

RESERVOIR SEDIMENTATION
DATA SUMMARY

LAKE MITCHELL

36-14

NAME OF RESERVOIR

DATA SHEET NO.

DAM	1. OWNER City of Mitchell, S.D.		2. RIVER Firesteel Creek		3. STATE South Dakota			
	4. SEC. 33 TWP. T10, 4N RANGE R63W		5. NEAREST TOWN Mitchell, S.D.		6. COUNTY Davidson			
	7. STREAM BED ELEV.		8. TOP OF DAM ELEV.		9. SPILLWAY CREST ELEV. 100.0 Assumed			
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					Oct. 1928		
	b. POWER							
	c. WATER SUPPLY	99	767	10,943	10,943	16. DATE NORMAL OPER. BEGAN		
	d. IRRIGATION					Oct. 1928		
	e. CONSERVATION							
	f. INACTIVE							
17. LENGTH OF RESERVOIR 3.47 MILES		AV. WIDTH OF RESERVOIR .47 MILES						
WATERSHED	18. TOTAL DRAINAGE AREA 584 SQ. MI.		22. MEAN ANNUAL PRECIPITATION approx. 20.8 INCHES					
	19. NET SEDIMENT CONTRIBUTING AREA 496 SQ. MI.		23. MEAN ANNUAL RUNOFF est. .22 INCHES					
	20. LENGTH 58 MILES		AV. WIDTH 10 MILES		24. MEAN ANNUAL RUNOFF est. 5820 AG.-FT.			
	21. MAX. ELEV. 1750		MIN. ELEV. 1300		25. CLIMATIC CLASSIFICATION semi-arid			
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.
	1928, Oct.	0	0	contour	10 feet	767	10,943	22.06
	1948, July	19.8	19.8	range	21	767	10,380	20.93
	1958, Aug.	10.0	29.8	range	21	767	9,798	19.76
	26. DATE OF SURVEY	34. PERIOD ANNUAL PRECIPITATION	35. PERIOD WATER INFLOW ACRE- FEET			36. WATER INFL. TO DATE AG.-FT.		
			a. MEAN ANNUAL	b. MAX. ANNUAL	c. PERIOD TOTAL	d. MEAN ANNUAL	e. TOTAL TO DATE	
	1948, July	1931-48 20.81"	6000(est.)					
	1958, Aug.	1949-57 19.6"	5820(est.)					
	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	
	1948, July	563	28.4	.057	563	28.43	.057	
	1958, Aug.	582	58.2	.117	1145	38.42	.078	
	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	c. PERIOD	d. TOT. TO DATE	
1948, July	46.79 *	58.10	58.10	.26	5.14			
1958, Aug.	Same wt. used	119.26	79.49	.35	10.4			

* Use of vol. wt. of 46.79 lbs/cu. ft. not considered valid.

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
 Report by John A. Wilson, SCS, Watershed Planning Party, Geologist, Huron, South Dakota, December 1958.
 Additional data believed to be in SCS office, Huron, South Dakota.

48. AGENCY SUPPLYING DATA Soil Conservation Service

49. DATE Sept. 11, 1961
 Oct. 11, 1961 (revised)

RESERVOIR SEDIMENT
DATA SUMMARY

SCS-34 Rev. 6-66

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Lake Mitchell

NAME OF RESERVOIR

36-11^b
DATA SHEET NO.

DAM	1. OWNER City of Mitchell		2. STREAM Firesteel Creek		3. STATE South Dakota		
	4. SEC. 9-10 WP. 103N RANGE 60W		5. NEAREST P.O. Mitchell		6. COUNTY Davison		
	7. LAT. " LONG. "		8. TOP OF DAM ELEVATION 1,270 ^{1/}		9. SPILLWAY CREST ELEV. 1,261.4		
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					Oct. 1928	
	b. MULTIPLE USE						
	c. POWER						
	d. WATER SUPPLY	1,261.4	767	10,943	10,943	16. DATE NORMAL OPER. BEGAN	
	e. IRRIGATION					Oct. 1928	
	f. CONSERVATION						
	g. INACTIVE						
17. LENGTH OF RESERVOIR 3.47 MILES			AV. WIDTH OF RESERVOIR .47 MILES				
WATERSHED	18. TOTAL DRAINAGE AREA 58.4 SQ. MI.		22. MEAN ANNUAL PRECIPITATION 22.54 ^{2/} INCHES				
	19. NET SEDIMENT CONTRIBUTING AREA 4.96 SQ. MI.		23. MEAN ANNUAL RUNOFF 0.71 INCHES				
	20. LENGTH 58 MILES	AV. WIDTH 10 MILES	24. MEAN ANNUAL RUNOFF 22,113 ^{3/} AC.-FT.				
	21. MAX. ELEV. 1750	MIN. ELEV. 1261	25. ANNUAL TEMP: MEAN 46.8 RANGE -39 to 116				
	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
Oct. 1928			Contour	10	767	10,943	
July 1948	19.8	19.8	Range	21	767	10,380	
Aug. 1958	10.0	29.8	Range	21	767	9,798	
July-Aug. 1969	11.0	40.8	Range	21	767	9,235	
33. C/I. RATIO, AC.-FT. PER AC.-FT.	.49	.47	.44	.42			
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	a. MEAN ANNUAL	b. TOTAL TO DATE
	July 1948	1931-48	6,000(est.)				
	Aug. 1958	1949-57	5,820(est.)				
July-Aug. 1969	1958-68	23,599	117,000	259,591			
22.54	22.54	23,599	117,000	259,591			
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	
July 1948	563	28.4	.057	563	28.43	.057	
Aug. 1958	582	58.2	.117	1,145	38.42	.077	
July-Aug. 1969	563	51.18	.103	1,708	41.86	.084	
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. ANN.	b. TOT. TO DATE	a. PERIOD	
July 1948	46.79	58	58	.27	5.11		
Aug. 1958	46.79	119	78	.35	10.46		
July-Aug. 1969	65.47	231	119	.38	15.61		

1/ Approximate

3/ 14 year record

2/ Average 4 stations *Vol. wt. 46.79 lbs/cu ft not considered valid.

26. DATE OF SURVEY	43. DEPTH DESIGNATION RANGE IN FEET BELOW, AND ABOVE, 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														
1969	13	8	8	10	27	18	9	2	2	3					

45. RANGE IN RESERVOIR OPERATION							
WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.	WATER YEAR	MAX. ELEV.	MIN. ELEV.	INFLOW, AC.-FT.
1955-56			4,040	1964-65			74
56-57			13,920	65-66			7,490
57-58			7,010	66-67			10,920
58-59			53	67-68			2,960
59-60			47,810				
60-61			1,960				
61-62			146,600				
62-63			2,470				
63-64			1,620				

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

47. REMARKS AND REFERENCES

1. Report by John A. Wilson, SCS, Watershed Planning Party, Geologist, Huron, South Dakota, December 1958.
2. 1969 report by James R. Monaghan, Geologist, River Basin and Watershed Planning Staff, Huron, South Dakota. Nov. 1969.
3. Additional data in SCS office, Huron, South Dakota.
4. 1969 sample average wts. 65.47.
5. Land use 47% cropland and 53% pasture rangeland.
6. Several structures control approximately 200 square miles of drain "A".

48. AGENCY MAKING SURVEY Watershed Planning Party,
 49. AGENCY SUPPLYING DATA Soil Conservation Service, Huron, S.D. DATE November 1969