Dam Catalog – Pre break information and assumptions.

(1) Scenarios – Based on starting water elevation and estimated storage along With time of failure

Two character code representing the amount of water and the time of pre-break.

HF high/fast
HN high/normal
HS high/slow
MF middle/fast
MN middle/normal
MS middle/slow
LF low/fast
LN low/normal
LS low/slow

Starting Water Elevations & Storage (First Letter in Scenario Code)

H (High) Height of the dam
Max Storage

M (Middle) Hydraulic Height
Normal_Storage

L (Low) Height of Dam * (ratio multiplier)
Normal storage – (normal storage * ratio multipler)

Where, ratio_mulitplier is based on a relationship of normal storage/max storage for Various classes of volumes of dams.

> 100000	90%
50000 – 100000	86%
25000 – 50000	82%
1000 – 25000	77%
< 1000	62%

Time of Failure (Second Letter in Scenario Code)

F (Fast) if 'ER' height_dam/10
If 'PG' height_dam/40
If 'CNVA' height_dae/50
If 'VA' height_dam/50
If 'CB' height_dam/40

If 'MV'	height_dam/50
If 'CN'	height_dam/50
If 'MS'	height_dam/5
If 'ST'	height_dam/5
If 'TC'	height_dam/5
If 'OT'	height_dam/10
If 'RE'	height_dam/5

N (Normal) Fast Time * 1.5

S (Slow) Fast Time * 2.0)

(2) Breach Width

if 'ER'(earth)	3.0 * height_dam < crest_length
If 'PG'(con gravity)	5.0 * height_dam < crest_length
If 'CNVA'(con arch)	0.9 * crest_length
If 'VA'(con arch)	0.9 * crest_length
If 'CB'(buttress)	5 * height_dam < crest_length
If 'MV'(multi-arch)	0.9 * crest_length
If 'CN'(concrete)	0.9 crest_length
If 'MS'(masonry)	4 * height_dam
If 'ST'(stone)	4 * height_dam
If 'TC' (timber crib)	crest_length
If 'OT' (other)	crest_length
If 'RE'(rockfill)	4 * height_dam < crest_length

(3) Cross Section
OH Method

$K = B / y^m = CL/(HD)^2$

$B = K y^m$

Assuming parabolic shape, m = 0.5

CL	=	crest length of dam
HD	=	height of dam
y	=	depth of water
B	=	top width of water
K	=	computed coefficient from CL and HD

(1) compute K from know values
(2) loop through elevations of y and compute B or top width values
(3) as you loop through, compute total cross sectional area for each elevation

(4) from mannings equation, compute a discharge for each elevation

Cross Section
CBRFC Method

Use regression equations for flood width and flood depth then expand channel To width of dam.

(4) Flood Flow

Computed from USGS return frequency equations. We use the 10 year return flow as the flood flow. The flood stage is determined from the rating table that is constructed from the cross section calculations.