

RESERVOIR SEDIMENTATION
DATA SUMMARY

C. A. Stiles

NAME OF RESERVOIR

36-2

DATA SHEET NO.

DAM	1. OWNER C. A. Stiles			2. RIVER Trib. of Ashton Creek			3. STATE Iowa				
	4. SEC. 31 TWP. 90 N RANGE 40 W			5. NEAREST TOWN Washta			6. COUNTY Cherokee				
	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		13.4	25.7	71.7	Dec. 1940					
	b. POWER										
	c. WATER SUPPLY		9.7	46.0	46.0	16. DATE NORMAL OPER. BEGAN					
	d. IRRIGATION										
	e. CONSERVATION										
	f. INACTIVE					Dec. 1940					
17. LENGTH OF RESERVOIR		MILES		AV. WIDTH OF RESERVOIR		MILES					
WATERSHED	18. TOTAL DRAINAGE AREA 0.593			SQ. MI.			22. MEAN ANNUAL PRECIPITATION 29 (35)			INCHES	
	19. NET SEDIMENT CONTRIBUTING AREA 0.578			SQ. MI.			23. MEAN ANNUAL RUNOFF 4.2 *			INCHES	
	20. LENGTH		MILES		AV. WIDTH		MILES		24. MEAN ANNUAL RUNOFF		AG.- 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.			
	Dec. 1940	-	-	-	-	9.7	46.0	77.6			
	March 1949	8.3	8.3	Range Detailed	6	9.4	40.0	67.5			
	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW			36. WATER INFL. TO DATE					
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE				
	March 1949		(inches)			(inches)					
			6.1 *			6.1 *					
	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				
	March 1949	6.0 (7.4) 1/	0.723 (0.892)	1.25 (1.54)	6.0 (7.4)	0.723 (0.892)	1.25 (1.54)				
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				
March 1949	46.9 (3)	1,280 (1,570)	1,280 (1,570)	1.23 (1.57) 2/	10.2 (13.0) 2/	3/ (3,480)	3/ (3,480)				

* Estimated

1/ Includes 0.1 acre-foot of sediment above emergency spillway elevation; all 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 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, L.C., and G.M. Brune. Sediment design criteria for the Missouri Basin Loess Hills. Soil Conserv. Serv., SCS-TP-97, 21 pp., illus., processed, Milwaukee, Wisconsin, 1950.

$\frac{2}{42} = \frac{37b \times 39 \times 1,000,000}{35a \times 18 \times \frac{640 \times 62.4}{12}}$

For 730 ft. downstream from dam, gradient was found to have decreased from 0.90 to 0.74%. From 730 to 1,630 ft. downstream from dam, gradient was found to have increased from 0.70 to 1.13%. Mechanical analysis made of sediment.

48. AGENCY SUPPLYING DATA Region 3, Soil Conservation Service 49. DATE January 10, 1950

U. S. Department of Agriculture
 Milwaukee, Wisconsin

RESERVOIR SEDIMENTATION
DATA SUMMARY

C. A. Stiles

36-2a

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER C. A. Stiles			2. RIVER			3. STATE Iowa		
	4. SEC. 31 TWP. 90N RANGE 40W			5. NEAREST TOWN Washta			6. COUNTY Cherokee		
	7. STREAM BED ELEV.			8. TOP OF DAM ELEV.			9. SPILLWAY CREST ELEV. 100.0		
RESERVOIR	10. STORAGE ALLOCATION	11. ELEVATION TOP OF POOL	12. SURFACE AREA ACRES	13. STORAGE ACRE- FEET	14. ACCUMULATED ACRE- FEET	15. assumed DATE STORAGE BEGAN			
	a. FLOOD CONTROL	102.2	13.5	25.5	78.0	Dec.1940			
	b. POWER								
	c. WATER SUPPLY							16. DATE NORMAL OPER. BEGAN	
	d. IRRIGATION								
	e. CONSERVATION	100.0 assumed	9.9	52.5	52.5	Dec.1940			
	f. INACTIVE								
17. LENGTH OF RESERVOIR				MILES	17. AV. WIDTH OF RESERVOIR				MILES
WATERSHED	18. TOTAL DRAINAGE AREA 0.593			SQ. MI.	22. MEAN ANNUAL PRECIPITATION 28.78 (35yr)			INCHES	
	19. NET SEDIMENT CONTRIBUTING AREA 0.572			SQ. MI.	23. MEAN ANNUAL RUNOFF 4.2 estimated			INCHES	
	20. LENGTH		MILES	20. AV. WIDTH		MILES	24. MEAN ANNUAL RUNOFF		AC.-FT.
	21. MAX. ELEV.		21. MIN. ELEV.		25. CLIMATIC CLASSIFICATION subhumid				
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.	
	Dec.1940	-	-	-	-	9.9	52.5(78.0)	133	
	Mar.1949	8.3	8.3	Detailed	6 ranges	9.6	46.1(70.7)	119	
	Sept.1950	1.5	9.8	"	" "	9.3	44.5(69.1)	117	
	Feb.4,1953	2.4	12.2	"	" "		43.3(67.7)	114	
	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW ACRE- FEET			36. WATER INFL. TO DATE AQ.-FT.			
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. 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		
Mar.1949	7.3(7.4)	0.88(0.89)	1.54(1.56)	7.3(7.4)	0.88(0.89)	1.54(1.56)			
Sept.1950	1.56(1.56)	1.04(1.04)	1.82(1.82)	8.91(8.96)	0.91(0.92)	1.59(1.61)			
Feb.4,1953	1.35(1.35)	0.56(0.56)	0.98(0.98)	10.26(10.31)	0.84(0.85)	1.47(1.49)			
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		
Mar.1949	46.9(3)	1,580(1,600)	1,580, (1,600)	1.13	9.36	-	-		
Sep.1950	57.8 assumed	2,300(2,300)	2,010(2,010)	1.17	11.4	-	-		
Feb.4,1953	57.8 (5)	1,240(1,240)	1,850(1,880)	1.07	13.1	-	-		

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION <u>2/</u>													
	Below Crest				Between Crest and Emergency				Above Emergency					
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION													
Mar. 1949	87				12							1		
Sep. 1950	89				10							1		
Feb. 4, 1953	90				10							0		

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
1940:			1953:					
100.2	9.9	52.5	100.0		43.3			
100.2	13.5	78.0	102.2		67.7			
1949:								
100.0	9.6	46.1						
102.2	13.3	70.7						
1950:								
100.0	9.3	44.5						
102.2	13.3	69.1						

47. REMARKS AND REFERENCES

1/ Below crest. Capacity-inflow ratio estimated to be 0.59 in 1940, 0.53 in 1949 and 0.52 in 1950, and 0.51 in 1953. Trap efficiency estimated to be 96% for entire period 1940-1953.

2/ These figures are for total sediment to date of survey.
Total load adjusted for trap efficiency 1,960 tons/sq.mi./yr.

48. AGENCY SUPPLYING DATA SCS, Milwaukee, Wisconsin

49. DATE May 22, 1953