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U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

RESERVOIR SEDIMENTATION DATA SUMMARY

William Esbeck
NAME OF RESERVOIR

35-3
DATA SHEET NO.

DAM

1. OWNER William Esbeck	2. RIVER Trib. of Elkhorn Cr.	3. STATE Iowa
4. SEC. 4 TWP. 78N RANGE 36W	5. NEAREST TOWN Elkhorn	6. COUNTY Audubon
7. STREAM BED ELEV.	8. TOP OF DAM ELEV.	9. SPILLWAY CREST ELEV.

RESERVOIR

10. STORAGE ALLOCATION	11. ELEVATION TOP OF POOL	12. SURFACE AREA ACRES	13. STORAGE ACRE-FEET	14. ACCUMULATED ACRE-FEET	15. DATE STORAGE BEGAN
a. FLOOD CONTROL		3.37	7.27	19.87	May 1940
b. POWER					
c. WATER SUPPLY		2.48	12.60	12.60	16. DATE NORMAL OPER. BEGAN
d. IRRIGATION					
e. CONSERVATION					May 1940
f. INACTIVE					

17. LENGTH OF RESERVOIR MILES | AV. WIDTH OF RESERVOIR MILES

WATERSHED

18. TOTAL DRAINAGE AREA 0.208 SQ. MI.		22. MEAN ANNUAL PRECIPITATION 30 (35) INCHES	
19. NET SEDIMENT CONTRIBUTING AREA 0.204 SQ. MI.		23. MEAN ANNUAL RUNOFF 4.7* INCHES	
20. LENGTH MILES	AV. WIDTH MILES	24. MEAN ANNUAL RUNOFF AC.-FT.	
21. MAX. ELEV.	MIN. ELEV.	25. CLIMATIC CLASSIFICATION Humid	

SURVEY DATA

26. DATE OF SURVEY	27. PERIOD YEARS	28. ACCL. YEARS	29. TYPE OF SURVEY	30. NO. OF RANGES OR CONTOUR INT.	31. SURFACE AREA ACRES	32. CAPACITY ACRE-FEET	33. C/W RATIO AC.-FT. PER SQ. MI.
May 1940	-	-	-	-	2.48	12.60	60.6
May 1949	9.0	9.0	Range Detailed	3	2.05	4.51	21.7

26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	36. WATER INFL. TO DATE d. MEAN ANNUAL	e. TOTAL TO DATE
		(inches)			(inches)	
May 1949		6.3*			6.3*	

26. DATE OF SURVEY	37. PERIOD SEDIMENT DEPOSITS ACRE-FEET a. PERIOD TOTAL	b. AV. ANNUAL	c. PER SQ. MI.-YEAR	38. TOTAL SED. DEPOSITS TO DATE ACRE-FEET a. TOTAL TO DATE	b. AV. ANNUAL	c. PER SQ. MI.-YEAR
May 1949	8.09 (8.68) 1/	0.899 (0.965)	4.41 (4.73)	8.09 (8.68)	0.899 (0.965)	4.41 (4.73)

26. DATE OF SURVEY	39. AV. DRY WGT. LBS. PER CU. FT.	40. SED. DEP. TONS PER SQ. MI.-YR. a. PERIOD	b. TOTAL TO DATE	41. STORAGE LOSS PCT. a. AV. ANNUAL	b. TOT. TO DATE	42. SED. INFLOW PPM a. PERIOD	b. TOT. TO DATE
May 1949	56.2 (3)	5,390 (5,790)	5,390 (5,790)	4.86 (7.13) 2/	43.7 (64.2) 2/	11,590 3/ (12,440) 3/	11,590 3/ (12,440) 3/

* Estimated

1/ Above-crest deposits within original flow line at emergency spillway elevation.

2/ Based on water supply pool.

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION											
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION											

26. DATE OF SURVEY	44. REACH DESIGNATION PERCENT OF TOTAL ORIGINAL LENGH OF RESERVOIR														
	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	-105	-110	-115	-120	-125
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION														

45. RANGE IN RESERVOIR OPERATION

WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.

46. ELEVATION-AREA-CAPACITY DATA

ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY

47. REMARKS AND REFERENCES 1. Gottschalk, L.C., and Brune, G.M. Sediment design criteria for the Missouri Basin Loess Hills. Soil Conserv. Serv., SCS-TP-97, 21 pp., illus., processed, Milwaukee, Wis., 1950.

2. U.S.D.A. Yearbook of Agriculture, Washington, D.C., 1941.

For 490 feet downstream from dam, gradient was found to have decreased from 1.10 to 0.29%. From 490 to 1,260 feet downstream, gradient increased from 0.99 to 1.09%.

3/ $$42 = \frac{37b \times 39 \times 1{,}000{,}000}{35a \times 18 \times \frac{640 \times 62.4}{12}}$$

48. AGENCY SUPPLYING DATA Region 3, Soil Conservation Service
U. S. Dept. of Agriculture, Milwaukee, Wisconsin

49. DATE January 6, 1950