

REPORT OF THE 1969 SURVEY OF SEDIMENT BELOW
STREAM GAGE SITES 1, 2, AND 3 ON THE
H. J. ANDREWS EXPERIMENTAL FOREST

By Roger Dela Rosa

There were no treatments on watersheds 1, 2, and 3, yet a slide came off on a section of the L220 Road (G Road) in watershed 3.

Three years have elapsed since the end of logging and slash burning on watershed 1.

On watershed 3, it has been four winters since the slides of December 1964, 6 years since logging, and 10 years since road construction.

Measurements and Calculations

Elevation measurements were made with exactly the same number of points used in previous years: 224 in watershed 1, 210 in watershed 2, and 209 in watershed 3.

On watershed 3, by checking the elevation of the spike at the dam in 1969 with that of 1968, it was found that the elevation at the spike was lower this year by .017 foot. This figure was used as a correction factor in the calculation of this year's average bottom elevation.

On watershed 1, the sediment basin was partly cleaned about 1 month after the sediment measurements were made in August 1968. The change in bottom elevation this year was based on the measurements made after the partial basin cleaning.

During the survey, permanent bench mark readings were taken as often as possible, usually at the end and/or beginning of a transect. These readings were averaged and were taken into account in the calculation of the lines of sight. To insure more accurate elevation readings, auxiliary bench mark readings were also made.

Only one survey rod was used this year as against two rods used last year. Like last year, sediment accumulation was determined by the methods outlined in 1959 by Sturges.

Discussion

Since there have been no treatments on all three watersheds this year, the resultant sediment loads should be traced to the previous treatments on watersheds 1 and 3 and to the erosion effects of the severe winter storm in December 1964 which had scoured the channel and deposited large amounts of mud and debris along the channel in watershed 3. Also, on watershed 3, a slide that began in November 1968 on a section of the L220 Road (G Road) offered a new source of sedimentation for the stream channel. However, due to steep hillsides and poor soils of the watershed, mass wasting is still the primary source of erosion.

Although measurements were made to avoid errors as much as possible, this does not mean that the computed accumulated bedloads represent the total sediment loads. For one thing, the sediment basins were not designed or built to have a 100 percent trap efficiency. The basins trap bedload but not the fine sand or silt-like particles. Another significant thing is that the sediment basins in watersheds 1 and 3 were already filled in the winter of 1968 after two relatively big storms. Since the basins had not been cleaned until October 1969, the accumulated bedloads measured on watersheds 1 and 3 do not necessarily represent a 1-year total deposition.

TABLE 1. SEDIMENT ACCUMULATION 1968-69

Year	Number of Points	Line of Sight	Average rod Reading	Average bottom Elev.	Change of Bottom Elev.	Basin area in Sq. ft.	Total Accum. in cu. ft.	Average Accum. Cu. ft./ Acre	Ratio
								3/2	1/2
Watershed 1 -- 237 acres									
Aug. 1969	224	113.874	5.346	108.528	2.104	2133.00	4487,832	18.94	17.87
1968*	224	114.372	7.948	106.424					
Watershed 2 -- 149 acres									
Aug. 1969	210	108.018	7.755	100.263	0.084	1887.00	158.508	1.06	
Watershed 3 -- 250 acres									
Aug. 1969	209	105.756	5.346	100.410	2.503	890.00	2227.670	8.91	8.41

* Measured on October 9, 1968

Benchmark:
H. I.
Elev.

FORM RI-2

After Cleaning

Date: 10/9/68

Party: Level RLF

Rod R.M.

Notes J.R.

Experimental Area: H.T.A.
Basin Location: WS #1

[illegible]

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H. I.

Elev.

Experimental Area: HJA

Basin Location: WS #1

Date: 10-9-68

Party: Level

Rod

Notes

[illegible]

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.	Elev.
100	100
101	101
102	102
103	103
104	104
105	105
106	106
107	107
108	108
109	109
110	110
111	111
112	112
113	113
114	114
115	115
116	116
117	117
118	118
119	119
120	120
121	121
122	122
123	123
124	124
125	125
126	126
127	127
128	128
129	129
130	130
131	131
132	132
133	133
134	134
135	135
136	136
137	137
138	138
139	139
140	140
141	141
142	142
143	143
144	144
145	145
146	146
147	147
148	148
149	149
150	150
151	151
152	152
153	153
154	154
155	155
156	156
157	157
158	158
159	159
160	160
161	161
162	162
163	163
164	164
165	165
166	166
167	167
168	168
169	169
170	170
171	171
172	172
173	173
174	174
175	175
176	176
177	177
178	178
179	179
180	180
181	181
182	182
183	183
184	184
185	185
186	186
187	187
188	188
189	189
190	190
191	191
192	192
193	193
194	194
195	195
196	196
197	197
198	198
199	199
200	200

Experimental Area: H/H
Basin Location: WS #1

Date: 8/11/69
Party: Level RM-JR-RCLR
Rod _____
Notes _____

[illegible]

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

Watersheds

H. I. 6

Elev.

IN CATCHMENT BASINS

Date: 8/11/69

Party: Level

Rod

Notes

Experimental Area: HJA

Basin Location: WS #1

Total
Average

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H. I. e.

Elev.

Experimental Area: HJA

Basin Location: WLS #2

Date: 8/12/69

Party: Level AL-RM-RdJR

Rod

Notes

[illegible]

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED
IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H.I.

Elev.

Experimental Area:

Basin Location: WS 2

Date: 8-12-69

Party: Level

Rod

Notes

Station*	Transects (Designated in ft. starting at crest of dam)													
	8		9		10		11		12		13		14	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
03		✓4.66		4.94		4.69		5.11		3.98		2.08		4.35
06		6.25		6.65		6.64		6.55		5.58		4.78		5.26
09		7.40		7.59		7.62	Rock→	7.17		6.54		6.23		6.35
12		8.56		8.15		8.12		8.19		7.44		7.20		6.84
15		8.80		8.74		8.58		8.27		7.69		7.29		6.91
18		8.88		8.81		8.60		8.39		7.96		7.40		6.94
21		9.04		8.77		8.48		8.21		8.19		7.47		7.08
24		8.82		8.65		8.38		8.23		8.13		7.31		6.72
27		8.50		8.42		8.38		8.23		8.09		7.41		6.33
30		8.34		8.45		8.30		8.15		8.07		7.30		6.11
33		8.56		8.34		8.36		8.13		7.76		6.95		5.47
36		8.43		8.16		8.05		7.86		7.63		6.36		4.57
39		8.20		7.82		7.78		7.38		7.24		5.94		4.35
42		7.68		7.50		7.31		7.00		6.41		4.55		6.54
45		7.28		7.08		6.73		6.19		5.07		4.24		
48		6.74		6.63		6.15		5.26		4.33				
51		6.20		5.91		5.27		4.57		3.88				
54		4.25		4.13		3.98		✓3.70						
57		4.14		4.03		3.52								
60														
		(16)		(15)		(15)		(14)		(12)		(11)		(8)
		127.68		119.76		117.48		107.95		91.15		76.86		53.28

AUXILIARY B.M.
END of LINE 8 5.149
END of LINE 10 5.147
END of LINE 12 5.150

Total
Average

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H. I.

Elev.

Experimental Area:

Basin Location:

Date: 8-12-69

Party: Level

Rod

Notes

Station*	Transects (Designated in ft. starting at crest of dam)											
	15		16		17		18					
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00												
03		5.75		5.65		6.19						
06		6.16		6.15		5.98						
09		6.13		6.08		6.13						
12		6.30		6.12		5.90	5.58					
15		6.63		6.14		5.68						
18		6.50		5.72		4.25						
21		6.18		5.26		4.44						
24		5.71		4.33								
27		5.28		4.16								
30		4.51										
33												
36												
39												
42		(6)		(4)		(4)						
45		37.90		24.49		24.20						
48												
51												
54												
57												
60												

① = add in for 1970 Rpt

5.58

Total Rod Rds including #18 = 1634.13

Ave Rod Rdd. = 7.745

Total Pts = 211

Line of Sight 108018

1970 Rpt.

REGULAR BM
END of SURVEY - 8.019

AUXILIARY BM

END of LINE 14 5.147

END of LINE 16 5.147

END of SURVEY 5.147

Total
Average

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H. I.

Elev.

Experimental Area: *H. J. A.*

Basin Location: # 3

Date: 8/12/69

Party: Level RM

Rod Rd/R

Notes LR

Transects (Designated in ft. starting at crest of dam)														
Station*	1		1A		2		3		4		5		6	
	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.	H.I.	Elev.
00														
02.5		5.70				5.62		5.49		5.51		5.61		5.77
4		5.61				5.47		5.40		5.45		5.59		5.74
6		5.65				5.29		5.36		5.42		5.62		5.80
8		5.62				5.32		5.39		5.49		5.62		5.71
10		5.46				5.36		5.23		5.52		5.63		5.76
12		5.44				5.33		5.40		5.52		5.68		5.79
14		5.43				5.34		5.41		5.55		5.73		5.64
16		5.42				5.41		5.42		5.56		5.71		5.42
18		5.42				5.47		5.44		5.59		5.49		5.22
20		5.39				5.32		5.44		5.57		5.34		5.19
22		5.38				5.38		5.34		5.66		5.20		5.06
24		5.46				5.54		5.44		5.19		5.25		5.18
26		5.54				5.59		5.39		5.17		5.17		5.19
28		5.72				5.76		5.25		5.20		5.20		5.18
30		6.12				5.77		5.16		5.53		5.32		5.32
32		5.85				5.52		5.04		5.26		5.17		4.82
34		5.43		5.52		5.01		5.00		5.14		5.12		
36		5.24		5.35		4.84		4.94		4.90		5.01		
38		4.80	edge	5.11		4.76		4.96		4.74		4.83		
40		4.82	channel	5.09		4.78		4.67		4.78				
42		4.87		5.07	in channel	4.74		4.69		4.65				
44		4.78		4.78		4.54		4.79		4.65				
46		4.90		4.95		4.73		4.76		4.62				
48		4.68		4.71		4.64		4.68		4.47				
	(24)		(8)		(34)		(24)		(24)		(19)		(16)	
	128.73		40.58	#1	125.53		124.09 #2		125.14		102.09	#3	86.7	9
B.S. on B.M.		0.140					0.142				0.143			
F.S. To T.P.		12.048		11.908	171.64		12.044	119.02			12.049	119.03		
R.S. To T.P.		434		5256			0.438	5.251			522			
F.S. To Spike		5.690					5.689				- 5.774	5253		
										11.53			121.53	
check	Line 1				5.774									
	4				5.774									
TOTAL NO. OF POINTS = 209														
TOTAL ROD READINGS = 1117.03														
AVERAGE ROD READING = 5.346														
Pond Full of Sediment AVER BM ROD READING = 5.773														
LINE OF SIGHT = 99.983 + 5.773														
there's a difference of .017 of the assumed elevation of 100 at the spike in 1968 and 1969.														
Total Average														

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.

RI - NW
SOIL STABILIZATION
Watersheds

ELEVATIONS OF SEDIMENT ACCUMULATED IN CATCHMENT BASINS

FORM RI-2

Benchmark:

H. I. e

Elev.

Experimental Area: 145A.
Basin Location: WS #3

Date: 8-12-69

Party: Level

Rod

Notes

[illegible]

*Numbered to right starting with 0 at borderline which extends upstream from left end of dam.