DATA THAT DESCRIBE AT-A-POINT TEMPORAL VARIATIONS IN THE TRANSPORT RATE AND PARTICLE-SIZE DISTRIBUTION OF BEDLOAD--EAST FORK RIVER, WYOMING, AND FALL RIVER, COLORADO.

By Basil Gomez and William W. Emmett

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DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information
write to:

W.W. Emmett
U.S. Geological Survey
Federal Center
Box 25046, MS 413
Denver, Colorado 80225-0046

Copies of this report can
be purchased from:

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CONVERSION FACTORS

Metric units (International System) in this report may be converted to inch-pound units by using the following conversion factors:

Multiply metric unit	By	To obtain inch-pound unit
millimeter (mm)	0.03937	inch
meter (m)	3.281	foot
cubic meter per second (m^3/s)	35.311	cubic foot per second
kilogram (kg)	2.205	pound
kilogram per second per meter [(kg/s)/m]	0.672	pound per second per foot

Degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) by using the following equation:

$$°F = 9/5\ (°C) + 32.$$

The following terms and abbreviations also are used in this report:

Phi (ϕ) [$-\log_2 d$ where: d is the particle-size, in millimeters]
D_n particle-size of the n^{th} percentile, in millimeters
ρ fluid mass density
ρ' solid mass density

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ABSTRACT

Data from the East Fork River, Wyoming, and the Fall River, Colorado, that document at-a-point temporal variations in the transport rate and particle-size distribution of bedload, associated with the downstream migration of dunes, are presented in this report. Bedload sampling was undertaken, using a 76.2- x 76.2-millimeter Helley-Smith sampler, on three separate occasions at each site in June 1988. In each instance, the sampling time was 30 seconds and the sampling interval 5 minutes. The sampling period ranged from 4.92 to 8.25 hours. Water stage did not vary appreciably during any of the sampling periods.

INTRODUCTION

Temporal variability (even during steady flow conditions) is recognized to be an inherent component of the bedload-transport process (Gomez and others, 1989), and is becoming increasingly well documented. Short-term, at-a-point temporal variability in bedload-transport rates commonly is associated with the migration of bedforms, such as ripples and dunes (Hamamori, 1962). Einstein (1937) was among the first to identify the link between short-term temporal variability in at-a-point bedload-transport rates and the migration of bedforms. Einstein (1937) also observed, on the basis of a unique series of laboratory experiments undertaken with heterogeneous (sand/fine gravel) sediments, that temporal variations in the particle-size distribution of the bedload were associated with the migration of bedforms. The bedload usually was relatively coarser at those times when bedload-transport rates were at a maximum (in association with the passage of a bedform crest) than at those times when bedload-transport rates were about zero (in the trough between bedforms). To the best of our knowledge, no further attempt has been made to verify the existence of temporal variability in the particle-size distribution of bedload associated with the migration of bedforms.

Purpose and Scope

This report presents data that document at-a-point temporal variability in the transport rate and particle-size distribution of bedload that occurred during virtually steady flow conditions in association with the migration of low angle, three-dimensional dunes. Bedload sampling was undertaken on three separate occasions at two sites, East Fork River, Wyoming, and Fall River, Colorado, during June 1988.

Acknowledgments

We are grateful to Howard Routh for allowing continued access to his property along the East Fork River, and the National Park Service for granting us permission to sample in the Fall River. Susan Calder, Wesley Campbell, William Carey, Dallas Childers, Donna Marron, Jonathan Nelson, Myron Smalley, and J. Dugan Smith all participated in the sampling program. Some of the particle-size analyses were done by the U.S. Geological Survey Office in Rolla, Missouri.

FIELD SITES, SAMPLING, AND SIZE ANALYSIS

East Fork River

At-a-point bedload sampling in the East Fork River near Boulder, Wyoming, was undertaken on June 3, 4 and 5, 1988, at the site used previously by Leopold and Emmett (1976, 1977) for bedload measurements with a conveyor-belt bedload trap. The bedload trap is located within a riffle. The bed in the vicinity of the bedload trap consists of a stable, coarse gravel armor over which a predominately sand bedload is transported (Lisle, 1979). Bedload-transport commonly occurs across the entire width of the 14.6-m wide cross-section (Leopold and Emmett, 1976). Most bedload is transported during the late May through early June snowmelt season. On a seasonal basis, bedload-transport rates in the East Fork River are affected by the systematic process of scour and fill as sand is transported from pool, across a riffle, to pool (Andrews, 1979; Meade and others, 1981; Leopold and Emmett, 1984). Throughout the study period, low-angle, three-dimensional dunes were observed to be present on the streambed in the vicinity of the sampling point.

On a diurnal basis, peak flows in the East Fork River usually are recorded during early afternoon to midafternoon and reflect the previous afternoon's ablation of the snowpack in the Wind River Mountains. The bankful discharge of the East Fork River at the bedload trap is about 20 m^3/s (Leopold and Emmett, 1976). In 1988, the East Fork River reached a peak discharge of about 13 m^3/s (at the Big Sandy gage) on May 18 (Druse and others, 1988). A secondary peak of about 12.2 m^3/s occurred on June 5. The study period (June 3 through 5) encompassed almost the entire rising stage of the snowmelt hydrograph associated with the secondary peak. During sampling, daily fluctuations in water stage ranged from about ± 0.025 to about 0.058 m (± 1.17 to 2.05 m^3/s). Mean discharges recorded at the bedload trap during sampling were 3.80 m^3/s on June 3, 7.42 m^3/s on June 4, and 11.0 m^3/s on June 5.

Bedload samples were collected using a 76.2- x 76.2-mm Helley-Smith bedload sampler (Helley and Smith, 1971; Emmett, 1980) mounted on a wading rod, at a point 5.5 m from the east bank of the river (located in the vicinity of Gate 3 of the bedload trap; Leopold and Emmett, 1976). On each occasion, care was taken to ensure that the entrance to the sampler was placed in approximately the same position on the bed, at a location 0.25 m upstream from the concrete lip of the bedload trap. All movement by the personnel operating the sampler was confined to the concrete lip or downstream streambed to minimize disturbance of the upstream streambed. The sampling time (the time the sampler remained on the streambed) was 30 seconds and the sampling interval (the time between samples) was 5 minutes. The sampling period (Σ sampling times + Σ sampling intervals) was 4.92 hours on June 3, 7.42 hours on June 4, and 4.92 hours on June 5.

All bedload samples subsequently were dried, weighed, and sieved in their entirety. The samples that were analysed at Indiana State University were sieved at 0.5-phi intervals. Those samples that were analysed by U.S. Geological Survey were sieved at 1-phi intervals.

The time (hours), unit bedload-transport rate [immersed weight (ρ'-ρ/ρ' x dry weight), (kg/s)/m], median particle-size (mm) and sorting

coefficient ($\sqrt{(D^{75}/D^{25})}$, Trask, 1930) associated with every sample obtained on each of the 3 days are listed in table 1. (Tables 1 through 8 are in the Data Tables section at the back of the report.) The complete particle-size distribution of each bedload sample is given in table 2. The bed-material particle-size distribution provided in table 3 is that derived by Leopold and Emmett (1977) from a composite of 232 samples obtained from the bed within a 200-m reach in the vicinity of the bedload trap. Water stage was recorded at 30-minute intervals throughout each sampling period and is listed as an arbitrary gage height, in meters, in table 4.

Fall River

At-a-point bedload sampling was undertaken in the Fall River, Rocky Mountain National Park, Colorado, on June 14, 15 and 16, 1988. The sampling site was located within Horseshoe Park, at the downstream end of a 60-m-long, straight reach (Reach 5) previously monitored by Pitlick (1985). At this point the stream is about 7.5 m wide and has a mobile, mixed sand and gravel bed that overlies a static, coarse gravel, armor. Most of the sand and fine gravel was supplied to Fall River by Roaring River during the Lawn Lake flood of July 15, 1982, and bedload-transport in the Fall River since that time largely represents a response to an increase in transportable material supplied by that flood (Pitlick, 1985). At no time during the study period was material on the bed limited in availability. Bedload-transport occurred in variable quantities across the entire width of the cross-section and low-angle, three-dimensional dunes were present on the bed throughout the study period.

The bankfull discharge of the Fall River in Horseshoe Park is about 7.0 m^3/s (Pitlick, 1985), and peak flows usually occur in mid-June. The flood hydrograph shows a diurnal variation that is typical of snowmelt streams. Daily peak discharges occur at about midnight. During sampling, fluctuations in water stage were on the order of ± 0.021 to 0.030 m (± 0.055 to 0.092 m^3/s). Mean discharges recorded at the sampling point during sampling were 4.18 m^3/s on June 14, 4.32 m^3/s on June 15, and 4.68 m^3/s on June 16.

Bedload samples were collected, using a 76.2- x 76.2-mm Helley-Smith bedload sampler (Helley and Smith, 1971; Emmett, 1980) mounted on a wading rod, at a point 5.5 m from the north bank of the river. The sampler was lowered to the streambed from a footbridge. On each occasion, care was taken to ensure that the entrance to the sampler was placed in approximately the same position on the bed. The sampling time was 30 seconds and the sampling interval 5 minutes. The sampling period was 6.67 hours on June 14, 8.25 hours on June 15, and 8.25 hours on June 16.

All bedload samples subsequently were dried, weighed, and sieved in their entirety. The samples that were analysed at Indiana State University were sieved at 0.5-phi intervals. Those samples that were analysed by the U.S. Geological Survey were sieved at 1-phi intervals.

Time (hours), unit bedload-transport rate [immersed weight ($\rho'-\rho/\rho'$ x dry weight), (kg/s)/m], median particle-size (mm) and sorting coefficient ($\sqrt{(D^{75}/D^{25})}$, Trask, 1930) associated with every sample obtained on each of the 3 days are listed in table 5. The complete particle-size distribution of each bedload sample is listed in table 6. The bed material particle-size

distribution provided in table 7 is a composite derived from four, 2-kg, bulk samples that were obtained at equally spaced intervals across the streambed, at a location 25 m upstream from the sampling point. Water stage was recorded at 30-minute intervals throughout each sampling period and is listed as an arbitrary gage height, in meters, in table 8.

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DATA TABLES

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
		June 3, 1988		
1	1000	0.007	1.00	1.92
2	1005	0.026	0.94	1.69
3	1010	0.025	0.66	1.70
4	1015	0.026	0.68	1.69
5	1020	0.027	0.66	1.69
6	1025	0.014	0.88	1.71
7		0.011	0.68	1.74
8		0.002	0.58	1.65
9		0.006	0.62	1.75
10		0.010	0.60	1.97
11	1050	0.002	0.44	1.41
12		0.012	0.50	1.56
13		0.004	0.38	1.34
14		0.009	0.44	1.38
15		0.015	0.64	1.95
16	1115	0.010	0.83	1.93
17		0.009	0.93	1.88
18		0.017	1.73	1.99
19		0.018	1.07	1.79
20		0.036	0.69	1.55
21	1140	0.043	0.71	1.46
22		0.027	0.76	1.52
23		0.020	0.70	1.52
24		0.045	0.76	1.62
25		0.007	0.87	1.61
26	1205	0.010	0.69	1.56
27		0.024	0.71	1.58
28		0.043	0.62	1.49
29		0.033	0.77	1.61
30		0.014	0.81	1.69
31	1230	0.022	1.13	1.67
32		0.024	1.14	1.62
33		0.023	0.68	1.55
34		0.011	0.88	1.64
35		0.012	0.83	1.82

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
36	1255	0.013	0.71	1.80
37		0.014	0.81	1.74
38		0.016	0.60	1.50
39		0.012	0.66	1.56
40		0.017	0.86	1.74
41	1320	0.026	0.85	1.62
42		0.015	0.87	1.77
43		0.009	0.76	1.65
44		0.012	1.07	1.67
45		0.011	0.81	1.74
46	1345	0.016	0.68	1.62
47		0.008	0.77	1.59
48		0.021	0.70	1.69
49		0.019	0.62	1.51
50		0.018	0.66	1.71
51	1410	0.053	0.62	1.50
52		0.004	0.56	1.39
53		0.009	0.57	1.41
54		0.009	0.61	1.47
55		0.007	0.58	1.51
56	1435	0.022	0.70	1.71
57		0.012	0.62	1.57
58		0.021	0.57	1.46
59		0.013	0.64	1.56
60		0.015	0.7	1.67
61	1500	0.012	0.55	1.39
62		0.009	0.88	1.58
63		0.007	0.92	1.56
64		0.006	0.93	1.47
65		0.011	1.25	1.75
66	1525	0.001	1.28	1.71
67		0.0001	0.35	1.41
68		0.007	1.02	1.70
69		0.004	0.93	1.73
70		0.001	0.97	1.87

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
71	1550	0.006	0.49	1.37
72		0.015	0.57	1.37
73		0.017	0.50	1.38
74		0.011	0.55	1.43
75		0.020	0.57	1.54
76	1615	0.009	0.58	1.60
77		0.018	0.51	1.43
78		0.013	0.57	1.46
79		0.005	0.46	1.36
80	1635	0.007	0.60	1.59

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
		June 4, 1988		
81	1000	0.045	0.71	1.65
82	1005	0.057	0.81	1.58
83	1010	0.074	0.67	1.57
84	1015	0.022	0.57	1.47
85	1020	0.105	0.58	1.56
86	1025	0.063	0.55	1.59
87		0.097	0.50	1.51
88		0.044	0.67	1.59
89		0.025	0.72	1.67
90		0.036	0.63	1.70
91	1050	0.029	0.70	1.69
92		0.034	0.80	1.65
93		0.009	0.66	1.73
94		0.014	0.69	1.64
95		0.018	0.62	1.70
96	1115	0.021	0.66	1.60
97		0.015	0.71	1.67
98		0.022	0.64	1.79
99		0.011	0.93	1.81
100		0.034	1.07	1.97
101	1140	0.015	1.00	1.92
102		0.009	0.72	2.06
103		0.007	0.67	1.68
104		0.017	0.62	1.51
105		0.020	0.58	1.59
106	1205	0.003	0.48	1.65
107		0.023	0.87	1.92
108		0.0007	0.35	1.59
109		0.0006	0.31	1.23
110			Zero transport	
111	1230	0.0003	0.29	1.18
112		0.003	0.95	1.52
113		0.021	0.73	1.75
114		0.043	0.66	1.58
115		0.064	0.66	1.40

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
116	1255	0.078	0.60	1.56
117		0.058	0.56	1.72
118		0.068	0.60	1.65
119		0.067	0.57	1.62
120		0.037	0.59	1.59
121	1320	0.038	0.62	1.64
122		0.025	0.64	1.75
123		0.019	0.76	1.80
124		0.001	0.37	1.39
125		0.002	0.30	1.18
126	1345	0.007	0.52	1.81
127		0.003	0.29	1.20
128		0.004	0.30	1.23
129		0.002	0.31	1.33
130		0.003	0.31	1.23
131	1410	0.001	0.31	1.19
132		0.002	0.31	1.25
133		0.002	0.30	1.18
134		0.001	0.29	1.17
135		0.001	0.29	1.17
136	1435	0.002	0.31	1.16
137		0.067	0.63	1.92
138		0.140	0.44	1.79
139		0.090	0.77	1.41
140		0.086	0.81	1.99
141	1500	0.044	0.58	1.96
142		0.043	0.66	1.97
143		0.021	0.93	2.02
144		0.045	0.66	1.85
145		0.055	0.57	1.76
146	1525	0.027	0.47	1.70
147		0.076	0.48	1.66
148		0.034	0.47	1.64
149		0.039	0.54	1.72
150		0.039	0.57	1.88

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
151	1550	0.024	0.70	1.86
152		0.057	0.65	1.97
153		0.013	0.99	2.05
154		0.019	0.56	1.88
155		0.025	0.69	1.93
156	1615	0.027	0.71	2.03
157		0.014	0.69	2.03
158		0.022	0.73	1.97
159		0.021	0.70	2.16
160		0.049	0.71	1.95
161	1640	0.013	0.70	1.95
162		0.008	0.57	1.92
163		0.004	0.52	2.04
164		0.002	0.33	1.52
165		0.002	0.31	1.30
166	1705	0.002	0.31	1.27
167		0.001	0.31	1.33
168		0.001	0.31	1.17
169		0.0006	0.29	1.17
170	1725	0.0009	0.29	1.21

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
		June 5, 1988		
171	1115	0.003	0.38	1.25
172	1120	0.005	0.38	1.28
173	1125	0.009	0.48	1.68
174	1130	0.003	0.35	1.23
175	1135	0.002	0.36	1.23
176	1140	0.001	0.35	1.23
177		0.0006	0.34	1.23
178		0.062	0.53	1.67
179		0.101	0.47	1.61
180		0.097	0.54	1.64
181	1205	0.070	0.46	1.56
182		0.077	0.50	1.55
183		0.071	0.57	1.68
184		0.047	0.52	1.53
185		0.077	0.51	1.58
186	1230	0.032	0.44	1.47
187		0.057	0.62	1.80
188		0.011	0.43	1.48
189		0.018	0.54	1.72
190		0.007	0.38	1.45
191	1255	0.002	0.36	1.25
192		0.009	0.66	1.32
193		0.013	0.46	1.47
194		0.042	0.39	1.28
195		0.145	0.42	1.44
196	1320	0.049	0.60	1.60
197		0.197	0.46	1.57
198		0.154	0.47	1.57
199		0.345	0.46	1.57
200		0.240	0.45	1.57
201	1345	0.165	0.50	1.74
202		0.086	0.47	1.77
203		0.071	0.50	2.02
204		0.015	0.41	1.41
205		0.079	0.92	2.34

Table 1.--East Fork River--Unit bedload-transport rate, median particle size, and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
206	1410	0.008	0.39	1.30
207		0.005	0.37	1.23
208		0.003	0.35	1.23
209		0.003	0.36	1.23
210		0.002	0.35	1.23
211	1435	0.001	0.36	1.21
212		0.032	0.97	1.90
213		0.129	0.62	1.80
214		0.092	0.69	1.92
215		0.122	0.61	1.68
216	1500	0.142	0.60	1.76
217		0.079	0.57	1.76
218		0.074	0.49	1.63
219		0.082	0.68	1.75
220		0.105	0.60	1.77
221	1525	0.024	0.56	1.53
222		0.018	0.64	2.01
223		0.054	0.70	2.02
224		0.067	0.86	2.16
225		0.003	0.31	1.14
226	1550	0.002	0.31	1.22
227		0.003	0.33	1.21
228		0.0005	0.32	1.29
229		0.001	0.30	1.22
230	1610	0.0001	0.33	1.36

Table 2.--East Fork River--Particle size distribution of bedload

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
							June 3, 1988							
1	2.4	9.0	20.1	37.5	50.0	62.2	74.7	83.7	94.1	97.6	100.0			
2	1.2	6.3	17.0	36.9	52.0	68.5	82.0	91.7	97.3	99.0	100.0			
3	2.1	12.4	31.3	55.7	68.1	78.1	86.8	93.8	97.3	99.4	100.0			
4	2.7	13.9	31.1	52.8	66.5	79.5	88.9	96.2	99.0	100.0				
5	2.1	14.6	31.5	52.6	66.0	79.2	89.4	95.8	98.8	99.5	100.0			
6	1.6	8.0	19.1	39.5	55.3	70.9	83.7	91.3	97.1	99.2	100.0			
7	3.2	14.4	31.3	51.6	64.5	77.4	87.0	93.6	97.5	100.0				
8	5.4	20.3	40.5	62.1	74.3	85.1	94.6	100.0						
9	3.7	18.1	36.6	57.0	68.6	78.3	86.6	92.6	95.8	98.6	100.0			
10	3.4	19.5	41.1	58.3	66.7	74.1	80.9	85.6	89.8	95.3	100.0			
11	4.8	33.4	60.4	79.4	87.3	95.2	98.4	100.0						
12	4.5	24.6	51.0	70.2	77.6	84.3	89.4	93.9	96.6	98.2	100.0			
13	6.7	42.7	72.6	87.3	91.3	94.0	95.3	97.3	99.3	100.0				
14	4.6	30.4	61.1	81.0	88.1	93.6	96.7	98.2	100.0					
15	2.3	18.6	38.2	54.7	63.7	73.4	81.7	89.0	94.0	97.0	100.0			
16	2.4	12.9	27.9	44.8	56.1	67.6	78.6	86.9	96.0	100.0				
17	1.8	10.9	23.6	40.5	52.3	65.9	78.6	88.6	95.2	98.5	100.0			
18	1.6	6.5	13.0	22.5	30.4	41.8	56.3	71.5	83.6	93.0	98.4	100.0		
19	2.1	10.0	19.3	32.6	45.9	62.0	77.5	88.6	96.4	99.2	100.0			
20	1.7	8.3	26.0	52.1	68.4	82.8	93.2	98.0	99.5	100.0				
21	1.5	6.6	19.8	49.0	68.0	84.3	94.4	98.8	99.6	100.0				
22	1.6	7.7	21.6	47.2	64.7	82.7	94.1	98.4	100.0					
23	1.5	8.7	24.3	51.1	68.3	83.6	94.1	98.0	99.5	100.0				
24	1.5	8.9	24.6	46.8	63.0	79.0	91.1	97.1	99.4	100.0				
25	2.1	8.4	20.5	40.5	57.5	75.4	90.4	97.1	100.0					

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
26	1.9	11.1	27.3	50.8	68.3	85.2	95.4	99.7	100.0					
27	1.9	10.1	26.2	49.6	65.5	81.3	92.5	97.9	100.0					
28	2.8	13.4	34.5	62.2	76.3	87.5	94.6	98.1	99.6	100.0				
29	2.1	9.5	23.4	46.4	62.0	77.4	88.5	95.9	99.2	100.0				
30	2.1	9.9	23.2	43.1	58.1	73.5	86.4	94.8	99.1	100.0				
31	1.7	5.5	12.5	27.7	43.4	62.5	79.6	90.7	98.2	100.0				
32	1.7	5.3	12.2	27.4	42.7	63.4	81.3	93.3	98.5	100.0				
33	1.3	9.6	25.2	53.4	68.3	82.0	91.4	96.5	99.0	100.0				
34	1.4	8.2	20.7	39.6	55.6	74.2	86.7	94.8	98.3	100.0				
35	2.4	12.6	27.2	43.8	56.2	71.2	83.4	92.5	97.8	100.0				
36	1.7	14.2	30.7	49.7	61.5	74.2	86.0	93.4	97.2	98.3	100.0			
37	2.1	9.7	24.1	45.2	58.7	72.9	85.2	94.3	99.4	100.0				
38	1.6	12.2	35.4	63.1	76.1	86.7	93.6	97.6	99.7	100.0				
39	1.3	9.4	27.3	54.5	70.0	83.7	92.9	97.0	98.5	99.1	100.0			
40	2.9	11.6	24.6	42.5	56.0	72.3	86.6	95.2	99.6	100.0				
41	1.6	8.3	20.1	41.7	57.9	74.9	88.1	95.9	99.5	100.0				
42	2.5	11.5	25.4	42.8	55.6	70.5	84.2	93.7	98.6	99.5	100.0			
43	3.1	10.9	25.9	47.5	64.1	79.4	90.0	95.0	97.8	99.1	100.0			
44	2.0	7.9	17.6	32.8	46.9	64.3	80.8	91.1	97.4	100.0				
45	1.6	10.0	24.1	44.0	58.4	73.3	85.5	93.7	98.3	100.0				
46	1.9	11.1	28.9	52.7	67.7	80.9	90.0	95.3	98.5	99.7	100.0			
47	1.8	8.4	21.9	44.8	62.0	78.1	88.7	94.9	98.2	100.0				
48	2.8	12.6	29.5	50.9	64.9	78.2	87.7	93.8	98.1	100.0				
49	1.6	12.0	34.2	61.8	75.0	85.7	92.8	97.0	100.0					
50	2.3	13.1	32.5	55.2	67.8	78.5	86.9	92.8	96.7	100.0				

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
51	1.8	13.2	36.0	63.6	76.7	86.2	92.5	96.5	99.3	100.0				
52	2.6	15.2	40.4	70.9	84.8	93.4	98.0	100.0						
53	1.9	13.7	38.5	68.8	83.0	93.2	97.8	100.0						
54	2.2	13.7	35.5	62.9	78.5	90.6	96.8	99.3	100.0					
55	3.3	15.6	37.9	64.0	77.4	87.1	93.0	95.6	97.8	100.0				
56	2.4	12.0	29.1	51.2	64.3	76.4	87.0	94.3	97.8	100.0				
57	2.6	13.2	33.3	58.0	71.6	82.6	91.3	96.3	98.7	100.0				
58	1.7	13.1	38.8	65.0	81.9	91.1	95.6	97.8	98.9	100.0				
59	2.2	13.4	33.6	56.8	71.7	84.9	92.8	97.3	99.4	100.0				
60	2.1	10.8	26.1	48.7	65.3	81.2	92.1	97.3	99.4	100.0				
61	2.3	16.3	41.8	71.3	84.2	92.2	98.8	99.5	100.0					
62	2.3	10.1	21.9	39.0	55.2	77.2	92.8	98.0	100.0					
63	1.6	7.9	18.6	36.5	54.8	77.4	91.3	97.6	100.0					
64	1.4	5.2	13.3	32.5	54.3	77.8	91.9	97.9	100.0					
65	2.4	7.3	15.3	28.8	39.9	56.2	74.1	87.8	96.1	100.0				
66	3.4	6.8	13.7	24.0	37.8	55.1	72.4	86.2	100.0					
67	25.0	50.0	75.0	100.0										
68	1.9	8.3	17.4	33.7	48.5	66.3	83.3	94.3	100.0					
69	2.9	11.7	22.0	38.2	52.2	69.1	86.0	95.6	100.0					
70	5.6	16.7	26.0	39.0	52.0	68.6	81.6	96.3	100.0					
71	3.5	23.9	51.7	77.6	88.0	94.5	97.5	98.5	100.0					
72	3.1	17.0	36.3	70.7	82.1	90.4	95.1	97.9	99.5	100.0				
73	4.4	22.9	50.5	75.7	85.3	92.0	95.9	98.0	99.1	100.0				
74	2.8	17.1	41.9	69.4	82.2	91.3	96.5	99.0	100.0					
75	3.5	19.0	41.3	66.4	78.6	87.8	94.1	97.3	99.5	100.0				

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
76	3.1	18.1	39.8	62.4	74.3	84.7	92.7	98.2	100.0					
77	3.8	22.3	47.7	73.0	83.1	90.0	94.4	96.9	99.0	100.0				
78	2.7	16.7	39.7	67.6	80.3	89.3	94.6	98.3	99.4	100.0				
79	2.8	26.1	57.8	82.8	91.7	96.1	98.3	100.0						
80	2.6	16.5	37.8	61.4	74.1	84.6	91.3	96.2	98.1	100.0				

Table 2.--East Fork River - Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
							June 4, 1988							
81	5.8	16.0	28.9	49.0	64.8	81.0	91.2	96.0	98.4	99.1	100.0			
82	4.8	13.3	24.1	43.0	61.7	80.8	92.8	97.2	99.0	99.6	100.0			
83	5.6	15.4	29.6	53.3	70.7	86.0	94.7	98.0	99.3	99.8	100.0			
84	4.6	21.0	39.5	66.7	84.3	93.6	97.0	98.1	98.7	99.6	100.0			
85	7.5	22.1	39.4	62.6	78.2	89.9	96.5	98.8	99.7	100.0				
86	4.9	24.3	45.1	66.1	78.3	88.8	95.6	98.5	99.6	100.0				
87	8.1	28.0	49.9	72.1	83.2	91.5	96.2	98.2	99.2	99.8	100.0			
88	3.3	14.3	29.2	53.3	69.7	85.6	93.9	97.9	99.2	99.7	100.0			
89	3.9	16.3	29.2	48.9	65.1	80.2	91.0	96.3	98.3	99.1	100.0			
90	5.4	21.1	36.0	56.0	70.6	84.0	92.6	96.8	98.9	99.8	100.0			
91	3.1	16.0	31.4	51.2	65.9	80.4	90.5	96.4	99.0	100.0				
92	3.1	14.3	26.4	43.6	61.7	79.6	90.3	95.5	97.8	98.8	100.0			
93	4.6	20.3	33.7	53.4	67.9	80.4	88.1	92.9	96.3	98.6	100.0			
94	4.0	17.2	29.1	51.7	68.2	82.6	91.4	95.6	98.3	100.0				
95	5.6	23.2	39.0	59.0	72.9	84.8	92.0	95.9	97.1	98.9	100.0			
96	3.4	17.1	32.6	55.1	72.7	85.0	92.4	96.1	98.6	99.1	100.0			
97	3.5	15.9	28.5	49.0	64.2	79.5	90.2	95.9	98.3	99.4	100.0			
98	5.3	21.5	36.9	56.6	69.4	79.8	86.8	91.4	94.2	96.5	100.0			
99	3.5	13.9	23.6	39.5	53.4	68.5	81.7	90.6	97.5	100.0				
100	3.2	11.7	20.9	35.7	47.7	60.7	73.1	83.9	91.7	97.9	99.2	100.0		
101	3.3	14.2	24.1	38.4	50.1	64.1	77.6	88.9	96.9	100.0				
102	5.5	22.2	34.6	49.0	59.1	70.3	81.0	89.9	96.8	100.0				
103	2.3	16.4	32.4	52.7	66.4	80.1	89.1	93.0	94.6	96.5	100.0			
104	3.5	18.3	34.4	61.3	78.2	89.7	95.0	97.6	98.8	100.0				
105	3.5	20.9	39.6	61.5	76.5	89.0	96.1	98.2	98.9	100.0				

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
106	7.8	35.5	51.1	68.9	81.1	91.1	96.7	100.0						
107	2.5	14.4	26.4	42.9	54.4	67.1	78.8	87.8	93.2	97.5	100.0			
108	14.3	50.1	64.4	75.1	82.2	92.9	100.0							
109	19.2	71.3	85.6	90.4	95.2	100.0								
110	Zero transport													
111	29.4	76.4	88.2	94.1	100.0									
112	3.3	10.8	17.5	31.7	53.4	76.7	85.9	89.2	92.5	100.0				
113	2.5	14.2	28.0	48.7	62.6	75.9	87.2	93.6	96.6	97.6	99.0	100.0		
114	3.2	14.3	28.7	55.7	69.7	81.9	90.4	95.1	97.5	98.8	100.0			
115	3.6	14.8	31.6	53.6	68.9	82.5	91.8	96.3	98.4	99.2	99.6	100.0		
116	5.4	20.5	39.8	61.1	72.6	82.7	89.8	94.0	97.2	99.1	100.0			
117	7.6	26.4	44.4	63.3	74.8	85.1	92.0	95.9	97.9	99.5	100.0			
118	4.9	20.5	39.3	60.7	74.3	85.5	93.0	96.6	98.6	99.6	100.0			
119	4.3	21.4	41.6	62.8	75.0	85.0	92.3	96.2	98.6	99.8	100.0			
120	3.0	18.9	38.5	62.6	75.8	86.5	93.1	96.5	98.5	99.3	100.0			
121	3.5	18.1	35.1	59.2	72.6	84.3	91.2	95.2	96.7	98.1	99.0	100.0		
122	4.7	20.4	34.3	56.2	69.2	80.5	88.8	93.8	97.3	98.5	100.0			
123	4.3	18.5	31.2	48.6	62.1	76.9	88.5	95.1	98.5	100.0				
124	14.0	56.0	72.0	86.0	92.0	96.0	100.0							
125	28.8	75.4	86.4	94.6	97.3	100.0								
126	9.9	32.7	48.1	65.0	74.9	86.3	94.8	98.5	100.0					
127	28.2	73.8	86.4	93.2	97.1	100.0								
128	26.0	72.6	86.1	93.6	97.6	99.2	100.0							
129	23.4	65.9	79.7	89.3	93.6	96.8	100.0							
130	24.4	72.2	86.6	94.4	100.0									

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample Number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
131	15.8	71.9	87.7	94.7	98.2	100.0								
132	24.3	71.6	83.7	91.8	95.9	100.0								
133	22.2	77.8	93.1	98.6	100.0									
134	27.8	80.6	91.6	97.2	100.0									
135	24.0	81.4	92.5	96.2	98.1	100.0								
136	21.6	75.7	89.2	94.6	97.3	100.0								
137	10.6	26.4	39.6	55.3	67.0	79.4	89.4	94.9	97.5	99.6	100.0			
138	15.2	40.7	55.6	68.7	77.0	85.5	92.3	96.6	98.9	99.9	100.0			
139	7.3	21.8	33.2	47.0	59.2	73.2	86.0	93.3	97.4	99.3	100.0			
140	6.7	20.0	31.6	45.3	56.5	69.6	82.5	91.1	96.2	98.7	99.3	100.0		
141	6.7	28.0	43.6	58.3	67.9	74.4	87.6	93.9	98.1	99.2	100.0			
142	6.0	25.1	37.8	53.0	64.1	76.5	87.1	94.3	97.9	99.5	100.0			
143	5.7	19.2	28.3	40.8	52.2	65.9	78.7	88.3	94.2	98.0	100.0			
144	4.5	20.3	35.3	53.8	65.4	77.0	86.7	92.6	96.0	98.2	99.5	100.0		
145	6.7	26.3	43.4	61.6	72.4	82.6	90.8	95.3	98.0	100.0				
146	6.5	34.3	54.0	70.3	78.9	86.2	91.6	95.7	97.8	99.5	100.0			
147	8.4	33.1	52.5	68.6	77.8	86.1	92.7	96.2	98.6	99.7	100.0			
148	5.9	33.3	53.9	70.5	78.8	86.1	91.5	95.0	97.3	97.8	100.0			
149	5.8	27.4	46.1	64.0	74.7	83.5	90.7	95.2	98.0	98.6	99.4	100.0		
150	5.8	27.8	43.0	60.0	70.1	80.3	88.7	94.4	97.9	99.2	100.0			
151	3.8	18.3	33.7	50.9	62.6	74.7	84.9	92.1	97.0	99.4	100.0			
152	7.3	25.8	39.4	53.8	64.4	75.7	85.2	91.8	96.0	97.9	99.6	100.0		
153	4.1	18.3	28.0	40.7	50.6	63.5	76.6	87.5	95.7	100.0				
154	6.2	25.7	42.0	58.3	69.0	79.2	87.6	93.4	96.9	99.1	100.0			
155	5.2	22.3	36.1	51.5	63.3	75.2	85.2	92.1	96.7	98.8	100.0			

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
156	5.5	23.2	36.4	50.0	60.4	72.7	83.1	91.0	96.4	99.4	100.0			
157	6.7	23.2	36.1	50.8	60.8	71.5	82.2	91.3	96.7	100.0				
158	5.0	21.1	33.8	48.8	60.0	72.5	83.7	92.3	97.4	100.0				
159	6.1	24.2	37.2	50.3	59.6	70.0	79.4	86.8	92.0	95.6	100.0			
160	5.6	22.6	36.0	50.0	62.4	74.5	84.2	91.5	96.0	98.4	99.2	99.2	100.0	
161	5.6	22.6	33.9	46.8	56.7	67.2	67.2	77.1	84.9	89.8	93.9	95.3	100.0	
162	7.6	31.3	44.9	58.8	69.2	80.2	89.3	95.9	97.8	100.0				
163	12.8	37.8	48.7	59.6	67.9	78.2	86.5	92.3	96.8	100.0				
164	18.5	54.4	68.5	79.4	87.0	94.6	100.0							
165	21.5	65.8	79.7	88.6	94.9	100.0								
166	24.6	70.1	85.7	94.8	97.4	100.0								
167	18.7	67.1	81.2	90.6	95.3	100.0								
168	18.0	74.0	90.0	96.0	98.0	100.0								
169	28.0	84.0	92.0	96.0	100.0									
170	30.3	75.8	87.9	94.0	100.0									

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
							June 5, 1988							
171	5.4		81.1		93.7		98.2		100.0					
172	6.9		78.1		92.5		98.9		100.0					
173	4.1		53.6		74.7		92.1		100.0					
174	8.6		90.3		97.8		100.0							
175	6.3		92.4		98.7		100.0							
176	10.0		92.5		97.5		100.0							
*177	12.0		96.0		100.0									
178	2.4		48.3		76.4		92.5		98.2		100.0			
179	4.0		53.5		81.6		94.2		98.9		100.0			
180	3.2		47.6		77.4		94.3		99.4		100.0			
181	4.0		57.7		83.9		95.1		98.6		98.9		100.0	
182	3.4		51.0		79.8		95.2		99.7		100.0			
183	3.0		44.1		74.9		93.8		99.3		100.0			
184	3.3		58.1		85.1		97.3		99.9		100.0			
185	2.8		48.9		81.0		95.7		99.4		100.0			
186	3.4		61.6		88.1		97.3		99.0		100.0			
187	2.9		41.6		70.1		89.1		97.1		99.3		100.0	
188	3.6		63.6		88.3		96.8		100.0					
189	3.9		46.9		74.2		93.3		99.1		100.0			
190	10.5		72.7		81.3		88.8		94.4		100.0			
191	6.6		86.9		96.8		98.4		100.0					
192	2.1		40.8		62.2		82.7		95.2		100.0			
193	1.7		57.7		91.8		97.8		99.3		100.0			
194	4.0		74.0		93.5		97.2		99.6		100.0			
195	4.6		65.1		91.3		96.8		99.1		99.8		100.0	

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
196	2.0		41.0		76.4		92.7		98.9		100.0			
197	4.7		56.7		83.1		93.6		98.3		99.6		100.0	
198	4.4		55.6		83.5		93.5		97.5		98.9		100.0	
199	4.7		57.2		82.7		93.2		98.3		99.6		100.0	
200	4.0		58.1		81.7		91.5		97.5		99.7		100.0	
201	3.6		50.1		74.4		88.0		97.0		99.4		100.0	
202	3.7		56.8		74.6		86.4		96.1		100.0			
203	3.6		49.9		70.1		83.5		95.7		99.6		100.0	
204	4.5		68.6		89.3		94.0		96.9		100.0			
205	3.0		32.8		52.7		71.5		88.9		97.4		100.0	
206	5.4		74.5		88.1		95.3		98.9		100.0			
207	3.7		87.9		97.9		99.5		100.0					
208	8.7		90.4		97.4		99.1		100.0					
209	5.7		91.1		98.4		99.2		100.0					
210	5.7		92.8		98.5		100.0							
211	5.1		89.7		97.4		100.0							
212	1.0		17.9		48.4		73.4		89.8		99.2		100.0	
213	3.1		40.4		70.2		86.2		94.6		97.3		100.0	
214	2.6		37.6		64.5		84.7		96.4		99.6		100.0	
215	2.6		42.0		73,5		91.2		99.0		100.0			
216	3.2		42.8		71.6		89.4		98.0		99.9		100.0	
217	2.8		43.9		78.5		95.0		99.6		100.0			
218	2.7		52.1		78.2		91.7		98.3		100.0			
219	1.9		35.8		68.2		88.9		98.3		100.0			
220	2.5		42.3		70.9		88.6		98.2		100.0			

Table 2.--East Fork River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
221	2.8	21.2	42.7	67.0	80.0	89.0	94.3	97.6	99.2	100.0				
222	2.5	19.9	39.0	54.1	63.2	72.9	82.0	89.6	96.1	98.9	100.0			
223	3.0	20.2	36.9	51.0	60.7	71.0	81.3	89.5	94.9	98.2	100.0			
224	3.7	18.9	32.1	44.9	54.1	64.9	76.0	84.6	92.9	97.2	100.0			
225	13.0	75.0	93.5	97.8	98.9	100.0								
226	14.7	69.3	87.2	93.6	96.8	100.0								
227	9.5	64.7	88.5	95.2	97.1	99.0	100.0							
228	19.1	62.0	81.1	90.6	95.3	100.0								
229	26.8	73.1	87.7	95.0	97.5	100.0								
230	22.2	55.6	77.8	88.9	100.0									

Table 3.--East Fork River--Particle size distribution of bed material

Percent by weight finer than sieve size indicated, in millimeters													
0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.0	22.63
4.2	10.8	22.8	36.2	45.3	52.7	58.8	63.5	67.8	71.4	75.0	78.5	82.8	100.0

Table 4.--East Fork River--Water stage

[Stage is an arbitrary gage height; °C, degrees Celsius]

Day	Time (hours)	Stage (meters)	Day	Time (hours)	Stage (meters)
June 3	1000	0.168	June 4	1000	0.408
	1030	0.171		1030	0.421
	1100	0.171		1100	0.424
	1130	0.171		1130	0.430
	1200	0.171		1200	0.433
	1230	0.171		1230	0.433
	1300	0.171		1300	0.433
	1330	0.168		1330	0.430
	1400	0.165		1400	0.430
	1430	0.159		1430	0.427
	1500	0.156		1500	0.421
	1530	0.152		1530	0.408
	1600	0.146		1600	0.402
	1630	0.146		1630	0.396
				1700	0.384
				1730	0.375
June 5	1100	0.610			
	1130	0.610	Water-temperature range		
	1200	0.622			
	1230	0.625	June 3 9-17 °C		
	1300	0.622	June 4 10-15 °C		
	1330	0.622	June 5 11-13 °C		
	1400	0.622			
	1430	0.616			
	1500	0.607			
	1530	0.601			
	1600	0.591			

Table 5.--Fall River--Unit bedload-transport rate, median particle size, and sorting of bedload
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
		June 14, 1988		
1	0930	0.002	0.93	2.07
2	0935	0.357	1.61	1.81
3	0940	0.393	1.41	1.79
4	0945	0.308	1.49	1.73
5	0950	0.257	1.97	1.74
6	0955	0.007	0.93	1.72
7		0.001	0.58	1.65
8		0.330	1.43	1.46
9		0.325	1.73	1.71
10		0.355	1.69	1.64
11	1020	0.158	1.63	1.59
12		0.133	1.37	1.47
13		0.079	1.84	1.72
14		0.175	1.17	1.57
15		0.017	1.09	1.65
16	1045	0.355	1.22	1.54
17		0.150	1.63	1.93
18		0.207	1.28	1.54
19		0.095	1.17	1.80
20		0.031	1.04	1.68
21	1110	0.124	1.01	1.41
22		0.055	0.95	1.64
23		0.374	1.16	1.66
24		0.409	1.07	1.47
25		0.117	1.40	1.48
26	1135	0.037	0.94	1.76
27		0.185	1.52	1.75
28		0.391	1.15	1.61
29		0.155	1.43	1.86
30		0.146	1.01	1.80
31	1200	0.031	0.99	1.87
32		0.044	1.13	1.96
33		0.139	1.29	1.68
34		0.408	1.21	1.68
35		0.303	1.11	1.68

Table 5.--Fall River--Unit bedload-transport rate, median particle size and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
36	1225	0.109	1.40	1.79
37		0.107	1.11	1.89
38		0.023	0.68	1.51
39		0.007	0.54	1.36
40		0.077	1.30	1.49
41	1250	0.006	1.01	1.45
42		0.233	1.07	1.66
43		0.016	0.60	1.49
44		0.085	1.01	1.73
45		0.206	1.15	1.54
46	1315	0.302	0.95	1.57
47		0.050	0.85	1.57
48		0.228	1.42	1.69
49		0.203	1.24	1.59
50		0.230	1.31	1.65
51	1340	0.073	1.10	1.83
52		0.106	1.32	1.65
53		0.005	0.67	1.62
54		0.025	1.92	2.01
55		0.278	1.17	1.66
56	1405	0.376	1.46	1.80
57		0.276	1.49	1.81
58		0.005	1.18	1.75
59		0.061	1.56	1.62
60		0.317	1.23	1.57
61	1430	0.243	1.17	1.67
62		0.095	1.41	1.36
63		0.007	0.60	1.43
64		0.037	0.91	1.46
65		0.024	1.88	1.93
66	1455	0.248	1.72	1.68
67		0.346	1.51	1.74
68		0.273	1.30	1.67
69		0.013	1.72	2.23
70		0.271	1.04	1.41

Table 5.--Fall River--Unit bedload-transport rate, median particle size and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
71	1520	0.147	1.13	1.53
72		0.003	0.49	1.46
73		0.005	0.54	1.39
74		0.057	1.07	1.48
75		0.370	1.03	1.64
76	1545	0.239	1.06	1.53
77		0.192	0.99	1.48
78		0.004	0.57	1.49
79		0.019	1.03	1.59
80		0.363	0.99	1.39
81	1610	0.284	1.07	1.41

Table 5.--Fall River--Unit bedload-transport rate, median particle size and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
		June 15, 1988		
82	0930	0.367	1.01	1.62
83	0935	0.278	1.34	1.63
84	0940	0.348	0.97	1.70
85	0945	0.292	1.55	1.95
86	0950	0.020	0.65	1.69
87		0.007	1.13	1.66
88		0.005	0.54	1.47
89		0.319	1.07	1.58
90		0.015	0.56	1.44
91	1015	0.155	1.02	1.59
92		0.052	1.33	1.85
93		0.432	1.49	1.62
94		0.173	0.99	1.68
95		0.269	1.49	1.65
96	1040	0.161	1.16	1.57
97		0.050	1.40	2.04
98		0.042	1.46	1.98
99		0.186	1.38	1.68
100		0.618	1.30	1.86
101	1105	0.307	1.38	1.49
102		0.238	1.07	1.67
103		0.191	1.15	1.86
104		0.106	1.27	1.87
105		0.065	1.09	1.81
106	1130	0.042	0.91	1.83
107		0.006	0.75	1.80
108		0.273	1.23	1.67
109		0.028	0.81	1.84
110		0.174	1.27	1.65
111	1155	0.055	0.84	1.53
112		0.010	0.64	1.67
113		0.003	0.58	1.51
114		0.248	1.15	1.53
115		0.287	1.07	1.58

Table 5.--Fall River--Unit bedload-transport rate, median particle size and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
116	1220	0.300	1.07	1.58
117		0.013	0.66	1.55
118		0.006	0.47	1.48
119		0.102	1.25	1.61
120		0.003	0.67	1.60
121	1245	0.371	1.11	1.57
122		0.072	0.80	1.46
123		0.350	1.37	1.81
124		0.012	0.68	1.69
125		0.006	0.54	1.52
126	1310	0.128	0.97	1.45
127		0.163	0.87	1.49
128		0.411	1.09	1.64
129		0.035	1.00	1.87
130		0.290	0.82	1.33
131	1335	0.007	1.10	2.55
132		0.537	1.32	1.79
133		0.143	1.53	1.84
134		0.018	0.68	1.67
135		0.001	0.57	1.56
136	1400	0.155	1.03	1.51
137		0.380	1.22	1.63
138		0.246	1.43	1.64
139		0.261	1.49	1.52
140		0.006	0.56	1.65
141	1425	0.004	0.51	1.42
142		0.154	1.06	1.41
143		0.153	1.25	1.58
144		0.209	1.18	1.60
145		0.011	0.66	1.56
146	1450	0.048	1.45	1.74
147		0.045	0.84	1.63
148		0.006	0.60	1.54
149		0.423	1.07	1.60
150		0.210	1.15	1.67

Table 5.--Fall River--Unit bedload-transport rate, median particle size and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
151	1515	0.369	1.06	1.66
152		0.344	1.45	1.52
153		0.215	0.99	1.61
154		0.012	0.76	1.46
155		0.086	0.95	1.59
156	1540	0.003	0.66	1.53
157		0.283	1.15	1.49
158		0.148	0.99	1.60
159		0.054	2.01	1.74
160		0.053	1.40	1.63
161	1605	0.009	0.62	1.52
162		0.195	1.15	1.70
163		0.280	1.21	1.61
164		0.306	1.44	1.71
165		0.054	0.99	1.59
166	1630	0.005	0.50	1.54
167		0.120	1.23	1.79
168		0.035	0.95	1.91
169		0.004	0.53	1.48
170		0.005	1.40	1.93
171	1655	0.038	0.81	1.58
172		0.271	1.19	1.60
173		0.423	1.23	1.68
174		0.016	0.80	1.94
175		0.064	1.93	1.87
176	1720	0.011	0.61	1.54
177		0.056	0.84	1.48
178		0.008	0.67	1.50
179		0.376	1.23	1.68
180		0.018	0.80	1.82
181	1745	0.008	0.58	1.41

Table 5.--Fall River--Unit bedload-transport rate, median particle size and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
		June 16, 1988		
182	0945	0.545	1.26	1.75
183	0950	0.263	1.42	2.05
184	0955	0.179	1.52	2.07
185	1000	0.056	1.79	2.02
186	1005	0.024	0.82	1.54
187		0.131	0.85	1.65
188		0.372	1.09	1.72
189		0.462	1.13	1.70
190		0.272	1.15	1.86
191	1030	0.150	1.18	1.87
192		0.126	1.17	1.87
193		0.007	0.54	1.46
194		0.009	0.95	1.90
195		0.093	1.09	1.87
196	1055	0.504	1.37	1.84
197		0.316	1.24	1.82
198		0.259	1.13	1.78
199		0.274	1.09	1.71
200		0.369	0.99	1.63
201	1120	0.084	1.01	1.78
202		0.010	0.80	1.61
203		0.004	0.50	1.41
204		0.003	1.38	2.24
205		0.177	1.20	1.65
206	1145	0.595	1.40	1.83
207		0.305	1.57	1.96
208		0.184	1.22	1.97
209		0.255	1.25	1.67
210		0.239	0.95	1.70
211	1210	0.006	0.57	1.40
212		0.001	0.50	1.43
213		0.283	1.17	1.77
214		0.773	1.11	1.66
215		0.182	1.50	1.87

Table 5.--Fall River--Unit bedload-transport rate, median particle size and sorting of bedload--Continued
[(kg/s)/m, kilogram per second per meter; mm, millimeter]

Sample number	Time (hours)	Unit bedload-transport rate [immersed weight] [(kg/s)/m]	Median particle size (mm)	Sorting coefficient
216	1235	0.075	1.32	2.16
217		0.003	0.50	1.47
218		0.191	1.32	1.77
219		0.303	1.19	1.76
220		0.584	1.15	1.66
221	1300	0.443	1.24	1.81
222		0.093	1.46	1.98
223		0.475	1.13	1.70
224		0.159	1.07	1.93
225		0.056	1.17	1.74
226	1325	0.195	0.88	1.75
227		0.010	0.71	1.83
228		0.054	1.15	1.97
229		0.345	0.97	1.57
230		0.245	1.42	1.84
231	1350	0.507	1.16	1.68
232		0.477	1.31	1.76
233		0.217	1.30	1.79
234		0.192	0.98	1.72
235		0.017	0.54	1.37
236	1415	0.119	0.99	1.80
237		0.049	0.95	1.77
238		0.056	0.99	1.69
239		0.187	1.06	1.67
240		0.200	1.33	1.82
241	1440	0.247	1.37	1.79
242	1445	0.282	1.36	1.98

Table 6.--Fall River--Particle size distribution of bedload

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
							June 14, 1988							
1	3.2	9.8	25.0	40.0	53.0	62.3	71.5	83.5	90.1	94.5	100.0			
2	0.2		3.5		27.8		61.1		85.1		98.4		100.0	
3	0.2		5.1		34.5		67.4		89.9		98.8		100.0	
4	0.3	1.4	3.9	12.9	28.2	47.9	63.6	75.5	86.5	94.0	98.4	99.8	100.0	
5	0.4	1.5	3.5	9.0	18.7	33.7	50.6	66.2	80.6	91.4	97.3	100.0		
6	2.3	13.2	23.3	37.9	53.6	70.8	85.4	95.9	100.0					
7	6.8	25.0	40.9	61.4	77.3	90.9	100.0							
8	0.2	0.9	4.5	8.5	23.0	48.7	71.7	84.5	92.7	97.2	99.4	100.0		
9	0.2		3.5		23.4		57.8		87.3		99.7		100.0	
10	0.3	1.7	4.3	11.4	22.3	40.2	59.4	74.3	87.1	95.0	99.1	99.7	100.0	
11	0.4	2.0	4.6	11.4	23.3	42.4	62.6	77.3	88.4	94.9	97.9	99.4	100.0	
12	0.5	2.8	6.8	15.9	30.1	52.4	72.6	85.7	94.1	97.9	100.0			
13	0.6	3.7	8.0	15.5	23.9	37.6	54.7	71.4	86.0	95.3	99.4	100.0		
14	0.2	2.0	6.5	21.3	39.8	61.3	79.0	90.8	95.7	98.0	99.1	99.5	100.0	
15	0.8	6.1	13.7	27.7	44.0	64.6	79.4	87.4	93.3	98.1	99.7	100.0		
16	0.4	1.9	5.7	19.2	38.0	60.7	78.1	88.5	95.2	98.2	99.7	100.0		
17	0.4	2.7	7.3	17.7	30.4	45.0	58.3	70.2	82.8	92.9	98.2	100.0		
18	0.3	2.5	6.5	16.4	32.8	56.1	74.4	85.5	94.0	98.1	99.8	100.0		
19	0.6	4.1	10.6	25.8	42.1	58.9	71.7	80.9	89.2	96.4	99.7	100.0		
20	0.7	5.4	13.4	30.8	48.4	65.9	80.1	90.3	96.0	98.2	99.3	100.0		
21	0.3	2.3	6.6	22.7	49.0	73.3	86.7	93.1	96.9	98.6	100.0			
22	0.7	6.2	16.0	34.4	51.9	67.7	79.9	88.2	93.6	96.7	99.3	100.0		
23	0.2		5.8		42.6		76.4		92.6		100.0			
24	0.2	1.7	6.2	22.1	45.0	69.3	84.7	92.6	96.9	98.9	99.5	100.0		
25	0.5	3.6	8.9	21.1	34.9	50.2	64.8	76.8	87.6	94.0	97.8	100.0		

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
26	1.1	7.5	16.9	34.8	52.9	68.0	77.9	85.9	91.5	96.8	99.1	100.0		
27	0.3	2.0	5.8	15.7	29.7	47.0	63.5	77.2	89.7	96.3	99.8	100.0		
28	0.4	2.5	7.5	22.9	42.4	62.3	75.8	84.1	90.9	95.4	98.4	99.5	100.0	
29	0.5	3.2	8.5	20.8	33.4	48.8	63.4	75.2	86.0	93.7	98.4	100.0		
30	1.7	5.2	12.6	28.0	44.0	59.9	73.2	83.3	91.6	96.9	99.4	100.0		
31	1.4	9.0	19.6	36.6	50.4	64.5	75.0	83.6	91.6	95.8	98.1	100.0		
32	1.0	7.2	17.4	33.4	46.5	59.4	71.0	81.4	90.9	96.6	100.0			
33	0.3	2.1	6.6	19.3	36.1	54.9	71.3	83.1	92.4	97.4	99.6	100.0		
34	0.3	1.8	6.2	20.9	39.6	58.8	72.8	82.5	90.8	96.5	99.5	100.0		
35	0.3		8.0		45.9		75.5		92.5		100.0			
36	0.6	3.4	8.2	20.2	34.1	50.2	65.4	78.7	88.5	95.4	98.5	100.0		
37	0.7	5.3	14.4	30.9	45.6	59.7	72.0	81.7	90.0	95.7	98.8	100.0		
38	1.5	10.3	24.7	52.6	70.4	83.6	90.3	94.6	97.7	99.2	100.0			
39	2.2	17.8	43.0	74.5	89.0	96.1	98.6	100.0						
40	0.2	2.1	5.7	14.7	31.5	56.2	76.5	88.4	95.5	98.5	100.0			
41	5.0	27.1	50.9	74.7	86.9	95.0	98.2	100.0						
42	0.4	2.8	9.2	26.4	46.1	64.0	77.1	85.9	93.0	97.2	98.9	100.0		
43	1.7		38.2		84.9		98.1	100.0						
44	0.4		14.5		49.8		78.0		94.9		100.0			
45	0.2	1.7	5.9	20.1	40.6	63.1	80.1	89.7	95.7	98.5	99.8	100.0		
46	0.3		10.1		52.3		85.8		97.1		99.7		100.0	
47	0.6		17.7		60.0		89.3		97.4		100.0			
48	0.4	2.2	6.0	17.2	31.5	49.8	67.3	80.5	90.7	96.5	99.2	100.0		
49	0.4	2.3	7.2	20.2	37.3	57.4	75.3	87.4	94.9	98.2	99.5	100.0		
50	0.4	2.0	6.0	18.7	34.8	54.4	71.3	83.1	92.4	97.3	99.4	100.0		

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
51	0.6		13.8		46.1		73.5		92.8		99.2		100.0	
52	0.6	4.1	11.7	30.2	48.4	66.8	80.0	88.6	94.3	97.2	99.0	100.0		
53	2.4	11.9	26.7	53.8	70.9	80.9	85.2	89.0	93.3	97.1	100.0			
54	0.5	2.5	6.7	15.6	26.2	38.5	51.5	64.7	76.0	90.4	98.2	100.0		
55	0.4	2.1	6.9	23.0	41.4	59.9	74.5	85.2	93.0	97.8	99.6	100.0		
56	0.3		6.1		32.7		64.7		89.3		98.9		100.0	
57	0.3		7.3		39.8		69.2		90.5		99.5		100.0	
58	0.5	2.7	8.2	25.4	41.8	58.1	72.2	83.0	91.7	96.5	99.3	99.7	100.0	
59	0.3	1.4	3.5	11.5	25.2	44.5	63.6	78.9	89.8	96.9	100.0			
60	0.3	4.3	38.4	78.8	95.3	99.9	100.0							
61	0.3	1.7	4.4	16.5	37.7	63.6	80.5	89.8	95.7	98.3	99.7	100.0		
62	0.5	3.0	7.9	19.9	33.5	50.1	66.3	79.3	89.9	95.5	98.7	100.0		
63	3.4	18.0	35.2	65.1	85.8	96.2	100.0							
64	0.8	4.9	12.2	32.1	56.8	80.0	92.1	96.9	99.3	100.0				
65	0.4	1.7	3.5	9.0	18.3	35.5	53.8	72.1	86.9	95.6	98.7	100.0		
66	0.3	1.7	4.6	13.1	25.4	41.3	58.4	73.6	87.4	96.1	99.5	100.0		
67	0.2		4.3		30.0		65.6		90.4		99.2		100.0	
68	0.3	1.4	4.7	18.4	36.0	55.3	71.3	82.6	91.9	96.9	99.1	99.8	100.0	
69	2.0	10.0	19.0	27.0	35.0	43.9	54.6	69.0	82.8	93.8	97.0	100.0		
70	0.4	1.7	4.9	20.2	47.1	72.8	87.1	93.9	97.8	99.3	99.8	100.0		
71	0.4	2.4	6.5	21.3	42.7	64.2	80.0	89.4	95.3	97.7	98.9	100.0		
72	6.3	30.2	50.8	74.7	88.8	98.5	100.0							
73	4.0	23.0	44.5	74.0	88.5	95.0	98.0	100.0						
74	0.3	1.8	5.8	22.0	45.5	69.8	84.0	90.9	95.2	98.0	100.0			
75	0.3		6.7		48.8		79.2		93.9		99.4		100.0	

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
76	0.4	2.2	6.8	23.4	46.6	68.2	81.6	89.6	94.7	97.7	99.5	100.0		
77	0.4	2.1	7.1	27.1	51.2	70.7	81.7	88.7	94.2	97.8	99.7	100.0		
78	4.9	22.7	41.7	68.1	84.1	92.7	97.0	98.8	100.0					
79	0.6	2.0	4.0	8.5	14.8	28.1	48.0	67.6	83.7	91.9	98.6	100.0		
80	0.4	2.2	7.2	24.1	50.5	76.1	90.1	95.9	98.7	99.5	99.9	100.0		
81	0.3	1.6	5.4	21.2	44.7	71.2	87.1	94.3	97.7	99.2	99.9	100.0		

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
							June 15, 1988							
82	0.2		7.6		49.8		81.7		96.1		99.8		100.0	
83	0.4	2.6	6.8	18.9	34.4	53.5	70.2	82.1	91.3	96.0	98.9	100.0		
84	0.5		11.9		51.4		78.3		93.8		99.3		100.0	
85	0.6	3.3	8.7	21.7	33.2	46.5	60.4	73.2	85.7	94.4	98.5	99.8	100.0	
86	2.7	16.5	33.7	57.0	69.4	78.4	84.7	88.6	92.2	94.9	98.3	100.0		
87	0.4	2.5	8.3	25.5	44.1	62.4	76.1	84.8	92.5	96.6	9.3	100.0		
88	4.7	24.1	45.1	70.9	84.3	92.4	95.6	97.8	100.0					
89	0.5	2.6	8.1	24.5	46.1	68.2	83.4	91.4	96.2	98.8	99.6	100.0		
90	3.5	20.7	40.3	70.7	84.9	92.7	96.6	98.6	100.0					
91	0.6	3.5	9.5	28.8	48.3	67.8	82.6	91.2	96.6	98.7	100.0			
92	0.9	5.2	11.4	24.1	37.4	52.6	67.3	79.9	90.0	95.3	99.1	100.0		
93	0.5	2.4	7.5	23.8	42.1	62.2	78.3	88.6	95.4	98.4	99.7	100.0		
94	0.7	4.3	12.3	32.3	51.0	67.6	80.0	87.8	93.6	96.8	98.9	100.0		
95	0.7	3.4	9.5	25.8	42.4	61.1	76.9	87.1	94.3	98.1	99.4	100.0		
96	0.6	2.7	6.6	21.2	40.7	62.1	78.5	88.9	95.4	98.7	100.0			
97	1.4	6.9	13.2	25.4	37.8	50.4	63.0	74.4	83.7	91.5	97.8	100.0		
98	0.4	2.5	7.5	21.3	35.5	48.7	61.0	71.9	83.5	91.5	98.0	100.0		
99	1.7	11.0	25.3	48.5	63.8	75.8	84.5	91.0	95.8	98.8	100.0			
100	0.5	2.4	7.4	22.5	38.6	54.4	67.4	77.9	87.5	94.0	98.7	100.0		
101	0.5		8.8		38.3		65.5		87.7		97.4		100.0	
102	0.6	3.3	9.6	27.3	46.7	64.2	77.2	85.8	92.0	95.9	98.0	99.7	100.0	
103	0.8	4.3	11.7	29.4	44.3	58.9	71.6	80.9	89.3	94.9	98.7	100.0		
104	1.0	4.7	11.2	25.8	39.7	54.7	68.0	79.0	88.6	95.4	98.5	100.0		
105	1.0		19.0		54.2		77.3		91.0		98.7		100.0	

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
106	0.8		20.0		55.0		77.0		92.6		99.5		100.0	
107	3.1	13.7	27.4	47.7	61.8	73.3	83.0	89.6	94.3	96.9	100.0			
108	0.4	2.2	6.6	20.0	37.9	56.7	72.1	82.8	91.8	96.7	99.4	100.0		
109	1.3		27.1		60.2		81.6		94.6		99.3		100.0	
110	0.5	2.6	7.1	19.9	36.8	56.7	73.2	84.6	93.1	97.4	99.6	100.0		
111	0.7		14.9		62.6		91.1		99.1		100.0			
112	2.6		37.6		73.6		89.5		98.4		100.0			
113	2.5		40.5		84.3		96.7		100.0					
114	0.3	1.7	5.8	20.8	41.0	63.3	79.9	89.4	95.1	97.9	99.6	100.0		
115	0.5	2.7	8.5	25.6	46.7	66.6	80.9	89.8	95.6	98.5	99.8	100.0		
116	0.5	2.7	8.2	25.1	45.3	66.0	80.4	89.3	95.6	98.7	100.0			
117	1.9		34.8		76.4		94.6		99.1		100.0			
118	2.3		53.9		93.0		99.5		100.0					
119	0.4		7.1		38.0		75.7		94.8		99.8		100.0	
120	1.7		32.2		72.9		94.1		100.0					
121	0.3	1.5	5.9	22.4	43.9	64.3	79.4	89.0	95.6	98.8	100.0			
122	0.9	5.2	15.6	42.3	66.2	83.0	92.5	96.5	98.5	99.5	100.0			
123	0.4	2.3	7.3	21.4	35.8	51.6	66.6	79.1	89.3	96.0	99.0	100.0		
124	1.6		34.3		70.8		88.8		98.0		100.0			
125	1.4		45.9		85.1		95.7		100.0					
126	0.6	3.0	8.8	27.7	52.2	75.0	88.7	94.8	98.3	99.5	100.0			
127	0.8	4.2	12.8	37.3	59.4	77.2	87.7	93.8	97.5	99.2	100.0			
128	0.3		7.8		45.2		78.7		95.6		99.5		100.0	
129	0.6		21.6		50.0		76.9		99.5		100.0			
130	0.3	1.8	7.5	35.0	68.5	89.8	96.3	97.8	98.5	99.2	99.6	100.0		

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
131	0.8		15.9		47.9		63.0		74.9		86.5		100.0	
132	0.3		6.3		37.0		69.0		91.8		99.3		100.0	
133	0.5	2.5	7.0	1.84	31.4	45.9	60.9	75.0	88.0	95.5	99.0	100.0		
134	2.9		33.4		71.0		89.8		98.8		100.0			
135	3.1		43.7		81.2		93.7		100.0					
136	0.3	1.5	5.8	24.4	48.5	69.3	82.5	90.1	95.1	98.4	99.8	100.0		
137	0.4	1.5	4.8	19.8	39.0	59.3	74.4	84.8	92.6	97.0	99.4	100.0		
138	0.3	1.4	4.1	14.7	30.5	49.3	66.8	79.2	89.9	95.9	99.0	100.0		
139	0.4	1.9	6.3	22.3	42.8	63.1	78.5	88.2	94.6	98.2	99.6	100.0		
140	7.6	27.2	43.3	64.7	77.2	86.1	91.6	94.7	96.0	97.8	100.0			
141	5.8	26.4	48.2	74.7	88.2	95.3	98.8	100.0						
142	0.3	1.3	3.8	18.4	45.6	72.0	86.3	93.0	96.8	99.0	99.9	100.0		
143	0.4	1.6	4.6	17.7	36.3	57.8	74.3	85.6	93.7	97.5	99.5	100.0		
144	0.4	1.8	5.1	19.5	39.7	61.1	78.2	89.1	95.5	98.7	99.5	100.0		
145	4.4	17.4	30.4	53.5	72.8	87.7	95.2	98.1	100.0					
146	1.4	6.5	13.8	29.0	43.1	60.2	75.9	86.8	94.5	97.6	99.0	100.0		
147	1.5	8.5	20.4	42.2	58.7	74.1	85.6	93.0	97.1	99.1	100.0			
148	3.6	19.0	37.6	62.5	76.5	86.9	93.2	97.3	100.0					
149	0.5	1.8	6.2	23.4	45.7	64.9	78.0	86.3	92.9	96.9	98.9	100.0		
150	0.4	1.8	6.2	23.9	43.6	61.7	74.9	84.0	91.0	95.6	98.6	100.0		
151	0.3		6.5		47.6		78.3		93.7		99.5		100.0	
152	0.5	2.4	7.5	24.2	43.0	61.9	76.0	85.2	92.7	97.1	99.0	99.7	100.0	
153	0.7	3.5	10.1	30.2	50.2	68.4	81.2	89.5	95.0	98.2	99.8	100.0		
154	2.6	11.0	21.0	45.7	68.2	85.2	92.9	97.0	98.5	100.0				
155	0.9	4.2	10.0	26.3	46.1	66.4	79.6	88.0	93.6	97.5	100.0			

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
156	4.3	14.7	29.5	54.7	73.0	86.1	92.2	96.5	100.0					
157	0.3	1.6	4.8	18.8	41.0	64.8	81.1	90.0	95.5	98.4	99.4	100.0		
158	0.6	4.0	12.1	31.9	51.2	69.7	83.7	91.7	96.0	98.4	99.6	100.0		
159	0.2		2.6		17.5		49.6		80.6		95.5		100.0	
160	0.8	2.9	5.8	15.6	30.3	50.8	69.2	84.1	93.5	98.4	99.5	100.0		
161	2.1		36.4		81.0		96.5		99.7		100.0			
162	0.4	2.1	6.6	25.2	43.8	61.2	75.0	84.9	92.2	96.4	99.6	100.0		
163	0.4	2.0	5.8	19.8	39.3	59.4	75.2	85.7	93.4	97.4	99.5	100.0		
164	0.3	1.5	4.7	16.6	31.9	49.1	65.8	79.0	90.1	96.4	99.2	99.7	100.0	
165	0.9		9.8		51.2		83.5		96.2		99.3		100.0	
166	6.0		50.0		87.5		98.2		100.0					
167	1.0	4.1	9.3	24.2	40.0	56.4	70.9	82.8	92.0	96.8	99.6	100.0		
168	1.2		19.0		51.9		74.1		89.9		99.1		100.0	
169	3.1		46.5		90.8		99.2		100.0					
170	0.5		10.8		37.8		64.6		86.0		98.5		100.0	
171	2.0	10.6	21.4	42.3	60.5	76.6	88.2	94.0	98.1	99.0	100.0			
172	0.5	2.4	6.7	22.3	40.3	59.6	75.6	86.9	94.7	98.0	100.0			
173	0.3		7.1		41.9		74.6		93.8		99.6		100.0	
174	2.4		28.4		61.1		81.0		93.7		100.0			
175	0.3		6.2		27.7		51.6		85.6		99.7		100.0	
176	2.4		37.9		81.7		93.4		97.8		100.0			
177	0.7		12.4		63.1		91.7		98.5		100.0			
178	1.4		31.0		76.2		91.8		100.0					
179	0.5	2.3	6.3	20.2	38.4	57.5	73.1	83.7	92.1	97.2	99.7	100.0		
180	2.3		27.5		61.5		82.4		93.9		100.0			
181	1.7		36.8		90.8		98.7		100.0					

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
							June 16, 1988							
182	0.5	2.5	7.8	22.2	38.1	54.9	70.9	83.2	93.1	97.4	99.7	100.0		
183	0.7	4.4	11.7	25.7	36.7	49.3	62.6	86.9	93.9	98.9	99.7	100.0		
184	0.7	4.8	12.4	25.1	34.4	46.3	59.7	72.7	84.9	93.2	97.5	100.0		
185	0.8	6.3	14.2	23.7	30.6	39.9	54.7	71.5	86.9	96.5	99.5	100.0		
186	0.4		16.1		64.7		88.5		97.6		99.9		100.0	
187	0.5		19.1		60.0		84.3		96.4		100.0			
188	0.3		10.6		47.0		75.9		92.7		99.1		100.0	
189	0.6	3.5	9.9	26.7	43.9	61.4	75.6	85.7	93.4	97.2	98.9	100.0		
190	1.0	3.9	8.4	26.9	44.8	58.0	71.7	78.3	84.0	92.4	98.9	100.0		
191	0.5	3.9	10.7	27.3	42.7	57.2	69.9	80.0	89.1	95.1	98.8	100.0		
192	0.4		13.6		44.0		70.5		91.6		99.1		100.0	
193	2.8	20.9	42.7	69.8	82.1	89.8	94.0	98.6	100.0					
194	2.0	10.0	21.7	39.5	51.8	65.0	75.9	84.8	92.0	98.3	100.0			
195	0.3		12.3		46.6		89.5		98.4		100.0			
196	0.3	1.9	6.6	21.1	36.2	51.9	66.2	78.0	88.9	95.7	99.2	100.0		
197	0.3		9.6		40.1		71.4		94.0		99.6		100.0	
198	0.4	3.3	10.3	28.3	45.0	61.0	73.9	84.6	93.1	98.1	99.6	100.0		
199	0.6	3.9	11.5	29.6	45.9	62.1	75.8	85.6	93.1	97.3	99.2	100.0		
200	0.3		13.4		60.4		81.3		95.6		99.5		100.0	
201	0.4		14.1		44.5		74.8		94.8		99.7		100.0	
202	1.5	9.2	21.8	44.0	61.0	76.2	86.0	91.7	95.6	98.7	100.0			
203	4.9	26.1	51.1	77.5	88.5	94.5	97.8	100.0						
204	1.7		22.0		41.5		60.2		89.0		100.0			
205	0.3	2.4	6.8	21.2	40.1	58.9	73.9	84.3	92.0	96.4	98.7	99.7	100.0	

Table 6.--Fall River--Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
206	0.5	2.6	7.8	20.7	35.1	50.6	65.7	77.5	88.2	95.1	98.6	100.0		
207	0.3		8.7		33.6		58.8		86.1		98.7		100.0	
208	0.6	5.6	14.8	30.9	43.4	55.8	69.0	80.9	91.4	97.0	99.4	100.0		
209	0.3	2.5	7.8	21.8	38.0	56.5	73.3	85.8	94.2	98.1	99.5	100.0		
210	0.5		16.7		53.4		80.9		95.7		99.9		100.0	
211	2.5	17.2	38.6	70.1	85.2	93.6	97.8	100.0						
212	7.1	26.7	49.9	76.7	89.3	96.4	100.0							
213	0.4	2.8	9.5	26.5	43.2	59.0	72.8	83.6	91.8	97.0	98.8	100.0		
214	0.4	2.5	8.3	25.5	44.0	62.3	76.0	84.8	92.5	96.6	99.3	100.0		
215	0.7	3.6	8.9	20.7	32.7	47.3	62.3	75.4	86.8	93.8	97.3	99.5	100.0	
216	0.8	6.0	14.5	29.0	41.1	52.1	62.5	73.1	84.7	92.1	98.4	100.0		
217	1.0		50.0		92.0		98.0		100.0					
218	0.1		7.5		37.3		69.7		90.7		98.8		100.0	
219	0.5	2.7	8.2	25.3	41.8	58.1	72.2	83.0	91.7	96.5	99.3	99.7	100.0	
220	0.5	2.5	8.1	24.2	42.8	60.3	74.9	85.4	93.1	97.7	99.7	100.0		
221	0.4	2.8	8.8	24.2	39.3	55.7	69.9	80.3	89.5	95.1	99.1	100.0		
222	0.6		12.5		36.1		68.1		87.1		97.7		100.0	
223	0.4	2.8	9.5	26.8	44.3	61.3	75.8	85.5	92.5	96.9	99.1	100.0		
224	0.8	5.7	15.5	33.7	47.7	60.7	72.1	81.5	89.1	96.4	99.2	100.0		
225	0.7		22.3		58.9		81.8		95.8		99.8		100.0	
226	0.5		19.2		57.0		79.3		91.8		98.6		100.0	
227	1.4		32.6		66.9		83.2		93.1		100.0			
228	0.7		23.3		54.0		73.7		91.8		100.0			
229	0.3	2.6	9.5	29.8	51.2	69.6	82.2	89.6	94.5	97.3	99.3	100.0		
230	0.2	1.6	5.5	18.6	33.4	49.4	64.0	75.5	86.4	94.1	98.8	100.0		

Table 6.--Fall River - Particle size distribution of bedload--Continued

Sample number	Percent by weight finer than sieve size indicated, in millimeters													
	0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.00	22.63
231	0.3	2.1	7.8	24.4	43.0	64.0	75.5	86.4	94.1	98.8	100.0			
232	0.3	2.0	7.3	21.6	37.5	54.3	69.4	80.4	89.9	95.6	99.3	100.0		
233	0.4	3.1	9.5	24.3	38.7	54.0	69.7	82.5	91.7	96.4	99.0	100.0		
234	0.4		14.5		50.3		79.4		95.6		99.7		100.0	
235	3.5	21.9	44.5	76.0	89.9	96.2	98.5	100.0						
236	0.7	5.0	14.5	35.0	50.1	64.0	76.1	85.3	92.7	97.2	99.2	100.0		
237	0.9	7.3	14.7	35.9	51.7	66.9	77.2	84.0	89.8	93.3	97.5	100.0		
238	0.6	5.2	14.9	33.4	50.2	67.3	81.3	89.2	94.4	98.2	100.0			
239	0.3	2.4	8.9	27.7	47.5	65.1	77.4	85.3	92.0	96.5	98.7	100.0		
240	0.3	2.6	8.2	22.2	36.9	52.6	67.2	78.8	89.1	95.1	98.4	99.3	100.0	
241	0.4	2.1	6.5	19.9	34.5	51.0	66.5	78.1	89.8	96.4	99.7	100.0		
242	0.5	3.0	8.9	24.1	37.9	52.0	64.6	75.8	86.7	94.0	98.2	100.0		

Table 7.--Fall River--Particle size distribution of bed material

Percent by weight finer than sieve size indicated, in millimeters													
0.25	0.35	0.50	0.71	1.00	1.41	2.00	2.83	4.00	5.67	8.00	11.31	16.0	22.63
2.8	8.0	13.6	24.5	35.3	45.2	55.3	64.2	73.2	81.2	89.1	93.7	98.0	100.0

Table 8.--Fall River--Water Stage

[Stage is an arbitrary gage height; °C, degrees Celsius]

Day	Time (hours)	Stage (meters)	Day	Time (hours)	Stage (meters)
June 14	0930	0.457	June 15	0930	0.463
	1000	0.451		1000	0.463
	1030	0.448		1030	0.460
	1100	0.448		1100	0.457
	1130	0.442		1130	0.457
	1200	0.436		1200	0.454
	1230	0.436		1230	0.454
	1300	0.433		1300	0.451
	1330	0.430		1330	0.448
	1400	0.427		1400	0.445
	1430	0.427		1430	0.442
	1500	0.430		1500	0.447
	1530	0.430		1530	0.442
	1600	0.430		1600	0.442
	1630	0.430		1630	0.442
				1700	0.445
				1730	0.445
				1800	0.445
June 16	0930	0.491			
	1000	0.491	Water-temperature range		
	1030	0.491			
	1100	0.491	June 14	6.5-10.5 °C	
	1130	0.488	June 15	7.0-10.5 °C	
	1200	0.482	June 16	7.0-11.5 °C	
	1230	0.476			
	1300	0.476			
	1330	0.469			
	1400	0.469			
	1430	0.469			
	1500	0.466			

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