

3804

Diag. Cht. No. 8554-1

C. & G. SURVEY  
L. & A.

MAR 31 1916

Form 504  
DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

State: ALASKA

11-5813

DESCRIPTIVE REPORT.

Hyd Sheet No. 3804

LOCALITY:

Port Graham to Elizabeth Id

1915

CHIEF OF PARTY:

R. S. Patton

3804

Descriptive Report

Hydrographic Sheet 3804

Entrance to Cook Inlet

Alaska

Port Graham to Elizabeth Id.

U.S. Explorer

R. S. Patton, Chief of Party

1915

DESCRIPTIVE REPORT

to accompany

Hydrographic Sheet **3804**

Port Graham to Elizabeth Island

surveyed

under the direction of

R.S. Patton, Ass't.

by

H.T. Kelsh, Ass't

Steamer Explorer

1915

## GENERAL DESCRIPTION OF COAST.

The whole coast embraced by this sheet, from Port Graham to Elizabeth Island is rugged. The shore is precipitous and drops off quickly into deep water, so that except for a few places the shore may be closely approached without danger.

The currents here are very strong, and are very irregular near the shore due to the shape of the coast, the fact that it is broken by Elizabeth Island, etc.

The flood divides past Elizabeth Island, the current running very strongly through the passage between the island and the mainland. Heavy tide rips occur here both on the flood and ebb tide. Pouring out of the narrow pass the current sweeps in a broad arc against the northern shore, about signal "Gab", making an eddy swinging back into the small bight on the north shore. The current appears, however to spread across most of the funnel shaped mouth formed by Elizabeth Island and the mainland, so that part of the current at least, meets off Cape Elizabeth. Tide rips often occur across this channel.

The ebb tide strikes the north shore of the island, leaving a lee under the shore of the mainland.

The current sweeps closer in shore as it runs north, until it passes with full force right off shore at Point Adam. Here a strong flood probably runs at least three knots, for the launch could barely make headway directly against the tide. There is considerable current between Flat Island and the main shore and heavy tide rips occur here.

OFF SHORE DANGERS.

English Bay Reef. This reef, covered at half tide, lies as shown on the chart, about 1900 M. w  $1/2n$ (true) from the prominent church in the small village of Alexandrovsk. There is deep water on either side and it can be safely passed less than a half mile outside the reef.

Flat Island. This consists really of two small grass covered islands lying close together about a mile off shore and below English Bay.

The tide rips are strong both inside and outside of these islands, due probably to the fact that the bottom comes up rapidly here from 30 to 10 fathoms. A light has been recently placed on the north end of Flat Island. 350 Meters west of the south end on the islands is a small rock. It is surrounded by thick kelp which extends for 300 meters southwest, and also fills the area between the rock and the islands. The islands are fringed with kelp all the way around.

Magnet Rock. This lies  $1 \frac{1}{4}$  miles south of Flat Island and 900 meters off shore. It is a small bare rock about 40 feet high, without little kelp surrounding it, and deep water on either side. The 20 fathom curve is about  $\frac{3}{4}$  miles outside the rock.

There is a shoal area, (5 - 6 fathoms) covered with kelp about one mile south of Magnet Rock, off Signal Seal. There is a large brownish yellow cliff along the shore at this place. It is rather extensive and reaches nearly a half mile off shore. No development was done here as <sup>time</sup> none could be spared for this purpose. However no ship would approach this place and even small boats would keep outside as it is plainly marked with kelp.

Adam Point. It is a steep rocky point with numerous offlying rocks, visible and sunken, but all close inshore. Deep water runs directly up to the rocks. The current runs very swiftly past here and it would be dangerous for a small boat to get inside the rocks. There is 15 fathoms less than  $\frac{1}{4}$  mile off shore, so that the point can be closely passed.

Koyuktolik Bay is a bay of oblong shape extending back for two miles. The bottom is regular and largely gravel and sand, with about 14 fathoms across the entrance gradually shoaling up to 8 fms. three quarters of a mile from the head. There are a few small rocks, bare somewhat before low water, near the northeast bight of the bay, 350 meters off shore, and 800 meters west of the gravel beach forming the end of the bay.

Off the south point of Koyuktolik Bay there is an extensive kelp patch. The kelp is thick and extends a half mile off the point, running from signal Jo around the point to signal Hi.

Numerous ledges project out at this place, and the point should be given a wide berth. The bottom is shoal for a half mile off shore and is made up of boulders generally concealed by kelp.

A small 3 fm. spot was found covered with kelp 600 meters S by W (true) from signal Cat. It lies too far inshore to be at all dangerous.

There is about 20 fms. across the entrance between the north shore and Elizabeth Island, but this deepens rapidly to over 50 fms. midway between Signals Off and Tree. To this and to the fact that the other end of the passage shoals up to 10 fms as shown on sheet Elizabeth Island to East Chugach Island, is due the very heavy tide rips that occur in this pass.

The passage is clear all the way across. There is a small sand and gravel spit projecting about 300 meters off the northeast point of Elizabeth Island, but it drops off into deep water.

The north shore of Elizabeth Island drops off quickly into 15 fms. so that the shore is free.

Off Cape Elizabeth there is an extensive kelp patch extending a half mile off the point, and to the north of signal Outer which is a small rock lying 400 meters off the cape. Outside this rock the water deepens quickly.

The outside coast of Elizabeth Island is very precipitous and drops off into 20 fms. within a half mile of the shore.

The south end of the island is taken up on the next sheet.

The development work done at the entrance to the inside harbor of Port Chatham showed that the north entrance past the small island in the mouth was open as shown on the chart, and that it was safe to pass close to the island.

*Respectfully*

*A. T. Kebb, Asst.*

Statistics Sheet No. 3804  
*Port Graham to Elizabeth Island*

Date, 1915	Letter	Vol.	Posi- tions.	Sound- ings.	Miles- Statute.	Vessels.
August 5, .....	A <i>212</i>	1	108	280	20 1/2	Launch.
" 6, .....	B <i>194</i>	1	97	228	15 1/2	"
" 9, .....	C <i>72</i>	1	46	112	6 1/2	"
" 10, .....	" <i>210</i>	2	105	184	13	"
" 11, .....	D <i>120</i>	2	60	188	6 1/2	"
" 13, .....	E <i>185</i>	2	93	189	13	"
" 14, .....	F <i>87</i>	2	44	91	5 1/2	"
" 16, .....	" <i>139</i>	3	70	156	8 1/2	"
" 17, .....	G <i>334</i>	3	117	266	15 3/4	"
" 18, .....	H <i>277</i>	3	140	232	16	"
" 19, .....	" <i>22</i>	4	11	14	1 1/2	"
" 20, .....	J <i>258</i>	4	131	221	17	"
" 21, .....	K <i>260</i>	4	131	241	18	"
" 22, .....	L <i>100</i>	4	49	75	6	"
" 23, .....	" <i>184</i>	5	92	168	11	"
" 24, .....	M <i>305</i>	5	96	149	9 1/2	"
" 25, .....	N <i>272</i>	5	137	221	17 1/2	"
" 26, .....	" <i>10</i>	6	5	5	1 1/2	"
" 27, .....	P <i>347</i>	6	174	234	20 1/2	"
" 28, .....	Q <i>299</i>	6	151	218	17 1/2	"
" 29, .....	R <i>58</i>	6	29	51	1 1/2	"
" 30, .....	" <i>140</i>	7	70	123	8 1/4	"
" 31, .....	S <i>204</i>	7	103	160	15	"
Sept. 7, .....	T <i>257</i>	7	133	267	18	"
" 22, .....	U <i>349</i>	8	177	308	21 1/2	"
	" <i>286</i>	8	128	304	19 1/2	"
Total.....	<i>4921</i>		2497	4685	323 1/2	



VEC  
April 21, 1916

135  
RSL  
HCL

HYDROGRAPHIC SHEET 3804.

Approaches to Cook Inlet, Alaska, by Assistant  
R. S. Patton in 1915.

TIDES.

	Port Chatham ft.
Mean lower low water, or plane of reference on staff	4.1
Lowest tide observed " "	0.2
Highest " " " "	21.1
Mean range of tide	12.1

DEPARTMENT OF COMMERCE

Hydrographic Sheet No. 3804.  
Entrance to Cook Inlet, Alaska.

Positions protracted by field party and taken as correct.

Soundings pencil plotted by field party and found to be generally accurate.

The work in general appears good but possible too open to accurately develop existing conditions and "tiro drag" work might develop dangers which this survey fail to show

John D. Torrey  
4/2/17