

SUMMARY OF MUDDY CREEK SURFACE WATER
AND SEDIMENT TRANSPORT DATA 1984-1986

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ABSTRACT

Five streamflow gaging stations have been installed and are maintained by the Wyoming Water Research Center (WWRC) on Muddy Creek, a cold desert stream in southcentral Wyoming. The purpose of the stations is to monitor change in the surface water and sediment transport characteristics of the stream in response to riparian restoration efforts currently being undertaken in the basin by the University of Wyoming Range Management Department in cooperation with several state, federal and private groups.

The objective of the report is to present 1) a general characterization of the watershed, 2) a description of each gaging station, 3) an outline of the methods used for field data collection, and 4) a summary of all surface water and sediment data collected for Water Years 1984, 1985 and 1986. As the Muddy Creek riparian restoration program is a long-term effort, this report is presented in loose-leaf format so that data for subsequent water years can be easily added.

INTRODUCTION

Muddy Creek, a tributary to the Little Snake River in the Green-Colorado River system, is located in Carbon County, southcentral Wyoming (Figure 1). The drainage basin is a cold desert ecosystem with shrubs being the primary vegetation type. Annual precipitation ranges from 20 inches in the northeastern part of the watershed to 8 inches in the western portion of the basin (U.S. Department of Agriculture, 1983). Topographically, the area is varied being composed of rolling plains, tablelands and foothills. Elevations range from 8,200 feet at the headwaters of the basin to 6,480 feet at the Highway 789 mile 30.5 stream gaging station. Tertiary and Cretaceous claystones, siltstones, sandstones, and shales underlie most of the watershed with Quaternary alluvial deposits underlying the stream channel (Welder and McGreevey, 1966). The major uses of the basin are livestock grazing, and gas and oil production and exploration.

The landforms of the Muddy Creek watershed are largely the result of fluvial processes. A fine dendritic drainage pattern, composed of numerous ephemeral streams, dissects the basin. The watershed also contains many noncontributing subbasins, some as large as six square miles. The stream follows a meandering pattern with a slope of one percent for its first 50 miles. The channel is deeply incised and actively eroding its banks in many areas. There is also active head-cutting within the basin.

Presently Muddy Creek is the focus of ongoing riparian restoration efforts by the Range Management Department at the University of Wyoming. This research is in cooperation with the Bureau of Land Management, the Wyoming Department of Environmental Quality, the Wyoming Water Development Commission, the Wyoming Water Research Center, the Western Wyoming Livestock Association, and private landowners within the basin. The goal of the research is to establish a protocol for restoring riparian zones using instream structures, vegetation, and beaver dams to: 1) store water, 2) abate non-point pollution, and 3) increase vegetation production (Skinner et al. 1986).

STREAM GAGING NETWORK

Five stream gaging stations have been installed since 1984 and are maintained by WWRC along a 60 mile study reach of Muddy Creek (Figure 2). These stations are used to monitor surface water discharge and suspended sediment transport at key locations in the system. Data generated will be used to evaluate the success of riparian restoration in regard to 1) storage of surface flow as ground water, 2) enhancement of return flows during critical low flow periods, and 3) reduction in the rate of sediment transport. Following is a brief description of the five stream gaging stations:

1. Muddy Creek above Reach 2

Latitude: 41-27-00; Longitude: 107-44-00
NE $\frac{1}{4}$ SE $\frac{1}{4}$ Section 15, Township 17 N, Range 92 W
Elevation: 6,720 feet
Drainage area: 193 square miles, 0 noncontributing
Date activated: May 8, 1986

2. Muddy Creek below Reach 2

Latitude: 41-26-00; Longitude: 107-45-00
NW $\frac{1}{4}$ NW $\frac{1}{4}$ Section 22, Township 17 N, Range 92 W
Elevation: 6,650 feet
Drainage area: 201 square miles, 0 noncontributing
Date activated: May 8, 1986

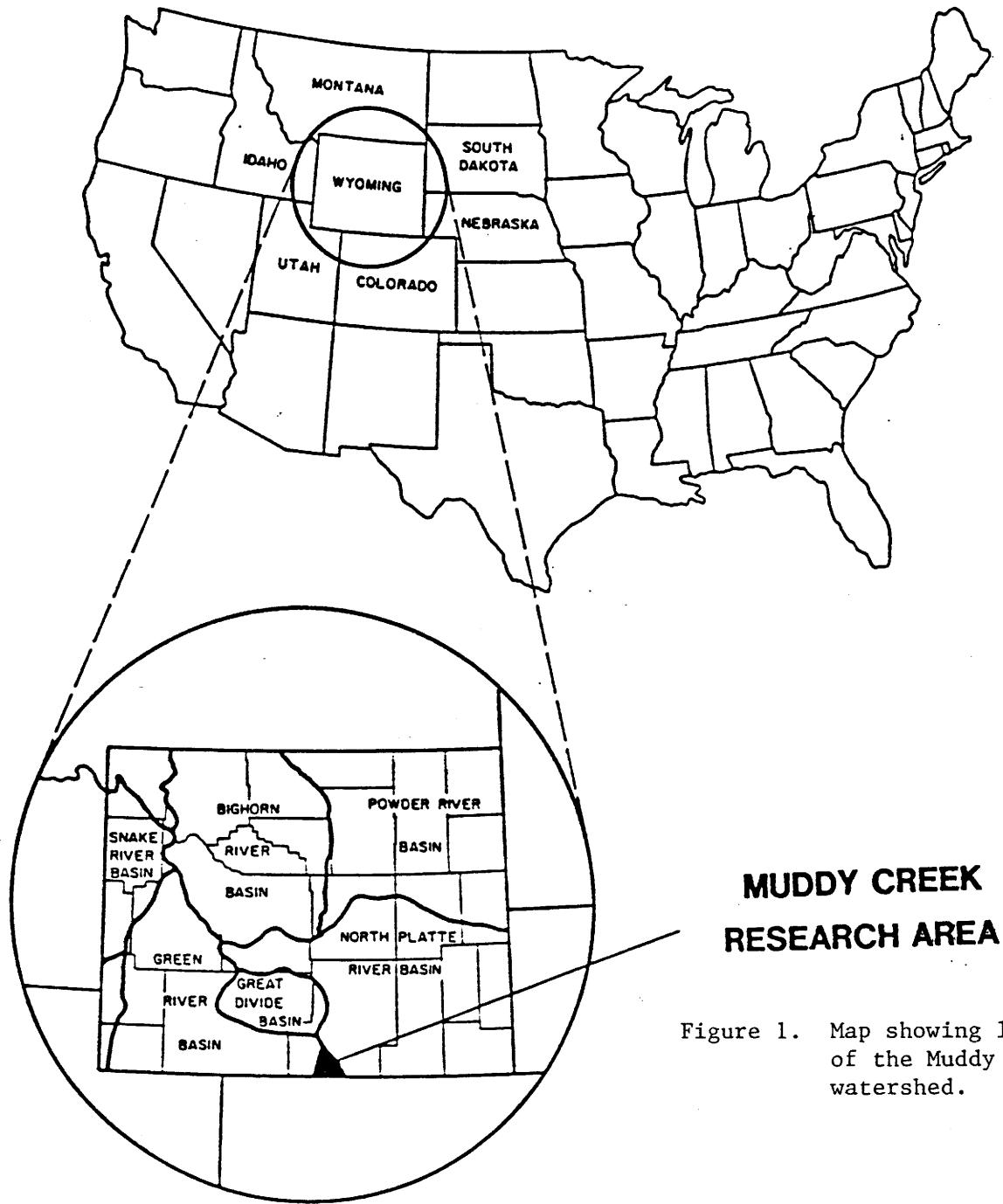


Figure 1. Map showing location of the Muddy Creek watershed.

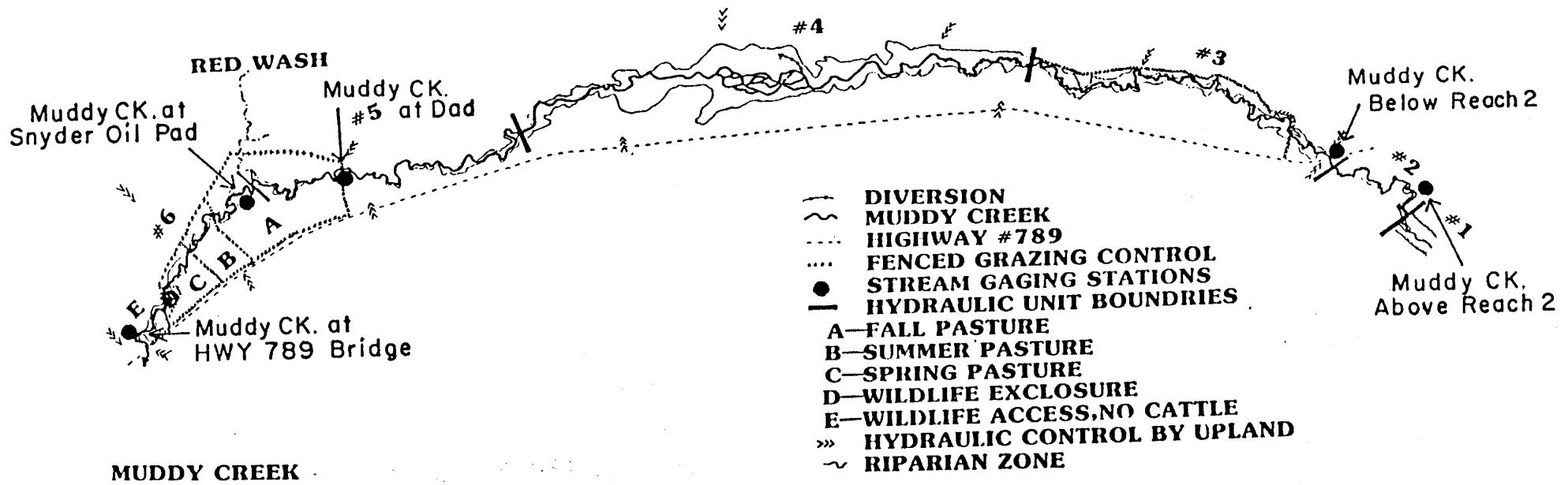


Figure 2. Location of stream gaging station on Muddy Creek.

3. Muddy Creek at Dad, Wyoming
Latitude: 41-20-00; Longitude: 107-45-00
 $NE\frac{1}{4}$ $SE\frac{1}{4}$ Section 29, Township 16 N, Range 92 W
Elevation: 6,520
Drainage area: 232 square miles, 0 noncontributing
Date activated: June 13, 1985
4. Muddy Creek at Snyder Oil Pad
Latitude: 41-19-00; Longitude: 107-45-00
 $SE\frac{1}{4}$ $SW\frac{1}{4}$ Section 33, Township 16 N, Range 92 W
Elevation: 6,500 feet
Drainage area: 556 square miles, 35 noncontributing
Date activated: September 19, 1984
5. Muddy Creek at Highway 789 Bridge (mile 30.5)
Latitude: 41-18-00; Longitude: 107-44-00
 $SW\frac{1}{4}$ $NW\frac{1}{4}$ Section 3, Township 15 N, Range 92 W
Elevation: 6,480 feet
Drainage area: 557 square miles, 35 noncontributing
Date activated: September 20, 1984

The Muddy Creek above Reach 2 gage is the uppermost station, located near the boundary of Study Reaches 1 and 2 (Figure 2). Above the station there is a large headcut encroaching into a riparian zone in good condition, while Study Reach 2 itself represents a riparian zone in poor condition characterized by channelization. The purpose of the gage is to monitor surface water discharge and sediment yield from the upstream portions of the basin.

The Muddy Creek below Reach 2 gage is located 3 miles downstream from the uppermost gage at the lower end of Reach 2. While there currently is no active riparian zone restoration occurring within Reach 2, long range plans call for instream structures to be installed in the future. Therefore, the purpose of this station is to compare the hydrologic characteristics of Reach 2 with those of reaches where riparian zone restoration efforts are now underway and to develop baseline information for comparison following future modification.

The Muddy Creek at Dad gage is located approximately 16 miles below Reach 2 and above Red Wash, a large ephemeral tributary which enters

Muddy Creek from the west. Study Reaches 3 and 4, located between Dad and Reach 2, represent riparian zones that are in relatively good condition. The purpose of the Dad gage is to assess the influence of these healthy riparian areas on surface water and sediment discharge prior to the entrance of Red Wash.

The Muddy Creek at Snyder Oil Pad gage is located approximately 3 miles downstream from the Dad station, just below the mouth of Red Wash. Study Reach 5, characterized by downcutting and formation of an immature floodplain, is located between the two gages. Data generated at the Snyder gage allow us to evaluate the input of Red Wash to the Muddy Creek system. The purpose of the station is to evaluate the influence of return and to monitor water and sediment discharge into Reach 6, the reach where restoration activity is now focused.

The Muddy Creek at Highway 789 Bridge (mile 30.5) gage is located 3 miles downstream from the Snyder gage at the lower end of Study Reach 6. A floodplain covered by heavy willow growth is evident throughout this reach. The reach is fenced (Figure 2) and numerous instream structures have been built in the active channel since 1984. Beaver activity is also prevalent. The function of this station is to monitor the influence of the structures on hydrograph characteristics and sediment yield.

METHODS

Streamflow

Streamflow is monitored continuously at the 5 gaging stations, although limited data are available for the winter months. The stream's stage is recorded continuously at each station by use of Scientific Instruments Manometer-Servo units and Stevens A-35 recorders. The accuracy of the Manometer-Servo units is monitored regularly by

comparison to outside staff gage readings. All stations are checked at least bi-weekly during the ice-free season (March to November). During the winters of 1984-85 and 1985-86 attempts were made to continue gage operation through the ice-cover period. This practice has now been discontinued due to poor data quality and budgetary constraints. Crest gages have also been installed at each station except the "Above Reach 2" gage to determine discharge during unmeasured flood peaks.

Discharge is now measured at least bi-weekly at transects adjacent to each of the five gaging stations using the velocity-area technique (U.S. Geological Survey, 1983). Under most conditions, mean water velocity is measured using a Marsh-McBirney electronic current meter. During high unwadeable flows, velocity determinations are made by suspending a Price AA current meter from the Dad and Highway 789 bridges.

The analysis of all A-35 strip charts and discharge notes is performed by Water Center personnel. Mean daily gage height at each station is determined from the strip charts following standard U.S.G.S. procedures (Kennedy, 1983). Following calculation of discharges, stage discharge relationships for each station are developed by regression analysis and mean daily discharge values are determined for corresponding mean daily gage heights. Discharge records for each station are then entered into the Water Resources Data System maintained by the Water Center on the UW Cyber computer system.

Suspended Sediment

Suspended sediment samples are collected at the same transects and times as the discharge measurements using a USDH 48 wading rod sampler.

During unwadeable conditions, samples are taken from the Dad and Highway 789 bridges using a USDH 49 cable sampler. Sampling procedures follow the Equal Transit Rate Method described by Guy and Norman (1970). Manning or Isco automatic pump water quality samplers have been installed at each of the 5 gaging stations to sample sediment during unmeasured high flows. Suspended sediment concentrations are determined using either the filtration or evaporation method (U.S. Geological Survey, 1977) in the sediment analysis lab located within the Range Management Department's Watershed Laboratory. Sediment discharge is then calculated from the equation:

$$Q_s = Q_w C_s k$$

where, Q_s = sediment discharge in English short tons per day,
 Q_w = water discharge in cubic feet per second,
 C_s = discharge-weighted mean concentration in mg/l, and
k = a constant, 0.0027.

STREAMFLOW AND SEDIMENT DATA

Appendices A through E contain streamflow and sediment data for each of the five gaging stations. The following data are presented from the date of gage activation to the end of the 1986 Water Year:

- Tables of mean daily flow for each water year
- Plot of mean daily streamflow
- Current stage-discharge rating table
- Summary table of sediment analysis
- Plot of current suspended sediment transport rating curve.

The relationship between suspended sediment concentration and streamflow for each of the five stations is depicted in Figure 3, while regression equations and coefficients of determination (r^2) are presented in Table 1.

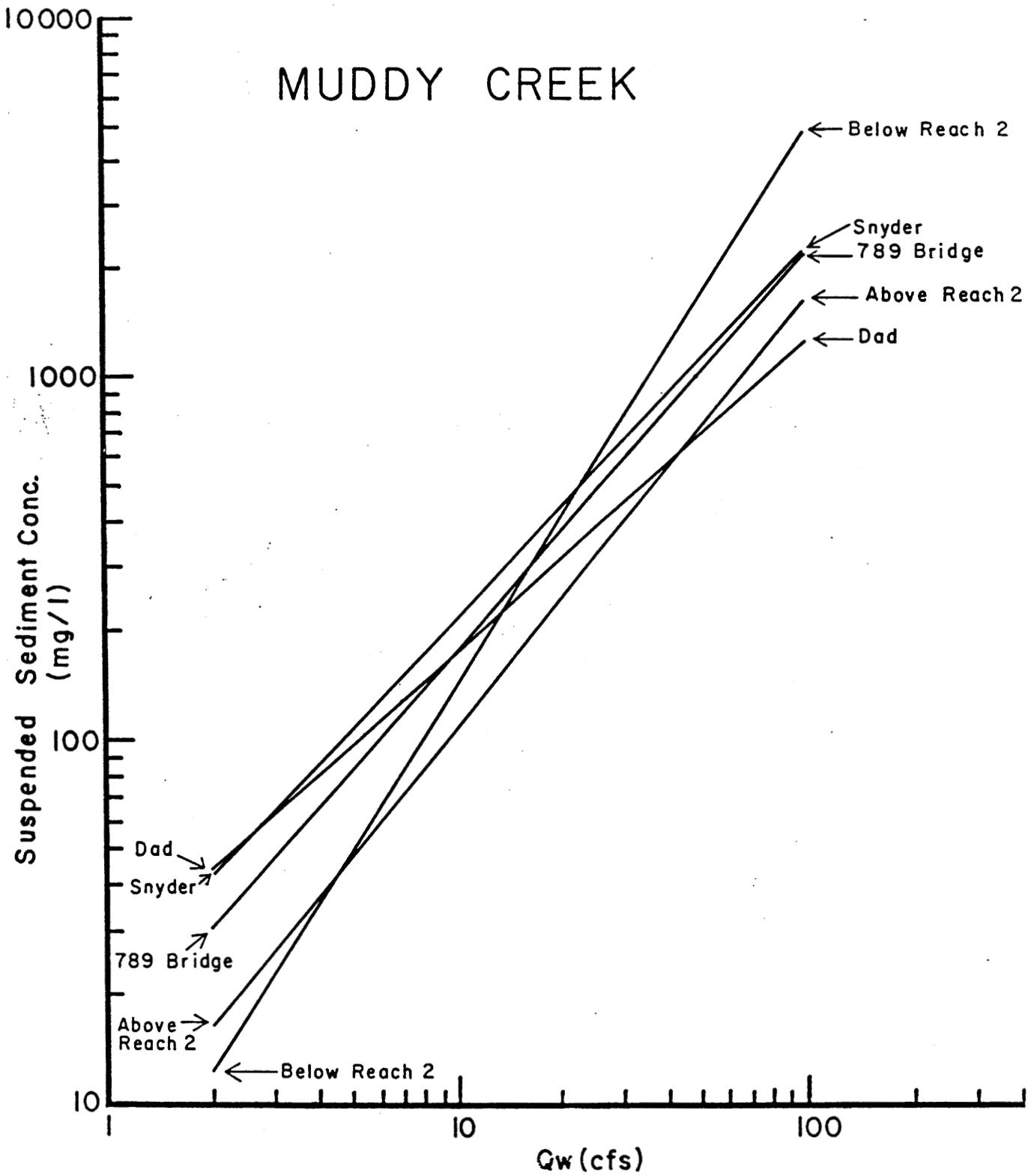


Figure 3. Relationship between suspended sediment concentration and streamflow at the five Muddy Creek stations.

Table 1. Regression equation and coefficient of determination (r^2) for the relationship between suspended sediment concentration (C_s) and streamflow (Q_w) at the five Muddy Creek stations.

STATION	SAMPLE SIZE	REGRESSION EQUATION	r^2
Above Reach 2	22	$C_s = 7.39 Q_w^{1.18}$	0.66
Below Reach 2	20	$C_s = 4.28 Q_w^{1.53}$	0.65
Dad	31	$C_s = 24.49 Q_w^{0.86}$	0.86
Snyder Oil Pad	31	$C_s = 21.64 Q_w^{1.01}$	0.87
Highway 789 Bridge	29	$C_s = 14.49 Q_w^{1.09}$	0.85

LITERATURE CITED

- Guy, H.P. and V.W. Norman. 1970. Field methods for measurement of fluvial sediment. Book 3, Chapter 2 - Applications of Hydraulics. Techniques of Water-Resources Investigations of the U.S. Geological Survey. U.S. Government Printing Office, Washington, D.C.
- Kennedy, E.J. 1983. Computation of continuous records of streamflow. Book 3, Chapter AG13 of Techniques of Water Resources Investigations of the U.S. Geological Survey. U.S. Government Printing Office, Washington, D.C.
- Skinner, Q.D., J.L. Dodd, M.A. Smith, J.D. Rodgers, J.J. Jacobs, S.A. Mizell, and T.A. Wesche. 1986. Value of altering riparian zones to enhance water supply and quality for multiple use. Proposal submitted to the U.S. Geological Survey, Feb., 1986. Wyoming Water Research Center, Laramie, WY.
- U.S. Department of Agriculture - SCS. 1983. Wyoming average annual precipitation. Base Map M7 - P-21418 - 13 ABCDXG. USDA - SCS, Fort Worth, Texas.
- U.S. Geological Survey, 1983. Measurement and computation of streamflow. Volume 1 - Measurement of stage and discharge, Volume 2 - Computation of Discharge. USGS Water Supply Paper 2175.
- U.S. Geological Survey. 1977. National handbook of recommended methods for water-data acquisition. Section 3 - Sediment. U.S. Government Printing Office, Washington, D.C.
- Welder, G.E. and L.J. McGreevy. 1966. Ground-water reconnaissance of the Great Divide and Washakie Basin and some adjacent areas of Southwestern Wyoming. U.S. Geological Survey, Hydraulic Atlas map HA-219. U.S. Geological Survey, Washington, D.C.

APPENDIX A

MUDY CREEK ABOVE REACH 2

MUDGY CREEK ABOVE REACH 2 WYOMING
 LATITUDE 41-27-00 LONGITUDE 107-44-00 NE1/4SE1/4 SECTION 15 TOWNSHIP 17 RANGE 92 4 6TH S. 00.
 ELEVATION 6720.00 FT DRAINAGE AREA 193.00 SQ MI NONCONTRIBUTING 0.00 SQ MI BASIN 14070000
 CARBON COUNTY DATA FROM WYRC (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1986

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY	
1	**	**	**	**	**	**	**	**	27.96	7.53	3.28	10.79	1	
2	**	**	**	**	**	**	**	**	25.94	7.53	3.28	6.67	2	
3	**	**	**	**	**	**	**	**	25.94	4.69	3.28	5.85	3	
4	**	**	**	**	**	**	**	**	24.62	4.32	3.28	5.85	4	
5	**	**	**	**	**	**	**	**	25.94	5.06	2.96	5.45	5	
6	**	**	**	**	**	**	**	**	26.61	5.06	2.96	5.45	6	
7	**	**	**	**	**	**	**	**	27.28	5.45	2.96	5.85		
8	**	**	**	**	**	**	**	**	24.62	5.85	2.95	5.85	8	
9	**	**	**	**	**	**	**	65.03	25.28	10.79	2.64	7.09	9	
10	**	**	**	**	**	**	**	**	59.23	78.56	15.53	2.64	9.34	10
11	**	**	**	**	**	**	**	43.47	140.96	9.34	2.64	16.09	11	
12	**	**	**	**	**	**	**	44.82	48.26	7.97	2.05	12.30	12	
13	**	**	**	**	**	**	**	52.31	32.14	5.45	2.05	10.30	13	
14	**	**	**	**	**	**	**	39.66	25.94	5.06	1.78	8.88	14	
15	**	**	**	**	**	**	**	38.48	20.97	5.85	2.05	7.97	15	
16	**	**	**	**	**	**	**	35.16	20.39	8.42	2.34	7.53	16	
17	**	**	**	**	**	**	**	43.47	18.78	7.53	2.05	7.53	17	
18	**	**	**	**	**	**	**	46.22	17.81	7.53	2.05	7.09	18	
19	**	**	**	**	**	**	**	40.88	18.78	7.09	1.78	7.09	19	
20	**	**	**	**	**	**	**	43.47	18.28	5.85	2.05	7.09	20	
21	**	**	**	**	**	**	**	49.17	18.28	5.06	2.64	7.53	21	
22	**	**	**	**	**	**	**	52.41	17.81	5.06	5.85	8.88	22	
23	**	**	**	**	**	**	**	49.91	17.35	5.06	7.53	8.88	23	
24	**	**	**	**	**	**	**	35.04	17.35	5.45	5.45	11.29	24	
25	**	**	**	**	**	**	**	35.78	17.35	5.85	4.69	40.31	25	
26	**	**	**	**	**	**	**	32.14	16.91	7.09	4.32	62.84	26	
27	**	**	**	**	**	**	**	32.86	8.42	8.88	3.06	38.78	27	
28	**	**	**	**	**	**	**	31.43	7.53	6.67	3.06	24.62	28	
29	**	**	**	**	**	**	**	32.14	7.53	5.06	2.95	29.54	29	
30	**	**	**	**	**	**	**	30.73	7.09	3.62	5.85	17.23	30	
31	**	**	**	**	**	**	**	29.33		2.96	16.66		31	
TOTAL	**	**	**	**	**	**	**	963.14*	810.78	202.66	115.95	409.06		
MEAN	**	**	**	**	**	**	**	41.88*	27.03	6.54	3.74	13.64		
AC-FT	**	**	**	**	**	**	**	1910.36*	1608.16	401.97	229.98	811.36		

TOTAL ANNUAL FLOW IN ACRE-FEET = 4961.83*

INSTANTANEOUS PEAK IN CFS = **

** INDICATES MISSING DATA

* INDICATES COMPUTED FROM INCOMPLETE DATA

E INDICATES ESTIMATED VALUE

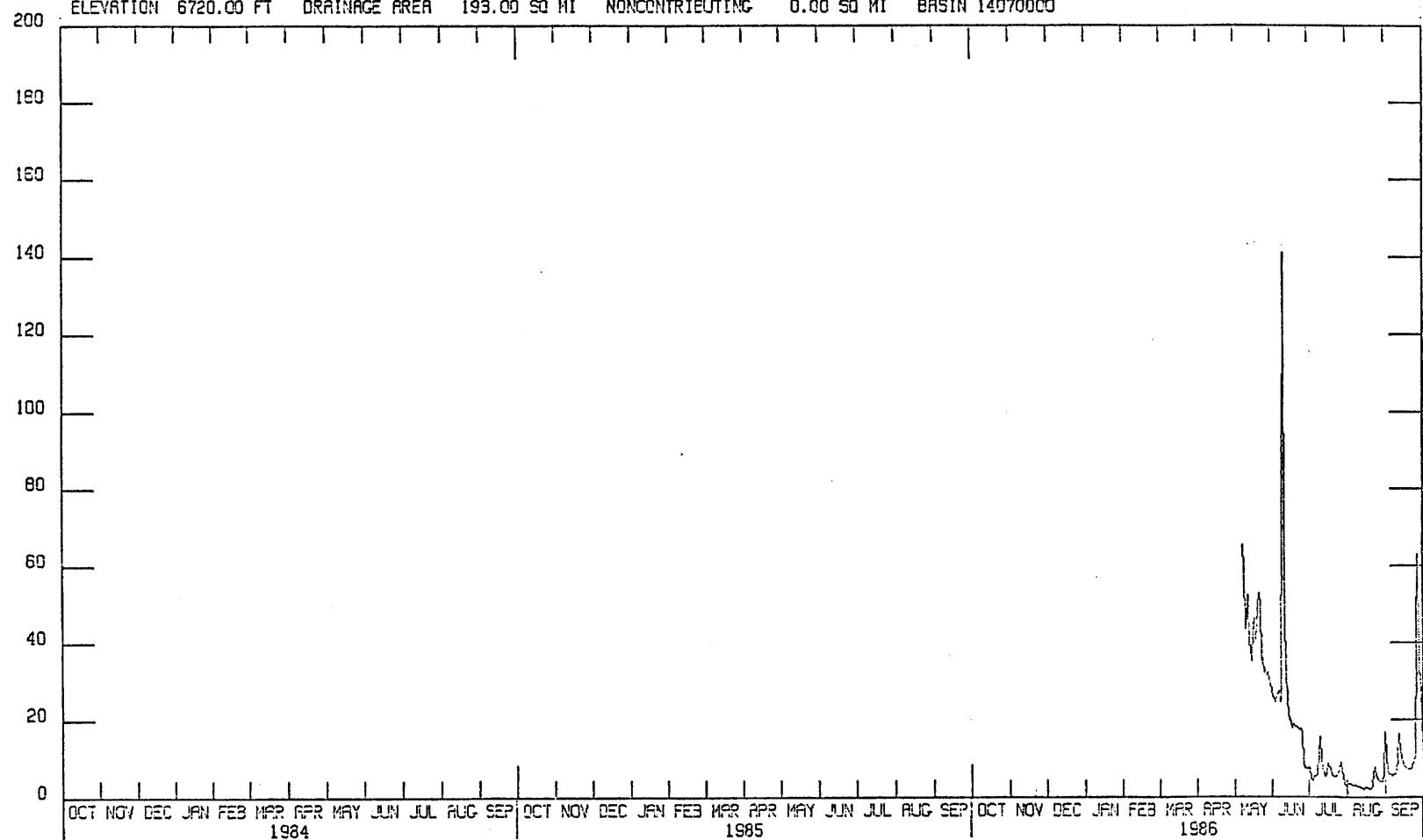
MUDY CREEK ABOVE REACH 2, WYOMING

STATION NO. 066235.00

LATITUDE 41-27-00 LONGITUDE 107-44-00 NE1/4SE1/4 SECTION 15 TOWNSHIP 17 N, RANGE 92 W 6TH P.M.

ELEVATION 6720.00 FT DRAINAGE AREA 193.00 SQ MI NONCONTRIBUTING 0.00 SQ MI BASIN 14070000

DAILY STREAMFLOW IN C.F.S.



Muddy Creek Above Reach 2 - Rating Table
(12/31/86)

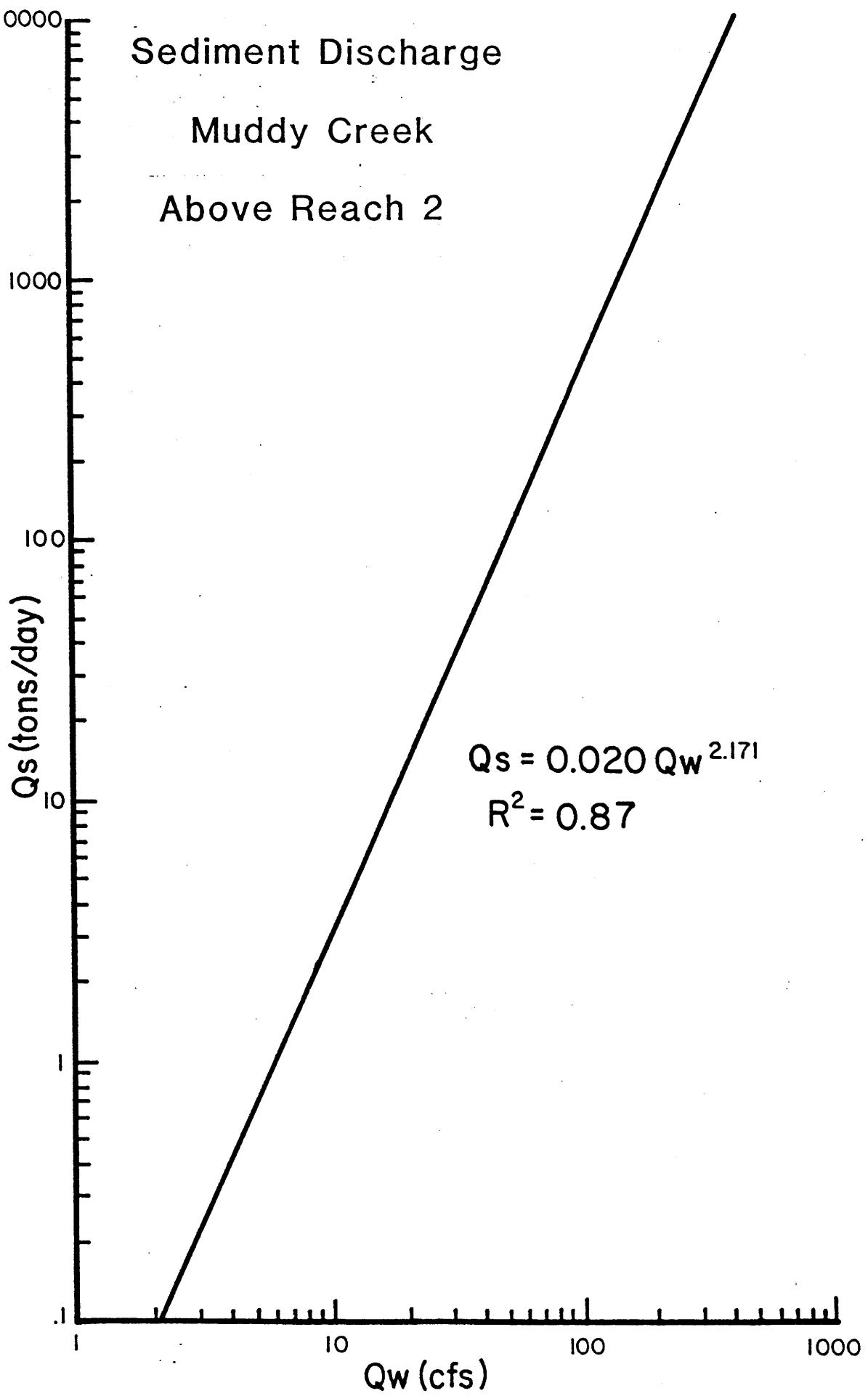
ALPHA	BETA	A _{MIN}	A _{MAX}	.48	19.00	1.02	59.29
1.7600	1.5100	.0100	2.5000	.49	19.60	1.03	60.17
GAGE HEIGHT(FT)	STREAMFLOW(CFS)			.50	20.20	1.04	61.05
.01		.05		.53	22.06	1.07	63.73
.02		.16		.54	22.69	1.08	64.64
.03		.29		.55	23.33	1.09	65.54
.04		.45		.56	23.98	1.10	66.45
.05		.62		.57	24.62	1.11	67.37
.06		.82		.58	25.28	1.12	68.28
.07		1.04		.59	25.94	1.13	69.21
.08		1.27		.60	26.61	1.14	70.13
.09		1.52		.61	27.28	1.15	71.06
.10		1.78		.62	27.96	1.16	72.00
.11		2.05		.63	28.64	1.17	72.94
.12		2.34		.64	29.33	1.18	73.88
.13		2.64		.65	30.03	1.19	74.83
.14		2.96		.66	30.73	1.20	75.78
.15		3.28		.67	31.43	1.21	76.74
.16		3.62		.68	32.14	1.22	77.70
.17		3.96		.69	32.86	1.23	78.66
.18		4.32		.70	33.58	1.24	79.63
.19		4.69		.71	34.31	1.25	80.60
.20		5.06		.72	35.04	1.26	81.58
.21		5.45		.73	35.78	1.27	82.56
.22		5.85		.74	36.52	1.28	83.54
.23		6.25		.75	37.27	1.29	84.53
.24		6.67		.76	38.02	1.30	85.52
.25		7.09		.77	38.78	1.31	86.51
.26		7.53		.78	39.54	1.32	87.51
.27		7.97		.79	40.31	1.33	88.51
.28		8.42		.80	41.08	1.34	89.52
.29		8.88		.81	41.86	1.35	90.53
.30		9.34		.82	42.64	1.36	91.55
.31		9.82		.83	43.43	1.37	92.57
.32		10.30		.84	44.22	1.38	93.59
.33		10.79		.85	45.02	1.39	94.61
.34		11.29		.86	45.82	1.40	95.64
.35		11.79		.87	46.63	1.41	96.68
.36		12.30		.88	47.44	1.42	97.71
.37		12.82		.89	48.26	1.43	98.75
.38		13.35		.90	49.08	1.44	99.80
.39		13.88		.91	49.91	1.45	100.85
.40		14.42		.92	50.74	1.46	101.90
.41		14.97		.93	51.57	1.47	102.96
.42		15.53		.94	52.41	1.48	104.01
.43		16.09		.95	53.26	1.49	105.08
.44		16.66		.96	54.10	1.50	106.14
.45		17.23		.97	54.96	1.51	107.21
.46		17.81		.98	55.82	1.52	108.29
.47		18.40		.99	56.68	1.53	109.37
				1.00	57.54	1.54	110.45
				1.01	58.42	1.55	111.53

Muddy Creek Above Reach 2 - Rating Table (cont.)

1.56	112.62	2.10	176.42
1.57	113.71	2.11	177.69
1.58	114.81	2.12	178.96
1.59	115.91	2.13	180.24
1.60	117.01	2.14	181.52
1.61	118.12	2.15	182.80
1.62	119.23	2.16	184.09
1.63	120.34	2.17	185.38
1.64	121.45	2.18	186.67
1.65	122.58	2.19	187.96
1.66	123.70	2.20	189.26
1.67	124.83	2.21	190.56
1.68	125.96	2.22	191.86
1.69	127.09	2.23	193.17
1.70	128.23	2.24	194.48
1.71	129.37	2.25	195.79
1.72	130.51	2.26	197.11
1.73	131.66	2.27	198.43
1.74	132.81	2.28	199.75
1.75	133.96	2.29	201.07
1.76	135.12	2.30	202.40
1.77	136.28	2.31	203.73
1.78	137.45	2.32	205.06
1.79	138.61	2.33	206.40
1.80	139.79	2.34	207.74
1.81	140.96	2.35	209.08
1.82	142.14	2.36	210.42
1.83	143.32	2.37	211.77
1.84	144.50	2.38	213.12
1.85	145.69	2.39	214.48
1.86	146.88	2.40	215.83
1.87	148.07	2.41	217.19
1.88	149.27	2.42	218.56
1.89	150.47	2.43	219.92
1.90	151.68	2.44	221.29
1.91	152.88	2.45	222.66
1.92	154.09	2.46	224.03
1.93	155.31	2.47	225.41
1.94	156.52	2.48	226.79
1.95	157.74	2.49	228.17
1.96	158.97		
1.97	160.19		
1.98	161.42		
1.99	162.66		
2.00	163.89		
2.01	165.13		
2.02	166.37		
2.03	167.62		
2.04	168.87		
2.05	170.12		
2.06	171.37		
2.07	172.63		
2.08	173.89		
2.09	175.15		

Suspended sediment data, Muddy Creek above Reach 2.

DATE	TIME	Q_w (cfs)	C_s (mg/l)	Q_s (tons/day)
5/21/86	1000	49.08	574	76.06
6/27/86	1030	9.34	61	1.54
6/27/86	1030	9.34	38	0.96
7/2/86	1030	7.09	33	0.63
7/17/86	1009	7.09	118	2.26
7/17/86	1009	7.09	156	2.99
7/31/86	1405	2.64	18	0.13
7/31/86	1405	2.64	24	0.17
8/13/86	1011	2.34	20	0.13
8/13/86	1012	2.34	20	0.13
8/27/86	1018	3.96	20	0.21
8/27/86	1019	3.96	21	0.22
9/4/86	0933	5.06	57	0.78
9/4/86	0935	5.06	133	1.82
9/23/86	1055	7.97	90	1.94
9/23/86	1057	7.97	91	1.96
10/8/86	1034	11.79	117	3.72
10/8/86	1035	11.79	134	4.27
10/20/86	1451	10.79	94	2.74
10/20/86	1453	10.79	87	2.53
11/5/86	0945	9.34	330	8.32
11/5/86	0946	9.34	293	7.39



APPENDIX B

MUDY CREEK BELOW REACH 2

MUDY CREEK BELOW REACH 2 WYOMING
 LATITUDE 41-25-00 LONGITUDE 107-48-00 STATION NO 066284 00
 ELEVATION 6650.00 FT NW1/4 NW1/4 SECTION 22 TOWNSHIP 17 RANGE 92 6TH 4.
 CARBON COUNTY DRAINAGE AREA 201.00 SQ MI NONCONTRIBUTING 0.00 SQ MI BASIN 14070000
 DATA FROM HWRC (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1986

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	**	**	**	**	**	**	**	**	21.65	8.02	3.55	7.62	1
2	**	**	**	**	**	**	**	**	18.96	7.62	3.75	5.55	2
3	**	**	**	**	**	**	**	**	18.13	5.26	2.98	4.46	3
4	**	**	**	**	**	**	**	**	17.33	4.98	4.21	4.46	4
5	**	**	**	**	**	**	**	**	18.13	5.55	4.21	4.46	5
6	**	**	**	**	**	**	**	**	18.96	5.86	4.21	4.46	6
7	**	**	**	**	**	**	**	**	21.65	6.18	4.21	4.21	7
8	**	**	**	**	**	**	**	**	17.33	5.52	4.21	4.21	8
9	**	**	**	**	**	**	**	**	69.04	18.13	10.33	3.98	9
10	**	**	**	**	**	**	**	**	61.80	65.55	16.56	3.98	10
11	**	**	**	**	**	**	**	42.12	167.67	14.42	3.98	11.37	11
12	**	**	**	**	**	**	**	43.81	35.89	7.24	3.98	9.81	12
13	**	**	**	**	**	**	**	53.16	20.72	5.55	3.55	7.62	13
14	**	**	**	**	**	**	**	37.37	15.81	4.98	3.16	5.18	14
15	**	**	**	**	**	**	**	35.89	15.81	5.86	3.35	5.55	15
16	**	**	**	**	**	**	**	31.75	15.10	7.62	3.16	4.98	16
17	**	**	**	**	**	**	**	42.12	13.12	6.87	3.16	4.46	17
18	**	**	**	**	**	**	**	45.56	11.93	5.86	3.16	4.21	18
19	**	**	**	**	**	**	**	38.90	13.12	5.55	2.97	4.46	19
20	**	**	**	**	**	**	**	42.12	12.51	4.71	3.35	4.46	20
21	**	**	**	**	**	**	**	49.24	12.51	4.46	3.98	4.71	21
22	**	**	**	**	**	**	**	53.16	11.93	4.46	3.86	4.71	22
23	**	**	**	**	**	**	**	49.24	11.37	4.46	7.24	6.18	23
24	**	**	**	**	**	**	**	33.08	11.37	4.98	5.86	8.88	24
25	**	**	**	**	**	**	**	33.08	11.37	5.55	4.71	28.02	25
26	**	**	**	**	**	**	**	29.22	10.83	6.52	4.46	71.61	26
27	**	**	**	**	**	**	**	28.02	9.81	8.44	4.21	37.37	27
28	**	**	**	**	**	**	**	28.02	9.34	6.87	3.98	23.62	28
29	**	**	**	**	**	**	**	28.02	8.88	5.35	3.98	25.85	29
30	**	**	**	**	**	**	**	25.74	8.44	4.21	4.98	16.56	30
31	**	**	**	**	**	**	**	22.62	3.98	11.93			31
TOTAL	**	**	**	**	**	**	**	923.08*	664.35	205.52	135.31	341.89	
MEAN	**	**	**	**	**	**	**	40.13*	22.15	6.63	4.36	11.40	
AC-FT	**	**	**	**	**	**	**	1830.90*	1317.72	407.64	268.39	678.13	

TOTAL ANNUAL FLOW IN ACRE-FEET = 4502.77*

INSTANTANEOUS PEAK IN CFS = **

** INDICATES MISSING DATA

* INDICATES COMPUTED FROM INCOMPLETE DATA

E INDICATES ESTIMATED VALUE

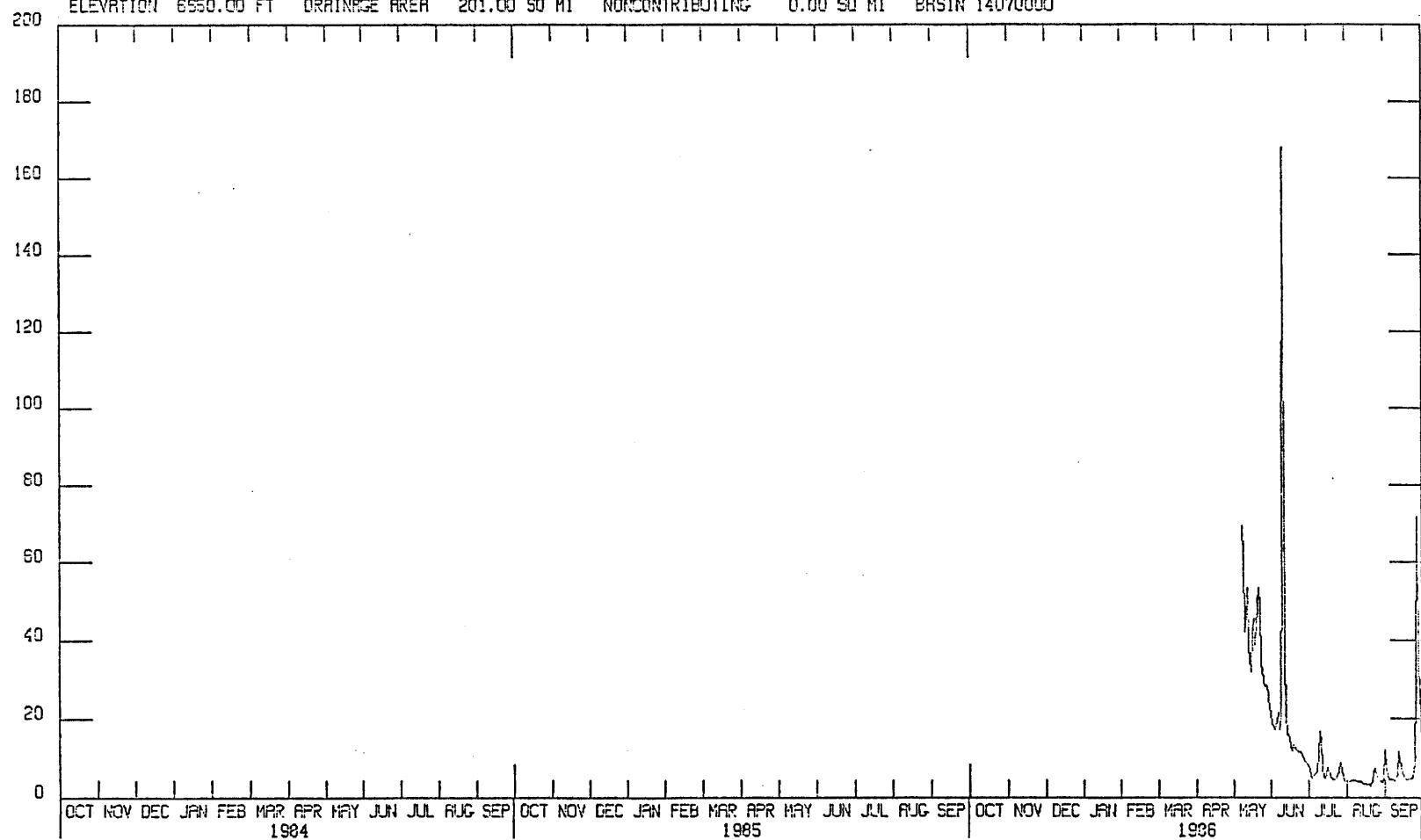
MUDY CREEK BELOW REACH 2, WYOMING

STATION NO. 066284.00

LATITUDE 41-26-00 LONGITUDE 107-45-00 NW1/4NW1/4 SECTION 22 TOWNSHIP 17 N, RANGE 92 W 6TH P.M.

ELEVATION 6550.00 FT DRAINAGE AREA 201.00 SQ MI NONCONTRIBUTING 0.00 SQ MI BRSIN 14070000

DAILY STREAMFLOW IN C.F.S.



Muddy Creek Below Reach 2 - Rating Table
 (12/31/86)

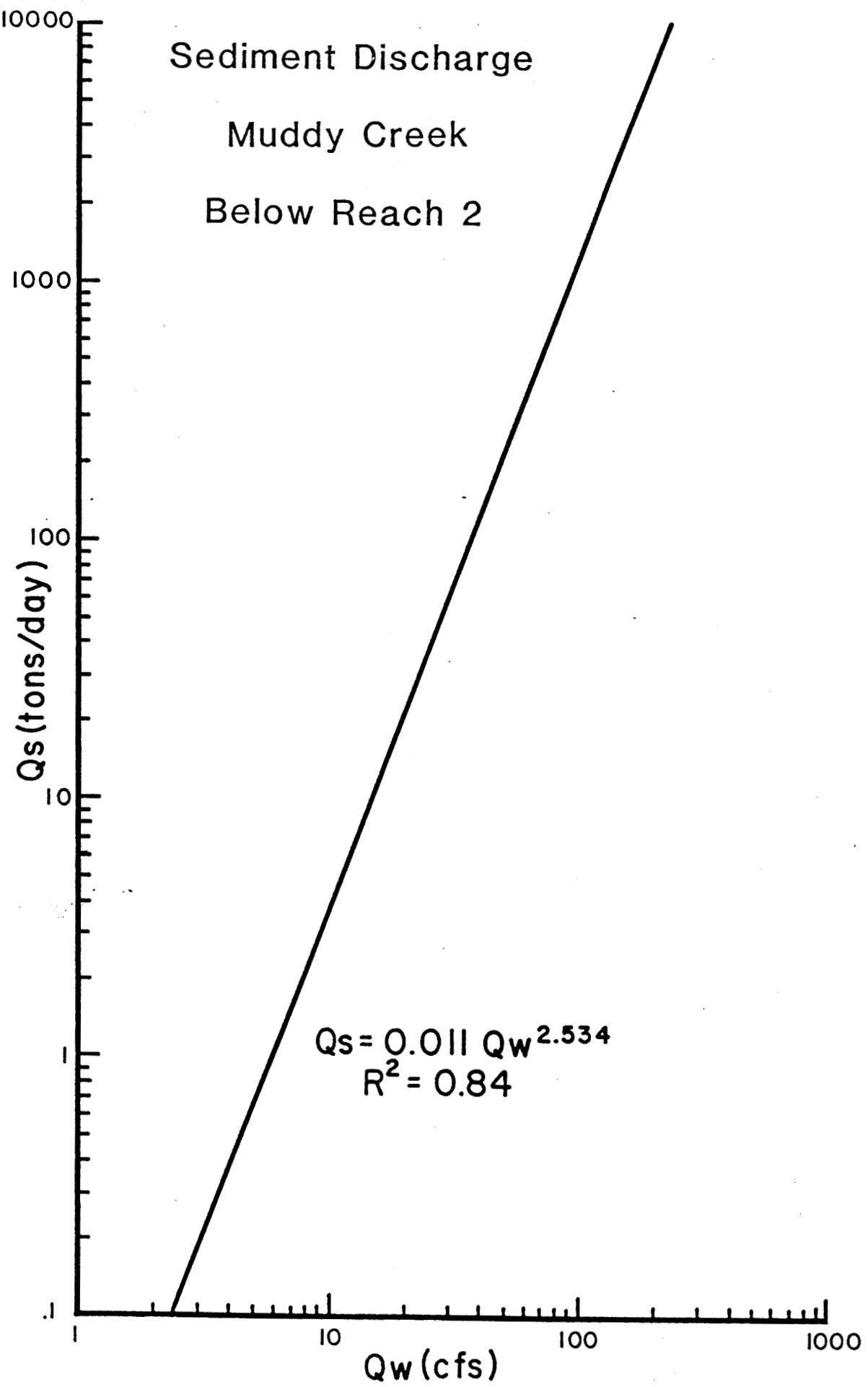
ALPHA	BETA	A MIN	A MAX		
.2600	6.4400	.5000	2.5000	.97	1.50
				.98	1.60
				.99	1.71
				1.00	1.82
				1.01	1.94
				1.02	2.07
				1.03	2.20
				.02	2.34
				.02	2.49
				.03	2.65
				.03	2.81
				.03	2.99
				.04	3.17
				.04	3.36
				.05	3.56
				.05	3.78
				.06	4.00
				.07	4.23
				.08	4.48
				.08	4.73
				.09	5.00
				.10	5.28
				.11	5.58
				.13	5.89
				.14	6.21
				.15	6.55
				.17	6.90
				.18	7.27
				.20	7.66
				.22	8.06
				.24	8.48
				.26	8.92
				.29	9.38
				.31	9.86
				.34	10.36
				.37	10.88
				.40	11.42
				.43	11.98
				.47	12.57
				.51	13.18
				.55	13.82
				.59	14.48
				.64	15.17
				.69	15.89
				.74	16.63
				.80	17.41
				.86	18.21
				.92	19.05
				.99	19.92
				1.06	20.82
				1.14	21.75
				1.22	22.72
				1.31	23.73
				1.40	24.78

Muddy Creek Below Reach 2 - Rating Table (cont.)

1.51	25.86	2.05	185.22
1.52	26.98	2.06	191.12
1.53	28.15	2.07	197.17
1.54	29.35	2.08	203.39
1.55	30.60	2.09	209.77
1.56	31.90	2.10	216.32
1.57	33.23	2.11	223.04
1.58	34.62	2.12	229.93
1.59	36.06	2.13	237.01
1.60	37.54	2.14	244.27
1.61	39.08	2.15	251.71
1.62	40.67	2.16	259.35
1.63	42.31	2.17	267.18
1.64	44.01	2.18	275.21
1.65	45.77	2.19	283.44
1.66	47.59	2.20	291.88
1.67	49.46	2.21	300.53
1.68	51.40	2.22	309.39
1.69	53.41	2.23	318.48
1.70	55.47	2.24	327.79
1.71	57.61	2.25	337.33
1.72	59.81	2.26	347.10
1.73	62.09	2.27	357.11
1.74	64.44	2.28	367.37
1.75	66.86	2.29	377.87
1.76	69.36	2.30	388.62
1.77	71.94	2.31	399.63
1.78	74.59	2.32	410.91
1.79	77.34	2.33	422.45
1.80	80.16	2.34	434.26
1.81	83.07	2.35	446.35
1.82	86.07	2.36	458.72
1.83	89.16	2.37	471.39
1.84	92.35	2.38	484.34
1.85	95.63	2.39	497.60
1.86	99.01	2.40	511.16
1.87	102.49	2.41	525.04
1.88	106.07	2.42	539.22
1.89	109.75	2.43	553.74
1.90	113.55	2.44	568.58
1.91	117.45	2.45	583.75
1.92	121.47	2.46	599.27
1.93	125.60	2.47	615.13
1.94	129.85	2.48	631.35
1.95	134.22	2.49	647.92
1.96	138.72		
1.97	143.34		
1.98	148.09		
1.99	152.97		
2.00	157.99		
2.01	163.15		
2.02	168.45		
2.03	173.89		
2.04	179.48		

Suspended sediment data, Muddy Creek below Reach 2.

DATE	TIME	Q_w (cfs)	C_s (mg/l)	Q_s (tons/day)
5/21/86	1030	49.24	1097	145.84
7/2/86	1220	7.24	44	0.86
7/17/86	1050	5.86	184	2.91
7/17/86	1050	5.86	217	3.43
7/31/86	1330	3.35	29	0.26
7/31/86	1330	3.35	29	0.26
8/13/86	1045	3.16	11	0.09
8/13/86	1047	3.16	11	0.09
8/27/86	0925	4.46	12	0.15
8/27/86	0925	4.46	14	0.17
9/4/86	1007	4.46	97	1.17
9/4/86	1008	4.46	102	1.23
9/23/86	1155	5.86	94	1.49
9/23/86	1155	5.86	78	1.23
10/8/86	1109	9.34	171	4.31
10/8/86	1111	9.34	171	4.31
10/20/86	1420	12.51	106	3.58
10/20/86	1422	12.51	126	4.26
11/5/86	1040	10.31	226	6.29
11/5/86	1040	10.31	244	6.79



APPENDIX C

MUDGY CREEK AT DAD

MUDGY CREEK AT DAD, WYOMING
 LATITUDE 41-20-00 LONGITUDE 107-46-00 STATION NO. 066283-00
 ELEVATION 5520.00 FT NE1/4 SE1/4 SECTION 29 TOWNSHIP 16 N, RANGE 9^W 6TH P.M.
 CARBON COUNTY DATA FROM WWRC 7.00 SQ MI BASIN 1407000C
 232.00 SQ MI NONCONTRIBUTING (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1985

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	**	**	**	**	**	**	**	**	**	6.53	5.51	.26	1
2	**	**	**	**	**	**	**	**	**	5.32	5.90	.28	2
3	**	**	**	**	**	**	**	**	**	4.64	4.13	.46	3
4	**	**	**	**	**	**	**	**	**	3.82	3.02	.99	4
5	**	**	**	**	**	**	**	**	**	2.90	2.56	.75	5
6	**	**	**	**	**	**	**	**	**	2.35	2.35	.79	6
7	**	**	**	**	**	**	**	**	**	2.06	1.88	.71	7
8	**	**	**	**	**	**	**	**	**	1.88	1.56	.75	8
9	**	**	**	**	**	**	**	**	**	2.15	1.42	.84	9
10	**	**	**	**	**	**	**	**	**	2.06	1.28	.71	10
11	**	**	**	**	**	**	**	**	**	1.88	1.16	.99	11
12	**	**	**	**	**	**	**	**	**	2.06	.94	1.26	12
13	**	**	**	**	**	**	**	**	**	2.57	.89	1.72	13
14	**	**	**	**	**	**	**	**	**	2.35	.99	1.88	14
15	**	**	**	**	**	**	**	**	10.46	2.35	.99	1.97	15
16	**	**	**	**	**	**	**	**	9.00	2.78	.99	2.15	16
17	**	**	**	**	**	**	**	**	7.69	1.64	.89	1.64	17
18	**	**	**	**	**	**	**	**	6.75	2.57	.94	1.22	18
19	**	**	**	**	**	**	**	**	6.31	2.67	.99	1.49	19
20	**	**	**	**	**	**	**	**	6.11	3.02	.79	1.72	20
21	**	**	**	**	**	**	**	**	5.70	3.97	.99	1.72	21
22	**	**	**	**	**	**	**	**	4.95	5.87	.59	2.45	22
23	**	**	**	**	**	**	**	**	4.78	211.30	.35	3.15	23
24	**	**	**	**	**	**	**	**	4.61	236.66	.30	3.27	24
25	**	**	**	**	**	**	**	**	6.98	71.09	.26	4.28	25
26	**	**	**	**	**	**	**	**	9.56	39.28	.21	4.95	26
27	**	**	**	**	**	**	**	**	13.54	14.31	.15	4.28	27
28	**	**	**	**	**	**	**	**	24.48	7.45	.14	3.68	28
29	**	**	**	**	**	**	**	**	17.26	7.69	.15	3.41	29
30	**	**	**	**	**	**	**	**	9.56	14.71	.28	3.27	30
31	**	**	**	**	**	**	**	**	8.45	.28		31	
TOTAL	**	**	**	**	**	**	**	**	159.50*	727.38	42.78	57.34	
MEAN	**	**	**	**	**	**	**	**	9.38*	23.46	1.38	1.91	
AC-FT	**	**	**	**	**	**	**	**	316.36*	1442.74	84.85	113.73	

TOTAL ANNUAL FLOW IN ACRE-FEET = 1957.68*

INSTANTANEOUS PEAK IN CFS = **

** INDICATES MISSING DATA

* INDICATES COMPUTED FROM INCOMPLETE DATA

E INDICATES ESTIMATED VALUE

MUDGY CREEK AT DAD, WYOMING
 LATITUDE 41-20-00 LONGITUDE 107-46-00
 ELEVATION 6520.00 FT DRAINAGE AREA 232.00 SQ MI
 CARBON COUNTY

NE1/4SE1/4 SECTION 29 TOWNSHIP 16 N, RANGE 92 W 6TH 3.4.
 STATION NO. 066283.00
 7.00 SQ MI BASIN 14070000
 DATA FROM WWRCC (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1986

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	3.54	5.51	**	**	88.80	78.37	77.37	19.00	2.09	1.36	2.88		1
2	3.54	6.31	**	**	66.14	91.00	73.49	17.57	2.33	1.19	2.78		2
3	3.97	8.19	**	**	54.50	83.47	78.37	18.63	2.09	1.09	1.60		3
4	3.82	7.21	**	**	52.26	76.39	93.24	18.28	2.25	1.05	1.42		4
5	4.28	7.45	**	**	50.77	59.32	115.15	17.57	2.02	.95	1.42		5
6	4.44	5.90	**	**	47.19	58.50	115.15	18.28	1.60	.87	1.19		6
7	7.45	5.13	**	**	52.26	68.83	97.83	17.23	2.09	.79	1.09		7
8	6.31	5.70	**	**	54.54	70.67	75.41	16.55	2.02	.75	1.14		8
9	14.71	6.11	**	**	59.32	66.14	70.67	19.00	2.09	.68	1.09		9
10	16.81	6.11	**	**	67.92	64.38	62.66	29.84	5.31	.71	1.30		10
11	11.42	3.97	**	**	51.51	64.38	56.10	69.74	6.96	.58	1.60		11
12	11.42	11.42	**	**	44.46	66.14	49.32	48.60	4.21	0.00	2.42		12
13	11.42	15.94	**	**	34.64	68.83	50.77	25.09	3.84	0.00	3.39		13
14	9.56	19.62	**	**	35.77	79.37	50.77	18.63	3.61	0.00	2.69		14
15	9.28	7.94	**	**	33.53	63.52	41.84	15.89	2.88	0.00	2.09		15
16	8.45	**	**	**	30.35	72.54	41.20	14.64	4.74	0.00	1.66		16
17	7.69	**	**	**	27.39	72.54	39.95	10.30	4.74	0.00	1.30		17
18	6.31	**	**	**	22.93	80.38	47.19	6.43	4.21	0.00	1.30		18
19	5.13	**	**	**	22.93	70.67	42.49	6.96	3.73	0.00	1.42		19
20	5.32	**	**	**	22.93	56.89	39.95	4.88	2.02	0.00	1.48		20
21	5.13	**	**	**	19.74	50.77	38.12	5.62	2.62	0.00	1.42		21
22	5.70	**	**	**	20.51	57.69	40.57	5.02	3.07	0.00	1.73		22
23	6.31	**	**	**	27.39	76.39	42.49	4.88	2.69	0.00	2.09		23
24	5.70	**	**	**	36.93	115.15	36.35	5.31	2.69	1.09	3.39		24
25	6.75	**	**	**	44.46	135.54	31.91	5.47	2.78	1.25	7.14		25
26	8.19	**	**	**	47.89	161.05	30.35	5.47	3.28	1.36	20.90		26
27	7.45	**	**	**	72.54	143.51	28.85	4.88	3.73	1.30	34.08		27
28	6.98	**	**	**	97.83	32.45	106.24	28.36	4.60	3.84	1.14		28
29	5.11	**	**	**	39.95	81.40	27.87	4.34	3.39	1.00	19.37		29
30	7.69	**	**	**	50.77	82.43	26.46	3.39	2.42	1.30	22.10		30
31	5.90	**	**	**	60.97		24.21		1.87	1.80			31
TOTAL	226.78	122.51*	**	**	170.37*	1336.40	2422.50	1674.46	462.09	97.01	20.26	174.87	
MEAN	7.32	8.17*	**	**	85.19*	43.11	80.75	54.01	15.40	3.13	.65	5.83	
AC-FT	449.81	242.99*	**	**	337.92*	2650.71	4804.96	3321.24	916.54	192.42	40.19	346.85	

TOTAL ANNUAL FLOW IN ACRE-FEET = 13303.63*

INSTANTANEOUS PEAK IN CFS = 206.43 #
 02/28 at 20:00

** INDICATES MISSING DATA

* INDICATES COMPUTED FROM INCOMPLETE DATA

E INDICATES ESTIMATED VALUE

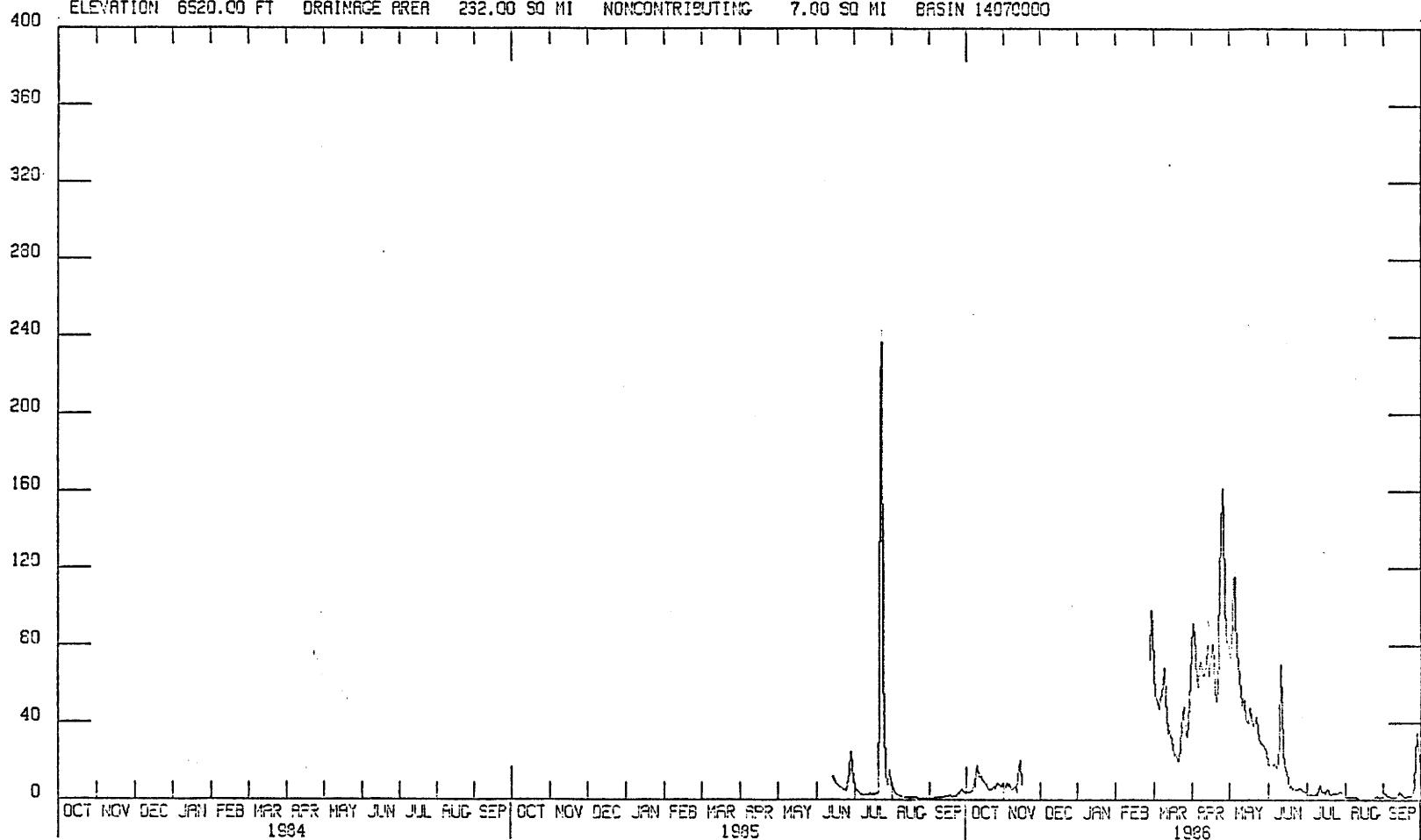
MUDY CREEK AT DAD, WYOMING

STATION NO. 066283.00

LATITUDE 41-20-00 LONGITUDE 107-46-00 NE1/4SE1/4 SECTION 29 TOWNSHIP 16 N. RANGE 92 W 6TH P.M.

ELEVATION 6520.00 FT DRAINAGE AREA 232.00 SQ MI NONCONTRIBUTING 7.00 SQ MI BASIN 14070000

DAILY STREAMFLOW IN C.F.S.



Muddy Creek at Dad - Rating Table
(12/31/86)

ALPHA	BETA	A MIN	A MAX		
.4400	3.4000	.5000	4.0000	.97	2.48
				.98	2.57
				.99	2.66
				1.00	2.75
				1.01	2.85
				1.02	2.95
GAGE HEIGHT(FT)		STREAMFLOW(CFS)		1.03	3.05
.50		.26		1.04	3.15
.51		.28		1.05	3.25
.52		.30		1.06	3.36
.53		.32		1.07	3.47
.54		.34		1.08	3.58
.55		.36		1.09	3.69
.56		.38		1.10	3.81
.57		.41		1.11	3.93
.58		.43		1.12	4.05
.59		.46		1.13	4.17
.60		.48		1.14	4.30
.61		.51		1.15	4.43
.62		.54		1.16	4.56
.63		.57		1.17	4.70
.64		.60		1.18	4.84
.65		.64		1.19	4.98
.66		.67		1.20	5.12
.67		.71		1.21	5.27
.68		.74		1.22	5.42
.69		.78		1.23	5.57
.70		.82		1.24	5.72
.71		.86		1.25	5.88
.72		.90		1.26	6.04
.73		.94		1.27	6.21
.74		.99		1.28	6.38
.75		1.04		1.29	6.55
.76		1.08		1.30	6.72
.77		1.13		1.31	6.90
.78		1.18		1.32	7.08
.79		1.24		1.33	7.26
.80		1.29		1.34	7.45
.81		1.35		1.35	7.64
.82		1.40		1.36	7.83
.83		1.46		1.37	8.03
.84		1.52		1.38	8.23
.85		1.58		1.39	8.44
.86		1.65		1.40	8.65
.87		1.72		1.41	8.86
.88		1.78		1.42	9.07
.89		1.85		1.43	9.29
.90		1.92		1.44	9.52
.91		2.00		1.45	9.74
.92		2.07		1.46	9.97
.93		2.15		1.47	10.21
.94		2.23		1.48	10.44
.95		2.31		1.49	10.69
.96		2.40		1.50	10.93

Muddy Creek at Dad - Rating Table (cont.)

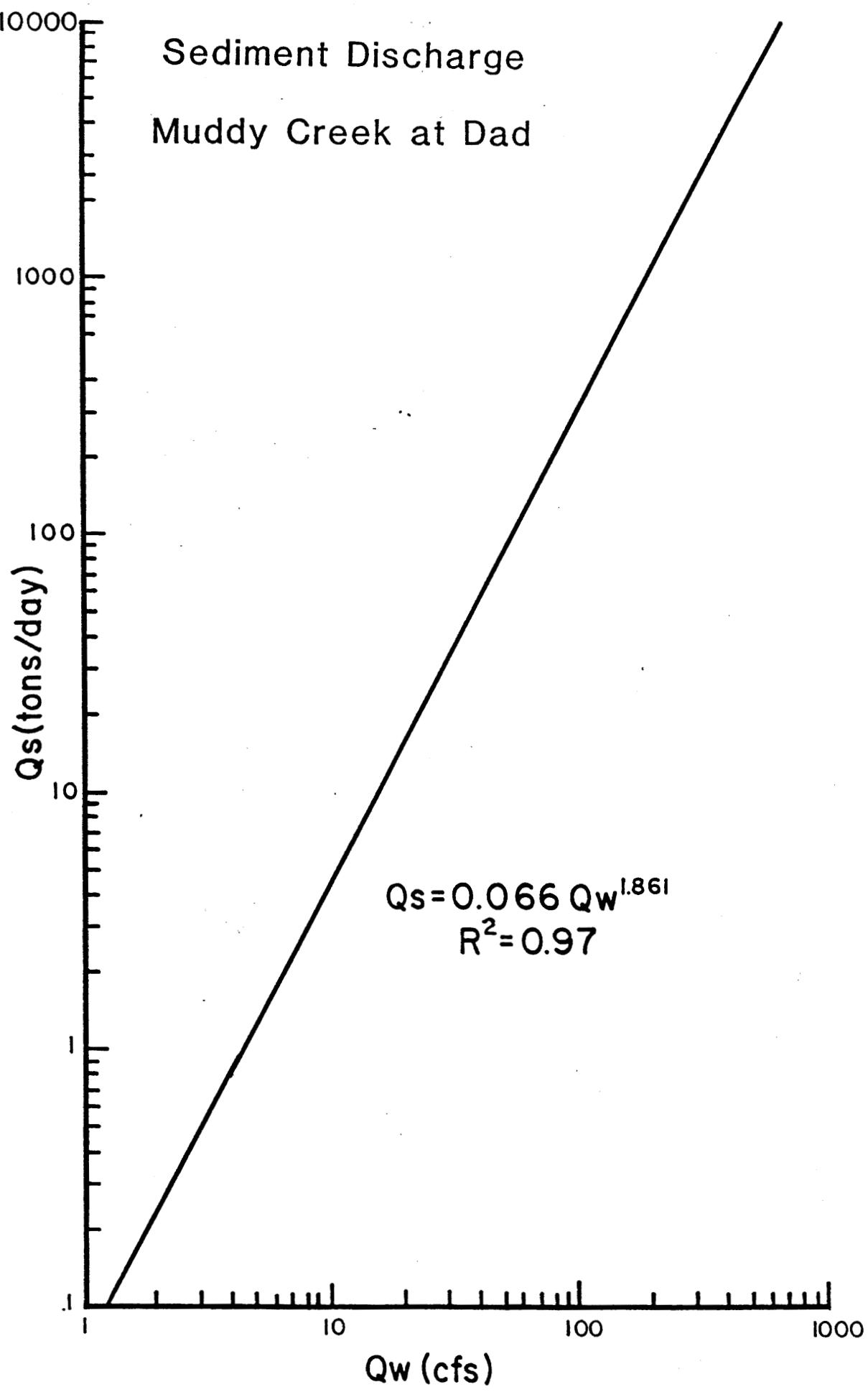
1.51	11.18	2.05	31.62
1.52	11.44	2.06	32.15
1.53	11.69	2.07	32.68
1.54	11.96	2.08	33.22
1.55	12.22	2.09	33.77
1.56	12.49	2.10	34.32
1.57	12.77	2.11	34.88
1.58	13.04	2.12	35.44
1.59	13.33	2.13	36.02
1.60	13.61	2.14	36.59
1.61	13.91	2.15	37.18
1.62	14.20	2.16	37.77
1.63	14.50	2.17	38.37
1.64	14.81	2.18	38.97
1.65	15.12	2.19	39.58
1.66	15.43	2.20	40.20
1.67	15.75	2.21	40.83
1.68	16.07	2.22	41.46
1.69	16.40	2.23	42.10
1.70	16.73	2.24	42.74
1.71	17.07	2.25	43.39
1.72	17.41	2.26	44.05
1.73	17.76	2.27	44.72
1.74	18.11	2.28	45.39
1.75	18.46	2.29	46.07
1.76	18.83	2.30	46.76
1.77	19.19	2.31	47.45
1.78	19.56	2.32	48.16
1.79	19.94	2.33	48.87
1.80	20.32	2.34	49.58
1.81	20.71	2.35	50.31
1.82	21.10	2.36	51.04
1.83	21.49	2.37	51.78
1.84	21.90	2.38	52.52
1.85	22.30	2.39	53.28
1.86	22.72	2.40	54.04
1.87	23.13	2.41	54.81
1.88	23.56	2.42	55.59
1.89	23.99	2.43	56.37
1.90	24.42	2.44	57.16
1.91	24.86	2.45	57.96
1.92	25.31	2.46	58.77
1.93	25.76	2.47	59.59
1.94	26.21	2.48	60.41
1.95	26.68	2.49	61.25
1.96	27.14	2.50	62.09
1.97	27.62	2.51	62.93
1.98	28.10	2.52	63.79
1.99	28.58	2.53	64.66
2.00	29.07	2.54	65.53
2.01	29.57	2.55	66.41
2.02	30.07	2.56	67.30
2.03	30.58	2.57	68.20
2.04	31.10	2.58	69.10

Muddy Creek at Dad - Rating Table (cont.)

2.59	70.02	3.13	133.31	3.67	229.02
2.60	70.94	3.14	134.76	3.68	231.15
2.61	71.87	3.15	136.23	3.69	233.29
2.62	72.82	3.16	137.70	3.70	235.44
2.63	73.76	3.17	139.19	3.71	237.61
2.64	74.72	3.18	140.69	3.72	239.80
2.65	75.69	3.19	142.20	3.73	242.00
2.66	76.67	3.20	143.72	3.74	244.21
2.67	77.65	3.21	145.25	3.75	246.44
2.68	78.64	3.22	146.79	3.76	248.68
2.69	79.64	3.23	148.35	3.77	250.94
2.70	80.66	3.24	149.92	3.78	253.21
2.71	81.68	3.25	151.50	3.79	255.49
2.72	82.71	3.26	153.09	3.80	257.79
2.73	83.74	3.27	154.69	3.81	260.10
2.74	84.79	3.28	156.31	3.82	262.43
2.75	85.85	3.29	157.93	3.83	264.78
2.76	86.91	3.30	159.57	3.84	267.14
2.77	87.99	3.31	161.22	3.85	269.51
2.78	89.07	3.32	162.88	3.86	271.89
2.79	90.17	3.33	164.56	3.87	274.30
2.80	91.27	3.34	166.24	3.88	276.72
2.81	92.39	3.35	167.94	3.89	279.15
2.82	93.51	3.36	169.65	3.90	281.60
2.83	94.64	3.37	171.37	3.91	284.06
2.84	95.78	3.38	173.11	3.92	286.53
2.85	96.93	3.39	174.86	3.93	289.02
2.86	98.09	3.40	176.62	3.94	291.53
2.87	99.27	3.41	178.39	3.95	294.06
2.88	100.45	3.42	180.17	3.96	296.60
2.89	101.64	3.43	181.97	3.97	299.15
2.90	102.84	3.44	183.78	3.98	301.72
2.91	104.05	3.45	185.60	3.99	304.31
2.92	105.27	3.46	187.44		
2.93	106.50	3.47	189.29		
2.94	107.74	3.48	191.15		
2.95	108.99	3.49	193.02		
2.96	110.25	3.50	194.91		
2.97	111.52	3.51	196.81		
2.98	112.81	3.52	198.72		
2.99	114.10	3.53	200.65		
3.00	115.40	3.54	202.59		
3.01	116.72	3.55	204.54		
3.02	118.04	3.56	206.51		
3.03	119.37	3.57	208.49		
3.04	120.72	3.58	210.48		
3.05	122.07	3.59	212.48		
3.06	123.44	3.60	214.50		
3.07	124.82	3.61	216.53		
3.08	126.20	3.62	218.58		
3.09	127.60	3.63	220.64		
3.10	129.01	3.64	222.71		
3.11	130.43	3.65	224.80		
3.12	131.86	3.66	226.90		

Suspended sediment data, Muddy Creek at Dad.

DATE	TIME	Q_w (cfs)	C_s (mg/l)	Q_s (tons/day)
8/19/85	1145	1.04	49	0.14
10/9/85	1120	12.45	181	6.08
11/12/85	1040	13.54	208	7.60
3/5/86	1115	32.98	1012	90.12
3/5/86	1120	32.98	1265	112.64
3/26/86	1340	56.89	1350	207.36
3/26/86	1345	56.89	1392	213.82
4/7/86	1111	81.40	1197	263.08
4/7/86	1117	81.40	1148	252.31
4/25/86	1101	145.05	1751	685.66
4/25/86	1105	145.05	1737	680.18
5/21/86	1530	43.14	752	87.59
6/27/86	1135	5.47	116	1.71
6/27/86	1135	5.47	114	1.68
7/2/86	1330	2.33	78	0.49
7/17/86	1135	5.47	63	0.93
7/17/86	1135	5.47	61	0.90
7/31/86	1257	1.80	53	0.26
7/31/86	1257	1.80	39	0.19
8/27/86	1110	1.36	56	0.21
8/27/86	1112	1.36	61	0.22
9/4/86	1048	1.36	42	0.15
9/4/86	1050	1.36	33	0.12
9/23/86	1244	2.09	46	0.26
9/23/86	1246	2.09	55	0.31
10/8/86	1410	8.94	83	2.0
10/8/86	1414	8.94	55	1.33
10/20/86	1350	8.31	62	1.39
10/20/86	1350	8.31	87	1.95
11/5/86	1145	7.33	58	1.15
11/5/86	1145	7.33	61	1.21



APPENDIX D

MUDDY CREEK AT SNYDER OIL PAD

MUDY CREEK AT SNYDER OF PAD WYOMING
 LATITUDE 41-19-00 LONGITUDE 107-45-00 STATION NO 066281 00.
 ELEVATION 6500.00 FT DRAINAGE AREA 556.00 SQ MI NONCONTRIBUTING 35.00 SQ MI BASIN 14070000
 CARBON COUNTY DATA FROM NRCC (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1986

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	8.64	8.09	**	**	**	64.74	70.68	75.81	17.16	2.49	2.98	2.00	1
2	8.64	8.50	**	**	**	53.72	91.85	72.92	15.20	2.56	2.76	3.05	2
3	8.92	9.51	**	**	**	45.61	81.85	79.52	15.92	2.59	2.62	2.30	3
4	8.92	8.92	**	**	**	46.64	70.68	86.52	15.44	3.05	2.69	2.00	4
5	9.36	9.07	**	**	**	42.62	50.40	104.55	14.74	3.53	2.42	1.95	5
6	9.36	8.50	**	**	**	43.11	49.73	101.83	15.20	4.54	1.89	2.00	6
7	11.09	8.22	**	**	**	52.59	60.29	88.14	14.29	6.86	1.84	1.79	7
8	10.44	7.95	**	**	**	57.84	60.91	68.75	13.62	6.50	1.70	1.79	8
9	14.19	8.50	**	**	**	47.16	56.05	64.09	16.66	6.86	1.64	2.04	9
10	17.60	8.78	**	**	**	42.62	53.72	54.88	39.40	8.60	1.41	2.75	10
11	13.42	6.82	**	**	**	37.95	53.15	48.21	55.46	10.45	1.24	2.69	11
12	13.61	13.04	**	**	**	38.40	53.72	41.66	45.61	6.96	0.00	2.98	12
13	13.42	12.49	**	**	**	32.44	56.64	41.66	22.33	6.47	0.00	3.79	13
14	12.67	10.60	**	**	**	27.16	66.06	42.11	16.41	6.47	0.00	2.83	14
15	12.13	10.44	**	**	**	25.10	54.88	34.91	14.06	5.61	0.00	2.36	15
16	11.95	**	**	**	**	22.33	59.67	34.07	13.19	7.35	1.32	1.79	16
17	11.78	**	**	**	**	20.43	57.84	33.66	10.45	8.45	1.59	1.54	17
18	10.93	**	**	**	**	18.48	57.40	38.40	6.60	8.60	1.84	1.60	18
19	9.97	**	**	**	**	16.41	64.09	35.33	6.21	6.50	1.84	2.24	19
20	9.81	**	**	**	**	16.16	52.59	33.66	5.16	5.27	1.95	2.56	20
21	9.21	**	**	**	**	15.92	46.12	31.65	5.38	5.27	2.18	2.69	21
22	9.97	**	**	**	**	16.66	51.47	32.44	4.84	5.97	1.79	2.98	22
23	10.93	**	**	**	**	20.14	65.40	34.07	4.54	4.84	1.15	3.45	23
24	9.51	**	**	**	**	26.81	102.73	30.87	4.64	4.34	1.24	5.97	24
25	9.81	**	**	**	**	34.07	104.55	26.12	4.74	3.37	1.20	8.60	25
26	10.76	**	**	**	84.14	37.51	85.73	25.10	6.64	3.70	1.41	18.75	26
27	10.76	**	**	**	62.17	28.97	100.04	22.33	3.05	3.96	2.06	26.81	27
28	9.51	**	**	**	61.54	25.78	97.40	23.47	4.84	3.87	2.06	29.43	28
29	7.95	**	**	**	30.87	81.04	22.33	4.44	3.37	2.12	15.20	29	
30	9.51	**	**	**	40.24	80.28	21.33	4.15	3.28	1.59	14.07	30	
31	8.50	**	**	**	51.47	20.14			3.28	2.06			31
TOTAL	333.27	139.43*	**	**	207.85*	1079.95	2046.96	1470.56	419.47	166.36	50.59	155.02	
MEAN	10.75	9.30*	**	**	69.28*	34.84	68.23	47.44	13.98	5.37	1.64	5.53	
AC-FT	661.03	276.56*	**	**	412.26*	2142.05	4060.08	2916.81	832.01	329.97	100.54	329.30	

TOTAL ANNUAL FLOW IN ACRE-FEET • 12060.61*

INSTANTANEOUS PEAK IN CFS • 290.63*

02/26 at 20:00

** INDICATES MISSING DATA

* INDICATES COMPUTED FROM INCOMPLETE DATA

E INDICATES ESTIMATED VALUE

MUDGY CREEK AT SNYPER OTL PAD WYOMING
 LATITUDE 41-19-00 LONGITUDE 107-45-00
 ELEVATION 6500.00 FT DRAINAGE AREA 556.00 SQ MI NONCONTRIBUTING 35.00 SQ MI STATION NO. 0662813.00
 CARBON COUNTY DATA FROM WWRCC SECTION 33 TOWNSHIP 16 N, RANGE 82 E, 6TH PM.
 (P) BASIN 14070000

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1985

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	9.97	13.80	**	**	**	26.96	87.54	25.75	7.18	10.44	4.52	1	
2	10.12	13.23	**	**	**	38.47	98.31	29.49	6.35	9.97	4.61	2	
3	10.44	15.20	**	**	**	54.44	109.15	23.24	6.02	7.95	5.08	3	
4	10.93	15.20	**	**	**	41.69	134.18	25.35	5.28	7.06	5.13	4	
5	10.28	14.59	**	**	**	47.78	140.76	20.25	4.51	7.56	5.18	5	
6	9.81	11.95	**	**	**	134.18	149.54	17.83	4.25	8.22	4.61	6	
7	10.12	14.79	**	**	**	76.34	113.22	15.27	4.00	8.92	4.34	7	
8	10.28	13.23	**	**	**	82.14	107.56	16.27	3.76	8.50	4.61	8	
9	9.31	12.31	**	**	**	**	109.15	15.41	4.00	7.95	4.00	9	
10	9.51	10.60	**	**	**	**	105.98	13.99	3.84	7.69	4.80	10	
11	9.51	**	**	**	**	**	104.41	13.42	3.76	7.31	5.13	11	
12	9.36	**	**	**	**	**	109.96	13.23	4.25	6.94	5.82	12	
13	9.56	**	**	**	**	**	82.80	11.78	5.38	6.82	7.04	13	
14	9.97	**	**	**	**	**	65.60	10.44	5.38	5.48	7.18	14	
15	9.81	**	**	**	**	**	56.97	9.36	5.08	7.18	7.31	15	
16	10.60	**	**	**	**	**	142.68	50.56	8.50	5.48	6.24	7.43	16
17	9.97	**	**	**	**	**	162.88	48.23	8.09	4.43	7.31	6.94	17
18	9.51	**	**	**	**	**	195.54	48.23	7.43	5.91	6.47	6.47	18
19	12.13	**	**	**	**	**	239.25	50.09	7.06	5.48	6.24	5.82	19
20	11.95	**	**	**	**	**	257.60	50.56	6.94	6.70	5.08	7.06	20
21	13.99	**	**	**	**	**	154.58	46.87	6.58	8.09	5.91	7.06	21
22	13.34	**	**	**	**	43.37	99.81	41.69	6.02	6.65	7.82	22	
23	10.93	**	**	**	**	30.15	81.48	37.30	5.80	189.52	4.89	23	
24	10.93	**	**	**	**	36.92	75.09	36.16	5.80	314.93	4.25	24	
25	13.04	**	**	**	**	56.46	62.27	32.54	6.58	57.49	4.17	25	
26	14.19	**	**	**	**	51.99	51.51	30.15	9.36	19.26	4.52	9.66	26
27	16.70	**	**	**	**	27.27	44.23	30.48	10.93	13.61	4.34	6.21	27
28	14.39	**	**	**	**	24.58	37.60	30.15	15.00	11.43	4.08	8.78	28
29	11.26	**	**	**	**	21.81	38.86	26.35	11.95	11.30	4.00	8.64	29
30	12.49	**	**	**	**	30.82	67.89	21.02	8.54	15.41	4.34	8.50	30
31	17.38	**	**	**	**	33.60	20.51			12.57	4.61		31
TOTAL	352.08	134.90*	**	**	**	356.97*	2213.36*	2176.02	397.75	815.60	200.57	203.83	
MEAN	11.36	13.49*	**	**	**	35.70*	96.23*	70.19	13.25	26.31	6.47	6.79	
AC-FT	698.34	267.57*	**	**	**	708.04*	4390.14*	4316.07	788.95	1617.72	397.82	404.29	

TOTAL ANNUAL FLOW IN ACRE-FEET = 13588.94*

INSTANTANEOUS PEAK IN CFS = 314.93*

7/24 at 03:00

** INDICATES MISSING DATA
 * INDICATES COMPUTED FROM INCOMPLETE DATA
 E INDICATES ESTIMATED VALUE

MUDGY GREEK AT SNYDER PIT ROAD WYOMING
 LATITUDE 41-15-30 LONGITUDE 107-45-00
 ELEVATION 6500.00 FT DRAINAGE AREA 556.00 SQ MI NONCONTRIBUTING 35.00 SQ MI BASIN 14070000
 CARBON COUNTY DATA FROM WWRC

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1984

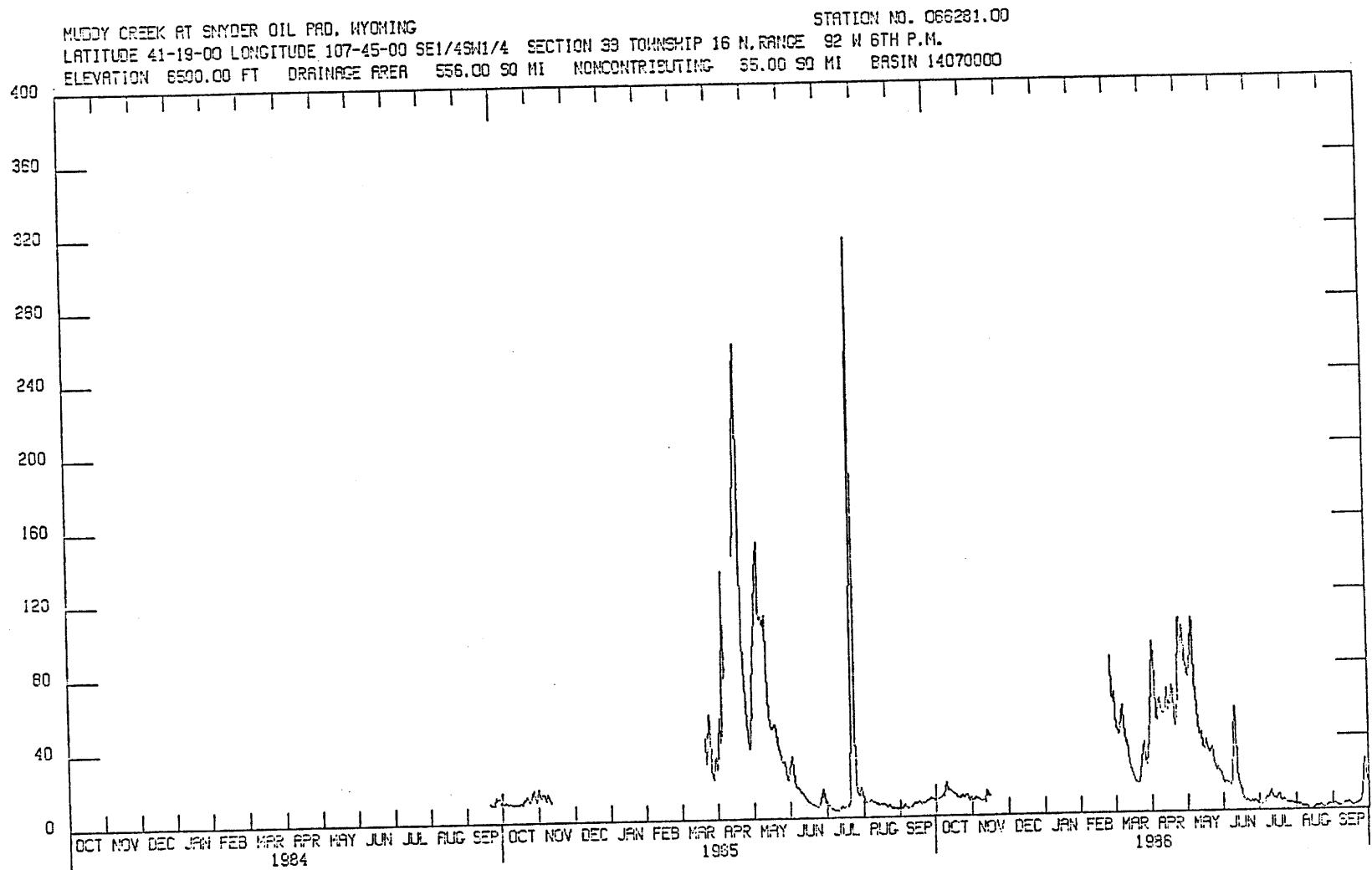
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	**	**	**	**	**	**	**	**	**	**	**	**	1
2	**	**	**	**	**	**	**	**	**	**	**	**	2
3	**	**	**	**	**	**	**	**	**	**	**	**	3
4	**	**	**	**	**	**	**	**	**	**	**	**	4
5	**	**	**	**	**	**	**	**	**	**	**	**	5
6	**	**	**	**	**	**	**	**	**	**	**	**	6
7	**	**	**	**	**	**	**	**	**	**	**	**	7
8	**	**	**	**	**	**	**	**	**	**	**	**	8
9	**	**	**	**	**	**	**	**	**	**	**	**	9
10	**	**	**	**	**	**	**	**	**	**	**	**	10
11	**	**	**	**	**	**	**	**	**	**	**	**	11
12	**	**	**	**	**	**	**	**	**	**	**	**	12
13	**	**	**	**	**	**	**	**	**	**	**	**	13
14	**	**	**	**	**	**	**	**	**	**	**	**	14
15	**	**	**	**	**	**	**	**	**	**	**	**	15
16	**	**	**	**	**	**	**	**	**	**	**	**	16
17	**	**	**	**	**	**	**	**	**	**	**	**	17
18	**	**	**	**	**	**	**	**	**	**	**	**	18
19	**	**	**	**	**	**	**	**	**	**	**	**	19
20	**	**	**	**	**	**	**	**	**	**	**	10.56	20
21	**	**	**	**	**	**	**	**	**	**	**	0.92	21
22	**	**	**	**	**	**	**	**	**	**	**	0.62	22
23	**	**	**	**	**	**	**	**	**	**	**	0.47	23
24	**	**	**	**	**	**	**	**	**	**	**	0.92	24
25	**	**	**	**	**	**	**	**	**	**	**	13.95	25
26	**	**	**	**	**	**	**	**	**	**	**	12.45	26
27	**	**	**	**	**	**	**	**	**	**	**	13.12	27
28	**	**	**	**	**	**	**	**	**	**	**	13.19	28
29	**	**	**	**	**	**	**	**	**	**	**	11.22	29
30	**	**	**	**	**	**	**	**	**	**	**	10.40	30
31	**	**	**	**	**	**	**	**	**	**	**	**	31
TOTAL	**	**	**	**	**	**	**	**	**	**	**	123.89*	
MEAN	**	**	**	**	**	**	**	**	**	**	**	11.25*	
AC-FT	**	**	**	**	**	**	**	**	**	**	**	245.73*	

TOTAL ANNUAL FLOW IN ACRE-FEET = 245.73*

INSTANTANEOUS PEAK IN CFS = **

** INDICATES MISSING DATA
 * INDICATES COMPUTED FROM INCOMPLETE DATA
 E INDICATES ESTIMATED VALUE

DAILY STREAMFLOW IN C.F.S.



Muddy Creek at Snyder Oil Pad - Rating Table

(12/31/86)

				1.47	3.81	2.01	11.06
				1.48	3.90	2.02	11.25
				1.49	3.99	2.03	11.44
				1.50	4.08	2.04	11.64
				1.51	4.17	2.05	11.83
				1.52	4.27	2.06	12.03
ALPHA	BETA	AMIN	AMAX	1.53	4.36	2.07	12.23
.0100	3.4100	1.0000	5.0000	1.54	4.46	2.08	12.43
GAGE HEIGHT(FT)	STREAMFLOW(CFS)			1.55	4.56	2.09	12.64
1.01		1.02		1.56	4.66	2.10	12.85
1.02		1.09		1.57	4.76	2.11	13.06
1.03		1.13		1.58	4.87	2.12	13.27
1.04		1.17		1.59	4.97	2.13	13.48
1.05		1.21		1.60	5.08	2.14	13.70
1.06		1.25		1.61	5.19	2.15	13.92
1.07		1.29		1.62	5.30	2.16	14.14
1.08		1.33		1.63	5.41	2.17	14.37
1.09		1.37		1.64	5.53	2.18	14.59
1.10		1.42		1.65	5.64	2.19	14.82
1.11		1.46		1.66	5.76	2.20	15.05
1.12		1.51		1.67	5.88	2.21	15.29
1.13		1.55		1.68	6.00	2.22	15.53
1.14		1.60		1.69	6.12	2.23	15.77
1.15		1.65		1.70	6.25	2.24	16.01
1.16		1.70		1.71	6.38	2.25	16.25
1.17		1.75		1.72	6.50	2.26	16.50
1.18		1.80		1.73	6.63	2.27	16.75
1.19		1.85		1.74	6.77	2.28	17.00
1.20		1.91		1.75	6.90	2.29	17.26
1.21		1.96		1.76	7.03	2.30	17.52
1.22		2.02		1.77	7.17	2.31	17.78
1.23		2.07		1.78	7.31	2.32	18.04
1.24		2.13		1.79	7.45	2.33	18.31
1.25		2.19		1.80	7.59	2.34	18.58
1.26		2.25		1.81	7.74	2.35	18.85
1.27		2.31		1.82	7.89	2.36	19.13
1.28		2.37		1.83	8.03	2.37	19.40
1.29		2.44		1.84	8.19	2.38	19.68
1.30		2.50		1.85	8.34	2.39	19.97
1.31		2.57		1.86	8.49	2.40	20.25
1.32		2.64		1.87	8.65	2.41	20.54
1.33		2.71		1.88	8.81	2.42	20.84
1.34		2.78		1.89	8.97	2.43	21.13
1.35		2.85		1.90	9.13	2.44	21.43
1.36		2.92		1.91	9.30	2.45	21.73
1.37		2.99		1.92	9.46	2.46	22.03
1.38		3.07		1.93	9.63	2.47	22.34
1.39		3.15		1.94	9.80	2.48	22.65
1.40		3.22		1.95	9.98	2.49	22.96
1.41		3.30		1.96	10.15	2.50	23.28
1.42		3.38		1.97	10.33	2.51	23.60
1.43		3.46		1.98	10.51	2.52	23.92
1.44		3.55		1.99	10.69	2.53	24.25
1.45		3.63		2.00	10.89	2.54	24.57
1.46		3.72					

Muddy Creek at Snyder Oil Pad - Rating Table (cont.)

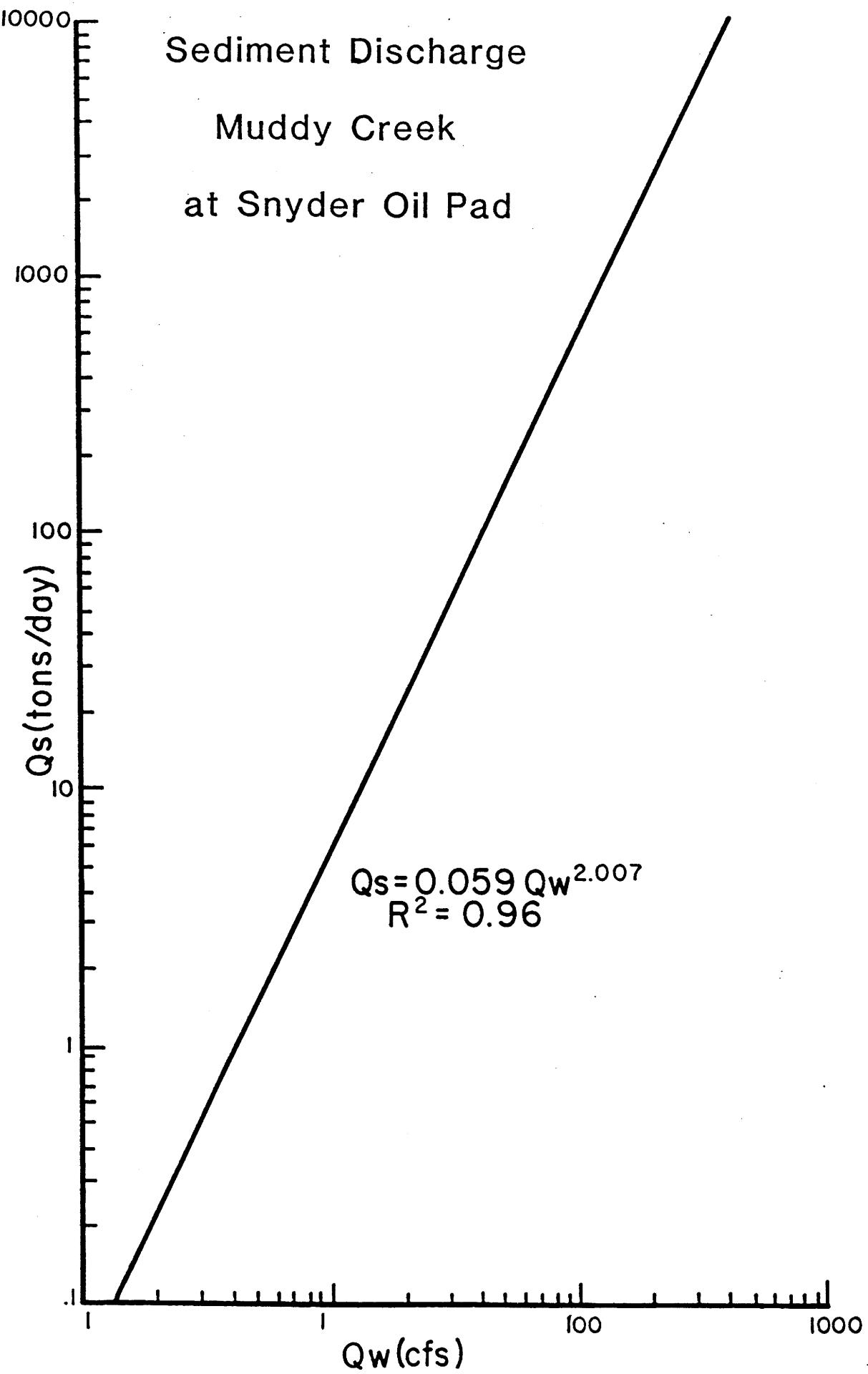
2.55	24.91	3.63	83.04	3.09	47.95
2.56	25.24	3.64	83.82	3.10	48.48
2.57	25.58	3.65	84.61	3.11	49.01
2.58	25.92	3.66	85.40	3.12	49.55
2.59	26.26	3.67	86.20	3.13	50.10
2.60	26.61	3.68	87.00	3.14	50.64
2.61	26.96	3.69	87.81	3.15	51.20
2.62	27.32	3.70	88.63	3.16	51.75
2.63	27.67	3.71	89.45	3.17	52.31
2.64	28.03	3.72	90.27	3.18	52.88
2.65	28.40	3.73	91.10	3.19	53.45
2.66	28.76	3.74	91.94	3.20	54.02
2.67	29.13	3.75	92.78	3.21	54.60
2.68	29.51	3.76	93.63	3.22	55.18
2.69	29.89	3.77	94.48	3.23	55.77
2.70	30.27	3.78	95.33	3.24	56.36
2.71	30.65	3.79	96.20	3.25	56.95
2.72	31.04	3.80	97.07	3.26	57.55
2.73	31.43	3.81	97.94	3.27	58.16
2.74	31.82	3.82	98.82	3.28	58.77
2.75	32.22	3.83	99.70	3.29	59.38
2.76	32.62	3.84	100.59	3.30	60.00
2.77	33.03	3.85	101.49	3.31	60.62
2.78	33.43	3.86	102.39	3.32	61.25
2.79	33.85	3.87	103.30	3.33	61.88
2.80	34.26	3.88	104.21	3.34	62.51
2.81	34.68	3.89	105.13	3.35	63.15
2.82	35.10	3.90	106.05	3.36	63.80
2.83	35.53	3.91	106.99	3.37	64.45
2.84	35.96	3.92	107.92	3.38	65.10
2.85	36.39	3.93	108.86	3.39	65.76
2.86	36.83	3.94	109.81	3.40	66.43
2.87	37.27	3.95	110.76	3.41	67.10
2.88	37.72	3.96	111.72	3.42	67.77
2.89	38.16	3.97	112.69	3.43	68.45
2.90	38.62	3.98	113.66	3.44	69.13
2.91	39.07	3.99	114.64	3.45	69.82
2.92	39.53	4.00	115.62	3.46	70.51
2.93	40.00	4.01	116.61	3.47	71.21
2.94	40.46	4.02	117.60	3.48	71.91
2.95	40.93	4.03	118.60	3.49	72.62
2.96	41.41	4.04	119.61	3.50	73.33
2.97	41.89	4.05	120.62	3.51	74.05
2.98	42.37	4.06	121.64	3.52	74.77
2.99	42.86	4.07	122.66	3.53	75.49
3.00	43.35	4.08	123.69	3.54	76.23
3.01	43.84	4.09	124.73	3.55	76.96
3.02	44.34	4.10	125.77	3.56	77.70
3.03	44.85	4.11	126.82	3.57	78.45
3.04	45.35	4.12	127.88	3.58	79.20
3.05	45.86	4.13	128.94	3.59	79.96
3.06	46.38	4.14	130.01	3.60	80.72
3.07	46.90	4.15	131.08	3.61	81.49
3.08	47.42	4.16	132.16	3.62	82.26

Muddy Creek at Snyder Oil Pad - Rating Table (cont.)

4.17	133.25	4.71	201.84
4.18	134.34	4.72	203.30
4.19	135.44	4.73	204.78
4.20	136.55	4.74	206.26
4.21	137.66	4.75	207.75
4.22	138.78	4.76	209.24
4.23	139.90	4.77	210.74
4.24	141.03	4.78	212.25
4.25	142.17	4.79	213.77
4.26	143.31	4.80	215.30
4.27	144.46	4.81	216.83
4.28	145.62	4.82	218.37
4.29	146.78	4.83	219.92
4.30	147.95	4.84	221.48
4.31	149.13	4.85	223.04
4.32	150.31	4.86	224.61
4.33	151.50	4.87	226.19
4.34	152.70	4.88	227.78
4.35	153.90	4.89	229.38
4.36	155.11	4.90	230.98
4.37	156.33	4.91	232.59
4.38	157.55	4.92	234.21
4.39	158.78	4.93	235.84
4.40	160.02	4.94	237.47
4.41	161.26	4.95	239.12
4.42	162.51	4.96	240.77
4.43	163.77	4.97	242.43
4.44	165.04	4.98	244.10
4.45	166.31	4.99	245.77
4.46	167.58		
4.47	168.87		
4.48	170.16		
4.49	171.46		
4.50	172.77		
4.51	174.08		
4.52	175.40		
4.53	176.73		
4.54	178.06		
4.55	179.40		
4.56	180.75		
4.57	182.10		
4.58	183.47		
4.59	184.84		
4.60	186.21		
4.61	187.60		
4.62	188.99		
4.63	190.39		
4.64	191.79		
4.65	193.21		
4.66	194.63		
4.67	196.05		
4.68	197.49		
4.69	198.93		
4.70	200.38		

Suspended sediment data, Muddy Creek at Snyder Oil Pad.

DATE	TIME	Q_w (cfs)	C_s (mg/l)	Q_s (tons/day)
8/19/85	1050	4.95	87	1.16
10/9/85	1210	12.81	162	5.60
11/12/85	1310	18.99	1791	91.83
3/5/86	1225	33.25	1754	157.47
3/5/86	1230	33.25	1117	100.28
3/26/86	1150	44.10	1965	233.97
3/26/86	1154	44.10	1351	160.86
4/7/86	1257	70.81	1320	252.37
4/7/86	1300	70.81	1366	261.16
4/25/86	0953	131.43	1662	589.78
4/25/86	0956	131.43	2671	947.83
5/21/86	1450	34.91	574	54.10
6/27/86	1315	5.16	105	1.46
6/27/86	1315	5.16	94	1.31
7/2/86	1415	2.49	56	0.38
7/17/86	1250	8.29	116	2.60
7/17/86	1250	8.29	105	2.35
7/31/86	1155	3.21	44	0.38
7/31/86	1155	3.21	58	0.50
8/27/86	1312	2.42	56	0.37
8/27/86	1315	2.42	51	0.37
9/4/86	1225	2.30	71	0.44
9/4/86	1225	2.30	74	0.46
9/23/86	1515	3.53	147	1.40
9/23/86	1515	3.53	143	1.36
10/8/86	1210	8.14	109	2.40
10/8/86	1210	8.14	83	1.82
10/20/86	1315	7.27	102	2.00
10/20/86	1315	7.27	162	3.18
11/5/86	1310	5.05	137	1.87
11/5/86	1310	5.05	102	1.39



APPENDIX E

**MUDDY CREEK AT HIGHWAY 789 BRIDGE
(Mile 30.5)**

MUDY CREEK AT HIGHWAY 789 BRIDGE 107-44-00 LE 30.5, WYOMING
 LATITUDE 41-18-00 LONGITUDE 107-44-00 SECTION 3 TOWNSHIP 15 RANGE 92 46TH S.
 ELEVATION 6480.00 FT DRAINAGE AREA 557.00 SQ MI NONCONTRIBUTING 35.00 SQ MI BASIN 14070000
 CARBON COUNTY DATA FROM WWRCC (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1986

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	7.32	8.07	**	**	113.54	78.41	84.85	17.43	2.13	1.92	2.05	1	
2	7.32	8.39	**	**	91.83	100.98	77.52	13.76	2.33	1.62	1.73	2	
3	7.55	9.57	**	**	75.85	89.68	83.91	14.83	1.98	1.26	1.51	3	
4	7.47	9.75	**	**	77.88	78.41	139.62	14.83	2.12	1.35	1.30	4	
5	7.72	8.89	**	**	69.96	56.79	147.88	14.29	2.18	1.17	1.58	5	
6	7.81	8.89	**	**	84.85	56.08	132.98	14.29	1.62	1.17	1.38	6	
7	9.44	8.39	**	**	86.76	67.38	119.19	13.51	2.24	1.00	1.30	7	
8	8.82	8.07	**	**	83.91	68.10	86.76	13.25	2.18	.92	1.34	8	
9	13.37	9.75	**	**	97.80	61.92	78.41	15.39	2.24	.88	1.30	9	
10	16.77	13.28	**	**	125.32	59.69	61.92	23.72	5.08	.74	1.48	10	
11	11.43	8.72	**	**	92.67	59.69	54.00	54.36	6.53	.65	1.74	11	
12	10.85	13.50	**	**	70.65	59.69	44.39	38.28	4.11	.54	2.46	12	
13	10.66	18.31	**	**	44.39	62.68	43.80	20.07	3.78	0.00	3.21	13	
14	9.75	11.43	**	**	34.25	74.89	45.59	15.11	3.58	0.00	2.69	14	
15	8.89	13.28	**	**	32.59	57.50	34.55	13.00	2.94	0.00	2.17	15	
16	9.06	**	**	**	28.92	67.38	33.56	12.04	4.57	0.00	1.79	16	
17	7.92	**	**	**	25.96	64.22	32.59	8.71	4.70	0.00	1.43	17	
18	7.92	**	**	**	23.98	79.31	35.56	6.18	4.03	0.00	1.43	18	
19	6.59	**	**	**	21.04	73.17	33.56	5.62	3.93	0.00	1.58	19	
20	6.45	**	**	**	21.04	56.08	31.18	4.60	2.53	0.00	1.64	20	
21	6.45	**	**	**	21.04	48.07	29.36	4.72	2.25	0.00	1.58	21	
22	7.76	**	**	**	21.40	54.00	28.48	4.37	2.88	0.00	1.85	22	
23	10.11	**	**	**	26.37	70.65	31.65	4.25	2.33	0.00	2.17	23	
24	7.61	**	**	**	28.92	119.19	31.18	4.06	2.79	0.00	3.30	24	
25	8.39	**	**	**	42.63	150.71	24.76	5.22	2.88	0.00	6.58	25	
26	9.57	**	**	**	151.76	64.39	184.46	23.98	5.35	3.14	7.8	26	
27	9.37	**	**	**	108.48	32.59	181.19	22.11	4.84	3.52	10.92	27	
28	9.33	**	**	**	107.23	29.81	135.93	21.75	4.50	3.93	10.68	28	
29	8.56	**	**	**	35.56	95.72	21.04	4.04	3.42	1.40	17.27	29	
30	9.75	**	**	**	44.99	92.67	21.04	3.23	2.88	1.48	19.65	30	
31	9.23	**	**	**	61.17		20.01		2.40	1.92		31	
TOTAL	279.34	158.29*	**	**	367.47*	1692.36	2505.73	1677.19	378.85	97.72	22.49	160.75	
MEAN	9.01	10.55*	**	**	122.49*	54.59	83.52	54.10	12.63	3.15	5.73	5.35	
AC-FT	554.06	313.96*	**	**	728.87*	3356.75	4970.04	3326.64	751.44	193.82	44.61	318.84	

TOTAL ANNUAL FLOW IN ACRE-FEET = 14559.03*

INSTANTANEOUS PEAK IN CFS = 212.16
 3/26 at 20:00

** INDICATES MISSING DATA
 * INDICATES COMPUTED FROM INCOMPLETE DATA
 E INDICATES ESTIMATED VALUE

MUDY CREEK AT HIGHWAY 789 BRIDGE, MILE 30.5, WYOMING
 LATITUDE 41°18'00" LONGITUDE 107°44'00" STATION NO. 066282803
 ELEVATION 5480.00 FT DRAINAGE AREA 557.00 SQ MI NONCONTRIBUTING 35.00 SQ MI BASIN 140700010
 CARBON COUNTY DATA FROM NRWC (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1985

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
1	11.43	18.31	**	**	**	39.63	83.07	24.72	6.97	6.19	1.72	1	
2	11.53	16.52	**	**	**	47.83	94.69	29.44	6.05	6.45	1.74	2	
3	12.05	18.31	**	**	**	63.16	106.24	32.37	5.54	5.20	1.65	3	
4	13.07	18.31	**	**	**	71.53	123.83	27.69	5.06	4.40	2.55	4	
5	12.23	18.31	**	**	**	121.21	141.23	19.94	4.38	4.07	2.29	5	
6	11.93	14.39	**	**	**	130.33	157.02	17.53	3.97	4.07	2.33	6	
7	12.03	18.31	**	**	**	88.87	118.62	15.03	3.57	3.77	2.24	7	
8	12.44	16.28	**	**	**	93.95	103.86	16.02	3.48	3.29	2.60	8	
9	11.83	13.72	**	**	**	**	102.30	15.32	3.77	2.87	5.05	9	
10	11.63	15.32	**	**	**	**	99.21	13.72	3.57	2.79	5.78	10	
11	11.83	**	**	**	**	**	97.69	12.65	3.48	2.71	5.04	11	
12	11.43	**	**	**	**	**	113.57	13.07	3.67	3.53	5.25	12	
13	12.23	**	**	**	**	**	89.54	11.23	4.17	3.48	5.33	13	
14	12.23	**	**	**	**	**	67.86	10.11	3.97	2.48	6.42	14	
15	12.23	**	**	**	**	**	57.02	8.80	3.97	2.40	6.47	15	
16	13.07	**	**	**	**	146.05	49.79	8.07	4.28	2.48	6.57	16	
17	12.65	**	**	**	**	162.17	45.87	7.46	3.30	2.55	5.29	17	
18	12.23	**	**	**	**	188.39	46.39	6.87	4.17	2.51	5.06	18	
19	15.32	**	**	**	**	220.87	48.80	6.32	4.17	2.56	5.21	19	
20	14.62	**	**	**	**	235.05	48.80	6.18	4.49	2.24	4.32	20	
21	16.77	**	**	**	**	156.00	44.90	6.32	5.17	2.56	5.32	21	
22	17.28	**	**	**	**	57.02	109.46	41.37	5.92	4.80	5.73	22	
23	15.79	**	**	**	**	50.78	93.22	37.52	5.34	187.23	1.62	23	
24	17.28	**	**	**	**	54.37	87.45	35.48	5.54	275.71	1.77	24	
25	16.77	**	**	**	**	74.05	75.32	32.75	6.32	63.15	1.72	25	
26	19.94	**	**	**	**	96.93	54.80	29.79	9.23	19.12	1.65	26	
27	20.30	**	**	**	**	43.15	57.57	29.79	10.20	12.54	1.59	27	
28	20.70	**	**	**	**	40.49	50.76	29.08	14.39	7.31	1.62	28	
29	15.08	**	**	**	**	37.93	52.30	27.01	11.83	7.46	1.50	29	
30	17.28	**	**	**	**	52.30	64.31	21.06	8.30	10.85	1.74	30	
31	20.50	**	**	**	**	43.61	19.39		7.02	1.74	1.74	31	
TOTAL	446.59	157.78*	**	**	**	550.63*	2429.32*	2145.61	387.61	720.51	88.46	167.81	
MEAN	14.41	16.78*	**	**	**	55.06*	105.52*	69.21	12.92	23.53	2.25	5.59	
AC-FT	885.30	332.79*	**	**	**	1092.16*	4818.49*	4255.76	768.81	1446.66	175.46	332.85	

TOTAL ANNUAL FLOW IN ACRE FEET = 14109.08*

INSTANTANEOUS PEAK IN CFS = 372.28*

07/24 at 03:00

** INDICATES MISSING DATA

* INDICATES COMPUTED FROM INCOMPLETE DATA

E INDICATES ESTIMATED VALUE

MUDY GREEK AT HIGHWAY 788 BRIDGE MILE 30.5, WYOMING STATION NO 0622209.
 LATITUDE 41-13-00 LONGITUDE 107-44-00 SW 1/4 SECTION 3 TOWNSHIP 15 DRAINAGE AREA 557.00 SQ MI NONCONTRIBUTING 35.00 SQ MI BASIN 14070000
 ELEVATION 6480.00 FT CARBON COUNTY DATA FROM WWRC (P)

MEAN DAILY FLOW IN CFS BY WATER YEAR
 1984

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	DAY
1	**	**	**	**	**	**	**	**	**	**	**	**	1
2	**	**	**	**	**	**	**	**	**	**	**	**	2
3	**	**	**	**	**	**	**	**	**	**	**	**	3
4	**	**	**	**	**	**	**	**	**	**	**	**	4
5	**	**	**	**	**	**	**	**	**	**	**	**	5
6	**	**	**	**	**	**	**	**	**	**	**	**	6
7	**	**	**	**	**	**	**	**	**	**	**	**	7
8	**	**	**	**	**	**	**	**	**	**	**	**	8
9	**	**	**	**	**	**	**	**	**	**	**	**	9
10	**	**	**	**	**	**	**	**	**	**	**	**	10
11	**	**	**	**	**	**	**	**	**	**	**	**	11
12	**	**	**	**	**	**	**	**	**	**	**	**	12
13	**	**	**	**	**	**	**	**	**	**	**	**	13
14	**	**	**	**	**	**	**	**	**	**	**	**	14
15	**	**	**	**	**	**	**	**	**	**	**	**	15
16	**	**	**	**	**	**	**	**	**	**	**	**	16
17	**	**	**	**	**	**	**	**	**	**	**	**	17
18	**	**	**	**	**	**	**	**	**	**	**	**	18
19	**	**	**	**	**	**	**	**	**	**	**	**	19
20	**	**	**	**	**	**	**	**	**	**	**	**	20
21	**	**	**	**	**	**	**	**	**	**	**	11.45	21
22	**	**	**	**	**	**	**	**	**	**	**	10.87	22
23	**	**	**	**	**	**	**	**	**	**	**	10.68	23
24	**	**	**	**	**	**	**	**	**	**	**	10.68	24
25	**	**	**	**	**	**	**	**	**	**	**	15.50	25
26	**	**	**	**	**	**	**	**	**	**	**	14.20	26
27	**	**	**	**	**	**	**	**	**	**	**	14.42	27
28	**	**	**	**	**	**	**	**	**	**	**	14.65	28
29	**	**	**	**	**	**	**	**	**	**	**	12.67	29
30	**	**	**	**	**	**	**	**	**	**	**	11.65	30
31	**	**	**	**	**	**	**	**	**	**	**	**	31
TOTAL	**	**	**	**	**	**	**	**	**	**	**	125.85*	
MEAN	**	**	**	**	**	**	**	**	**	**	**	12.59*	
AC-FT	**	**	**	**	**	**	**	**	**	**	**	251.62*	

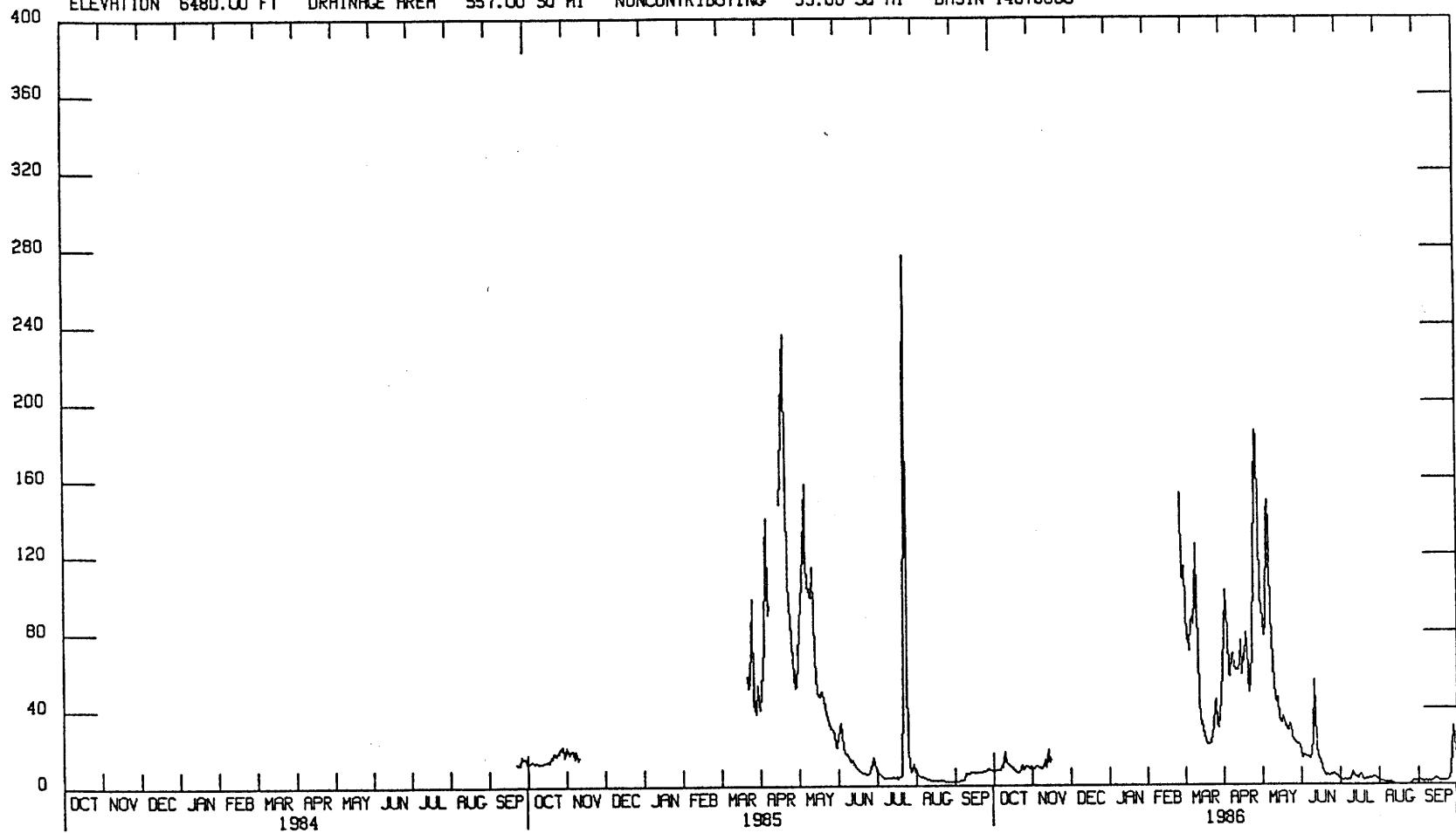
TOTAL ANNUAL FLOW IN ACRE-FEET = 251.62*

INSTANTANEOUS PEAK IN CFS = **

** INDICATES MISSING DATA
 * INDICATES COMPUTED FROM INCOMPLETE DATA
 E INDICATES ESTIMATED VALUE

MUDY CREEK AT HIGHWAY 789 BRIDGE, MILE 30.5, WYOMING
STATION NO. 066262.00
LATITUDE 41-18-00 LONGITUDE 107-44-00 SW1/4NW1/4 SECTION 3 TOWNSHIP 15 N, RANGE 92 W 6TH P.M.
ELEVATION 6480.00 FT DRAINAGE AREA 557.00 SQ MI NONCONTRIBUTING 35.00 SQ MI BASIN 14070000

DAILY STREAMFLOW IN C.F.S.



Muddy Creek at Highway 789 Mile 30.5 Bridge - Rating Table
 (12/31/86)

				.97	1.46	1.51	6.81
				.98	1.51	1.52	6.96
				.99	1.57	1.53	7.12
				1.00	1.62	1.54	7.29
				1.01	1.68	1.55	7.45
				1.02	1.74	1.56	7.62
ALPHA	BETA	A MIN	A MAX	1.03	1.80	1.57	7.79
.2100	3.4800	.5000	5.0000	.50	1.86	1.58	7.97
				.51	1.92	1.59	8.14
				.52	1.99	1.60	8.32
				.53	2.05	1.61	8.51
				.54	2.12	1.62	8.69
				.55	2.19	1.63	8.88
				.56	2.26	1.64	9.07
				.57	2.33	1.65	9.27
				.58	2.41	1.66	9.46
				.59	2.48	1.67	9.66
				.60	2.56	1.68	9.86
				.61	2.64	1.69	10.07
				.62	2.72	1.70	10.28
				.63	2.80	1.71	10.49
				.64	2.89	1.72	10.71
				.65	2.97	1.73	10.92
				.66	3.06	1.74	11.15
				.67	3.15	1.75	11.37
				.68	3.24	1.76	11.60
				.69	3.33	1.77	11.83
				.70	3.43	1.78	12.06
				.71	3.53	1.79	12.30
				.72	3.62	1.80	12.54
				.73	3.73	1.81	12.79
				.74	3.83	1.82	13.03
				.75	3.93	1.83	13.28
				.76	4.04	1.84	13.54
				.77	4.15	1.85	13.80
				.78	4.26	1.86	14.06
				.79	4.38	1.87	14.32
				.80	4.49	1.88	14.59
				.81	4.61	1.89	14.86
				.82	4.73	1.90	15.14
				.83	4.85	1.91	15.42
				.84	4.97	1.92	15.70
				.85	5.10	1.93	15.99
				.86	5.23	1.94	16.28
				.87	5.36	1.95	16.57
				.88	5.49	1.96	16.87
				.89	5.63	1.97	17.17
				.90	5.77	1.98	17.47
				.91	5.91	1.99	17.78
				.92	6.05	2.00	18.10
				.93	6.20	2.01	18.41
				.94	6.35	2.02	18.73
				.95	6.50	2.03	19.06
				.96	6.65	2.04	19.39

Muddy Creek at Highway 789 Mile 30.5 Bridge - Rating Table (cont.)

2.05	19.72	2.59	44.49	3.13	86.00
2.06	20.06	2.60	45.09	3.14	86.96
2.07	20.40	2.61	45.70	3.15	87.93
2.08	20.74	2.62	46.31	3.16	88.90
2.09	21.09	2.63	46.93	3.17	89.88
2.10	21.44	2.64	47.55	3.18	90.88
2.11	21.80	2.65	48.18	3.19	91.87
2.12	22.16	2.66	48.82	3.20	92.88
2.13	22.53	2.67	49.46	3.21	93.89
2.14	22.90	2.68	50.11	3.22	94.92
2.15	23.27	2.69	50.76	3.23	95.95
2.16	23.65	2.70	51.42	3.24	96.98
2.17	24.04	2.71	52.09	3.25	98.03
2.18	24.42	2.72	52.76	3.26	99.08
2.19	24.82	2.73	53.44	3.27	100.14
2.20	25.21	2.74	54.12	3.28	101.21
2.21	25.61	2.75	54.81	3.29	102.29
2.22	26.02	2.76	55.51	3.30	103.38
2.23	26.43	2.77	56.21	3.31	104.47
2.24	26.84	2.78	56.92	3.32	105.57
2.25	27.26	2.79	57.64	3.33	106.69
2.26	27.69	2.80	58.36	3.34	107.81
2.27	28.12	2.81	59.09	3.35	108.93
2.28	28.55	2.82	59.82	3.36	110.07
2.29	28.99	2.83	60.56	3.37	111.21
2.30	29.43	2.84	61.31	3.38	112.37
2.31	29.88	2.85	62.07	3.39	113.53
2.32	30.33	2.86	62.83	3.40	114.70
2.33	30.79	2.87	63.60	3.41	115.87
2.34	31.25	2.88	64.37	3.42	117.06
2.35	31.72	2.89	65.15	3.43	118.26
2.36	32.19	2.90	65.94	3.44	119.46
2.37	32.67	2.91	66.73	3.45	120.67
2.38	33.15	2.92	67.54	3.46	121.90
2.39	33.64	2.93	68.34	3.47	123.13
2.40	34.13	2.94	69.16	3.48	124.37
2.41	34.63	2.95	69.98	3.49	125.61
2.42	35.13	2.96	70.81	3.50	126.87
2.43	35.64	2.97	71.65	3.51	128.14
2.44	36.15	2.98	72.49	3.52	129.41
2.45	36.67	2.99	73.34	3.53	130.70
2.46	37.19	3.00	74.20	3.54	131.99
2.47	37.72	3.01	75.06	3.55	133.29
2.48	38.26	3.02	75.93	3.56	134.60
2.49	38.79	3.03	76.81	3.57	135.92
2.50	39.34	3.04	77.70	3.58	137.25
2.51	39.89	3.05	78.59	3.59	138.59
2.52	40.45	3.06	79.49	3.60	139.94
2.53	41.01	3.07	80.40	3.61	141.29
2.54	41.57	3.08	81.31	3.62	142.66
2.55	42.15	3.09	82.24	3.63	144.04
2.56	42.72	3.10	83.17	3.64	145.42
2.57	43.31	3.11	84.10	3.65	146.82
2.58	43.90	3.12	85.05	3.66	148.22

Muddy Creek at Highway 789 Bridge Mile 30.5 - Rating Table (cont.)

3.67	149.64	4.21	241.27	4.75	367.20
3.68	151.06	4.22	243.27	4.76	369.89
3.69	152.49	4.23	245.28	4.77	372.61
3.70	153.94	4.24	247.31	4.78	375.33
3.71	155.39	4.25	249.34	4.79	378.07
3.72	156.85	4.26	251.39	4.80	380.82
3.73	158.33	4.27	253.45	4.81	383.59
3.74	159.81	4.28	255.52	4.82	386.38
3.75	161.30	4.29	257.60	4.83	389.17
3.76	162.80	4.30	259.70	4.84	391.98
3.77	164.31	4.31	261.81	4.85	394.81
3.78	165.84	4.32	263.93	4.86	397.65
3.79	167.37	4.33	266.06	4.87	400.50
3.80	168.91	4.34	268.20	4.88	403.37
3.81	170.46	4.35	270.36	4.89	406.26
3.82	172.02	4.36	272.53	4.90	409.16
3.83	173.59	4.37	274.71	4.91	412.07
3.84	175.18	4.38	276.91	4.92	415.00
3.85	176.77	4.39	279.11	4.93	417.94
3.86	178.37	4.40	281.33	4.94	420.90
3.87	179.98	4.41	283.56	4.95	423.87
3.88	181.61	4.42	285.81	4.96	426.86
3.89	183.24	4.43	288.06	4.97	429.86
3.90	184.89	4.44	290.33	4.98	432.88
3.91	186.54	4.45	292.61	4.99	435.91
3.92	188.21	4.46	294.91		
3.93	189.88	4.47	297.22		
3.94	191.57	4.48	299.54		
3.95	193.27	4.49	301.87		
3.96	194.98	4.50	304.22		
3.97	196.70	4.51	306.58		
3.98	198.43	4.52	308.95		
3.99	200.17	4.53	311.33		
4.00	201.92	4.54	313.73		
4.01	203.68	4.55	316.14		
4.02	205.45	4.56	318.57		
4.03	207.23	4.57	321.01		
4.04	209.03	4.58	323.46		
4.05	210.84	4.59	325.92		
4.06	212.65	4.60	328.40		
4.07	214.48	4.61	330.89		
4.08	216.32	4.62	333.39		
4.09	218.17	4.63	335.91		
4.10	220.03	4.64	338.44		
4.11	221.91	4.65	340.99		
4.12	223.79	4.66	343.55		
4.13	225.69	4.67	346.12		
4.14	227.59	4.68	348.71		
4.15	229.51	4.69	351.31		
4.16	231.44	4.70	353.92		
4.17	233.39	4.71	356.55		
4.18	235.34	4.72	359.19		
4.19	237.30	4.73	361.84		
4.20	239.28	4.74	364.51		

Suspended sediment data, Muddy Creek at Highway 789 Bridge (mile 30.5).

DATE	TIME	Q_w (cfs)	Cs (mg/l)	Q_s (tons/day)
10/9/85	1300	11.26	178	5.41
11/12/85	1310	14.20	3907	149.79
3/5/86	1430	58.23	1211	190.40
3/5/86	1430	58.23	1035	162.72
3/26/86	1022	40.35	2177	237.17
3/26/86	1026	40.35	955	104.04
4/7/86	1410	80.21	1338	289.77
4/7/86	1412	80.21	1296	280.67
4/25/86	1101	138.27	2134	796.68
4/25/86	1105	138.27	1966	733.97
6/27/86	1355	4.60	98	1.22
6/27/86	1355	4.60	94	1.17
7/2/86	1456	2.33	90	0.57
7/17/86	1340	4.60	85	1.06
7/17/86	1340	4.60	77	0.96
7/31/86	1110	2.40	49	0.32
7/31/86	1110	2.40	40	0.26
8/27/86	1350	1.85	9	0.05
8/27/86	1353	1.85	36	0.18
9/4/86	1256	1.92	21	0.11
9/4/86	1258	1.92	23	0.12
9/23/86	1409	2.05	22	0.12
9/23/86	1415	2.05	32	0.18
10/8/86	1318	9.05	111	2.71
10/8/86	1319	9.05	117	2.86
10/20/86	1117	7.60	112	2.30
10/20/86	1119	7.60	107	2.20
11/5/86	1412	7.27	91	1.79
11/5/86	1415	7.27	75	1.47

