

CHIEF ENGINEER'S ANNUAL REPORT FOR THE
YEAR 1929.

Tacoma, Washington
January 6, 1929

TO THE JOINT COMMISSION
INTER-COUNTY RIVER IMPROVEMENT.

GENTLEMEN:--

I have the honor to submit herewith my annual report for the year 1929, expenditures for work performed being shown on the attached itemized budget schedule amounting to \$145,564.99, and leaving an unexpended balance for the year of \$11,435.01 after taking care of the purchase of new equipment amounting to \$13,430.78 which was not included in the budget.

WEATHER AND RIVER CONDITIONS.

Rainfall for the year has been the lowest for the past 25 years, and as there is no great accumulation of snow in the higher altitudes there is no probability of high water this spring.

This extreme low water condition has been highly favorable for levee building and permanent bank protection work, and is reflected in very large savings under our estimates as will be noted in the schedule.

There have been very few instances of serious erosion of unprotected banks, or failure of concrete revetment, the latter being confined to old types of revetment.

No indication of failure has developed on any new Type 7 revetment placed during the past seven years, and in fact there has been no expense for maintenance thereon.

Following is a detailed analysis of work performed.

MUCKLESHOOT SECTION.

There has been no appreciable change in conditions here. In 1923 we sent a Fordson donkey thru this section, pulling accumulations of

large drift into strategic points on the left bank and ~~lining~~ ^{tying} together with old cable. Most of this work is still in place, but after a field trip with Mr. Hussey we decided, in October, to again send the donkey thru this section reinforcing some of the older work and building new retards. This work is still under way, the total expense of which, including the removal of drift at the Drift Barrier amounting to \$2,221.59 has been charged to Item 8.

AUBURN SECTION.

Late in the fall of 1928 we began driving 7 wooden pile, brush filled bulkheads on the right bank about 3/4 miles above the Stuck River highway bridge. They were completed last spring, a total length of 700 feet and the Waukesha donkey worked for several months filling gravel between them. This work was discontinued in March, it being necessary to use the Waukesha for levee building in the Murphy Section. The work was resumed in October with the Hercules donkey and is now operating.

Nine brush retards have been built on the right bank immediately below the Auburn Dam. The 15 retards built in 1928 on the left bank are still in place and in good condition. Two brush retards on the left bank built in 1924 have been rebuilt, and the pile bulkhead on the right bank above the Stuck River highway bridge rebrushed and ballasted.

During the late summer we sent a crew thru the entire County Line and Auburn Sections breaking up all large drift and snags.

Cost of all work in this Section has been charged to Item 7, \$ 10,663.82.

COUNTY LINE SECTION.

There has been no material change in conditions here other than the annual gravel flow. Seven hundred and forty feet of new pile bulkheads on the right bank have been driven and brushed.

The Hercules donkey operated almost continuously until October filling between bulkheads with gravel and was then replaced by the

now 120 H. P. Buda Diesel donkey. This machine is a very fine piece of equipment; is now using about 40 gallons per day of fuel oil at 4 cents per gallon. The total operating cost including labor, fuel and lubricating oil, wire rope and upkeep is approximately \$24.00 per day and is handling about 500 cu. yds. of gravel with a three yard Crescent scraper, the cost being less than 5 cents per yard.

It is our intention to keep this donkey in this section permanently. Cost of all work in this section has been charged to Item 6, \$ 20,721.73.

DIERINGER SECTION.

Three hundred feet of Type 7 revetment on the right bank above the new Sumner Bridge was completed in August, Item 5, \$2,620.69. All bulkheads below the Stewart Bridge were re-brushed and ballasted, cost being charged to Item 9, Maintenance and Repairs.

No work was done at the spillway of the Puget Sound Power and Light Company, and we will resume our negotiations with them early in the year in order to come to an agreement with them as to their responsibility.

ROESLI SECTION

Under Item 4, at a cost of \$6,259.45 we completed in July 650 feet of Type 7 revetment on the right bank at the "Boatman Place".

On a field trip with Mr. Hussey in May we found indications of quite serious shifting of channel and erosion on the left bank of the Puyallup River immediately above its confluence with the Stuck. Altho, strictly speaking, this is only partially within the jurisdiction of the Inter-County River Improvement it nevertheless, unless controlled, will endanger our works below and we decided that it was imperative that work should be started as soon as possible in order to prevent very extensive damage.

We found it possible to release our pile driver from other work and began driving pile bulkheads in June.

In September we had completed, brushed and ballasted 7 bulkheads, a total length of 930 feet, and

in November started 2 Fordson donkeys filling with gravel between these bulkheads, which are still operating.

The total cost to date of this work amounting to \$7,600.00 has been charged to Item 9, Maintenance and Repairs.

Conditions in this Section are extremely bad and will involve some expense during the coming year.

PUYALLUP SECTION.

No change in conditions here and no work has been done, except that in October the Waukesha donkey, being released from other work, was moved into this section and began filling the river channel on right bank preparatory to building the large levee job provided for in the 1930 budget, cost of same being charged to Item 9.

MURPHY SECTION.

Under Item 5 we completed in November at a total cost of \$58,196.85 the replacement of old bulkhead No. 9 on the right bank with levee and Type 7 revetment.

This was the largest piece of new construction undertaken during the year and involved the placing of over 130,000 cu. yds. of fill in levee, 3,234 lin. feet of brush mattress 30 feet wide and 2 feet thick, and 2100 cu. yds of reinforced concrete revetment. The levee is 22 ft. wide on top with 2 to 1 slopes, both top and back slope being covered with 3 inches of clay to provide for growing sod. It allows 2 feet of freeboard above known maximum high ~~water~~ water.

You will note the considerable saving under budget estimates, due to extreme low water conditions.

Other work in this section was limited to minor maintenance and repairs.

RESERVATION SECTION.

Under Item 1, with an expenditure of \$7,015.03 and Item 2, with an expenditure of \$8,665.36 we have replaced old bulkheads No's. 2 and 4 with Type 7 revetment; total length 1610 feet. Both of these jobs have been pending for several years, and it was doubtful that we

could complete more than one, but the highly favorable low water released equipment and both jobs were completed in record time and very much below the estimate.

Other work in this section consists of maintenance and repairs on old Type 4 revetment, charged to Item 9.

All of the above described bulkheads and revetment construction are shown in the attached photos.

NEW EQUIPMENT.

There was purchased during the year ,

1	120 H. P. Buda Diesel Donkey	\$ 13,890.00
	Sled and accessories for above	628.00
1	3 yard Crescent Scraper	755.00
1	1½ ton White Truck	2,293.50
1	2 ton Tank Trailer	325.00
1	1929 Ford ½ ton Truck	597.95
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Total	Item 11	\$ 18,489.78

GENERAL CONTROL.

Under General Control, Item 10, is charged all Engineering, Hydro-graphic surveys and Office expense amounting to \$9,165.32.

INDUSTRIAL INSURANCE.

Total amount paid for Industrial Insurance and Medical Aid is \$ 846.19.

RECAPITULATION.

5794 ft.	Type 7 revetment with mattress including 3200 ft. of levee, 130,000 cu. yds.	\$ 63,757.36
2370 ft.	Pile Bulkheads, brushed & ballasted	14,500.00
140000 cu. yds.	Gravel removed from channel	11,200.00
11	Brush retards built	2,640.00
	River clearing, rebrushing bulkheads, rebuilding retards and general maintenance and repairs	26,812.53
	New Equipment	18,489.78
	General Control	9,165.32
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	Total,.....	\$ 145,564.99

In conclusion I wish to express my appreciation for the cooperation and advise of your Consulting Engineer, Mr. Ernest B. Hussey.

FINANCIAL STATEMENT.

Financial statements from the two counties show the following fund balances:

King County	November 30, 1929	\$ 13,636.83
Pierce County	November 30, 1929	42,741.44
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				\$ 56,378.27

Yours truly,



H. F. Gronen,
Chief Engineer
Inter-County River Improvement.

HFG:T