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DATE 10-22-46

SUBJECT COLUMBIA RIVER TEMPERATURE

STUDY AT 100-F AREA

To File

FROM W. R. Lewis - R. A. Rohrbacher

Copy No. 1A

W. H. Milton

D. H. Lauder

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OCTOBER 22, 1946



COLUMBIA RIVER TEMPERATURE STUDY

AT 100 F AREA

Introduction

The upstream effluent line has broken off 37 feet from the shoreline and the downstream effluent line has been bent and partly broken seventeen feet from shoreline and has swung downstream to a point about 50 feet from shoreline. This condition was discovered in August 1946.

Objective

This study was made to determine how fast and in what fashion the temperature of the effluent water is dissipated in the Columbia River under the present conditions and to compare this to a previous survey made when the effluent lines were believed to be in their original position.

Summary

A river temperature survey was made on October 15 downstream from the 100 F Area effluent pipes in the same manner as a previous



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survey which has been made on April 19, 1946 while the effluent pipes were presumably in their original positions. The temperature profiles in Appendix A show under the present conditions that a warm water band extends from the southwest bank outward with the maximum temperature near the bank. Under conditions of the earlier survey, the center of the warm band was located 150 to 250 feet out from the bank with normal river water between the warm band and the bank.

Discussion

The data are presented graphically in Appendix A as transverse temperature profiles of the river at six stations downstream from the effluent pipes. The temperature increases caused by the effluent water under the present conditions at comparable distances downstream are about four times those found during the original survey. This indicates a less rapid mixing of effluent and river water, which may be caused in part by the lower river flow of 60,000 cu. ft. per sec. on October 15 as compared to 110,000 cu. ft. per sec. on April 19. In comparing the time required for mixing the lower river velocity near the bank would be an important factor.

Differences in ambient river temperatures of the two surveys should have little effect on the temperature profiles as shown in Appendix A, because in each case approximately the same amount of heat was added to the river by the effluent water.

A general discussion of the methods used in making these temperature surveys, together with earlier temperature profiles at all three areas, is given in the following reports:

- (1) Preliminary Report: "Columbia River Temperature Survey at Hanford Engineer Works", March 1, 1946. Doc. No. 7-3684.
- (2) Final Report: "Columbia River Temperature Survey at Hanford Engineer Works", August 14, 1946. Doc. No. 7-4674.

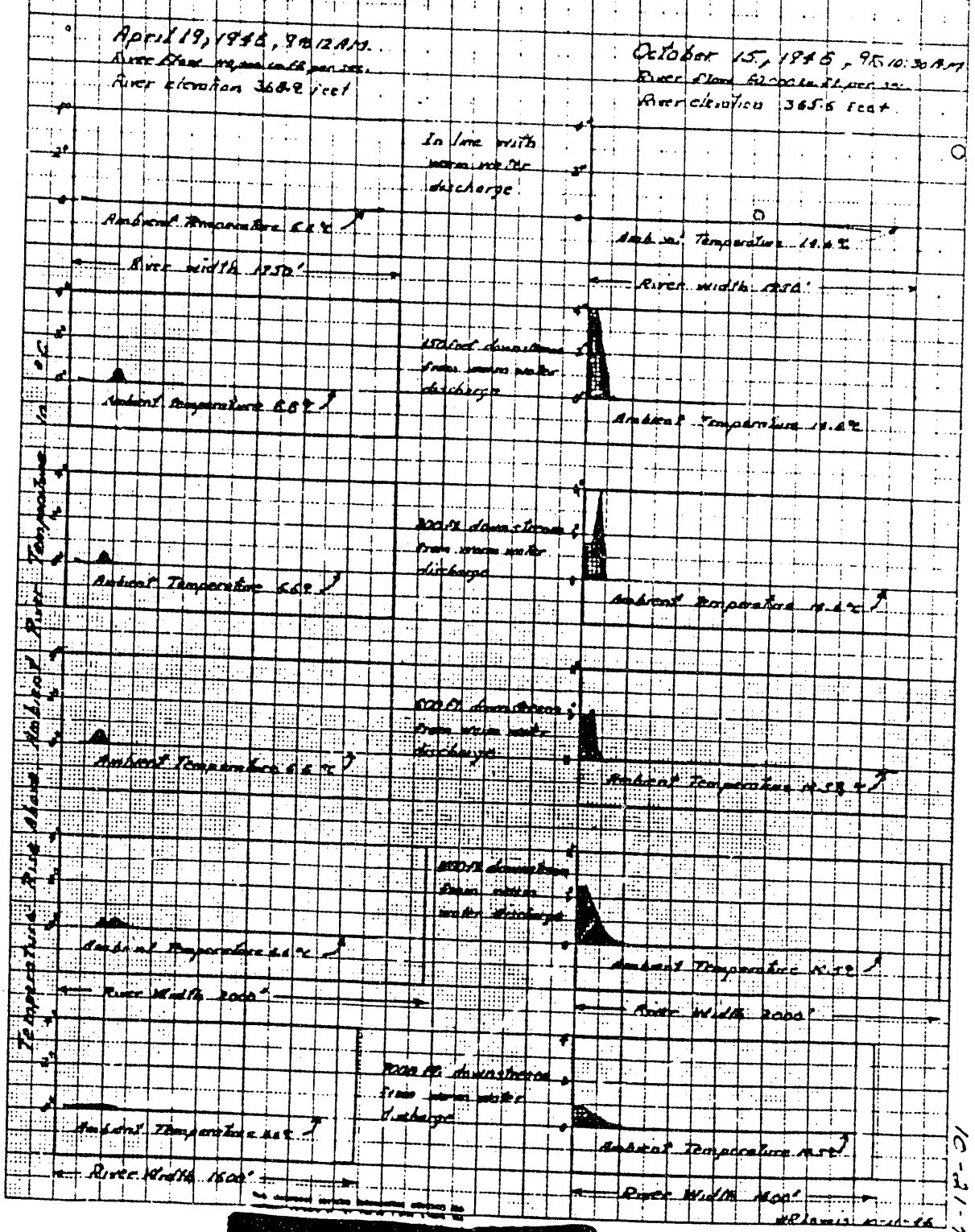
A description of the present condition of the effluent pipes at 100 F Area and suggested methods of repair are given in: "Recommendation Report No. 69. Cost Estimate - Effluent Line Repairs - 100 F."

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Columbia River Temperature Survey at 100 F. Area Temperature Profiles



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