

NATURAL ENVIRONMENTAL RADIOACTIVITY
SURVEY
FOR THE PERIOD OF
SEPTEMBER 1980 THROUGH AUGUST 1981

Prepared By:

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INTRODUCTION

The health physics environmental sampling program includes a continuous evaluation of the levels of naturally occurring radioactivity in the immediate environs, and out to a radius of five miles from the Northrop Reactor site.

Fluctuations in the radioactivity content of the environmental samples occur from time to time due to seasonal and climatic conditions which may effect the deposition of the atmospheric fallout or other airborne radioactive materials. These minor variations must be noted since they do add to the natural environmental background; therefore, it is quite important to compile the sample data and periodically compare it with the data from the previous sampling periods in order to establish the trend in the natural background.

The report is a compilation of the data derived from the environmental samples collected and processed during the period of September 1980 through August 1981 which comprises the twentieth annual report.

In order to maintain continuity in the overall sampling program, the sampling sites have not been changed from those shown in Table I. All sample processing and handling techniques have remained the same as those stated in the previous reports.

AIR ANALYSES

A total of 89 continuous air samples were collected during the period from sites S-11 and S-12. The sampling time averaged 194 hours per sample. A 72-hour decay period was permitted on each sample prior to counting to eliminate natural Radon-Thoron activities.

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Figure 1, graphically displays the monthly averages from the two sampling stations.

RAINWATER ANALYSES

A total of 6 samples were collected from sites S-11 and S-12. The radioactivity content of the rainwater, as shown in Figure 2, does not indicate any significant changes from the previous periods.

SOIL ANALYSES

A total of 108 soil samples were collected from the sampling sites indicated in Table I. The radioactivity content of the soil samples, as shown in Figure 3, indicates a relatively stable trend.

VEGETATION ANALYSES

A total of 108 vegetation samples were collected and processed from the same areas as the soil samples. The samples indicated no increase in radioactivity content. The overall trend was quite typical. The monthly averages are shown in Figure 4.

WATER ANALYSES

A total of 120 water samples were collected from the sites indicated in Table I. The combined monthly averages for drinking water and pond water are shown in Figure 5. The water samples indicated only a very slight variation in radioactivity.

DISCUSSION

Analysis of the data for the overall environmental samples indicates a reasonably stable trend in their radioactivity content, with no significant changes from previous sampling periods.

At times the radioactivity content of the environmental samples changed due to climatic conditions, the prevailing winds (with the change in seasons), and the temperature inversions in the Los Angeles basin. The smog content in the air during periods of temperature inversions tends to increase the natural background radioactivity of the air.

Since the overall radioactivity content of the environmental samples was reasonably stable, it is apparent that the Northrop Reactor and associated facilities have not contributed significantly to the natural radioactivity background.

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TABLE I

SAMPLING SITES

<u>SITE</u>	<u>LOCATION</u>	<u>SAMPLES TAKEN</u>
S-1	Reactor	Soil, vegetation, and drinking water
S-2	Imperial Highway and Inglewood Blvd.	Soil, vegetation, and drinking water
S-3	Imperial Highway and Sepulveda Blvd.	Soil, vegetation, and drinking water
S-4	Prairie Avenue and Redondo Beach Blvd.	Soil, vegetation, and pond water (Alondra Park)
S-5	Hawthorne Blvd. and Redondo Beach Blvd.	Soil, vegetation, and drinking water
S-6	Hawthorne Blvd. and 190TH Street	Soil, vegetation, and drinking water
S-7	Normandie and El Segundo Blvd.	Soil, vegetation, and drinking water
S-8	Rosecrans and Central Avenue	Soil, vegetation, and drinking water
S-9	Hawthorne Blvd. and Century Avenue	Drinking water
S-10	La Brea Avenue and Slauson Avenue	Soil, vegetation, and drinking water
S-11	Atop Engineering Center 900 yards west of reactor	Air (particulates), and rainwater
S-12	Atop Plant III, 200 yards east of reactor	Air (particulates), and rainwater

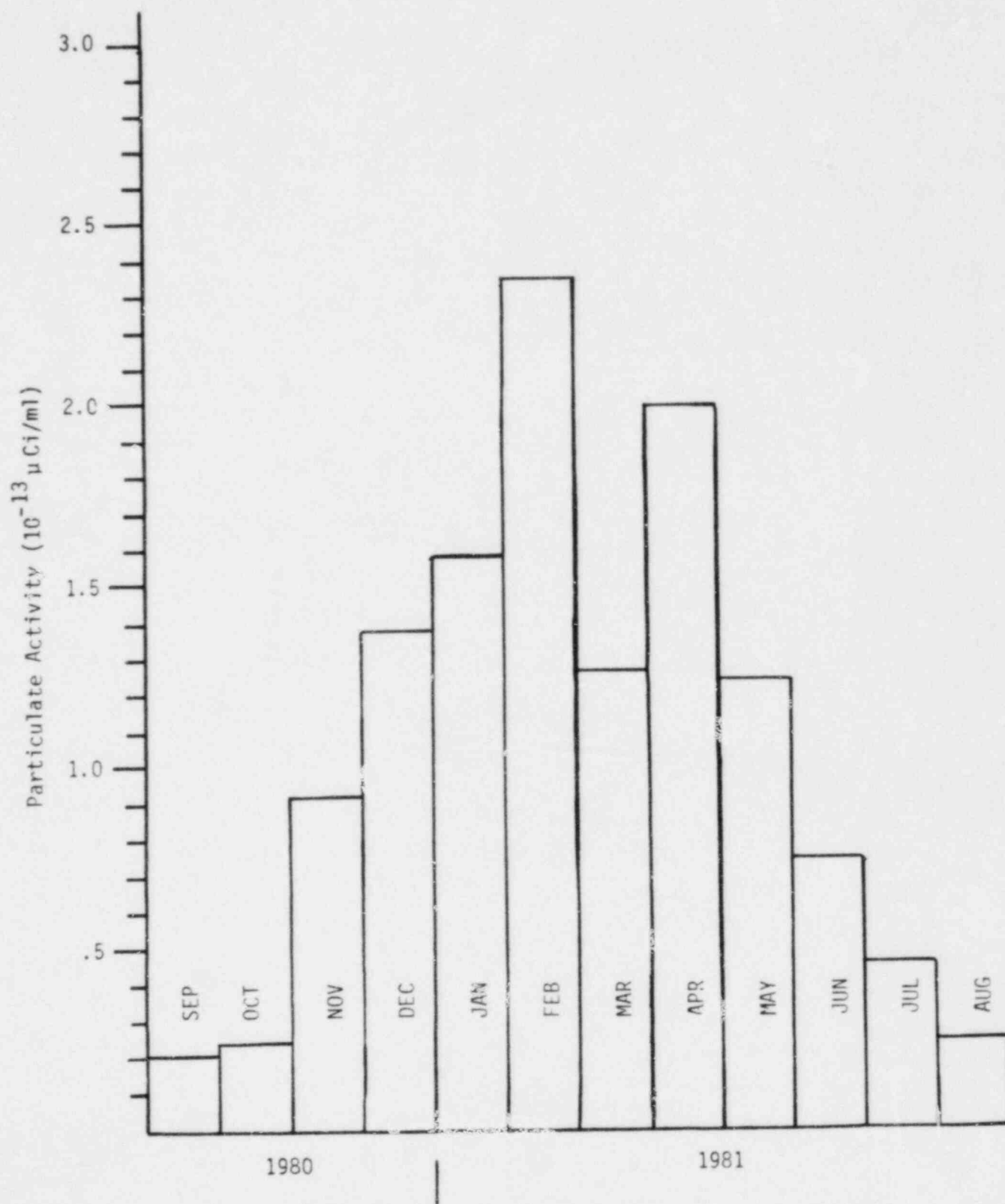
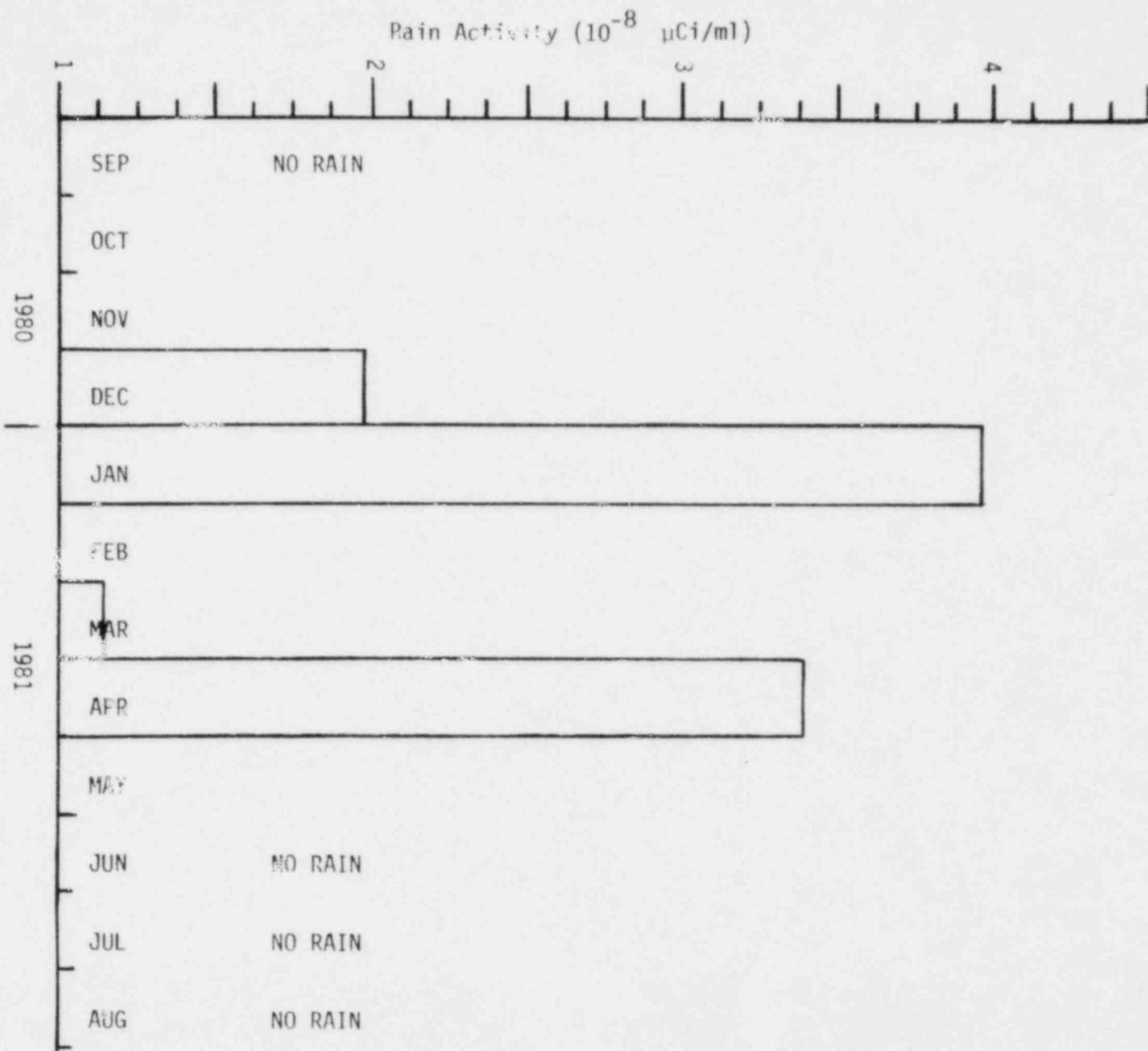


FIG. 1 Monthly averages of Continuous Air Samples from Sites S-11 and S-12.

FIG. 2 Monthly Averages of Rain Water Samples from Sites S-11 and S-12.



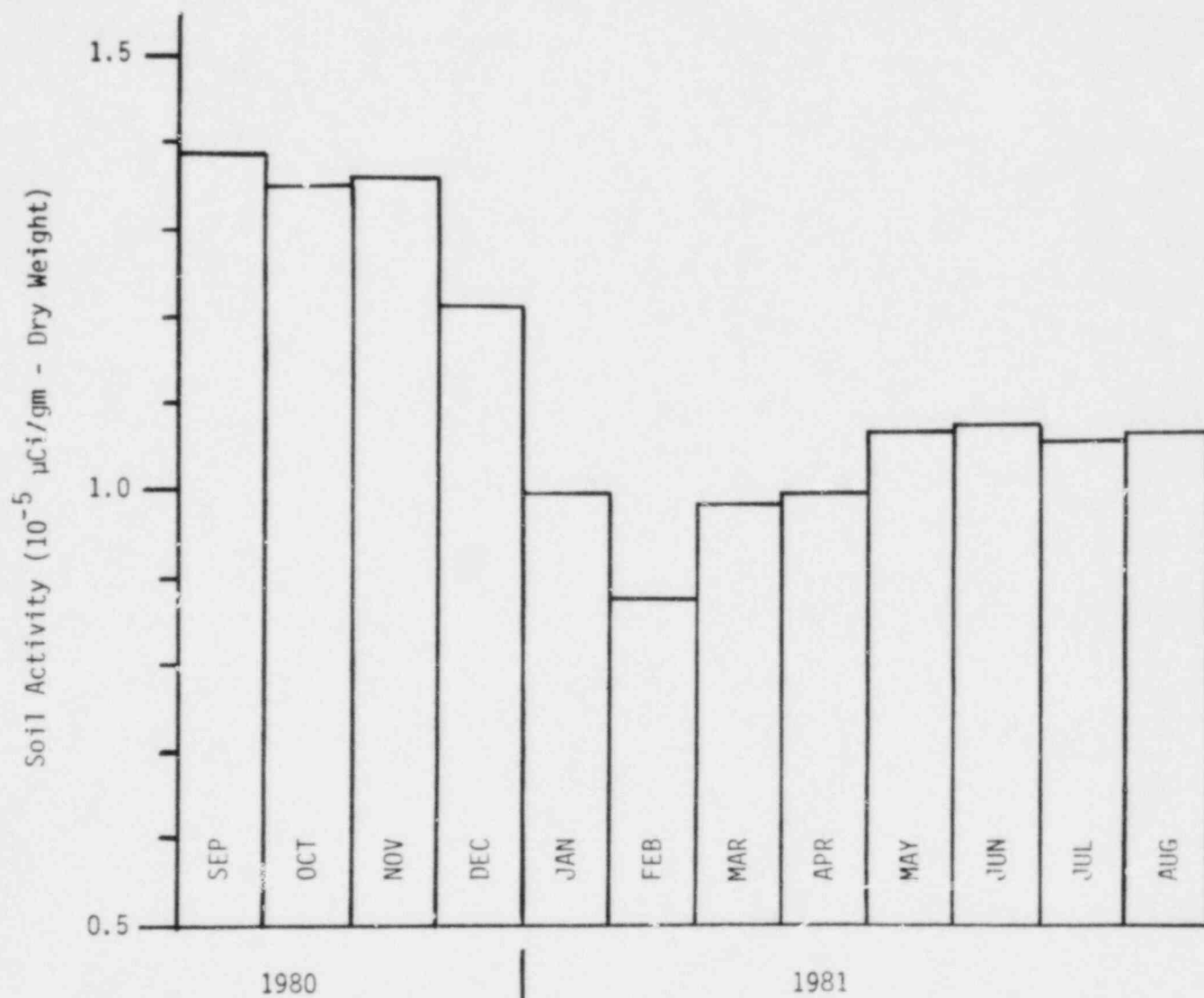
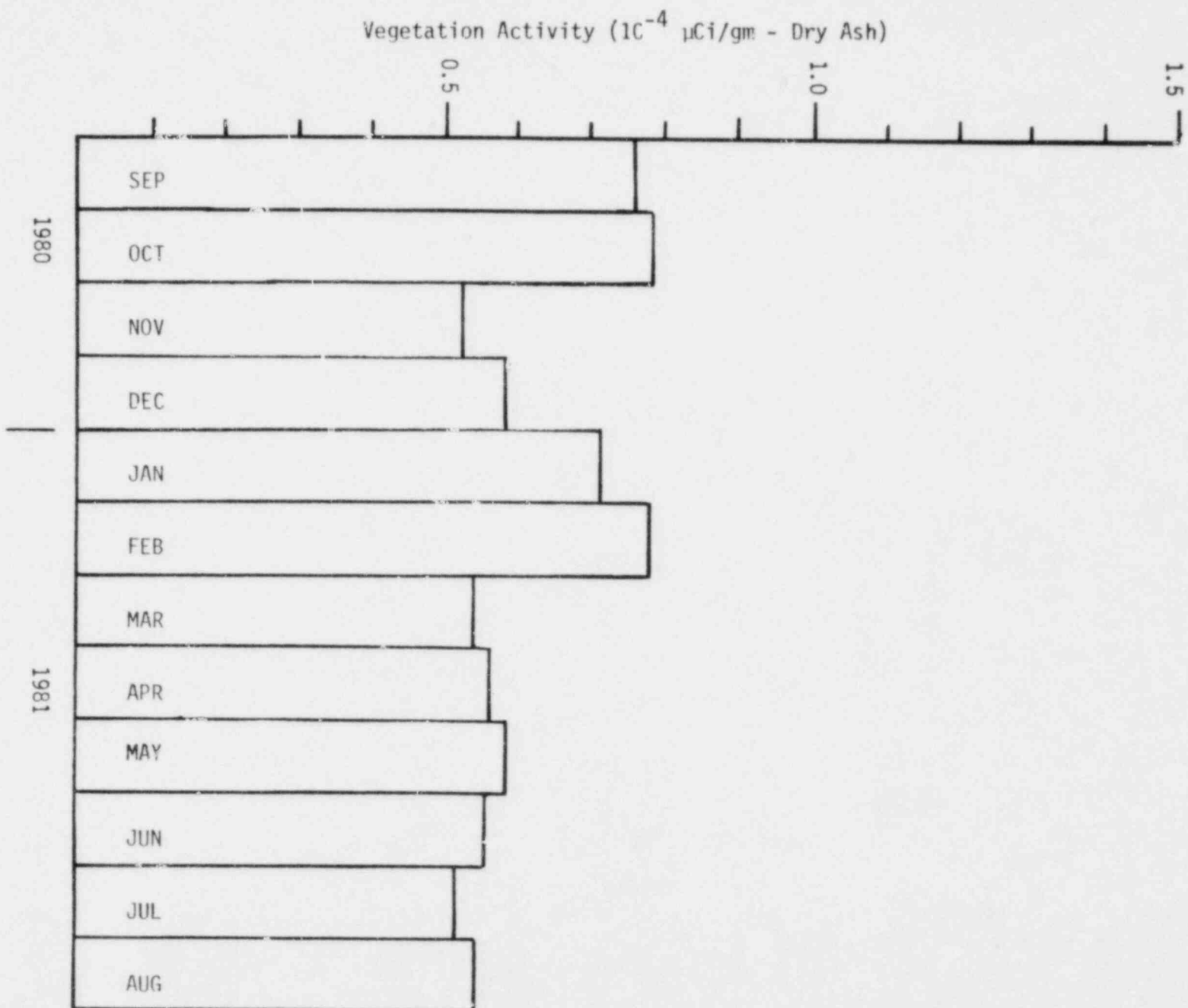


FIG. 3 Monthly Averages of Soil Samples from Sites S-1 thru S-8, and S-10.

FIG. 4 Monthly Averages of Vegetation Samples from Sites S-1 thru S-8, and S-10.



Water Activity (10^{-9} $\mu\text{Ci/ml}$)

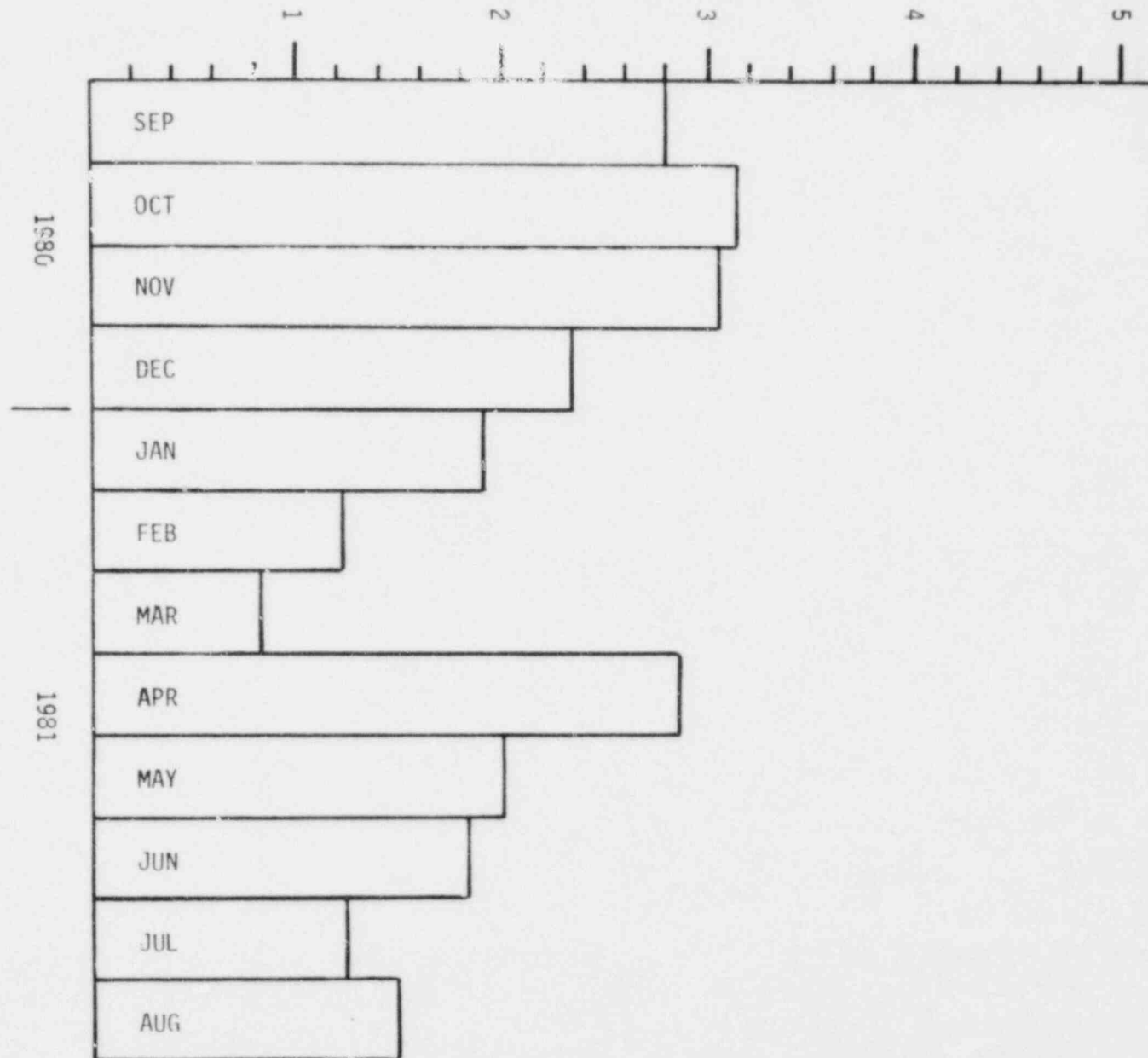


FIG. 5 Monthly Averages of Water Samples from Sites S-1 thru S-10.