

RESERVOIR SEDIMENT DATA SUMMARY

Hayes Lake

37-26a
DATA SHEET NO.

South Dakota Dept. of Wildlife NAME OF RESERVOIR

DAM	1. OWNER <u>Parks & Forestry</u>			2. STREAM <u>Frozenman Creek</u>			3. STATE <u>South Dakota</u>						
	4. SEC. <u>29</u> TWP. <u>5N</u> RANGE <u>26E</u>			5. NEAREST P.O. <u>Hayes, SD</u>			6. COUNTY <u>Stanley</u>						
	7. LAT. <u>44° 21' 38"</u> LONG. <u>101° 00' 36"</u>			8. TOP OF DAM ELEVATION <u>1947.71</u>			9. SPILLWAY CREST ELEV. <u>1944.71</u>						
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										March 1933		
	b. MULTIPLE USE										16. DATE NORMAL OPER. BEGAN		
	c. POWER										March 1933		
	d. WATER SUPPLY												
	e. IRRIGATION												
	f. CONSERVATION <u>2/</u>		<u>1944.7(1946.7)^{1/}</u>		<u>88.1(95.2)^{1/}</u>		<u>629(784)^{1/}</u>		<u>629(784)^{1/}</u>				
	g. INACTIVE												
WATERSHED	17. LENGTH OF RESERVOIR <u>2.50 (2.54)</u> MILES				AV. WIDTH OF RESERVOIR <u>0.05 (0.05)</u> MILES								
	18. TOTAL DRAINAGE AREA <u>44.12</u> SQ. MI.				22. MEAN ANNUAL PRECIPITATION <u>15.33</u> INCHES								
	19. NET SEDIMENT CONTRIBUTING AREA <u>43.29^{3/}</u> SQ. MI.				23. MEAN ANNUAL RUNOFF <u>.45^{5/}</u> INCHES								
	20. LENGTH <u>12.2</u> MILES		AV. WIDTH <u>3.6</u> MILES		24. MEAN ANNUAL RUNOFF <u>1059</u> AC.-FT.								
	21. MAX. ELEV. <u>2200^{4/}</u>		MIN. ELEV. <u>1919.7</u>		25. ANNUAL TEMP. MEAN <u>47.5^{ORANGE}</u> RANGE <u>1130 to -38^{OR}</u>								
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.				
	3-33		-	-		-	88.1	629	0.39				
	6-37		4.2	4.2	Range (D)	21	88.1	580	0.36				
	6-5-78		41.0	45.2	Range (D)	22	95.2	756 ^{1/}	0.47				
	1-90		11.5	56.7	Range (D)	21	95.2	696	0.43				
	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				
	6-37		10.99		565*			2,373*	565*	2,373*			
	6-5-78		15.33		1,624*			66,584	1,526*	68,957*			
	1-90		15.33		1,059 ^{5/}			12,178 ^{5/}	1,431 ^{5/}	81,135 ^{5/}			
	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					
	6-37		49	11.67	0.27	49	11.67	0.27					
	6-5-78		163 ^{1/}	3.98 ^{1/}	0.09 ^{1/}	212 ^{1/}	4.69 ^{1/}	0.11 ^{1/}					
	1-90		60	5.22	0.12	272	4.80	0.12					
26. DATE OF SURVEY		39. AV. DRY WGT., LBS. PER CU. FT.		40. SED. DEP., TONS PERSQ. 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	b. TOT. TO DATE						
6-37		38.8	228.2	1.86	7.79	12,866*	12,866*						
6-5-78		63.5 ^{6/}	141.9 ^{6/}	0.60 ^{1/}	27.04 ^{1/}	2,783*	3,128*						
1-90		*63.5 ^{6/}	166.7	0.61	34.69	5,014*	3,412*						

* Estimated

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														
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							
REMARKS AND REFERENCES <u>1/</u> Top of dam raised to elev. 1956.7' and spillway crest to 1946.7' in the 1950's. New data in parentheses. <u>2/</u> Recreation and fish and wildlife. <u>3/</u> Stock pond drainage areas and reservoir area are non-sediment contributing. <u>4/</u> Pierre AMS topographic map (1:250,000). <u>5/</u> USGS streamgage record for Bad River at Ft. Pierre (62 years). Median of yearly mean discharges = 74,600 acre ft/yr for 3,107 mi ² . <u>6/</u> Weighted average for 1933-1937 deposits increased from 38.3 pcf in 1937 to 68.5 pcf in 1978. Weighed average from 1937 to 1978 sediment is 58.3 pcf and for 1933 to 1978, 63.5 pcf. For the 1990 survey, the 1978 value of 63.5 pcf was used. Land use - changed from 68% cropland, 30% rangeland, and 2% water in 1978 to 71% cropland, 27% rangeland, and 2% water in 1990. Geology-Pierre shale. Information on 1978 sediment samples, previous land use, and sediment survey reports available at USDA, SCS, Federal Building, Huron, SD 57350 48. AGENCY MAKING SURVEY Area III and State Office Staff, SCS 49. AGENCY SUPPLYING DATA SCS 50. DATE September 7, 1990															

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	7. LAT 44° 21' 38" LONG. 101° 00' 36"		8. TOP OF DAM ELEVATION 1947.7 ^{1/}		9. SPILLWAY CREST ELEV. 1944.7 ^{1/}											
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					
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	19. NET SEDIMENT CONTRIBUTING AREA 43.29 ^{3/} SQ. MI.				23. MEAN ANNUAL RUNOFF 0.69 ^{5/} INCHES											
	20. LENGTH 12.2 MILES		AV. WIDTH 3.6 MILES		24. MEAN ANNUAL RUNOFF 1624 AC.-FT.											
	21. MAX. ELEV. 2200 ^{4/}		MIN. ELEV. 1919.7		25. ANNUAL TEMP: MEAN 47.5° RANGE 113° to -38° F.											
SURVEY DATA	25. 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.	
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45. RANGE IN RESERVOIR OPERATION							
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ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY	ELEVATION	AREA	CAPACITY

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48. AGENCY MAKING SURVEY Water Resources Planning Staff, SCS
 49. AGENCY SUPPLYING DATA SCS

50. DATE Sept. 20, 1978