

**HEARINGS BEFORE THE COMMITTEE ON
RAILWAYS AND CANALS ON
CONCURRENT RESOLUTION NO. 18,
SURVEY FOR SHIP CANAL FROM
TOLEDO TO CHICAGO VIA FORT WAYNE**

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Hearings Before the Committee on Railways and Canals on Concurrent Resolution No. 18,
Survey for Ship Canal from Toledo to Chicago Via Fort Wayne by Various

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HEARINGS

BEFORE THE

U.S.C.H.

COMMITTEE ON RAILWAYS AND CANALS

ON

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CONCURRENT RESOLUTION NO. 18

SURVEY FOR SHIP CANAL FROM
TOLEDO TO CHICAGO VIA
FORT WAYNE

WASHINGTON
GOVERNMENT PRINTING OFFICE
1908

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[House Concurrent Resolution No. 18, Sixtieth Congress, first session.]

CONCURRENT RESOLUTION.

Resolved by the House of Representatives (the Senate concurring). That the Secretary of War be, and he is hereby, authorized and directed to cause and complete surveys for a ship canal commencing at Toledo, Ohio, running thence to Fort Wayne, Ind.; thence to or near Chicago, Ill., with report of plans, specifications, and estimates of cost; said survey to be made by such officers or engineers as may be directed by the Secretary of War, and to be of suitable location and dimensions for military, naval, and commercial purposes.

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SURVEY FOR SHIP CANAL FROM TOLEDO TO CHICAGO VIA FORT WAYNE.

COMMITTEE ON RAILWAYS AND CANALS,
HOUSE OF REPRESENTATIVES,
Tuesday, April 23, 1908.

The committee met at 10 o'clock a. m., Hon. James H. Davidson, chairman, presiding.

The following gentlemen appeared before the committee: Messrs. Charles S. Bash, Perry Randall, and Frank B. Taylor, of Fort Wayne, Ind.; and Mr. H. R. Probasco, of Cincinnati, Ohio.

The CHAIRMAN. This is a hearing called at the request of Mr. Gilhams to consider concurrent resolution No. 18, introduced by himself, authorizing the survey of a ship canal from Toledo to Chicago via Fort Wayne, Ind. Mr. Gilhams will take charge of the hearings.

Mr. GILHAMS. Mr. Chairman and gentlemen of the committee, I want in advance to thank you for so kindly giving us this hearing on the Michigan and Erie Ship Canal, and I want to assure you that we are thoroughly interested in this canal, which fact I hope you will learn before you get through with the hearing.

I desire first to call Mr. Frank B. Taylor, whose father, Mr. Robert S. Taylor, has been a member of the Mississippi River Commission. Mr. Taylor is in the service of the Geological Survey.

STATEMENT OF MR. FRANK B. TAYLOR.

Mr. Chairman and gentlemen of the committee, the prosperity of the great Middle West, comprising twelve States and 26,000,000 people, and which may be said to be "The garden plot of the United States," raising one-half of the corn and three-fourths to four-fifths of all the staple products of the country excepting cotton and sugar, lies in the interior of the continent. All this section of our country has to carry on its commerce with our own Atlantic coast and with Europe almost entirely by rail. This long carry by rail from the coast to the interior, and vice versa, 500 to 1,500 miles each way, constitutes the burdensome "long haul," concerning which so much has been said in recent years.

It is well known that transportation by rail costs on the average about eight times as much as in large boats on deep waterways. The commerce of this great interior portion of our country is heavily burdened by the cost of this long haul by rail. This applies particularly to fuel and to raw materials of all kinds; in short, to nearly all the things which form the basis or foundation of manufacturing industries. The cost of the long haul by rail is a heavy burden. It is like a double tax, a tax on both imports and exports. Like Davy Crockett's gun, it "catches 'em both a-coming and a-going." The products of the Middle West must meet the products of the other

sections of the country in competition on equal terms, and in order to do this they are compelled in every transaction to take the price of the railroad long haul out of their profits. The only escape from this heavy handicap is by the construction of deep waterways from the Middle West to the sea. One of the greatest and most worthy objects of the present inland waterways agitation is the relief of our inland States from the burden of the long haul by rail. It is only by means of the most advantageous deep waterways from the Great Lakes to the sea, both south and east, that the Middle West can hope to continue its normal growth and prosperity.

Only two routes within the borders of the United States are possible for deep waterways to the sea, one from Chicago down the Mississippi River to the Gulf and the other from the Great Lakes to New York through the Erie Canal and the Hudson River.

While I do not wish to disparage in any way the great possibilities of traffic on a Lakes-to-Gulf deep waterway, it is nevertheless certainly true that the Middle West can not carry on its commerce with the Atlantic seaboard and with Europe as advantageously in that direction as by the east and west or Lakes-to-Hudson route.

As usually thought of, the east-and-west deep-water route would be complete if the Erie Canal were made into a ship canal. The route would then be through the Hudson River, the Erie Canal, Lake Erie, Lake Huron, and Lake Michigan to Chicago. But if such a waterway were finished, it would still be 400 miles longer than necessary, because as I shall endeavor to show you, there is a route for a deep waterway or ship canal from Lake Erie to Lake Michigan, which is feasible and which, if laid out on proper lines, will be sufficient for any development of commerce that we can now foresee.

The CHAIRMAN. What is the distance?

Mr. TAYLOR. The length of the canal on this line would be about 235 or 240 miles, according to the route taken. If the gentlemen of the committee will turn to this pamphlet and look at the map opposite page 9—

Mr. CHANEY. They could go down the Mississippi by way of that route or could go east?

Mr. TAYLOR. They could go either way. This map is intended to show the general relation of this canal to the north and south and also to the east and west main deep-water routes. It shows the proposed canal as a link, making a practically straight route to the Hudson River equal in length to the best all-rail route.

Mr. CHANEY. Does it follow the Maumee River from Fort Wayne?

Mr. TAYLOR. Yes, sir. In making choice of a route for this canal, we have gone carefully over the ground. We have found that the shortest distance between the two lakes is, as marked on this map, through southern Michigan from Toledo to Benton Harbor. There are other routes a little farther south, but they are somewhat longer.

The CHAIRMAN. I had those marked on the map in order to give the members a general idea of it. For the direct route to Benton, a bill has been introduced by Mr. Fornes, which is before this committee also.

Mr. TAYLOR. In looking for the best route for this canal there are three things to consider: (1) The water supply at the summit level; (2) the best place for the summit level; and (3) the length of the canal. The water supply at the summit level of the canal must be

large if the canal is to be a deep waterway or ship canal. We searched for the route which would give the longest, lowest summit level and the largest possible amount of water, and it seems to us that it is not so essential to have the shortest route as it is to get a large water supply and a low summit level. The lower the summit level the fewer the number of locks required, and locks are very costly to build and wasteful of time in operation. There are many advantages in the very long summit level which the proposed canal would have. Its length of 100 miles or more makes it possible to bring in more streams and a greater quantity of water at the summit than can possibly be obtained on the summit level of any other route in the region traversed. The proposed route goes up the Maumee River from Toledo to Fort Wayne. On the map facing page 12 the route is shown in somewhat more detail.

Mr. McDERMOTT. How wide is the Maumee?

Mr. TAYLOR. It is an ordinary river and you can wade its shallows in low water. The bed is 200 to 300 feet wide at Fort Wayne and is somewhat wider below Defiance.

Mr. McDERMOTT. It is full of yellow mud.

Mr. TAYLOR. Yes; but it is the St. Marys River that contributes most of the mud. The route then goes southwest from Fort Wayne through the old glacial outlet channel to Huntington. From this place it keeps on the high ground along the north side of the Wabash River to or nearly to the city of Wabash, where it turns northwest on a line directly toward Chicago.

The other routes which have been suggested pass farther north and are somewhat shorter. They are feasible for small canals, but not for a ship canal. It would not be impossible to get water enough for a ship canal on the summit level of any of these northern routes and they would require twice as many locks.

If you will look at the map you will see that the summit level can be carried across the whole stretch from a point a little east of Fort Wayne to near Lake Maxinkuckee, and the whole area surrounded by the outside feathered line can be drained into it. This area is about 8,000 square miles. None of the other routes farther north, though shorter, can get the drainage from much more than one-tenth as much area. The larger area comprises a number of rivers of good size, a large number of lakes, and many favorable sites for artificial reservoirs. Fort Wayne is in the lowest gap in the southern or western rim of Lake Erie. If you go north from Fort Wayne you rise to higher ground, to 950 feet or 1,000 feet above sea level, whereas at Fort Wayne the divide is only 760 feet. Having brought the canal up to Fort Wayne, the question arises as to whether it shall be carried by way of Huntington and Wabash to Lake Maxinkuckee without any locks, making the summit level over 100 miles long, or whether it shall be carried northwest from Fort Wayne over a broad ridge more than 100 feet higher, requiring nearly twice as many locks and securing a much smaller supply of water.

Information of the most reliable sort as to the details of the country along the proposed route was obtained from Mr. Frank Leverett, of Ann Arbor, Mich., before whom the project was laid soon after the first meeting in Fort Wayne. As a geologist of the United States Geological Survey he has studied the topography and drift of northern Indiana and Ohio in much detail, having examined every town-

ship of the region on foot and collected records of all the deeper wells, showing the depth and character of the drift. Mr. Leverett expressed himself as confident not only of the feasibility of construction on the proposed route, but expressed equal confidence in the availability of a sufficient water supply for the summit level to make the canal entirely adequate to the needs of commerce.

The summit level of the canal can begin at Fort Wayne and be carried to Lake Maxinkuckee without a lock.

The CHAIRMAN. What is the distance?

Mr. TAYLOR. It is 100 or 110 miles, and its altitude above sea level is about 750 feet. At the bottom of this map you will notice the profile. It shows a summit level of great length, which would enable the canal to get the water of a large number of streams, and largely increase the capacity of the canal to do business. The capacity of a canal for business is necessarily limited by the amount of water available at its summit level. For this reason the summit level of this canal is designed to be as low as possible and as long as possible.

Mr. BURTON. Where is the long summit level?

Mr. TAYLOR. It begins east of Fort Wayne. Of course, the exact place it should begin is a question to be decided by engineers. These figures are only approximate. It runs west to a place marked "West Lock" on the map. This is just south of Lake Maxinkuckee. At this point it begins to descend toward the west, and after running for a considerable distance at a level of 680 feet makes a rapid descent by three or four locks to the level of Lake Michigan.

Mr. McDERMOTT. There will be about twenty locks?

Mr. TAYLOR. Yes, sir.

Mr. BURTON. Is it supposed that the rivers would supply a sufficient quantity of water?

Mr. TAYLOR. I have data on that point from Mr. M. O. Leighton, chief of the hydrographic division of the United States Geological Survey. The first time I wrote him we were considering a canal of 14 feet depth, and he answered on that supposition. He said there are five streams which would furnish about 654 cubic feet of water per second at low stage and that 490 cubic feet per second is enough to operate a lock 348 feet long, 69 feet wide, and 16 feet deep (which is suited to a canal of this depth), one hundred times a day without resorting to storage.

Mr. HARDY. That would be more than you would need.

Mr. TAYLOR. Yes, sir; for a 14-foot canal. But I believed that this would ultimately become a greater canal. When Mr. Leverett went over the project he found that the lay of the land was favorable for bringing a large feeder down to the summit level at Lake Maxinkuckee from South Bend and Elkhart. The largest source of water supply would be from the St. Joseph and Elkhart rivers. It was also found that the Wabash and the Salamonie rivers and also the Mississinewa River could be drawn upon. Taking all these together, we could have as a maximum supply at low water, without reservoirs, about 2,500 cubic feet of water per second, and we found that that would be more than enough to operate the biggest lock at the Soo 100 times per day. Colonel Davis's report on the traffic through the Soo locks for 1906 shows that all three of the great locks taken together were operated in the busiest time only about 110 times a day.

Mr. HARDY. How long does it take to operate a lock one time?

Mr. TAYLOR. Theoretically it takes from ten to twelve minutes, but it really requires twenty-five to thirty minutes—mainly because of the slow movements of the large boats.

Mr. CHANEY. At the Soo it is about twenty-two minutes.

Mr. HARDY. Then they could not get 100 operations per day.

Mr. TAYLOR. I think the best locks to-day are operated quicker. Besides, two locks could be put in at each place if necessary.

Mr. WHEELER. The locks at the Soo are larger.

Mr. TAYLOR. I think not.

Mr. WHEELER. Are they not 800 feet by 100 feet?

Mr. TAYLOR. Yes, sir. I misunderstood your question. It may be that we will need a canal 21 feet deep—

Mr. HARDY. You want the biggest thing possible.

Mr. TAYLOR. It seems to me that this canal will at some time in the future need to be of large capacity. I think that all of our principal canals in the Great Lake region ought to be standardized. They ought to be of one depth from Chicago and Duluth to New York.

Mr. HARDY. Is not 14 feet the depth of the ship canal from Chicago to St. Louis?

Mr. TAYLOR. According to Mr. Cooley, of Chicago, the latest idea is to make it 18 feet. The Chicago Drainage Canal is 24 feet.

Mr. WHEELER. What is the depth of the Erie Canal?

Mr. TAYLOR. It is 7 feet deep, and they are now making it 12 feet deep. Many people are strongly urging that the Erie Canal should be made 21 feet deep. The present work is now being done, I believe, by the State of New York, unaided by the Government.

Mr. BURTON. In getting that depth of water at the summit level would it interfere with any water rights?

Mr. TAYLOR. It might interfere with some water rights on the St. Joseph River and on the Elkhart River. I imagine that such an undertaking would be rather difficult for a State or a corporation, but the National Government could afford to compensate those people when their rights were taken. The largest water rights are at Buchanan, in Michigan. This place is a little below Niles. They rely on the water of the St. Joseph and the Elkhart rivers. Indiana, I imagine, would have trouble in taking the water supply from a power plant located in Michigan.

Mr. HARDY. The power would still be there?

Mr. TAYLOR. Yes, sir; the canal would not affect the power except at low water.

Mr. CHANEY. They could build reservoirs which would effectually meet the difficulty?

Mr. TAYLOR. I think so.

Mr. GILHAMS. They could not get water below South Bend?

Mr. TAYLOR. No, sir; that is too low for the canal. The river bed is 40 feet below the level of the town. The feeder would be about 30 feet above the level of the city. This water power in the vicinity of South Bend would be much more advantageous if taken out of the canal feeder above the city, where it would have a fall of 60 or 70 feet in returning to the bed of the river. The power company could almost afford to move their plant to South Bend and take their water out of the canal feeder. It would be a great advantage to them.