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Engineer Intelligence Guide [Not Numbered], Computation of Outflow from Breached Dams (DRAFT), 1962

U.S. Army Map Service

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ENEXE-A 7 August 1962

SUBJECT: Computation of Outflow of Breached Dams

TO: Special Investigations Section
Hydraulics Division
U. S. Army Engineer Waterways Experiment Station
Vicksburg, Mississippi

1. The attached draft study, subject as above, is forwarded for your review, comments and retention.

2. It is requested that your comments be forwarded direct to Military Hydrology and Hydraulics Division, Department of Engineer Intelligence, Army Map Service, Washington, D. C. by 17 September 1962.

FOR THE CHIEF OF ENGINEERS:

1 Incl
as

ROGER L. YOUNG
Lt Colonel, CE
Chief, Area Analysis Division
Topography & Military Engineering

[ENGYE]-A 7 August 1962

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Transcribed by Bob Bolin, 18 April 2016

24 SEP 1962

[redacted] (7 Aug 62) 1st Ind
[redacted]: Computation of Outflow of Breached Dams

U. S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

TO: Military Hydrology and Hydraulic Division, Department of Engineer Intelligence, Army Map Service, Washington, D. C.

1. A review has been made of the EIG: "Computation of Outflow from Breached Dams (Draft)." The Military Hydrology and Hydraulics Division is to be complimented on such a lucid presentation of a very complex subject.

2. As a result of our review, two comments are offered:

a. Effect of tailwater submergence on discharge: the EIG uses Villemonte's sharp-crested weir formula while the flow might be expected to resemble that common to a broad-crested weir. If so, the coefficients will differ from those assumed.

b. The EIG does not mention the branching phenomena associated with an earth dam. A paragraph or two might be included which would summarize the current state of the art and perhaps make recommendations for the study of this very important phase of the dam-breach problem.

FOR THE DIRECTOR:

wi all incl

N. P. FORTSON, JR.
Engineer
Chief, Hydraulics Division

24 Sep 1962

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FOR THE DIRECTOR

w/o all incl[osures]

M. P. FORTSON, jr.
Engineer
Chief, Hydraulics Division

Transcribed by Bob Bolin, 18 April 2016

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ENGINEER INTELLIGENCE

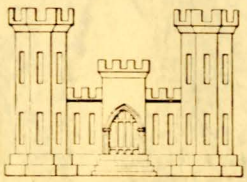
EIG

GUIDE

COMPUTATION OF OUTFLOW FROM BREACHED DAMS

(DRAFT)

A TECHNICAL SERVICE INTELLIGENCE DOCUMENT



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WASHINGTON 25, D. C.

ENGINEER INTELLIGENCE GUIDE

COMPUTATION OF OUTFLOW FROM BREACHED DAMS

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Printed by Army Map Service

PREFACE

Engineer Intelligence Guides (EIG's) are the media for the dissemination of intelligence collection, processing, production, and dissemination guidance by the Chief of Engineers to pertinent elements of the Corps of Engineers. EIG's are designed to provide orientation, direction, and instruction in the field of Engineer intelligence. Comments on this EIG and suggestions for additional EIG's are solicited from all recipients. Comments and suggestions should be addressed to:

Chief of Engineers
Department of the Army
Washington 25, D. C.
ATTN: Area Analysis Division

Note: the ATTENTION line was changed from "Intelligence Division" with correction tape.

ABSTRACT

The failure or demolition of high dams, impounding large volumes of water, may release large flood waves capable of seriously damaging downstream military and civilian installations and of disrupting river crossings and other military operations. The outflow from a breached dam is influenced by the dimensions of the breach, the volume and shape of the reservoir, tailwater conditions, reservoir inflow, and other variables. The theoretical and experimental equations used to compute the breach outflow in civilian practice are very complex and too time-consuming for military use. Simplified step-by-step procedures for determining the flow through the breach are developed in this study to permit fairly rapid prediction of the breach outflow hydrograph with a degree of accuracy acceptable for military situations. Computation procedures with illustrative examples are given for three types of breach: 1) a small breach with the size and shape of the breach and the total reservoir storage governing the outflow; 2) a medium breach with a steep negative wave in the reservoir significantly affecting outflow; and 3) a large breach with tailwater submergence, as well as the factors previously listed, affecting outflow.

COMPUTATION OF OUTFLOW FROM BREACHED DAMS

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