

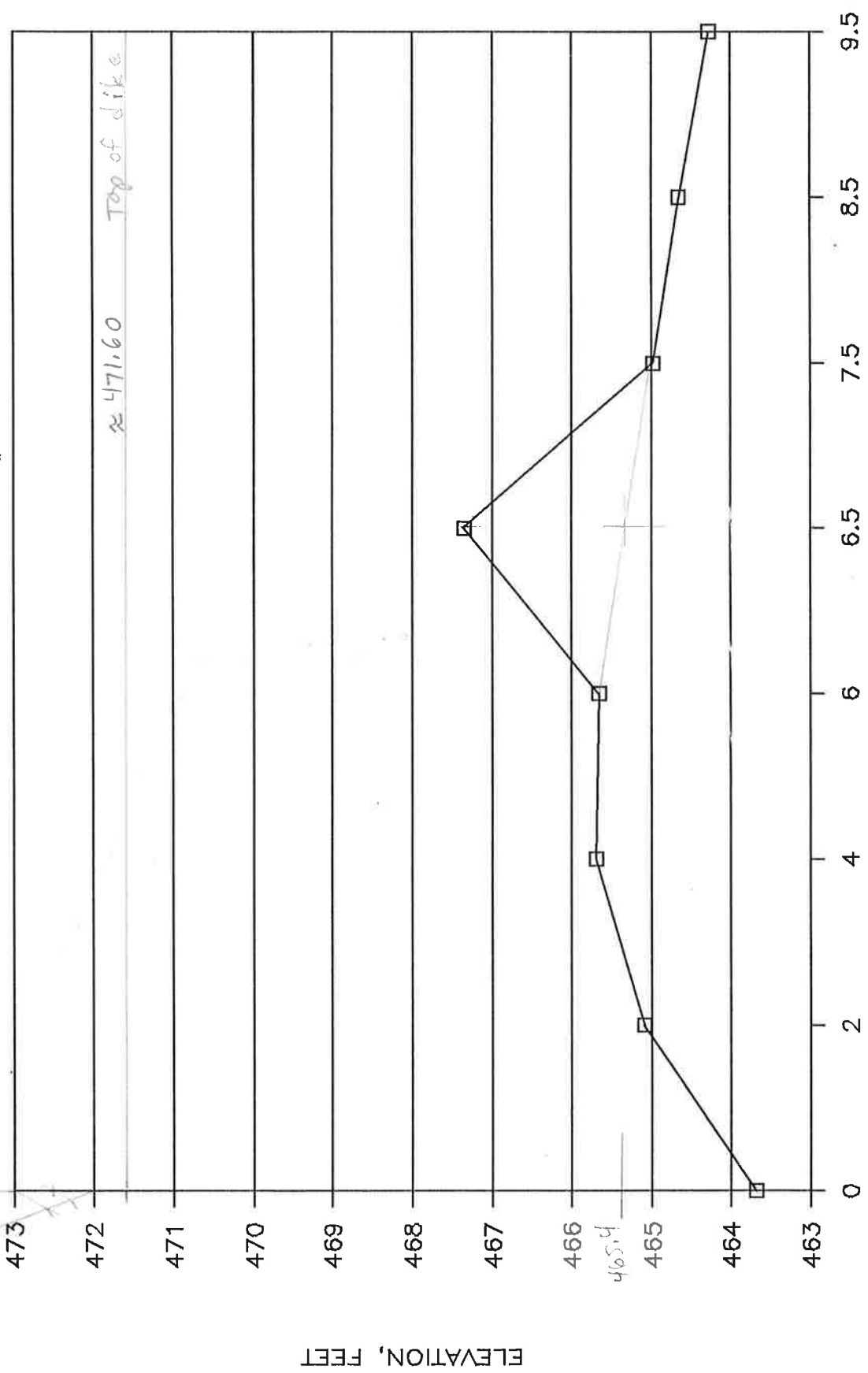
Top of dike ≈ 700

# APPROXIMATE PROFILE OF EAST SPILLWAY

LAKE 17-BREACHED DIKE LAKE17#2

Top of dam 473.50

≈ 471.60 Top of dike



ELEVATION, FEET

STATION, 100'S OF FEET

# COMPUTATION SHEET

BY	DATE	PROJECT	SHEET <u>1</u> OF <u>1</u>
CHKD BY	DATE	FEATURE <u>Lake 17</u>	
DETAILS			

Flow Thru East Spillway

476

75

74

73.50 Top of Dam

~ 73.25

73

31,500 cfs  
1/2 PMF

72

71

470

0 10 20 30 40 50  
Flow, cfs, 1000's

Water surface elevation, ft.

# Emergency Spillway Capacity

471.60

Parabola

$$A = \frac{2}{3} T y$$

$$T = 200'$$

$$WP = T + \frac{8}{3} \frac{y^2}{T}$$

$$y = 5.10$$

$$R = \frac{2T^2 y}{3T^2 + 8y^2}$$

$$D (\text{hyd. depth}) = \frac{2}{3} y$$

$$Z (\text{center of mass}) = \frac{2}{9} \sqrt{6} T y^{1.5}$$

$$A = \frac{1}{3} 200 \times 5.1 = 680 \text{ ft}^2$$

$$WP = 200 + \frac{8}{3} \frac{5.1^2}{200} = 200.35$$

$$R = \frac{2 \cdot 200^2 \cdot 5.1}{3 \cdot 200^2 + 8 \cdot 5.1^2} = 3.39$$

$$D = \frac{2}{3} 5.1 = 3.40$$

$$Z = \frac{2}{9} \sqrt{6} 200 \cdot 5.1^{1.5} = 1253.86$$

$$S = 0.2222$$

$n = 0.029$  clear, straight bank, no rills or pools.

$$V = \frac{1.486}{n} R^{2/3} S^{1/2} = \frac{1.486}{0.029} 3.39^{2/3} \cdot 0.2222^{1/2} = 17.24 \text{ fps}$$

$$Q = VA = 17.24 \cdot 680 = 11,723 \text{ cfs}$$



Try  $y = 8.10'$   
 $T = 263'$

$$R = \frac{2 \cdot 263^2 \cdot 8.1}{3 \cdot 263^2 + 8 \cdot 8.1^2} = 5.39$$

$$A = \frac{2}{3} 263 \cdot 8.1 = 1420$$

$$V = \frac{1.486}{.024} 5.39^{\frac{2}{3}} \cdot 0.2222^{\frac{1}{2}}$$
$$= 23.48 \text{ fps}$$

$$Q = 23.48 \cdot 1420$$
$$= 33,343 \text{ cfs}$$

Try  $y = 9.10'$   
 $T = 296'$

$$R = \frac{2 \cdot 296^2 \cdot 9.1}{3 \cdot 296^2 + 8 \cdot 9.1^2} = 6.05$$

$$A = \frac{2}{3} 296 \cdot 9.1 = 1796 \text{ ft}^2$$

$$V = \frac{1.486}{.024} 6.05^{\frac{2}{3}} \cdot 0.2222^{\frac{1}{2}}$$
$$= 25.36 \text{ fps}$$

$$Q = 25.36 \cdot 1796 = 45,548 \text{ cfs}$$

