

Figure 9. Maximum and minimum water temperatures for the Bruneau Springsnail study sites. Dashed horizontal lines indicate maximum and minimum temperatures recorded after September 1994 (external-sensor logger data). Dotted horizontal lines indicate thermal maximum temperature for *P. bruneauensis*. Dark bar under x-axis represents probable outlier period. See text for additional comments.

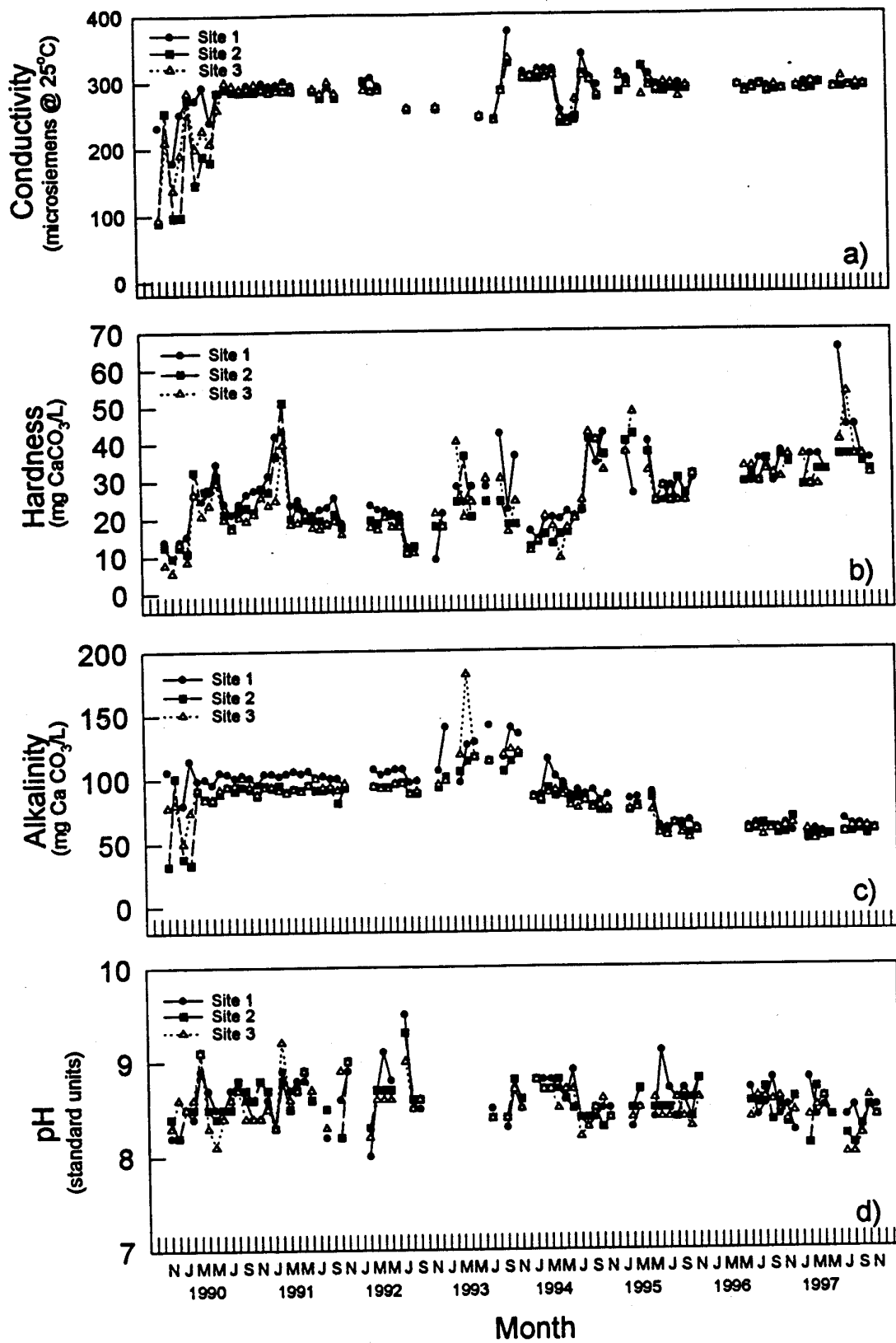


Figure 10. Conductivity (a), hardness (b), alkalinity (c), and pH (d) for the Bruneau Springsnail study sites.

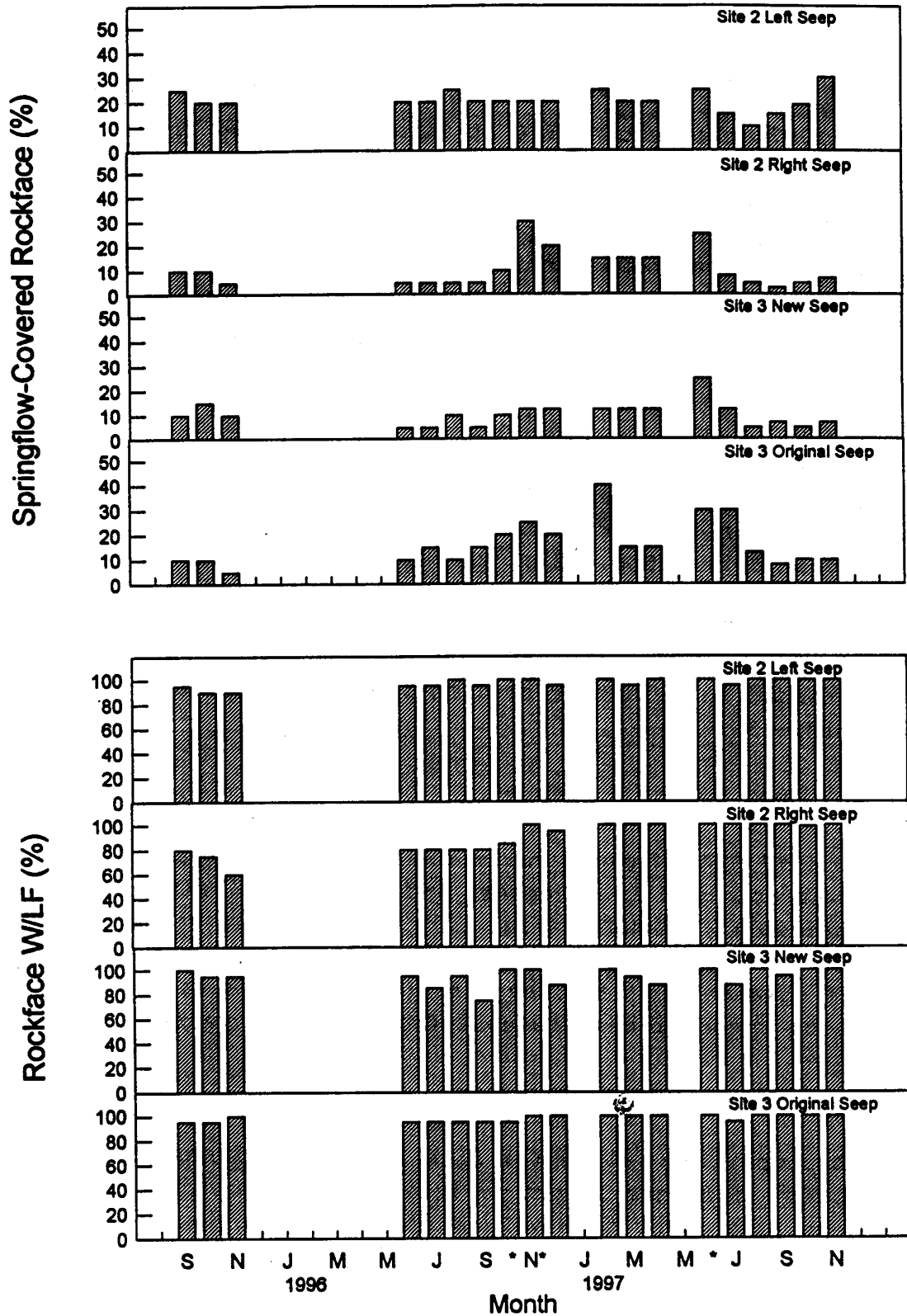


Figure 11. (Top) Percent springflow-covered rockface (SFC rockface) and (bottom) percent rockface, wetted, but lacking flow (rockface W/LF) for the Bruneau Springsnail study sites. Asterisks indicate that sampling occurred during rain events.

### Site 3-NS

In 1997, the percent SFC at Site 3-NS ranged from 5 to 25% (Fig. 11). Percent rockface W/LF ranged from 85 to 100% (Fig. 11). Water temperatures at Site 3-NS were the most variable of all the study sites, ranging from 13 to 32°C (Fig. 9). Water chemistry remained consistent with data from previous years (Fig. 10).

### Periphyton Levels

#### Site 1 (Hot Creek)

In 1997, the highest value for chlorophyll a, 155.4 mg/m<sup>2</sup>, was obtained in February, and the lowest value, 7.2 mg/m<sup>2</sup>, was obtained in April (Fig. 12). The highest value for AFDM, 76.2 g/m<sup>2</sup>, was obtained in February, and the lowest value, 5.2 g/m<sup>2</sup> was obtained in March (Fig. 13). These values fell within the range from previous monitoring years. Chlorophyll a and AFDM values tended to be higher at Site 1 than at any other study site (Figs. 12, 13).

#### Site 2 (Upper Spring Rockface)

In 1997, the highest value for chlorophyll a at Site 2, 38.1 mg/m<sup>2</sup>, was obtained in November, and the lowest value, 3.8 mg/m<sup>2</sup>, was obtained in February (Fig. 12). The highest value for AFDM, 18.7 g/m<sup>2</sup>, was obtained in February, while the lowest value, 5.5 g/m<sup>2</sup> was obtained in September (Fig. 13). These values fell within the range of measurements from previous years.

#### Site 3-OS (Lower Spring Rockface)

Chlorophyll a values for Site 3-OS were highest in March (25.4 mg/m<sup>2</sup>) and were lowest in February (1.8 mg/m<sup>2</sup>) in 1997, and were generally lower than values from previous years (Fig. 12). The highest value for AFDM, 11.0 g/m<sup>2</sup>, was obtained in June, and the lowest value, 3.3 g/m<sup>2</sup> was obtained in August (Fig. 13). These values fell within the range of measurements from previous years, but were on the lower end of the range.

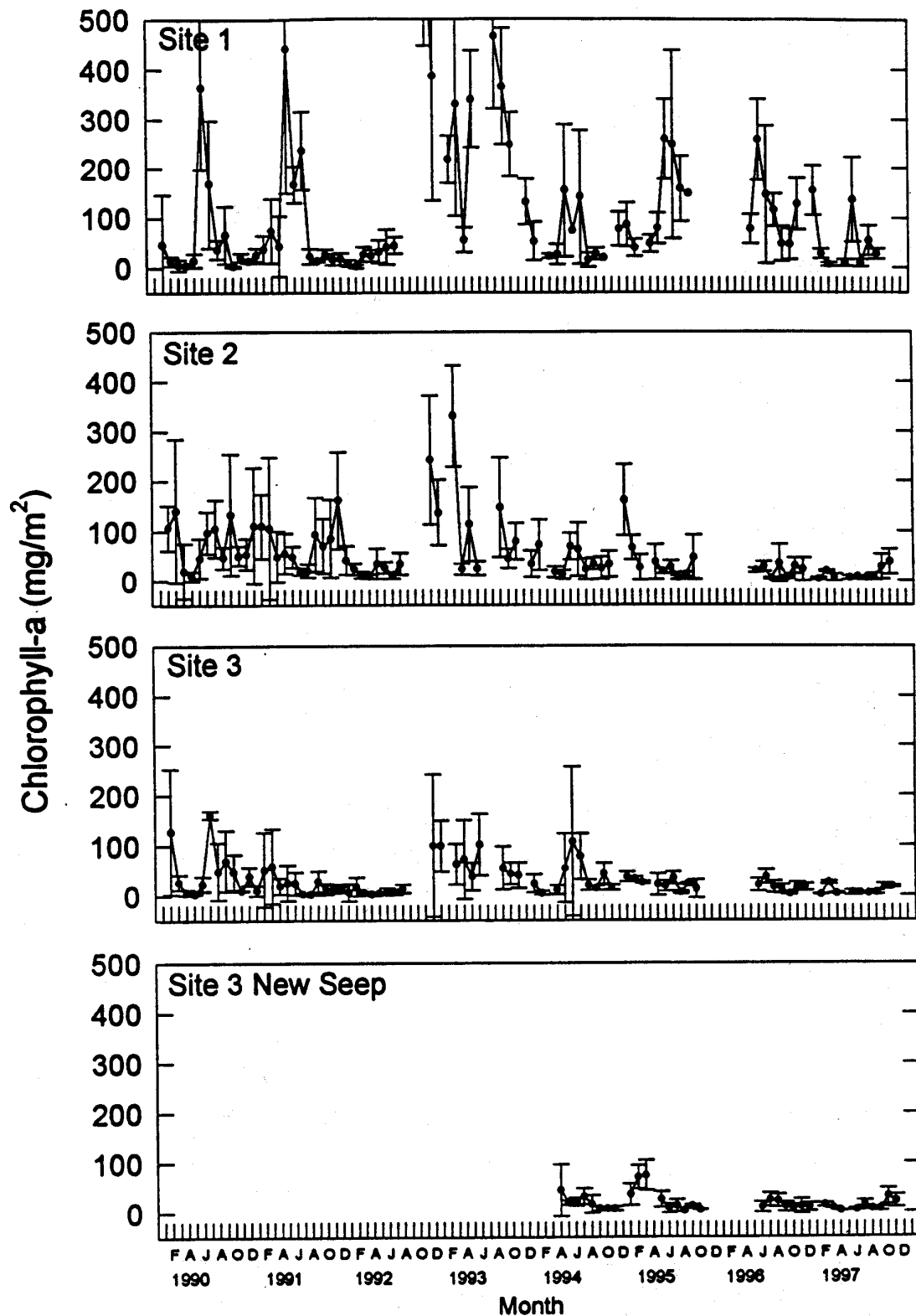


Figure 12. Periphyton chlorophyll-a values for the Bruneau Springsnail study sites. The value for Site 1 in December 1992 was 742.7 mg/m<sup>2</sup>. Error bars represent one standard deviation from the mean. (n = 5 for Sites 1 and 2; n = 3 for Site 3 and 3 New Seep).

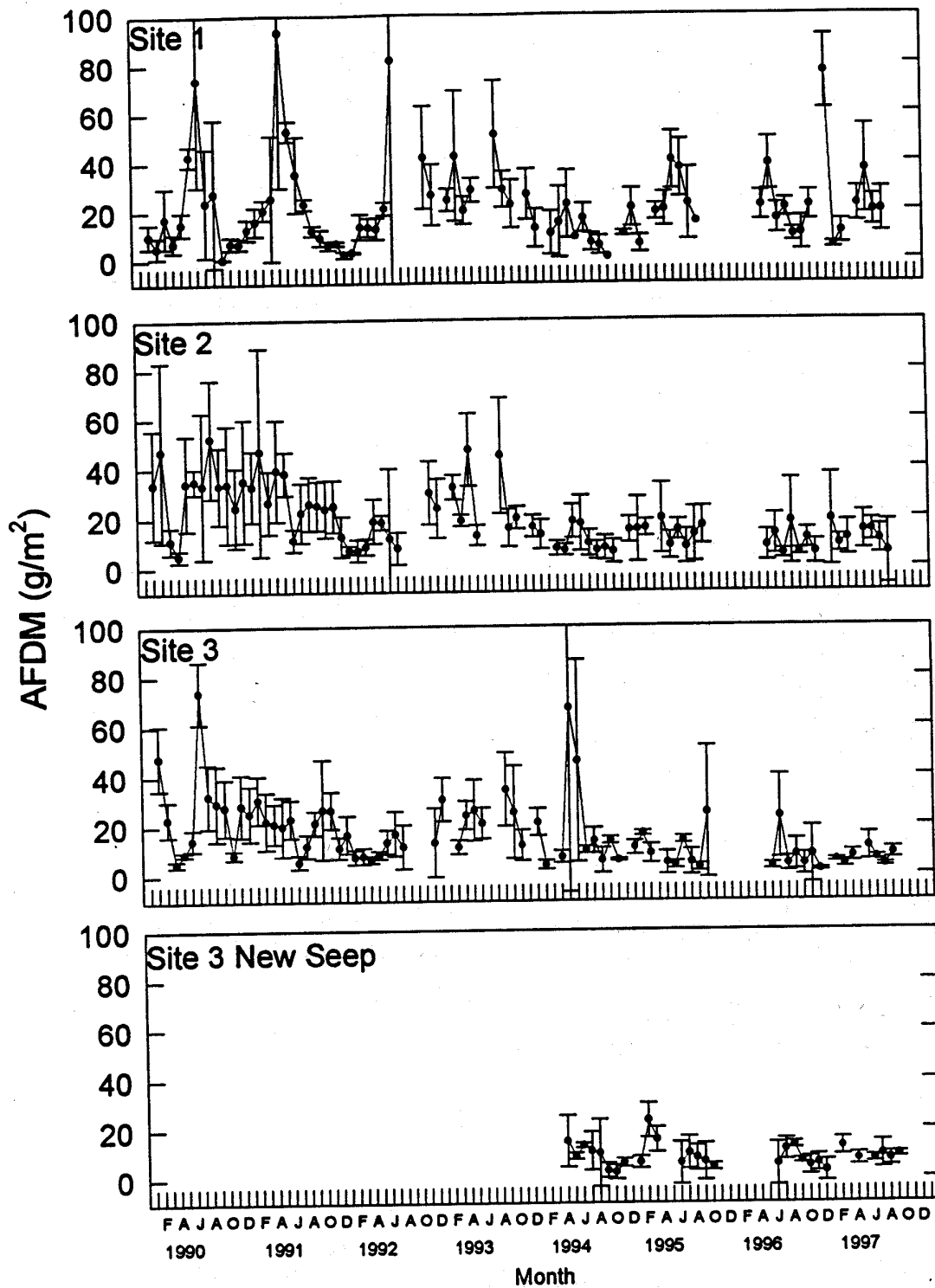


Figure 13. Periphyton ash-free dry mass (AFDM) values for the Bruneau Springsnail study sites. Error bars represent one standard deviation from the mean. (n=5 for Sites 1 and 2; n=3 for Site 3 and Site 3 New Seep).

### Site 3-NS

The highest value for chlorophyll a, 31.1 mg/m<sup>2</sup>, was obtained in October, and the lowest value, 2.4 mg/m<sup>2</sup>, was obtained in April (Fig. 12). The highest value for AFDM, 12.7 g/m<sup>2</sup>, was obtained in February, and the lowest value, 7.4 g/m<sup>2</sup> was found in August (Fig. 13). In general, these measurements were slightly lower than those from previous years.

### Habitat Assessment at Hot Creek

Using the Idaho Department of Health and Welfare Habitat Assessment Field Data Sheet for lowland streams (Appendix B), habitat assessment scores were obtained on a monthly basis for Hot Creek beginning in 1995. At the recommendation of Varricchione and Minshall (1997), habitat scoring was only conducted in July in 1997. Conditions remained fairly constant between 1995 and 1997, with only seasonal changes in vegetation being apparent (Table 1). Overall, scores for the riparian community were intermediate to high, while substrate scores were low (Table 1). Particle size distribution data showed that  $\geq 65\%$  of Hot Creek's substrate was less than 1 cm in diameter for the years 1995 through 1997 (Fig. 14). In addition,  $\geq 29\%$  of Hot Creek's substrate was less than 0.1 cm in diameter (Fig. 14).

Table 1. Habitat assessment scores for Site 1 (Hot Creek).

Year	Month	Bottom Substrate	Pool Substrate	Pool Variability	Canopy Cover	Channel Alteration	Deposition	Channel Sinuosity	Channel Capacity	Bank Stability	Bank Vegetation	Streamside Cover	Riparian Width	Total Score	Percent of Maximum
Maximum score possible:		20	20	20	20	15	15	15	15	10	10	10	10	180	100
1995	March	4	5	5	16	12	2	10	9	8	8	6	5	90	50
	May	4	5	5	16	12	2	10	9	8	8	8	5	92	51
	June	4	5	5	15	12	2	10	9	9	9	5	5	90	50
	July	4	5	5	14	12	2	10	9	9	10	5	5	90	50
	August	4	5	5	14	12	2	10	9	9	10	5	5	90	50
	September	4	5	5	14	12	2	10	9	9	10	5	5	90	50
	October	4	5	5	15	12	2	10	9	9	10	5	5	91	51
	November	4	5	5	15	12	2	10	9	9	9	6	5	91	51
1996	June	4	5	5	15	12	2	10	9	8	9	5	5	89	49
	July	4	5	5	14	12	2	10	9	8	10	5	5	89	49
	August	4	5	5	14	12	2	10	9	8	10	5	5	89	49
	September	4	5	5	14	12	2	10	9	8	10	5	5	89	49
	October	4	5	5	15	12	2	10	9	8	10	5	5	90	50
	November	4	5	5	15	12	2	10	9	8	10	6	5	91	51
	December	4	5	5	16	12	2	10	9	8	9	6	5	91	51
1997	July	4	5	5	15	12	2	10	9	8	10	5	5	90	50

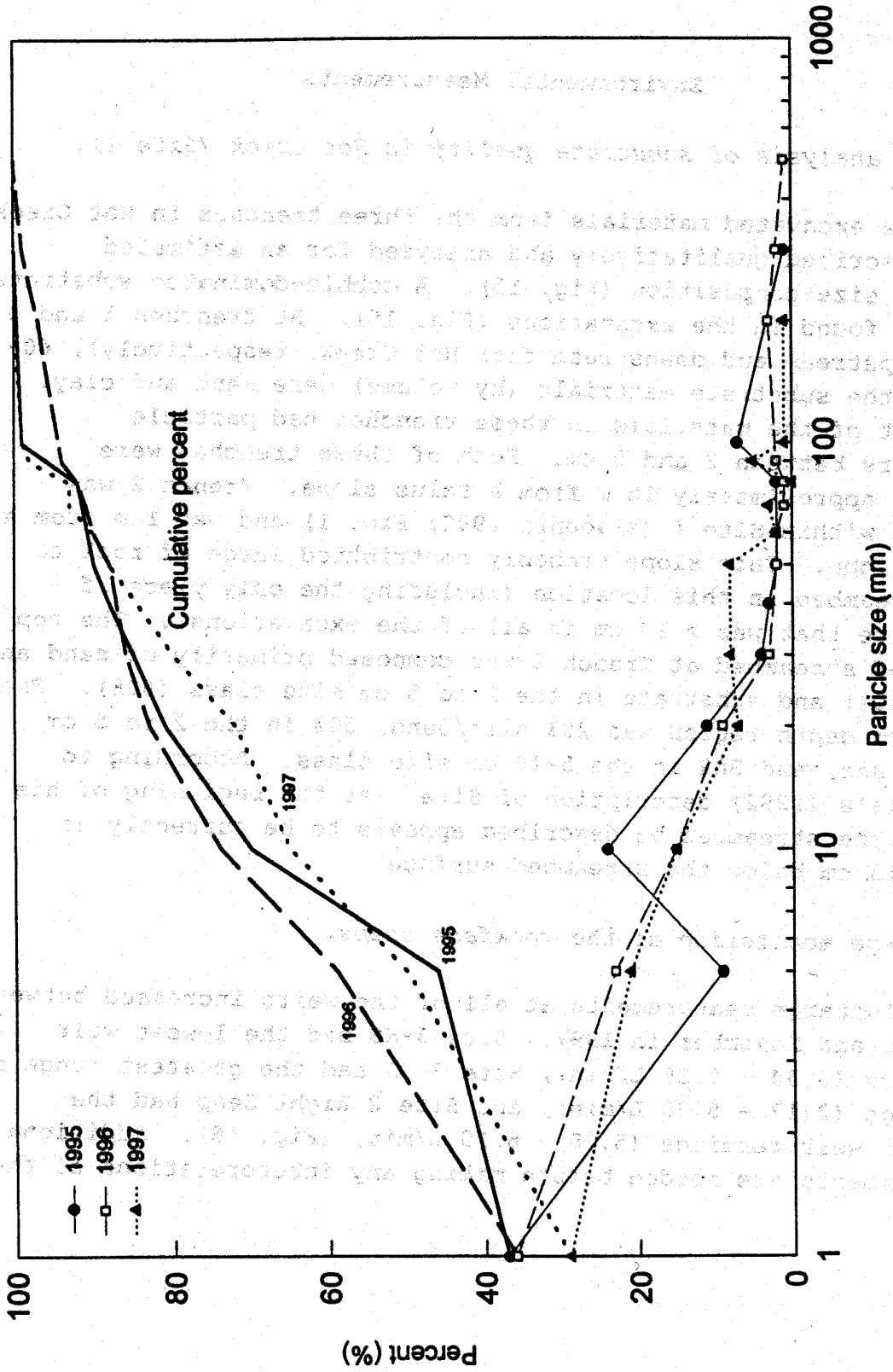


Figure 14. Substrate particle size distributions for Hot Creek (Site 1) for 1995-1997. Lines without symbols represent cumulative particle distribution.