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July 13, 1948

MINUTES OF MEETING ON
COLUMBIA RIVER STUDIES

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A meeting was called by Major A. A. White on July 10, 1948, to discuss Columbia River studies with Dr. L. R. Donaldson and Mr. H. Thayer and to obtain their counsel as to what additional data or modifications in present techniques are required in connection with these investigations. The meeting was attended by Major A. A. White, L. R. Donaldson, H. Thayer, R. T. Foster, W. H. Smith, S. T. Cantril and C. P. Kidder.

Two propositions were presented by Major White for discussion and resolution, namely:

1. How fast and in what fashion is the temperature of the effluent water from the 100 Areas dissipated in the Columbia River.
2. What frequency and sampling technique is considered adequate for pollution survey records of chemical and bacteriological analyses of Columbia River water.

Technical Department report No. 3-2401 dated May 7, 1948, on "River Water Temperature Survey" was reviewed, and it was concluded that more extensive data of this type, particularly information as to how the temperature effects in the water are dissipated across and down the river, would be of assistance in the conduct and interpretation of the results of the fish study now in progress at the F Area. The following specific program was recommended.

1. A temperature survey of the Columbia River should be made by the Technical Department in accordance with standard procedures, the details of which will be developed by R. T. Foster and C. P. Kidder.
2. The scope of the investigation would be ascertained by first establishing normal temperature variations from shore to shore and in the vicinity of each 100 Area. This would be accomplished by determining a temperature base line above the B Area and by taking a temperature traverse at each of the 100 Areas during a shutdown.

With the above base conditions and normal variations established, survey the river, when operating, at each of the 100 Areas by taking readings at 50-foot intervals across the river until normal temperatures are encountered and then two additional readings to the far shore. Readings are to be taken at the surface and at five-foot intervals of depth. In addition, readings are to be taken at the point of effluent discharge and at the following intervals downstream, i.e., 50 ft., 100 ft., 200 ft., 500 ft., and 1,000 yards, and then at 1,000 yard intervals, or until a temperature variation not

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exceeding normal variations (established by base line surveys) are encountered. In other words, the temperature survey should be extended to all zones affected more than the normal variations or accuracy of measurements.

In addition to the temperature survey, it was agreed that the course and maximum quantity of addition agents in the water could be determined most accurately by taking colored moving pictures of the river from an airplane while samples of river water were being taken at the center and edge, at and below the surface, of any visible path of the effluent water and at half-mile intervals downstream until visible signs of color have vanished. Photographs would be taken of all areas, but sampling would be limited to the F Area. The Area Engineer would arrange for the photography and the Technical Department would collect the samples.

Due to the large dilution in the river, the normal analytical procedures are inadequate for detecting the small amounts of addition agents that would be encountered, so it was agreed that the most reliable procedure would be to run colorimetric determinations on the various samples and from these data, knowing the amount of addition agents in effluent water, calculate the amount at the respective sampling stations.

Radioactivity cross sections of the river are being made independently of this program, and it was agreed that the program now in effect is adequate.

The second subject presented for discussion was the problem of river sampling for the purpose of determining the effect, from a pollution viewpoint, of any effluent discharged into the Columbia River. It was agreed that the frequency of samples could be reduced and at the same time a more complete and comprehensive record obtained by the selection of more representative sampling stations. In general the recommendations of the Public Health Section, as contained in W. D. Norwood's letter of May 31, 1945, to W. C. Simon, were adopted, namely:

1. Samples should be collected twice a week with the exception of the control station above 100-B which should be sampled once a week.
2. Three cross section samples should be taken at each sampling station, instead of one as at present. This would afford a more reliable traverse of river conditions. The three samples would be taken approximately six feet below the surface. The first sample at the center of the channel and the second and third samples at points approximately halfway between the main channel and the shores.
3. Present sample stations should be abandoned in favor of the following four locations:

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- (a) Control station at a selected point above 100-B Area.
- (b) On the Columbia River at Richland.
- (c) At the bridge crossing the Yakima River, approximately one mile south of Richland.
- (d) On the Columbia River approximately 200 yards below the junction of the Yakima and Columbia Rivers.

Note: Subsequent to the meeting, it was agreed that this station, on the Columbia River, should be omitted in favor of a location on the Yakima River below the point that sewage is discharged into the Yakima.

4. Discontinue agar plate counts.

It was agreed that the adoption of the above proposals would reduce the number of analytical samples from about 200 to 100 per month, and eliminate 400 agar plate counts per month. However, in spite of this reduction in time and laboratory supplies, more accurate and complete information would be obtained as a result of cross section sampling and more representative sampling stations.

Later, perhaps in three months after the above program has been started, sufficient data will have been established to indicate whether less frequent sampling, than twice a week, will be adequate.

C. P. Kidder
C. P. Kidder, 100 Technical

CPK:mk

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