

**RESERVOIR SEDIMENTATION  
 DATA SUMMARY**

Mission Lake

31-9a

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER City of Horton				2. RIVER Mission Creek		3. STATE Kansas	
	4. LONG. 32, Twp. 45, Range 17E				5. NEAREST TOWN Horton		6. COUNTY Brown	
	7. STREAM BED ELEV. 1018.32				8. TOP OF DAM ELEV. 1053.57		9. SPILLWAY CREST ELEV. 1047.57	
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					May 1924		
	b. POWER							
	c. WATER SUPPLY	1047.57	169	1866	1866	16. DATE NORMAL OPER. BEGAN		
	d. IRRIGATION							
	e. CONSERVATION							
	f. INACTIVE							
17. LENGTH OF RESERVOIR 1.77 MILES				AV. WIDTH OF RESERVOIR 426 FEET				
WATERSHED	18. TOTAL DRAINAGE AREA 8.15 SQ. MI.		22. MEAN ANNUAL PRECIPITATION 32.44 (45) INCHES					
	19. NET SEDIMENT CONTRIBUTING AREA 7.76 SQ. MI.		23. MEAN ANNUAL RUNOFF 4.4* INCHES					
	20. LENGTH 4.3 MILES		AV. WIDTH 1.9 MILES		24. MEAN ANNUAL RUNOFF .1821* AC.-FT.			
	21. MAX. ELEV. 1178*		MIN. ELEV. 1018.32		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.
	5-24	--	--	Range	--	169	1866	229
	4-25-37	13	13	Detailed	26	168	1563	192
	7-18-54	17.2	30.2	"	32	154.3	1181	145
	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW ACRE-FEET			36. WATER INFL. TO DATE AC.-FT.		
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	d. MEAN ANNUAL	e. TOTAL TO DATE	
	4-25-37	30.85						
	7-18-54	36.01						
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		
4-25-37	303	23.3	3.00	303	23.3	3.00		
7-18-54	382 (411)	22.2 (23.9)	2.86 (3.07)	685 (714)	22.7 (23.6)	2.93 (3.04)		
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	
4-25-37	62.2 (6)	4064	4064	1.25	16.2			
7-18-54	53.3 (52) (54.2)	3326 (3624)	3401 (3588)	1.21	36.7			

26. DATE OF SURVEY		43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION															
		1027.3	1029.3	1031.3	1033.3	1035.3	1037.3	1039.3	1041.3	1043.3	1045.3	1047.3					
		1018.0	1027.3	1029.3	1031.3	1033.3	1035.3	1037.3	1039.3	1041.3	1043.3	1045.3	1047.3				
		PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION															
Silt accumulation between 1924 & 1937		21.9%	6.6	10.4	9.3	7.3	8.0	6.2	2.1	9.0	11.1	8.3					
Silt accumulation between 1937 and 1954		1029.6	1031.6	1033.6	1035.6	1037.6	1039.6	1041.6	1043.6	1045.6	1047.6						
		1027.0	1029.6	1031.6	1033.6	1035.6	1037.6	1039.6	1041.6	1043.6	1045.6						
		10.9	9.6	8.9	13.0	10.0	9.6	9.8	8.2	7.5	12.5						
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															
1937		10.0	6.0	6.5	7.5	7.0	8.0	13.0	6.0	3.0	0.5						
1954		10.0	9.0	8.8	9.0	9.0	10.0	12.0	5.5	2.0	0.3						
		% of total sed. within seg. 3-4-8-9			% of total sed. in arm containing seg. 12-13-14			% of total sed. in arm containing seg. 17-18-19-20			% of total sed. in arm containing seg. 23 and 24						
1937		2.75%			11.44%			12.87%			5.44%						
1954		3.63%			10.39%			8.00%			2.36%						
45. RANGE IN RESERVOIR OPERATION																	
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.
46. ELEVATION-AREA-CAPACITY DATA																	
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
1047.57	154.76	1181.13	1030	3.96	2.51												
1046	138.44	962.47															
1044	114.79	722.13															
1042	94.88	523.14															
1040	75.73	361.23															
1038	59.53	223.06															
1036	44.33	134.70															
1034	28.13	66.40															
1032	18.63	22.27															
47. REMARKS AND REFERENCES																	
Footnotes by items: See attached sheet.																	
Jones, V.H. Advance Report on the Sedimentation Survey of Mission Lake, Horton, Kansas. U.S. Soil Conservation Service, SCS-SS-22, 15 pp., illus., processed. Washington, D.C., July 1938..																	
Resurvey made July 1954 by personnel furnished by ARS, SCS, and the City of Horton.																	
Notes and computations in ARS office, Lincoln, Nebraska																	
USDA, Agricultural Research Service																	
Sedimentation Studies, Room 505, 49. DATE Jan. 10, 1962																	
134 South 12th St., Lincoln, Nebraska																	
48. AGENCY SUPPLYING DATA																	

Mission Lake  
31-9

- Item 14: Value of original volume refigured 6-13-57 to 1047.57 spillway elevation established in 1954. The spillway elevation at the time of construction was 1047.32 but the spillway was raised in 1948 to 1047.57.
- Item 17: Three contributing arms have lengths of 0.4, 0.5 and 0.6 miles.
- Item 43: Between 1924 and the 1937 survey, depths of sediment are based on the elevation of the spillway (1047.32). Between 1937 and 1954, the depths are based on spillway elevation 1047.57.
- Item 44: Segments 3-4-8-9 are individual segments off the main channel.  
Segments 12-13-14 are in the first arm to the right looking upstream.  
Segments 17-18-19-20 are in second arm to the right looking upstream.  
Segments 23 and 24 are in arm to left looking upstream.

RESERVOIR SEDIMENT  
DATA SUMMARY

U. S. DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

SCS-34 Rev. 6-66

Mission Lake

NAME OF RESERVOIR

31-9b

DATA SHEET NO.

DAM	1. OWNER <b>City of Horton</b>			2. STREAM <b>Mission Creek</b>			3. STATE <b>Kansas</b>									
	4. SEC. <b>32</b> TWP. <b>45</b> RANGE <b>17E</b>			5. NEAREST P.O. <b>Horton</b>			6. COUNTY <b>Brown</b>									
	7. LAT. <b>39° 40' 30"</b> LONG. <b>95° 31'</b>			8. TOP OF DAM ELEVATION <b>1053.57</b>			9. SPILLWAY CREST ELEV. <b>1047.57</b>									
RESERVOIR	10. STORAGE ALLOCATION		11. ELEVATION TOP OF POOL		12. ORIGINAL SURFACE AREA, ACRES		13. ORIGINAL CAPACITY, ACRE-FEET		14. GROSS STORAGE, ACRE-FEET		15. DATE STORAGE BEGAN					
	a. FLOOD CONTROL										<b>May 1924</b>					
	b. MULTIPLE USE															
	c. POWER															
	d. WATER SUPPLY		<b>1047.57</b>		<b>169</b>		<b>1866</b>		<b>1866</b>		16. DATE NORMAL OPER. BEGAN					
	e. IRRIGATION															
	f. CONSERVATION															
g. INACTIVE																
WATERSHED	17. LENGTH OF RESERVOIR				<b>1.77</b> MILES		AV. WIDTH OF RESERVOIR		<b>426 ft.</b>		<b>.08</b> MILES					
	18. TOTAL DRAINAGE AREA				<b>8.15</b> SQ. MI.		22. MEAN ANNUAL PRECIPITATION		<b>32.44 (45)</b>		INCHES					
	19. NET SEDIMENT CONTRIBUTING AREA				<b>7.76</b> SQ. MI.		23. MEAN ANNUAL RUNOFF		<b>4.4*</b>		INCHES					
	20. LENGTH		<b>4.3</b> MILES		AV. WIDTH		<b>1.9</b> MILES		24. MEAN ANNUAL RUNOFF		<b>1821*</b> AC.-F.T.					
	21. MAX. ELEV.		<b>1178*</b>		MIN. ELEV.		<b>1018.32</b>		25. ANNUAL TEMP.: MEAN RANGE							
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/I. RATIO, AC.-FT. PER AC.-FT.	
	<b>Aug. 1967</b>		<b>13.1</b>		<b>43.3</b>		<b>Range Detailed</b>		<b>32</b>		<b>147.2</b>		<b>1091.5</b>		<b>.599</b>	
	26. DATE OF SURVEY		34. PERIOD ANNUAL PRECIPITATION		35. PERIOD WATER INFLOW, ACRE-FEET				36. WATER INFL. TO DATE, AC.-FT.							
	<b>Aug. 1967</b>		<b>36.14</b>		a. MEAN ANNUAL		b. MAX. ANNUAL		c. PERIOD TOTAL		a. MEAN ANNUAL		b. TOTAL TO DATE			
	26. DATE OF SURVEY		37. PERIOD CAPACITY LOSS, ACRE-FEET				38. TOTAL SED. DEPOSITS TO DATE, ACRE-FEET									
	<b>Aug. 1967</b>		a. PERIOD TOTAL		b. AV. ANNUAL		c. PER SQ. MI.-YEAR		a. TOTAL TO DATE		b. AV. ANNUAL		c. PER SQ. MI.-YEAR			
			<b>89.5</b>		<b>6.8</b>		<b>0.88</b>		<b>726.527</b>		<b>16.77</b>		<b>2.16</b>			
	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							
	<b>Aug. 1967</b>		a. PERIOD		b. TOTAL TO DATE		a. AV. ANN.		b. TOT. TO DATE		a. PERIOD		b. TOT. TO DATE			
<b>58.5</b>			<b>12.65</b>		<b>27.55</b>		<b>0.92</b> <b>40.0</b>									

\*Assumed.

*By Telephone Call  
3-2-1968*

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION											
	18-26	26-28	28-30	30-32	32-34	34-36	36-38	38-40	40-42	42-44	44-46	46-47.3
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION											
Aug. 1967	4.9	5.7	8.5	11.1	9.8	9.5	10.0	9.7	9.1	8.5	8.5	4.7

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														
Aug. 1967	17	8	10	10	18	19	12	4	2	0					

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.
Aug. 1967							

46. ELEVATION-AREA-CAPACITY DATA								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
1047.3	147.3	1091.5	1034.0	29.3	39.9			
1046.0	127.4	910.4	1032.0	7.4	3.3			
1044.0	105.3	679.8	1030.0	0.0	0.0			
1042.0	88.3	486.4						
1040.0	69.7	328.4						
1038.0	54.9	203.8						
1036.0	40.6	108.811						

47. REMARKS AND REFERENCES

48. AGENCY MAKING SURVEY USDA, Agricultural Research Service, Columbia, Missouri  
 49. AGENCY SUPPLYING DATA " " " " 50. DATE March 1972