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COLUMBIA RIVER THERMAL EFFECTS STUDY

SUBSURFACE WATER TEMPERATURES OF THE COLUMBIA RIVER AT PRESCOTT, OREGON (RIVER MILE 72), 1968-69

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ABSTRACT

Water temperature data from January 1968 through December 1969 are presented to aid in the evaluation of the effects of impending industrial encroachment on the existing fisheries of the lower Columbia River.

INTRODUCTION

Two thermal nuclear electric plants have been proposed by public and private utilities for installation on the lower Columbia River in this decade. Thermal plants historically have used river water for condenser cooling and in so doing have increased river temperatures. An increase in water temperature of the Columbia River could affect the survival of economically important species of fish to this river.

Existing (preplant) temperature records are needed to establish and predict: (1) the changes that will take place in water temperature as a result of plant operation and (2) what effect temperature increases will have on the aquatic ecology of the river.

This report presents existing water temperatures that were continuously recorded at the BCF (Bureau of Commercial Fisheries) Water Temperature Laboratory at Prescott, Oreg. (river mile 72). This laboratory is adjacent to and downstream from the proposed Trojan thermal electric plant; it is across the river and 8 miles (12 km.) downstream from the proposed Kalama thermal electric plant (fig. 1).

GEAR AND PROCEDURE

A single-pen, 7-day, Bristol temperature recorder (range, C-40 C.)[1/] was installed January 1968 on the downstream end of the floating laboratory (fig. 1). The probe of the instrument is about 2 m. below the water surface at all times and is not affected by water discharged from the laboratory. The recorder has an accuracy of $\pm 0.2°$ C., was checked daily, and was calibrated periodically with a registered laboratory thermometer. Periodic testing of the temperature-depth profile at the location of the probe indicated little variation ($<0.2°$ C.) from surface to bottom (6 m.).

DATA PRESENTATION

Daily maximum, mean, and minimum water temperature data are presented in tabular form for 1968-69. Tables 1-3 give the 1968 data; tables 4-6 give the 1969 data. Dash lines mirror gaps in the data collection.

1/ Trade names referred to in this publication do not imply endorsement of commercial products by the Bureau of Commercial Fisheries.

Table 1. Maximum daily water temperatures of the Columbia River at Prescott, Oreg., 1968

Date	Month											
	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	-	3.5	8.5	9.5	12.0	15.7	18.5	21.6	20.0	17.3	12.0	8.5
2	-	6.0	8.5	9.1	12.0	15.5	19.0	21.5	20.5	17.0	11.8	8.5
3	-	5.5	8.2	9.9	12.5	15.8	19.5	21.5	20.0	16.6	11.5	8.5
4	-	5.5	8.5	9.4	12.5	16.1	19.5	21.0	19.5	16.5	11.4	8.5
5	-	6.3	8.6	9.5	12.0	16.5	19.5	21.3	20.0	16.0	11.0	8.0
6	-	7.0	8.8	9.5	12.0	16.0	19.8	21.3	20.0	16.0	11.0	7.5
7	-	6.5	9.0	9.5	12.3	16.0	20.0	21.3	20.0	16.0	10.5	7.5
8	-	6.5	8.5	10.0	13.5	15.5	20.5	21.4	20.0	15.8	10.0	7.0
9	-	6.5	8.0	10.5	13.5	15.8	20.5	21.3	20.3	15.5	10.0	7.3
10	-	5.7	8.2	10.5	14.0	16.0	20.0	22.0	20.5	15.3	10.0	7.5
11	-	6.1	8.0	10.3	13.5	16.2	20.0	22.0	20.5	15.0	10.0	7.5
12	-	6.3	8.0	10.0	13.5	16.5	19.0	22.4	20.3	14.5	10.5	7.7
13	-	6.0	8.0	9.8	13.5	16.3	19.0	22.4	20.0	14.0	10.5	7.5
14	-	5.8	7.5	10.0	13.5	16.5	19.8	22.3	19.5	13.8	10.0	7.3
15	-	6.0	7.5	10.0	14.0	16.7	20.0	22.0	20.3	13.5	9.8	7.1
16	-	6.0	7.5	10.0	14.5	16.5	19.8	21.5	19.0	13.3	9.0	7.2
17	-	6.1	7.5	10.0	15.0	16.5	20.0	-	18.8	12.9	8.8	7.3
18	-	6.5	8.0	10.1	15.5	17.0	20.0	-	18.5	12.8	9.0	7.3
19	6.1	-	8.1	10.5	15.5	17.1	20.0	-	18.5	12.5	9.0	7.1
20	6.3	8.5	8.5	10.1	15.8	17.1	19.6	-	18.0	12.5	9.0	6.5
21	6.5	9.0	8.5	10.1	16.0	17.5	19.5	-	18.0	12.5	9.0	6.0
22	6.4	9.8	8.3	10.5	15.5	17.5	19.5	-	17.5	12.6	10.0	5.9
23	6.5	10.0	8.1	10.5	15.0	17.8	19.4	19.0	17.3	12.5	10.0	5.5
24	6.5	10.1	8.3	11.0	15.5	18.0	19.8	(USGS)	17.5	12.6	10.0	5.0
25	5.8	10.0	8.0	10.5	15.5	18.5	20.0	-	17.5	12.7	10.0	5.0
26	5.0	10.3	8.4	11.0	15.5	18.6	20.0	-	17.5	12.5	10.0	5.5
27	4.5	10.1	8.5	10.5	16.0	18.7	20.5	19.5	17.9	12.5	9.8	5.7
28	3.5	10.0	9.0	12.0	16.4	18.5	21.0	19.5	17.5	12.5	9.5	5.9
29	2.5	10.0	9.0	12.5	16.0	18.0	21.3	19.5	17.5	12.5	9.5	5.0
30	2.5	-	9.0	12.0	16.0	17.8	21.4	20.0	17.4	12.5	9.0	3.5
31	3.0	-	8.8	-	16.0	-	21.0	20.0	-	12.5	-	-

Table 2.--Minimum daily water temperatures of the Columbia River at Prescott, Oreg., 1968

Date	Month											
	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	-	3.0	7.5	8.5	11.4	15.5	17.5	21.4	19.5	17.0	11.5	8.5
2	-	3.5	7.7	8.1	11.0	15.5	18.5	21.5	19.5	16.5	11.5	8.0
3	-	4.0	7.5	8.5	11.5	15.0	18.8	21.0	19.0	16.0	11.4	8.0
4	-	4.5	7.6	8.6	12.0	15.3	19.0	20.7	19.0	16.0	10.9	8.0
5	-	5.0	8.0	8.5	12.0	15.5	18.8	21.0	19.0	15.5	10.5	7.5
6	-	5.5	8.2	9.0	11.4	15.8	19.0	20.5	19.5	15.5	10.3	7.4
7	-	5.5	8.1	9.0	11.5	15.5	19.4	20.5	20.0	15.5	10.0	7.0
8	-	5.0	7.5	9.4	12.5	15.3	19.5	20.5	19.5	15.5	9.8	7.0
9	-	4.5	6.7	9.4	13.0	15.5	20.0	21.0	20.0	15.0	9.7	7.0
10	-	4.5	7.0	9.8	13.4	15.5	19.5	21.6	20.0	14.5	9.5	7.0
11	-	4.5	7.4	9.5	13.0	15.8	19.5	21.5	20.0	14.5	9.5	7.0
12	-	4.0	7.1	9.0	13.3	16.0	19.5	22.0	20.0	14.4	10.0	7.5
13	-	3.3	7.5	8.5	13.0	15.8	19.5	21.7	19.5	13.5	10.0	7.3
14	-	3.3	7.0	9.5	13.3	15.9	19.5	21.5	19.3	13.5	9.5	7.1
15	-	4.5	7.0	9.5	13.5	16.3	19.5	21.3	19.5	13.0	9.0	7.0
16	-	4.5	7.0	9.5	13.6	16.5	19.5	20.5	18.5	13.0	8.8	7.0
17	-	5.0	6.5	9.0	14.5	16.5	19.5	-	18.5	12.5	8.5	7.3
18	-	5.5	6.6	9.4	14.5	16.5	19.5	-	18.0	12.0	8.5	7.1
19	5.5	-	6.8	9.5	15.0	17.0	19.8	-	17.5	12.0	8.5	6.5
20	5.5	7.0	7.0	9.5	15.3	16.5	19.4	-	17.5	12.5	8.5	6.0
21	5.6	8.5	7.2	9.3	15.5	17.0	19.0	-	17.3	12.0	8.8	5.9
22	5.5	8.8	7.9	9.0	15.0	17.0	19.0	-	17.0	12.2	9.0	5.5
23	5.3	9.0	7.6	10.0	14.7	17.5	19.0	-	17.3	12.0	10.0	5.0
24	5.2	9.0	7.5	10.0	14.5	17.5	19.5	-	17.0	12.0	10.0	5.0
25	5.0	9.0	7.8	10.0	15.0	18.0	19.5	-	17.3	12.4	9.8	5.0
26	3.5	9.0	8.0	10.5	15.0	18.0	19.5	-	17.3	12.5	9.8	5.0
27	3.0	9.0	8.0	10.0	15.4	18.4	19.5	19.0	17.5	12.4	9.5	5.5
28	2.5	8.6	8.0	10.0	15.5	18.0	20.0	19.0	17.5	12.3	9.3	5.0
29	2.0	8.5	8.4	11.5	15.5	17.5	20.5	19.0	17.3	12.0	9.0	2.6
30	1.5	-	8.0	11.5	15.3	17.5	20.9	19.5	17.0	12.0	8.6	2.6
31	1.5	-	8.0	-	15.5	-	20.5	19.5	-	12.0	-	-

Table 3.--Mean daily water temperatures of the Columbia River at Prescott, Oreg., 1968

Date	Month											
	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	-	3.3	8.0	9.0	11.7	15.6	18.0	21.5	19.8	17.2	11.8	8.5
2	-	4.8	8.1	8.6	11.5	15.5	18.8	21.5	20.0	16.8	11.7	8.3
3	-	4.8	7.9	9.2	12.0	15.4	19.2	21.3	19.5	16.3	11.5	8.3
4	-	5.0	8.0	9.0	12.3	15.7	19.3	20.9	19.3	16.3	11.2	8.3
5	-	5.7	8.3	9.0	12.0	16.0	19.2	21.2	19.5	15.8	10.8	7.8
6	-	6.3	8.5	9.3	11.7	15.9	19.4	20.9	19.8	15.8	10.7	7.5
7	-	6.0	8.6	9.3	11.9	15.8	19.7	20.9	20.0	15.8	10.3	7.3
8	-	5.8	8.0	9.7	13.0	15.4	20.0	21.0	19.8	15.7	9.9	7.0
9	-	5.5	7.3	9.9	13.3	15.7	20.3	21.2	20.2	15.3	9.9	7.2
10	-	5.1	7.6	10.2	13.7	15.8	19.8	21.8	20.3	14.9	9.8	7.3
11	-	5.3	7.7	9.9	13.3	16.0	19.8	21.8	20.3	14.8	9.8	7.3
12	-	5.2	7.6	9.5	13.4	16.3	19.8	22.2	20.2	14.5	10.3	7.6
13	-	4.7	7.8	9.2	13.3	16.0	19.8	22.1	19.8	13.8	10.3	7.4
14	-	4.6	7.5	9.8	13.4	16.2	19.7	21.9	19.4	13.7	9.8	7.2
15	-	5.3	7.3	9.8	13.8	16.5	19.8	21.7	19.9	13.3	9.4	7.1
16	-	5.3	7.2	9.8	14.1	16.5	19.7	21.0	18.8	13.2	8.9	7.1
17	-	5.6	7.0	9.5	14.8	16.5	19.8	-	18.7	12.7	8.7	7.3
18	-	6.0	7.3	9.8	15.0	16.8	19.8	-	18.3	12.4	8.8	7.2
19	5.8	-	7.4	10.0	15.3	17.1	19.9	-	18.0	12.3	8.8	6.8
20	5.9	7.8	7.8	9.8	15.6	16.8	19.5	-	17.8	12.5	8.8	6.3
21	6.1	8.8	7.8	9.7	15.8	17.3	19.3	-	17.5	12.3	8.9	6.0
22	6.0	9.3	8.1	9.8	15.3	17.3	19.3	-	17.3	12.4	9.5	5.7
23	5.9	9.5	7.9	10.3	14.9	17.7	19.2	-	17.3	12.3	10.0	5.3
24	5.9	9.6	7.9	10.5	15.0	17.8	19.7	-	17.3	12.3	10.0	5.0
25	5.4	9.5	7.9	10.8	15.3	18.3	19.8	-	17.4	12.6	9.9	5.0
26	4.3	9.7	8.2	10.8	15.3	18.3	19.8	-	17.4	12.5	9.8	5.3
27	3.8	9.6	8.3	10.8	15.7	18.6	20.0	19.3	17.7	12.5	9.7	5.6
28	3.0	9.3	8.5	11.0	16.0	18.3	20.5	19.3	17.5	12.4	9.4	5.5
29	2.3	9.3	8.7	12.0	15.8	17.8	20.9	19.3	17.4	12.3	9.3	3.8
30	2.0	-	8.5	11.8	15.7	17.7	21.2	19.8	17.2	12.3	8.8	3.1
31	2.3	-	8.4	-	15.8	-	20.8	19.8	-	12.3	-	-

Table 4.--Maximum daily water temperatures of the Columbia River at Prescott, Oreg., 1969

Date	Month											
	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	3.3	-	4.5	8.5	10.8	15.3	17.5	20.8	20.4	18.0	12.8	7.3
2	3.4	1.5	-	8.4	10.8	15.6	17.4	20.6	20.5	17.6	12.8	6.9
3	3.7	2.0	-	8.4	11.0	16.1	17.0	20.6	20.5	17.3	12.9	6.5
4	5.0	2.1	4.6	8.5	11.0	16.3	17.3	20.6	20.1	17.0	13.0	6.5
5	6.3	2.3	4.9	8.6	11.4	16.3	17.7	20.5	19.6	16.8	12.5	7.0
6	6.5	2.5	4.9	9.0	11.6	16.0	17.7	20.3	19.2	16.6	12.3	7.2
7	5.5	2.5	5.2	9.0	12.0	16.5	17.7	19.9	19.1	16.3	12.0	6.8
8	5.6	-	5.5	9.1	12.2	17.0	18.1	20.0	19.3	15.8	12.2	6.7
9	5.6	-	5.5	9.0	12.5	17.0	18.6	-	19.6	15.8	12.0	6.8
10	5.4	-	5.5	9.3	12.8	16.9	18.5	20.5	19.5	15.8	12.0	6.7
11	4.6	4.5	6.0	9.8	13.3	17.2	18.8	20.5	19.6	15.7	12.1	6.8
12	4.5	4.5	5.5	9.5	13.5	17.3	18.6	20.5	20.2	15.5	12.2	6.9
13	4.3	4.9	5.5	9.5	13.6	17.8	18.7	20.6	20.3	15.3	12.0	7.0
14	4.2	5.0	5.5	9.8	13.8	18.0	19.1	20.6	20.1	14.6	12.0	7.3
15	4.0	-	5.8	9.8	13.8	18.8	19.2	20.9	19.8	13.8	12.0	7.5
16	3.8	5.0	5.8	10.0	13.8	-	19.4	20.9	19.4	13.1	11.8	7.5
17	4.0	5.1	6.0	10.0	14.4	19.0	19.5	20.5	18.9	13.0	11.3	7.0
18	4.0	5.0	6.4	10.0	14.0	19.0	19.5	20.4	18.6	13.4	11.0	7.0
19	4.0	4.8	6.8	10.0	13.6	19.0	19.9	20.4	18.5	13.1	10.8	6.7
20	3.8	4.6	7.0	10.2	13.6	18.5	20.0	20.6	18.3	13.5	10.7	6.5
21	3.7	4.6	7.5	10.7	14.0	18.6	20.0	20.6	18.0	13.8	10.5	6.5
22	3.5	4.6	7.5	10.8	14.4	18.4	20.0	21.0	17.8	14.0	10.5	7.0
23	3.2	4.5	7.3	11.0	14.2	18.1	20.5	21.0	18.0	13.7	10.4	7.5
24	2.8	4.5	7.5	11.0	14.1	18.0	21.0	21.0	18.0	14.0	10.3	7.5
25	2.3	4.5	7.9	11.0	14.2	17.8	21.0	21.4	18.5	13.8	10.0	7.5
26	1.7	4.5	8.0	11.2	14.4	17.4	21.0	21.0	18.5	13.4	10.0	7.5
27	1.6	4.5	8.0	11.4	14.4	17.5	20.9	20.9	18.4	13.1	9.5	7.0
28	1.5	4.4	8.4	11.1	14.5	17.5	21.0	20.5	18.3	12.6	9.0	7.0
29	1.3	-	8.5	11.2	14.4	16.6	21.0	20.5	18.0	12.6	8.5	7.0
30	-	-	8.8	10.7	14.4	17.0	21.0	20.5	18.0	12.5	7.9	6.5
31	-	-	8.6	-	14.8	-	20.8	20.3	-	12.8	-	6.5

Table 5.--Minimum daily water temperatures of the Columbia River at Prescott, Oreg., 1969

Date	Month											
	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	3.0	-	4.0	8.2	10.5	14.5	16.6	20.4	19.6	17.4	12.4	6.7
2	2.7	1.5	-	8.2	10.5	14.9	16.9	20.2	20.0	17.0	12.6	6.5
3	3.3	1.5	-	8.2	10.5	15.2	16.6	20.2	20.0	16.9	12.8	6.3
4	3.7	2.0	4.2	8.2	10.5	15.7	16.5	20.3	19.5	16.5	12.0	6.1
5	5.0	2.0	4.3	8.4	10.5	16.0	17.0	20.3	18.9	16.3	11.9	6.4
6	6.3	2.0	4.4	8.5	10.8	16.0	17.5	19.9	18.6	16.0	11.9	6.8
7	5.1	2.3	4.6	8.5	11.5	16.0	17.3	19.5	18.6	15.8	11.9	6.3
8	5.5	-	4.7	8.5	11.5	16.3	17.5	19.5	19.0	15.2	11.8	6.5
9	5.4	-	5.0	8.9	11.8	16.5	17.9	-	18.8	15.4	11.5	6.5
10	4.7	-	5.0	8.8	12.0	16.6	18.0	20.0	19.0	15.4	11.8	6.5
11	4.5	4.0	5.0	9.0	12.5	16.7	18.2	20.0	19.3	15.3	11.8	6.5
12	4.3	4.4	5.0	9.5	12.9	17.0	17.9	20.0	19.6	15.0	11.8	6.6
13	4.2	4.5	5.0	9.4	13.3	17.0	18.4	20.2	20.0	14.5	11.8	6.7
14	4.0	4.8	5.0	9.4	13.4	17.5	18.4	20.2	19.6	13.5	11.7	7.0
15	3.8	-	5.2	9.8	13.2	17.8	18.6	20.6	19.2	13.0	11.3	7.3
16	3.8	4.3	5.4	9.8	13.8	-	18.6	20.5	18.7	12.8	11.0	7.5
17	3.8	4.6	5.5	9.8	13.6	18.5	18.9	20.0	18.5	12.8	10.5	7.0
18	4.0	4.2	6.0	9.8	13.6	18.8	19.0	19.8	18.3	12.9	10.5	6.5
19	3.8	4.0	6.5	9.8	13.4	18.4	19.1	20.0	18.0	13.1	10.5	6.5
20	3.6	4.4	6.6	9.7	13.2	18.3	19.5	20.0	17.5	13.1	10.4	6.5
21	3.5	4.0	6.9	10.0	13.5	18.2	19.5	20.2	17.5	13.4	10.2	6.5
22	3.3	4.0	7.0	9.8	13.8	18.0	19.4	20.4	17.4	13.6	10.0	6.5
23	3.0	4.0	6.9	10.6	14.0	17.9	19.5	20.5	17.6	13.5	10.0	7.0
24	2.3	4.0	7.0	10.6	14.0	17.5	20.0	20.8	18.0	13.5	9.5	7.5
25	1.8	3.9	7.4	10.5	13.8	17.0	20.4	20.9	18.0	13.4	8.9	7.5
26	1.4	4.0	7.5	10.5	14.0	17.0	20.0	20.5	18.0	12.8	8.6	7.3
27	1.5	4.0	7.5	10.8	14.2	17.0	20.3	20.3	17.9	12.6	8.5	7.0
28	1.5	3.9	7.8	11.0	14.4	17.0	20.5	20.0	17.8	12.2	8.0	6.9
29	1.0	-	8.0	10.8	14.2	16.4	20.5	20.0	17.8	12.2	8.0	6.9
30	-	-	8.2	10.5	14.2	16.4	20.2	20.0	17.6	12.2	7.3	6.5
31	-	-	8.2	-	14.2	-	20.4	19.8	-	12.5	-	6.5

Table 6.--Mean daily water temperatures of the Columbia River at Prescott, Oreg., 1969

Date	Month											
	Jan.	Feb.	March	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.	°C.
1	3.2	-	4.3	8.4	10.7	14.9	17.1	20.6	20.0	17.7	12.6	7.0
2	3.5	1.5	-	8.3	10.7	15.3	17.2	20.4	20.3	17.3	12.7	6.7
3	3.5	1.8	-	8.3	10.8	15.7	16.8	20.4	20.3	17.1	12.8	6.4
4	4.4	2.1	4.4	8.4	10.8	16.0	16.9	20.5	19.8	16.8	12.9	6.3
5	5.7	2.2	4.6	8.5	11.0	16.2	17.4	20.4	19.3	16.6	12.3	6.7
6	6.4	2.3	4.7	8.8	11.1	16.0	17.6	20.1	18.9	16.3	12.1	7.0
7	5.3	2.4	4.9	8.8	11.8	16.3	17.5	19.7	18.9	16.0	12.0	6.6
8	5.6	-	5.1	8.8	11.9	16.7	17.8	19.8	19.2	15.5	12.1	6.6
9	5.5	-	5.3	9.0	12.2	16.8	18.3	-	19.4	15.6	11.9	6.7
10	5.1	-	5.3	9.1	12.4	16.8	18.3	20.3	19.3	15.6	11.8	6.6
11	4.6	4.3	5.5	9.4	12.9	17.0	18.5	20.3	19.5	15.5	12.0	6.7
12	4.4	4.5	5.3	9.5	13.2	17.2	18.3	20.3	19.9	15.3	12.0	6.8
13	4.3	4.7	5.3	9.5	13.5	17.4	18.6	20.4	20.2	14.9	11.9	6.9
14	4.1	4.9	5.3	9.6	13.6	17.8	18.8	20.4	19.9	14.0	11.9	7.2
15	3.9	-	5.5	9.8	13.5	18.3	18.9	20.8	19.5	13.4	11.8	7.4
16	3.8	4.7	5.6	9.9	13.8	-	19.0	20.7	19.1	12.9	11.6	7.5
17	3.9	4.9	5.8	9.9	14.0	18.8	19.2	20.3	18.7	12.9	11.2	7.0
18	4.0	4.6	6.2	9.9	13.8	18.9	19.3	20.1	18.5	13.1	10.8	6.9
19	3.9	4.4	6.7	9.9	13.5	18.7	19.5	20.2	18.3	13.1	10.7	6.6
20	3.7	4.5	6.8	10.0	13.4	18.4	19.8	20.3	17.9	13.3	10.6	6.5
21	3.6	4.3	7.2	10.4	13.8	18.4	19.8	20.4	17.7	13.6	10.5	6.5
22	3.4	4.3	7.3	10.3	14.1	18.2	19.7	20.7	17.6	13.8	10.4	6.7
23	3.1	4.3	7.1	10.8	14.1	18.0	20.0	20.8	17.8	13.6	10.2	7.3
24	2.6	4.3	7.3	10.8	14.1	17.7	20.5	20.9	18.0	13.8	10.2	7.5
25	2.1	4.2	7.7	10.8	14.0	17.4	20.2	21.1	18.3	13.6	9.8	7.5
26	1.6	4.3	7.8	10.4	14.2	17.2	20.5	20.8	18.3	13.1	9.5	7.3
27	1.6	4.3	7.8	11.1	14.3	17.3	20.6	20.6	18.2	12.8	9.1	7.0
28	1.5	4.2	8.1	11.1	14.5	17.3	20.8	20.3	18.1	12.4	8.8	6.9
29	1.2	-	8.8	11.0	14.3	16.5	20.8	20.3	17.9	12.4	8.3	6.9
30	-	-	8.5	10.6	14.3	16.7	20.6	20.3	17.8	12.3	7.6	6.5
31	-	-	8.4	-	14.5	-	20.6	20.1	-	12.7	-	6.5

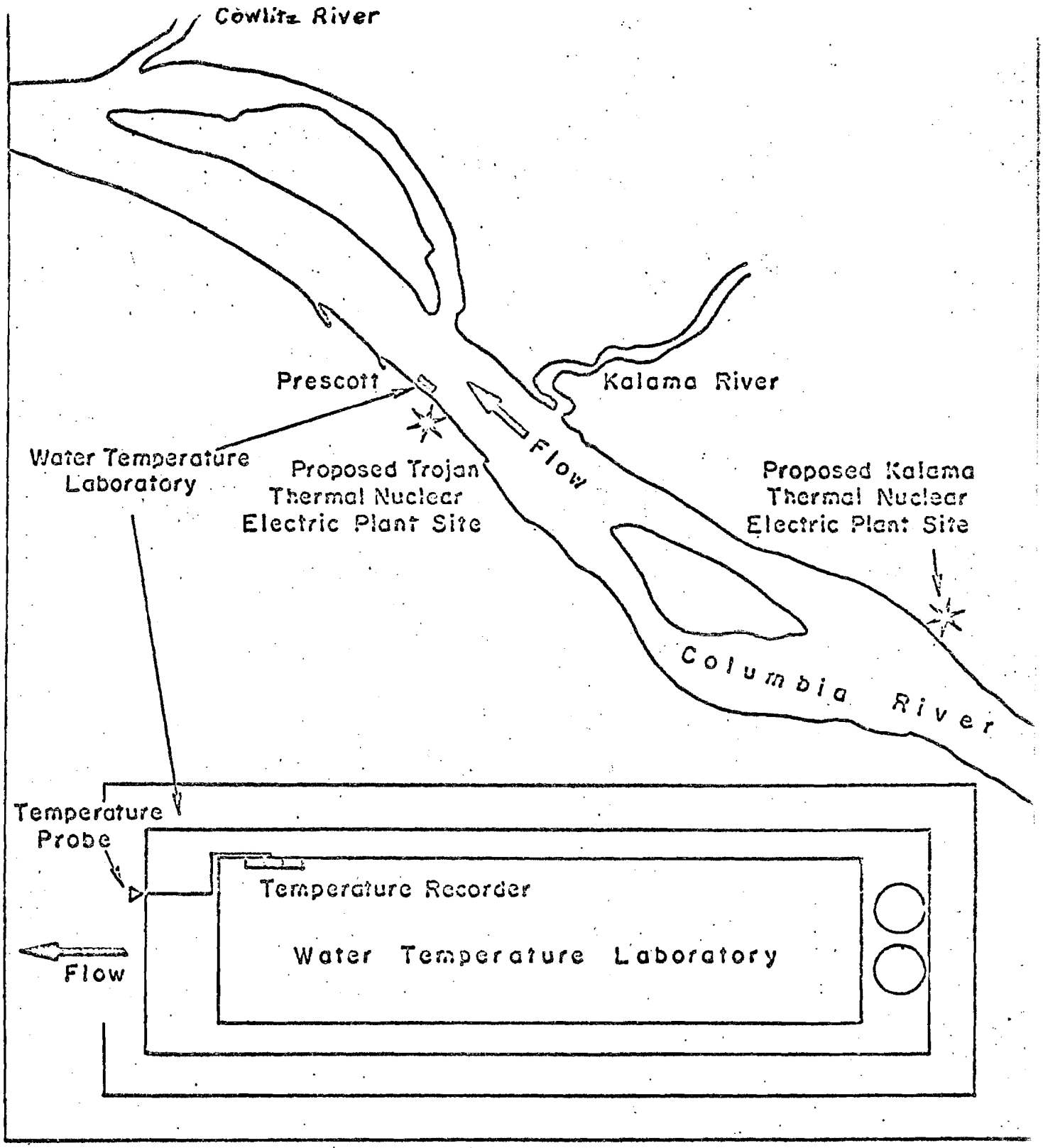

Figure 1.--The Columbia River near Prescott, Oreg., and the location of the water temperature recorder in relation to the floating laboratory.