5-24-1832

Canal -- Lake Michigan and Illinois River. Letter from the Secretary of War, transmitting a report of a survey of the route of a canal to connect the waters of Lake Michigan with those of Illinois River.

22d Congress, 1st Session. [Doc. No. 245.] Ho. of Reps. War Dept.

CANAL—LAKE MICHIGAN AND ILLINOIS RIVER.

LETTER

FROM

THE SECETARY OF WAR,

TRANSMITTING

A report of a Survey of the route of a Canal to connect the waters of Lake Michigan with those of Illinois river.

May 25, 1832.

Read, and committed to a Committee of the Whole House.

Department of War,
May 24, 1832.

Sir: In part compliance with a resolution of the House of Representatives of the 28th ultimo, I have the honor to transmit "the report of the United States' engineer who was directed to survey the route of a canal to connect the waters of Lake Michigan with those of the Illinois river." The maps and estimates will be furnished as soon as they can be prepared.

I have the honor to be,
Very respectfully,
Your obedient servant,
LEW. CASS.

Hon. Andrew Stevenson,
Speaker of the Ho. of Reps.

Topographical Bureau,
May 24, 1832.

Sir: I have the honor to lay before you the report on a survey of a canal route to connect the waters of Lake Michigan and the Illinois river, called for by a resolution of the House of Representatives of April the 28th.

The resolution also calls for the maps and estimates of the route. These it has not been in the power of this bureau as yet, to prepare, nor will they be ready for delivery for some time to come; but as great anxiety has been expressed to have the report, it is now submitted, as a compliance, in part, with the resolution.

With great respect, I remain, sir,
Your obedient servant,
J. J. ABERT,
Lt. Col. T. E.

Hon. Lewis Cass,
Secretary of War.

Report on the survey of a canal route to connect the waters of Lake Michigan and the Illinois river, 1831.

WASHINGTON, *May* 20, 1832.

SIR: In obedience to the orders of the Chief Engineer, dated the 27th of April, 1831, I proceeded to Cook county, State of Illinois, to complete a survey, (commenced by Messrs. F. Harrison and W. B. Guyon, assistant civil engineers in the service of the United States, in the summer of 1830,) the object of which was the selection of a route for a canal to unite Lake Michigan with the Illinois river. The results of the survey exhibited in nine sheets of maps, and the same number of sheets of profiles, with a memoir explanatory of the same, I now have the honor to lay before you.

The route examined commences on Chicago creek, which empties into Lake Michigan, about six miles above its mouth; thence, in a westerly direction, across the low ridge dividing the head waters of the above mentioned creek from Des Plaines river, till it strikes into the valley of the Des Plaines, near its junction with Mud lake, down this valley on the left bank of the river for twenty-six miles, when it crosses to the right bank, along which it continues to the junction of the Kankakee river, the united streams from the Illinois. The valley of the Des Plaines is, on an average, about two miles wide, bounded by bluffs from 20 to 60 feet high, the soil is generally poor, the rock, (sand stone,) in a great portion, being very near the surface, and, in the remainder, gravelly, with a thin covering of soil: timber is scarce, and of an inferior quality. The river is a succession of rapids from its head to the mouth of the De Page; then, to the Kankakee, the current is very sluggish.

From the junction of the Des Plaines and Kankakee the line runs on the right bank of the Illinois, generally in an open prairie, to the foot of the rapids, crossing no stream of any consequence except the Fox.

The valley varies in breadth from one to three miles; it is bounded by high and steep bluffs; the soil is generally of good quality; and timber is plenty, especially on the left bank. The rapids commence about 27 miles below the mouth of the Kankakee, and continue, with little interruption, for 15 miles. During high water, steamboats, drawing not more than 4 feet, can ascend to the mouth of the Fox, 8 miles above the foot of the rapids.

When the Indian trade was extensively carried on upon the Illinois and its tributaries, boats ascended the Illinois and Des Plaines to Mud lake, and then dragged across to Chicago creek, and descended to Lake Michigan. In the spring, when the water was high, no portage was necessary, and boats, carrying as much as six tons, passed from Mud lake to the creek without difficulty.

Map No. 1 exhibits the survey of Chicago creek, together with eight miles of the canal route; the profile of the latter is on sheet No. 1.

The survey of the creek commences at its mouth, which is obstructed by a bar. At the time it was sounded, during the summer of 1831, there was two feet water, but it is constantly altering, and sometimes completely closed. From the bar the water of the lake gradually deepens, and, 445 yards from its mouth, there is 18 feet water.

The creek, from its mouth to Fort Dearborn, a distance of 467 yards, runs parallel to the lake, (course nearly north,) from which it is separated by a narrow sand bank; its average width 100 yards; the depth varies from 6 to

15 feet. From the fort of the village of Chicago the course is west, distance 1,150 yards, average width 70 yards, and from 15 to 26 feet deep: at this point, the stream forks. From the village, the main branch has a course east of south for 3,200 yards, average width 60 yards, depth 17 feet; thence, to the point where the line of levels commence, the course is south of west, distance 5,230 yards, average width 44 yards, depth varying from 26 to 10 feet. The creek heads about 2,500 yards from the above mentioned point, in low wet ground, which extends in a westerly direction for about four miles to Mud lake, which communicates with the river Des Plaines.

Mr. Guyon commenced his line of levels at Chicago creek, at the mouth of a broad slough, marked on the map stake No. 1, 2.55 feet above the surface of the water in creek, which is the same as the surface of the lake. The line runs for 5⅝ miles over an open prairie, when it strikes upon the shore of Mud lake, to which it is parallel for 2⅝ miles, when it comes upon the left bank of the Des Plaines, along which it continues for ⅜ of a miles, the ground to the south of the line, for the last two miles, is high and wooded.

The total distance is 8⅛ miles; the highest point above the lake is 10 feet.

Map No. 2.—From the 8⅛ mile to the 18⅛ mile of the main line, and from B M 3 to the termination of the feeder line from the Calamac river. The profile of the main line on sheets 1 and 2, that of feeder on sheet 3.

From the 8⅛ mile to the 135th picket, 6 miles, the line is on a prairie, and nearly parallel to the river, when it enters a thick wood, in which it continues to B M 6, a distance of 4 miles: for the last 2 miles, at the foot of a high ridge, which commences opposite the 12th mile, it is indented with numerous ravines, and runs parallel to the river for 6 miles, when it turns abruptly to the east, forming the north bank of the Ausoganashkee swamp: from B M 6 an offset was made to B M 8 of feeder line: the level of 10 feet above the lake can be kept up.

Map No. 3.—From the Calamic river to B M 3, this, with the portion on map No. 2, comprise the feeder line, distance 18⅛ miles: the profile is shown on sheet 3.

The feeder line commences at the junction of the Calamic river with Stoney creek, marked on the map B M No. 1, running along the low grounds of Stoney creek, Grassey lake, and the Ausoganashkee swamp: from picket 120 to 181, it was run on the slope of the bluff for convenience; a lower level can be had, as will be seen on reference to the offsets on profile 3.

From picket 20, an offset was run to a point on the Calamic, marked on the map A; its surface here is 0.69 feet higher than at B M 1, and 2.81 feet above Lake Michigan. At this point the river was guaged, and, according to Mr. Guyon's calculation, it discharges 286.95 cubic feet of water per second: from the 183d picket an offset was made to the Des Plaines river: its surface is 5.32 feet above the Calamic, and 7.20 feet above Lake Michigan.

On the 21st of October, 1829, Dr. Howard, United States' civil engineer, guaged the Des Plaines at Lawton's trading house, and made the discharge 26.80 cubic feet per second. On the 8th of August, 1831, Messrs. Harrison and Guyon guaged it at the same place, and made the discharge 15.14 cubic feet per second. Mr. Lawton stated to them that he had seen the river lower.

Map No. 4.—From the 18⅛ mile to B M 10; the profile on sheet 2.

From picket 185 to B M 7, the line crosses the Ausoganashkee swamp, which is here 1,443⅓ yards wide. The ground, for the first 166 yards, is dry

and firm, as the swamp expands considerably at its mouth; by crossing further up, the distance across it might be greatly diminished. From B M 7 to stake 16, the line runs on a prairie, with the exception of the first quarter of a mile, which is on wet ground, covered with wood. Here the bluff forms the river bank, and the line is on the slope for seven-eighths of a mile, when the bluffs recedes from the river, and the line come on level open ground, which continues to the 27¼ mile, crossing two sloughs, through which the water, flowing from the luff, is discharged into the river: from the 27¼ mile the line is on the slope of a mound for 770 yards; thence, on low marshy ground, to stake 30, crossing three streams with rocky bottoms. From stake 30 to 31 the ground is open and dry: the line might have been nearly straight from stake 24 to 30: from stake 31 to B M 10, the line is on a gentle slope; near the B M it crosses a ravine 35 feet wide and 5 feet deep. This is the termination of Mr. Guyon's survey, being 29 miles and 423⅓ yards from the commencement at Chicago creek.

The balance of the route was surveyed and levelled by myself, assisted by Mr Chauncey Barnard, jun.; the distances are computed from B M 10, map No. 4: from B M 10 to B M 22, 14⅛ miles. The first 12 miles of the profile on sheet 4, the balance on sheet 5.

From B M 10 to B M E, the line runs on a descending plain, covered with short grass; the soil is generally wet, and rock is found from 6 to 18 inches from the surface; the bluff gradually recedes from the river, leaving a wide bottom. It is rocky and thinly wooded. At B M E the line crosses the Des Plaines; the banks are rocky, and the streams divided into two channels by a rocky island; the first is 19⅓ yards wide, and 1 foot 6 inches deep; the island 24⅔ yards wide, its highest point 9 feet above the surface of the river; the second channel is 22⅓ yards wide, and 2 feet deep; the bed of the river is rock, and the current rapid; the surface 64.05 feet below Lake Michigan. The bluff on the west side of the river forms the bank, and the line runs on the slope for 1⅛ miles; it is rocky, with a thin covering of gravel; it then crosses a small stream, through which the water, flowing from the upper prairie, is discharged. From this point the bluff gradually recedes from the river, leaving a wide bottom, intersected by numerous low gravel ridges, upon which the line runs to the 8⅜ miles to the north of the line, and opposite to the 8th mile is an isolated hill 500 yards long and 40 feet high, called Mount Joliet: from the 8⅜ mile, the line runs on the slope of a gravel ridge for 660 yards, when it crosses low ground three-eighths of a mile wide, to the foot of a high ridge that extends to the river, and continues along its base to B M 17, on the north bank of the Joliet river, which is 25⅔ yards wide, and 1 foot 2 inches deep, with a gravelly bottom, and no perceptible current: the surface is 77.47 feet below Lake Michigan. From B M 18 (south bank of the Joliet) to the 11⅛ mile, the line is on a sloping ground, crossing a wide ravine, which is said to communicate with the river De Page; thence, to the 13⅜ mile on the slope of the river bank, a narrow wet bottom intervenes between the bank and the river; it then comes on a level open ground, which continues to B M 22, crossing two small streams.

Map No. 6.—From B M 22 to the 27⅞ mile, 13⅜ miles, and feeder line, to the De Page 1⅞ miles. The profile of the first 9⅞ miles on sheet 5, the balance on sheet 6; profiles of feeder line on sheet 9.

From B M 22, the line for 1 mile is open level ground; thence, to B M 24, on the slope of the bluff, which is thinly wooded; thence to B M 25, on

a gravelly ridge: at B M 24 the bluff turns to the north, leaving a wide bottom through which the river De Page runs. At the junction of this stream with the Des Plaines, there is an Indian village.

From B M 25 a line was run to ascertain if the De Page could be used as a feeder. The rise in the 1¾ miles is 11.3 feet; (at B M A,) the stream was guaged on the 12th July, 1831; its discharge was 62.24 cubic feet per second; It must be remarked that the summer of '31 was unusually wet. On the 23d July, 1830, it was guaged at Walkin's, 3 miles above B M A, by Messrs. Harrison and Guyon: the result was 27.75 cubic feet per second. The season, however, was uncommonly dry.

At B M 25, the main line crosses the De Page: it is 35⅝ yards wide, and 1.1 foot deep, with a rocky bottom and a gentle current; its surface 79.32 feet below Lake Michigan. It then crosses a bottom 183 yards wide, that is inundated during high water, then, to the 18th mile, on dry, level, wooded ground along the foot of the bluff, which here forms the river bank; thence, to the 19th mile, on the slope of the bluff, which is broken and covered with heavy timber, principally oak, ash, and walnut. Here the river turns nearly at a right angle, the bluff keeping parallel to it; the line continues on the slope of the bluff to B M 31, where the timber ends. Opposite this, the Des Plaines unites with the Kankakee, and the Illinois is formed. From B M 31 to 200 yards below B M 32, the line runs on a steep, broken clay bank, the river running at the foot of it; then for half a mile on the slope of a gravel ridge, when it descends, crossing a small gully into a prairie, on which it continues to B M 33. From B M 32 the bluff recedes from the river, and gradually descends to the general level of the country, as it approaches the Au Sable river.

From B M 33 to the Au Sable, the line is on an undulating prairie; it then crosses the river (the Au Sable) to B M 34. The stream is 19⅓ yards wide, 2.10 feet deep, rocky bottom, and very little current; the surface 83.46 feet below Lake Michigan. Its banks, below this point, are thickly wooded. From B M 34 to the 27⅞ miles, the line passed over a prairie; the surface very irregular, caused by numerous gravel ridges.

Map No 7.—From the 27⅞ mile to the 41¼ mile: 13⅜ miles profile of the first 8½ mile on sheet 6, the balance on sheet 7.

From the 27⅞ mile to B M 35 the line runs at the foot of a ridge, the ground gradually descending to the river; thence, to B M 36, on the slope of the same ridge, when it turns to the north, in order to avoid a low bottom made by Nettle creek and Little Maison river, which unite about 100 yards below the bench mark. Between B M 36 and 38, both streams are crossed, the first is 13 feet wide and 1 foot deep, passing through a deep ravine 150 yards wide: the second is 23 feet wide, and 2½ feet deep; the ravine through which it runs is 245 yards wide. From B M 38 to 39 it runs on the slope of a gravel ridge, between which and the river a low bottom intervenes, which is overflowed during the spring freshets from B M 39 to 33⅞ mile on the slope of the river bank; then to the 36th mile on a prairie intersected with gravel ridges. It then crosses a marsh three quarters of a mile wide, to a dry gravel ridge, thinly wooded, on the slope which it continues to the 37⅜ mile; thence, on a wet bottom, to the 41¼ mile, crossing two streams, on the left of the line is a high bluff, broken by numerous wide and deep ravines. It is thinly wooded, and chiefly white oaks: the soil of the bottom is alluvial, and covered with very high rank grass.

Map No 8.—From the 41¼ to the 52½ mile, 11¼ miles. The profile of the first 6¾ miles on sheet 7, the balance on sheet 8.

From the 41¼ mile to B M 44, the line continues on the bottom, (the surface irregular, caused by ridges putting out from the bluff, and extending to the river; between these ridges, the ground is marshy,) crossing two streams; the first 10 feet wide and 6 inches deep, the second 38 feet wide and 3 feet deep, running in a ravine 149⅓ yards wide: the surface of the water is 102.20 feet below Lake Michigan; this gives the surface of the Illinois, it being so high as to back up the water in the creek. Bituminous coal, of an excellent quality, is found in the banks of the stream. From B M 44 to 48 the line runs on open ground, crossing three small streams; thence, to the 50th mile, on a gentle slope: B M 48 is on the bank of a brook 20 feet wide; thence, on a flat prairie, to the 52¼ mile, crossing two branches of the Chicago road, the first leading to a ford, and the second to the ferry of the Illinois.

Opposite the 49th mile, the bluff begins to recede from the river in a northwest direction. The grand rapids of the Illinois commence opposite the 46½ mile; and from this point to the foot of the rapids, a distance of about 16 miles, during the low stages of water, the river is only navigable for small boats.

Map No. 9.—From the 52¼ mile to the termination of the survey, 10 miles and 579⅓ yards; feeder line up the Fox river, from the point marked A, on the map, to the head of the principal rapid, 4 miles and 649 yards. Profile of main line on sheet 8, profile of feeder on sheet 9.

From the 52¼ to the 53⅛ mile, the line runs on a dry level prairie, when it commences to descend to the Fox river, the east bank of which is a gradual slope, the west rocky and nearly perpendicular. Where the line crosses the river, it is 125⅓ yards wide, its surface 127.11 feet below Lake Michigan; in ordinary stages of the water it is fordable, but, owing to heavy rains, it was, at this time, 6 or 8 feet above low water mark.

A line was run on the west bank of the Fox to the head of the principal rapid, a distance of 4 miles 649 yards; its surface at that point was 96.52 feet below the lake, making a rise of 30.59 feet. The stream was so much flushed that it was useless to guage it, but I was informed it discharged a large quantity of water at all seasons.

From the 53⅜ mile to the 54⅞ mile, the line is on a dry prairie, crossing a ravine 33⅓ yards wide; its banks are rocky, a great deal of water passes through it, being the drain of a large prairie; from 54⅞ to the 55 mile, the rock (soft sand stone) is very near the surface, and, in some places, is visible. Thence, over a sandy ridge, through a gap of a rocky ridge, to the 57th mile; then to B M 51, on open level ground, crossing a stream, which is the outlet of a large swamp, at the foot of the bluff. From B M 51 to the 58¾ mile, the line is on marshy ground, and midway between the bluff and Buffalo rock an isolated rocky hill about 1 mile long, and a quarter of a mile wide, in its broadest part—its south sides forms the bank of the Illinois; thence, on a dry gravel ridge, to the 60⅛ mile, when it crosses a slough 266⅔ yards wide, through which, during the spring freshets, the water from the river passes into the marsh at the foot of the bluff. From this point to the 62d mile, the line runs on a dry gravelly ridge, when it descends on a bottom, which is overflowed during extraordinary freshets, and continues on it for three quarters of a mile, when it strikes upon the Illinois river.

This point is at the foot of all the rapids, and boats that can pass over the bars at Beard's ferry, Fort Clark, and the Little Vermillion river, can ascend to this point. The surface of the water is 139.64 feet below Lake

Michigan; but from what I learned from persons living in the neighborhood, the river was from 12 to 15 feet above low water mark. The total length of the line, from its commencement on Chicago creek to this point, is 92 miles and 123⅓ yards.

I was desirous of running a line from the 60⅔ mile to the mouth of the Little Vermillion river, 3 miles below the termination of my line, along the foot of the bluff, but, owing to the heavy rains, it was impracticable to effect it, the marshes along the bluff being impassable without swimming. The Canal Commissioners of the State of Illinois designated the mouth of the Little Vermillion as the termination of the canal.

I have the honor to be,
Very respectfully,
Your obedient servant,

H. BELIN,
Assistant Civil Engineer.

To Lieut. Col. J. J. ABERT,
Topographical Bureau, Washington, D. C.