

RESERVOIR SEDIMENTATION
DATA SUMMARY

Great Salt Plains Reservoir

46-2

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER Dept of Army, C. of E.			2. RIVER Salt Fork of Arkansas		3. STATE Oklahoma		
	4. SEC. 11 TWP. 26N RANGE 9W		5. NEAREST TOWN Jet			6. COUNTY Alfalfa		
	7. STREAM BED ELEV. 1100.0			8. TOP OF DAM ELEV. 1168.5		9. SPILLWAY CREST ELEV. 1138.5		
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		1138.5	28,428	25,300	308,000	6 June 1941	
	b. POWER						1/	
	c. WATER SUPPLY							
	d. IRRIGATION						16. DATE NORMAL OPER. BEGAN	
	e. CONSERVATION		1125.0	10,181	56,700	56,700		
	f. INACTIVE						21 Nov. 1941	
WATERSHED	17. LENGTH OF RESERVOIR 5.5 MILES			18. AV. WIDTH OF RESERVOIR 7 MILES				
	19. TOTAL DRAINAGE AREA 3200 SQ. MI.			20. MEAN ANNUAL PRECIPITATION 25.46 (35) INCHES				
	21. NET SEDIMENT CONTRIBUTING AREA 3156 SQ. MI.			22. MEAN ANNUAL RUNOFF 2.05 INCHES				
	23. LENGTH 90 MILES		24. AV. WIDTH 45 MILES		25. MEAN ANNUAL RUNOFF 349,750 (12.2) AC.-FT.			
	26. MAX. ELEV. 2380		27. MIN. ELEV. 1100		28. CLIMATIC CLASSIFICATION Sub-humid			
SURVEY DATA	29. DATE OF SURVEY	30. PERIOD YEARS	31. ACCL. YEARS	32. TYPE OF SURVEY	33. NO. OF RANGES OR CONTOUR INT.	34. SURFACE AREA ACRES	35. CAPACITY ACRE-FEET	36. C/W RATIO AC.-FT. PER SQ. MI.
	June 1941	-	7	Range(D)	65	28,428	308,000	96
	Dec. 1949	8.5	8.5	Range(D)	34	28,304	292,000	91
	29. DATE OF SURVEY	30. PERIOD ANNUAL PRECIPITATION	31. PERIOD WATER INFLOW ACRE-FEET			32. WATER INFL. TO DATE AC.-FT.		
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	a. MEAN ANNUAL	b. TOTAL TO DATE	
	Dec. 1949	28.08	424,059	1,089,305	3,604,501	424,059	3,604,501	
	29. DATE OF SURVEY	30. PERIOD SEDIMENT DEPOSITS ACRE-FEET			31. TOTAL SED. DEPOSITS TO DATE ACRE-FEET			
		a. PERIOD TOTAL	b. AV. ANNUAL	c. PER SQ. MI.-YR.	a. TOTAL TO DATE	b. AV. ANNUAL	c. PER SQ. MI.-YR.	
	Dec. 1949	15,700	1,850	0.586	15,700	1,850	0.586	
	29. DATE OF SURVEY	30. AV. DRY WGT. LBS. PER CU. FT.	31. SED. DEP. TONS PER SQ. MI.-YR.		32. STORAGE LOSS PCT.		33. SED. INFLOW PPM	
		a. PERIOD	b. TOTAL TO DATE	a. AV. ANNUAL	b. TO DATE	a. PERIOD	b. TO DATE	
Dec. 1949	48.6 (16)	620	620	0.601	5.10	3390	3390	

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26. DATE OF SURVEY 43. DEPTH DESIGNATION RANGE IN FEET ABOVE, AND BELOW, CREST ELEVATION
 38.5-34.5-31.5-28.5-25.5-22.5-19.5-16.5-13.5-10.5-7.5-4.5-Crest
 PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION

1 Dec. 1949	0.3	1.8	4.4	6.1	9.9	12.7	9.3	19.5	17.7	12.3	2.9	3.1
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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

1 Dec. 1949	5.1	5.6	16.7	31.1	27.6	9.9	3.2	0.8	0.0	0.0					
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45. RANGE IN RESERVOIR OPERATION

WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.
1941 (4 Mo)	1123.8	-	77,717	1947	1129.5	1122.6	407,305
1942	1132.0	1123.8	512,605	1948	1130.5	1122.7	423,005
1943	1127.3	1123.2	166,405	1949	1133.4	1124.9	1,089,305
1944	1128.7	1122.8	295,005	1950 (2 Mo)	1125.9	1125.3	45,244
1945	1128.6	1124.2	431,605				
1946	1128.5	1122.8	156,305				

46. ELEVATION-AREA-CAPACITY DATA

ELEVATION	AREA 2/	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
1105	0	0						
1110	99	89						
1115	772	2240						
1120	4358	13,300						
1125	9282	46,700						
1130	15,421	107,000						
1135	22,814	203,000						
1138.5	28,304	292,000						

47. REMARKS AND REFERENCES
 1/ Date of diversion
 2/ Areas are derived from capacity curve

48. AGENCY SUPPLYING DATA Dept of Army, Corps of Engineers, Tulsa District
 49. DATE 8 May 1950

**RESERVOIR SEDIMENT
DATA SUMMARY**

Great Salt Plains
NAME OF RESERVOIR

46-2a
DATA SHEET NO.

DAM	1. OWNER Dept. of Army, C of E		2. STREAM Salt Fork Arkansas		3. STATE Oklahoma			
	4. SEC. 11 TWP. 26N RANGE 9W		5. NEAREST TOWN Jet		6. COUNTY Alfalfa			
	7. STREAM BED ELEVATION 1100.0		8. TOP OF DAM ELEVATION 1168.5		9. SPILLWAY CREST ELEV. 1138.5			
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. MULTIPLE USE					6 Jun 41		
	b. FLOOD CONTROL	1138.5	28,428	251,300	308,000			
	c. POWER							
	d. WATER SUPPLY					16. DATE NOR-MAL OPER. BEGAN		
	e. IRRIGATION							
	f. CONSERVATION	1125.0	10,181	56,700	56,700	21 Oct 41		
	g. SEDIMENT							
h. INACTIVE								
17. LENGTH OF RESERVOIR 5.5 MILES		AV. WIDTH OF RESERVOIR 7 MILES						
WATERSHED	18. TOTAL DRAINAGE AREA 3,200 SQ. MI.		22. MEAN ANNUAL PRECIPITATION 24.54 INCHES					
	19. NET SEDIMENT CONTRIBUTING AREA 3,156 SQ. MI.		23. MEAN ANNUAL RUNOFF 1.69 INCHES					
	20. LENGTH 90 MILES		AV. WIDTH 45 MILES		24. MEAN ANNUAL RUNOFF 288,700 (39) AC.-FT.			
	21. MAX. ELEV. 2380		MIN. ELEV. 1,100		25. CLIMATIC CLASSIFICATION sub-humid			
SURVEY DATA	26. DATE OF SURVEY	27. PERIOD YEARS	28. ACCL. YEARS OF SURVEY	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.
	Jun 1941	-	-	Range	65	28,428	308,000	96
	Dec 1949	8.5	8.5	Range	34	28,304	292,000	91
	Apr 1961	11.4	19.9	Range	34	28,240	280,200	88
	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	
	Dec 1949		28.08	424,059	1,089,305	3,604,501	424,059	3,604,501
	Apr 1961		24.12	299,589	793,280	3,415,310	352,754	7,019,811
	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
Dec 1949		15,700	1,850	0.586	15,700	1,850	0.586	
Apr 1961		12,100 (13,100)1/	1,060 (1,150)1/	0.336 (0.364)	27,800 (28,800)	1,400 (1,450)	0.443 (0.459)	
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. AN.	b. TOT. TO DATE	a. PERIOD	b. TOT. TO DATE	
Dec 1949		48.6 (16)	620	620	0.601	5.10	3,390	3,390
Apr 1961		58.9 (29) (59.7) (33)	529 (578)	568 (596)	0.455 (0.471)	9.03 (9.35)	3,340 (3.670)	3,740 (3,920)

below above

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET ABOVE AND BELOW CREST ELEVATION											
	38.5-	34.5-	31.5-	28.5-	25.5-	22.5-	19.5-	16.5-	13.5-	10.5-	7.5-	4.5-
	34.5 31.5 PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION											4.5 Crest
Dec 1949	0.3	1.8	4.4	6.1	9.9	12.7	9.3	19.5	17.7	12.3	2.9	3.1
April 1961	0.19	0.96	2.70	6.09	10.25	18.82	13.84	14.16	13.79	8.89	3.73	3.32
	Crest	4.5	7.5	10.5	13.5	16.5	19.5	22.5				
	4.5	7.5	10.5	13.5	16.5	19.5	22.5	25.5				
Dec 1949	-	-	-	-	-	-	-	-				
April 1961	1.27	0.34	0.12	0.73	-0.14	-0.78	0.30	1.42				

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	-133
	PERCENT OF TOTAL SEDIMENT LOCATED WITHIN REACH DESIGNATION														
Dec 1949	5.1	5.6	16.7	31.1	27.6	9.9	3.2	0.8	0.0	0.0					
April 1961	6.5	8.0	16.6	29.9	21.6	8.6	4.6	1.7	0.86	0.34	0.22	-0.03	-0.24	-0.32	1.67

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV. #	INFLOW AC.-FT.
1950 (9.8mo.)	1128.7	1124.8	288,410	1957	1134.0	1123.0	712,630
1951	1134.4	1125.1	793,280	1958	1128.8	1124.7	263,720
1952	1128.0	1122.8	282,880	1959	1127.7	1124.4	169,660
1953	1126.0	1122.0	70,700	1960	1129.6	1124.9	433,770
1954	1126.4	1122.4	59,800	1961 (7 mos)	1125.9	1125.0	127,530
1955	1129.2	1121.5	152,600				
1956	1126.1	1123.6	60,330				

46. ELEVATION-AREA-CAPACITY DATA								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
1112	2	0	1130	15,250	96,450	1146	38,860	534,900
1116	570	910	1132	18,150	129,900	1148	41,300	615,000
1120	3,400	6,640	1134	21,250	169,300	1150	43,800	700,000
1122	5,630	15,660	1136	24,290	214,800	1152	46,490	790,200
1124	7,850	29,250	1138.5	28,240	280,200	1156	52,210	987,800
1125	8,890	37,450	1140	31,200	324,900	1160	57,510	1,207,400
1126	9,800	46,670	1142	33,550	389,600	1164	63,200	1,448,200
1128	12,310	68,900	1144	36,350	459,700			

47. REMARKS AND REFERENCES

Item 15 - Date of diversion

Item 46 - Areas are based on one-foot incremental capacity.

1/ Deposition to elevation 1164.0 ft., m.s.l.

Reference: Report of sedimentation survey
 Great Salt Plains Reservoir
 Salt Fork of Arkansas River, Oklahoma
 July 1953

48. AGENCY MAKING SURVEY

49. AGENCY SUPPLYING DATA: Department of the Army, CE, Tulsa District DATE Rev. 19 Feb 1968

RESERVOIR SEDIMENT
DATA SUMMARY

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS

Great Salt Plains Lake
NAME OF RESERVOIR

46-2b

DATA SHEET NO.

DAM	1. OWNER Corps of Engineers		2. STREAM Salt Fork of Arkansas		3. STATE Oklahoma		
	4. SEC. 11 TWP. 26N RANGE 9W		5. NEAREST P.O. Jet		6. COUNTY Alfalfa		
	7. LAT. 36° 44' 40" LONG. 98° 08' 08"		8. TOP OF DAM ELEVATION 1168.5		9. SPILLWAY CREST ELEV. 1138.5		
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		1138.5		28,428		
	b. MULTIPLE USE				251,300		
	c. POWER				308,000 1,2/		
	d. WATER SUPPLY						
	e. IRRIGATION						
f. CONSERVATION		1125.0		10,181			
g. INACTIVE				56,700			
				56,700 3/			
				21 Oct 41			
17. LENGTH OF RESERVOIR		5.5 MILES		AV. WIDTH OF RESERVOIR		7 MILES	
18. TOTAL DRAINAGE AREA		3200 SQ. MI.		22. MEAN ANNUAL PRECIPITATION		24.13 INCHES	
19. NET SEDIMENT CONTRIBUTING AREA		3156 SQ. MI.		23. MEAN ANNUAL RUNOFF		1.74 INCHES	
20. LENGTH		90 MILES		AV. WIDTH		45 MILES	
21. MAX. ELEV.		2380		MIN. ELEV.		1100	
				24. MEAN ANNUAL RUNOFF		297,800 (29.7) AC.-F.T.	
				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.				
	Jun 1941		-		-		
	Dec 1949		8.5		8.5		
	Apr 1961		11.4		19.9		
	1 Mar 1971		9.8		29.7		
	Range (D)		65		28,428		
	Range (D)		34		28,304		
	Range (D)		34		28,240		
Range (D)		34		27,729			
308,000 1/		0.88					
292,000 1/		0.83					
280,200 3/		0.97					
271,398		0.91					
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			
Dec 1949		28.08		424,059		1,089,305	
Apr 1961		24.12		299,589		793,280	
1 Mar 1971		24.03		186,200 4/		317,000 4/	
						3,604,501	
						3,415,310	
						1,824,430	
						424,059	
						352,754	
						297,800 4/	
						3,604,501	
						7,019,811	
						8,843,980 2/	
26. DATE OF SURVEY		37. PERIOD CAPACITY LOSS, 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	
Dec 1949		15,700		1,850		0.586	
Apr 1961		12,100		1,060		0.336	
1 Mar 1971		8,853		903		0.286	
						15,700	
						1,850	
						27,800	
						1,400	
						1,234	
						0.586	
						0.443	
						0.391	
26. DATE OF SURVEY		39. AV. DRY WGT., LBS. PER CU. FT.		40. SED. DEP., TONS PER SQ. MI.-YR.		41. STORAGE LOSS, PCT.	
		a. PERIOD		b. TOTAL TO DATE		a. AV. ANN.	
		a. PERIOD		b. TOT. TO DATE		a. PERIOD	
		b. TOT. TO DATE				b. TOT. TO DATE	
Dec 1949		48.6 (16)		620		620	
Apr 1961		58.9 (29)		529		568	
1 Mar 1971		63.8 (31)		494		543	
						0.601	
						5.10	
						0.455	
						9.03	
						0.401	
						11.90	
						3,390	
						3,340	
						6,160	
						3,390	
						3,740	
						4,240	

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, CREST ELEVATION											
	38.5-	34.5-	31.5-	28.5-	25.5-	22.5-	19.5-	16.5-	13.5-	10.5-	7.5-	4.5-
	34.5 31.5 PERCENT OF TOTAL SEDIMENT LOCATED WITHIN DEPTH DESIGNATION											4.5 Crest
Dec 1949	0.3	1.8	4.4	6.1	9.9	12.7	9.3	19.5	17.7	12.3	2.9	3.1
Apr 1961 ^{6/}	0.2	1.0	2.8	6.3	10.6	19.4	14.3	14.6	14.3	9.2	3.9	3.4
1 Mar 1971	0.1	0.8	2.1	4.9	10.4	19.6	18.2	12.9	10.7	7.6	5.6	7.1

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														
Dec 1949	5.1	5.6	16.7	31.1	27.6	9.9	3.2	0.8							
Apr 1961 ^{6/}	6.7	8.2	17.2	30.9	22.3	8.9	4.7	1.0	0.1						
1 Mar 1971	7.4	10.4	15.5	26.6	22.9	10.7	5.8	0.6	0.1						

45. RANGE IN RESERVOIR OPERATION 4/							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.
Jun 41-Sep 48	1132.0	1122.6	2,469,920 ^{2/}	1960	1129.6	1124.9	433,800
1949	1133.4	1124.9	1,089,000	1961	1128.0	1124.8	350,000
1950	1128.7	1124.8	333,700	1962	1127.1	1124.6	225,200
1951	1134.4	1125.1	793,300	1963	1129.1	1124.7	142,500
1952	1128.0	1122.8	282,900	1964	1125.4	1123.8	71,400
1953	1126.0	1122.0	70,700	1965	1127.6	1124.5	262,000
1954	1126.4	1122.4	59,800	1966	1125.7	1123.9	92,860
1955	1129.2	1121.5	152,600	1967	1125.9	1124.3	102,400
1956	1126.1	1123.6	60,330	1968	1126.0	1123.8	153,900
1957	1134.0	1123.0	712,600	1969	1126.8	1123.6	317,000
1958	1128.8	1124.7	263,700	1970	1128.0	1124.1	202,100
1959	1127.7	1124.4	169,700	1971 (5 mo)	1125.5	1124.7	32,570

46. ELEVATION-AREA-CAPACITY DATA								
ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY
Original Area-Capacity			1971 Area-Capacity			1128	12,417	62,944
1101	0	0	1115	0	0	1130	15,110	90,353
1110	416	1,106	1116	45	15	1132	17,845	123,386
1115	1,388	5,118	1118	580	435	1134	20,710	162,107
1120	4,696	19,168	1120	2,455	2,549	1136	23,848	207,055
1125	10,181	56,712	1122	4,792	10,310	1138	27,128	257,684
1130	15,995	121,564	1124	7,609	23,280	1138.5	27,729	271,398
1135	22,949	218,443	1125	8,693	31,425			
1138.5	28,428	308,051	1126	9,868	40,699			

47. REMARKS AND REFERENCES
1. Rounded to nearest thousand.
2. Original computed capacity at El. 1138.5 is 308,051 acre-feet.
3. Rounded to nearest hundred.
4. Inflow rounded to three significant figures below 10,000 A.F. and four significant figures above 10,000 A.F.
5. Computed from yearly inflows for previous periods rounded to four significant figures.
6. Revised figures based on percentage of the total sediment at El. 1138.5. Extend of ranges does not permit an accurate determination of sediment deposits above El. 1138.5.

This report prepared in part by Holway Engineers, Inc., Consulting Engrs, Tulsa, OK

48. AGENCY MAKING SURVEY Dept. of the Army, Corps of Engineers, Tulsa District

49. AGENCY SUPPLYING DATA Corps of Engineers, Dept. of the Army ⁵⁰ DATE 3 August 1972