UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

GRAPHIC AND TABULAR SUMMARIES OF RECENT CHANGES IN STREAM-CHANNEL CROSS SECTIONS FOR REDWOOD CREEK AND SELECTED TRIBUTARIES, HUMBOLDT COUNTY, CALIFORNIA

By

K. Michael Nolan, Deborah R. Harden, *and* Richard J. Janda

OPEN-FILE REPORT 76-392

This report is preliminary and has not been edited or reviewed for conformity with Geological Survey standards and nomenclature

270464

Menlo Park, California
May 1976

CONTENTS

TABLES

GRAPHIC AND TABULAR SUMMARIES OF RECENT CHANGES IN STREAM-CHANNEL CROSS SECTIONS FOR REDWOOD CREEK AND SELECTED TRIBUTARIES, HUMBOLDT COUNTY, CALIFORNIA

by

K. Michael Nolan, Deborah R. Harden, and

Richard J. Janda

The following report contains graphs and tables that summarize changes in stream channel cross-section configuration during the 1974 and 1975 water years at 48 monumented cross-sections along Redwood Creek and at 31 similar cross sections along selected tributaries. The locations of the cross sections are shown on a planimetric map of the drainage basin (fig. 1) and on a longitudinal profile of Redwood Creek (fig. 2). Vertically exaggerated, repeated stream-channel cross-section profiles are also presented for 10 cross sections to provide examples of the changes summarized in tables 1 through 4.

All surveyed stream-channel cross sections along Redwood Creek are monumented with 4.0-ft (1.2-m) lengths of 3/8-in (9.5-mm) steel bars or by reference marks on concrete bridge abutments. Steel monuments were driven 3 to 3.5 ft (0.9 to 1.1 m) into the ground and were referenced to at least two other triangulation points (Emmett, 1974). Triangulation was by tape and compass. A self-leveling level was used to establish relative altitudes. Three stream-channel cross sections along Redwood Creek are at cableways of stream-gaging stations of the U.S. Geological Survey, and auxiliary data on stream-channel geometry are obtained from cross

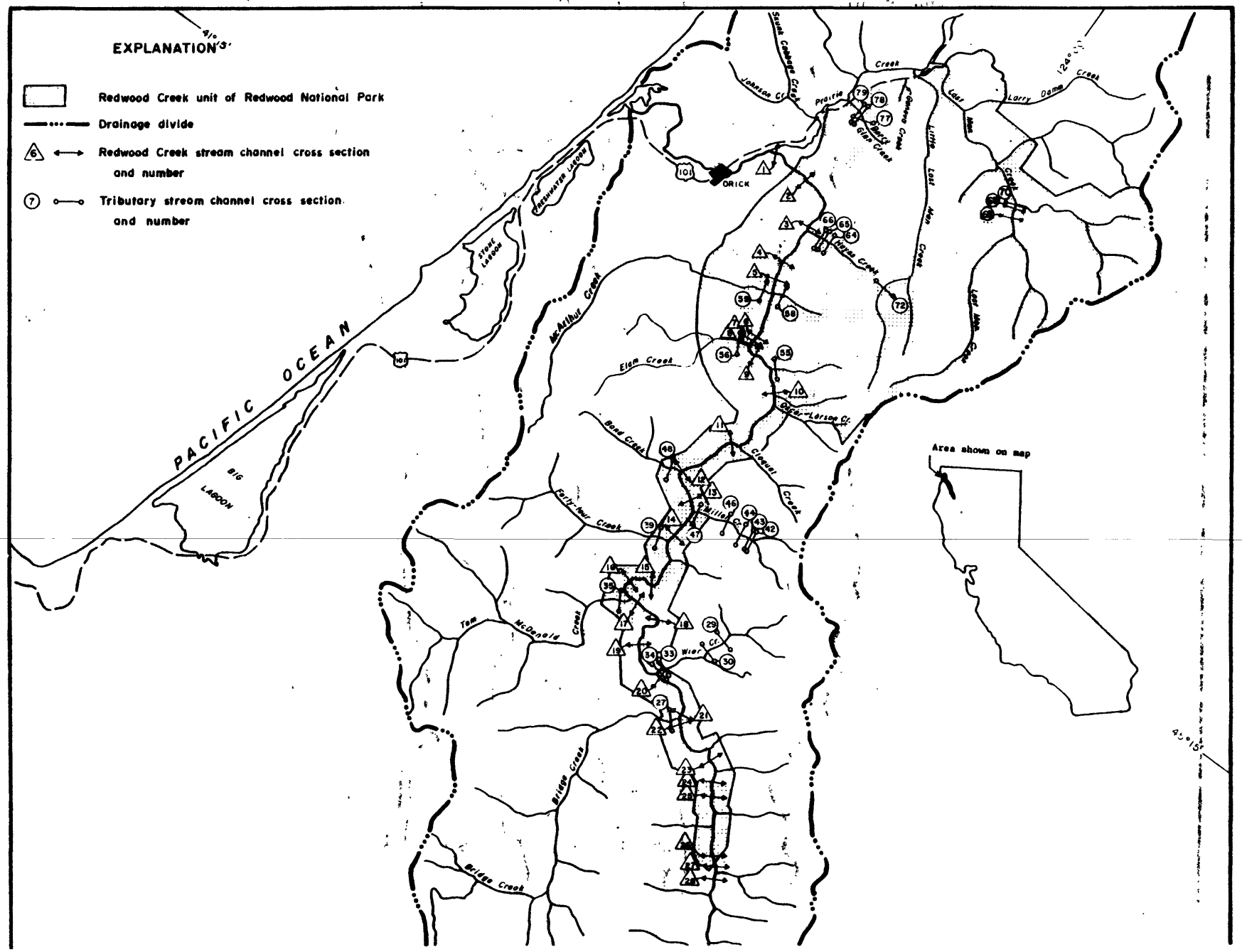
sections made while measuring stream discharge. Cross sections along some larger tributaries were monumented and surveyed in the same manner as those along Redwood Creek. Most cross sections along smaller tributaries were determined by using a surveying rod, or a tape and plumb bob, to measure the vertical distance between the ground surface and a taut horizontal line attached to fixed end points. Photographs and information on bedforms, grain-size of streambed material, and specific erosional and depositional features were obtained while surveying, to assist in the interpretation of any observed cross-sectional changes.

Two of the cross sections reported here were installed along lower Redwood Creek at the start of the 1973 water year by the National Park Service; 40 additional cross sections were established early in the 1974 water year; and the remaining six Redwood Creek cross sections were established during the 1975 water year. Most tributary cross sections were established between September and December 1974, and all were established prior to the major flood of March 1975.

References Cited

Emmett, W. W., 1974, Channel Changes: Geology, v. 2, no. 6, p. 271-272.

Iwatsubo, R. T., Nolan, K. M., Harden, D. R., Glysson, G. D., and Janda, R. J., 1975, Redwood National Park Studies, Data Release Number 1 Redwood Creek Humboldt County, California September 1, 1973-April 10, 1974: U.S. Geol. Survey open-file rept., 120 p.


EXPLANATION
Redwood Creek unit of Redwood National Park
Drainage divide
Redwood Creek stream channel cross section and number
Tributary stream channel cross section and number
PACIFIC OCEAN
Freshwater Lagoon
Stone Lagoon
Big Lagoon
McArthur Creek
Elam Creek
Bond Creek
Forty-Four Creek
Tom McDonald Creek
Bridge Creek
Stunts Cabbage Creek
Johnson Cr.
Prairie Creek
Lost Man Creek
Larry Dama Creek
Little Lost Man Creek
Orick
Area shown on map

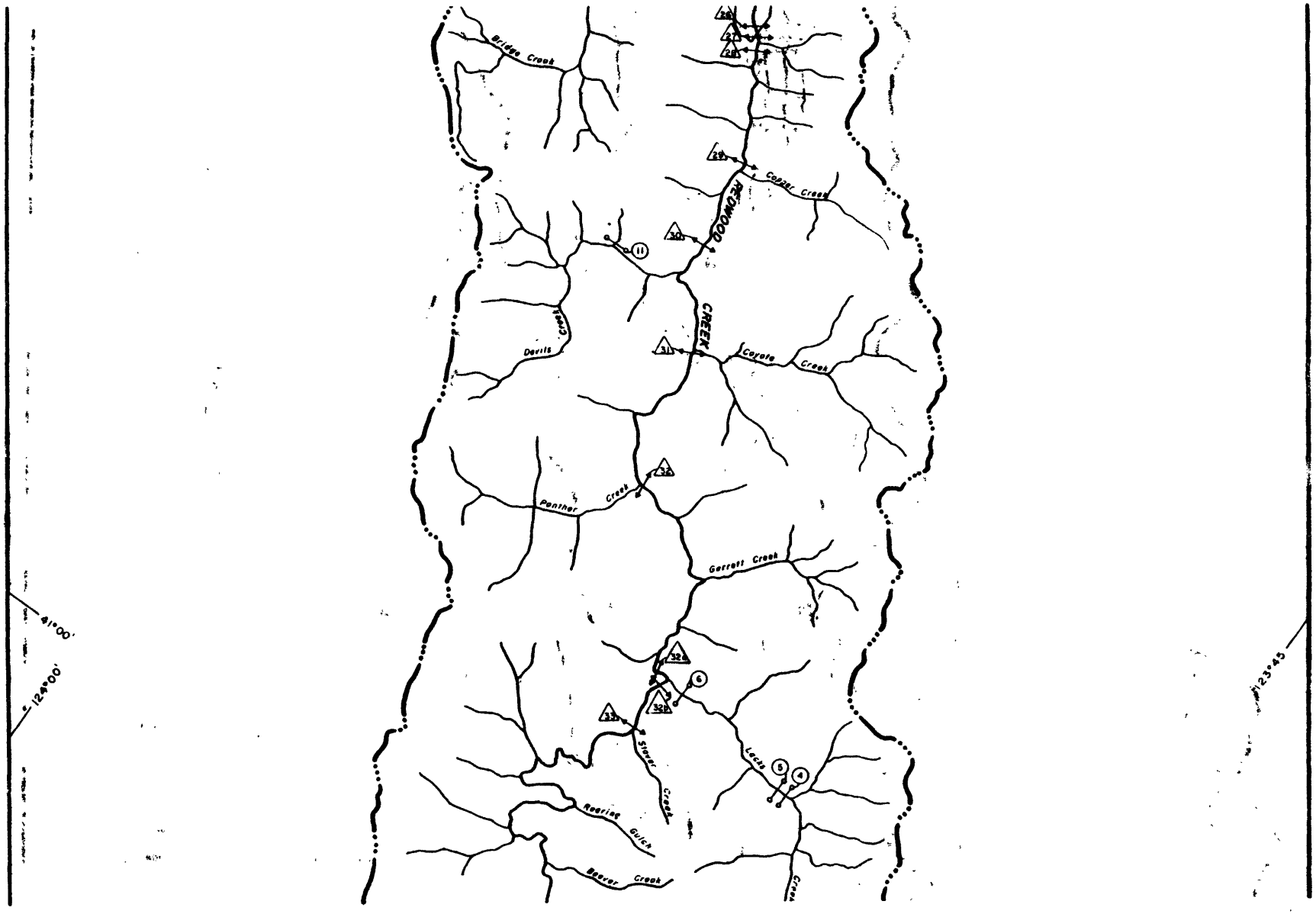


Figure 1.--Location of stream-channel cross sections in Redwood Creek drainage basin.

41°00'
Mill Creek
Tobin Creek
Minor Creek
Lumpa Creek
Noisy Creek
Coal Spring Cr.

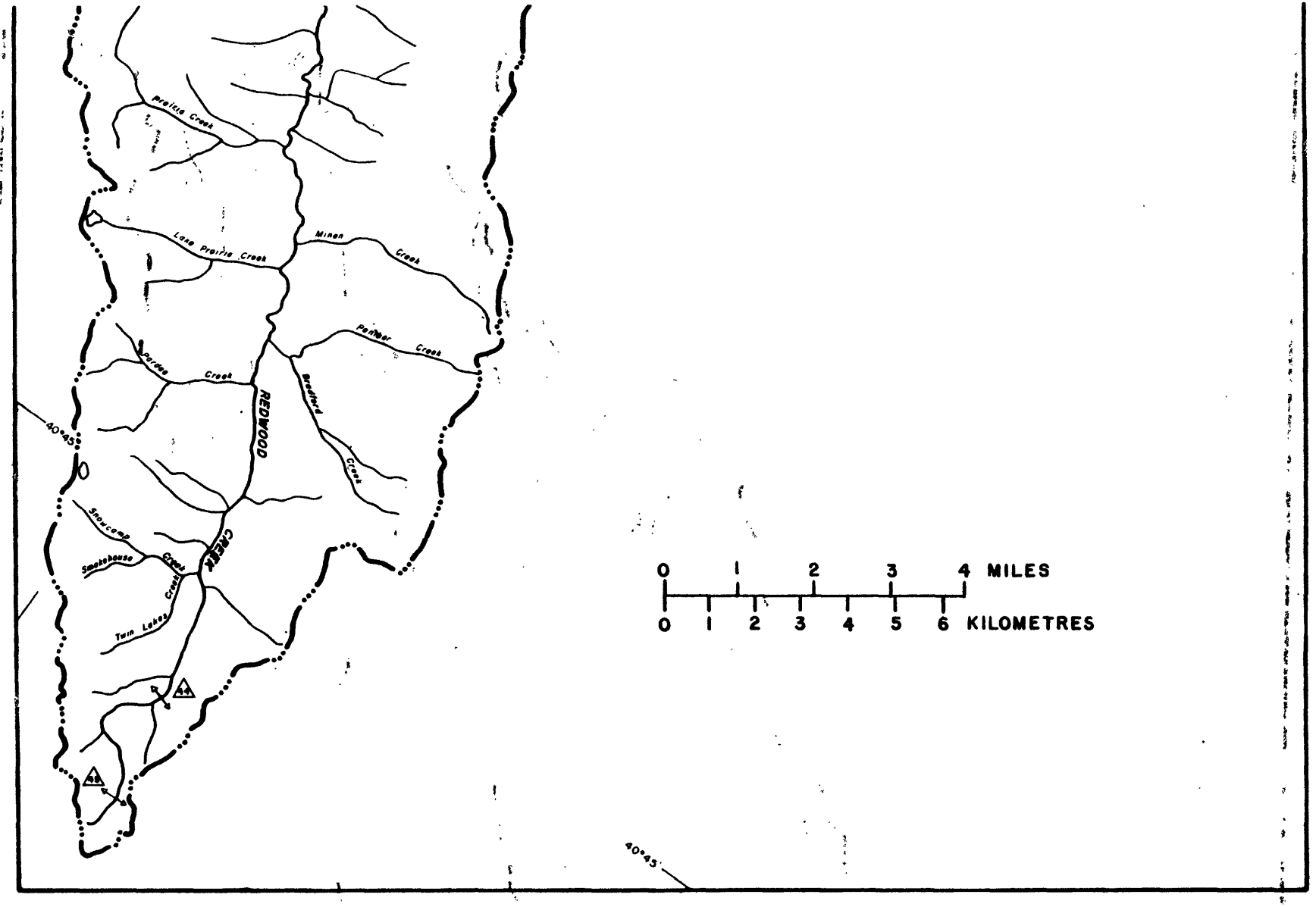


Figure 1.--Location of stream-channel cross sections in Redwood Creek drainage basin. (continued)

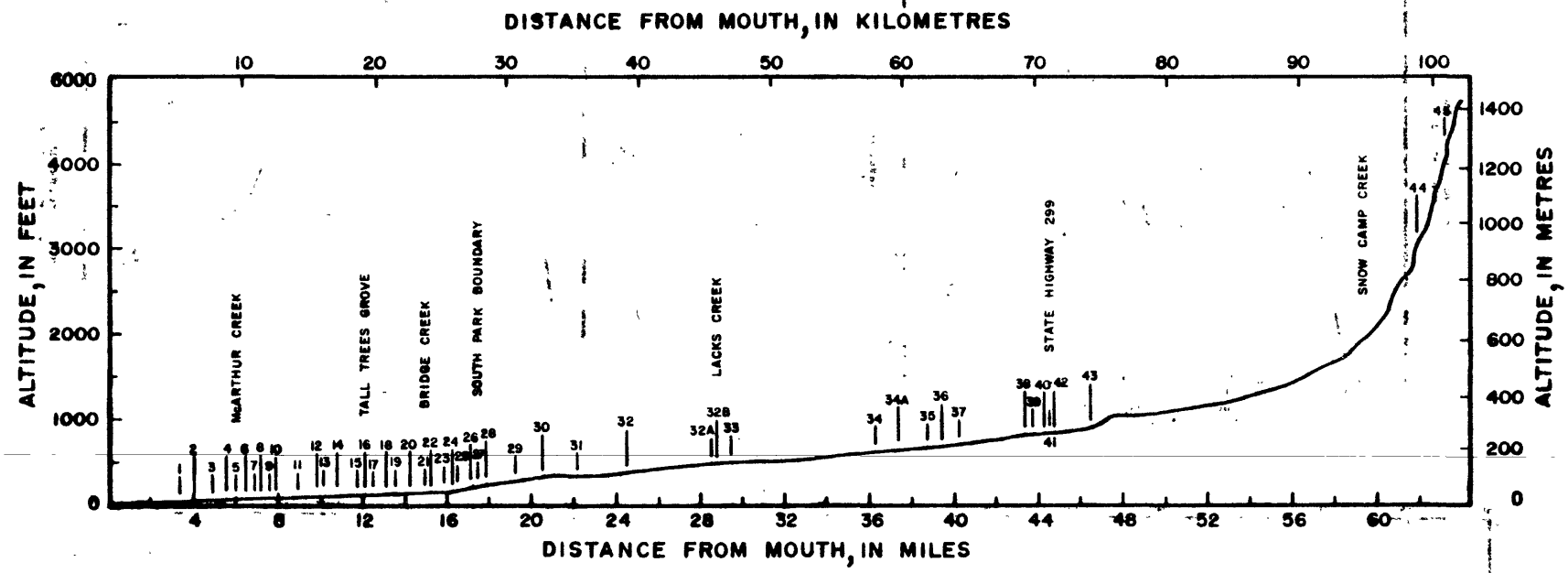


Figure 2.--Longitudinal profile of Redwood Creek showing location of monumented stream channel cross sections. Cross sections are indicated by their identification number.

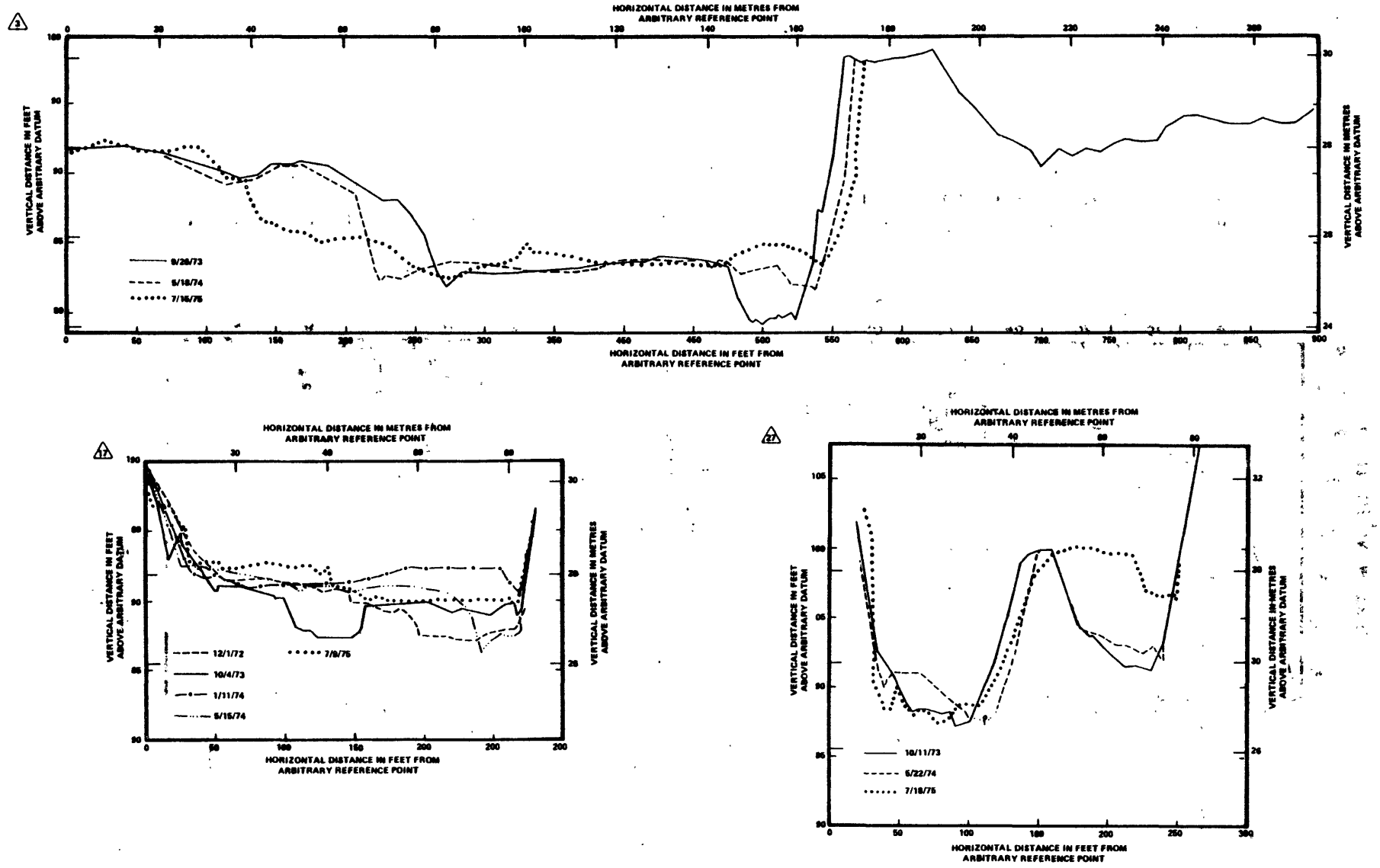


Figure 3.--Vertically exaggerated Redwood Creek cross sections 3, 17, and 27. View is looking downstream.

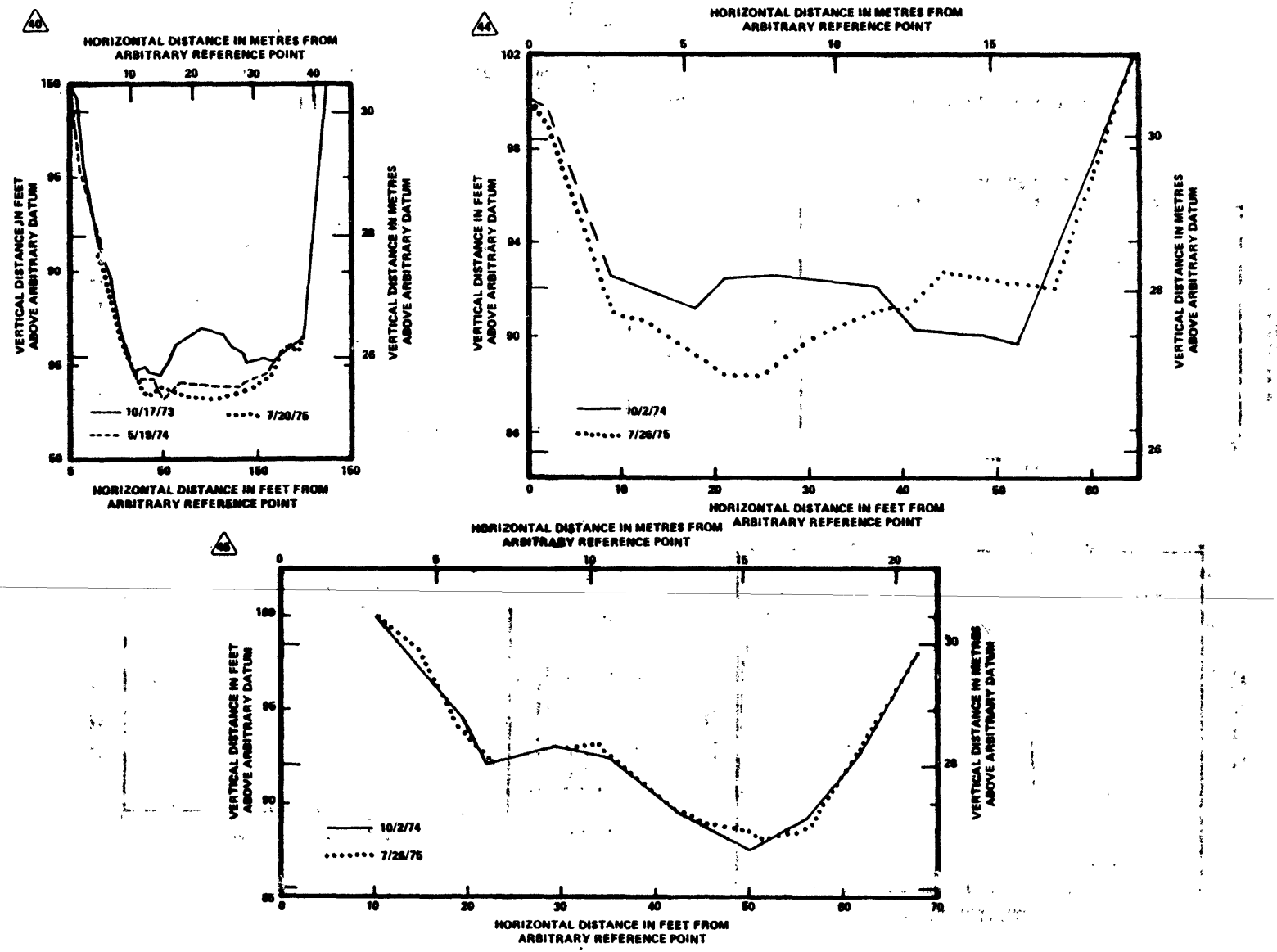


Figure 4.--Vertically exaggerated Redwood Creek cross sections 40, 44, and 45. View is looking downstream.

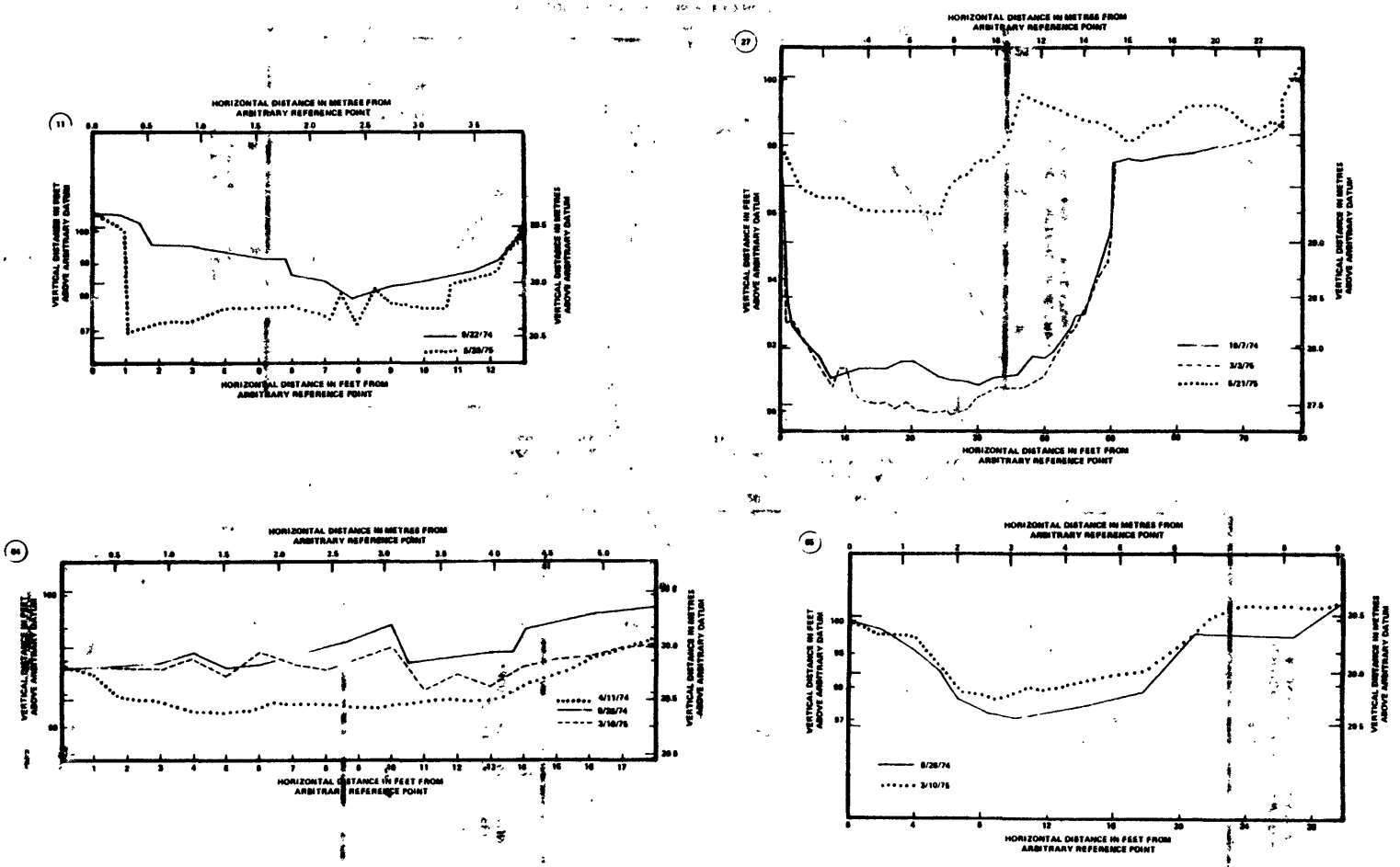
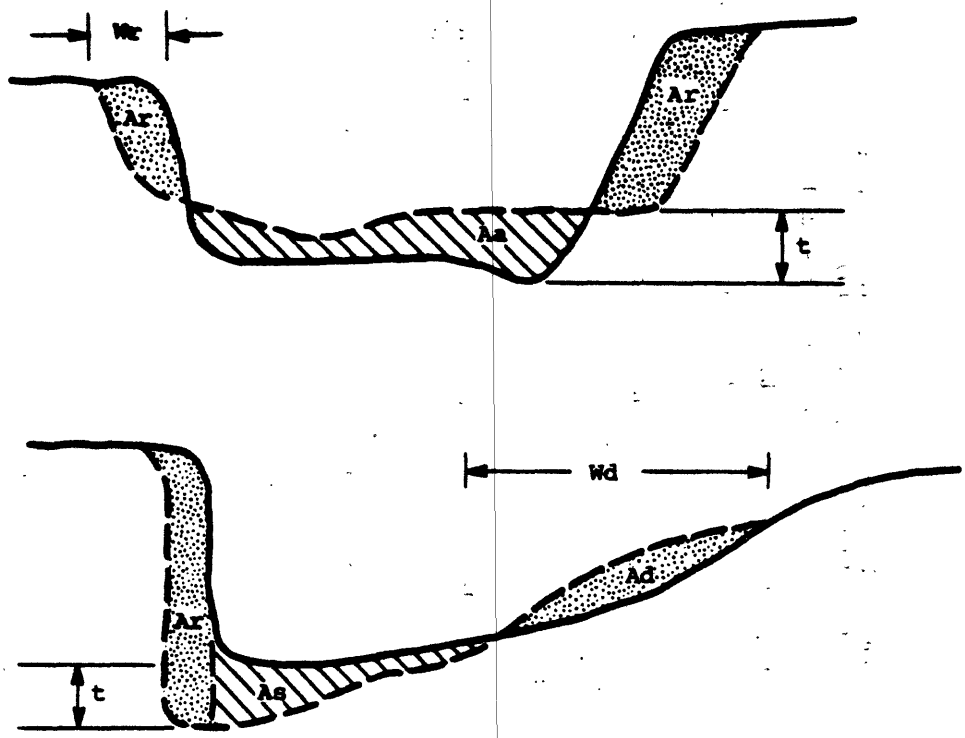


Figure 5.--Vertically exaggerated tributary cross sections 11, 27, 64, and 65. View is looking downstream.



Land-surface profile at time of initial survey

Land-surface profile at time of resurvey

Wr — Change in width associated with bank recession (erosion)

Wd — Change in width associated with deposition (lateral accretion)

t — Change in altitude of thalweg

Aa / As — Change in cross-sectional area associated with changing streambed altitude. Aa indicates aggradation. As indicates scour

Ar / Ad — Change in cross-sectional area associated with erosion or deposition on streambanks. Ar indicates bank recession (erosion). Ad indicates bank deposition

FIGURE 6.--Explanation of cross-sectional changes used in tables 1-3 (from Iwatsubo and others, 1975).

Table 1.--Summary of net changes in Redwood Creek stream channel at cross sections between September, 1973 and May, 1974. (from Iwatsubo and others, 1975)

[See figures 1&2 for location of cross sections and figure 6 for explanation of symbols]

Measurement	Cross-section identification numbers														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Change in altitude of thalweg (ft)															
Aggradation	0	1.0	2.4	0.9		0.8	0	1.0		0.5	3.9		1.2	0.8	0.4
Scour	0				2.3		0		2.0			0.8			
Change in cross-sectional area (ft^2) associated with changing streambed altitude															
Aggradation (Aa)	0	169	145	0	0	416.5	106	162	68	8.5	223	58	211.1	120	230
Scour (As)	365	0	0	199	440	0	0	0	0	0	0	0	0	0	0
At left bank															
Change in width (ft)															
Deposition (Wd)	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0
Recession (Wr)	8	4	20	15	0	0	0	9	18	0	0	5	6	5	10
Change in area (ft^2)															
Deposition (Ad)	0	0	0	0	0	0	12.5	0	0	0	0	0	0	0	0
Recession (Ar)	24	16	290	126	0	0	0	85.5	95	0	0	6	21	3	33
At right bank															
Change in width (ft)															
Deposition (Wd)	0	0	0	10	0	0	0	0	0	0	5	0	0	0	0
Recession (Wr)	5	78	30	0	6	0	25	20	0	0	0	5	1	0	0
Change in area (ft^2)															
Deposition (Ad)	0	0	0	87	0	0	0	0	0	0	20	0	0	0	0
Recession (Ar)	4.5	280	155	0	30	0	60.5	70	0	0	0	20	2.5	0	0
Net change in area (ft^2)	+393.5	+127	+300	+238	+470	-416.5	-58	-6.5	+27	-8.5	-243	-32	-187.6	-117	-197
Number of surveys	4	2	2	2	3	2	2	2	2	2	2	2	2	2	2

Table 1.--Summary of net changes in Redwood Creek stream channel at cross sections between September, 1973 and May, 1974--continued.

Measurement	Cross-section identification numbers														
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Change in altitude of thalweg (ft)															
Aggradation	1.5		0.7	0.8	0.9										
Scour		1.3				0.2	1.0	0.2	2.5	2.0	1.5[1/]	.4[1/]	0.3	1.1	0.8
Change in cross-sectional area (ft^2) associated with changing streambed altitude															
Aggradation (Aa)	38	115	50	85	13	131	0	0	0	0	77.5	0	13	0	0
Scour (As)	0	0	0	0	0	0	83	55	600	215	0	15	0	75	5
At left bank															
Change in width (ft)															
Deposition (Wd)	5	3	0	0	0	0	2	0	0	0	5	0	0	0	0
Recession (Wr)	0	0	45	5	0	0	0	15	2	0	0	2	0	0	0
Change in area (ft^2)															
Deposition (Ad)	40	8	0	0	0	0	5	0	0	2	60	0	0	0	0
Recession (Ar)	0	0	100	10	0	0	0	75	20	0	0	7	0	0	0
At right bank															
Change in width (ft)															
Deposition (Wd)	0	0	3	0	0	0	0	5	0	2	0	0	2	5	0
Recession (Wr)	5	0	0	10	0	8	0	0	12	0	0	0	2	0	5
Change in area (ft^2)															
Deposition (Ad)	0	0	25	0	0	0	0	15	0	5	0	0	3	13	0
Recession (Ar)	65	0	0	30	0	43	0	0	75	0	0	0	0	0	10
Net change in area (ft^2)	-13	-123	+25	-45	-13	-88	+78	+115	+695	+208	-137.5	+22	-16	+62	+15
Number of surveys	2	7	2	2	Discharge meas.	2	2	2	2	2	Discharge meas.	2	2	2	3

1/ The deepest part of cross section was unwadeable in May, 1974. Thalweg elevations are from field estimates.

Table 1.--Summary of net changes in Redwood Creek stream channel at cross sections between September, 1973 and May, 1974--continued.

Measurement	Cross-section identification numbers											
	31	32	33	34	35	36	37	38	39	40	41	42
Change in altitude of thalweg (ft)												
Aggradation												
Scour	0.7	2.2	1.0	0.4	0.4	1.9	2.2	0.3	0.2	1.7	2.1	0.7
Change in cross-sectional area (ft^2) associated with changing streambed altitude												
Aggradation (Aa)	0	0	0	0	0	0	0	0	25	0	0	0
Scour (As)	35	98	118	55	35	113	118	23	0	108	123	38
At left bank												
Change in width (ft)												
Deposition (Wd)	0	0	0	0	0		0		0	0	0	0
Recession (Wr)	0	3	0	0	0		5		3	0	0	0
Change in area (ft^2)												
Deposition (Ad)	0	0	0	0	0		0		0	0	0	0
Recession (Ar)	0	10	0	0	0		8		13	0	0	0
At right bank												
Change in width (ft)												
Deposition (Wd)	2	0	0	0	0	Bridge site	0	Bridge site	0	0	0	0
Recession (Wr)	0	0	0	5	3		0		0	0	0	3
Change in area (ft^2)												
Deposition (Ad)	2	0	0	0	0		0		0	0	0	0
Recession (Ar)	0	0	0	3	5		0		0	0	0	3
Net change in area (ft^2)	+33	+108	+118	+58	+40	+113	+126	+23	-12	+108	+123	+41
Number of surveys	2	2	3	4	3	3	2	2	3	Discharge meas.	2	2

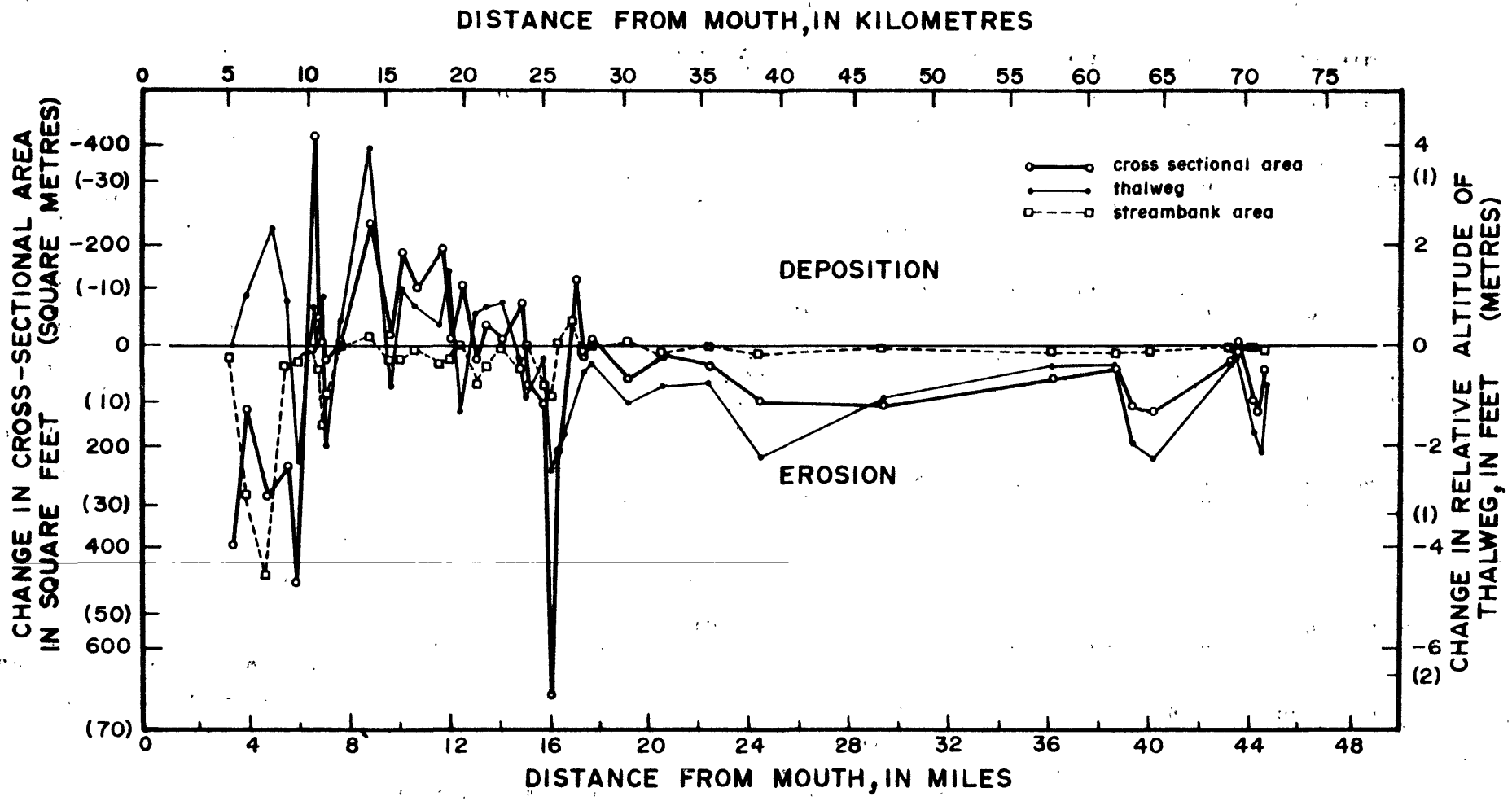


Figure 7.--Summary of net changes in Redwood Creek stream channel at cross sections between September, 1973 and May, 1974. The lines connecting actual observation points have no physical meaning; these lines are shown in order to assist the reader in categorizing the three types of portrayed data.

Table 2.--Summary of net changes in Redwood Creek stream channel at cross sections May 1974 - July 1975

Measurement	Cross-section identification numbers										
	1	2	3	4	5	6	7	8	9	10	11
Change in altitude of thalweg (ft)											
Aggradation	0.5		1.0		1.0		0.6	0.1	0.6		
Scour		3.8		1.6		.25				0.9	1.50
Change in cross-sectional area (ft) associated with changing streambed altitude											
Aggradation (Aa)	217.1	0	359.7	0	304.0	0	0	54.2	0	91.0	0
Scour (As)	0	108.3	0	29.4		84.4	35.2	0	251.7	0	98.5
At left bank											
Change in width (ft)											
Deposition (Wd)	0	0	0	3.8	9.8	0	1.9	0	0	0	0
Recession (Wr)	4.4	5.5	48.7	0	0	0	0	2.0	4.3	0	0
Change in area (ft^2)											
Deposition (Ad)	0	0	0	-	83.7	0	9.7	0	0	0	0
Recession (Ar)	17.5	41.5	285.5	35.0	0	0	0	13.6	55.6	0	0
At right bank											
Change in width (ft)											
Deposition (Wd)	6.9	0	0	4.8	0	3.8		0	1.3	0	0
Recession (Wr)	0	20.8	7.0	0	0	0	8.7	10.5	0	0	9.0
Change in area (ft^2)											
Deposition (Ad)	20.6	0	0	39.5	0	20.6	0	0	23.2	0	0
Recession (Ar)	0	218.5	97.9	0	0	0	12.5	75.2	0	0	15.8
Net change in area (ft^2)	-220.2	+368.3	+23.7	+24.9	-387.7	+63.8	+38.0	+34.6	+284.1	-91.0	+114.3
Number of surveys October 1973 - July 1975	6	3	5	5	4	3	5	3	4	3	4

Table 2.--Summary of net changes in Redwood Creek stream channel at cross sections-continued

Measurement	Cross-section identification numbers											
	12	13	14	15	16	17	18	19	20	21	22	23
Change in altitude of thalweg (ft)												
Aggradation	1.3		0	0.3		3.8	3.6			1.6	2.0	1.3
Scour		0.9	0		1.1			1.0	0.8			
Change in cross-sectional area (ft) associated with changing streambed altitude												
Aggradation (Aa)	180.1	50.3	51.3	0	0	144.5	431.0	395.9	113.9	87.2	303.8	250.3
Scour (As)	0	0	0	144.4	2.6	0	0	0	0	0	0	0
At left bank												
Change in width (ft)												
Deposition (Wd)	3.8	4.0	9.5	19.0	0	7.6	0	2.8	0	2.4	1.3	5.8
Recession (Wr)	0	0	0	0	10.1	0	0	0	0.4	0	0	0
Change in area (ft^2)												
Deposition (Ad)	16.9	40.7	7.0	38.7	0	40.0	0	13.8	0	16.8	1.3	103.5
Recession (Ar)	0	0	0	0	50.7	0	0	0	26.1	0	0	0
At right bank												
Change in width (ft)												
Deposition (Wd)	2.7	0	0	0	7.7	0	0	12.7	0	14.3	5.0	0
Recession (Wr)	0	7.9	0	0	0	0	0	0	0	0	0	2.5
Change in area (ft^2)												
Deposition (Ad)	61.3	0	0	0	6.4	0	0	95.1	0	92.8	2.5	0
Recession (Ar)	0	102.7	0	0	0	0	0	0	0	0	0	8.8
Net change in area (ft^2)	-258.3	+11.7	-58.3	+105.7	+46.9	-184.5	-431.0	-504.8	-87.8	-196.8	-307.5	-345.0
Number of surveys October 1973 - July 1975	3	3	5	3	5	8	3	3	7	3	3	3

Table 2.--Summary of net changes in Redwood Creek stream channel at cross-sections-continued

Measurement	Cross-section identification numbers														
	24	25	26	27	28	29	30	31	32	32A	32B	33	34	34A	35
Change in altitude of thalweg (ft)															
Aggradation	4.0	3.0	1.5			1.5	1.5	1.0	1.0		3.3	0.1	1.0	1.0	
Scour				0.3	1.0					0.9					1.0
Change in cross-sectional area (ft) associated with changing streambed altitude															
Aggradation (Aa)	1,036.2	401.9	.1	319.6	50.5	70.3	104.4	89.7	61.4	41.2	334.9	62.5	0	0	82.2
Scour (As)	0	0	0	0	0	0	0	0	0	0	0	0	107.0	31.1	0
At left bank															
Change in width (ft)															
Deposition (Wd)	4.4	2.8	1.3	4.8	0	0	0.2	0.2	0	0.9	1.6	0	0	0	0
Recession (Wr)	0	0	0	0	1.1	0	0	0	1.3	0	0	1.5	10.3	1.6	1.3
Change in area (ft^2)															
Deposition (Ad)	15.3	13.8	10.6	24.4	0	0	11.9	0	0	15.7	2.1	0	0	0	0
Recession (Ar)	0	0	0	0	2.8	0	0	0.5	6.3	0	0	4.4	61.9	6.9	6.0
At right bank															
Change in width (ft)															
Deposition (Wd)	1.5	2.5	1.3	2.7	0	2.5	0	0	0	0	0	0	2.2	0	0
Recession (Wr)	0	0	0	0	3.0	0	4.4	2.0	1.3	2.6	4.0	2.7	0	4.4	2.5
Change in area (ft^2)															
Deposition (Ad)	4.5	6.3	0	11.0	0	3.7	0	0	0	0	0	0	13.0	0	0
Recession (Ar)	0	0	42.0	0	52.5	0	65.2	6.0	3.1	62.1	39.9	33.7	0	19.7	3.8
Net change in area (ft^2)	-1,056.0	-422.0	+31.3	-355.0	+4.80	-74.0	-51.1	-83.2	-52.0	+5.2	-297.1	-24.4	+155.9	+57.7	-72.4
Number of surveys October 1973 - July 1975	4	3	3	3	3	6	4	2	5	3	2	4	8	3	5

Table 2.--Summary of net changes in Redwood Creek stream channel at cross-sections-continued

Measurement	Cross-section identification numbers									
	36	37	38	39	40	41	42	43	44	45
Change in altitude of thalweg (ft)										
Aggradation	3.3			0.4	0.1	0.1				0.6
Scour		0.3	0.9				0.8	1.0	1.2	
Change in cross-sectional area (ft) associated with changing streambed altitude										
Aggradation (Aa)	124.8	0	5.5	0	0	16.4		0	0	6.3
Scour (As)	0	45.3	0	16.9	39.4	0	57.0	118.3	39.2	0
At left bank										
Change in width (ft)										
Deposition (Wd)		2.2		0.4	0	1.3	0	0	0	1.0
Recession (Wr)		0		0	0.9	0	0	0	1.0	0
Change in area (ft^2)	Bridge site		Bridge site							
Deposition (Ad)		11.9		0	0	6.3	0	0	0	1.2
Recession (Ar)		0		6.8	6.1	0	0	0	8.0	0
At right bank										
Change in width (ft)										
Deposition (Wd)		0		0	0	0	0	0	0	1.2
Recession (Wr)		1.3		0	0	4.4	0	0	18	0
Change in area (ft^2)										
Deposition (Ad)		0		0	0	0	0	0	0	1.0
Recession (Ar)		1.3		0	0	15.3	0	0	4.4	0
Net change in area (ft^2)	-124.8	+34.7	-5.5	+23.7	+45.5	-7.4	+57.0	+118.3	+51.6	-8.5
Number of surveys October 1973 - July 1975	6	3	3	5	4	4	5	2	2	2

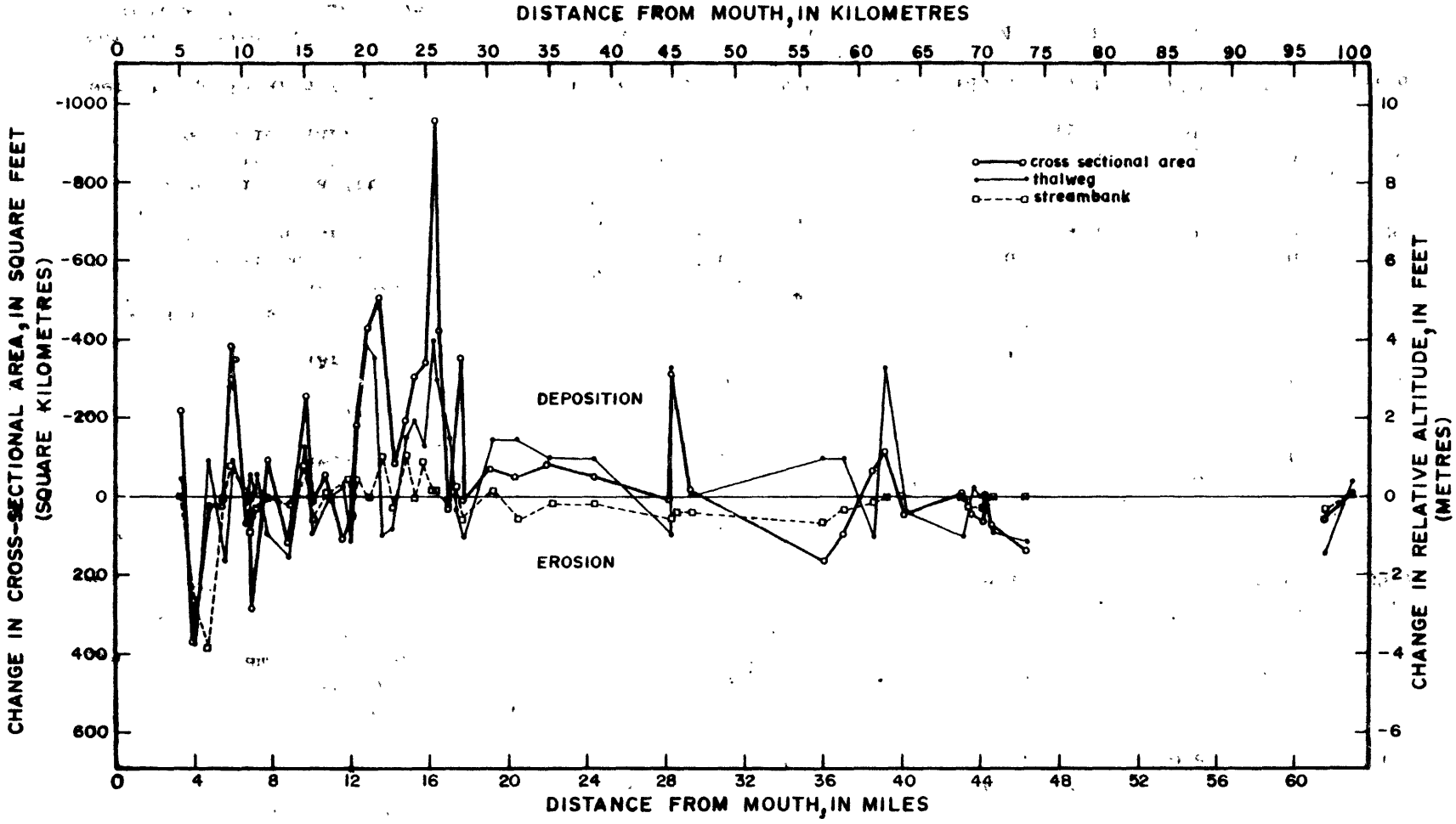


Figure 8.--Summary of net changes in Redwood Creek stream channel at cross sections between May, 1974 and July, 1975. The lines connecting actual observation points have no physical meaning; these lines are shown in order to assist the reader in categorizing the three types of portrayed data.

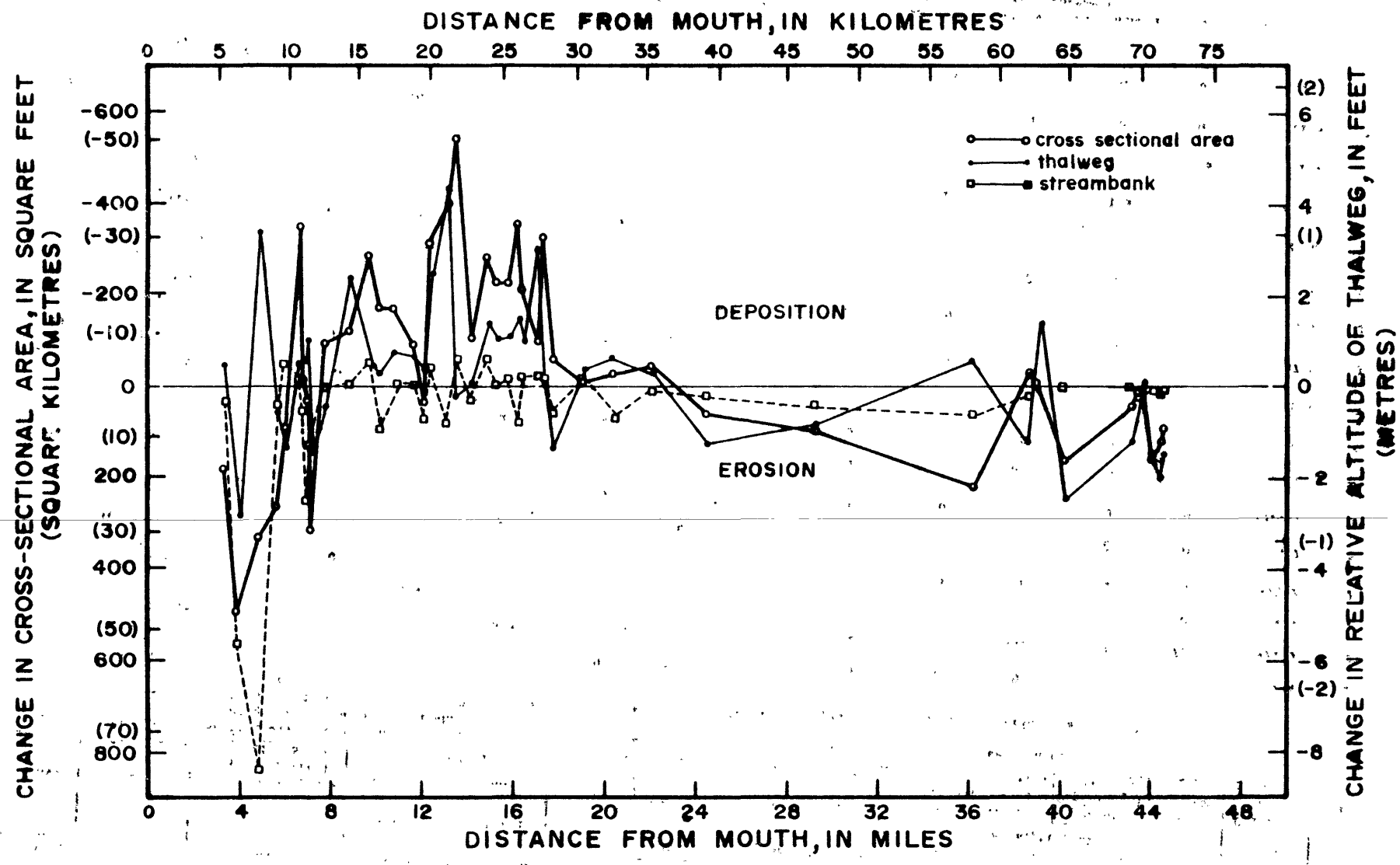


Figure 9.--Summary of net changes in Redwood Creek stream channel at monumented cross sections between September, 1973 and July, 1975. The lines connecting actual observation points have no physical meaning; these lines are shown in order to assist the reader in categorizing the three types of portrayed data.

Table 3 .- Summary of net changes at channel cross sections on selected tributaries to Redwood Creek

Cross-Section Number 1/	Interval of Measurements	Change in Altitude of Thalweg (Ft.)		CHANGE IN CROSS-SECTIONAL AREA										Net Change in Area (ft^2)	Number of Surveys
				Associated With Changing Stream Bed Altitude		At Left Bank				At Right Bank					
						CHANGE IN WIDTH		CHANGE IN AREA		CHANGE IN WIDTH		CHANGE IN AREA			
		Aggradation	Scour	Aggradation (ft^2)	Scour (ft^2)	Deposition (Wd) (ft.)	Recession (Wr) (ft.)	Deposition (Ad) (ft^2)	Recession (Ar) (ft^2)	Deposition (Wd) (ft.)	Recession (Wr) (ft.)	Deposition (Ad) (ft^2)	Recession (Ar) (ft^2)		
1	12/10/74 -	Section was destroyed by landslides and flood-induced stream deposits in the Spring of 1975; cross-section has subsequently been re-established.													
2	12/10/74 -	Section was destroyed by landslides and flood-induced stream deposits in the Spring of 1975; cross-section has subsequently been re-established.													
4	12/10/74 - 10/2/75	0.5	0	12.7	0	0	0.5	0	0.3	0	0	0	0	-12.4	2
5	12/10/74 - 10/2/75	0.2	0	0	8.3	0	1.6	0	7.4	0	2.5	0	7.2	+22.9	2
6	10/3/74 - 10/24/75	1.3	0	25.4	0	0	3.0	0	10.5	0	0	0	0	-14.9	2
11	9/22/74 - 5/20/75	0	1.0	0	13.2	0	0	0	0	0	0	0	0	+13.2	2
27	10/7/74 - 3/3/75	0	0.8	0	23.7	0	0	0	0	0	0	0	0	+23.7	2
27	3/3/75 - 5/21/75	6.0	0	320.1	0	0	0	0	0	0	0	0	0	-320.1	3
29	9/20/74 - 5/27/75	0.2	0	70.1	0	0	0	0	0	0	0.9	0	1.1	-69.0	2
30	9/12/74 - 5/27/75	0	0.3	0	2.8	0	0	0	0	0	0	0	0	+2.8	2
33	10/7/74 - 2/7/75	0	0.6	0	16.1	0	0	0	0	0	0	0	0	+16.1	3
33	2/7/75 - 5/22/75	0.9	0	37.4	0	0	0	0	0	0	0	0	0	-37.4	3
34	12/17/73 - 9/31/75	2.1	0	56.7	0	0	0.7	0	1.0	0	0	0	0	-55.7	2
35	10/7/74 - 3/4/75	0.6	0	25.3	0	0	0.9	0	1.2	0	0	0	0	-24.1	2
35	3/4/75 - 5/12/75	0	1.0	0	28.0	.3	0	.4	0	0	0	0	0	+27.6	2
39	10/7/74 - 3/4/75	0	0	0	3.0	0	0	0	0	1.2	0	1.3	0	+1.7	2
39	3/4/75 - 5/7/75	0	1.0	0	9.9	0	0	0	0	0	1.2	0	2.8	+12.7	2
42	9/19/74 - 5/8/75	0	0.3	10.8	0	0.7	0	1.0	0	0	0	0	0	+11.8	2
43	3/19/74- 2/27/75	0	0.1	0	0.2	0	0	0	0	0	0	0	0	+0.2	2

1/ Cross-section identificetion numbers are derived from a numbering system which includes an expanded network of tributary stream channel cross-sections. Many of these additional cross-sections heve not been installed for a sufficient length of time to allow meaningful remeasurement.

Table 3 .-Summary of net changes at channel cross sections on selected tributaries to Redwood Creek (continued)

Cross Section Number[1/]	Interval of Measurements	Change in Altitude of Thalweg (Ft.)		CHANGE IN CROSS-SECTIONAL AREA										Net Change in Area(ft^2)	Number of Surveys
				Associated With Changing Stream Bed Altitude		At Left Bank				At Right Bank					
						CHANGE IN WIDTH		CHANGE IN AREA		CHANGE IN WIDTH		CHANGE IN AREA			
		Aggradation	Scour	Aggradation	Scour	Deposition	Recession	Deposition	Recession	Deposition	Recession	Deposition	Recession		
		(Aa) (ft^2)		(As) (ft^2)		(Wd)(ft.)	(Wr)(ft.)	(Ad)(ft^2)	(Ar)(ft^2)	(Wd)(ft.)	(Wr)(ft.)	(Ad)(ft^2)	(Ar)(ft^2)		
43	2/27/75 - 5/8/75	0	0.2	4.2	0	0	0	0	0	0	0	0	0	-4.2	2
44	9/20/74 - 2/27/75	0.2	0	4.0	0	0	0	0	0	0	0	0	0	-4.0	2
44	2/27/75 - 5/8/75	0	0.2	4.3	0	0	0	0	0	0	0	0	0	-4.3	2
46	9/20/74 - 5/8/75	0	0.4	20.5	0	0	1.7	0	7.2	0	0	0	0	-13.3	2
47	11/20/74 - 2/14/75	0.2	0	0	6.9	0.4	0	0.3	0	0	0	0	0	+6.6	4
48	10/4/74 - 5/7/75	0	0.9	0	1.4	0	0.5	0	0.4	0	0	0	0	+1.8	2
55	9/30/74 - 2/11/76	0	0	0	1.1	0	0	0	0	0	0	0	0	+1.1	2
56	10/1/74 - 6/5/75	0	0.1	0	0.4	0.5	0	0.5	0	0	0	0	0	-0.1	2
58	9/30/74 - 2/11/76	0	0.4	3.4[2/]	0	0	0	0	0	0.3	0	0.3	0	-3.7	2
59	10/1/74 - 6/5/75	1.0	0	6.4	0	0	0.8	0	2.2	0	0.3	0	0.5	-3.7	2
64	4/11/74 - 9/26/74	1.3	0	29.1	0	0	0	0	0	0	0	0	0	-29.1	2
64	9/26/74 - 3/10/74	0	.6	0	9.8	0	0	0	0	0	0	0	0	+9.8	2
65	9/26/74 - 3/10/75	0.6	0	14.4	0	0	0	0	0	0	0	0	0	-14.4	2
65	3/10/75 - 7/24/75	1.2	0	14.9	0	0	0	0	0	0	0	0	0	-14.9	2
66	4/11/74 - 9/26/74	0.1	0	2.3	0	0	0.6	0	0.3	0	0	0	0	-2.0	2
67	11/22/74 - 2/26/75	0	0.1	0	0.8	0	0	0	0	0	0	0	0	+0.8	3
67	2/26/75 - 5/15/75	0	0.1	0	32.2	0	0	0	0	0	0	0	0	+32.2	2
69	11/22/74 - 2/26/75	0.4	0	8.6	0	0.5	0	2.6	0	0	0	0	0	-11.2	2
69	2/26/75 - 5/15/75	0	0.4	0	10.2	0	2.5	0	12.4	0	0	0	0	+22.6	2
70	2/26/75 - 5/15/75	0	0.8	0	61.9	0	1.2	0	6.3	0	2.3	0	17.3	+85.5	2
72	9/17/74 - 11/13/75	0.1	0	0	3.9	0	0	0	0	0	0	0	0	+3.9	2

1/ Cross-section identificstion numbers are derived from a numbering system which includes sn expanded network of tributary stream channel cross-sections. Many of these additional cross-sections have not been installed for a sufficient length of time to allow meaningful remeasurement.

2/ Aggradation resulted after implacement of weir at this site. This structure caused a rise in the local base level at this cross-section.

Table 3 .-Summary of net changes at channel cross sections on selected tributaries to Redwood Creek (continued)

Cross-Section Number[1/]	Interval of Measurements	Change in Altitude of Thalweg (Ft.)		CHANGE IN CROSS-SECTIONAL AREA									Net Change in Area (ft^2)	Number of Surveys
				Associated With Changing Stream Bed Altitude		At Left Bank				At Right Bank				
						CHANGE IN WIDTH		CHANGE IN AREA		CHANGE IN WIDTH		CHANGE IN AREA		
		Aggradation	Scour	Aggradation	Scour	Deposition	Recession	Deposition	Recession	Deposition	Recession	Deposition	Recession	
				(Aa) (ft^2)	(As) (ft^2)	(Wd)(ft.)	(Wr)(ft.)	(Ad)(ft^2)	(Ar)(ft^2)	(Wd)(ft.)	(Wr)(ft.)	(Ad)(ft^2)	(Ar)(ft^2)	
77	3/13/75 - 4/8/75	0	0.8	0	21.3	0	1.0	0	2.0	0	0.6	0	2.0	+25.3	2
78	3/14/75 - 4/8/75	0	0	4.4	0	0	2.0	0	6.0	0	0.3	0	0.8	+2.4	2
79	3/14/75 - 4/8/75	0	0.5	7.7	0	0	0	0	0	0	0	0	0	-7.7	2

1/ Cross-section identification numbers are derived from a numbering system which includes an expanded network of tributary stream channel cross-sections. Many of these additional cross-sections have not been installed for a sufficient length of time to allow meaningful remeasurement.