

EXAMINATION AND SURVEY OF INSIDE PASSAGE FROM
PUNTA RASA TO CHARLOTTE HARBOR, FLORIDA.

L E T T E R

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORTS OF
EXAMINATION AND SURVEY OF INSIDE PASSAGE FROM PUNTA
RASA TO CHARLOTTE HARBOR, FLORIDA.

JANUARY 12, 1900.—Referred to the Committee on Rivers and Harbors and ordered
to be printed.

WAR DEPARTMENT,
Washington, January 10, 1900.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated January 9, 1900, together with copies of reports from Capt. Henry Jervey, Corps of Engineers, dated May 23 and December 16, 1899, the former of a preliminary examination and the latter of a survey of Punta Rasa, Fla., made by him in compliance with the provisions of the river and harbor act of March 3, 1899.

Very respectfully,

ELIHU ROOT,
Secretary of War.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

OFFICE CHIEF OF ENGINEERS,
U. S. ARMY,
Washington, January 9, 1900.

SIR: I have the honor to submit the accompanying copies of reports, dated May 23 and December 16, 1899, with map, by Capt. Henry Jervey, Corps of Engineers, upon preliminary examination and survey of Punta Rasa, Fla., inside passage to Charlotte Harbor, made in compliance with requirements of the river and harbor act of March 3, 1899.

Punta Rasa is situated at the mouth of Caloosahatchee River, and the inside passage referred to in the act is known as Pine Island Sound, which forms part of the direct water route from the Caloosahatchee to

Charlotte Harbor, and by way of Boca Grande Pass to more northerly Gulf points.

The improvement desired is a channel with a navigable depth of 7 feet at mean low water through Pine Island Sound, and the project presented by Captain Jervey contemplates the dredging of channels with a depth of 8 feet (the extra foot being allowed for back filling) at mean low water and a bottom width of 100 feet through obstructive shoals northeast of Patricio Island and northeast of Blind Pass, at an estimated cost of \$6,000.

Captain Jervey states that the establishment of distinct and permanent channel marks, buoys, or beacons would be a great aid to navigation in these waters, but no estimate of cost for this purpose is submitted, as it is believed that such work is not within the province of the War Department.

The district officer is of opinion that the locality is worthy of improvement by the General Government to the extent proposed, and this opinion is concurred in by the division engineer, Col. Peter C. Hains, Corps of Engineers.

Very respectfully, your obedient servant,

JOHN M. WILSON,
Brig. Gen., Chief of Engineers,
U. S. Army.

Hon. ELIHU ROOT,
Secretary of War.

**PRELIMINARY EXAMINATION OF INSIDE PASSAGE FROM PUNTA RASA
TO CHARLOTTE HARBOR, FLORIDA.**

UNITED STATES ENGINEER OFFICE,
Tampa, Fla., May 23, 1899.

GENERAL: I have the honor to submit the following report of the preliminary examination of the inside passage from Punta Rasa to Charlotte Harbor, made in accordance with the river and harbor act of March 3, 1899:

This inside passage is through Pine Island Sound, lying between Pine Island on the east side and Sanibel, Captiva, and La Costa islands on the west. It is part of the direct water route from the Caloosahatchee River to Charlotte Harbor, and through the Boca Grande Pass to more northerly Gulf points.

A preliminary examination of this passage was made in 1897 under the direction of Lieut. Col. W. H. H. Benyaurd, Corps of Engineers, United States Army, and attention is respectfully invited to his report published in the Report of the Chief of Engineers, United States Army, for 1897 page 1572. Colonel Benyaurd states that with the improvement of a few shoal places by dredging ample depth of water would be afforded for the class of steamers and other vessels that navigate this inner passage. The conditions have not materially changed, and the present examination has been confined to the revision of commercial statistics and data on hand without further expense to the United States.

The route is used by small craft plying between Punta Gorda, at the mouth of Peace River, in Charlotte Harbor, and Myers, on the left

bank of the Caloosahatchee River, about 20 miles above its mouth. Two steamers make regular trips during the orange season, and one during the rest of the year. They carry general merchandise and crate material when southbound, and returning bring oranges, grape fruit, and vegetables for shipment by rail from Punta Gorda. It is estimated that the shipments this year from Myers to Punta Gorda will be as follows:

Articles.	Value.	Freight.
30,000 boxes oranges	\$75,000	\$3,000
150,000 crates vegetables	150,000	15,000
Pineapples, grape fruit, etc.....	25,000	500
Total	250,000	18,500

This represents an increase in value of over 50 per cent since 1897, and this section of the State is constantly growing in population and wealth. The distance from Punta Gorda to Myers is about 75 miles. The route permits a draft of about 5 feet at mean low water. It is obstructed by two principal shoals, each about 600 feet long. The material of these is sand and mud. There are other obstructive points and shoals, but dredging the two mentioned would greatly aid navigation, as loaded steamers sometimes have to wait for a favorable tide to cross them.

Considering the increasing commerce over this route and the comparatively small expense of improving certain shoal places, I deem the inside passage worthy of improvement by the General Government.

* * *
Very respectfully, your obedient servant,

HENRY JERVEY,
Captain, Corps of Engineers.

Brig. Gen. JOHN M. WILSON,
Chief of Engineers, U. S. A.
(Through the Division Engineer.)

[First indorsement.]

U. S. ENGINEER OFFICE,
Baltimore, Md., May 25, 1899.

Respectfully submitted to the Chief of Engineers, United States Army.

Lieutenant Meyler made an examination of this passage in December, 1896. His report, page 1573, Annual Report, Chief of Engineers, 1897, illustrates that very little interest is taken in any proposed improvement, but he and Lieutenant-Colonel Benyaurd deemed it worthy of improvement then, and Captain Jervy is of the same opinion now.

In view of the opinions expressed by these officers, I am of the opinion that the passage is worthy of improvement by the General Government to a very limited extent.

* * *
PETER C. HAINS,
Colonel, Corps of Engineers,
Division Engineer, Southeast Division.

[Second indorsement.]

OFFICE CHIEF OF ENGINEERS,
U. S. ARMY,
August 14, 1899.

Respectfully submitted to the Secretary of War.

In accordance with the provisions of the river and harbor act of March 3, 1899, a preliminary examination has been made of the inside passage from Punta Rasa to Charlotte Harbor, Florida.

The locality is reported to be worthy of improvement, and I recommend that a survey be made and the cost of improvement be estimated.

A. MACKENZIE,
Acting Chief of Engineers.

WAR DEPARTMENT,
August 24, 1899.

Approved.

ELIHU ROOT,
Secretary of War.

SURVEY OF INSIDE PASSAGE FROM PUNTA RASA TO CHARLOTTE HARBOR, FLORIDA.

UNITED STATES ENGINEER OFFICE,
Tampa, Fla., December 16, 1899.

GENERAL: I have the honor to submit the following report upon the survey of the inside passage from Punta Rasa to Charlotte Harbor, Florida, contemplated by the river and harbor act of March 3, 1899, and made as directed in Department letter dated August 25, 1899.

A report upon the preliminary examination of this locality was made January 4, 1897, by Lieut. Col. W. H. H. Benyaurd, Corps of Engineers, United States Army, and printed in House Document No. 246, Fifty-fourth Congress, second session,¹ and a second report was made by this office on May 23, 1899.

Punta Rasa is situated at the mouth of the Caloosahatchee River. The inside passage referred to in the act is known as Pine Island Sound, and forms part of the direct water route from the Caloosahatchee to Charlotte Harbor and, by way of Boca Grande Pass, to more northerly Gulf points. It lies between Pine Island on the east and Sanibel, Captiva, and La Costa islands on the west or Gulf side. The commerce to be benefited by an improvement of Pine Island Sound is carried by one or two small steamers plying between Punta Gorda at the mouth of Peace River in Charlotte Harbor and Fort Myers, 20 miles above the mouth of the Caloosahatchee. The amount of this commerce is shown in the following tabulations of statistics:

1. *Shipments from Fort Myers to Punta Gorda, 1896.*

Articles.	Value.	Freight.
25,000 boxes oranges	\$62,500	\$2,500
75,000 crates vegetables	75,000	7,500
1,700 boxes grape fruit	17,000	170
Total.....	154,500	10,170

¹ Reprinted in Annual Report of Chief of Engineers for 1897, page 1572.

2. Shipments Punta Gorda to Fort Myers, 1896.

General merchandise, grain, crate material..... \$150,000

3. Shipments Fort Myers to Punta Gorda, 1899 (estimated).

Articles.	Value.	Freight.
20,000 boxes oranges	\$75,000	\$3,000
150,000 crates vegetables	150,000	15,000
Pineapples, grape fruit, etc.....	25,000	500
Total.....	250,000	18,500

4. Commerce of Charlotte Harbor and Peace River, Florida, during the year ending December 31, 1898.

Articles.	Gross tonnage.	Estimated value.
Fertilizers and pebble phosphate.....	69,378	\$708,780
Cattle	225	11,250
Grain	3,500	38,104
Hides	10	2,250
Lumber	1,250	15,000
Merchandise	2,400	120,990
Hay	1,000	18,875
Vegetables	1,700	51,000
Fish and oysters	25,758	146,895
Oranges	887	32,000
Pineapples, etc	232	9,315
Honey, sirup, etc	6	371
Total.....	106,346	1,154,830

Arrivals and departures of vessels.

Class of vessels.	Arrivals and departures.	Tons.
Steamships.....	26	29,134
Steamboats, light-draft	704	277,770
Sailing vessels	68	55,430
Yachts.....	30	824
Total.....	828	363,158

The bulk of the commerce of Charlotte Harbor, exclusive of that carried in sea-going vessels, such as phosphate, lumber, etc., is carried in the light-draft steamers navigating Pine Island Sound.

Fort Myers, Punta Rasa, and neighboring points form the only outlets for the produce of the fruit and vegetable farms of Lee County, Fla., as the nearest railroad is at Punta Gorda. Recent information indicates that larger shipments of fruit than ever before are now being made from these points by water, and that the crop for the year will exceed that estimated in table 3. The navigable capacity of Pine Island Sound is therefore of importance to a valuable and increasing commerce, and in view of this fact, and of the small cost of improvement as determined by the results of this survey, I am of the opinion that the locality is worthy of improvement by the General Government to the extent hereinafter recommended.

The extent of improvement demanded is a navigable depth of 7 feet at mean low water throughout Pine Island Sound, this being the available depth of the Caloosahatchee River as improved by the United States below Fort Myers. Dredged cuts, 100 feet wide at the bottom,

made through the obstructive shoals will permit easy navigation, except during heavy northwest gales, which are likely to drive vessels against the side of any channel of limited width.

The preliminary examinations and local information indicated that there were probably three shoals in the sound, and a detailed survey was therefore ordered in each of the following areas:

1. Northeastward of Patricio Island.
2. Eastward of Captiva Pass.
3. Northeastward of Blind Pass.

The results of the survey indicate that in the area east of Captiva Pass there is an ample depth of water, but that the channel is difficult to follow in the absence of channel marks. This is especially true during the high winds prevalent in the fruit-shipping season.

The other areas require dredging, an estimate of the amount and cost of which is submitted below. The estimate of quantities is based on dredging to a depth of 8 feet at mean low water (the extra foot being allowed for back filling) and a bottom width of 100 feet, with slopes of 1 on 3. The length of cut required is 1,354 feet northeastward of Patricio Island and 1,458 feet northeastward of Blind Pass. It is estimated that the proposed improvement will require the removal of about 20,000 cubic yards of sand, mud, and shell, at a cost of about \$6,000.

It is respectfully represented that the establishment of distinct and permanent channel marks, buoys, or beacons would be a great aid to navigation in these waters, but no estimate of cost is submitted, as it is believed that such work is not within the province of the Engineer Department of the Army.

Four maps¹ accompany this report. On the general map, scale 1:40,000, the areas surveyed in detail are inclosed in broken lines, and the usually followed route of steamers is indicated. The other maps, scale 1:5,000, represent the hydrography as determined by the detailed surveys and the shore lines and topography taken from Coast Survey charts.

The fieldwork of the survey was executed during September and October, 1899, under the immediate supervision of Assistant Engineer W. H. Caldwell, to whose report herewith attention is respectfully invited. The operations were considerably delayed by winds and stormy weather, and the cost of the survey thereby increased.

Very respectfully, your obedient servant,

HENRY JERVEY,
Captain, Corps of Engineers.

Brig. Gen. JOHN M. WILSON,
Chief of Engineers, U. S. A.

(Through the Division Engineer.)

[First indorsement.]

U. S. ENGINEER OFFICE,
Baltimore, Md., December 18, 1899.

Respectfully submitted to the Chief of Engineers, United States Army.

This is the report on the survey of the inside passage from Punta Rasa to Charlotte Harbor, Florida. It appears from the report of the

¹Only general map printed.

district engineer that the amount of commerce to be benefited is small, but the cost of the improvement is proportionally small; in view of which I concur in the opinion of the district engineer that the locality is worthy of improvement to the extent of a navigable depth of 7 feet at mean low water through the obstructive shoals.

PETER C. HAINS,
Colonel, Corps of Engineers,
Division Engineer Southeast Division.

REPORT OF MR. W. H. CALDWELL, ASSISTANT ENGINEER.

UNITED STATES ENGINEER OFFICE,
Tampa, Fla., December 14, 1899.

CAPTAIN: I have the honor to submit the following report upon a survey of the "inside passage from Punta Rasa to Charlotte Harbor," made in the months of September and October, 1899, together with estimates for the proposed channel, 100 feet wide and 7 feet deep, through mid-channel areas having a depth of less than 7 feet. The field party was in local charge of Mr. A. Thompson, assistant engineer. The stern-wheel steamer *Grey Eagle*, of Fort Myers, Fla., was chartered and used as a quarter boat throughout the progress of the survey. Mr. Thompson has not yet submitted a detailed account of his work. He is still at Englewood, where he has been conducting a survey of the "inside passage from Sarasota Bay to Lemon Bay."

In accordance with your instructions, the plan of survey was based upon the information contained in reports of the results of preliminary examinations of the "inside passage from Punta Rasa to Charlotte Harbor," made to comply with the provisions of the river and harbor act of March 3, 1899, and of June 3, 1896. The former was transmitted from this office to Gen. John M. Wilson, Corps of Engineers, United States Army, on May 23, 1899; the latter was published in the Report of the Chief of Engineers, 1897, Part II, page 1572 et seq.

1. TRIANGULATION.

Detailed surveys were required of all portions of the main channel where depths of less than 7 feet were found. That necessitated a scheme of triangulation from the southern limits of Charlotte Harbor, through Pine Island Sound, to Blind Pass, covering an area of about 40 square miles. Within this area were 3 triangulation stations, which had been established by a United States engineers' surveying party in January, 1891. The party was in charge of Assistant Engineer J. H. Bacon, who, under the direction of Captain (now Colonel) W. M. Black, Corps of Engineers, United States Army, made a survey of Charlotte Harbor between the dates of November 17, 1890, and January, 1891. Two of the stations above referred to were easily located, but the other one—east of the northern extremity of Pine Island—could not be found. The stations located were used as the extremities of a base line, from which a system of triangulation was developed.

Surveys in detail were made of an area of 4 square miles, east-northeastward of Patricio Island; of $1\frac{1}{4}$ square miles eastward of Captiva Pass, and of $1\frac{3}{4}$ miles northward of Blind Pass.

2. BASE LINES.

The base line on which the system of triangulation depended is the distance between the station at Gasparilla Island Light-House and the one at Charlotte Harbor Light Station. By the United States engineers' survey of 1890-91 that distance was found to be 51,454.62 feet. A check base line 1,470.213 feet long has been measured near the south end of La Costa Island. The degree of accuracy with which this base was measured is an error of 1 in 34,191.

3. TIDES.

A tide gauge was established at Gasparilla Island Light-House Wharf, and its zero referred to a bench mark established by the United States engineers' survey in 1890-91. A tide gauge was established in each of the three areas, of which detailed

surveys were made, and their zeros referred to permanent bench marks. By simultaneous observations and the difference of time of low waters at the several tidal stations the gauge readings were reduced to a common plane of reference, and it, in turn, was reduced to mean low water. The mean rise and fall of the tide was found to be about 1.7 feet. During the greater portion of the time of the survey the conditions were unfavorable for a tidal record, the weather being squally and the sea rough. The tides were evidently influenced by the force and direction of the winds.

4. CURRENTS.

Current observations were taken in each of the three areas of detailed survey.

In the area at the upper end of Pine Island Sound the general trend of the current was north-northeast and south-southwest, with a maximum velocity of 0.8 mile (nautical) per hour.

In the area eastward of Captiva Pass the current is divided into two branches by an oyster bar which lies just inside the pass. The upper branch runs in a general northeast and southwest direction and the lower branch in a southeast and northwest direction. The maximum velocity of the current near this pass is 1.2 miles (nautical) per hour. This maximum velocity occurred during ebb flow, two hours after high water.

In the area northeastward of Blind Pass the general direction of the current is north-northeast and south-southwest and its maximum velocity was 0.4 mile (nautical) per hour.

5. SOUNDINGS.

All soundings were made from rowboats by means of sounding poles 9 feet long, graduated to feet and tenths from each end. An average of 10 soundings per minute was obtained. In the area at the upper end of Pine Island Sound the sounding lines radiate from a central channel stake. In the other two areas the sounding lines are parallel and run at right angles to the greatest dimension of the area surveyed. Soundings were located at intervals of one minute by means of a transit, the boats being steered on established range lines. Borings were made to determine the nature of the bottom. It consists of mud, coarse sand, and oyster shells.

6. MAPS.

Three hydrographic charts of the detailed areas have been platted, using a scale of 1 to 5,000 and a map of Pine Island Sound has been made of 1 to 40,000. Tracings of each are submitted herewith. The topography and the hydrography not covered by the survey have been supplied from the United States Coast and Geodetic Survey chart No. 175.

7. ESTIMATES FOR DREDGING.

The survey shows that a depth of 7 feet or over, with a navigable width, exists throughout the "inside passage from Punta Rasa to Charlotte Harbor," except at the "Horseshoe Shoal," near the northern extremity of Pine Island and the shoal near Blind Pass. Master mariners have registered complaints about insufficient depth opposite Captiva Pass, but the survey of that area has clearly demonstrated a perfectly navigable channel of 7 feet depth. Its course there is rather tortuous and buoys are needed to mark its changes of direction. In the areas at the head of Pine Island Sound and opposite Blind Pass dredging will be necessary to afford the desired channel of 7 feet depth at mean low water. A width of 100 feet will answer the purpose of shipping, and the length of cut in either case will be less than 1,500 feet.

The improvement is practicable, and from the history of similar work in other Gulf ports it is believed that a dredged channel will remain with a reasonable degree of permanency.

No. 1.—*Estimate for a channel 100 feet wide and 7 feet deep across "Horseshoe Shoal," near the northern extremity of Pine Island.*

Removing 7,399 cubic yards of material (mud, sand, and oyster shells), at 25 cents.....	\$1,849.75
Engineering and contingencies.....	275.00
Total.....	2,124.75

No. 2.—*Estimate for a channel 100 feet wide and 7 feet deep across the shoal opposite Blind Pass.*

Removing 13,372 cubic yards of material (mud, sand, and oyster shells), at 25 cents	\$3,343.00
Engineering and contingencies	500.00
Total	3,843.00

Cost of the entire project for giving a 7-foot channel through the "inside passage from Punta Rasa to Charlotte Harbor" is \$5,967.75.

In the above estimates 25 per cent for increased bulk of dredged material, 1 foot for back filling, and a slope of 1 on 3 for the sides of the dredged channels has been allowed: The length of the cut between the 7-foot contours in the area near the northern extremity of Pine Island is 1,354 feet and in the area near Blind Pass is 1,458 feet.

During the progress of the survey inquiries were made concerning commerce and the statistics were found to be substantially as recorded in the preliminary examination report. The commerce of this year will undoubtedly exhibit a large increase over that of any preceding year. The shipping traffic which uses the passage is growing. The cost of the improvement in comparison with the advantages to be derived therefrom is small. It would seem that the project is worthy of being executed by the General Government.

Very respectfully,

W. H. CALDWELL,
Assistant Engineer.

Capt. HENRY JERVEY,
Corps of Engineers, U. S. A.

LETTER OF MR. A. F. DEWEY.

CHARLOTTE HARBOR LIGHTERAGE AND STEVEDORE COMPANY,
Punta Gorda, Fla., December 15, 1899.

DEAR SIR: Yours of the 13th instant received yesterday during my absence, and I enclose herewith report of commercial statistics from January 1 to December 1, 1899, as near as I could get at the figures in the limited time allowed.

Yours, truly,

A. F. DEWEY.

Capt. HENRY JERVEY,
Corps of Engineers, U. S. A.

Commercial statistics, port of Punta Gorda, Fla., January 1 to December 1, 1899.

Articles.	Quantity.	Estimated value.
Phosphate	83,073 tons	\$830,730.00
Fertilizer	1,000 do	40,000.00
Gain	75,000 bushels	41,250.00
Lumber	125,000 feet	18,750.00
Merchandise	12,500 packages	187,990.00
Hay	23,375 bales	29,218.75
Vegetables	177,000 crates	531,000.00
Fish	3,599,000 pounds	179,950.00
Oranges	12,500 boxes	50,000.00
Oysters	1,500 gallons	1,500.00
Coal	2,060 tons	6,180.00
Cattle	2,500 head	37,500.00
Total		1,954,068.75

MAP
of
Inside Passage from Punta Rassa to Charlotte Harbor,
PINE ISLAND SOUND, FLORIDA,

Prepared under the direction
of Captain Henry Jervey, Corps of Engineers, U. S. Army,

from the U. S. Engineers' Survey made in
September - October, 1899;

and from U. S. C. & G. S. Chart, No. 175.

SCALE, 1:60,000.



Notes— Soundings are in feet, and referred to mean low water level.

The areas where detailed surveys were made are inclosed by dotted lines.

The proposed 7-foot channels, 100 feet wide, through the shoal areas are denoted by parallel lines.

Mid-channel line is shown in red.

U. S. Engineer Office,
Tampa, Florida.
To accompany report of December 16, 1899.

Henry Jervey
Captain, Corps of Engineers, U. S. Army.

