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Subject CORRELATION OF ACTUAL RIVER WATER ANALYSES WITH CMX RAN WATER ANALYSES

By C. Kidder - Frank

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January 11, 1944

EXPLOSIVES - TMX

H. Worthington
Explosives Department - TMX
Wilmington, Delaware

CORRELATION OF ACTUAL RIVER WATER ANALYSES
WITH C.M.X. RAW WATER ANALYSES

Object:

To correlate Columbia River water iron and dissolved oxygen analyses with data determined on water from sample taps within the C.M.X. building.

Procedure:

Actual river water samples were collected from a boat at the river pump intake. Samples for the iron determinations were collected by holding a clean bottle just below the surface of the river. Samples for dissolved oxygen determinations were collected at a depth of about 2 feet from the river bottom in a special sampling device which flashed the sample bottle once with river water at the sampling depth.

Samples for correlation with actual river water were collected at tap "A" which is just before the alum and alkali feeders on the raw river water pipe, and Tap "U" which is on the suction to the high head pumps for "A" system. "A" system, at present, is operating on raw river water. Each series of samples from the river and in the building were collected within a 20 minute period.

Iron analyses were determined by the C.M.X. photometric procedure. Dissolved oxygen analyses were determined by the standard "Winkler" procedure.

Results:

Date	Sample Series No.	P.P.M. Iron as Fe	
		In River	At Tap "A"
12/28/43	1	0.09	0.09
12/29/43	2	0.07	0.09
12/30/43	3	0.05	0.05
12/31/43	4	0.05	0.05

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H. Worthington

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Jan. 11, 1944

<u>Date</u>	<u>Sample Series No.</u>	<u>River Temp.</u>	<u>P.P.M. Dissolved Oxygen</u>		
			<u>In River</u>	<u>Tap "A"</u>	<u>Tap "U"</u>
1/6/44	1	4.8° C	12.3	12.4	12.5
1/7/44	2	5.0° C	13.1	12.8	13.0

Conclusions:

The data from the iron determinations indicate that there is very little, if any, increase in the iron content of Columbia River water as it flows through the several hundred feet of pump suction and discharge pipe to Tap "A". It is demonstrated that the iron data, which are determined each week on a composite sample of raw water from Tap "A", should be representative of actual river conditions.

The dissolved oxygen data for the different dates show minor variations which are all within the accuracy of the test (about 0.3 p.p.m. O_2). It is indicated that the dissolved oxygen data which have been collected in the past from Taps "A" and "U" should be representative of actual river conditions. In addition it is shown that the river is about at dissolved oxygen saturation for the present temperatures. Water at 5° C and exposed to an atmosphere containing 20.9 percent oxygen under a pressure of 760 mm. will contain about 12.8 p.p.m. of dissolved oxygen when at equilibrium.

G. P. KIDDER

TECHNICAL DIVISION

By

R. D. Frank

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