APPENDIX O.

LETTER OF SECRETARY OF WACO COMMERCIAL CLUB.

WACO COMMERCIAL CLUB,
Waco, Tex., January 28, 1897.

DEAR SIR: The visit of your board to Velasco and the importance of your forthcoming report to Congress upon the improvements at the mouth of the Brazos have been brought to the attention of the Waco Commercial Club, and I am directed to forward to you all data obtainable concerning the navigation of the Brazos. The success of the promoters of the deep-water port at the mouth of the river has intensified the interest felt in the matter of securing Government aid in the opening of the river to navigation as far up as Waco, a distance of perhaps 500 miles by the meanderings of the stream, and I beg to submit a few figures relative to the volume of commerce which would be effected by such navigation: The Brazos River traverses twelve counties from Waco to its mouth, namely: McLennan, Falls, Milam, Robertson, Brazos, Burleson, Grimes, Washington, Waller, Austin, Fort Bend, and Brazoria. Each of these counties contains large bodies or rich bottom lands along the Brazos and tributaries constituting the Brazos Valley, the finest cotton producing region in the world.

I have not reliable reports of the exports of cotton from the counties named later than 1894, which place it at 420,000 bales, in round numbers. I am sure a half million bales is not an exaggerated estimate of the amount for an ordinarily good crop year in future, with a probable increase with better and cheaper transportation facilities. The Brazos Valley now produces about one-sixth of all the cotton raised in Texas, and with navigation of the river to Waco it would certainly produce one-fifth of the Texas crop. Along with the long-staple cotton must be considered the item of cotton seed. For every bale of cotton produced there is a yield of a half ton of seed, so the production of cotton seed in the Brazos Valley was in 1894 about 210,000 tons, and with the estimated increase in cotton production would reach 250,000 tons.

According to the report of the Texas agricultural bureau for 1894, the twelve counties named lying between Waco and Velasco produced more than half the entire sugar crop of Texas, valued at $660,000, besides molasses valued at $40,000, and sorghum valued at $50,000. We have, then, cotton, 500,000 bales, worth $17,500,000; 250,000 tons of cotton seed, worth $1,750,000; and sugar-cane products worth $750,000, making a total of $20,000,000 in these three items alone. When we take into consideration the other farm products, live stock, etc., which would in all probability add as much more to the export traffic, we have $40,000,000 of exports which would be accommodated by the navigation of the Brazos. The imports are not taken into account, but would of course enter into the traffic and would probably equal the exports.

I now desire to direct your attention to the feasibility of Brazos navigation. The Waco Board of Trade in 1890 secured the services of Prof. J. H. Hurwood, of Waco, to survey the Brazos River from Waco to Richmond in Fort Bend County. Professor Hurwood traversed the river in a small boat, making measurements and collecting data covering every detail bearing upon navigation, and his report is the completest and most reliable collection of important information on the subject now extant. I submit extracts from the same. Addressing the board of trade he says:

"The subjects for observation in your instructions were ten in number. I report on them seriatim, but not in the order in the copy. I have inverted them because by this method I can give a more comprehensive view of the subject.

"No. 10. Instruction number ten is as follows:

"'Ascertain the approximate distance from Waco, by river, to Richmond.'

"Answer. The approximate distance between the two points is 416 miles.

"No. 6. 'What portion of the river consists of pools, their length and average depth.'

"Answer. Of the 416 miles of river between Waco and Richmond 389.1 miles are pools. The Brazos River does not descend to the sea in a gradual slope. It is, as far as San Felipe, a series of elongated lakes or canals or pools, rising one above the other from San Felipe to Waco. These lakes or pools vary in length from one-fourth mile, the smallest, to 84 miles, the longest. Below San Felipe the lake system of the river is not so well defined, but sufficiently so as to class as pools, being uniformly deep water. The lakes are fed by perennial springs, terrestrial and subaqueous, as far as a point above San Felipe, and they are wholly independent of the supply of water from above Waco.

"These pools or lakes are forty-four in number between Waco and Richmond. Their length, seriatim, beginning at first from Waco, is as follows: (1) 5½ miles, (2) 3¼ miles, (3) 6.4 miles, (4) 4.6 miles, (5) 6.4 miles, (6) 3½ miles, (7) one-fourth mile, (8) 5½ miles, (9) 9.6 miles, (10) 4.4 miles, (11) 3½ miles, (12) 1.8 miles, (13) 14 miles, (14) 12 miles, (15) 8¼ miles, (16) 5½ miles, (17) one-half mile, (18) 2½ miles, (19) 1¾ miles, (20) 4 miles, (21) 1.8 miles, (22) 5½ miles, (23) 3½ miles, (24) 1.7 miles, (25) 3½ miles, (26) 1¾ miles, (27)

1¼ miles, (28) 2.3 miles, (29) 21.87 miles, (30) 4.65 miles, (31) 20 miles, (32) 5 miles, (33) 7.9 miles, (34) 14.6 miles, (35) 84 miles, (36) 7 miles, (37) 5½ miles, (38) 21 miles, (39) 11.6 miles, (40) 3¼ miles, (41) 26½ miles, (42) 2 miles, (43) one-fourth mile, (44) 24½ miles, (45) 5 miles (unfinished beyond Richmond). These make 389.10 miles of pools, with 8.90 miles from the first clearly defined pool or mixed water.

"THE DEPTH OF THESE POOLS.

"Nearly all of these lakes have a well-defined and uniform channel through their entire length. The depth of these channels was thoroughly measured, each separately, the depths of which I have arranged. The average depth was 4 to 10 feet at time of measurement, with occasional 2 to 3 feet water over loose sand for a few yards at each end of the pool. Many pools are 20 to 40 feet in deepest places.

"'4. What portion of the stream is shoal and would require jetties to narrow, control, or make a channel?'

"As there are 44 lakes of deep water, there are 44 places which obstruct navigation. These are the steps over which these lakes discharge their surplus water into the lakes below. Of these 44 steps 36 are shoals. These shoals vary in length from 25 feet, the shortest, to 2 miles, the longest. Each would require from one to three jetties to narrow the river and form a channel.

"'5. The length of the rapids, the force of the current over them, and whether the boats could stem such a current?'

"Answer. The rapids are eight in number, of which seven occur between points on the river opposite Marlin and Hearne; the last is situated about 7 miles above Washington.

"The length of these rapids is respectively as follows, beginning from Waco end: Falls on the Brazos, 1¼ miles; Rock Rapids, 600 feet; Blue Shoal Rapids, 1¼ miles; Curley Rapids, 3,000 feet; Calvert Falls or Blacks Crossing, one-third mile; Herndon Falls, 4,400 feet; Port Sullivan Rapids, one-half mile, and Hidalgo Falls, 900 feet.

"The current over these rapids is so affected by various causes, such as friction, obstructions, etc., that it is various, even in the same rapid. Estimated from the declivity and the length of each, the current in none of them would be less than 6 to 8 miles per hour if run in an unobstructed channel.

"Boats could not stem the current of the rapids except by the use of capstan and hawser. To that method the current over the rapids would be no obstacle.

"No. 1. 'What obstructions to navigation, such as bridges, snags, fallen timber, falls, and rapids, exist in that part of said stream?'

"Bridges are 12 in number. Snags occur very rarely in the upper part of the river; in lower part more frequently. Between Washington and Richmond are 35 groups of snags, with occasional isolated single snags; in the upper part of the river, two-thirds of the entire length, about as many. Fallen timber offers no obstructions; fall and rapids are embraced in a previous answer.

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"No. 8. 'What would be about the expense of removing existing obstructions and jettying the shoal portions of the stream?'

"From careful observations made, I estimate the expense as follows:

For removing snags and rocks in channels over the shoals	$100,000
For jetties over shoals and rapids, 80 jetties, at $1,000	80,000
For excavating channels in 8 rapids, $50,000 each	400,000
Total	580,000

* * * * * * *

"No. 2. 'The average depth of water in the stream at the several seasons of the year, as near as can be ascertained by inquiring?'"

"The water in the lake channels, which form almost the entire length of the river, is almost absolutely without variation below the measurements we found on the trip. The testimony to this from intelligent persons was unvarying. The flowing water of the river varies from a few inches over the shoals in the drought of summer to 25 feet in the spring floods. From the meager but best information attainable, the water should be from 3 to 25 feet over the shoals from October to July, which would make the river navigable for light-draft boats for nine months in the year from Waco to the mouth, except for the eight rapids, which could be crossed in not less than a 10-foot rise. This subject can be determined only by protracted observations.

"The above general replies are based on elaborate measurements and calculations.

"I may, perhaps, be allowed to close this report by a few suggestions purely gratuitous. The Brazos in respect to its long and deep-lake system is a remarkable river. It has 44 lakes, the channels of which constitute natural canals. The shoals and rapids, also 44 in number, fitted with locks and dams, should make slack-water navigation from Richmond to Waco possible every month in the year except in high water. The lakes and steps enumerated do not include the water from Waco for 9

miles down the river, but that piece of water is included in estimate for improvements. The study of the river was made at an excellent time, the river being nearly at its lowest. As a summary, the Brazos during our measurement contained, from Waco to Richmond, in round numbers, 398 miles of water practicable for light-draft boating and 16 miles of shoals and rapids."

The report, in addition to the above, gives a detailed report of the measurements of each reach and step, made with the care, if not the authority, of a Government official. Professor Hurwood's estimate of cost may be too low, but his measurements have stood the test of expert examination.

The data is submitted with the hope that in making your report upon the improvements at the mouth of the Brazos you will make favorable mention of the Brazos navigation as far as Waco.

S. L. JONES,
Secretary Waco Commercial Club.

Col. HENRY M. ROBERT,
Chairman Board of Engineers
for the Examination of the Mouth of the Brazos.

APPENDIX P.

RECEIVERSHIPS BRAZOS RIVER CHANNEL AND DOCK COMPANY.

George W. Angle and Frank Caldwell, September 5, 1890, to March 27, 1891.
George W. Angle and Gustav Wilke, March 28, 1891, to February 2, 1892.
George W. Angle, February 2, 1892, to March 25, 1896.

APPENDIX Q.

STENOGRAPHER'S REPORT OF A HEARING AT THE HOTEL VELASCO, VELASCO, TEX., JANUARY 11, 1897, BY THE BRAZOS RIVER BOARD.

Present: Col. H. M. Robert, Corps of Engineers; Mr. Stehman Forney, assistant Coast and Geodetic Survey; Mr. Robert Moore, civil engineer; Mr. Jay Stone, secretary and stenographer; Mr. L. L. Foster, manager Brazos River Channel and Dock Company; Col. Guy M. Bryan, of Quintana, Tex.; Mr. L. R. Bryan, banker and lawyer, of Velasco, Tex.; Mr. J. P. Bryan, of Quintana, Tex.; Col. Mordella Munson, of Oystercreek, Tex.; Mr. H. K. Davis, of Hearne, Tex.; Mr. J. L. Hudgins, of Velasco, Tex.; Mr. H. L. Brown; Capt. A. H. Ahm, captain of the light-house station at Velasco, Tex.; Mr. J. M. Moore, of Velasco, Tex.

Colonel ROBERT. This hearing is given by the Brazos River Board (which was appointed under the provisions of the act of Congress of June 3, 1896), at the personal request of citizens of this locality and other parts of Texas, and we would be very glad to listen to anything bearing upon the subject under investigation or matters having relation to it that any gentleman present desires to express.

Col. GUY M. BRYAN. Gentlemen: It will perhaps be interesting to you to know something of what has been thought in the past of the improvement of the mouth of the Brazos River. In the beginning J. F. Austin, the founder of Texas, thought that deep water could be obtained there, and directed the town of Quintana to be laid off there, in 1835, in view of these contemplated improvements. During the Republic of Texas some of the prominent men of Texas—the Whartons, Branch T. Archer, T. J. Green, and others—formed a company and laid off Old Velasco for the purpose of availing themselves of the advantages of the mouth when improved as contemplated.

In 1851-52, Senator Thomas J. Rusk, ex-Secretary of the Treasury, Robert J. Walker, and ex-Senator T. Butler King, of Georgia, came to Austin when the legislature was in session, to obtain a charter for a southern Pacific railroad through Texas. T. Butler King came to the mouth of the Brazos and, with the aid of the pilot of the place, thoroughly examined the bay and river and returned to Austin satisfied of the natural advantages, and with improvements, that deep water could be obtained, and that it was the point on the Gulf to make a terminal of the road. Years afterwards I met Mr. King in New York and he told me that eventually one of the largest cities of the United States would be built at the mouth of the Brazos; that it was the only river of its magnitude in the United States that emptied directly into the