63D CONGRESS, 2d Session. } HOUSE OF REPRESENTATIVES. { DOCUMENT No. 935.

SKAGIT RIVER, WASH.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORTS ON PRELIMINARY EXAMINATION AND SURVEY OF SKAGIT RIVER, WASH.

APRIL 30, 1914.—Referred to the Committee on Rivers and Harbors and ordered to be printed, with illustrations.

WAR DEPARTMENT,
Washington, April 29, 1914.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated April 28, instant, together with copy of reports from Maj. J. B. Cavanaugh, Corps of Engineers, dated December 6, 1912, and January 26, 1914, with maps, upon a preliminary examination and survey, respectively, of Skagit River, Wash., made by him in compliance with the provisions of the river and harbor act approved July 25, 1912.

Very respectfully,

LINDLEY M. GARRISON,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, April 28, 1914.

From: The Chief of Engineers, United States Army.
To: The Secretary of War.
Subject: Preliminary examination and survey of Skagit River, Wash.

1. There are submitted herewith, for transmission to Congress, reports dated December 6, 1912, and January 26, 1914, with maps, by Maj. J. B. Cavanaugh, Corps of Engineers, on preliminary examination and survey, respectively, of Skagit River, Wash., authorized by the river and harbor act approved July 25, 1912.

2. Skagit River is a tributary of Puget Sound, which it enters through Skagit Bay. The mouth of the river is of delta formation, the most important outlets being the North Fork and the South Fork. The river has been improved to the extent of removing snags and similar obstructions to navigation since 1882, under appropriations for Puget Sound and tributary waters. An independent project was adopted by the act approved June 25, 1910, providing for the construction of a training dike from the mouth of the South Fork across the flats to deep water in Saratoga Passage, regulating dikes and mattress sill near the head of the North Fork, and closing subsidiary channels at the delta of the river. Improvements are now desired at Sterling Bend, a short distance below Sedro Woolley, where a cut-off occurred in 1911, greatly disturbing the regimen of the stream, and at Skagit City bar, a short distance below Skagit City, where the river is wide and shallow. The results of the survey show an unstable condition of the river in the vicinity of the cut-off and indicate that it would be impracticable to improve the river at this point so as to provide useful navigation at reasonable cost, and the district officer therefore expresses the opinion that no work of improvement should be undertaken by the United States at this locality further than already carried on under the project for improving Puget Sound and its tributary waters. He presents a plan for the improvement of Skagit City bar by the construction of about 6,200 feet of dike to concentrate the flow, at an estimated cost of $61,500 and $5,000 annually for maintenance. Practically all of the commerce of the river is affected by the shoal condition at this bar, and the district officer reports that, in his opinion, it is advisable to undertake this work, provided local interests cooperate to the extent of undertaking any bank protection that may be required for the maintenance of the dikes or levees which have been built by local interests along the banks of the stream. The division engineer concurs with the views of the district officer.

3. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated April 21, 1914. The board believes that the amount of commerce justifies the improvement of this bar by combined dredging operations and training walls, but it believes that the main reliance should be placed upon dredging, and that training walls should 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, as suggested by the district officer. It therefore recommends that the existing project for the Skagit River be modified so as to include the improvement of Skagit City bar as outlined above, at a cost not exceeding $30,000.

4. After due consideration of the above-mentioned reports, I concur with the views of the Board of Engineers for Rivers and Harbors, and therefore report that it is deemed advisable to modify the existing project for improvement of Skagit River, Wash., to include the improvement of Skagit City bar by combined dredging operations and training walls, in the manner proposed by the board as expressed above, at a cost not exceeding $30,000, which sum should be furnished in one appropriation.

DAN C. KINGMAN,
Chief of Engineers, United States Army.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS ON SURVEY.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
April 21, 1914.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY.

1. This report covers preliminary examination and survey of Skagit River, Wash., made in compliance with the act of July 25, 1912.

2. The existing project, adopted by the act of June 25, 1910, provides for the construction of a training dike at the mouth of the south fork of the Skagit River, at an estimated cost of $100,000, and for snagging under the general project for this class of work on the tributaries of Puget Sound. The dike has been constructed to a length of 10,450 feet and performs the function for which it was designed, namely, to properly direct the flow of water across the flats at the mouth of the river.

3. The reach covered by this report extends from the mouth to Sedro Woolley, a distance of about 25 miles. A short distance below Sedro Woolley a cut-off occurred in 1911, greatly disturbing the regimen of the stream and resulting in an excessive slope and velocity in the immediate locality. This is one of the points where improvement is desired. Another is a short distance below Skagit city, about 6 miles above the mouth, where the river is wide and shallow and an increase in channel depth is desired.

4. The commerce of the river is reported as approximately 190,000 tons, having a value of $3,700,000. Of this, 124,000 tons are logs, the balance being of a miscellaneous character.

5. The results of the survey show an unstable condition of the river in the vicinity of the cut-off and indicate that it would be impracticable to improve the river at this locality so as to provide for useful navigation at anything like reasonable cost, and no improvement here is recommended. A plan is proposed 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. A large part of the commerce of this river is carried on at Mount Vernon, 12 miles above the mouth, and practically all the commerce of the river is affected by the shoal condition at this bar. The plan is to concentrate the flow, with the expectation of securing better depths. The district officer reports that in his opinion it is advisable to undertake this work, provided local interests cooperate to the extent of undertaking any bank protection that may be required for the maintennance of the local dikes or levees which have been built along the banks of the stream. The division engineer concurs in the views of the district officer.

6. The board has received several communications [1] bearing upon the proposed improvement, and has to-day listened to arguments by Hon. W. L. Jones, United States Senator, and Hon. W. E. Humphrey, Member of Congress.

7. The board believes that the amount of commerce justifies the improvement of this bar by combined dredging operations and training walls, but it believes that the main reliance should be placed

[1] One communication is printed.

upon dredging, and that training walls should 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, as suggested by the district officer. It therefore recommends that the existing project for the Skagit River be modified so as to include the improvement of Skagit city bar as outlined above, at a cost not exceeding $30,000, which sum should be provided in one appropriation.

8. In compliance with law, the board reports that 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:

W. M. BLACK,
Colonel, Corps of Engineers,
Senior Member of the Board.

PRELIMINARY EXAMINATION OF SKAGIT RIVER, WASH.

UNITED STATES ENGINEER OFFICE,
Seattle, Wash., December 6, 1912.

SIR: 1. As directed in river and harbor act approved July 25, 1912, and in compliance with department letter of August 3, 1912, I have the honor to submit the following report of a preliminary examination of the Skagit River, Wash., with map.

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, as shown on map herewith, at a cost of $100,000. The dike directs the outflowing waters over the tide flats and has served to maintain the required depth of channel. It also protects the channel from waves coming in from the west and northwest, and prevents the deposit of silt brought down by the river before it reaches deep water. The dike is 10,450 feet long, constructed of rubblestone, piles, and brush, and up to the present time it has successfully performed the function for which it was designed. While formerly there was a shifting, crooked channel over the tide flats there is now a comparatively straight channel which has remained fixed in position next to the training dike.

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. This survey has but just been completed on August 15, 1912, the

report thereon has not yet received consideration by Congress, and no new conditions have arisen since that date requiring further examination.

5. In view of these facts the scope of the present examination is confined to the section of river between Sedro Woolley and the mouth, and as a recent survey of this section is available and the physical characteristics of the river are well known and of record, actual examination in the field has been confined to two localities where changes have taken place and difficulties are experienced in navigating.

6. Since 1882 the navigable portions of the Skagit River have been kept free from snags and other similar obstructions with the U. S. snag boat *Skagit* and funds provided by the appropriation for the improvement of Puget Sound and its tributary waters.

7. In November of 1911 the river cut a channel across Sterling Bend, but not in a location entirely eliminating the bend. The cut occurred in the position shown on the accompanying map, and, due to the shortening of the river, there is now a fall of about 5 feet in 3,000 feet, or a slope of 8⅓ feet per mile, where there was formerly a slope of only about 2 feet per mile by the channel around the bend. A very swift current has developed through the section of increased slope, with a marked lowering of the water surface, and the available depths, particularly above the cut, are much less than existed before the cut occurred.

8. In time the increased slope will be distributed somewhat up and down stream from the cut and better depths than the present ones will probably result. Contrary to expectation, the river is not cutting into the island formed by the new cut and the old channel, but is rapidly wearing away the end of the new headland, which is covered with valuable cottonwood timber. Should the stream make another cut, as it threatens to do, and entirely eliminate Sterling Bend there would result a still greater increase in the slope of the stream with probable further shoaling in the approaches. Although very little traffic except small boats and logs moves on the river between Mount Vernon and Sedro Woolley, and the expense of increasing the depth over the shoals resulting from the cut-off would be more than the benefit to commerce would warrant, a survey should be made in order to determine the feasibility and cost of preventing further changes at this point.

9. For the entire distance from Sedro Woolley to Skagit Bay the Skagit River and its various branch outlets have been confined by dikes constructed by the county, the State, or by adjacent land owners. These dikes protect from flood some of the most valuable agricultural land in the State of Washington. Improper location and weak construction of these dikes has caused them to be overtopped or broken by exceptionally high freshets, but the general location of the channel has remained as it was before the construction of the dikes, the stream always returning to this bed in normal or low stages of water and floods of ordinary height.

10. Formerly all the mouths of the river which spread out fanlike from near Skagit City and empty into Skagit Bay were open. At present the river empties mainly through two channels, namely, South Fork via Steamboat Slough, and North Fork. The records of average and normal discharge of the stream show that there is only

sufficient water during low stages to maintain one good channel across the tide flats from deep water in Skagit Bay to deep water in the river. The North Fork channel contains sufficient depths of water to allow boats to come up the river at all stages of the tide at least as far as Mount Vernon, but due to the closing dike placed at the head of North Fork, steamers can only cross the dike at high tide. Steamers ply mainly between Mount Vernon and Everett or Seattle and southern Puget Sound ports and the South Fork (Steam Boat Slough) channel, which gives a much shorter southern route from Mount Vernon to deep water in Skagit Bay, is the one which has been improved. However, steamers using this channel must wait for favorable tide conditions to pass Skagit City Bar near Skagit City, and some relief should be afforded if this can be done at reasonable cost. The partial closing of some of the minor river outlets and the contraction of the South Fork channel over this bar would probably cause an increased current and scour sufficient to give good navigable depth in South Fork at all stages of the tide. A survey of this bar for the purpose of determining the cost, character, and proper location of regulating works required should be made.

11. The bridges spanning the stream are all draw bridges with ample openings to accommodate present and prospective commerce. A number of cable ferries are used and occur every 5 or 6 miles on the river. The cables are all overhead with a minimum height of 75 feet above low water which would, in extreme freshets, give a clearance of about 50 feet.

12. This river is subject to sudden freshets at all seasons of the year and it is impossible to give by months the stages of water. The approximate controlling depth of water over Skagit City bar is 3 feet. This is the only obstruction to navigation between Mount Vernon and deep water in Skagit Bay, over which part of the river nearly all the commerce, except a portion of the logs, passes. The stages of the river are always sufficiently high in the fall or autumn months of each year to allow the crops to be readily taken to market by boat from the delta section of the river.

13. The valley is well provided with railroads which bring in most of the supplies. The main line of the Great Northern traverses the lower valley and a branch line crossing at Burlington serves the upper valley. The Baker River Railway Co., a public carrier, operating almost exclusively for the transportation of timber, also traverses the upper valley. A branch of the Northern Pacific Railway between Seattle and Sumas passes through Sedro Woolley. 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 railroad 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. The water-borne commerce of the Skagit River for the year 1911 was, in detail, as follows:

Articles.	Amount.	Short tons.	Value.
Agricultural implements	.....	141	$29,328
Brick	.....	147	1,764
Butter	.....	6	4,800
Cement	.....	623	8,099
Coal	.....	93	930
Eggs, cases	2,102	578	18,918
Fish (fresh) and oysters	.....	8	600
Flour, grain, etc	.....	11,871	345,930
Hay	.....	6,050	62,100
Hides	.....	53	9,540
Lime and limerock	.....	123	2,460
Live stock, head	452	271	22,600
Logs	.....	124,744	597,348
Machinery	.....	162	3,078
Milk, condensed	.....	13,032	1,604,000
Milk, fresh	.....	1,700	59,500
Miscellaneous merchandise	.....	8,233	829,745
Oil, fuel	.....	18,055	128,798
Plaster	.....	162	3,078
Shingles	14,210,000	1,186	28,420
Wood, cords	1,200	3,072	3,600
Total	.....	190,310	3,764,636

16. In view of the important commerce affected and the possibility of affording some needed relief at Skagit City bar and at Sterling Bend within reasonable limits of cost, it is recommended that a survey of these two localities be authorized.

17. In compliance with law, I have the honor 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.

18. Should some work of regulation at Sterling Bend be found advisable, any work recommended will doubtless be contingent upon cooperation by local interests based upon protection from floods.

Respectfully submitted.

J. B. CAVANAUGH,
Major, Corps of Engineers.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY
(Through the Division Engineer).

[First indorsement.]

UNITED STATES ENGINEER OFFICE,
NORTHERN PACIFIC DIVISION,
San Francisco, Cal., December 11, 1912.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

I concur in the views expressed by the district officer.

THOS. H. REES,
Lieutenant Colonel, Corps of Engineers,
Division Engineer.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
February 3, 1913.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

For reasons stated herein, the Board concurs with the district officer and the division engineer in recommending a survey in order to determine the extent and advisability of the improvement.

For the board:

WM. T. ROSSELL,
Colonel, Corps of Engineers,
Senior Member of the Board.

SURVEY OF SKAGIT RIVER, WASH.

UNITED STATES ENGINEER OFFICE,
Seattle, Wash., January 26, 1914.

From: The District Engineer Officer.
To: The Chief of Engineers, United States Army
(Through the Division Engineer).
Subject: Report on survey of Skagit River, Wash., at Skagit City bar and Sterling Bend.

1. In compliance with instructions contained in letter from the Office of the Chief of Engineers, February 13, 1913, the following report from the survey of the Skagit River, Wash., at Skagit City bar and at Sterling Bend is submitted.

2. Instrumental surveys of both localities were made during the present low-water season, and maps are submitted herewith showing the results of such surveys. A general description of the localities and the commercial interests affected by any improvement undertaken are given in report on preliminary examination submitted on December 6, 1912.

3. Skagit City bar is about 3½ miles below Mount Vernon and 7 miles above the mouth of the river, and the depth of water available over the bar varies not only with the stage of the river but also with the height of the tide. While not close enough to tidewater to have a reversal of flow at high tide, the current is materially checked, with an elevation of water surface of about 3 feet at ordinary high tide. After each freshet, boats can not cross the bar except once in 24 hours, near the top of the higher high tide.

4. The bar formation is due to excessive width of river at the locality, and it is believed that by means of properly designed regulating works the low-water channel can be materially improved.

On the map herewith there have been indicated a tentative channel and a system of training walls and spur dikes which, if constructed and properly maintained, should secure a channel of sufficient depth for existing commerce at low water and low tide.

Any plan of improvement adopted, however, should be subject to such modifications as may be required by changes which occur during the progress of the work, for the position of the bar proper changes materially at each freshet, although its general characteristics have remained the same for many years.

5. In this locality the river banks are easily eroded, and on this account the training dikes indicated are more extensive than may be actually required. During last year the accidental grounding of a boom of logs substantially in the position indicated for the upper training wall on the right bank of the river removed practically all trouble with the bar for several months, and the regulating works indicated at this locality may alone be required. It is believed, however, that no work should be undertaken unless funds are available to fully control the river for some distance below, as provided by the plans herewith.

The type proposed for dikes and training walls, as shown on map herewith, consists essentially of a wide brush mattress strongly wired together, held in position by three lines of piling and weighted with stone sufficiently to insure settlement under scour and prevent undermining. The dikes are intended to control the low-water flow only and will be submerged at high water.

6. The estimated cost of the improvement of Skagit City bar as above indicated is as follows:

6,200 lineal feet dikes, at $9	$55,800
Superintendence and contingencies, approximately 10 per cent	5,700
	61,500

The maintenance of the works when once completed should be small, estimated at not exceeding $5,000 per year, and the total cost of maintenance of the river below Mount Vernon would probably not increase materially, since the repeated dredging now necessary to open a channel across the bar after the numerous freshets would no longer be required. At present the snag boat is employed on this bar seven or eight times per season for periods of about ten days each.

7. Along both sides of the Skagit River below Mount Vernon dikes have been constructed to protect the adjacent lands from overflow, and as these dikes are generally close to the river banks, constant work is required to maintain them, all of which is now carried on by the diking districts. It is evident, therefore, that from the standpoint of the United States there are certain practical objections to any change in the regimen of the river which may be considered as responsible for future difficulties with the dikes in this locality. In my opinion, no improvement of 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 above and below the works installed by the United States, so that no diversion of improvement funds can be urged by the diking districts for the protection of their dikes.

Additional reasons for recommending such cooperation are the protection incidentally afforded the dikes at Skagit City bar by the proposed works, and the fact that the above estimate closely approximates the maximum expenditure which could be justified in the interests of navigation.

There is in favor of improvement a reasonable expectation that if work be confined to that required for navigation only, the total cost of securing a satisfactory channel from Mount Vernon to the sound may be considerably less than the estimate submitted, but, on the other hand, if the United States assumes responsibility for the pro-

tection of river banks from erosion, which is now going on and will continue, the expenditures required will be much greater than could be justified.

8. The map of Sterling Bend submitted herewith shows conditions at the time of the survey in August, 1913, but for comparison there have been added the low-water lines of the channel in 1907 and the approximate position of the banks at the present time due to erosion since the last survey was made. Rapid and extensive changes are still taking place in the cut-off that occurred in 1911, and stable conditions will probably not be reached for several years. Nothing can be done to permanently improve conditions at the locality except at an expense so great as to be entirely out of proportion to the benefits that would result to the limited commerce using this section of river. Nothing short of a thorough revetment of several miles of river bank would be sufficient to stop erosion, and any halfway measures might cause extensive local damage for which the works might be held responsible. Above the cut-off the channel in the river has shifted to the north shore, entirely leaving the draw spans of the Northern Pacific and county bridges, but as the few gasoline boats using this section of the river can pass underneath the fixed spans at low water, and at high stages reach the draw spans, it is not believed that the department would be justified in requiring modification of these bridges at the present time.

9. 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 as outlined above, at a cost not exceeding $61,500, provided local interests cooperate to the extent of undertaking all work of bank protection required for the maintenance of their dikes. The provision for the work, if undertaken, should be made in a single appropriation, and no expenditures should be authorized until the Secretary of War is satisfied that local interests will cooperate as outlined above.

10. In view of the small benefits to navigation, and the difficulty and large expense of improving conditions at Sterling Bend, I am of the opinion that no work of improvement should be undertaken by the United States at this locality further than already carried on under the appropriation for improving Puget Sound and its tributary waters, which provides for the removal of snags and other obstructions from the Skagit River.

11. 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. B. CAVANAUGH,
Major, Corps of Engineers.

[First indorsement.]

UNITED STATES ENGINEER OFFICE,
NORTHERN PACIFIC DIVISION,
San Francisco, Cal., January 31, 1914.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY.

Concurring in the views expressed by the district engineer officer.

THOS. H. REES,
Lieutenant Colonel, Corps of Engineers,
Division Engineer.

[For report of the Board of Engineers for Rivers and Harbors on survey, see p. 3.]

LETTER OF THE MOUNT VERNON (WASH.) COMMERCIAL CLUB.

MOUNT VERNON, WASH., *April 2, 1914.*

GENTLEMEN: Under date of March 13, 1914, you forwarded a communication to the chamber of commerce at Mount Vernon, Wash., requesting information and arguments as to the desirability of the United States Government making an expenditure of $61,500 for the improvement of the Skagit City bar in the Skagit River, with a further expenditure of $5,000 per year for maintenance.

At a meeting of the commercial club called pursuant to the communication mentioned, we, the undersigned, were appointed as a committee to prepare statistics and arguments for your use relative to the proposed improvement. In preparing our case we have refrained from booster arguments entirely, and the statistics and arguments given below are founded entirely upon determined facts and not upon any sort of speculation. If anything the statistics given are too conservative, for the reason that there is much independent traffic, both in freight and passengers, of which no record is kept, while the figures we have given are taken from established steamboat lines, logging, lumber, and other manufacturing companies using the river.

Following is a table of boats and steamers which now ply between points on the Skagit River and various points on Puget Sound:

Vessel.	Power.	Remarks.
Harvester	Steamer	Freight and passenger.
Gleaner	do	Do.
Black Prince	do	Freight.
T. C. Reed	do	Do.
Lilly	do	Do.
Lomah	do	Do.
Fidalgo	do	Do.
Sunflower	Gasoline	Do.

In addition to the above there is another large freight steamer building at Mount Vernon, which will be placed in operation some time during the coming summer, and also 14 gasoline boats from 40 to 50 feet over all, used for freight and pleasure.

We have been unable to get statistics from all the boat companies operating on the river, as to the amount of traffic, freight, and passengers carried by them. One of the companies, however, the Skagit River Navigation & Trading Co., operating the steamers *Harvester* and *Gleaner*, has submitted to us a statement wherein we find that the two steamers mentioned, during the year 1913, carried 32,792 tons of freight of the value of $3,238,719.80. This freight was made up of the following items:

	Value.
Hay, 421 tons	$4,210
Milk, condensed, 514,354 cases, 15,431 tons	2,067,416
Miscellaneous freight, 6,820 tons	1,027,000
Oil, crude, 31,488 barrels, 5,620 tons	34,636
Oats, 2,488 tons	62,201
Potatoes, 552 tons	8,280
Shingles, 17,488 M, 1,460 tons	34,976

In addition to the table of freight given above, the Skagit River Navigation & Trading Co. carried 1,352 passengers during the year.

We have received signed reports from the following logging and manufacturing companies using the Skagit River for freighting purposes:

Mount Vernon Cream Co.
Pacific Coast Condensed Milk Co.
Slosson Logging Co.
Puget Sound & Baker River Railway Co.
English Logging Co.
Standard Oil Co.

The Mount Vernon Cream Co. reports that during the past year it shipped via the Skagit River, freight aggregating in round numbers 30,000 tons. Its business is rapidly increasing, and in the same report it estimates that it will ship to and from its plant during the year 1914, approximately 40,000 tons of freight.

The Pacific Coast Condensed Milk Co. reports that for the past year it shipped via the Skagit River 16,144 tons of condensed milk, and during the same year received 3,543 tons of fuel oil and 185 tons of general supplies.

The Oil Co. reports that it received via Skagit River during the year 1913, 11,868 barrels of crude oil and 6,772 gallons of refined oil.

By combining the reports of the Puget Sound & Baker River Railway Co., the Slosson Logging Co., and the English Logging Co., we find that during the same year logs, timber, etc., to the total amount of 308,308,628 feet, or 2,106,386,240 pounds, went down the river.

The Puget Sound & Baker River Railway Co. reports that in addition to the logs and timber shipped by it during the said year, it received 5,042 tons of crude oil, machinery, general supplies, and sand and gravel amounting to 12,402 tons. It estimates that for the next 15 years it will tow down the said river annually 100,000,000 feet of logs and timber, and will transport and receive other commodities to the amount of 50,000 tons annually.

The English Logging Co. reports that it has received 486 tons of general merchandise via the Skagit River in addition to the logs and timber by it shipped.

Another company known as the Lewis Logging Co. is just beginning operations in the upper Skagit, and it reports to us that it will transport down the said river approximately 50,000,000 feet of timber during the current year.

We also find from the report of the R. G. Dun Co. that there was raised in the Skagit Valley during the year 1913, 30,000 tons of oats, 20,000 tons of hay, and 8,200 tons of potatoes. As a very conservative estimate we submit that of this amount 14,000 tons of oats, 9,000 tons of hay, and 3,500 tons of potatoes were shipped out via the Skagit River. We also estimate that during the five months of the year in late summer, fall, and early winter, when the fishing season is on, approximately 13 or 14 tons of fish per day are caught and transported out of the Skagit River, making for the season approximately 2,000 tons of fish.

By combining the various reports given, we find that during the year 1913, approximately 108,168 tons of general freight consisting of condensed milk, oil, hay, grain, oats, machinery, etc., was transported over the river in addition to something over 308,000,000 feet of logs and timber.

In compiling this total we have not taken into consideration the report of the Skagit River Navigation & Trading Co., above given, for the reason that we do not wish to duplicate, and we firmly believe that much more merchandise was shipped over the river than would appear from the totals given. The reports submitted by the various companies place no value on the merchandise by them shipped and received, and through fear of being charged with exaggerating we have not attempted to place a value upon the commerce of the Skagit River for the year 1913. Taking, however, the report of the Skagit River Navigation & Trading Co., wherein it states that it alone carried merchandise worth almost three and a quarter million dollars during the year 1913, it will be readily seen that the total value of the merchandise, freight, and timber, which was shipped via the Skagit River during the past year would amount into many millions of dollars.

This commerce was distributed all along the river, much of it being received from or shipped to points lying above the town of Mount Vernon. The record of the bridge tender at Mount Vernon shows that the draw was opened during the year 1913, 1,227 times. The traffic which thus went up the river was entirely freight, as no passenger boats ply above the city of Mount Vernon.

Having given the statistics in so far as we have been able to gather them relative to commerce on the Skagit River, permit us to very briefly give what we consider to be conclusive answers to the doubts expressed by your honorable board, in the communication heretofore mentioned.

The bar at Skagit City is building higher and higher every year. At one time it was possible for the largest river boats to cross the bar at any stage of water, while at present the ordinary river boats can cross the bar only at high tide, and even then they are often stranded and sometimes hung up for several days before being floated again. Even the smallest of the launches on the river find difficulty in navigating the channel near the bar at low tide. We think we can assert it as a positive fact, that unless steps are taken to deepen the channel across the bar and prevent its further filling, it will only be a matter of a very few years until the river will be absolutely closed to navigation of all kinds.

Your honorable board can readily see from the figures above given the importance of the river commerce to this section of the State of Washington, and if the river should become permanently blocked so great a misfortune would it be to this section as to amount to almost a calamity. For the purpose of showing the importance to this section of the State of having the Skagit River kept open, let us reduce to dollars and cents a few of the advantages of the river navigation, as disclosed by the above statistics. From the report of the Skagit River Navigation & Trading Co., we find that that company alone carried 31,488 barrels of crude oil during the past year. We have no exact record of the oil carried by the other boats to various manufacturing concerns along the river, and in the report which we have given above, the manufacturing concerns have not attempted to separate the different items of freight included in their totals. We believe we are safe in assuming, however, that at least 19,000 barrels of crude oil was carried on the Skagit River the past year in addition to that carried by the Skagit River Navigation & Trading Co., or in round numbers some 50,000 barrels were transported on the said river during that year. There is a difference of 8 cents per barrel in favor of water transportation for crude oil between Mount Vernon and Seattle. River navigation therefore saved this community $4,000 in freight rates for the past year on crude oil alone. In refined oil there is a difference of 1½ cents per gallon, or $75 per carload. The local branch of the oil company shipped 6,772 gallons of refined oil, as shown by the above statistics, making an additional saving thereby of $101.58. Most of the refined oil coming into this community, however, is shipped over the railroad, for the reason, the oil company tells us, that it is too precious a cargo to be endangered by crossing the bar, and the company can not afford to take the chances of having a cargo of refined oil hung up for several days on the bar and in danger of being set afire or destroyed through an accident to the boat while in such condition. The management tells us that were it not for the dangerous condition at the bar the oil company would have shipped in last year at least 50 carloads of refined oil over the Skagit River at a saving of $75 per carload in freight rates, or, in other words, at a saving of $3,750 to this country on the item of refined oil alone.

The rate on hay between Mount Vernon and Seattle by railroad is $1.20 per ton, by river $1 per ton, making an advantage of 20 cents per ton in favor of river navigation. Inasmuch as 9,000 tons of hay were shipped by boat last year, there was a saving to this community on that item of $1,800.

The rate on grain by railroad is $1.50 per ton, by boat $1, making an advantage of 50 cents per ton in favor of river shipment. This community therefore saved by river navigation the sum of $7,000 on the 14,000 tons of grain shipped by water during the year 1913.

On potatoes there is a difference of 60 cents per ton in favor of water navigation, and inasmuch as 3,500 tons were shipped by river the past year, the community therefore saved $2,100 on that item by reason of river navigation.

One of the important industries of this country is the manufacture of condensed milk, and the shipment thereof to all parts of the world. In order to obtain part of the commerce in condensed milk, the railroad company has reduced its rates until they are the same as the rates by water, to wit, $1 per ton to Seattle and other deep-sea points. This cheap rate is given by the railroad solely because of water competition, and should the river ever become blockaded for navigation purposes, beyond a question of a doubt the railroad company would immediately increase the rate at least 50 or 60 per cent. The condensed-milk output from this town alone now approximates 50,000 tons by rail and water, and assuming that by the destruction of water competition the railroad rates would be increased from $1 per ton to $1.50 per ton, the community would thereby lose a sum in the neighborhood of $25,000 per annum. On all other merchandise given in the above report we find that the freight rate by boat between river points and Seattle is from 5 cents to 12½ cents per hundred, by rail from 10 cents to 28 cents per hundred. We have been unable to obtain any figures showing the relative cost of hauling logs and timber by rail and taking them down the river by tugboat, but we believe that your honorable body will entirely agree with our statement that the cost by rail would be at least two or three times the cost

of towing the same to market by tugboat. The saving to this part of the State by reason of river navigation in the shipment of 308,000,000 feet of timber for the year 1913 is so large that we do not even presume to estimate it. But we believe that your body will realize that the saving is of such importance as to affect the very existence of our greatest industry, that of logging and lumbering.

In addition to the saving in freight rates by reason of river navigation, we also receive a large indirect saving because of the lower passenger rates, which the railroad company must give in order to meet river competition. The railroad rates practically all over this State are 3 cents per mile, which would make the return fare $4.20 between Mount Vernon and Seattle. The rate by boat is so low that the railroad company has been forced to grant a return fare of $2.70 in order to get the passenger business, the one-way fare for transients being maintained at the regular price of 3 cents per mile, or $2.10 between the two points mentioned. We have, of course, been unable to get any exact figures from the railroad company as to the return passenger tickets sold to Seattle last year, for the reason that the railroad company is extremely anxious that river competition be eliminated. We have been informed, however, from a reliable source that approximately 12 to 15 return tickets per day are sold from Mount Vernon to Seattle, or in round numbers 5,000 per year. The difference between the usual rate of $4.20 and the present rate of $2.70 is $1.50, being the amount saved on each return ticket, or in other words, as a community we saved indirectly on the 5,000 passenger tickets sold to Seattle last year the sum of $7,500 because of river competition. The figures as to passenger rates are taken from Mount Vernon alone, and if we would include all the other towns in which the railroad has been forced to reduce rates because of river competition the sum given would be easily doubled. These are not matters of speculation, as your board can easily determine at a hearing or investigation, for the railroads in this State do not give the favorable freight and passenger rates which we enjoy unless absolutely forced to by water competition, and if the water competition is destroyed there is absolutely no question but what we in this part of the State will be compelled to pay tribute to the railroad company in the form of increased freight and passenger rates.

We find, therefore, from the figures given that there was a saving on freight rates on the freight actually carried via Skagit River during the year 1913 as follows:

Crude oil	$4,000.00
Refined oil	101.58
Hay	1,800.00
Grain	7,000.00
Potatoes	2,100.00
Total	15,001.58

This total does not include the saving on logs and timber, which item alone would be many times the figure given if there were any way in which it could be estimated with any degree of accuracy. We also find from the statistics heretofore given that we saved indirectly by reason of cheap railroad and freight rates occasioned by competition with river navigation items as follows:

Condensed milk	$25.000
Passenger rates, Mount Vernon alone	7,500
	32,500

In addition to the totals given, there would have been an additional saving of at least $3,750 on refined oil alone, if the Skagit River bar were in such condition as to permit of safe navigation. Combining the three totals, we find that if the proposed work were done, and the channel kept properly open, after being improved, it would result in an actual saving either directly or indirectly to this community of the sum of $51,251.58 annually, based upon the figures for the year 1913, it being always borne in mind that this figure is exclusive of the saving in the towage of logs and timber, and it being also borne in mind that the total savings will grow larger from year to year, with the increased development of the Skagit Valley.

We feel that before closing, a word as to the future prospects of this part of the country, as related to river navigation, would not be remiss. The lumber and logging industry is here in its infancy, notwithstanding the enormous amount of timber which has already been taken out, as compared to the whole, the supply has hardly been touched. We have great stretches of mountains and valleys, scores of miles in extent, thickly wooded with the best of cedar, fir, pine, spruce, hemlock, etc., aggregating millions upon millions of feet. At the present rate of logging it will be a generation at least before this timber is taken out, and the major portion of it must come down the

Skagit River. As the timber is being cut off the valley lands are being cleared and placed under cultivation, the crops raised being principally grain and dairying prodcts, consisting chiefly of condensed milk. The production of agricultural products of this community is ever on the increase, and we believe that the estimate of the Mount Vernon Cream Co., as given above, wherein it states that its shipment of condensed milk and other products will increase from 30,000 tons in 1913 to 40,000 tons during the current year, is a fair index of the ratio of increased production of agricultural products in the country bordering upon the Skagit River. Your honorable board must therefore see of what tremendous importance it is to us that the Skagit River be kept open to navigation, and the original cost and the cost of maintenance is insignificant when compared to the vast extent of territory, the amount of commerce affected, and the benefit to be derived from the prosecution of the proposed work.

In reply to the doubt expressed by your board in section "B" of your communication, wherein you state that the improvement would not insure continuous navigation in low stages up to Mount Vernon, we would say, that if the money was judicially spent that it would insure navigation as far as Mount Vernon. But even granting that your board is correct in the doubt expressed in the said section, we would point out that the improvement would at least insure navigation at high tide, and thus prevent the blocking of the river entirely, as will undoubtedly happen in the very near future if something is not done.

In reply to the objection stated in section "C" of your communication, we will say that we have consulted with several local engineers who are well acquainted with the Skagit River and have had a hand in the building of the various dikes and training walls along its course. These engineers seem to be of the unanimous opinion that if the improvement of the bar was properly done, the result would be that the deepening of the channel would draw the water to the center and away from the banks and instead of causing additional erosion of the banks and dikes it would lessen the erosion now existing.

We believe that we have given you the salient facts and arguments as to why your board should approve the work recommended, and we trust that we have impressed upon you the large amount of benefits to be received from the expenditure of the sum proposed. If we have not been sufficiently explicit, or if there are any other facts upon which the board is in doubt, we shall be pleased to furnish any additional information within our power.

We trust that we have proved our point with sufficient clearness to entitle us to the favorable action of the board without further hearing, but if your board should still be in doubt, we shall be more than glad to submit our case at any sort of a public or private hearing which the board might wish to arrange.

Very truly, yours,

MOUNT VERNON COMMERCIAL CLUB,
By A. R. HILEN,
R. S. DAVIS,
JAMES KEAN,
Committee.

The BOARD OF ENGINEERS FOR RIVERS AND HARBORS.