

45TH CONGRESS, }  
2d Session. }

HOUSE OF REPRESENTATIVES.

{ Ex. Doc. 1,  
Part 2.

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# REPORT

OF THE

# SECRETARY OF WAR;

BEING PART OF

THE MESSAGE AND DOCUMENTS

COMMUNICATED TO THE

TWO HOUSES OF CONGRESS

AT THE

BEGINNING OF THE SECOND SESSION OF THE FORTY-FIFTH CONGRESS.

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VOLUME II.  
PART I.

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1877.

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REPORT  
OF  
THE CHIEF OF ENGINEERS.

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2. *Improvement of San Joaquin River, California.*—The appropriation of \$20,000 for this improvement, in the river and harbor act of August 14, 1876, was made available in March last.

It is proposed to survey that portion of the river below Stockton, where navigation is most impeded, so soon as the low stage of water is attained, and, if necessary, to contract in the usual manner for the removal of the shoals by dredging.

Amount appropriated by act approved August 14, 1876.....	\$20,000 00
July 1, 1877, amount expended during fiscal year.....	6 80
July 1, 1877, amount available.....	19,993 20

(See Appendix II 2.)

#### IMPROVEMENT OF RIVERS IN OREGON AND IN WASHINGTON TERRITORY.

Officer in charge, Maj. John M. Wilson, Corps of Engineers.

1. *Improvement of Lower Willamette and Columbia Rivers, Oregon.*—Operations during the fiscal year have consisted of dredging at the mouth of the Willamette at Post-Office Bar, and Swan Island Bar, Willamette River; 21,285 cubic yards of mud, sand, gravel, &c., having been removed.

Extensive surveys were made of the Willamette River from Portland to its mouth, the Willamette Slough, Saint Helen's and Snag Island Bars.

During the present season it is proposed to continue dredging the channel over the bars in the Willamette River, and to make surveys at Swan Island Bar, Willamette River, and Saint Helen's Bar, Columbia River.

A plan for the permanent improvement of these rivers has been submitted by the Board of Engineers for the Pacific Coast, and approved.

July 1, 1876, amount available.....	\$9,093 24
Amount appropriated by act approved August 14, 1876.....	20,000 00
July 1, 1877, amount expended during fiscal year.....	\$29,093 24
July 1, 1877, amount available.....	18,584 54

Amount (estimated) required for completion of existing project.....	298,974 00
Amount that can be profitably expended in fiscal year ending June 30, 1879.	150,000 00

(See Appendix J J 1.)

2. *Improvement of Upper Willamette River, Oregon.*—Operations during the fiscal year have consisted of the removal of snags, stumps, rocks, &c., and the construction of wing-dams. Four thousand seven hundred and thirty-two feet of wing-dams have been built, 71½ cubic yards of rock excavated, and 901 snags, stumps, &c., removed. A new snag-boat has been built.

During the present season it is proposed to construct about 4,000 feet of wing-dams at points where they are most necessary, and to continue the removal of snags from the channel. The engineer in charge recommends the construction of two steam snag-boats, with scrapers and pile-drivers attached, for keeping the river open during low-water season.

July 1, 1876, amount available.....	\$8,038 25	
Amount appropriated by act approved August 14, 1876.....	20,000 00	
		\$28,038 25
July 1, 1877, amount expended during fiscal year .....	13,796 47	
July 1, 1877, outstanding liabilities .....	2,157 45	
		15,953 92
July 1, 1877, amount available.....		12,084 33
Amount (estimated) required for completion of existing project.....	80,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1879..	50,000 00	

(See Appendix J J 2.)

3. *Improvement of the Upper Columbia and Snake Rivers, Oregon, and Washington Territory.*—Operations during the fiscal year were carried on from November, 1876, until March, 1877, removing rock from the channel at Squally Hook, Owyhee, and Umatilla Rapids, in the Columbia River, and Pine Tree Rapid, in the Snake; 745.14 cubic yards of rock in all were removed, and the channel greatly improved, particularly at Pine Tree Rapid, from which 477.51 cubic yards of rock were taken.

During the coming winter it is proposed to continue the work by removing 150 yards of rock from Umatilla Rapid, Columbia River.

July 1, 1876, amount available.....	\$16,007 10	
Amount appropriated by act approved August 14, 1876.....	15,000 00	
		\$31,007 00
July 1, 1877, amount expended during fiscal year.....	25,257 01	
July 1, 1877, outstanding liabilities.....	155 00	
		25,412 01
July 1, 1877, amount available.....		5,595 09
Amount (estimated) required for completion of existing project.....	132,000 00	
Amount that can be profitably expended in fiscal year ending June 30, 1879..	66,000 00	

(See Appendix J J 3.)

4. *Construction of canal around the Cascades of Columbia River, Oregon.*—A survey has been made during the fiscal year of the country on the Oregon side of the river, bordering on the Cascades; a careful reconnaissance on the Washington Territory side, and a hydrographic survey of the river above and below the falls.

The engineer in charge has submitted plans and estimates for a canal, which have been referred to the Board of Engineers for the Pacific Coast for examination.

Amount appropriated by act approved August 14, 1876.....	\$90,000 00	
July 1, 1877, amount expended during fiscal year.....	4,616 65	
		85,383 35
July 1, 1877, amount available.....		85,383 35
Amount (estimated) required for completion of existing project.....	1,459,136 40	
Amount that can be profitably expended in fiscal year ending June 30, 1879..	500,000 00	

(See Appendix J J 4.)

#### EXAMINATIONS WITH A VIEW TO ESTABLISHING A HARBOR OF REFUGE ON THE PACIFIC COAST.

To comply with a resolution of the House of Representatives of April 27, 1876, asking for an examination of the harbors of Mendocino, Humboldt Bay, Trinidad, and Crescent City, in the State of California, with a view to establishing a breakwater and harbor of refuge, with estimate of probable cost, the Board of Engineers of the Pacific Coast was instructed to consider the general subject and report its views as to the necessity for a harbor of refuge on the Pacific coast between San Fran-