DEPARTMENT OF THE INTERIOR
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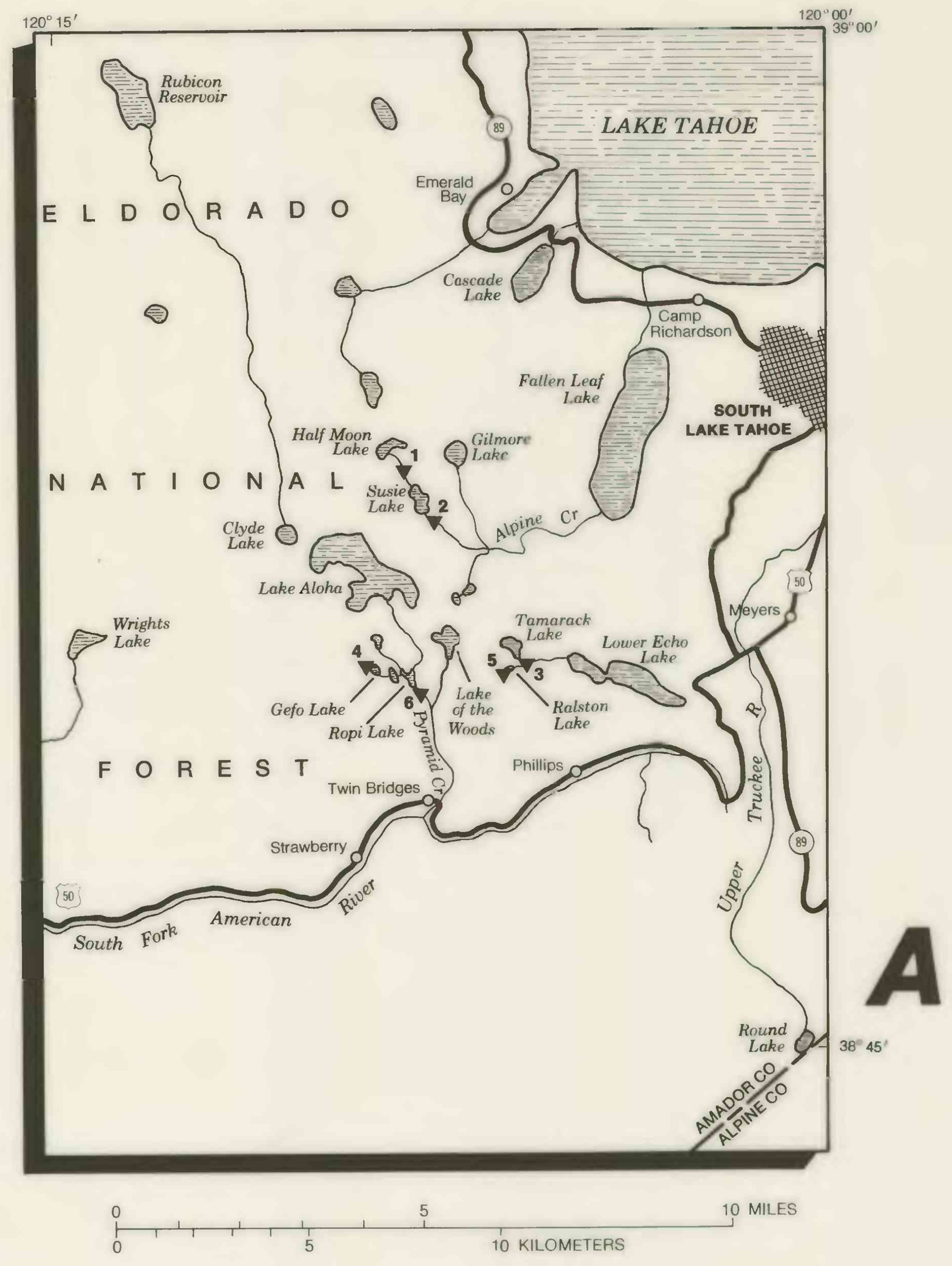

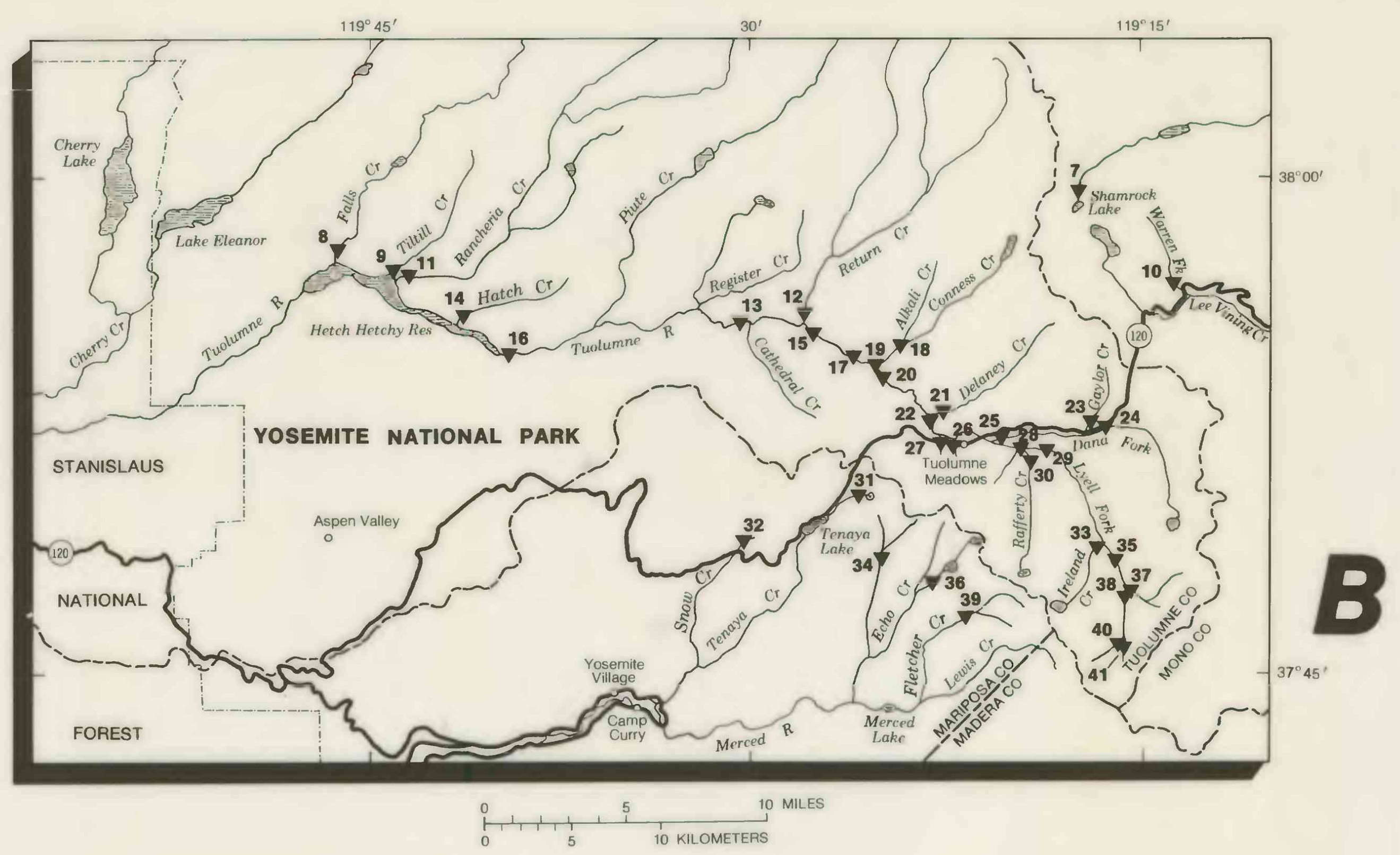

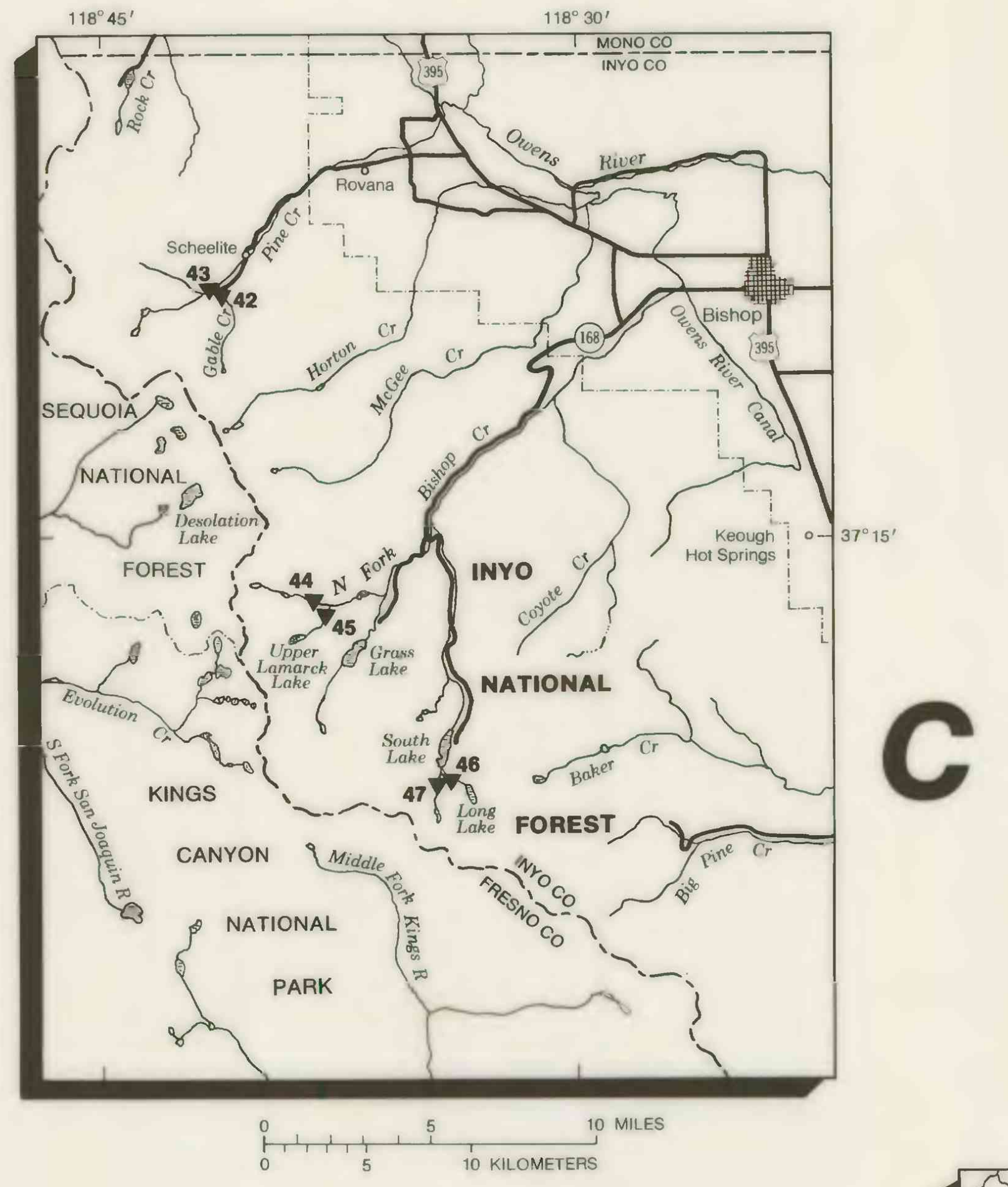

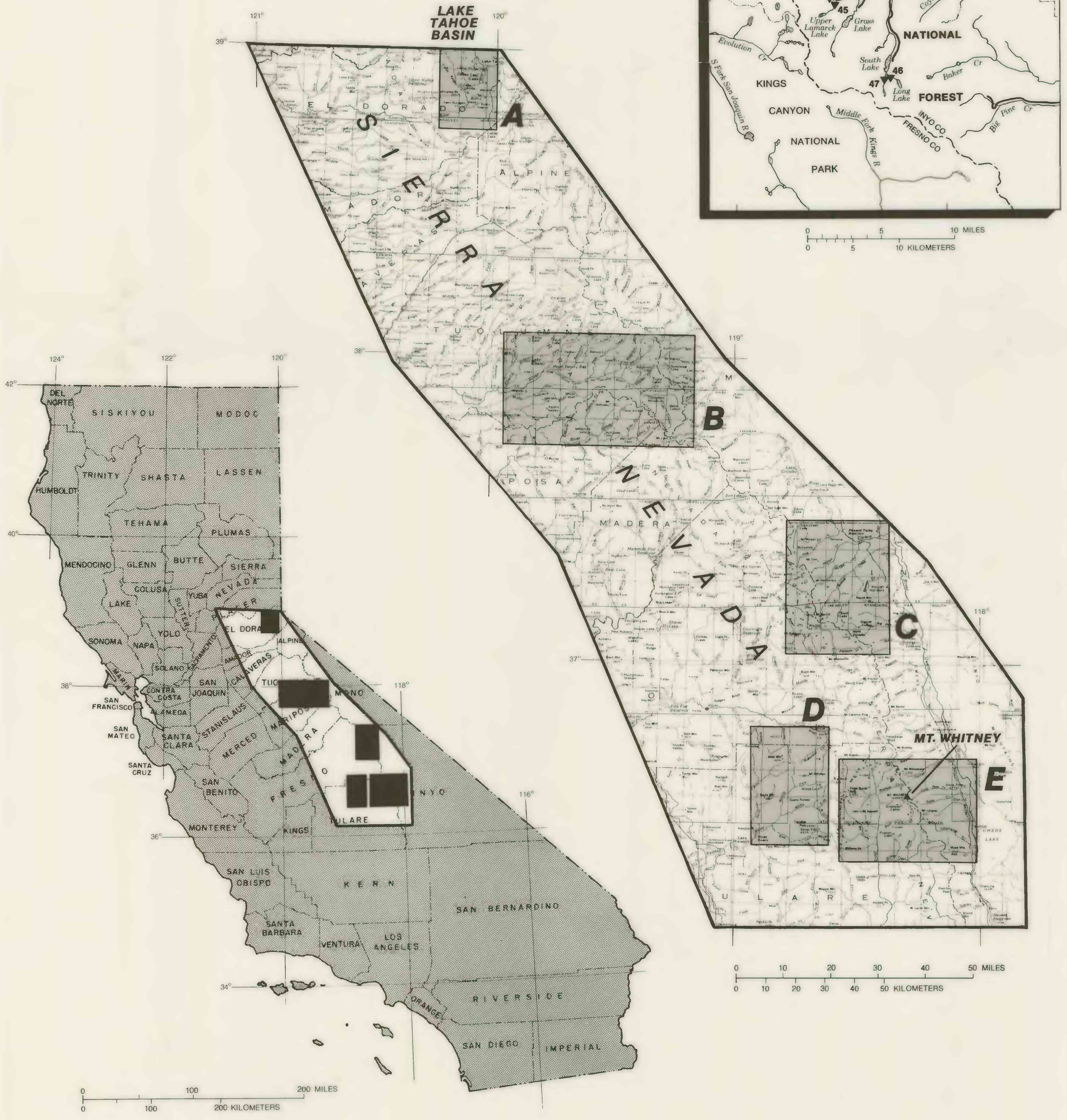

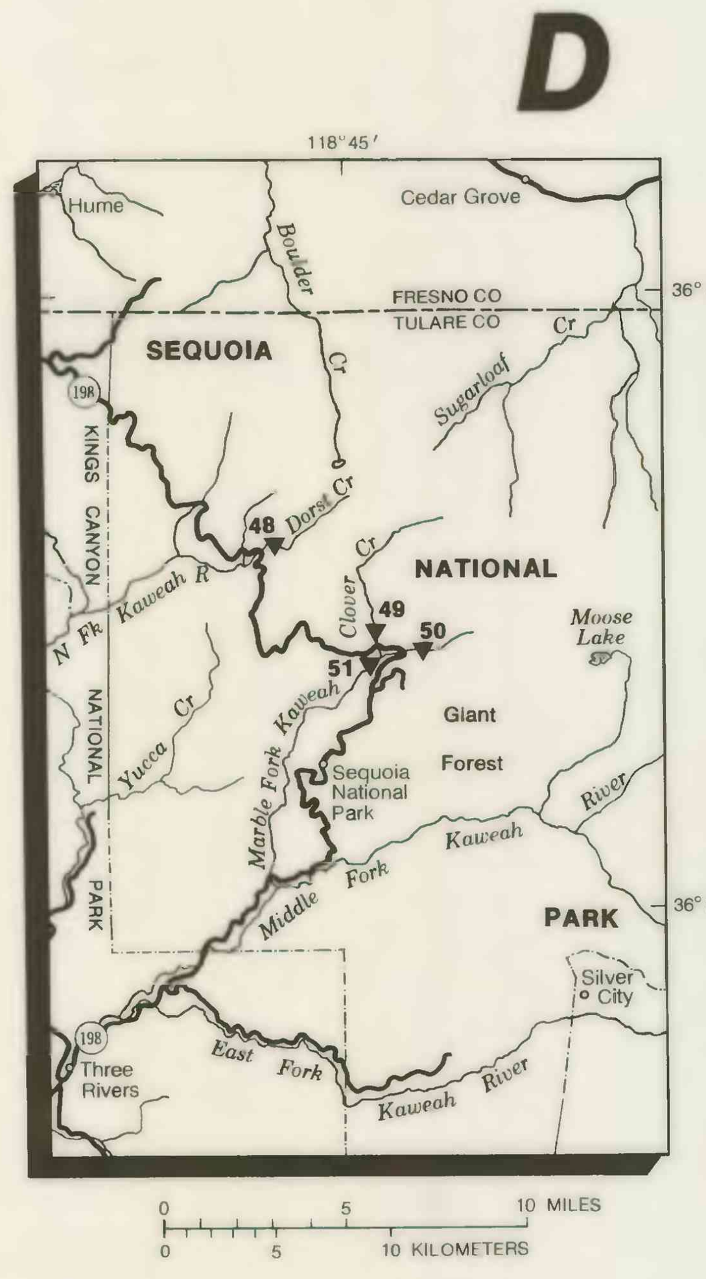

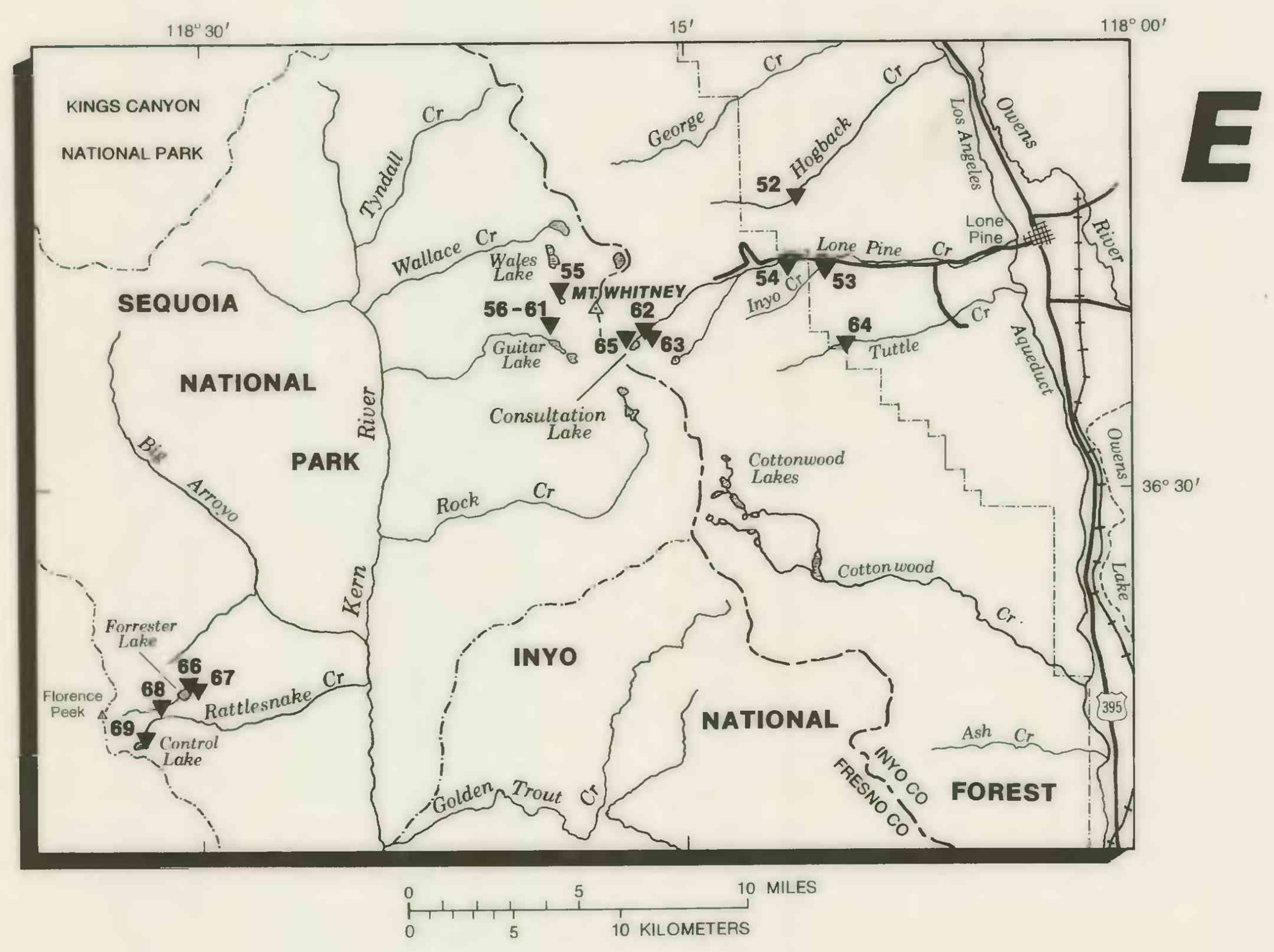

California's Sierra Nevada is a popular mountain range containing more than 3 million acres of designated wilderness. It s proximity to large population centers make the Sierra Nevada one of the most heavily visited wildland areas in the United States.

During 1984, 69 stream sites were sampled for the presence of *Giardia* sp. cysts. The sample sites ranged in elevation from 6,000 to 12,000 feet, and were distributed over a distance of more than 200 miles, from the Lake Tahoe basin in the north to Mt. Whitney in the south. This report shows the location of all sample sites, the quantity of water filtered, and the number of cysts detected in each sample.

Sampling sites were selected after consultation with National Park and National Forest managers who identified backcountry sites that had the highest and lowest probability of human fecal contamination. These sites are referred to as high use and low use in this report. Factors considered in the selection of sites included an estimate of the total number of users in an area, proximity of probable latrine sites to water courses, and the quantity of surface drainage in areas of known human waste deposition. Most high-use sites were immediately downstream from popular wilderness campsites, but several were at the mouths of drainage basins with heavy, dispersed recreational use. After a high-use site was located, an attempt was made to locate a low-use site of similar hydrology and geology in an adjacent drainage basin or directly upstream of the high-use site (upstream from areas of concentrated use). A greater number of high-use sites were sampled because corresponding low-use sites could not be located in all cases. Several sites were sampled more than once during the sampling period. A total of 78 samples were collected from 69 sites.

All sites were sampled using the methods of S.K. Sorenson (U.S. Geological Survey, written commun., 1985). The sampling apparatus was mounted on a backpack and transported to sample sites on foot. For most samples, at least 100 gallons of water was filtered. However, less than 100 gallons was filtered for several samples where suspended materials caused premature clogging of the filters. Identification of *Giardia* cysts was made using direct immunofluorescence (S.K. Sorenson, U.S. Geological Survey, written commun., 1985).

Cysts of *Giardia* were detected in 27 of 78 samples. The number of cysts detected ranged from 1 to 41. Of the 27 samples positive for *Giardia*, only 1 cyst was detected in each of 10 samples, 2 cysts were detected in each of 8 samples, 3 cysts were detected in each of 3 samples, 4 cysts were detected in each of 2 samples, and 5, 6, 14, and 41 cysts were detected in 1 sample each.

EXPLANATION

▼ 50 SAMPLING SITE AND NUMBER - Data shown in table 1

TABLE 1. Summary of sampling for *Giardia* at stream sites, 1984

[Site description: (H), high-use site; (L), low-use site]

Site No.	Site description	Latitude ° ′ ″	Longitude ° ′ ″	Date sampled	Gallons filtered	Number of cysts detected
	AREA A					
1	Susie Lake inlet (L)	38 53 12	120 07 44	8-13-84	100	0
2	Susie Lake outlet (H)	38 52 47	120 07 20	8-13-84	100	41
3	Tamarack Lake outlet (H)	38 50 43	120 05 39	8-12-84	97	0
4	Gefo Lake inlet (L)	38 50 29	120 08 30	8-12-84	100	0
5	Ralston Lake inlet (L)	38 50 24	120 05 55	8-12-84	100	2
6	Pyramid Creek below Ropi Lake (H).	38 50 18	120 07 42	8-12-84	125	0
	AREA B					
7	Shamrock Lake outlet (H)	37 59 57	119 17 40	8-23-84	100	0
8	Falls Creek at Hetch Hetchy Reservoir (H).	37 57 48	119 45 52	10-10-84	100	1
9	Tiltill Creek at Hetch Hetchy Reservoir (L)	37 57 23	119 43 44	10-10-84	100	0
10	Warren Fork of Lee Vining Creek (L).	37 57 17	119 13 43	8-23-84	100	0
11	Rancheria Creek at Hetch Hetchy Reservoir (H).	37 57 12	119 43 37	10-10-84	103	0
12	Return Creek at Tuolumne River (H).	37 55 56	119 27 51	9-18-84	100	0
13	Tuolumne River below Cathedral Creek (H).	37 55 54	119 30 00	9-18-84	106	0
14	Hatch Creek at Hetch Hetchy Reservoir (L).	37 55 44	119 41 01	10-10-84	100	0
15	Tuolumne River above Waterwheel Falls (H).	37 55 32	119 27 21	9-19-84	100	2
16	Tuolumne River at Hetch Hetchy Reservoir (H).	37 55 00	119 39 34	10-10-84	101	0
17	Tuolumne River above California Falls (H).	37 54 58	119 26 18	8-17-84	95	0
18	Cold Canyon Creek above Conness Creek (H).	37 54 46	119 24 53	9-16-84	100	1
19	Conness Creek at Tuolumne River (H).	37 54 34	119 25 05	9-16-84	100	0
20	Tuolumne River above Glen Aulin (H).	37 54 28	119 25 04	9-16-84	100	0
21	Delaney Creek at Tuolumne River (L).	37 52 56	119 22 54	9-14-84	100	0
22	Tuolumne River above Delaney Creek (H).	37 52 54	119 22 59	9-14-84	100	0
23	Gaylor Creek above Highway 120 (L).	37 52 48	119 18 04	9-14-84	100	0
24	Dana Fork Tuolumne River above Gaylor Creek (H).	37 52 41	119 17 28	9-14-84	100	0
25	Dana Fork Tuolumne River above Lyell Fork Tuolumne River (H).	37 52 28	119 20 49	9-14-84	100	0
26	Unicorn Creek (L)	37 52 23	119 21 49	9-14-84	100	0
27	Budd Creek (L)	37 52 21	119 22 54	9-14-84	100	0
28	Lyell Fork Tuolumne River above campground (H).	37 52 18	119 20 42	9-14-84	100	2
29	Lyell Fork Tuolumne River above Rafferty Creek (H).	37 52 12	119 19 20	9-14-84	100	0
30	Rafferty Creek at Lyell Fork Tuolumne River (H).	37 52 08	119 19 21	9-13-84	100	1
31	Outlet of Lower Cathedral Lake (H).	37 50 45	119 25 36	8-31-84	100	0
32	Snow Creek (H)	37 49 44	119.29 59	9- 3-84	100	0
33	Ireland Creek above Lyell Fork Tuolumne River (L).	37 49 29	119 16 40	9-13-84	100	0
34	Cathedral Fork Echo Creek (L)	37 49 14	119 24 27	8-31-84	100	0
35	Lyell Fork Tuolumne River above Ireland Creek (H).	37 48 40	119 15 58	9-11-84	100	2
36	Fork of Echo Creek below Nelson Lake (L).	37 47 57	119 23 27	9- 1-84	100	0
37	Kuna Creek at Lyell Fork Tuolumne River (L).	37 47 32	119 15 32	9-12-84	101	0
38	Lyell Fork Tuolumne River above Kuna Creek (H).	37 47 29	119 15 35	9-12-84	100	1
39	Fletcher Creek (H)	37 47 21	119 21 12	9- 2-84	100	0
40	Maclure Creek above Lyell Fork Tuolumne River (L).	37 46 25	119 15 41	9-12-84	100	0
41	Lyell Fork Tuolumne River above Maclure Creek (H).	37 46 17	119 15 34	9-12-84	100	0
	AREA C					
42	Gable Creek (L)	37 21 37	118 41 18	8-22-84	100	6
43	Pine Creek above UC Mine (H)	37 21 26	118 42 08	8-22-84	100	0
44	North Fork Bishop Creek (H)	37 13 41	118 37 13	8-22-84	100	0
45	Lamarck Creek (L)	37 13 37	118 37 09	8-22-84	100	0
46	Long Lake outlet (H)	37 09 15	118 34 10	8-21-84	100	14
47	Treasure Lakes outlet (L)	37 09 10	118 34 22	8-21-84	100	3
	AREA D					
48	Dorst Creek above Generals Highway (L).	36 38 45	118 48 09	6-12-84 9-20-84	100 50	0 0
49	Clover Creek above Generals Highway (H).	36 36 28	118 44 47	6-12-84 9-20-84	100 60	3 4
50	Marble Fork Kaweah above Lodgepole Campground (H).	36 36 22	118 42 51	6-12-84	100	2
51	Marble Fork Kaweah below Lodgepole Campground (H).	36 36 18	118 44 01	6-12-84	100	0
	AREA E					
52	Hogback Creek (L)	36 37 20	118 13 31	6-12-84	60	0
53	Inyo Creek (L)	36 35 31	118 11 54	6-12-84	100	0
54	Lone Pine Creek at Whitney Portal (H).	36 35 19	118 13 45	6-13-84	100	1
55	Inlet to Arctic Lake (L)	36 35 01	118 18 20	6-19-84	100	0
56	Guitar Lake inlet #5 above campground (L).	36 34 30	118 18 44	9- 2-84	60	0
57	Guitar Lake inlet #4 above campground (L).	36 34 29	118 18 38	9- 1-84	79	0
58	Guitar Lake inlet #4 below campground (H).	36 34 17	118 18 44	9- 1-84	9	2
59	Guitar Lake inlet #5 below campground (H)	36 34 16	118 18 48	6-18-84 9- 2-84	100 63	0 0
60	Guitar Lake inlet #0 (H)	36 34 16	118 18 39	8-31-84 8-31-84	36.5 35	3 1
61	Guitar Lake inlet #3 (L)	36 34 16	118 18 33	8-31-84	35	2
62	Lone Pine Creek at Trail Camp (H).	36 33 50	118 16 36	6-14-84 7-17-84	80 100	0 5
63	Lower outlet of Trail Camp into Consultation Lake (H).	36 33 36	118 16 37	7-17-84	20	0
64	Tuttle Creek (L)	36 33 46	118 09 37	6-12-84	100	2
65	Upper outlet of Trail Camp into Consultation Lake (H).	36 33 44	118 16 41	6-14-84 7-17-84	100 100	1 4
66	Forrester Meadow outlet (H)	36 24 50	118 30 49	6-26-84 8-19-84	103 75	1 1
67	Forrester Lake inlet #2 (H)	36 24 40	118 30 39	8-18-84 10-23-84	2.6 1.0	0 0
68	Forrester Lake outlet (H)	36 24 37	118 30 42	6-25-84	79	1
69	Control Lake outlet (L)	36 24 01	118 31 12	6-25-84 8-17-84	66.5 100	0 0

MAP SHOWING THE NUMBER OF *GIARDIA* CYSTS IN WATER SAMPLES FROM 69 STREAM SITES IN THE SIERRA NEVADA, CALIFORNIA

By

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1986

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