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Date 1/17/46

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Subject Correction to Report Dated 1/16/46

Entitled: "Extent of Activity in Mud Washed
through White Oak Dam on January 8, 1946"

By A. S. Greenwood

Copy # 3 W. J. Ray

To K. S. Morgan

Before reading this document, sign and date below:

Name	Date	Name	Date
<u>W. H. Ray</u>	<u>1-24-46</u>		

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- 1. K.Z.Morgan
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1/17/46

K. Z. Morgan

Health Physics

A. T. Greenwood

Health Physics

CORRECTION TO REPORT DATED 1/16/46 ENTITLED: "EXTENT OF ACTIVITY IN MUD WASHED THROUGH WHITE OAK DAM ON JANUARY 8, 1946"

In the report of 1/16/46 an incorrect use of the approximation formula for calculating the flow of water through a rectangular opening was made.

The formula as used in the above report, ft^3 of flow/sec = $2/3 \times b \times \sqrt{2g} \times h^{3/2}$ was correct when applied to the upper gate where the surface of the water was on the same level as top of gate opening. However, when the lower gate is considered a slightly different formula must be used, namely:-

$$ft^3/sec = 2/3 \times b \times \sqrt{2gh^1} \times h$$

where b = width of gate opening in ft = 4 ft; h = height of gate opening in ft = 4 ft; g = 32 ft/sec² and h¹ = average distance from surface of water to center of gate opening = 8 ft.

Consequently, since use of this new formula gives a greater total amount of water available for dilution of activity, the extent of dilution must be re-calculated.

For the upper gate the value of 313.6 ft³/sec still holds. While for the lower gate the revised value now becomes 241.5 ft³/sec, which gives a new total of 555.1 ft³/sec flow through both gates. This is equivalent to 4152 gals/sec. For four hours flow this would give a total of 5.98 x 10⁷ gals. or 2.26 x 10⁸ liters.

To determine the dilution of activity, the same method as used in the first report is employed.

$$\frac{\text{Total activity}}{\text{Total quantity of water}} = \frac{1.41 \times 10^{-2} \text{ curies}}{2.26 \times 10^8 \text{ liters}} = 6.24 \times 10^{-5} \mu\text{c/liters}$$

This value shows a slight decrease from the less correct value of $7.15 \times 10^{-5} \mu\text{c/liter}$ as found in first report.

This document has been approved for release to the public by:

CLASSIFICATION CANCELLED

DATE 10/24/66

For The Atomic Energy Commission

A.T. Greenwood
Technical Information Officer Date 3/22/75
ORNL Site

A. T. Greenwood

W.B. Cannon
Chief, Declassification Branch

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