I D A H O

FISH & GAME DEPARTMENT

Joseph C. Greenley, Director

FEDERAL AID IN FISH AND WILDLIFE RESTORATION

Job Performance Report

Project F-49-R-13

SALMON AND STEELHEAD INVESTIGATIONS

Job No. 1-a. Salmon Spawning Ground Surveys

Period Covered: 1 March 1974 to 28 February 1975

by

Steven A. Hoss, Regional Fishery Biologist
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February, 1975

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JOB PERFORMANCE REPORT

State of Idaho Name: SALMON AND STEELHEAD INVESTIGATIONS

Project No. F-49-R-13 Title: Salmon Spawning Ground Surveys

Job No. 1-a

Period Covered: 1 March 1974 to 28 February 1975

ABSTRACT :

Each year regional fishery biologists survey major chinook salmon spawning areas in their respective regions to count the number of redds constructed in trend count areas and to obtain age and sex composition data. The data are made available for trend analysis and correlation with dam and weir counts in management reports.

Redd counts and sex-length data for 1974 are presented in a series of attached tables and maps.

Authors:

Steven A. Hoss, Regional Fishery Biologist
Mel Reingold, Principal Fishery Research Biologist
Thomas L. Welsh, Regional Fishery Biologist

RECOMMENDATIONS:

The redd count surveys, sex and age composition data collections should be continued to provide management data.

OBJECTIVES:

To count chinook salmon redds in established trend areas.

To obtain age and sex composition data of the chinook spawning population.

TECHNIQUES USED:

Redd counts are made from low flying, fixed-wing aircraft, helicopter, or on foot depending on which technique is best suited for a particular stream. Redds are counted when preliminary observations indicate that spawning is over and before redds become obscure from algae and silt.

Carcass surveys should be made three times during post-spawning die-off to eliminate bias in sex ratios noted early and late in the season.

Chinook redd counts are included for selected tributaries of the Clearwater River to assist evaluation of reintroduction efforts.

FINDINGS:

Redd count surveys and sex and age composition data collections were made during the late summer of 1974. These data are summarized in attached tables and maps.

Spring chinook salmon age groups 3_2 and 4_2 were weakly represented on the spawning grounds and may indicate that the return of age groups 4_2 and 5_2 will be weak in 1975.

Table 1. Salmon River drainage spring and summer-run chinook salmon redd counts, 1974.

	Number of redds counted in:						
	1969	1970	1971	1972	1973	5-Yr.Av.	1974
Spring Chinook							
Alturas Lake Creek	41	68	50	143	153	91	42
Upper Salmon River	313	432	619	748	414	505	138
Upper Valley Creek	35	202	89	182	125	127	127
Upper Yankee Fork	53	67	57	115	104	79	54
Upper East Fork	174	468	370	448	665	425	346
Herd Creek	43	47	49	28	47	43	13
Marsh Creek Drainage	235	456	281	312	518	360	210
Lemhi River	360	371	407	507	485	426	215
North Fork Salmon R.	155*	95*	53*	31*	55	78	18
Bear Valley Creek	356	334	108	221	387	281	130
Elk Creek	349	302	173	212	369	281	108
Sulphur Creek	138	93	58	71	78	88	30
Upper Big Creek	65	68	32	60	96	64	28
Subtotal	2,317	3,003	2,346	3,078	3,493	2,847	1,459
Summer Chinook							
Lower Salmon River	120	150	220	412	224	225	200
Lower Valley Creek	22	41	147	39	77	65	45
Lower East Fork	138	123	149	161	138	142	46
Loon Creek	110	43	79	150	78	92	34
South Fork Salmon R.	636	527	421	577	586	549	218
Johnson Creek	273	130	183	220	271	215	107
Secesh River-Lake Creek	104	63	80	87	62	79	21
Subtotal	1,403	1,077	1,279	1,646**	1,436	1,368	671
Unclassified Spawners							
Camas Creek	94	86	120	211	358	174	172
Lower Yankee Fork	44	79	41	78	71	63	28
West Fork Yankee Fork	17	112	31	117	86	73	20
Middle Fork Salmon R.	15	62	14	33	18	28	23
Subtotal	170	393	206	439	533	338	243
Total	3,890	4,419	3,831	5,163**	5,462	4,553	2,373

* This counting area was changed in 1969 and is not comparable to previous years.

** Lower Big Creek count was discontinued in 1972. The Lower Big Creek totals for years prior to 1972 should be subtracted from summer chinook or overall totals to obtain comparable data.

Table 2. Clearwater River drainage chinook salmon redd counts, 1974.

Stream	Number of redds counted in:								
	1967	1968	1969	1970	1971	1972	1973	5-Yr.Av.	1974
Selway Drainage									
Selway River	22	16	57	65	55	175	261	123	66
Bear Creek	7	7	6	19	14	25	26	18	10
Running Creek	--	4	21	10	8	11	21	14	4
Whitecap Creek	--	--	--	4	0	8	7	--	2
Moose Creek 1/	--	--	--	--	--	13	32	--	15
Subtotal	29	27	84	98	77	232	347		97
Lochsa Drainage									
Crooked Fork	0	15	112	34	1	32	60	48	22
Brushy Fork 2/	--	--	--	--	--	--	--	--	6
Subtotal	0	15	112	34	1	32	60		28
South Fork Drainage 2/									
Newsome Creek	--	--	--	--	--	--	--	--	3
Crooked River	--	--	--	--	--	--	--	--	5
Red River	--	--	--	--	--	--	--	--	12
Subtotal	--	--	--	--	--	--	--	--	20
Totals	29	42	196	132	78	264	407		145

1/ Counting began in 1972
2/ Counting began in 1974

Table 3. Length frequency distribution for spawned-out chinook salmon in stream areas believed to be used primarily by spring-run fish, 1974.

Fork length (inches)	Bear Valley Cr.		Elk Creek		Sulphur Creek		Big Cr. (Upper)	
	Female	Male	Female	Male	Female	Male	Female	Male
16								
17								
18		1						
19								
20		1						
21								
22		1						
23		1						
Subtotal	0	4	0	0	0	0	0	0
24		2						
25	1	8						
26	1	4		4				3
27	1	6	3	1			1	1
28	5	10		3		1		4
29	2	6					1	1
30	4	5	1	1			1	
31	2	1	1					
Subtotal	16	42	5	9	0	1	3	9
32	10	2		1			2	1
33	6	2	2				2	
34	15	1	6		1		1	
35	12	3	2				2	
36	16	2	2	1				1
37	7	2	1		2			
38	11	2	1	1	1			3
39	3	5			1		1	
40	2	1						
41		2						2
42		4		1				
43								
44		1						
45		1						
46								
Subtotal	82	28	14	4	5	0	8	7
Grand total	98	74	19	13	5	1	11	16

Table 3 (Continued). Length frequency distribution for spawned-out chinook salmon in stream areas believed to be used primarily by spring-run fish, 1974.

Fork length (inches)	Lemhi River		Marsh Creek Drainage		Salmon River (Upper)		Valley Creek (Upper)		East Fork (Upper)	
	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male
15										
16										
17										
18										
19										
20								1		1
21										
22										
23								1		1
Subtotal	0	0	0	0	0	0	0	2	0	2
24	1							1		1
25	2					1	1	1		2
26			2	2			1			
27	1			1	2	2		1	1	
28	1		3	2	1	1		5		1
29		1	1		4	4				
30			1	1	3	1		3	2	2
31	1		3		1	1	1			
Subtotal	6	1	10	6	11	10	3	11	3	6
32	2				2		1		1	1
33	1			1	1		2	1	1	
34	5		2		7	1	10		6	
35	5	3	2		4	1	5		4	
36	5	1	4		17	1	4	1	6	3
37	2	1	5	2	4	2	1		2	
38			2	1	5				3	2
39				1	2	1			2	4
40		1			2	3			2	2
41				1		1				1
42			1	1	1			2	2	1
43										2
44						1				1
45										
46										
Subtotal	20	6	16	7	45	11	23	4	29	17
Grand total	26	7	26	13	56	21	26	17	32	25

Table 4. Length frequency distribution for spawned-out chinook salmon in stream areas believed to be used by summer-run fish during 1974.

Fork length (inches)	Johnson Creek		Lake Creek and Secesh River		South Fork Salmon	
	Female	Male	Female	Male	Female	Male
16						
17						
18		2				1
19		1				3
20						3
21						
22					1	1
23		1				2
24		1				1
Subtotal	0	5	0	0	1	11
25	1	2			2	3
26	2	4			3	4
27	6	9		2	3	1
28	5	15			7	14
29	3	17			6	9
30	6	12		1	9	12
31	5	4			6	7
32	3	4			3	3
33	3	3			3	1
Subtotal	34	70	0	3	42	54
34	18	1	1		9	1
35	13	3			9	1
36	13	2			8	1
37	1				6	1
38	2	2			3	2
39					1	1
40					1	2
41						
42						1
43						
44						1
Subtotal	47	8	1	0	37	11
Grand total	81	83	1	3	80	76

Table 5. Percent age composition, by sex, of spring chinook salmon found dead on spawning grounds in Idaho, 1974.

Stream and age group	Females	Males	Males and females
Lemhi River			
Age group 3_2	--	--	--
Age group 4_2	23	14	21
Age group 5_2	77	86	79
	100	100	100
	(n=26)	(n=7)	(n=33)
Marsh Creek drainage			
Age group 3_2	--	--	--
Age group 4_2	38	46	40
Age group 5_2	62	54	60
	100	100	100
	(n=26)	(n=13)	(n=39)
Salmon River (upper)			
Age group 3_2	--	--	--
Age group 4_2	20	48	27
Age group 5_2	80	52	73
	100	100	100
	(n=56)	(n=21)	(n=77)
Valley Creek (upper)			
Age group 3_2	--	13	5
Age group 4_2	12	69	33
Age group 5_2	88	19	62
	100	101	100
	(n=26)	(n=16)	(n=42)
East Fork (upper)			
Age group 3_2	--	8	4
Age group 4_2	9	24	16
Age group 5_2	91	68	80
	100	100	100
	(n=32)	(n=25)	(n=57)
Bear Valley Creek			
Age group 3_2	--	5	2
Age group 4_2	16	57	34
Age group 5_2	84	38	64
	100	100	100
	(n=98)	(n=74)	(n=172)

Table 5 (Continued). Percent age composition, by sex, of spring chinook salmon found dead on spawning grounds in Idaho, 1974.

Stream and age group	Females	Males	Males and females
Elk Creek			
Age group 3_2	--	--	--
Age group 4_2	26	69	44
Age group 5_2	74	31	56
	100	100	100
	(n=19)	(n=13)	(n=32)
Sulphur Creek			
Age group 3_2	--	--	--
Age group 4_2	--	100	17
Age group 5_2	100	--	83
	100	100	100
	(n=5)	(n=1)	(n=6)
Big Creek			
Age group 3_2	--	--	--
Age group 4_2	27	56	44
Age group 5_2	73	44	56
	100	100	100
	(n=11)	(n=16)	(n=27)

Table 6. Percent age composition, by sex, of summer-run chinook salmon found dead on spawning grounds in Idaho, 1974.

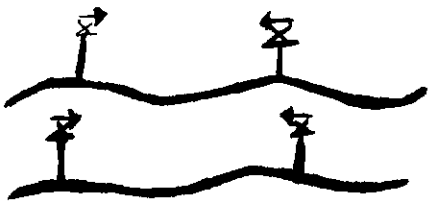
Stream and age group	Females	Males	Males and females
Johnson Creek			
Age group 3_2	--	6	3
Age group 4_2	42	84	63
Age group 5_2	58	10	34
	100	100	100
	(n=81)	(n=83)	(n=164)
Lake Creek and Secesh River			
Age group 3_2	--	--	--
Age group 4_2	--	100	75
Age group 5_2	100	--	25
	100	100	100
	(n=1)	(n=3)	(n=4)
South Fork Salmon River			
Age group 3_2	1	14	8
Age group 4_2	53	71	62
Age group 5_2	46	14	31
	100	99	101
	(n=80)	(n=76)	(n=156)

A P P E N D I X

LEGEND

Ground Survey Sections

Aerial Survey Sections



Ground Redd Counts

Aerial Redd Counts

Aerial-Ground Check Areas

Aerial-Ground Check Area Count

Migratory Block

Road

Trail

Forest Service Stations

Landing Strip

Fence

Pack Bridge

Highway Bridge

DRAINAGE Salmon River

SURVEY DATE Aug. 29, Sept. 5, 1974

STREAM Salmon River

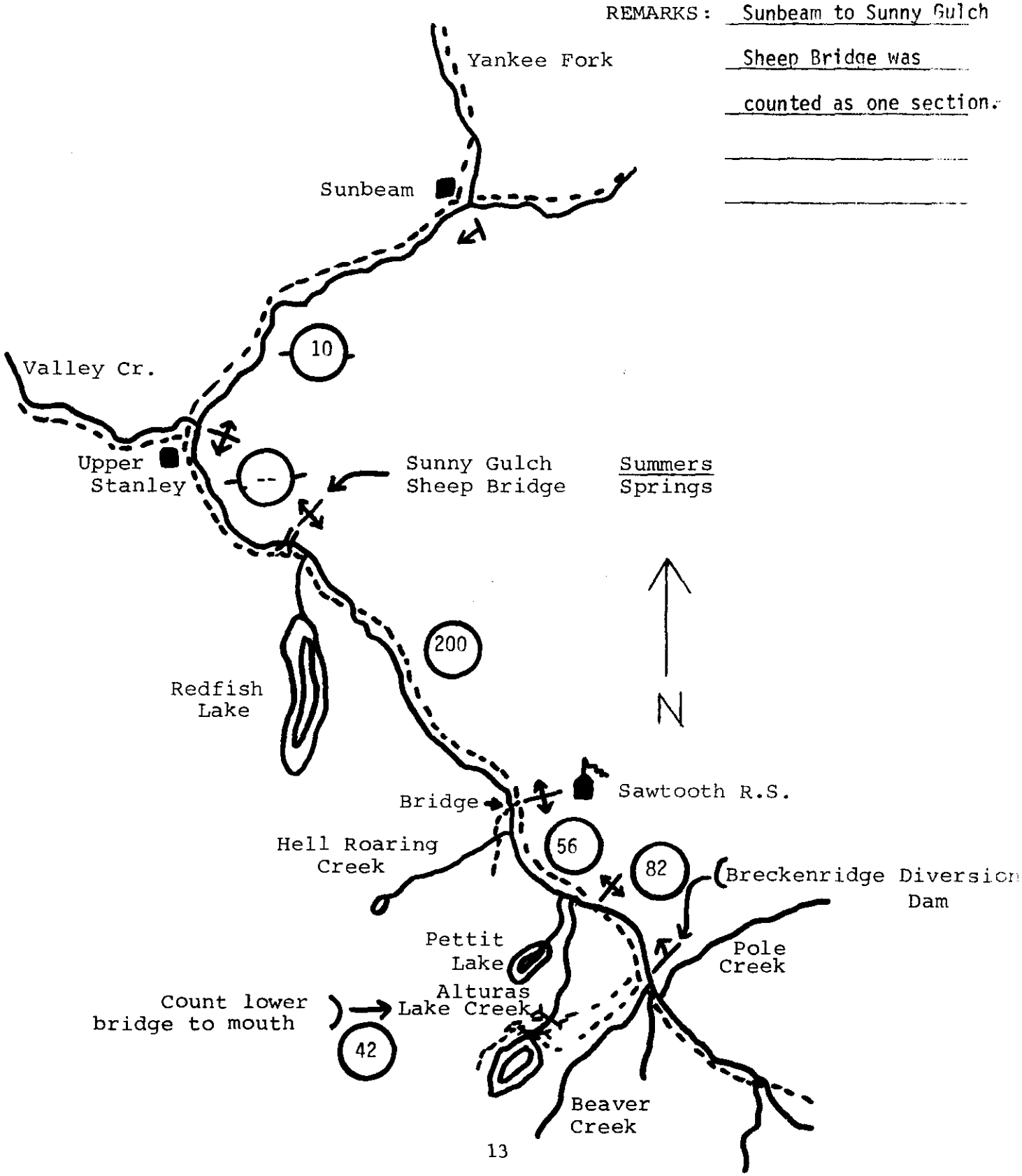
MAP SCALE 1/4" = 1 mile

OBSERVATION CONDITIONS Good

OBSERVER Duke, Nelson, Parker, Reingold

TIMING: Early On Time Late (mark one)

REMARKS: Sunbeam to Sunny Gulch Sheep Bridge was counted as one section.



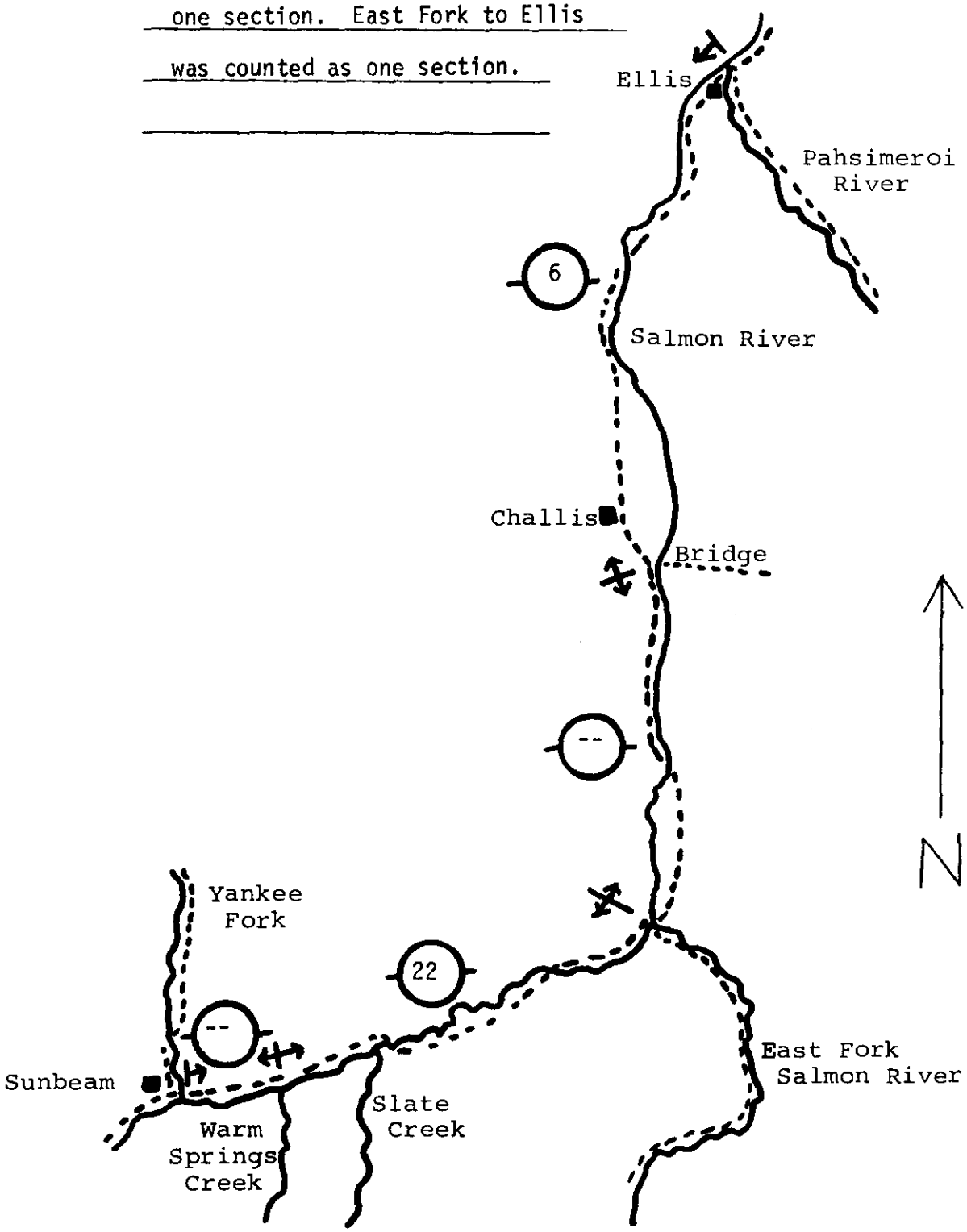
DRAINAGE Salmon River SURVEY DATE Sept. 3, 1974

STREAM Salmon River MAP SCALE 1/6" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Anderson

TIMING: Early On Time Late (mark one)

REMARKS: Sunbeam to East Fork was counted as one section. East Fork to Ellis was counted as one section.



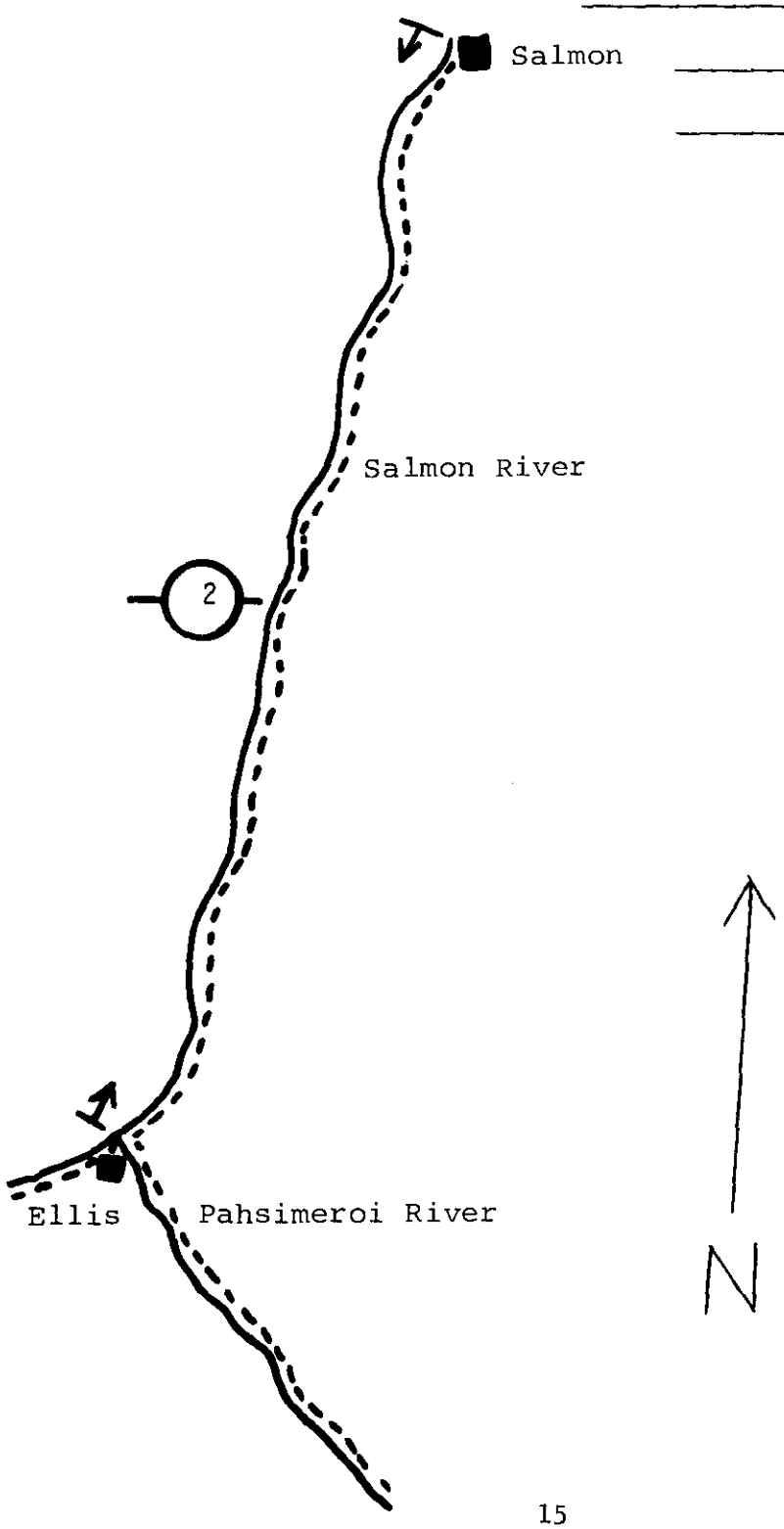
DRAINAGE Salmon River SURVEY DATE Sept. 3, 1974

STREAM Salmon River MAP SCALE 1/4" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Anderson

TIMING: Early On Time Late (mark one)

REMARKS:



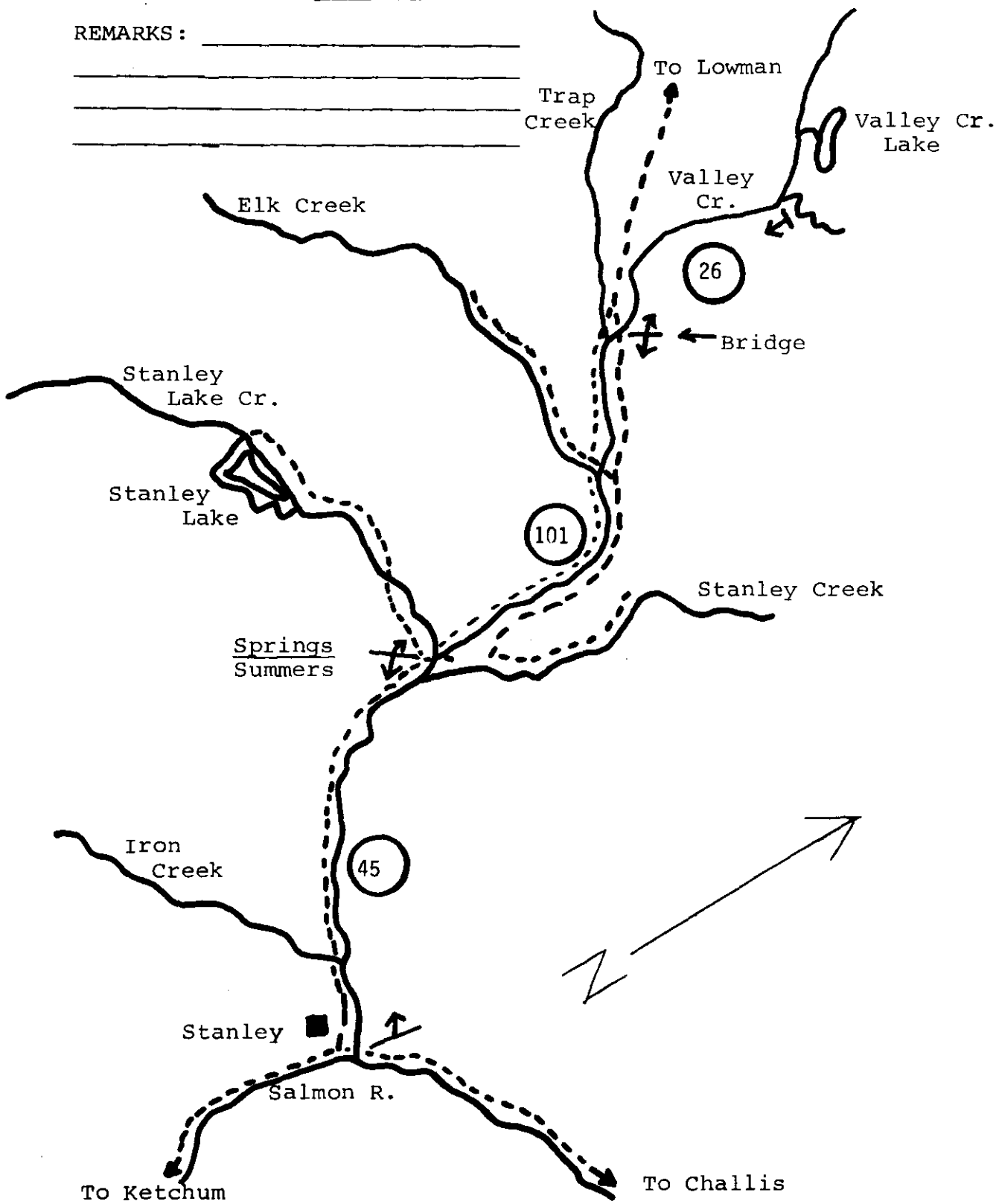
DRAINAGE Salmon River SURVEY DATE Aug. 26, Sept. 4, 1974

STREAM Valley Creek MAP SCALE 2/3" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Watkins, Stynar, Nelson, Parker

TIMING: Early On Time Late (mark one)

REMARKS: _____



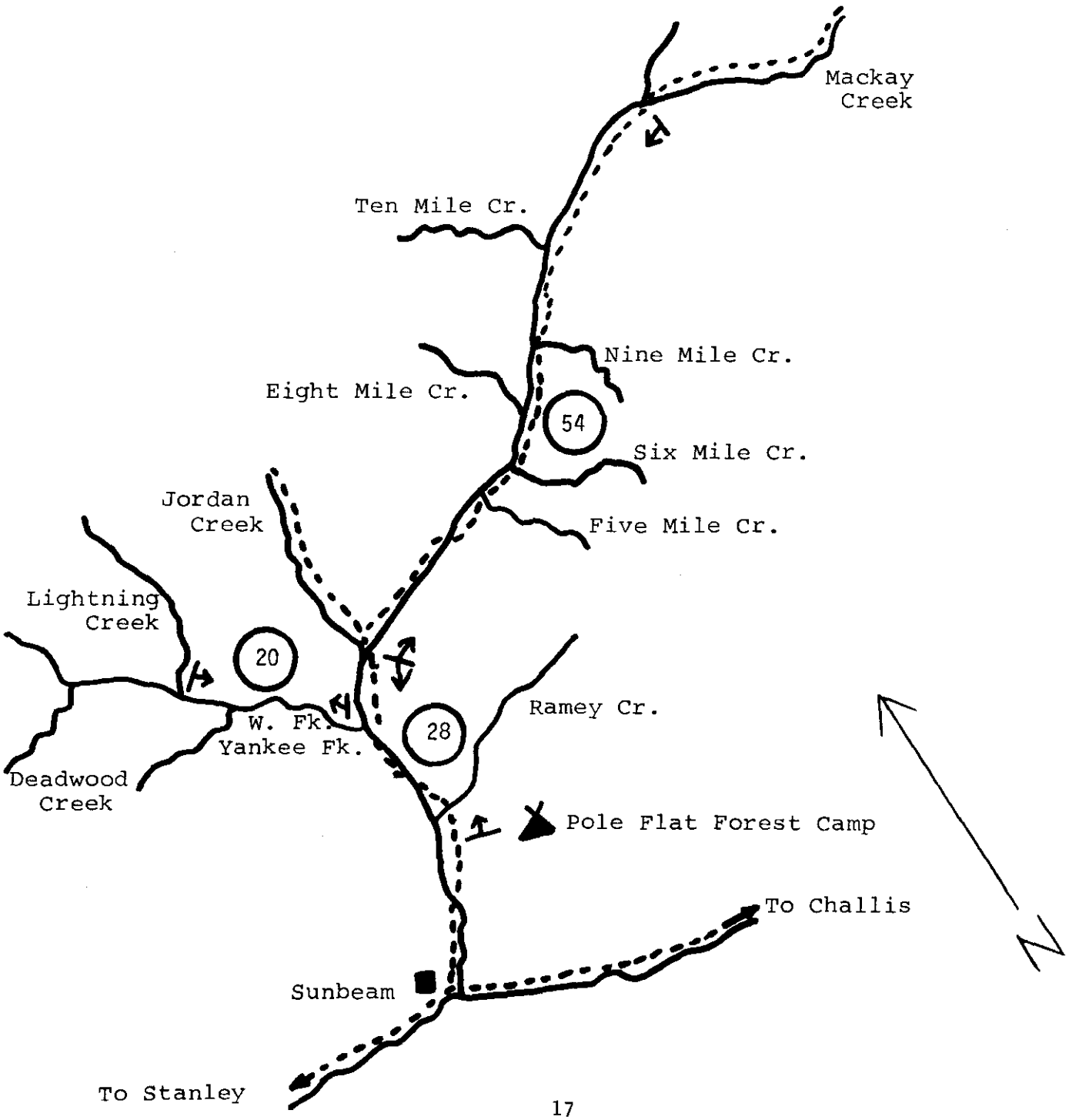
DRAINAGE Salmon River SURVEY DATE August 21, 22, 28, 1974

STREAM Yankee Fork MAP SCALE 1/3" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Watkins, Stygar, Steffan

TIMING: Early On Time Late (mark one)

REMARKS: _____



DRAINAGE Salmon River

SURVEY DATE Aug. 27, 28, Sept. 3, 1974

STREAM East Fork

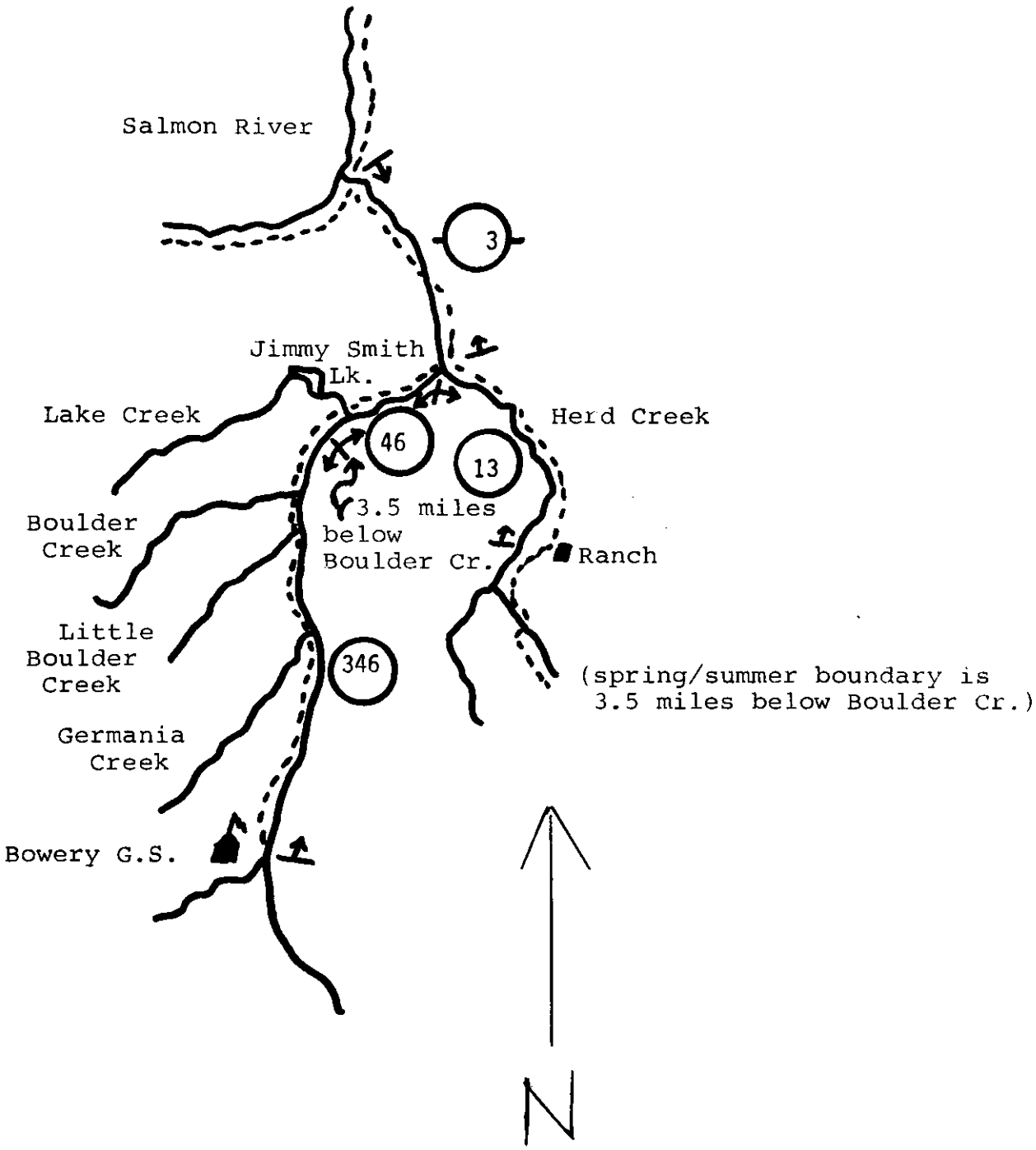
MAP SCALE 1/6" = 1 mile

OBSERVATION CONDITIONS Good

OBSERVER Steffan, Styqar, Michimoto, Watkins, Slatick, Nelson, Reingold, Anderson

TIMING: Early On Time Late (mark one)

REMARKS:



DRAINAGE Salmon River

SURVEY DATE September 9, 10, 1974

STREAM Lemhi River

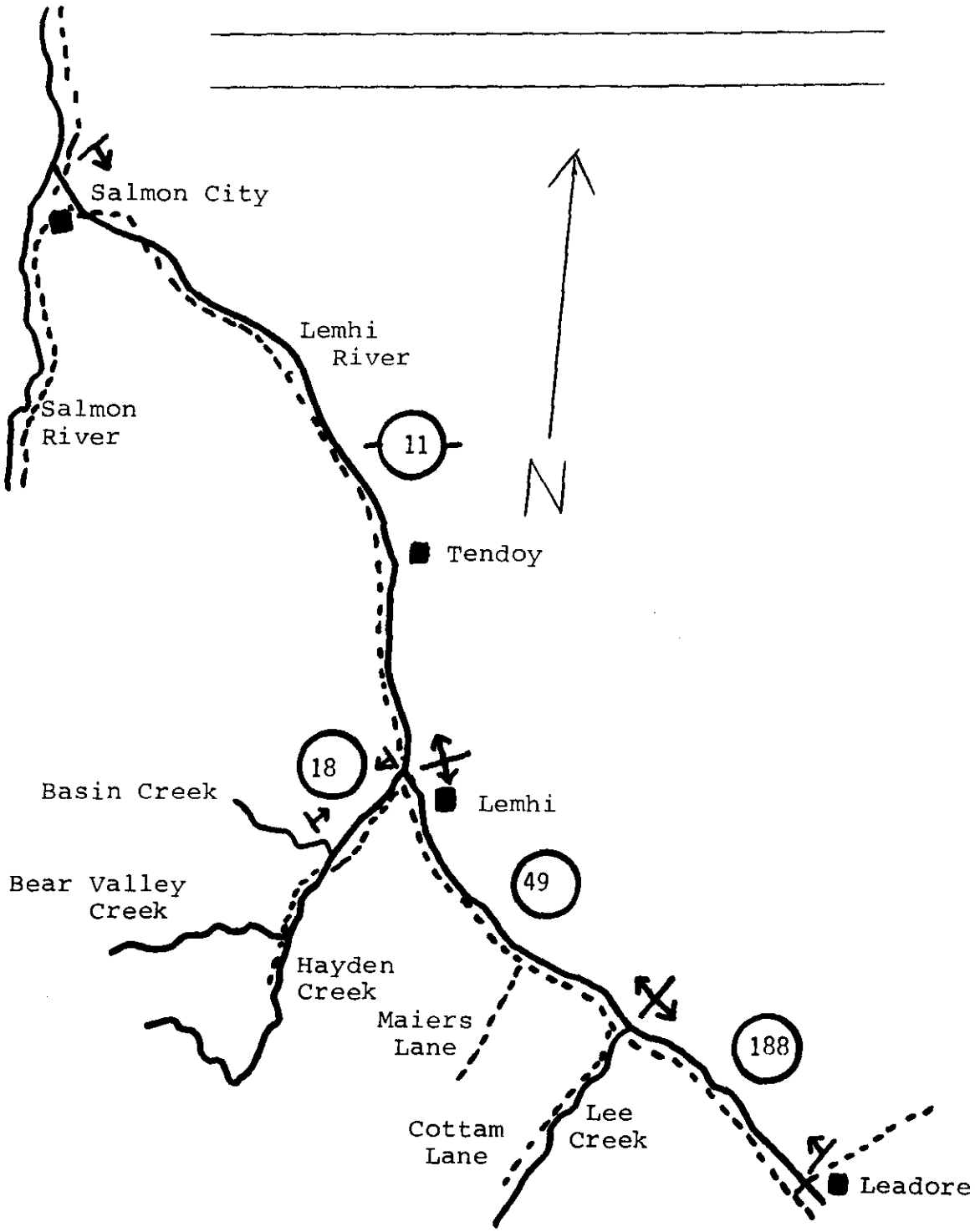
MAP SCALE 1/6" = 1 mile

OBSERVATION CONDITIONS Windy, Fair

OBSERVER Reingold, Myers, Anderson, Nelson

TIMING: Early On Time Late (mark one)

REMARKS:



DRAINAGE Salmon River

SURVEY DATE August 29, 1974

STREAM North Fork

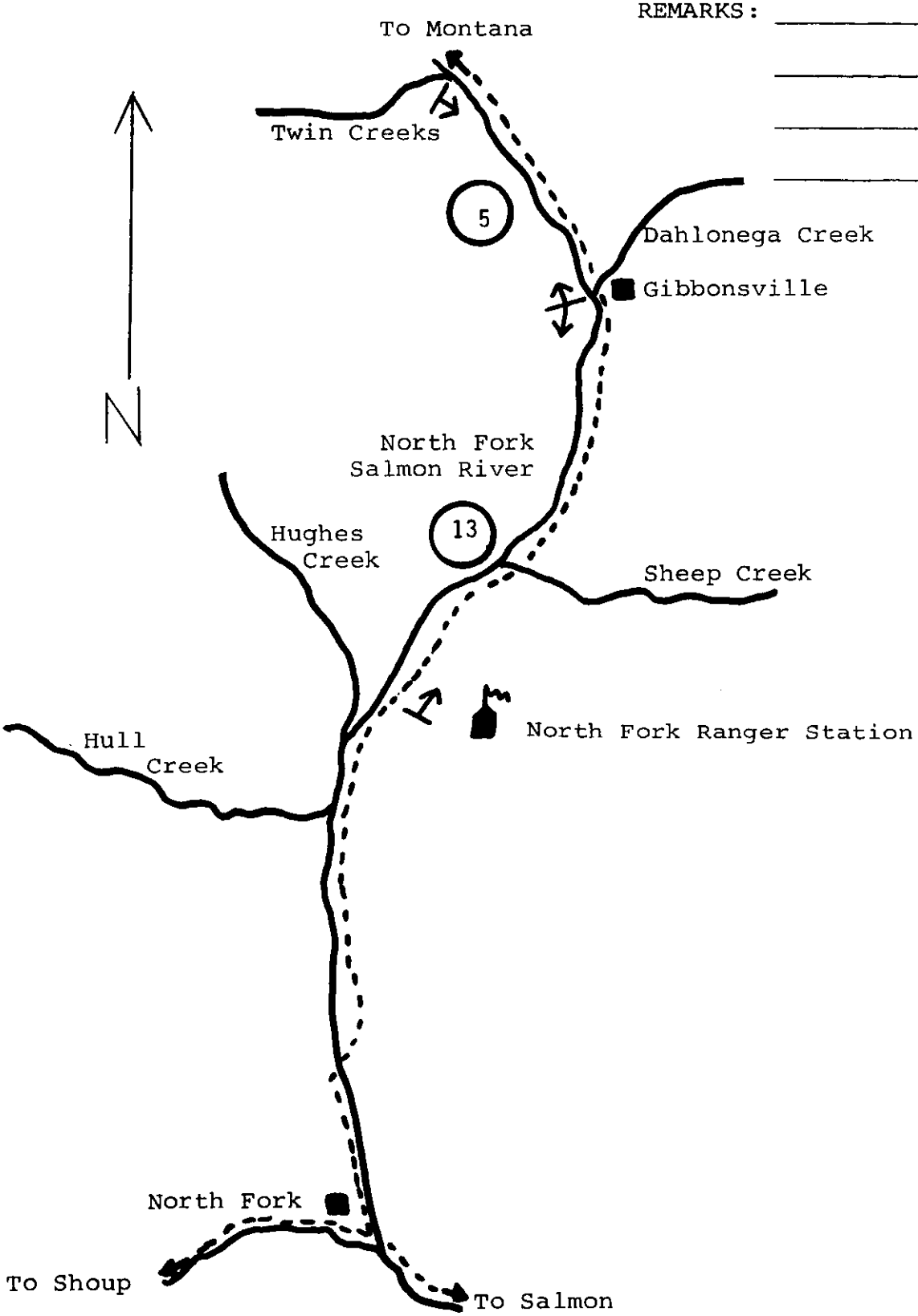
MAP SCALE 1/2" = 1 mile

OBSERVATION CONDITIONS Good

OBSERVER Watkins, Styaar

TIMING: Early On Time Late (mark one)

REMARKS:



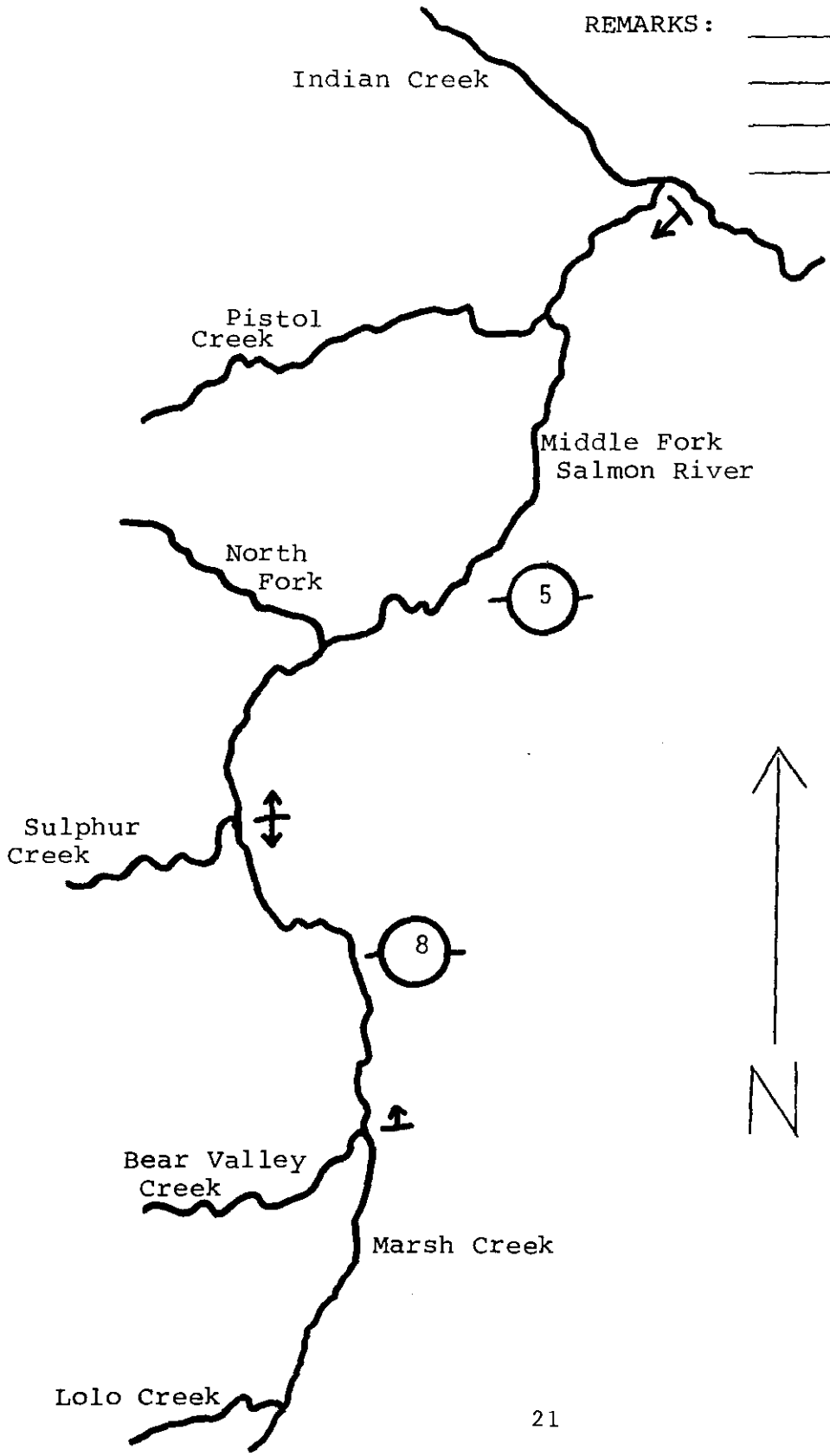
DRAINAGE Salmon River SURVEY DATE August 22, 1974

STREAM M. F. Salmon River MAP SCALE 1/4" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Watkins

TIMING: Early On Time Late (mark one)

REMARKS:



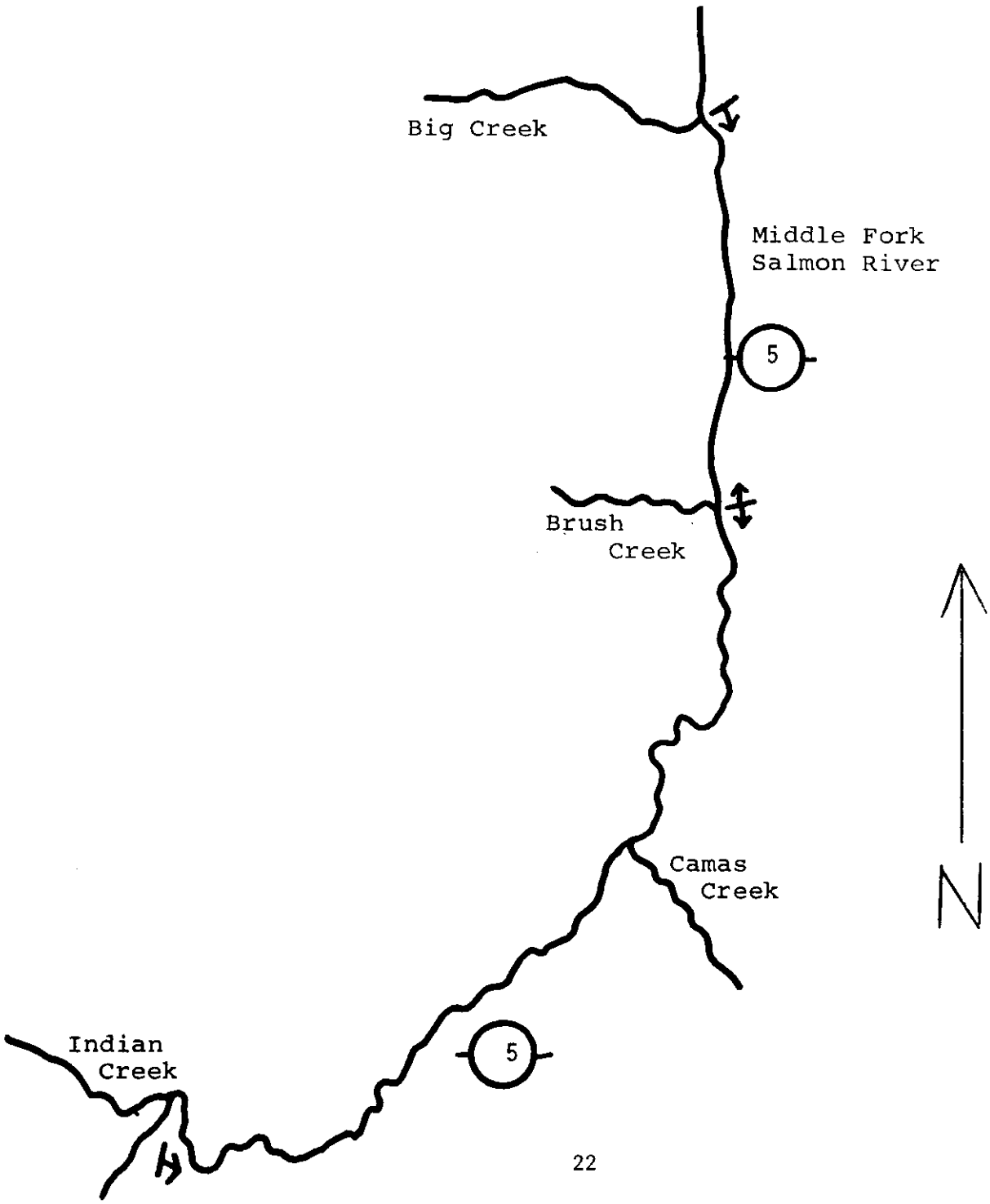
DRAINAGE Salmon River SURVEY DATE August 22, 1974

STREAM M. F. Salmon River MAP SCALE 1/4" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Watkins

TIMING: Early On Time Lake (mark one)

REMARKS:



DRAINAGE M. F. Salmon River

SURVEY DATE August 19, 20, 1974

STREAM Marsh, Beaver, Knapp, Capehorn Creeks

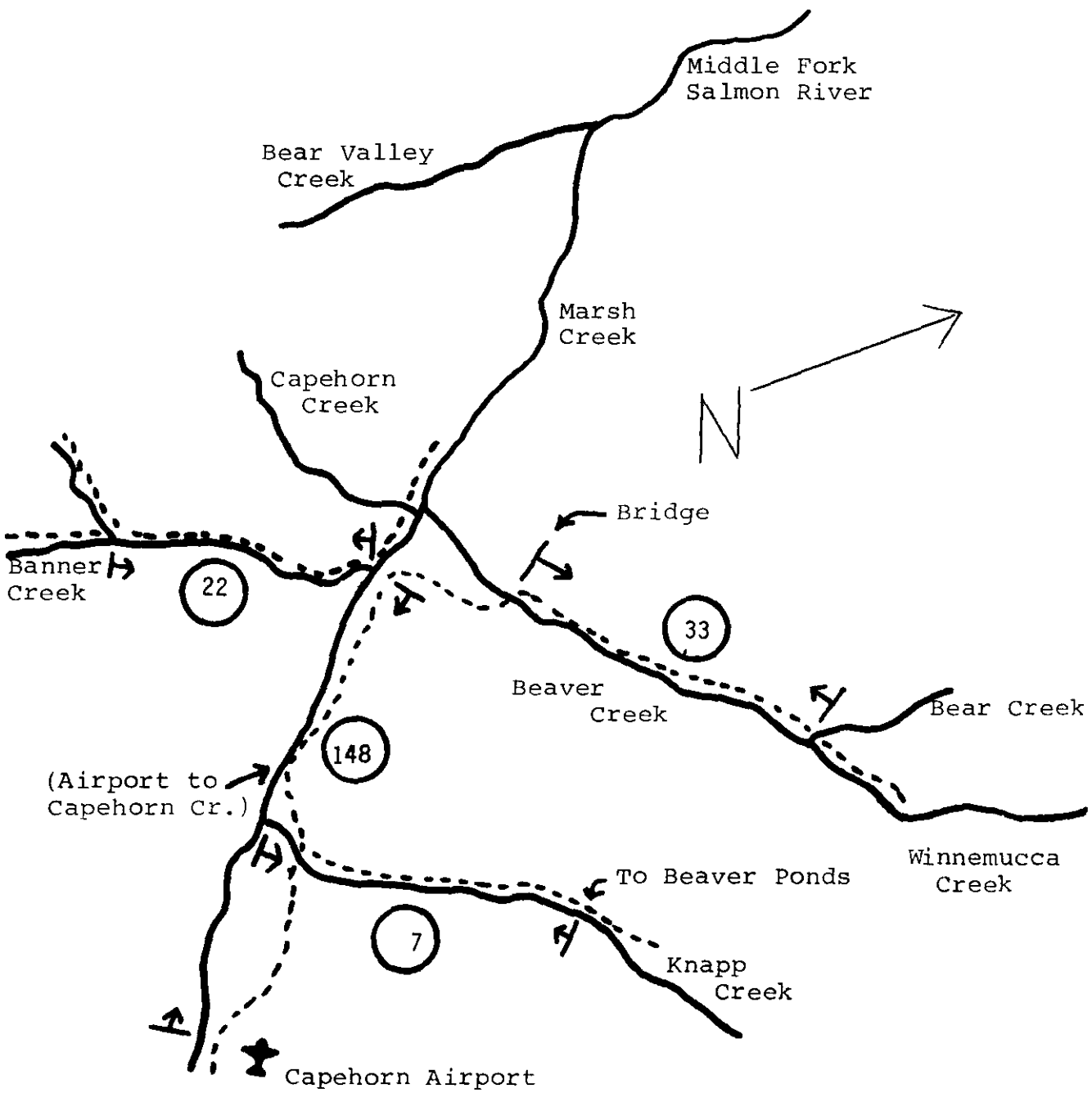
MAP SCALE 2/3" - 1 mile

OBSERVATION CONDITIONS Good

OBSERVER Watkins, Stygar, Steffan

TIMING: Early On Time Late (mark one)

REMARKS: _____



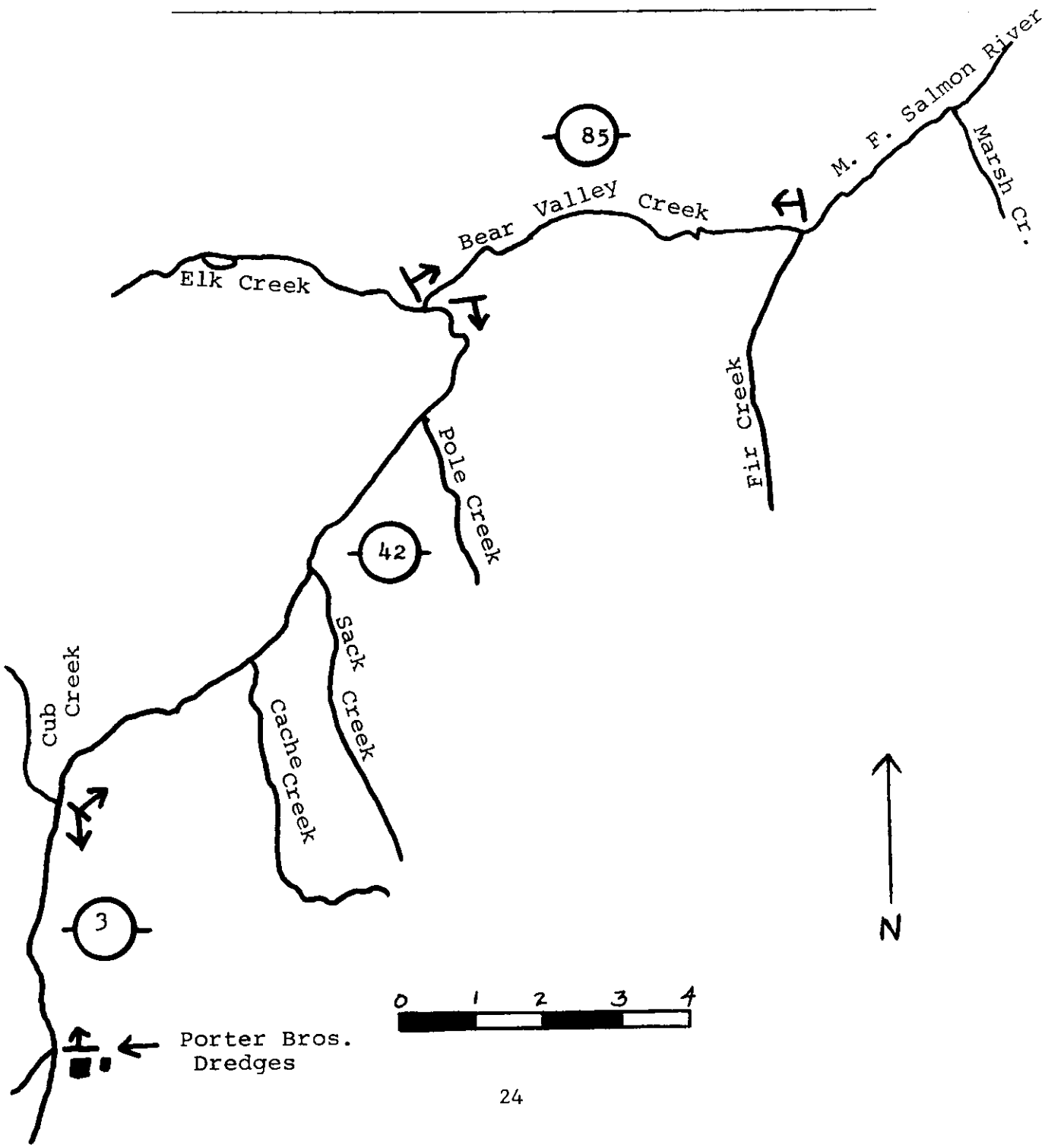
DRAINAGE M. F. Salmon River SURVEY DATE 8/23/74

STREAM Bear Valley Creek MAP SCALE 1" = 2 miles

OBSERVATION CONDITIONS Good OBSERVER Tom Welsh

TIMING: Early On Time Late (mark one)

REMARKS:



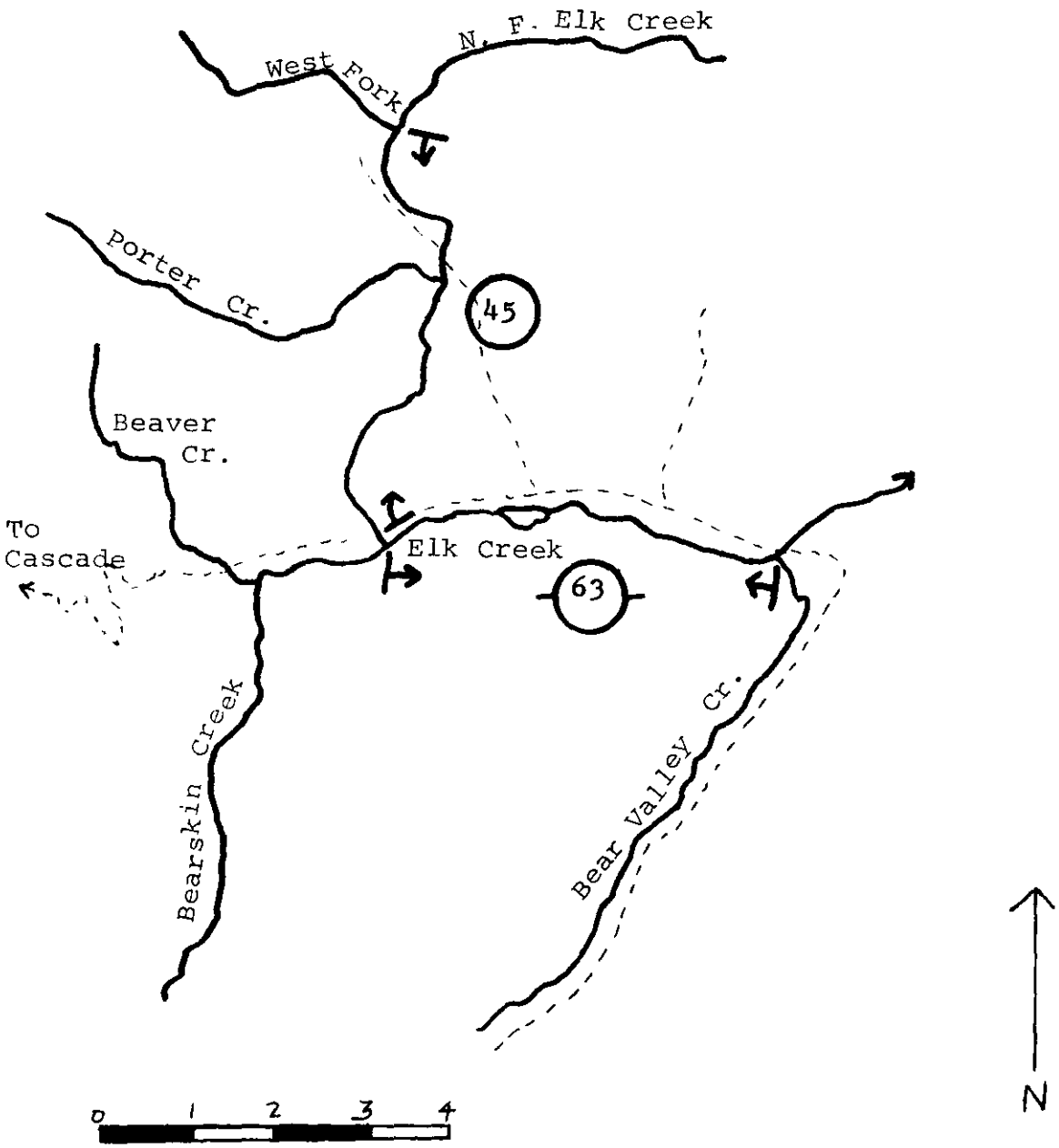
DRAINAGE M. F. Salmon River SURVEY DATE 8/14/74 - Ground 8/23/74 - Aerial

STREAM Elk Creek MAP SCALE 1" = 2 miles

OBSERVATION CONDITIONS Good OBSERVER Tom Welsh

TIMING: Early On Time Late (mark one)

REMARKS:



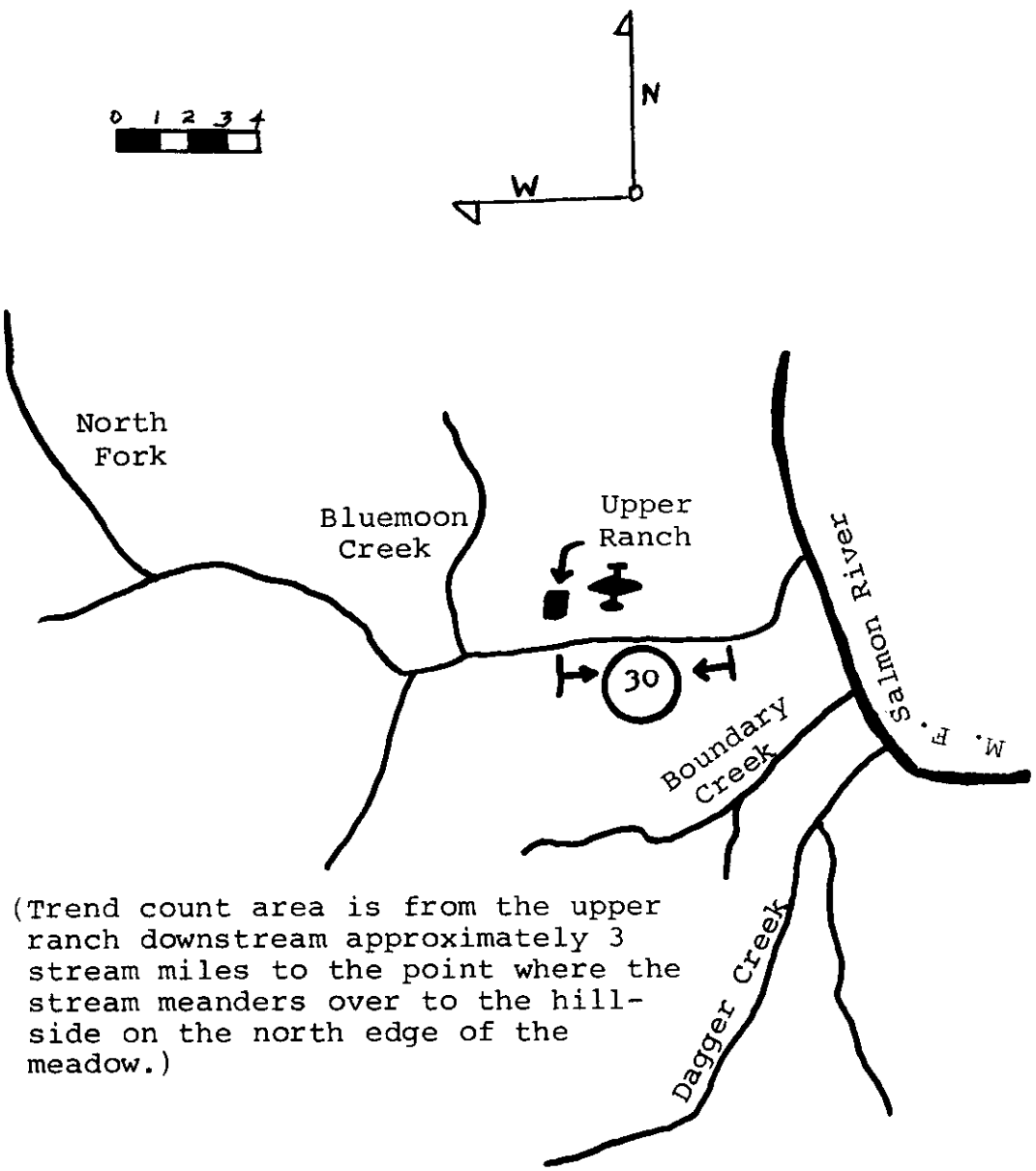
DRAINAGE M. F. Salmon River SURVEY DATE 8/15/74

STREAM Sulphur Creek MAP SCALE 1/6" = 1 mile

OBSERVATION CONDITIONS **Good** OBSERVER **Tom Welsh**

TIMING: Early On Time Late (mark one)

REMARKS: _____



(Trend count area is from the upper ranch downstream approximately 3 stream miles to the point where the stream meanders over to the hill-side on the north edge of the meadow.)

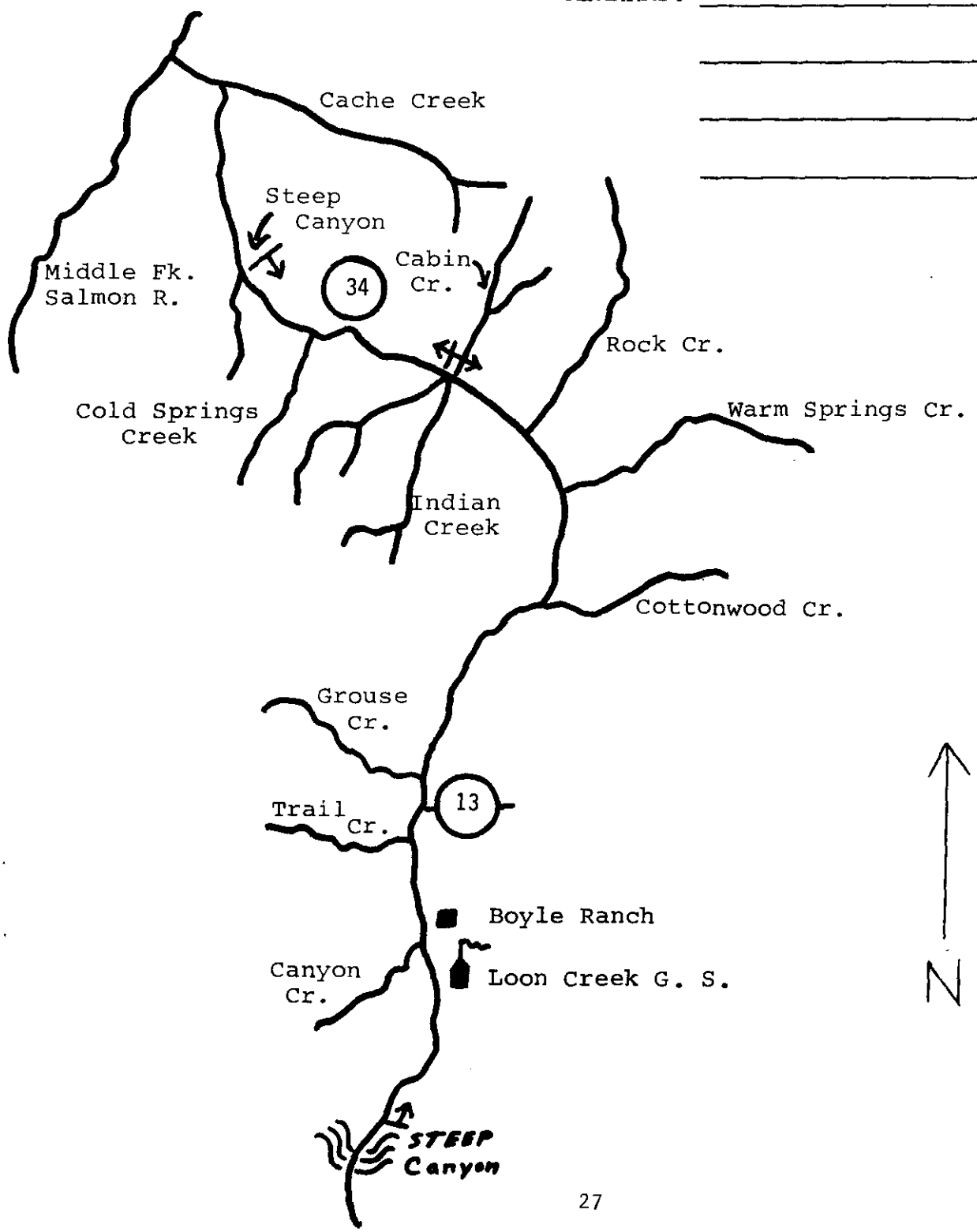
DRAINAGE Middle Fork Salmon River SURVEY DATE Sept. 5, 1974

STREAM Loon Creek MAP SCALE 1/3" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Reingold, Duke

TIMING: Early On Time Late (mark one)

REMARKS: _____



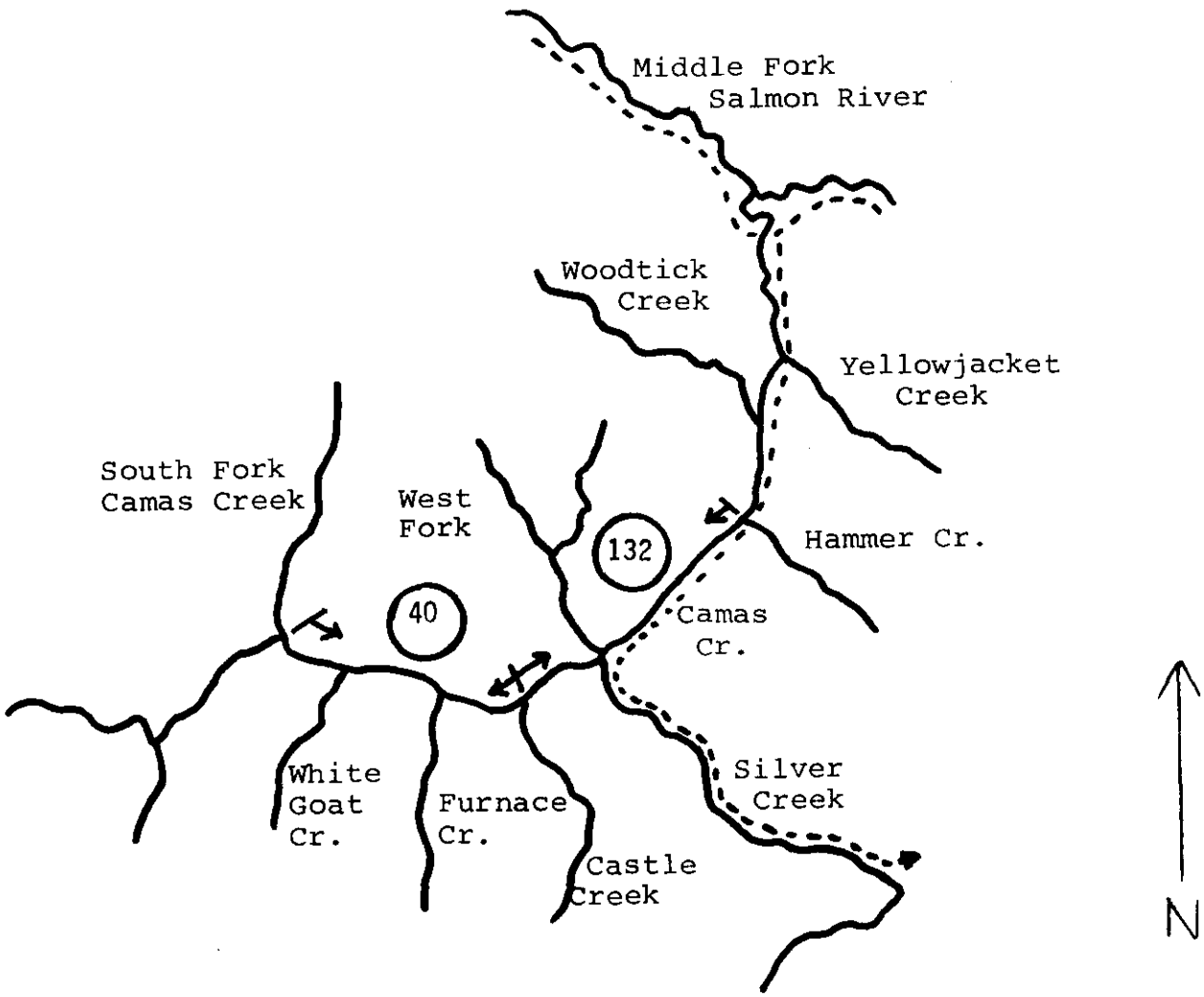
DRAINAGE M. F. Salmon River SURVEY DATE Aug. 23 and 30, 1974

STREAM Camas Creek MAP SCALE 1/4" = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Watkins, Stynar, Steffan

TIMING: Early On Time Late (mark one)

REMARKS: _____



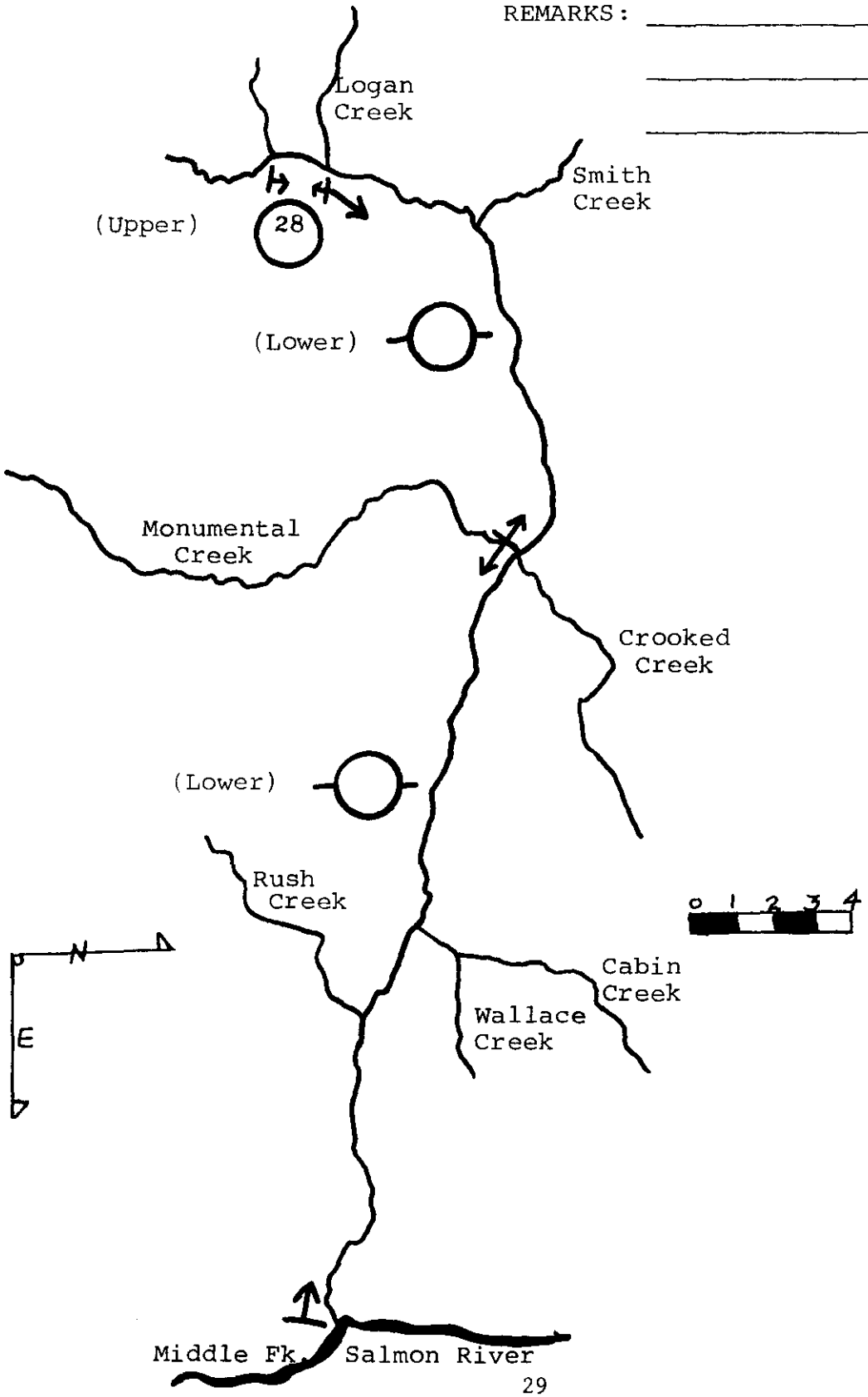
DRAINAGE M. F. Salmon River SURVEY DATE 8/27/74

STREAM Big Creek MAP SCALE 1" = 4 miles

OBSERVATION CONDITIONS **Good** OBSERVER **Tom Welsh**

TIMING: Early On Time Late (mark one)

REMARKS:



DRAINAGE Salmon River

SURVEY DATE Aerial - 9/16/74 Ground - 8/24/74

STREAM S. F. Salmon River

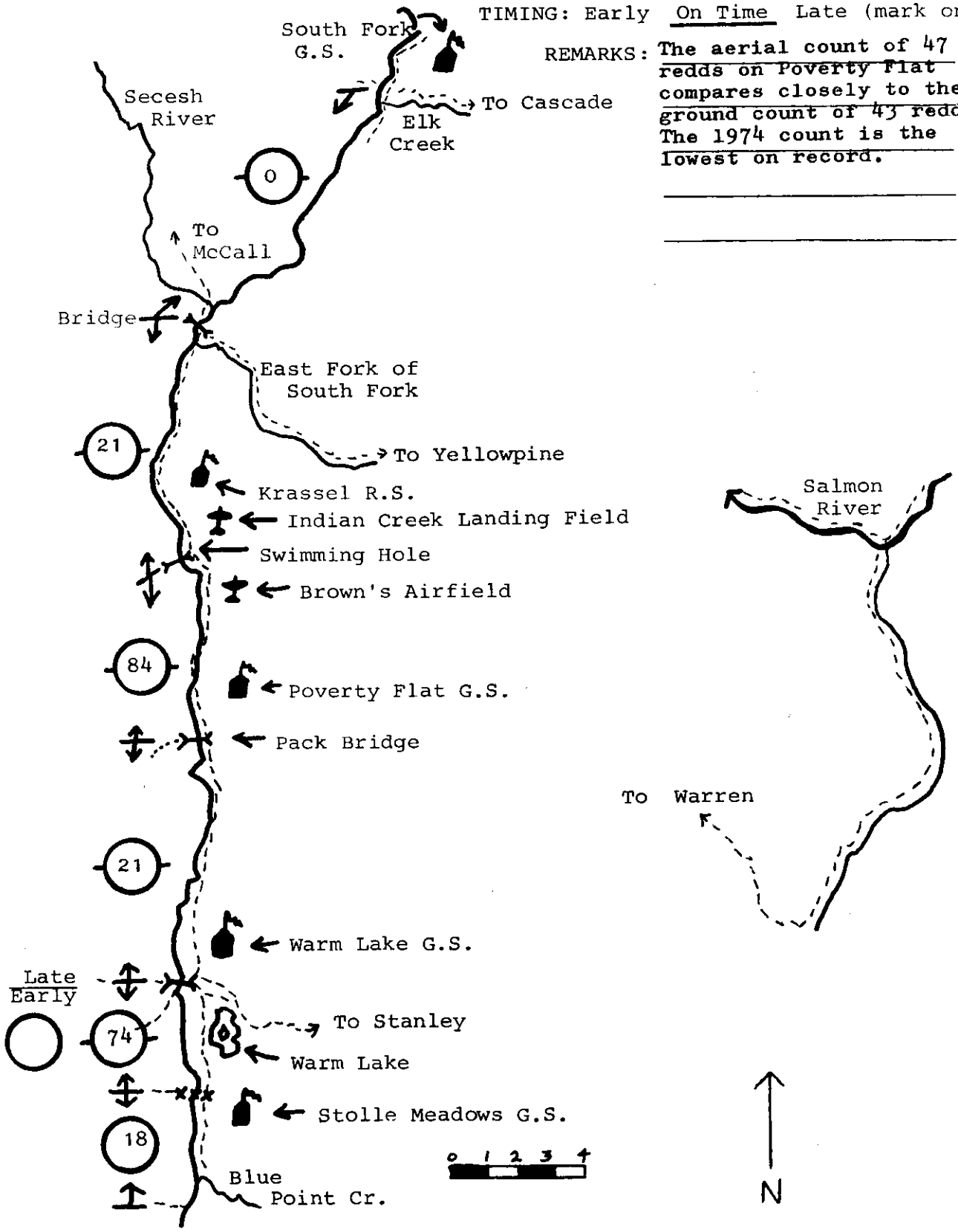
MAP SCALE 1/4" - 1 mile

OBSERVATION CONDITIONS Good

OBSERVER Tom Welsh

TIMING: Early On Time Late (mark one)

REMARKS: The aerial count of 47 redds on Poverty Flat compares closely to the ground count of 43 redds. The 1974 count is the lowest on record.



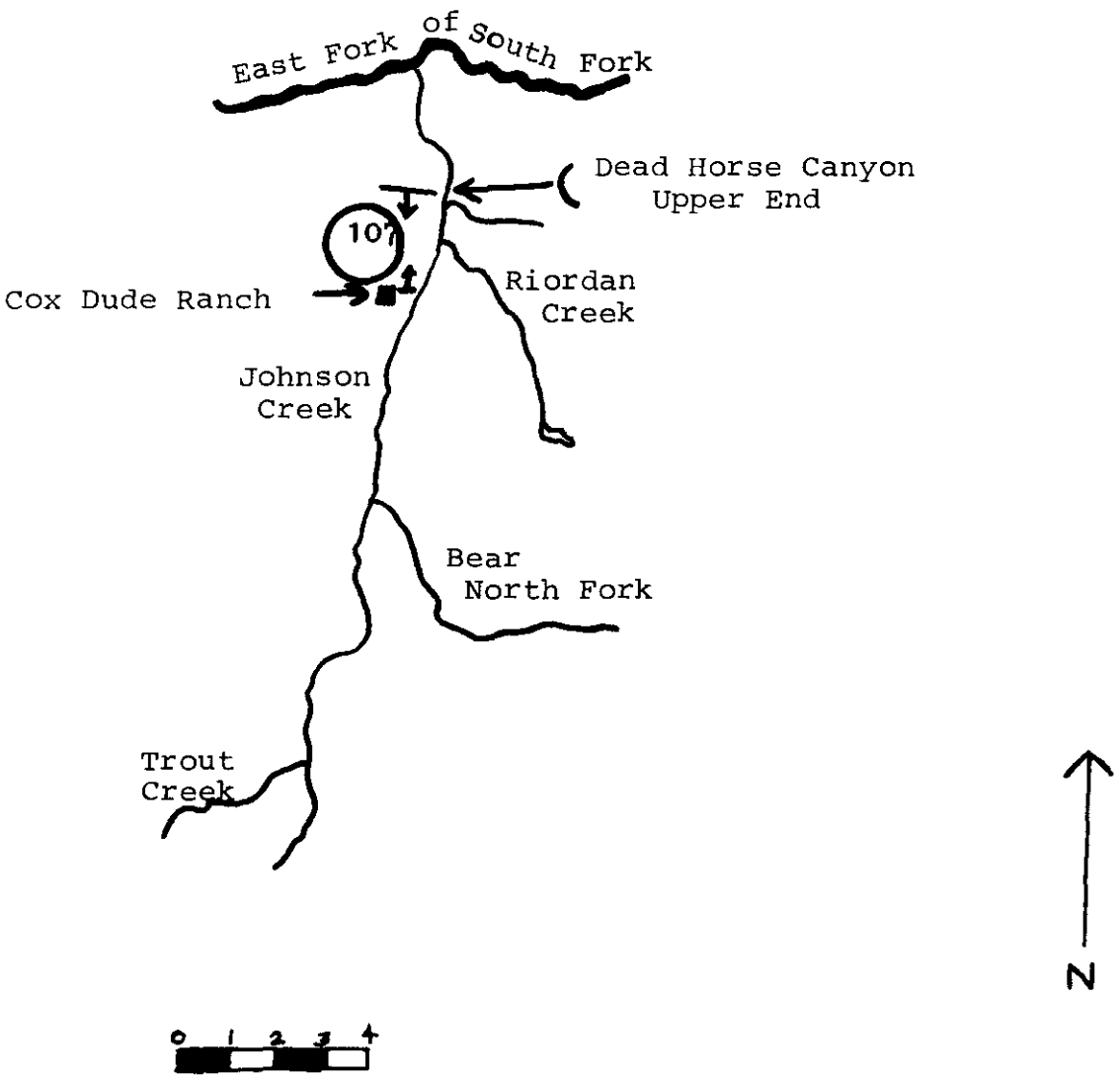
DRAINAGE E. F. of South Fork SURVEY DATE 8/28/74

STREAM Johnson Creek MAP SCALE 1" = 4 miles

OBSERVATION CONDITIONS Good OBSERVER Tom Welsh

TIMING: Early On Time Late (mark one)

REMARKS: _____



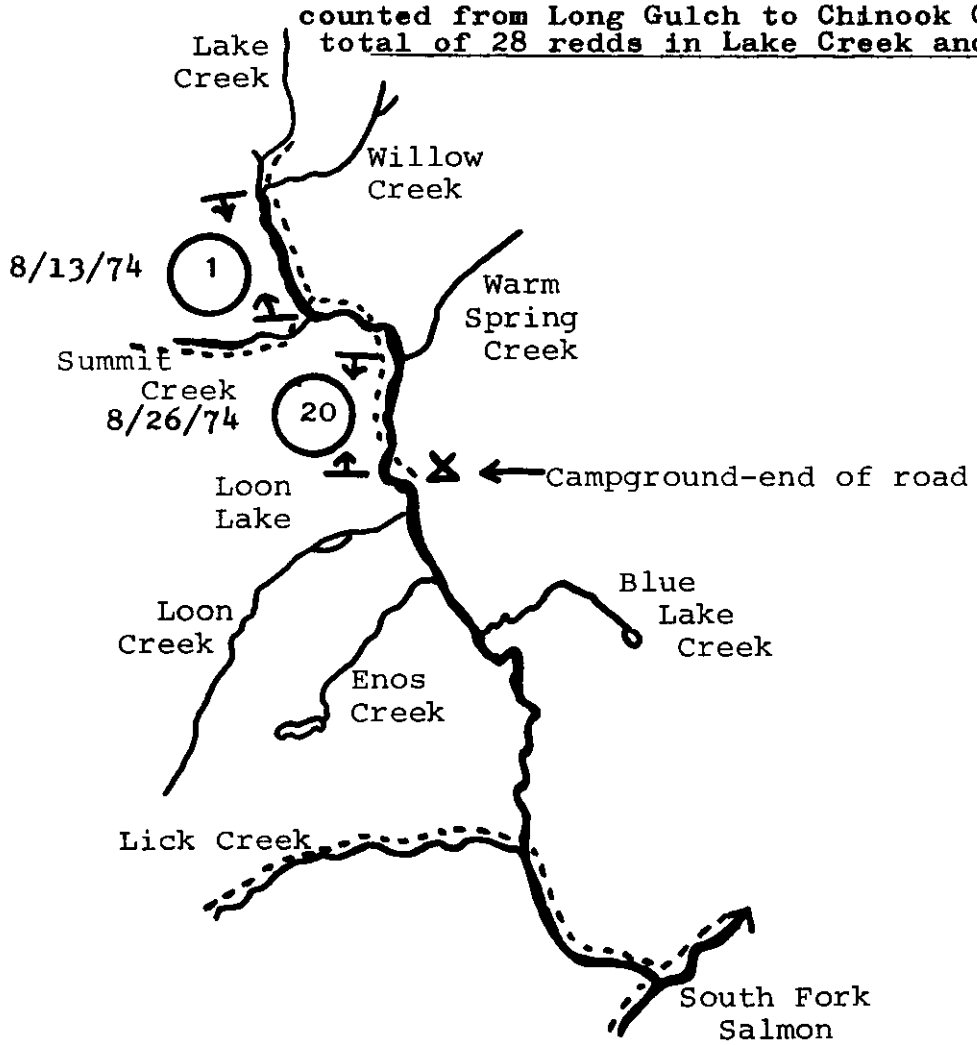
DRAINAGE S. F. Salmon River SURVEY DATE **As indicated**

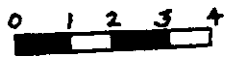
STREAM Secesh and Lake Creek MAP SCALE 1" = 4 miles

OBSERVATION CONDITIONS **Good** OBSERVER **Tom Welsh**

TIMING: Early On Time Late (mark one)

REMARKS: **From 1966 onward, the ground count from Warm Springs creek downstream was terminated at Long Gulch rather than at Chinook Campground. An additional 7 redds was counted from Long Gulch to Chinook Campgrounds for a total of 28 redds in Lake Creek and the Secesh River.**





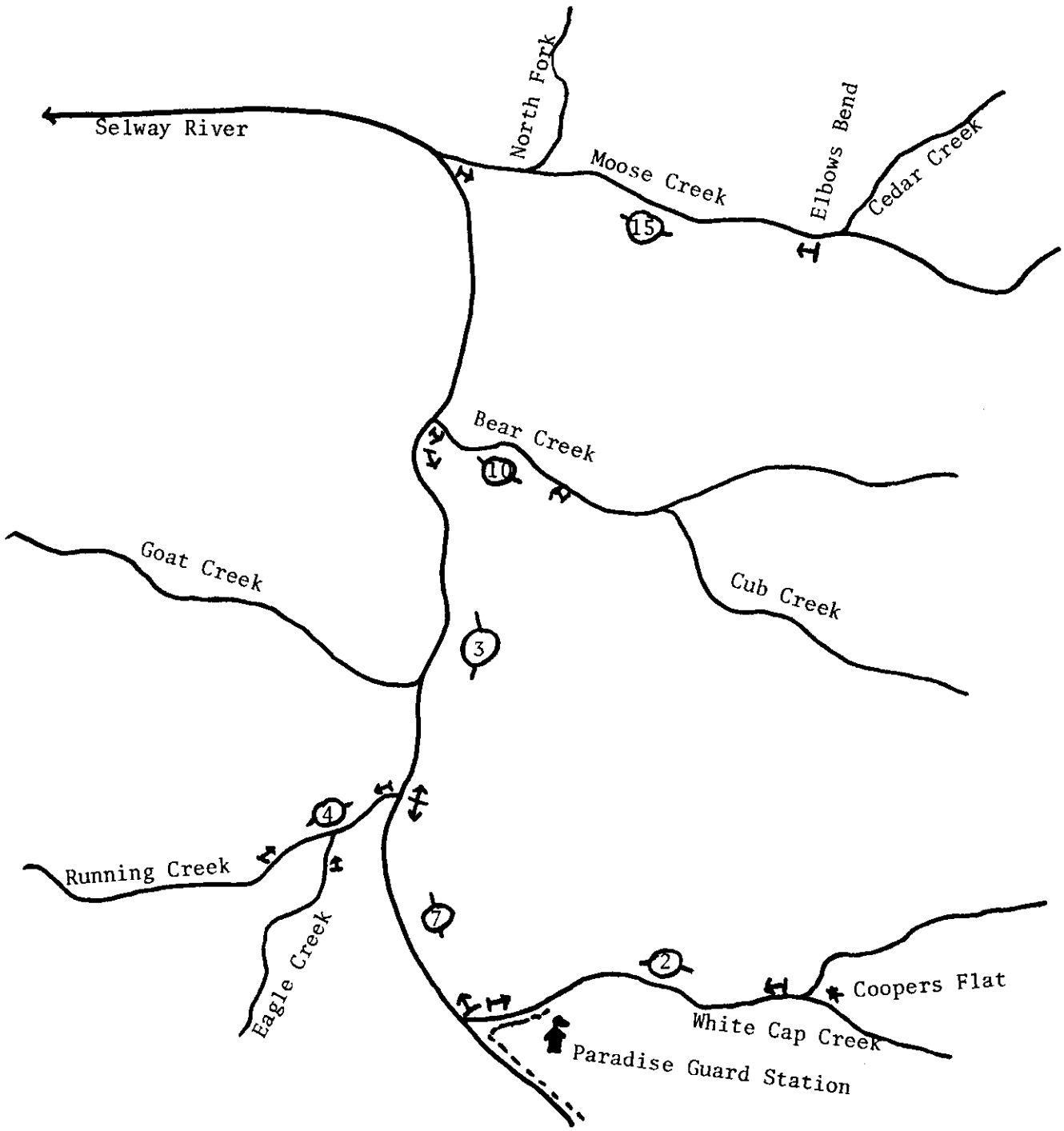
DRAINAGE Clearwater River SURVEY DATE Sept. 6, 1974

STREAM Selway River MAP SCALE 1/8" = 1 mile

OBSERVATION CONDITIONS Fair OBSERVER Hoss

TIMING: Early On Time Late (mark one)

REMARKS: Selway survey has been separated into two parts.



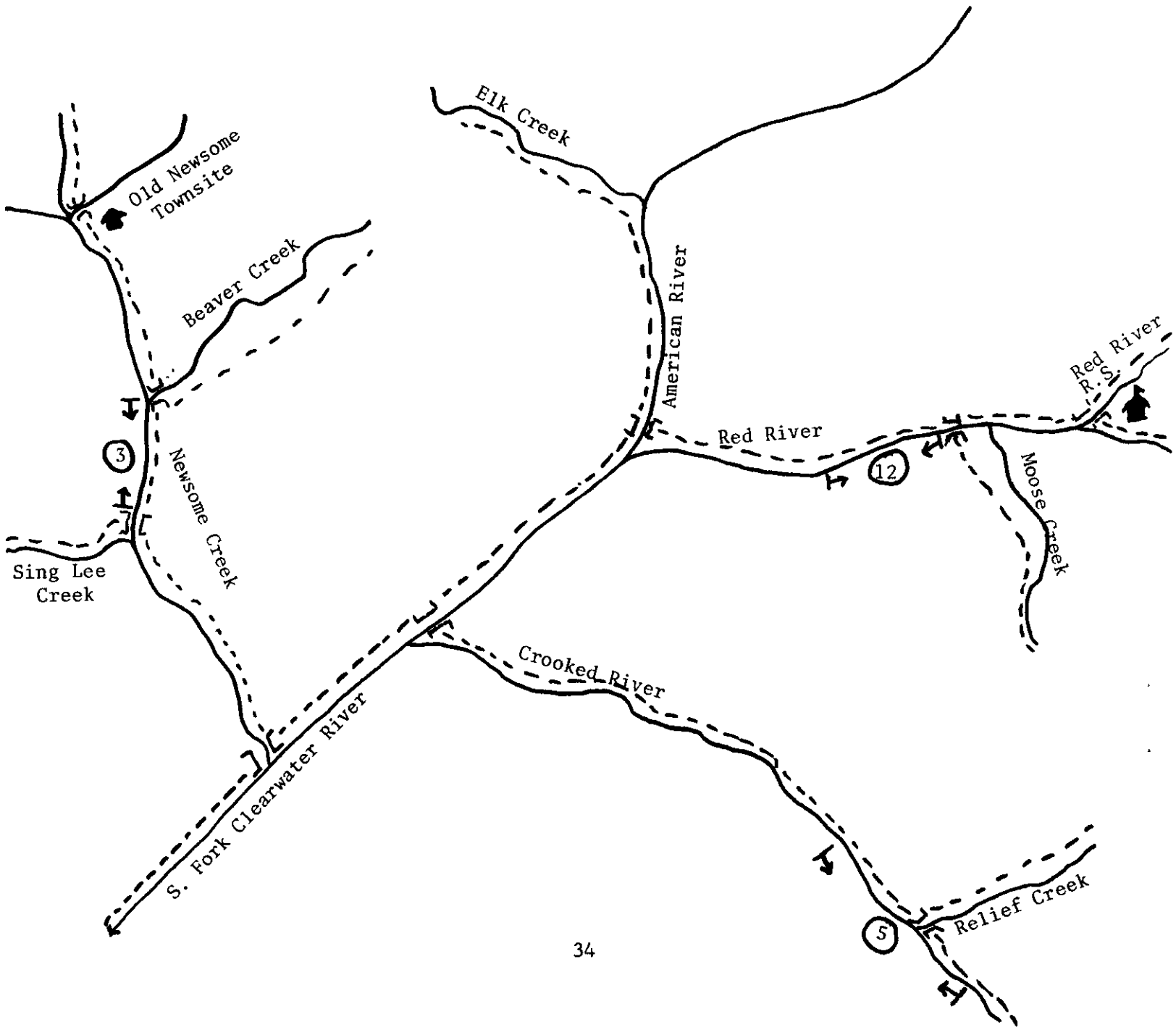
DRAINAGE S. Fork Clearwater River SURVEY DATE August 27 & 30, 1974

STREAM As noted MAP SCALE ¼ = 1 mile

OBSERVATION CONDITIONS Good OBSERVER Hoss

TIMING: Early On Time Late (mark one)

REMARKS: First Chinook survey in South Fork drainage. All returnees are from eyed eggs, fry, fingerling and smolt plants.



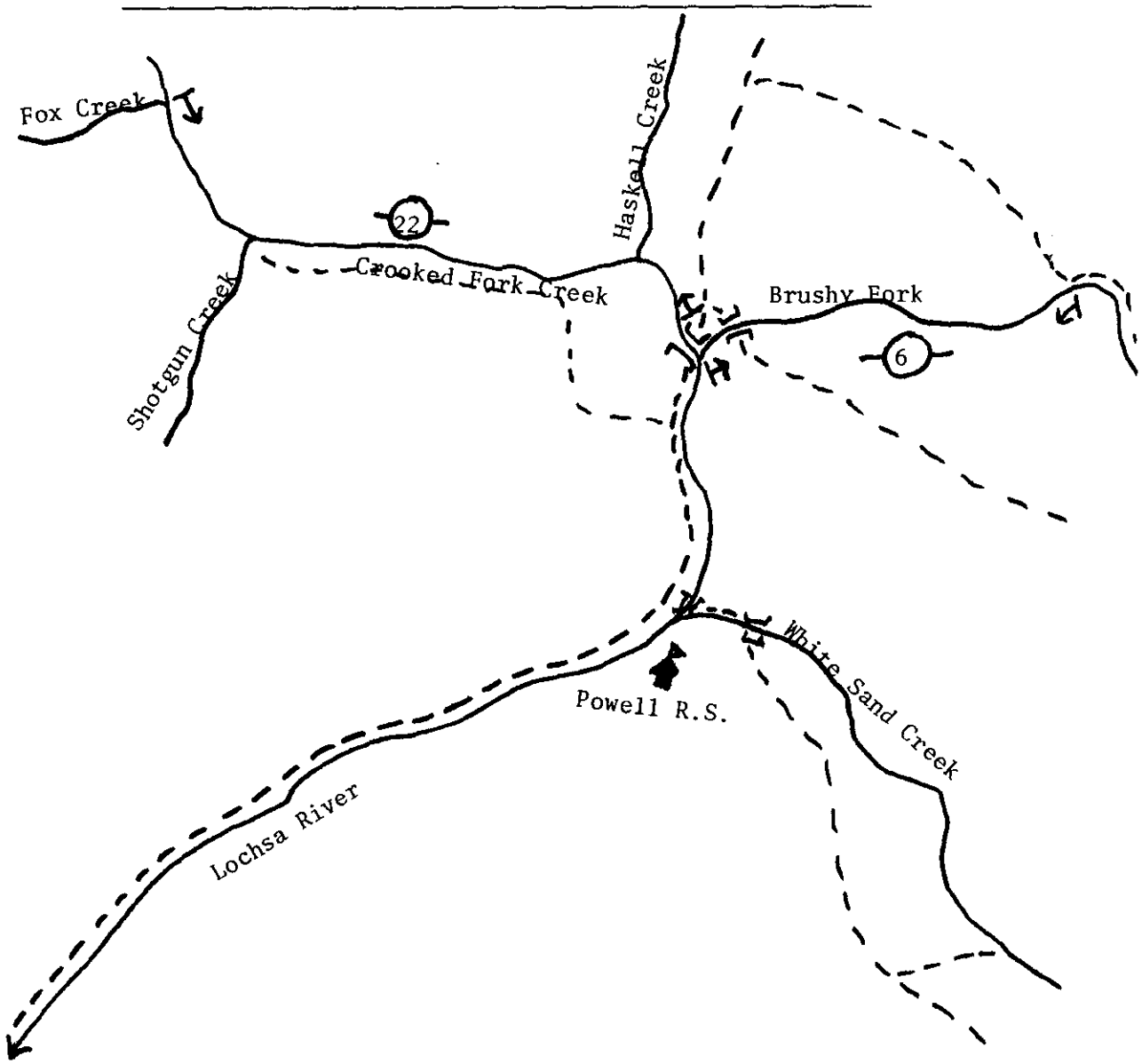
DRAINAGE Lochsa River SURVEY DATE Sept. 5, 1974

STREAM Crooked Fork MAP SCALE ¼ = 1 mile

OBSERVATION CONDITIONS Fair OBSERVER Hoss

TIMING: Early On Time Late (mark one)

REMARKS: Brushy Fork added to the survey for the first time.



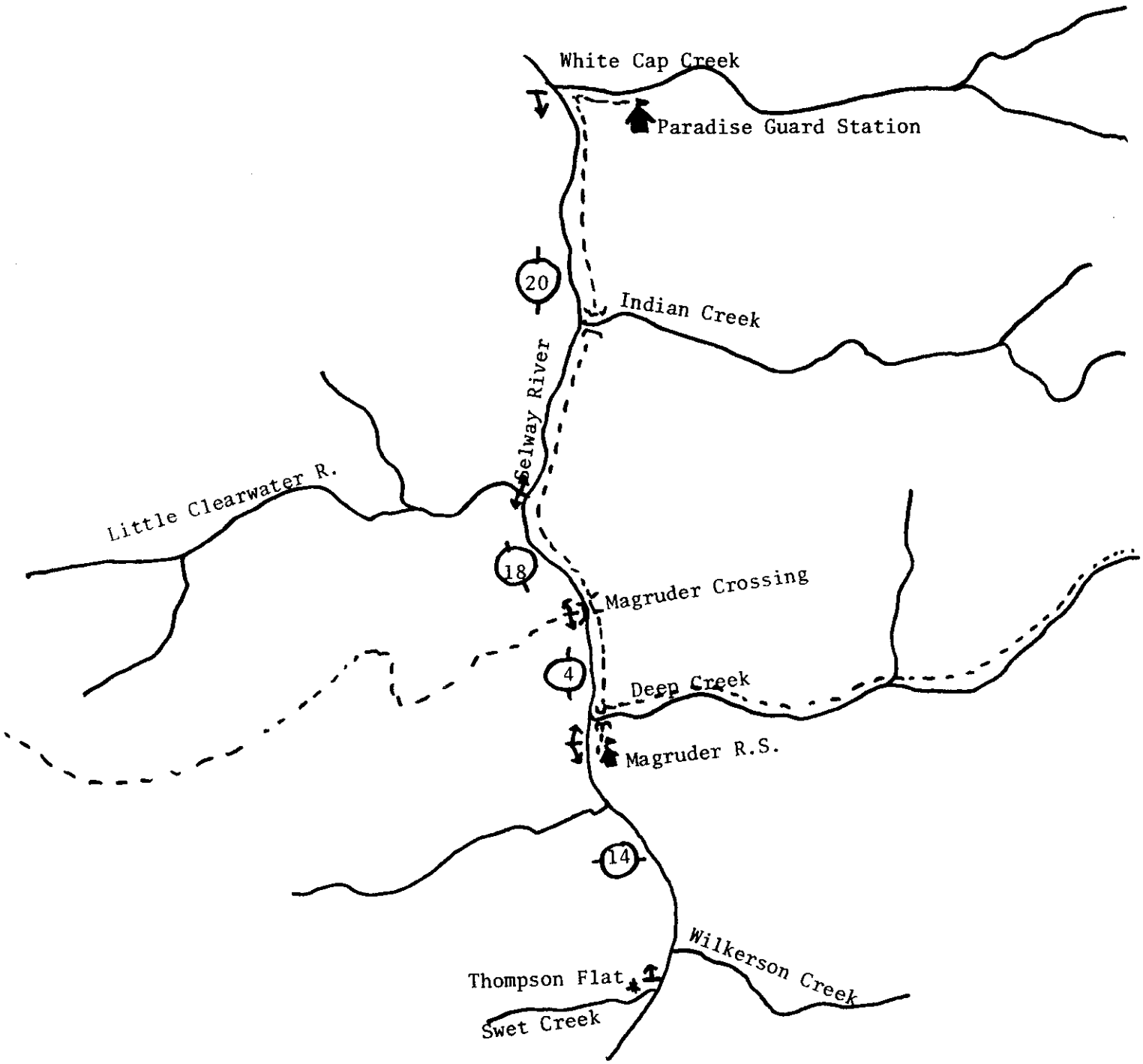
DRAINAGE Clearwater River SURVEY DATE Sept. 6, 1974

STREAM Selway River MAP SCALE 1/8" = 1 mile

OBSERVATION CONDITIONS Fair OBSERVER Hoss

TIMING: Early On Time Late (mark one)

REMARKS: Selway survey has been separated into two parts



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