BIG SANDY RIVER, KENTUCKY.

LETTER

FROM

THE ACTING SECRETARY OF WAR,

TRANSMITTING,

With a letter from the Chief of Engineers, a report of the examination of Big Sandy River, Kentucky.

DECEMBER 8, 1892.—Referred to the Committee on Rivers and Harbors and ordered to be printed.

WAR DEPARTMENT,
Washington, December 5, 1892.

SIR: I have the honor to inclose herewith a letter from the Chief of Engineers dated December 5, 1892, together with a copy of a report from Maj. D. W. Lockwood, Corps of Engineers, dated October 18, 1892, of a preliminary examination of the Big Sandy River, Kentucky, from its junction with the Ohio River to the crossing of the Big Sandy by the Chesapeake and Ohio Railroad Bridge, made by him in compliance with the provisions of the river and harbor act of July 13, 1892.

Very respectfully,

J. M. SCHOFIELD,
Major-General, Acting Secretary of War.

The SPEAKER OF THE HOUSE OF REPRESENTATIVES.

OFFICE OF THE CHIEF OF ENGINEERS,
UNITED STATES ARMY,
Washington, D. C., December 5, 1892.

SIR: I have the honor to submit the accompanying copy of report, dated October 18, 1892, by Maj. D. W. Lockwood, Corps of Engineers, of the results of preliminary examination of Big Sandy River, Kentucky, from its junction with the Ohio River to the crossing of the Big Sandy by the Chesapeake and Ohio Railroad bridge with a view of ascertaining if there be a bar in the Ohio River at the mouth of said Big Sandy obstructing navigation, and if there be, whether confining the waters of the Big Sandy to the general course of its channel between said points the said bar will be removed.

AUTHENTICATED U.S. GOVERNMENT INFORMATION GPO

This examination was made to comply with provisions of the river and harbor act approved July 13, 1892, and Maj. Lockwood is of opinion that the locality is not worthy of improvement by the General Government. His opinion is concurred in by the division engineer and by this office.

Very respectfully, your obedient servant,

THOS. LINCOLN CASEY,
Brigadier-General, Chief of Engineers.

Hon. S. B. ELKINS,
Secretary of War.

PRELIMINARY EXAMINATION OF THE BIG SANDY RIVER, KENTUCKY, FROM ITS JUNCTION WITH THE OHIO RIVER TO THE CROSSING OF THE BIG SANDY BY THE CHESAPEAKE AND OHIO RAILROAD BRIDGE, WITH A VIEW OF ASCERTAINING IF THERE BE A BAR IN THE OHIO RIVER AT THE MOUTH OF SAID BIG SANDY OBSTRUCTING NAVIGATION, AND IF THERE BE WHETHER CONFINING THE WATERS OF THE BIG SANDY TO THE GENERAL COURSE OF ITS CHANNEL BETWEEN SAID POINTS THE BAR WILL BE REMOVED.

UNITED STATES ENGINEER OFFICE,
Cincinnati, Ohio, October 18, 1892.

GENERAL: The river and harbor act of July 13, 1892, contained the following:

SEC. 6. That the Secretary of War is hereby directed to cause preliminary examinations to be made at the following localities, to wit:

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Big Sandy River from its junction with the Ohio River to the crossing of the Big Sandy by the Chesapeake and Ohio Railroad bridge, with a view of ascertaining if there be a bar in the Ohio River at the mouth of said Big Sandy obstructing navigation, and if there be whether confining the waters of the Big Sandy to the general course of its channel between said points the said bar will be removed.

In compliance with Department letter of July 14, by which this examination was assigned to me, I have the honor to submit the following report:

The Big Sandy empties into the Ohio at Catlettsburg, 151¾ miles above Cincinnati. It is a stream that varies from a depth hardly sufficient to float a skiff, to one at high water having a depth of upwards of 40 feet. From the junction of the Tug and Levisa forks, 26 miles above the Ohio, the banks of the Big Sandy are of sand easily washed. This is true also of the banks of the two forks after they leave the mountain country, and the result is that every rise in the Sandy or its forks carries with it large quantities of sand.

In consequence of the extreme variation in the discharge, the cross-section, area of discharge, must be such as to accommodate the high-water outflow, and when the river falls the low-water channel is cut out somewhere between the high-water banks, but its location may vary from year to year.

An examination of the locality when the Ohio and Sandy were both low, developed the fact that there existed a bar in the Ohio below the mouth of the Sandy that extended out into the Ohio from 250 to 300 feet, and that the mouth of the Sandy had been crowded upstream by it, close under Virginia Point.

Supposing the Ohio and Sandy both high, a bar will necessarily be formed in the latter stream, where its sand-laden water strikes the back water from the Ohio. The point at which this occurs will, of course, vary according to the relative heights of the two streams. The Sandy

rises and falls much more rapidly than the Ohio, and low water may exist in the Sandy when the Ohio is still at a fair stage, and in such cases, the Ohio falling slowly, small rises in the Sandy operates to move its bar nearer the Ohio, until the Ohio reaching so low a stage that its current can not carry away the sand brought into it by the Sandy during its rises, a bar is formed in the Ohio, as was the case this season, just below the mouth of the Sandy, and this bar will vary, a rise in the Sandy adding to it and a rise in the Ohio cutting it away.

Steamboatmen, raftsmen, and push boatmen stated to me that this year, with both streams low, there came a number of rises in the Sandy that would have permitted boats to go to the upper river if they could have gotten from the mouth to the Chesapeake and Ohio Railroad bridge, 6,500 feet above, and these people expressed the opinion that if parallel dikes were constructed from the bridge to the Ohio, so as to limit the low-water channel, this trouble would disappear. I am not of this opinion, however, as confining the water to produce a scouring effect would cause shoaling above the upper ends of the dikes, and so long as the current in the Ohio is too weak to carry away the sand that the Sandy brings out, there is sure to be a shoal at the mouth. Spur dikes in any event would be preferable to those proposed.

While the lower end of the low-water channel is over against Virginia Point, in high water the current sweeps along the front of Catlettsburg, washing the bank and endangering the safety of a part of the town.

When the board of internal improvements of the State of Kentucky were investigating the subject of slackwatering various streams in Kentucky by locks and dams, between 1830 and 1840, they only recommended the improvement of descending navigation for this stream, in consequence of a condition of affairs at the mouth similar to those found to exist to-day, only in less degree, for clearing the banks of timber has added to the unfavorable conditions that even then existed.

I do not deem the locality worthy of improvement, for the reason that, in my opinion, the bar at the mouth must be removed by the action of the Ohio, and will generally exist when the Ohio is so low that its feeble current can not carry away the sand brought down by the Sandy, and at such times a rise in the latter but piles up more sand.

A blue print* giving the characteristics of the Big Sandy from the railroad bridge to the Ohio, and a tracing* of profile of lower part of Sandy, from the Bell survey of 1875, are forwarded in a separate package.

The blue print was made from a map compiled from data obtained from two to four years ago, and on it I have indicated the general location of the low-water channel as it existed at the time I made an examination of it during September.

The stage of water when the map was made was higher than when I made the examination, and the width of the stream was greater than it was as I saw it. I am indebted to Mr. W. W. Coe, chief engineer of the Norfolk and Western Railroad, for this map.

Very respectfully, your obedient servant,

D. W. LOCKWOOD,
Major of Engineers.

Brig. Gen. THOMAS L. CASEY,
Chief of Engineers, U. S. A.

(Through Col. O. M. Poe, Corps of Engineers, Division Engineer, Northwest Division.)

*Not printed.

[First indorsement.]

U. S. ENGINEER OFFICE,
Detroit, Mich., October 25, 1892.

Respectfully forwarded to the office of the Chief of Engineers.

For the reasons assigned by the District Engineer, I concur in his conclusion.

O. M. POE,
Colonel, Corps of Engineers,
Division Engineer, Northwest Division.

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