that such a tax on the river commerce is not only unjust, but unnecessary, as much so as it would be to tax vessels navigating the Hudson River and apply part of the proceeds to defraying the expense of the Erie Canal.

The following are the conclusions to which this reports leads:

1st. That the slack-water system is the one on which the improvement of the river should be completed.

2d. That the completion of this system, aided by dredging, should be undertaken by the *general government* at once, or as soon as practicable.

3d. While it is believed that a radical improvement can be effected by dredging, its cost would exceed that of the slack-water system, the improvement would be less certain, and would require considerable annual expenditure for maintenance.

4th. That all dredging can be better, and much more economically,

done by machinery owned and operated by the government.

5th. The work already done may form a component part of either of the above-mentioned plans.

In view of the above, I have the honor to submit the following recom-

mendations:

1st. That an appropriation of at least \$400,000 be urged for the fiscal

year ending June 30, 1880, to be applied to building one lock and dam, and such dredging as may be necessary to obtain the required depth after the dam is constructed.

2d. That from the appropriation now available there be purchased, or built, an outfit with which to carry on future dredging operations; said outfit to consist of one first-class dredge, two dump-seows, two deckscows, and one tow boat, the total cost of which would probably be about \$30,000. This outfit would be required for *either* system of improvement. For extensive dredging operations, the outfit should be increased to number at least three dredges, with scows, &c., complete.

3d. That no more dredging be done until next season, unless it should be found necessary to do a little work for the restoration of channels, and for maintaining navigation during extreme low-water; and that such work, if any is called for, may be done by hired labor and machinery and purchases in open market; but that the engineering party be employed in careful examinations and surveys in order to show what changes have taken place in the various dredged channels since their improvement, amend existing maps to correspond to the present condition of the river from Copperas Creek to Grafton, and supply all the data needed for future operations, whether for the construction of locks and dams, or dredging.

I am, very respectfully, your obedient servant,

G. J. LYDECKER, Captain of Engineers.

Brig. Gen. A. A. HUMPHREYS, Chief of Engineers, U. S. A. River, from 1869 to June 30, 1878.

		Township	Kulliarks	Locks and dams were built at Henry and peras Greek, by the State of Illinois, 187 peras Greek, by the State of Illinois, 187 peras Greek lock foundation of the Copperas Greek lock cost for labor and materials of \$42,85 cost for labor and materials of \$42,85 cost for labor and materials of \$40,25 cost for labor and materials of \$40,25 cost for labor and regime done by government on bars II to 20 inclusive, insh a navigable depth of 7 feet from heras Greek to Utica, a distance of 95 m peras Greek to Utica, a distance of 95 m.
		*411	pate of improveme	1871 1869 1870 1870 1870 1870 1870 1870 1870 1870
	referred	ement.	Depth.	Seven feet, after dam was construction of built.
in della a	channel ace of 186	Dimensions of 10w-water surface of 1867. Before improve- ment.	Width.	Feet.
GING.	ow-water		Length dredged.	Feet. 1, 800 2, 500 2, 500 2, 500 2, 7, 500 2, 7, 500 6, 000 8, 500
ntractors, Jor.	ions of 1 to low-wa		Approximate depth.	######################################
d to con	Dimensi	Before improve- ment.	Approximate width.	7664. 175 250 250 250 250 250 250 250 250 250 25
nounts pai	No constant	·Bai2l	Amount paid for dree	2 1 1 2 Sed-
k done, and a	.878.	04 6981	eguigberb to tanom.	5 Ca 'parantisetting collection's series
Statement A.—Summary of work done, and amounts paid to contractors, for me emprocess. (a) DREDGING.			Designation of bar.	Sycamore Spring Creek Tree-Top Orab Island Nagro Creek Nagro Creek Muscle Shell Muscle Shell Wilow Island Wilow Island Wilow Island Wilow Spring Branch Spring Branch Sonachwine Peoria Bridge Peoria Bridge Peoria Bridge Rock Creek Cow Cr
	·w	вэтагим	ob gniog stad to redm	mX

Statement A.—Summary of work done, and amounts paid to contractors, for the improvement of the Illinois River, from 1869 to June 30, 1878—Continued.

Remarks.		Channel filled up to 2 feet.	Restoration of channel.	Bars Nos. 1 and 2, head of Grand Island.	Restoration of channel.					
	1871	1877	1877	1876 1871 1871, '72, '73	1876 1871 1875 1875 1872	1875 1872 1873	1876 1876 1876 1876	1875, 1877		
Dimensions of low-water channel, referred to low-water surface of 1867.	After improvement.	Depth.	Feet. 4.5	4.0	4.0	6; 4; 4; 8:70:70	4444	D. E.	4 4 4 4 4 0 0 0 0 0	
		Width.	Feet. 150 80	844	89	120 120 120 120 120 120 120 120 120 120	annel. 150 120	annel. 105 150	28888	4824
		Length dredged.	Feet. 2, 750	1,000	7,200	2000 2000 2000 2000 2000 2000 2000 200	1, 500 4, 000 3, 100 6, 000	on of cl 8,600 2,250	96466	25000
	Before improve- ment.	Approximate depth.	Feet.	1.8	1.0	Dry bar 2.8 30 2.2	est	estor	00000 00000000000000000000000000000000	y 0,00
		Approximate width.	Feet.	75	100	Dry 50 30	For r 40 50 50	S For r 25 50	84488	100
Amount paid for dredging.			\$10,468 88	4, 078 00	702	6,301 68 2,186 80 4,575 38 14,855 46	1, 173 9, 155 9, 212 8, 890	2, 048 13, 293 5, 592		2,830 3,335 159
.878.	Cubic yards. 5 42, 298. 5	16, 312. 0	30, 811. 0 49, 399. 0	22, 506. 0 7, 810. 0 18, 486. 4 60, 022. 1	4, 191. 0 36, 993 32, 901 35, 921	7, 315 53, 172 22, 596	12, 483 20, 456 2, 435 16, 632 28, 004	8, 324 12, 825 636		
Designation of bar.			Devil's Elbow	ор	Bath Chute, entrance to			Naples Bar, No. 2. Gar Island or Naples Flats. Blue River	Little Blue River Slim Island Bedford Piot Peak Buckhorn	
Number of bars going downstream.			25	25	26			38.48	88888	4 24 8

		29, 117 08 62, 358 90 62, 358 90
1875 1877, 1878 1875 1875 1874, 775, 776		#285, 785 89 17, 050 77 17, 050 77 18, 408 98 15, 749 15 2, 958 95 29, 117 08 62, 358 90
000 00		cost
150 150 150 120		655h 23m,
1, 500 1, 1, 700 1, 650	123, 320	18, &c., 1,
800 0 H		st on dam
100 100 200 200 200 200 200 200 200 200	B	yards, co g, casting t
3, 983 99 4, 440 00 3, 974 50 5, 054 84	235, 785 39	edging, 811,434.9 cubic yards, correst by the yardelege, snagging, casting and stone dams: ords brush, cost. 7 cubic yards stone, cost. Thear feet piles, cost. Making about 6,000 linear feet tions Copperas Creek lock, cost
15, 041 17, 760 15, 898 18, 053	17, 604	(a) Total dredging, 811,434.9 cubic yards, cost (b) Time-work by dredge, snagging, casting on dams, &c., 1,655° 23°, cost (c) Time-work by dredge, snagging, casting on dams, &c., 1,655° 23°, cost (d) Brush and stone dams (e) Brush and stone dams (f) Synd cords brush, cost (g) Synd stone, cost (g) Synd stone, cost (g) Synd linear feet piles, cost. Making about 6,000 linear feet (d) Foundations Copperas Creek lock, cost.
Spar Island Fisher's School House Apple Creek, No. 1	French	

STATEMENT B.—Amounts allotted to, and appropriated for, the improvement of the Illinois
River from 1869 to 1878, inclusive.

Act approved April 10, 1869, for repairs, preservation, &c., of river and harbor works, allotted		
Act approved July 11, 1870, appropriated Act approved March 3, 1873, appropriated Act approved June 23, 1874	100,000	
	100,000 75,000	
	40,000	
Act approved June 18, 1878, appropriated	75,000	00
Total from 1869 to June 30, 1878		00

STATEMENT C.—Statement derived from annual reports, showing total expenditures applied to improving the Illinois River, from the beginning of work in 1869 to June 30, 1878.

1 work in 1869 to June	30, 1878.	
Total amount expended from June 30, 1869, to June 30, 1872 Total amount expended during fiscal year ending June 30, 1873. Total amount expended during fiscal year ending June 30, 1874. Total amount expended during fiscal year ending June 30, 1875. Total amount expended during fiscal year ending June 30, 1876. Total amount expended during fiscal year ending June 30, 1877. Total amount expended during fiscal year ending June 30, 1878.	\$171,601 13,829 52,796 82,796 73,434 52,067 24,490	34 75 02 56 72
Total expenditures to June 30, 1878		_
*This amount is arrived at by the following process: There was allotted from act of April 10, 1869 There was appropriated July 11, 1870	84, 150 100, 000	
Total appropriated to June 30, 1872 The balance available June 30, 1872, per financial statement, Report Chief of Engineers for 1872, page 281	The same of the same	
Difference assumed as expended		

LETTER OF THE CHIEF OF ENGINEERS.

Office of the Chief of Engineers, Washington, D. C., November 18, 1878.

SIR: In the further prosecution of the improvement of Illinois River, by whatever plan that may hereafter be adopted, more or less dredging will always be necessary, and it would appear from the accompanying report of Capt. G. J. Lydecker, Corps of Engineers, the officer in charge, herewith submitted, that such works will be more economically done with machinery owned and operated by the government.

I beg leave, therefore, to recommend that so much of the appropriation of \$75,000, of June 18, 1878, as may be necessary, be applied to the construction or purchase of requisite machinery, and that the balibrush and stone) for continuing the construction of dams and jetties; the work to be done by hired labor and the materials purchased in open market.

The present time appearing opportune for the consideration of the various improvements on the Illinois River, having in view the preparation of a plan for its permanent and radical improvement, it was deemed advisable, before taking steps towards the application of the funds now available, to inquire particularly into the present condition of this work. With this view, and by instructions from this office, Captain Lydecker transmitted the report which I now submit, in which he gives a history

of the improvements made to the present time, showing what general plan has been adopted and how far the expenditures have been applied to carrying out that plan, and what changes have been found necessary during the progress of the work, &c.

Captain Lydecker's report leads to the conclusion that while a radical improvement might be effected by means of dredging and wing-dams, its cost would exceed the cost of a slackwater system, and the improvement would be less certain, and would require considerable annual expenditure for maintenance.

Captain Lydecker appears to be correct in his conclusions, but until the question of continuing the slackwater system below the locks already built by the State of Illinois is sanctioned by Congress, the expenditure of the present appropriation can only be applied, as heretofore, to the continuation of the plan of dredging and wing dams.

Very respectfully, your obedient servant,

A. A. HUMPHREYS,

Brigadier-General and Chief of Engineers.
Hon. Geo. W. McCrary,
Secretary of War.

[Indorsement.]

Approved.

By order of the Secretary of War.

JOHN TWEEDALE,
Acting Chief Clerk.

NOVEMBER 19, 1878. 100 E