

U. S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE
 SOIL AND WATER CONSERVATION RESEARCH DIVISION

RESERVOIR SEDIMENTATION
 DATA SUMMARY

Sabetha Lake

NAME OF RESERVOIR

31-33

DATA SHEET NO.

DAM	1. OWNER City of Sabetha			2. RIVER Deer Creek Trib. of Nemaha		3. STATE Kansas		
	4. LONG. 39°05'41"N LAT. 95°05'41"W RANGE 128 13E			5. NEAREST TOWN Sabetha		6. COUNTY Nemaha		
	7. STREAM BED ELEV. 66.0			8. TOP OF DAM ELEV. 108.2		9. SPILLWAY CREST ELEV.* 100.00		
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							
	b. POWER					Jan. 1, 1936		
	c. WATER SUPPLY	100.0	114.64	1298	1298	16. DATE NORMAL OPER. BEGAN		
	d. IRRIGATION							
	e. CONSERVATION							
	f. INACTIVE					July 1936		
17. LENGTH OF RESERVOIR		1.63 2/ MILES		AV. WIDTH OF RESERVOIR		377 FEET		
WATERSHED	18. TOTAL DRAINAGE AREA		9.17 SQ. MI.		22. MEAN ANNUAL PRECIPITATION		34.0 3/ INCHES	
	19. NET SEDIMENT CONTRIBUTING AREA		8.99 SQ. MI.		23. MEAN ANNUAL RUNOFF		4.92 (34) 4/ INCHES	
	20. LENGTH		4.32 MILES		AV. WIDTH		2.12 MILES	
	21. MAX. ELEV.		MIN. ELEV. 66.0		24. MEAN ANNUAL RUNOFF		2406 AC.-FT.	
					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.
	Jan. 1, 1936	0	0	-	-	114.64	1298	141.5
	Jun. 11, 1951	15.5	15.5	D	25 Ranges	99.02	721	78.6
	Aug. 28, 1952	1.2	16.7	D - R	25 "	98.19	645	70.3
	Oct. 22, 1953	1.1	17.8	D - R	25 "	99.53	668	72.8
	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	a. MEAN ANNUAL	b. TOTAL TO DATE	
	Jan. 1, 1936	--	5/					
	Jun. 11, 1951	31.6	2753	6513	42,670	2753	42,670	
	Aug. 28, 1952	49.0	7436	7436	8,924	3089	51,594	
	Oct. 22, 1953	18.5	3797	3797	4,177	3133	55,771	
	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	
	Jan. 1, 1936	-	-	-	-	-	-	
	Jun. 11, 1951	577(624)	37.2	4.14	577(624)	37.2	4.14(4.48)	
Aug. 28, 1952	76(76)	63.3	7.04	653(700)	39.1	4.35(4.66)		
Oct. 22, 1953	-23(-25)	-20.9	-2.32	630(675)	35.4	3.94(4.22)		
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	
Jan. 1, 1936	8/			-	-	5/ 6/	5/	
Jun. 11, 1951	54.7(12)	4932(5337)	4932(5337)	2.86	44.4	12827	12827	
Aug. 28, 1952	53.7(12)	7075(6980)	5088(5450)	3.01	50.3	6222	11676	
Oct. 22, 1953	58.0(63)	3246(3436)	4977(5331)	2.73	48.5	6244	11250	

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION											
	33-30	30-25	25-22.5	22.5-20	20-17	17-15	15-11	11-9	9-7	7-5	5-2.5	2.5-0
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION											
Apr. 11, 1956	0.84	8.47	7.95	10.60	14.56	9.02	17.00	8.13	8.34	7.56	5.11	2.43
Apr. 2, 1958	0.84	8.42	7.90	10.54	15.11	8.95	16.30	7.77	8.23	7.78	5.51	2.66
Jul. 16, 1960	0.75	7.56	7.09	9.46	14.95	9.04	16.09	7.18	7.68	8.42	7.72	4.30

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	80-85	90-100	-105	-110	-115	-120	-125
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION														
Apr. 11, 1956	13.0	14.0	13.5	13.5	11.5	8.5	6.0	3.0	0.7		Tributaries				
Apr. 2, 1958	14.0	13.5	13.5	13.0	12.0	8.0	6.0	3.0	0.7	10/	1.3%	15.0%			
Jul. 16, 1960	14.0	13.5	13.0	12.5	11.0	9.5	6.5	4.2	0.8		1.4	13.6			

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.
Data available but not processed							

46. ELEVATION-AREA-CAPACITY DATA								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY

47. REMARKS AND REFERENCES
 Advance Report on the Sedimentation Survey of Sabetha City Reservoir, by Louis M. Glymph, Jr., August 1952 - Lincoln, Nebraska.
 USDA, ARS, Sedimentation Section, Lincoln, Nebr.--Annual Reports for 1953, 1956, 1957, 1958, and 1960.
 "Volume-Weight of Reservoir Sediment," by H. G. Heinemann--presented at the ASCE Hydraulics Division Conference at Urbana, Illinois, on August 17, 1961.
 (All reports unpublished.)
 USDA, Agricultural Research Service
 Sedimentation Studies, Room 505
 134 South 12th Street, Lincoln, Nebr.

48. AGENCY SUPPLYING DATA
 49. DATE Jan. 10, 1962

**RESERVOIR SEDIMENTATION
 DATA SUMMARY**

Sabetha Lake

31-33

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER City of Sabetha			2. RIVER Deer Creek Trib. of Nemaha			3. STATE Kansas				
	4. LONG. 99°54'N LAT. 95°54'W RANGE T2S R13E			5. NEAREST TOWN Sabetha			6. COUNTY Nemaha				
	7. STREAM BED ELEV. 66.0			8. TOP OF DAM ELEV. 112.8			9. SPILLWAY CREST ELEV. * 105.0 ^{1/}				
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					Jan. 1, 1936					
	b. POWER										
	c. WATER SUPPLY	105.0	141.37	1934	1934	16. DATE NORMAL OPER. BEGAN					
	d. IRRIGATION										
	e. CONSERVATION										
	f. INACTIVE					July, 1936					
17. LENGTH OF RESERVOIR 1.80 ^{2/}		MILES		AV. WIDTH OF RESERVOIR 434		FEET					
WATERSHED	18. TOTAL DRAINAGE AREA 9.17		SQ. MI.		22. MEAN ANNUAL PRECIPITATION 34.0(34) ^{3/}					INCHES	
	19. NET SEDIMENT CONTRIBUTING AREA 8.99		SQ. MI.		23. MEAN ANNUAL RUNOFF 4.92(34) ^{1/}					INCHES	
	20. LENGTH 4.32		MILES		AV. WIDTH 2.12		MILES		24. MEAN ANNUAL RUNOFF 2406		AC.-FT.
	21. MAX. ELEV.		MIN. ELEV. 66.0		25. CLIMATIC CLASSIFICATION Humid						
	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.		
Apr. 11, 1956		1.0	20.3	D - R	26 Ranges	137.58	1205	131.4			
Apr. 2, 1958		2.0	22.3	D - R	26 "	136.36	1200	130.9			
Jul. 16, 1960		2.3	24.6	D - R	33 "	131.98	1117	121.8			
SURVEY DATA	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				
	Apr. 11, 1956	21.1	2489	2489	2489	2974	60381				
	Apr. 2, 1958	24.7	2810	2810	5619	2960	* 66000 ^{1/}				
	Jul. 16, 1960	40.9	5200	5200	10400	3106	* 76400				
	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				
Apr. 11, 1956	1 (2)	1.0	0.11	729(732)	35.9	3.99(4.01)					
Apr. 2, 1958	5 (5)	2.5	0.28	734(737)	32.9	3.66(3.68)					
Jul. 16, 1960	83(89)	36.1	4.02	817(826)	33.2	3.69(3.73)					
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				
Apr. 11, 1956	55.0(72)	1720(1858)	4780(4804)	1.86	37.7	4661	10685				
Apr. 2, 1958	56.2(72)	1400(1404)	4480(4504)	1.70	37.9	3577	10057				
Jul. 16, 1960	54.6(253)	3537(3877)	4388(4436)	1.72	42.2	5728	9460				

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION												
	28-25	25-20	20-17.5	17.5-15	15-12.5	12.5-10	10-7.5	7.5-5	5-2.5	2.5-0	Above crest	8-2.5	2.5-5
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION												
Jan. 1, 1936	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun. 11, 1951	0.99	9.89	9.29	11.93	10.94	10.17	9.20	9.70	11.19	9.15	5.00	2.55	
Aug. 28, 1952	0.88	5.79	8.29	11.04	11.88	10.62	10.22	10.29	11.75	9.50	4.49	2.18	
Oct. 22, 1953	0.91	9.15	8.59	11.46	11.82	10.96	10.44	10.09	11.01	9.01	4.47	2.10	

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 10/														
Jan. 1, 1936															Tributaries
Jun. 11, 1951	10.0	11.0	11.0	10.0	10.0	10.0	8.0	7.0	5.0	2.0	0.5	0.2			1.2% 14.1%
Aug. 28, 1952	10.0	10.5	11.0	10.5	10.0	10.0	8.5	6.5	4.5	2.5	0.4	0.4			1.1 14.3
Oct. 22, 1953	10.0	11.2	10.8	10.5	10.0	8.5	8.0	6.5	5.0	3.5	0.4	0.2			1.2 14.2

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.
Data available but not processed.							

46. ELEVATION-AREA-CAPACITY DATA								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
85.2	0.744	-	95.0	57.36	304.5	105.0	139.09	1259.3
86.0	10.29	3.7	97.5	67.82	460.8			
87.5	18.68	25.1	99.0	85.25	575.3			
90.0	29.53	84.8	100.0	99.53	667.6			
92.5	44.79	177.1	102.5	117.62	938.7			

47. REMARKS AND REFERENCES

48. AGENCY SUPPLYING DATA	49. DATE

Notes for Sabetha Lake summary sheets

These notes apply to all three summary sheets.

- 1/ Item 9. The spillway elevation was raised 5 feet in 1954. A complete summary using the new spillway elevation (105 ft.) is given and a summary using the original spillway elevation (100 ft.) is given through the 1953 survey.
- 2/ Item 17. There are two major tributaries. Referring to the 100 ft. spillway elevation, the tributaries are 0.17 and 0.53 miles long. The corresponding values for the 105 ft. spillway elevation are 0.20 and 0.69 miles long.
- 3/ Item 22. Taken from an isohyetal map of the Delaware River and the Nemaha River Watersheds.
- 4/ Item 23. This value was measured on the Delaware River Watershed which is directly south and east of the Sabetha Watershed. It was assumed that the runoff characteristics were similar.
- 5/ Items 35a, 42a, and 42b. The water inflow was computed using the runoff values from the Delaware Watershed. Better data are available from a stage recorder at Sabetha Lake but have not been processed.
- 6/ Item 42a. Item 42a was computed as follows:
 Period Sed. Inflow =

$$\frac{(\text{Total wt. at last survey} - \text{Total wt. at previous survey, lbs.}) \times 1,000,000}{\text{Water inflow, ft}^3, \times 62.4}$$
- 7/ Item 7. These estimated values were used to compute 35a, b, c, and 36a.
- 8/ Item 39. In 1951 and 1952, surface samples were obtained with a 1.60 diameter brass tube sampler. In 1955 the same sampler was used for below water samples and a USGS sampler (1-19/32" dia.) was used for above water samples. In 1953, 1956, 1958, and 1960 a piston-type sampler (2-7/8" dia.) was used, and samples were obtained from depths up to 9 ft.
- 9/ Item 39. In 1960 a total of 283 density readings were also obtained with a radioactive sediment density probe. These results are still being studied.
- 10/ Item 44. 83% to 85% of the total accumulated sediment is located in the main part of the lake. About 1% is located in the first tributary and 14% to 15% is located in the second tributary. Referring to the 100 ft. spillway elevation, the first tributary flows into the main lake at about 18% of the total reservoir length from the dam and the second tributary at 45% of the length. The corresponding values for the 105 ft. elevation are 13.8% and 34.5%. Distribution throughout the length of the tributaries is very nearly the same as in the main lake.



**RESERVOIR SEDIMENTATION
 DATA SUMMARY**

Sabetha Lake

31-33

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER City of Sabetha			2. RIVER Deer Creek Trib. of Nemaha			3. STATE Kansas				
	4. LONG. 99°54'N LAT. 95°54'W RANGE T2S R13E			5. NEAREST TOWN Sabetha			6. COUNTY Nemaha				
	7. STREAM BED ELEV. 66.0			8. TOP OF DAM ELEV. 112.8			9. SPILLWAY CREST ELEV. * 105.0 ^{1/}				
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					Jan. 1, 1936					
	b. POWER										
	c. WATER SUPPLY	105.0	141.37	1934	1934	16. DATE NORMAL OPER. BEGAN					
	d. IRRIGATION										
	e. CONSERVATION										
	f. INACTIVE					July, 1936					
17. LENGTH OF RESERVOIR 1.80 ^{2/} MILES		AV. WIDTH OF RESERVOIR 434 FEET									
WATERSHED	18. TOTAL DRAINAGE AREA 9.17 SQ. MI.		22. MEAN ANNUAL PRECIPITATION 34.0(34) ^{3/} INCHES								
	19. NET SEDIMENT CONTRIBUTING AREA 8.99 SQ. MI.		23. MEAN ANNUAL RUNOFF 4.92(34) ^{1/} INCHES								
	20. LENGTH 4.32 MILES AV. WIDTH 2.12 MILES		24. MEAN ANNUAL RUNOFF 2406 AC.-FT.								
	21. MAX. ELEV. MIN. ELEV. 66.0		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.			
	Apr. 11, 1956	1.0	20.3	D - R	26 Ranges	137.58	1205	131.4			
	Apr. 2, 1958	2.0	22.3	D - R	26 "	136.36	1200	130.9			
	Jul. 16, 1960	2.3	24.6	D - R	33 "	131.98	1117	121.8			
	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				
	Apr. 11, 1956	21.1	2489	2489	2489	2974	60381				
	Apr. 2, 1958	24.7	2810	2810	5619	2960	* 66000 ^{1/}				
	Jul. 16, 1960	40.9	5200	5200	10400	3106	* 76400				
	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					
Apr. 11, 1956	1 (2)	1.0	0.11	729 (732)	35.9	3.99 (4.01)					
Apr. 2, 1958	5 (5)	2.5	0.28	734 (737)	32.9	3.66 (3.68)					
Jul. 16, 1960	83 (89)	36.1	4.02	817 (826)	33.2	3.69 (3.73)					
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				
Apr. 11, 1956	55.0 (72)	1720 (1858)	4780 (4804)	1.86	37.7	4661	10685				
Apr. 2, 1958	56.2 (72)	1400 (1404)	4480 (4504)	1.70	37.9	3577	10057				
Jul. 16, 1960	54.6 (253)	3537 (3877)	4388 (4436)	1.72	42.2	5728	9460				

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION												
	28-25	25-20	20-17.5	17.5-15	15-12.5	12.5-10	10-7.5	7.5-5	5-2.5	2.5-0	Above crest	8-2.5	2.5-5
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION												
Jan. 1, 1936	-	-	-	-	-	-	-	-	-	-	-	-	-
Jun. 11, 1951	0.99	9.89	9.29	11.93	10.94	10.17	9.20	9.70	11.19	9.15	5.00	2.55	
Aug. 28, 1952	0.88	5.79	8.29	11.04	11.88	10.62	10.22	10.29	11.75	9.50	4.49	2.18	
Oct. 22, 1953	0.91	9.15	8.59	11.46	11.82	10.96	10.44	10.09	11.01	9.01	4.47	2.10	

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 10/														
Jan. 1, 1936															Tributaries
Jun. 11, 1951	10.0	11.0	11.0	10.0	10.0	10.0	8.0	7.0	5.0	2.0	0.5	0.2			1.2% 14.1%
Aug. 28, 1952	10.0	10.5	11.0	10.5	10.0	10.0	8.5	6.5	4.5	2.5	0.4	0.4			1.1 14.3
Oct. 22, 1953	10.0	11.2	10.8	10.5	10.0	8.5	8.0	6.5	5.0	3.5	0.4	0.2			1.2 14.2

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.
Data available but not processed.							

46. ELEVATION-AREA-CAPACITY DATA								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
85.2	0.744	-	95.0	57.36	304.5	105.0	139.09	1259.3
86.0	10.29	3.7	97.5	67.82	460.8			
87.5	18.68	25.1	99.0	85.25	575.3			
90.0	29.53	84.8	100.0	99.53	667.6			
92.5	44.79	177.1	102.5	117.62	938.7			

47. REMARKS AND REFERENCES

48. AGENCY SUPPLYING DATA	49. DATE

Notes for Sabetha Lake summary sheets

These notes apply to all three summary sheets.

- 1/ Item 9. The spillway elevation was raised 5 feet in 1954. A complete summary using the new spillway elevation (105 ft.) is given and a summary using the original spillway elevation (100 ft.) is given through the 1953 survey.
- 2/ Item 17. There are two major tributaries. Referring to the 100 ft. spillway elevation, the tributaries are 0.17 and 0.53 miles long. The corresponding values for the 105 ft. spillway elevation are 0.20 and 0.69 miles long.
- 3/ Item 22. Taken from an isohyetal map of the Delaware River and the Nemaha River Watersheds.
- 4/ Item 23. This value was measured on the Delaware River Watershed which is directly south and east of the Sabetha Watershed. It was assumed that the runoff characteristics were similar.
- 5/ Items 35a, 42a, and 42b. The water inflow was computed using the runoff values from the Delaware Watershed. Better data are available from a stage recorder at Sabetha Lake but have not been processed.
- 6/ Item 42a. Item 42a was computed as follows:
 Period Sed. Inflow =

$$\frac{(\text{Total wt. at last survey} - \text{Total wt. at previous survey, lbs.}) \times 1,000,000}{\text{Water inflow, ft}^3, \times 62.4}$$
- 7/ Item 7. These estimated values were used to compute 35a, b, c, and 36a.
- 8/ Item 39. In 1951 and 1952, surface samples were obtained with a 1.60 diameter brass tube sampler. In 1955 the same sampler was used for below water samples and a USGS sampler (1-19/32" dia.) was used for above water samples. In 1953, 1956, 1958, and 1960 a piston-type sampler (2-7/8" dia.) was used, and samples were obtained from depths up to 9 ft.
- 9/ Item 39. In 1960 a total of 283 density readings were also obtained with a radioactive sediment density probe. These results are still being studied.
- 10/ Item 44. 83% to 85% of the total accumulated sediment is located in the main part of the lake. About 1% is located in the first tributary and 14% to 15% is located in the second tributary. Referring to the 100 ft. spillway elevation, the first tributary flows into the main lake at about 18% of the total reservoir length from the dam and the second tributary at 45% of the length. The corresponding values for the 105 ft. elevation are 13.8% and 34.5%. Distribution throughout the length of the tributaries is very nearly the same as in the main lake.



U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
SOIL AND WATER CONSERVATION RESEARCH DIVISION

RESERVOIR SEDIMENTATION
DATA SUMMARY

Sabetha Lake

31- 33

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER City of Sabetha		2. RIVER Deer Creek Trib. of Nemaha		3. STATE Kansas				
	4. LONG 39°05'41" N AT 95°05'41" W RANGE 138		5. NEAREST TOWN Sabetha		6. COUNTY Nemaha				
	7. STREAM BED ELEV. 66.0		8. TOP OF DAM ELEV. 112.8		9. SPILLWAY CREST ELEV. * 105.00 ^{1/}				
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								
	b. POWER					Jan. 1, 1936			
	c. WATER SUPPLY	105.0	141.37	1934	1934	16. DATE NORMAL OPER. BEGAN			
	d. IRRIGATION								
	e. CONSERVATION								
	f. INACTIVE					July, 1936			
WATERSHED	17. LENGTH OF RESERVOIR 1.80 ^{2/} MILES		AV. WIDTH OF RESERVOIR 434 FEET						
	18. TOTAL DRAINAGE AREA 9.17 SQ. MI.		22. MEAN ANNUAL PRECIPITATION 34.0(34) ^{3/} INCHES						
	19. NET SEDIMENT CONTRIBUTING AREA 8.99 SQ. MI.		23. MEAN ANNUAL RUNOFF 4.92(34) ^{4/} INCHES						
	20. LENGTH 4.32 MILES	AV. WIDTH 2.12 MILES	24. MEAN ANNUAL RUNOFF 2406 AC.-FT.						
	21. MAX. ELEV. MIN. ELEV. 66.0		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.	
	Jan. 1, 1936	0	0	-	-	141.37	1934	210.9	
	Jun. 11, 1951	15.5	15.5	D	25 Ranges	137.99	1310	142.9	
	Aug. 28, 1952	1.2	16.7	D - R	25 "	137.77	1234	134.6	
	Oct. 22, 1953	1.1	17.8	D - R	25 "	139.09	1259	137.3	
	Apr. 25, 1955	1.5	19.3	D - R	26 "	137.19	1206	131.5	
	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	a. MEAN ANNUAL	b. TOTAL TO DATE		
	Jan. 1, 1936	-	5/						
	Jun. 11, 1951	31.6	2753	6513	42,670	2753	42,670		
	Aug. 28, 1952	49.0	7436	7436	8,924	3089	51,594		
	Oct. 22, 1953	18.5	3797	3797	4,177	3133	55,771		
	Apr. 25, 1955	33.3	1414	1414	2,121	3000	57,892		
	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		
Jan. 1, 1936	-	-	-	-	-	-			
Jun. 11, 1951	624	40.3	4.48	624	40.3	4.48			
Aug. 28, 1952	76	63.3	7.04	700	41.9	4.66			
Oct. 22, 1953	-25	-22.7	-2.52	675	37.9	4.22			
Apr. 25, 1955	53(55)	35.3	3.93	728(730)	37.7	4.19(4.21)			
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		
Jan. 1, 1936	8/					5/ 6/	5/		
Jun. 11, 1951	54.7(12)	5337	5337	2.08	32.3	12827	12827		
Aug. 28, 1952	53.7(12)	6980	5450	2.17	36.2	6222	11676		
Oct. 22, 1953	58.0(63)	3436	5331	1.96	34.9	6244	11250		
Apr. 25, 1955	54.1(20)	379(554)	4937(4961)	1.95	37.6	2425	10932		

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

48. AGENCY SUPPLYING DATA SOIL CONSERVATION SERVICE 49. DATE NOV-6-1961