

RESERVOIR SEDIMENTATION  
DATA SUMMARY

Howard Mattson

NAME OF RESERVOIR

35-17

DATA SHEET NO.

DAM	1. OWNER Howard Mattson			2. RIVER Trib. of Boyer R.		3. STATE Iowa			
	4. SEC. 13 TWP. 83 N RANGE 40 W			5. NEAREST TOWN Denison		6. COUNTY Crawford			
	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		2.72	12.52	16.44	July 1944			
	b. POWER								
	c. WATER SUPPLY		1.29	3.92	3.92	16. DATE NORMAL OPER. BEGAN			
	d. IRRIGATION								
	e. CONSERVATION								
	f. INACTIVE					July 1944			
17. LENGTH OF RESERVOIR				MILES	AV. WIDTH OF RESERVOIR		MILES		
WATERSHED	18. TOTAL DRAINAGE AREA 0.100			SQ. MI.	22. MEAN ANNUAL PRECIPITATION 28 (40)			INCHES	
	19. NET SEDIMENT CONTRIBUTING AREA 0.098			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 Sub-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.	
	July 1944	-	-	-	-	1.29	3.92	39.2	
	April 1949	4.8	4.8	Range Detailed	6	0.84	1.91	19.1	
	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION		35. PERIOD WATER INFLOW <del>ACRE- FEET</del>			36. WATER INFL. TO DATE <del>AC.- FT.</del>		
				a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE	
				(inches)			(inches)		
	April 1949			8.2 *			8.2 *		
	26. DATE OF SURVEY	37. PERIOD SEDIMENT DEPOSITS ACRE- FEET			38. TOTAL SED. DEPOSITS TO DATE ACRE- FEET.				
		a. PERIOD TOTAL	b. AV. ANNUAL	c. PER SQ. MI.-YEAR	a. TOTAL TO DATE	b. AV. ANNUAL	c. PER SQ. MI.-YEAR		
	April 1949	2.01 (3.88) 1/	0.419 (0.808)	4.28 (8.24)	2.01 (3.88)	0.419 (0.808)	4.28 (8.24)		
26. DATE OF SURVEY	39. AV. DRY WGT. LBS. PER CU. FT.	40. SED. DEP. TONS PER SQ. MI.-YR.		41. STORAGE LOSS PCT.		42. SED. INFLOW PPM			
		a. PERIOD	b. TOTAL TO DATE	a. AV. ANNUAL	b. TOT. TO DATE	a. PERIOD	b. TOT. TO DATE		
April 1949	69.1 (3)	6,440 (12,400)	6,440 (12,400)	4.92 (10.69) 2/	23.6 (51.3) 2/	3/ 10,610 (20,460)	3/ 10,610 (20,460)		

\* Estimated

1/ Above-crest deposits within original flow-line at emergency spillway crest, and occur only within flood control pool.

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 LENGTH 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  
 Gottschalk, I.C., and G. M. Brune. Sediment design criteria for the Missouri Basin Loess Hills. U. S. Soil Conserv. Serv., SCS-TP-97, 21 pp., illus., processed. Milwaukee, Wisconsin, 1950.

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

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

49. DATE January 9, 1950

RESERVOIR SEDIMENTATION  
DATA SUMMARY

Howard Mattson

NAME OF RESERVOIR

35-17a

DATA SHEET NO.

DAM	1. OWNER Howard Mattson			2. RIVER Trib. of Boyer River			3. STATE Iowa						
	4. SEC. 13 TWP. 83N RANGE 40W			5. NEAREST TOWN Denison			6. COUNTY Crawford						
	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		2.72		12.52		16.44		July 1944				
	b. POWER												
	c. WATER SUPPLY		1.29		3.92		3.92						
	d. IRRIGATION								16. DATE NORMAL OPER. BEGAN				
	e. CONSERVATION												
	f. INACTIVE												
17. LENGTH OF RESERVOIR				MILES		17. AV. WIDTH OF RESERVOIR				MILES			
WATERSHED	18. TOTAL DRAINAGE AREA 0.100				SQ. MI.		22. MEAN ANNUAL PRECIPITATION 28 (40)				INCHES		
	19. NET SEDIMENT CONTRIBUTING AREA 0.098				SQ. MI.		23. MEAN ANNUAL RUNOFF 3.2 est.				INCHES		
	20. LENGTH		MILES		AV. WIDTH		MILES		24. MEAN ANNUAL RUNOFF 171 a.f./sq.mi. <del>171</del>				
	21. MAX. ELEV.			MIN. ELEV.			25. CLIMATIC CLASSIFICATION sub-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 1/ ACRE- FEET		33. C/W RATIO 2/ AC- FT. PER SQ. MI.		
7/44		-	-	-	-	2.72		16.44		164			
4/7/49		4.8	4.8	Detailed	6 ranges	2.27		12.56		126			
7/14/53		4.27	9.1	Range	"	?		5.71		57.1			
26. DATE OF SURVEY		34. PERIOD ANNUAL PRECIPITATION		35. PERIOD WATER INFLOW <del>ACRE- FEET</del>			36. WATER INFL. TO DATE <del>AC- FT.</del>						
				a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL		d. MEAN ANNUAL		e. TOTAL TO DATE			
26. DATE OF SURVEY		37. PERIOD SEDIMENT DEPOSITS ACRE- FEET			38. TOTAL SED. DEPOSITS TO DATE ACRE- FEET.								
		a. PERIOD TOTAL			b. AV. ANNUAL	c. PER SQ. MI.-YEAR		d. TOTAL TO DATE		e. AV. ANNUAL		f. PER SQ. MI.-YEAR	
4/7/49		3.88			0.809	8.26		3.88		0.809		8.26	
7/14/53	6.85			1.60	16.3		10.73		1.18		12.0		
26. DATE OF SURVEY	39. AV. DRY WGT. LBS. PER CU. FT.		40. SED. DEP. TONS PER SQ. MI.-YR.		41. STORAGE LOSS PCT.		42. SED. INFLOW PPM						
			a. PERIOD	b. TOTAL TO DATE	c. AV. ANNUAL		d. TOT. TO DATE		e. PERIOD		f. TOT. TO DATE		
4/7/49	69.1 (3)		12,431	12,431	4.92		23.6		-		-		
7/14/53	87.1 (3)		30,900	22,764	7.18		65.3		-		-		

1/ At crest elevation. 2/ C/I ratio 0.98 in 1944, 0.75 in 1949, and 0.34 in 1953. Trap efficiency estimated at 98 percent in 1944, 97% in 1949, and 95% in 1953.

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 LENGTH 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 G. M. Brune. Sediment Design Criteria for the Missouri Basin Loess Hills, SCS-TP-97, Soil Conservation Service, Milwaukee, Wisconsin, 1950. (2) USDA Yearbook of Agriculture, Washington, D. C., 1941

Total rate of sediment production, adjusted for trap efficiency, 23,800 tons/mi./yr.