village of Kaunalapau. It extends but a few hundred meters north and south of the harbor.

Control:- Two beacon lights, two wireless poles and one other triangulation station --- all from the 1927 triangulation by the party of F. G. Engle, Steamer "Discoverer" --- furnished the necessary control.

Method:- Plane table stadia surveying was used entirely. Three point fixes were obtained for nearly all positions where the table was not set at a triangulation station. Buoys were located by cuts from several set ups.

Hydrographic signals used by the party of the Discoverer were whitewashed and relocated.

Enough elevations were taken to plot the contours in the immediate vicinity to an interval of 20 feet and to check those plotted by the party of the Discoverer. Dotted lines indicate contours filled in from a few elevations and an inspection of the ground and the previous survey.

The limits of the reefs were obtained partially by rod readings and partially by plane table cuts to the tangents. All rocks outlined with solid lines are bare at high water. The stages of the tide at which the reefs are awash are indicated by notes on the topographic sheet.

The rocky sections of the shore line are indicated by the symbol for "rocky ledge". Course gravel and small rocks are indicated in the vicinities of signals "But" and "Bay".

General Description:- The harbor is located on the rugged west coast of Lanai Island. It is nearly circular in shape with a diameter of about 325 meters. However, the section to the north and west of the line of buoys is the only part extensively used.

A concrete dock has been constructed by the Hawaiian Pineapple Company along the north end of the harbor. It is fitted to accomodate the inter-island steamers, and also has a small boat landing at its westerly end. The large dock landing is about 105 meters long and the small boat landing about 20 meters.

A rock and concrete breakwater about 4 feet above MTL extends southerly about 80 meters from the westerly end of the dock. It has a red beacon light at its southerly end.

The dock is equipped with a Warehouse and two travelling cranes for handling the shipments of freight and pineapples.

The Standard Oil Company has four storage tanks 30 feet in height and built at an elevation of 87 feet which places their tops at an elevation of 117 feet. Two of the tanks which are 20 feet in diameter are used for gasoline and have a capacity of 70,000 gallons each; one is 15 feet in diameter and has a capacity of 39,000 gallons, and is used for Deisel oil; the remaining tank is 10½ feet in diameter, has a capacity of 20,000 gallons and is used for kerosene. These tanks, which are painted grey, are the first objects recognized when approaching the harbor from the sea.

There are ten cottages, several small shacks and water tanks, a recreation cottage, a restaurant, a six-car garage, and a wireless station with two antenna poles on the cliff just east of the dock. This is the village of Kaunalapau. The main population of the island is at Lanai City which is located 7 miles east on the higher table land. Water is piped to Kaunalapau from the resevoir on the higher land.

A well kept asphalt macadam road 20 feet wide connects the dock with Lanai City. A wall about four feet high flanks the westerly and northerly side of the road in the vicinity of the dock. This also serves as a sea-wall near the dock.

Just south of the village a valley extends back about a half mile to the hills. A dry steam bed enters the harbor here.

To the south of the harbor is a cliff which rises from an elevation of 52 feet at the base of the "white lighted beacon" to an elevation of 125 feet near the southeast part of the harbor. The hill of which the cliff is a part slopes gently up to the higher levels of the island.

Land Marks:- When approaching from the northwest, the cliffs at the southwest end of the island show up dark approximately to Kaumalapau Harbor. From there northerly, the hills have a lighter coloring.

The grey oil tanks are the first objects that definitely mark Kaumalapau by daylight. When first seen from a distance they have the appearance of a large warehouse.

The five pinnacle rocks north of Kaumalapau Harbor do not show up very distinctly since they are seen against a background of rocky cliffs along the shore.

Statistics:-

| | |
|-----------------------------------|-----|
| Statute miles of high water line | 1.1 |
| Statute miles of roads and trails | 1.2 |
| Square statute miles of area | 0.3 |
| Working days | 3 |
| Number of men in party | 3 |

Respectfully submitted,

Francis B. Quinn

Francis B. Quinn, Jr. H. & G. E.

Approved,

K. T. Adams
K. T. Adams, H. & G. E.,
Chief of Party.

(See next page for Plane Table Positions)

PLANE TABLE POSITIONS

| SIGNAL | Latitude Longitude | D M D P | REMARKS |
|----------|-----------------------|----------------------------------|---|
| | 0 | | |
| Per | 20 47 156 59 | 960.5 (884.6) 991.5 (743.9) | W W on rocky ledge |
| Rock | 20 47 156 59 | 926.5 (918.6) 998.8 (736.6) | W W on rocky ledge |
| Bay | 20 47 156 59 | 876.1 (969.0) 990.6 (744.8) | W W on rocky ledge |
| Tin | 20 47 156 59 | 859.8 (985.3) 1053.4 (672.0) | W W on rocky ledge |
| Tank | 20 47 156 59 | 825.6 (1019.5) 1076.5 (658.9) | Oil office Small water tank W of Standard |
| Ho | 20 47 156 59 | 833.0 (1012.1) 1118.5 (616.9) | Small square comfort station alongside road. |
| Oil Tank | 20 47 156 59 | 805.8 (1039.3) 1022.9 (712.5) | Westerly of four oil tanks with top elevation of 117 ft. |
| Pole | 20 47 156 59 | 727.3 (1117.8) 1204.8 (530.6) | Pole with dock-light at sea wall. |
| Pow | 20 47 156 59 | 722.0 (1123.1) 1015.1 (720.3) | W W on rock. |
| Bit | 20 47 156 59 | 694.3 (1150.8) 1225.8 (509.6) | Bit on breakwater. |
| Clit | 20 47 156 59 | 670.0 (1175.1) 1230.2 (505.3) | Bit on breakwater. |
| Step | 20 47 156 59 | 674.7 (1170.4) 964.2 (771.2) | Foot of wooden steps to pow- der magazine in cliff. |
| But | 20 47 156 59 | 579.0 (1266.1) 893.6 (841.8) | Two W W spots on rocks. |
| Sav | 20 47 156 59 | 484.3 (1360.8) 930.1 (805.3) | W W on rocky ledge. |
| In | 20 47 156 59 | 406.1 (1439.0) 1033.4 (702.0) | W W on rocky ledge. |
| Dot | 20 47 156 59 | 361.2 (1483.9) 1115.0 (620.4) | Small W W on rocks. |
| Face | 20 47 156 59 | 358.3 (1486.8) 1137.1 (598.3) | W W on face of cliff. |
| Tripod | 20 47 156 59 | 354.8 (1490.3) 1107.4 (628.0) | Upright pole of hoisting beam near white light beacon. |
| Mix | 20 47 156 59 | 312.4 (1532.7) 1165.1 (570.3) | W W on rocky ledge. |
| Fig | 20 47 156 59 | 284.4 (1560.7) 1125.2 (610.3) | W W on rocky ledge. |
| Lit | 20 47 156 59 | 234.5 (1610.6) 1089.4 (646.0) | W W on rocky ledge. |
| Wat | 20 47 156 59 | 772.1 (1073.0) 1098.0 (637.4) | small water tank. |

AND REFER TO NO. 11-DEM

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

WASHINGTON

September 13, 1928.

SECTION OF FIELD RECORDS

Report on Topographic Sheet No. 4304a

Kaunapali Harbor, Lanai, Hawaiian Islands

Surveyed in 1928

Date of instructions April 7, 1928 (GUIDE)


Chief of Party, K. T. Adams.

Surveyed and inked by F. B. Quinn.

1. The records as well as the plan and character of the survey conform to the requirements of the General Instructions.
2. The plan and extent of the survey satisfy the specific instructions.
3. The junction with the previous survey is adequate.
4. This survey differs in many details from T. 4304. As the larger scale of T. 4304a, and the conditions under which the work was done, indicate that it is more accurate than T. 4304, the former should be accepted wherever the two surveys differ.
5. No additional surveying is required.
6. The character and scope of the surveying and field drafting are excellent.
7. Reviewed by E. P. Ellis, September, 1928.

Approved:


Chief, Section of Field Records (Charts)


Chief, Section of Field Work (H. & T.)

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

C. & G. SURVEY
L. & A.
AUG 3 1928
Acc. No.

REG. NO.

TOPOGRAPHIC TITLE SHEET

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

Field No. C.

REGISTER NO. **43042**

State ~~Territory of Hawaiian Is.~~

General locality Lanai Island, West Coast

Locality Kaunapali Harbor

Scale 1/2500 Date of survey June 27-29, 1928.

Vessel Steamer "GUIDE"

Chief of Party K.T. Adams, H.&G.E.

Surveyed by F.B. Quinn, Jr. H.&G.E.

Inked by F.B. Quinn

Heights in feet above MTL to ground ~~to top of rocks~~

Contour, ~~Approximate contour from data indicated~~ 20 feet

Instructions dated April 7, 1928.

Remarks:

43042

FACTS ABOUT THE ISLAND OF LANAI

Island of Lanai—140 square miles, 90,000 acres.

Located 65 miles south-east of Honolulu.

Estimated pineapple land—15,000 to 20,000 acres.

Option on Lanai taken September 6th, 1922.

Option exercised December 5th, 1922.

Population at that time—about 150.

Present population—1000. (*Varies from 500 to 1000*)

Elevation of Lanai City—1,650 feet.

Building of Lanai City commenced August, 1923.

Number of schools—2. Attendance—150.

Seven miles of asphalt macadam road to Lanai City, 8 in. to 12 in. thick and 20 ft. wide, widened at turns.

Maximum grade of road to Lanai City—about 6 per cent.

Water supply lifted 750 feet by electric pump from tunnels in bottom of Maunalei Gulch.

Water brought in 6 in. redwood pipe through three ridges by three tunnels, aggregating 5,300 feet in length.

Capacity old Kaiholena reservoir—500,000 gallons.

Capacity new Kaihoelena reservoir—3,390,000 gallons.

Electric power generated by 100 KW oil engine generator set, generated at 440 volts, transmitted at 2,300 volts.

Capacity moving picture theatre—450.

Kaumalapau Harbor development work commenced September, 1923.

Length of breakwater—300 feet.

Tonnage of rock in breakwater—116,000.

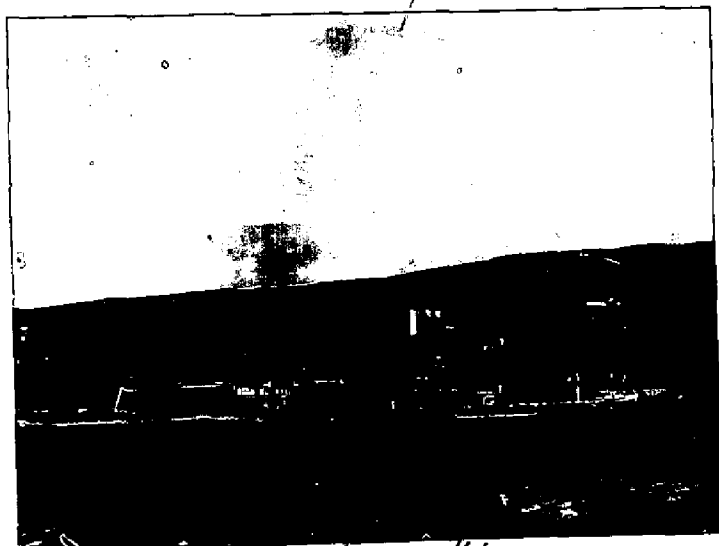
Minimum depth of Kaumalapau Harbor—27 feet.

Depth of Kaumalapau Harbor entrance—65 feet.

Length of wharf—400 feet.

Length of boat landing—80 feet.

Number of cattle on ranch at present time—4,000.



Kaumalapau Harbor, Lanai, H.I.