

SKAGIT RIVER, WASH.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE ACTING CHIEF OF ENGINEERS, REPORT ON REEXAMINATION OF SKAGIT RIVER, WASH., WITH A VIEW TO DETERMINING WHETHER THE PROJECT SHOULD BE MODIFIED TO MEET EXISTING CONDITIONS OR WHETHER CONDITIONS OF LOCAL COOPERATION SHOULD BE IMPOSED.

JANUARY 12, 1920.—Referred to the Committee on Rivers and Harbors and ordered to be printed.

WAR DEPARTMENT,
Washington, January 9, 1920.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Acting Chief of Engineers, United States Army, of 26th ultimo, together with report of the Board of Engineers for Rivers and Harbors, dated December 9, 1919, with related report by Lieut. Col. J. A. Woodruff, Corps of Engineers, dated October 10, on a reexamination of Skagit River, Wash., authorized by the river and harbor act approved March 2, 1919.

Very respectfully,

NEWTON D. BAKER,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, December 26, 1919.

From: The Acting Chief of Engineers.

To: The Secretary of War.

Subject: Reexamination of Skagit River, Wash.

1. There is submitted herewith, for transmission to Congress, report dated December 9, 1919, by the Board of Engineers for Rivers and Harbors, with related report by the district engineer.

Lient. Col. J. A. Woodruff, Corps of Engineers, dated October 10, 1919, authorized by the following item contained in section 1 of the river and harbor act, approved March 2, 1919:

* * * for improvement of Skagit River in accordance with the report printed in House Document Numbered 935, Sixty-third Congress, second session, \$30,000; *Provided*, That before work on this project is commenced, the report shall be referred to the Board of Engineers for Rivers and Harbors for review as to whether the project should be modified to meet existing conditions or whether conditions of local cooperation should be imposed: * * *

2. In the report under review, a plan is presented for the improvement of Skagit City Bar by combined dredging operations and the construction of training walls, at a cost not exceeding \$30,000, the main reliance to be placed upon dredging. This plan was recommended by the Board of Engineers for Rivers and Harbors without local cooperation, in lieu of a plan proposed by the district engineer for the construction of dikes at an estimated cost of \$61,500, on condition that local interests cooperate to the extent of undertaking all work of bank protection required for the maintenance of their dikes. There has apparently been little change in general conditions since the former investigation. Cost of dredging and of construction work, however, has increased, and the district engineer estimates that the improvement formerly recommended at a cost of \$30,000 will now cost \$45,000. The board is of opinion that the commerce involved, now exceeding 500,000 tons, is sufficient to justify the moderate expenditure contemplated, provided the work does not involve the United States in claims for damages. The board therefore recommends that the project under review be modified so as to provide for improvement by combined dredging and training walls, as formerly proposed, at a present estimated cost of \$45,000 (of which \$30,000 has already been appropriated), provided that no work shall be done by the United States until local interests shall, in a manner satisfactory to the Secretary of War, assume responsibility for the payment of all damages claimed or alleged to result from any work that may be done under this project.

3. After due consideration of the information available, I concur in the views and recommendations of the board, as expressed above. The full amount of the estimate should be made available in one appropriation.

FREDERIC V. ABBOT,
Colonel, Corps of Engineers.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS.

WAR DEPARTMENT,
BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
Washington, D. C., December 9, 1919.

From: The Board of Engineers for Rivers and Harbors.
To: The Chief of Engineers, United States Army.
Subject: Report on Skagit River, Wash.

1. The board submits its report called for by the following item contained in section 1 of the river and harbor act approved March 2, 1919:

* * * for improvement of Skagit River in accordance with the report printed in House Document Numbered 935, Sixty-third Congress, second ses-

sion, \$50,000: *Provided*, That before work on this project is commenced the report shall be referred to the Board of Engineers for Rivers and Harbors for review as to whether the project should be modified to meet existing conditions or whether conditions of local cooperation should be imposed: * * *

2. Under a project adopted by the river and harbor act of June 25, 1910, certain dikes have been constructed at a cost of approximately \$105,000 at or near the mouth of the river for the purpose of regulating the channel across the bar.

3. In the report under review recommendation is made for a modification of this report so as to include improvement of Skagit City Bar by combined dredging operations and training walls at a cost not exceeding \$30,000. The district engineer proposed that no work should be undertaken unless local interests cooperated to the extent of providing any bank protection required for the maintenance of the dikes or levees built by local interests along the stream. As this provision was not included in the letter of the Chief of Engineers, it was not made a part of the proposed revised project.

4. Apparently there has been little change in general conditions since the time the former report was made, except that prices have advanced materially and the district engineer now estimates that the work proposed to be done for \$30,000 would cost \$45,000. He expresses the opinion that the improvement contemplated is worthy of being undertaken as recommended in the report under review at a cost not exceeding \$45,000, provided local interests cooperate to the extent of undertaking all work of bank protection required for the maintenance of their dikes. The division engineer concurs in the views and recommendations of the district engineer.

5. It is apparent that the commerce involved, now exceeding 500,000 tons, is sufficient to justify the moderate expenditure contemplated, provided the work does not involve the United States in claims for damages. The adjacent lands are protected from overflow by levees (locally called dikes) located near the river banks which are subject to erosion. Under present conditions, therefore, more or less damage is done to riparian property and the proviso inserted by the district engineer is for the purpose of safeguarding the United States against claims for damage that might be traced or charged to the work done by the United States. This appears to be a just provision which, it is believed, should be made part of the project. The increase of 50 per cent in the estimate is in keeping with experience elsewhere and, if the work is to be done, should be allowed.

6. In view of the foregoing, the board recommends that the project under review be modified so as to provide for the improvement by the United States of Skagit River, Wash., by combined dredging and training walls, as formerly proposed, at a present estimated cost of \$45,000, provided that no work shall be done by the United States until local interests shall, in a manner satisfactory to the Secretary of War, assume responsibility for the payment of all damages claimed or alleged to result from any work that may be done under this project. The full amount of the estimate should be made available in one appropriation.

7. In compliance with law, the board reports that except as contemplated by the above recommendations, there are no questions of terminal facilities, water power, or other subjects so related to the

project proposed that they may be coordinated therewith to lessen the cost and compensate the Government for expenditures made in the interests of navigation.

For the board:

J. C. SANFORD,
Colonel, Corps of Engineers.
Senior Member Present.

REPORT ON REEXAMINATION OF SKAGIT RIVER, WASH.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Seattle, Wash., October 10, 1919.

From: The District Engineer.

To: The Chief of Engineers, United States Army
(Through the Division Engineer).

Subject: Skagit River.

1. In compliance with instructions contained in second indorsement on departmental letter of April 8, 1919, the following report is submitted covering the following provision of the river and harbor act approved March 2, 1919:

* * * for improvement of Skagit River in accordance with the report printed in House Document Numbered 935, Sixty-third Congress, second session, \$30,000: *Provided*, That before work on this project is commenced, the report shall be referred to the Board of Engineers for Rivers and Harbors for review as to whether the project should be modified to meet existing conditions or whether conditions of local cooperation should be imposed: * * *

2. The first examination and survey of the Skagit River was made in 1897 and covers the navigable portion of the stream from its mouth to Sedro Woolley. (H. Doc. No. 204, 55th Cong., 2d sess.)

3. A second examination and survey of the Skagit River from Sedro Woolley to the mouth was made in 1907, and report thereon is published in House Document No. 1188, Sixtieth Congress, second session. The project of improvement recommended in this report was for the improvement of the channel across the bar at the mouth of the river. It was adopted by Congress in 1910, and a training dike or jetty was constructed in 1910-11 at the mouth of South Fork, at a cost of \$100,000. The dike is 10,450 feet long, constructed of rubblestone, piles, and brush.

4. An examination and survey of the river from Sedro Woolley to the mouth of the Baker River was made in 1912, and is reported in House Document No. 909, Sixty-second Congress, second session.

The latest examination and survey report, of which this is a review, is published with maps in House Document No. 935, Sixty-third Congress, second session.

5. The Skagit River is ordinarily navigable from its mouth to Concrete, a distance of 58 miles, and at times of high water 38 miles higher.

6. The river is subject to sudden freshets at all seasons of the year. It has been known to rise 18 feet in 24 hours and a rise of 10 feet in 24 hours is not unusual. The maximum fluctuation is about 25 feet.

7. The traffic from Mount Vernon and from points above is nearly constant in amount throughout the year, the chief items being condensed milk and logs. The river stage is always sufficiently high in

the fall or autumn months to allow the crops to be taken to market by boat from the delta section of the river.

8. The bridges spanning the river are all drawbridges with ample openings to accommodate present and prospective commerce.

9. The only unusual difficulties attending navigation on this river are caused by bars between the mouth of the river and Skagit City, 7 miles above. The principal obstructions are at the mouth of the river, where the controlling depth at low water is $1\frac{1}{2}$ feet, and at Skagit City, where the controlling depth is about 2 feet.

10. The commerce on the river during the past five years is shown by the following statement:

Calendar year.	Short tons.	Value.	Calendar year.	Short tons.	Value.
1914.....	466,887	\$5,597,646	1917.....	554,797	\$9,287,915
1915.....	412,534	4,881,862	1918.....	733,022	11,533,174
1916.....	430,747	5,356,162			

11. The navigable depths on the Skagit City Bar are dependent on the tidal elevations at the river mouth. At times of low river and very high tide the current over the bar is reversed and ordinary high tide will cause an elevation of the water surfaces on the bar of 3 feet or more.

12. Boats entering the river, which arrive at the mouth near high tide will carry the high water up to and over the bar at Skagit City. Descending log tows, however, are unable to cross both bars on one tide, during low river stages.

13. The water-front property in Mount Vernon and Sedro Woolley is owned by private interests and suitable wharves exist only at Mount Vernon. Steamers make landings at the wharves or at suitable points along the banks of the river in each of these towns, and in the section of river between. It is not thought that the construction of additional wharves is necessary for proper handling of existing traffic, and present terminal facilities, although primitive, are considered adequate.

14. There is no physical connection between the railroads and the wharves or landing places. Wharfage rights and wharfage charges are fixed by State laws and are equal to all. As far as known no public frontage available for wharfage facilities exists along the river.

15. Due to the gradual widening of the river below Skagit City the current has decreased in velocity with a consequent increase in the deposition of material. The river bottom has therefore gradually raised until it is impossible for boats to navigate this section of the river during periods of low tide. As the shoals near the mouth of the river are affected to a greater extent and during a greater length of time by the tidal action than those at Skagit City, a deepening of the bar at Skagit City would increase the navigable period each day on this section of the river, as well as decrease the damming effect of this bar which is diverting a considerable quantity of water to the North Fork.

16. A personal inspection of the locality was made on August 24, 1919.

17. The report under review recommended the modification of the existing project for improvement of Skagit River, Wash., to include the improvement of Skagit City Bar by combined dredging operations and training walls at a cost not exceeding \$30,000, the main reliance to be placed upon dredging; training walls were to be used only to supplement the dredging and to restrain the dredging spoils, experience to serve as a guide as to the actual location and extent of construction of the training walls. No conditions of local cooperation were imposed.

18. The district engineer proposed a plan for the improvement of the Skagit City Bar involving the construction of about 6,200 feet of dike, at an estimated cost of \$61,500 and \$5,000 annually for maintenance. He recommended that no improvement of Skagit City Bar be undertaken by the United States unless local interests agree to cooperate to the extent of assuming all responsibility for the protection of the river banks above and below the works installed by the United States.

19. Under existing conditions the work recommended by the report under review would cost about \$45,000, and that recommended by the district engineer about \$95,000. Dredging alone could be done with the \$30,000 appropriated, but experience has shown that repeated dredging is necessary to open a channel across the bar after numerous freshets.

20. As the banks in the locality are composed of very light material, easily eroded, the construction of any type of training dike is very apt to lead to extensive damage, and, in my opinion, no improvement of the Skagit City Bar should be undertaken by the United States unless local interests agree to cooperate to the extent of assuming all responsibility for the protection of the river banks in the vicinity of the proposed work. The dikes on both sides of the river are dangerously close to the edges of the banks, and the land back of them is highly improved and subject to overflow for miles in case of a break in the dike. For this reason the question of liability as to any possible damage should be definitely placed before the commencement of any work at this point. It is the custom of the various diking commissions to build their dikes about 6 inches above the known high-water mark of past years, so the construction of any system of low-water training dikes that would have a tendency to raise the level of the water upstream would lead to a very heavy damage in case of overflow.

21. In view of the important commerce affected in the section of the river below Mount Vernon, and the fact that this commerce should increase with improved facilities, I am of the opinion that the Skagit River is worthy of further improvement by the United States to the extent of improving the Skagit City Bar by combined dredging and training walls as recommended in the report under review at a cost not exceeding \$45,000, provided local interests cooperate to the extent of undertaking all work of bank protection required for the maintenance of their dikes. The work should not be undertaken until the entire amount required, \$45,000, is available, and no expenditures should be authorized until the Secretary of War is satisfied that local interests will cooperate as outlined above.

22. In compliance with law, I have to report also that it is not practicable to coordinate with any improvement of the river the development and utilization of water power for commercial purposes so as to reduce the cost of improvement and render it advisable, nor to coordinate it with flood protection or other related subjects further than herein recommended.

J. A. WOODRUFF,
Lieutenant Colonel, Corps of Engineers.

[First indorsement.]

OFFICE DIVISION ENGINEER,
NORTHERN PACIFIC DIVISION.
Portland, Oreg., November 15, 1919.

THE CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. Forwarded, concurring in the views and recommendations of the district engineer.

2. It is not believed that any permanent and satisfactory improvement of Skagit City Bar can be made without more extensive work than now recommended; but the use of a more efficient dredge than is available at the present time, and the deposit of dredged materials behind some type of inexpensive bulkhead, as contemplated by the district engineer and by the Board of Engineers for Rivers and Harbors in the report under review, may offer considerable relief to the commerce using the river, and lead to the development of some more satisfactory method of maintenance than has heretofore been employed. Improvement to this extent is therefore recommended.

3. However, for the reasons stated by the district engineer, any important changes in the regimen of the river should not be made without release from claims for damages to riparian owners, since, under present conditions, damages to dikes and riparian property occur at every freshet which would be attributed to the operations of the United States if any important regulating works are placed in the river without such release.

J. B. CAVANAUGH,
Lieutenant Colonel, Corps of Engineers,
Division Engineer.

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