

1983 ANNUAL REPORT
TO
THE ILLINOIS POWER COMPANY
CLINTON, ILLINOIS

PREOPERATIONAL ENVIRONMENTAL RADIOLOGICAL
MONITORING PROGRAM
CLINTON POWER STATION
CLINTON, ILLINOIS

PREPARED AND SUBMITTED
BY
TELEDYNE ISOTOPES MIDWEST LABORATORY

PROJECT NO. 9109-9110
January - December 1983

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1.0 Introduction

The following constitutes the 1983 Annual Report for the Radiological Environmental Monitoring Program conducted at the Clinton Power Station, Clinton, Illinois.

Data obtained in the program are well within the ranges to be expected in the environmental media sampled.

None of the media sampled contained radioactivity attributable to the construction of Clinton Power Station.

2.0 Milch Animals and Vegetable Gardens Census

A milch animals and vegetable gardens census was conducted on August 10 and 11, 1983. The survey was conducted by visual observation and consultation with Ms. Wilma Brommel, Extension Advisor, Home Economics, Illinois Department of Agriculture.

There were no milking cows or goats found within a 5 mile radius of the station. Several herds of beef cattle were observed within this area; however, none of the cattle were milked for human consumption.

Several vegetable gardens of greater than 50 m² were located in the area. They were:

- Mr. T. Plunkett residence, approximately 2.25 miles WSW of the station;
- Mr. J. Reynolds residence, approximately 1.0 mile N of the station;
- Mr. R. Wantland Residence, approximately 3.0 miles SW of the station;
- Mr. R. Kuntz residence, approximately 2.5 miles W of the station;
- Mr. D. Hulveys residence, approximately 1.5 miles N of the station;
- Ms. C. Moore, Green Acres Campground and Storage, approximately 3.5 miles SSW of the station.

The towns of Birkbeck, DeWitte, and Lane were also surveyed. As almost all of the residences had gardens, they were too numerous to list. The sizes ranged from less than 10 m² to over 50 m². The predominant vegetables grown were tomatoes, zucchini, beans, corn, cucumbers, onions, peppers, and peas. In general, the gardens were in a very poor condition due to a prolonged draught. Hardly any vegetables were still in the garden at the time of survey.

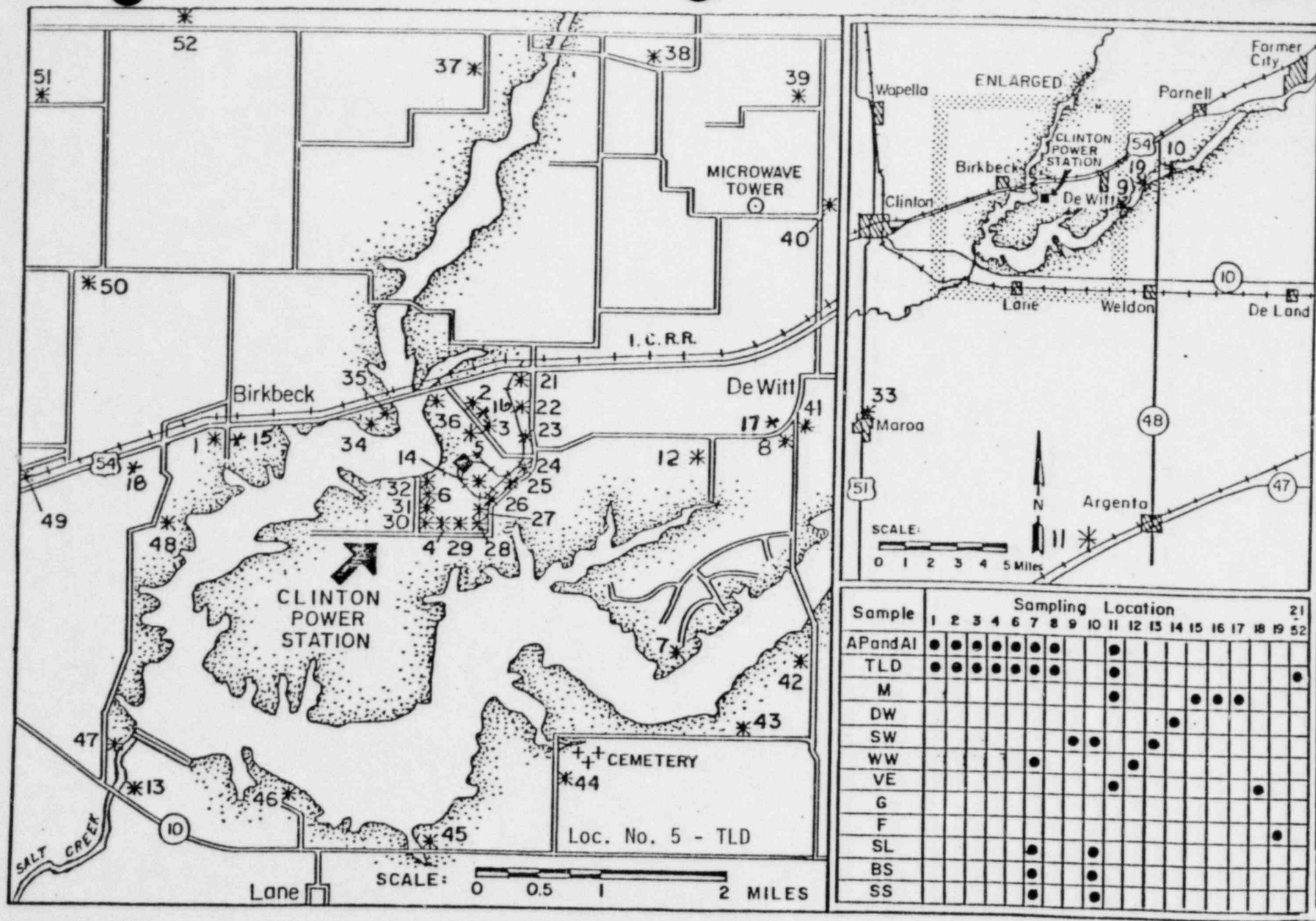


Figure 1. Sampling locations, Clinton Power Station.

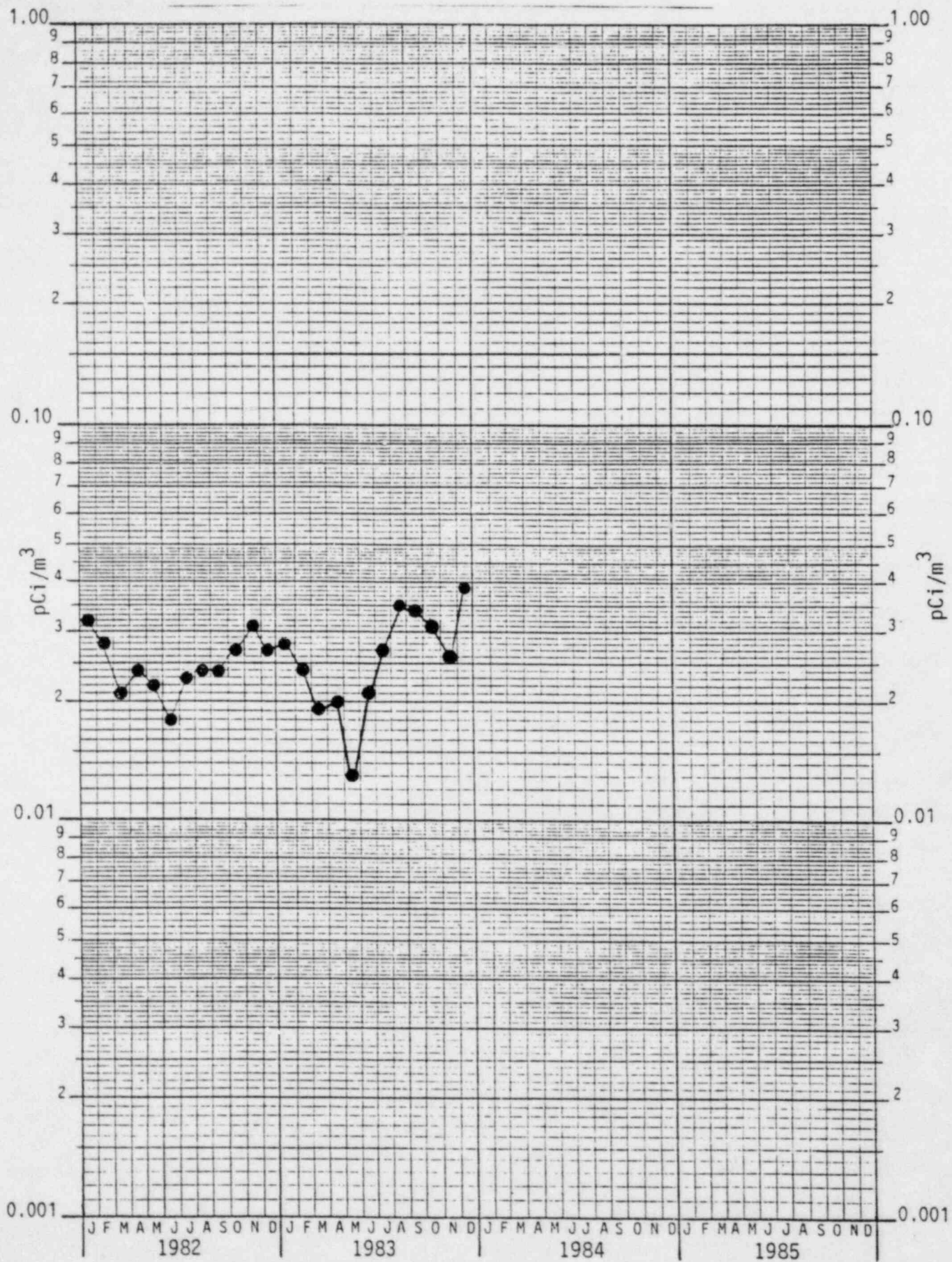


Figure 2. Airborne particulate samples, Location CL-1, gross beta activity, monthly averages.

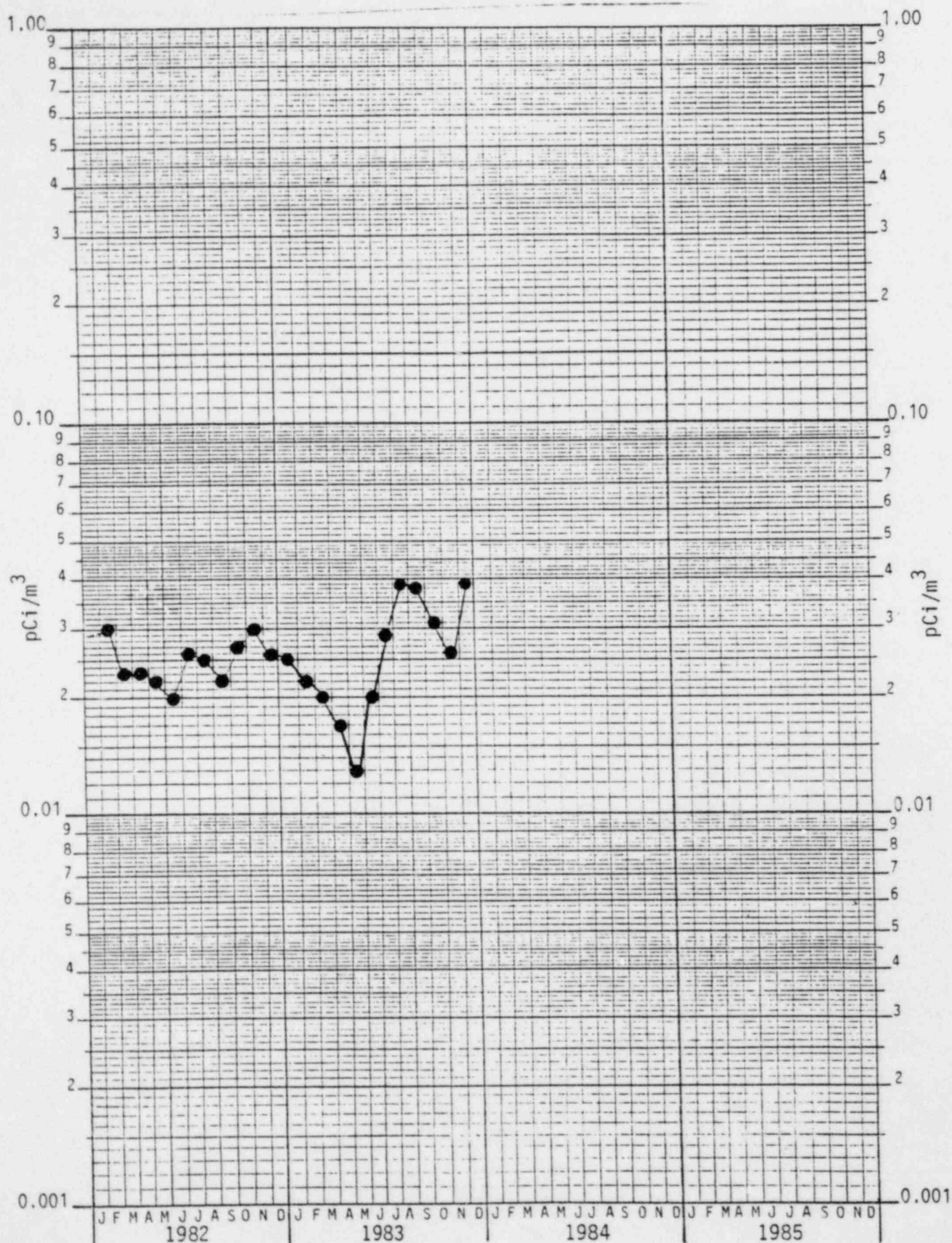


Figure 3. Airborne particulate samples, Location CL-2, gross beta activity, monthly averages. A dashed line indicates missing data.

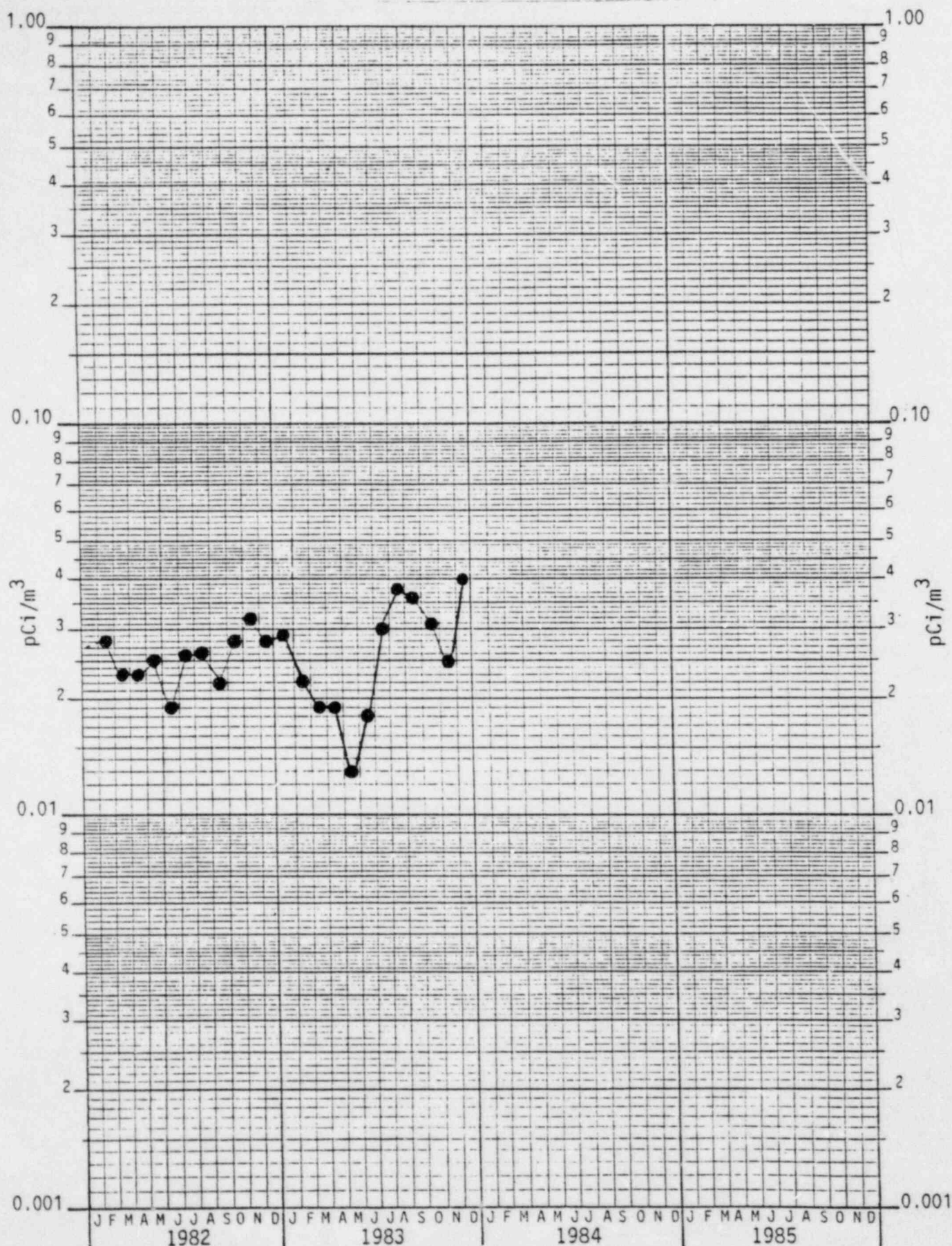


Figure 4. Airborne particulate samples, Location CL-3, gross beta activity, monthly averages. A dashed line indicates missing data.

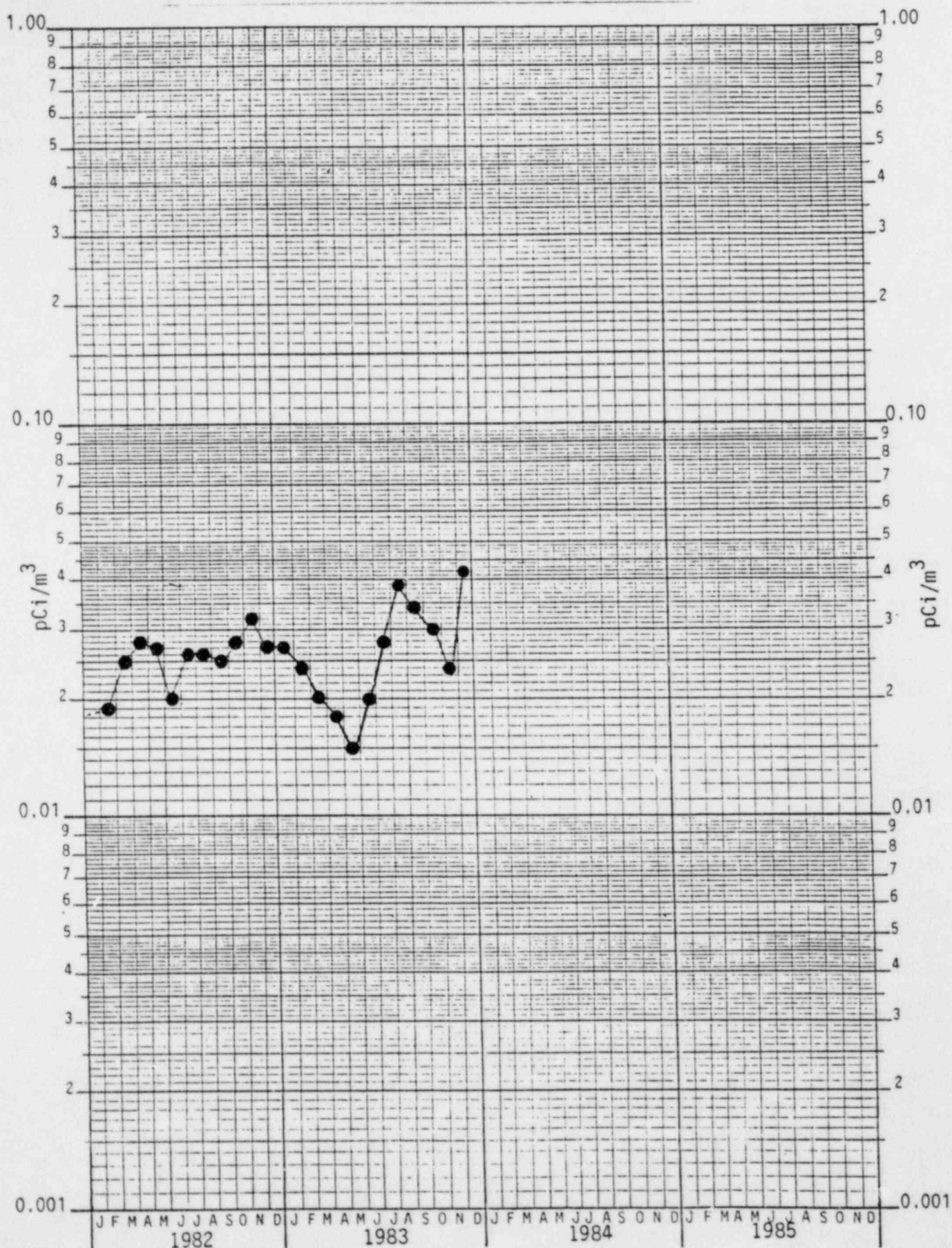


Figure 5. Airborne particulate samples, Location CL-4, gross beta activity, monthly averages. A dashed line indicates missing data.

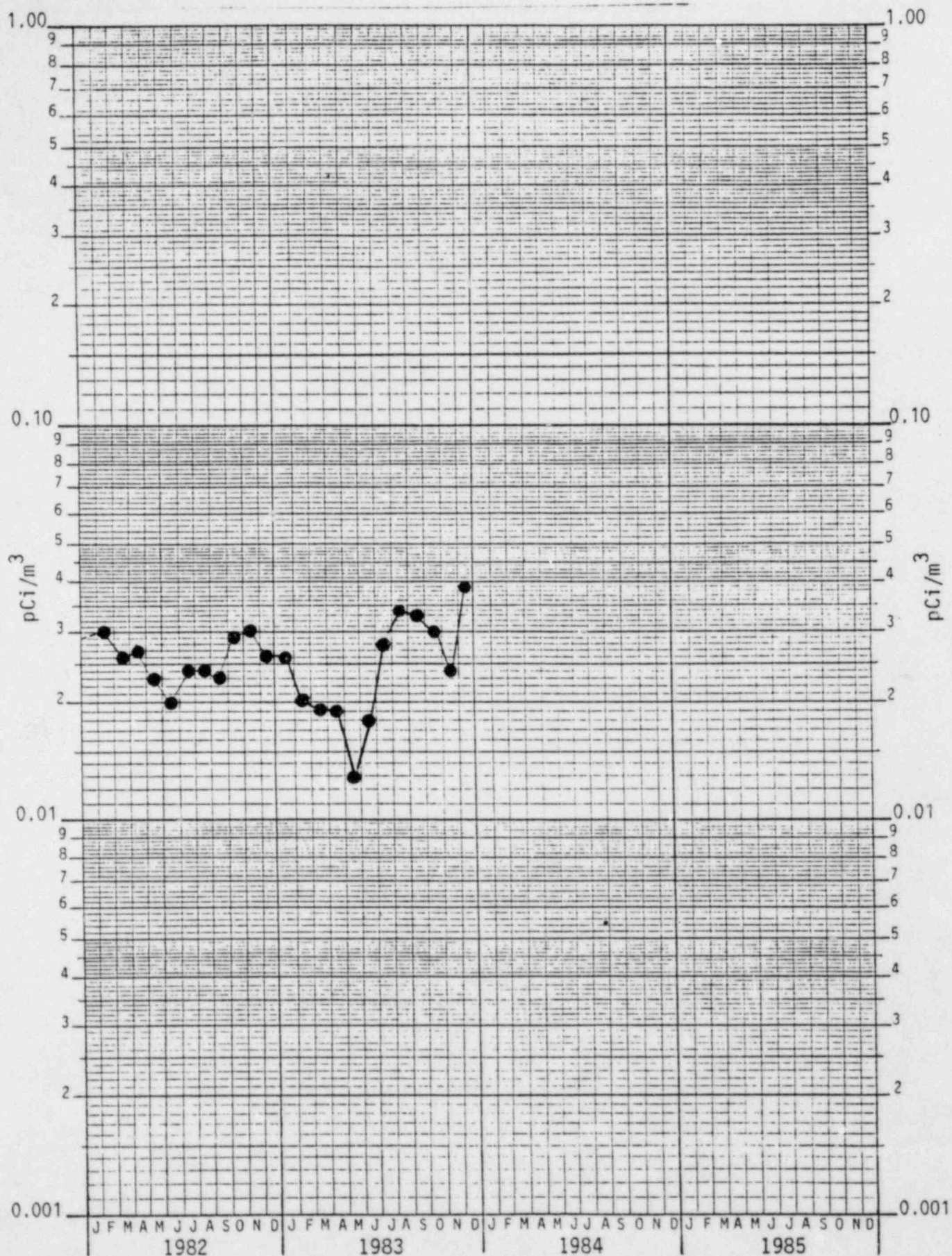


Figure 6. Airborne particulate samples, Location CL-6, gross beta activity, monthly averages.

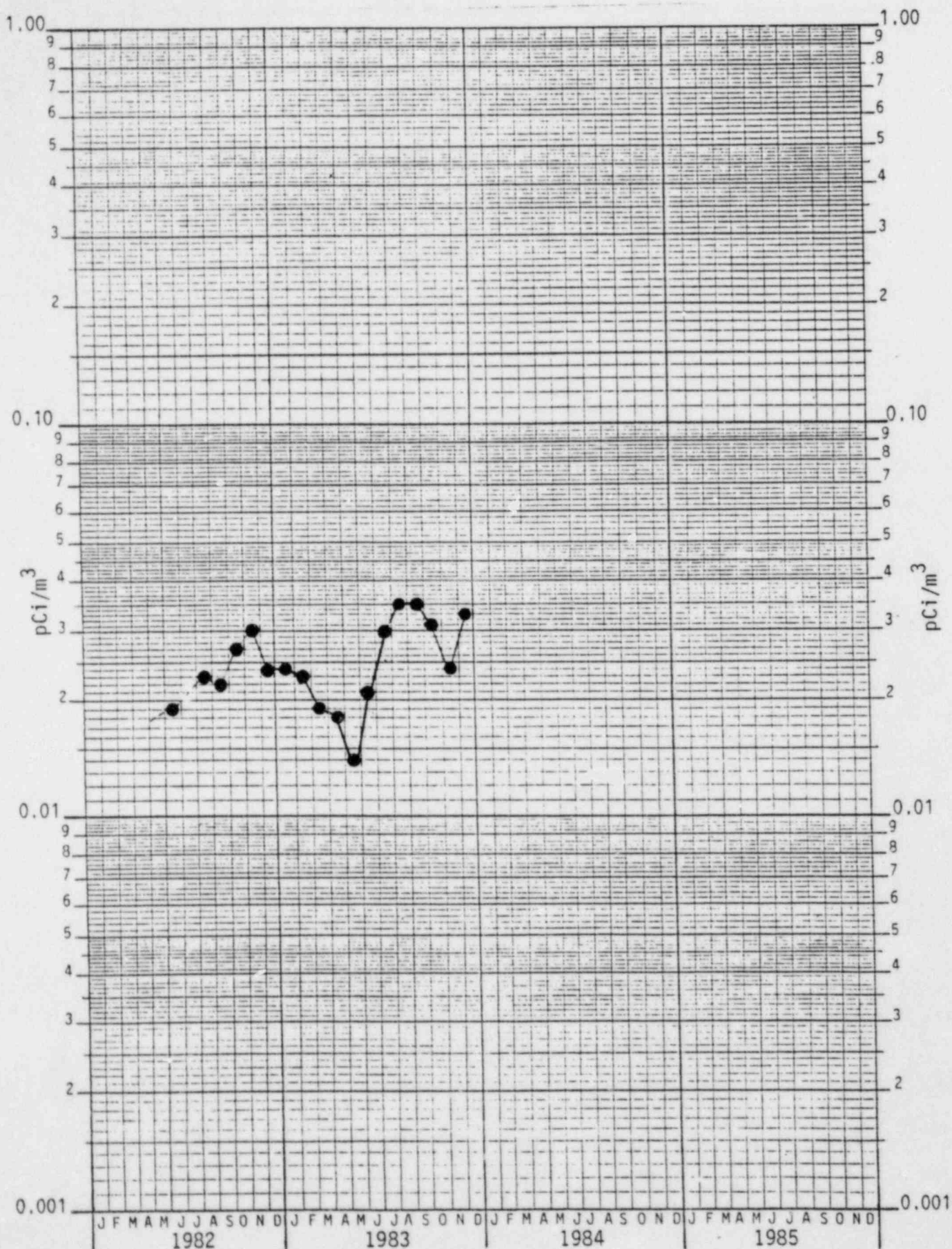


Figure 7. Airborne particulate samples, Location CL-7, gross beta activity, monthly averages. A dashed line indicates missing data.

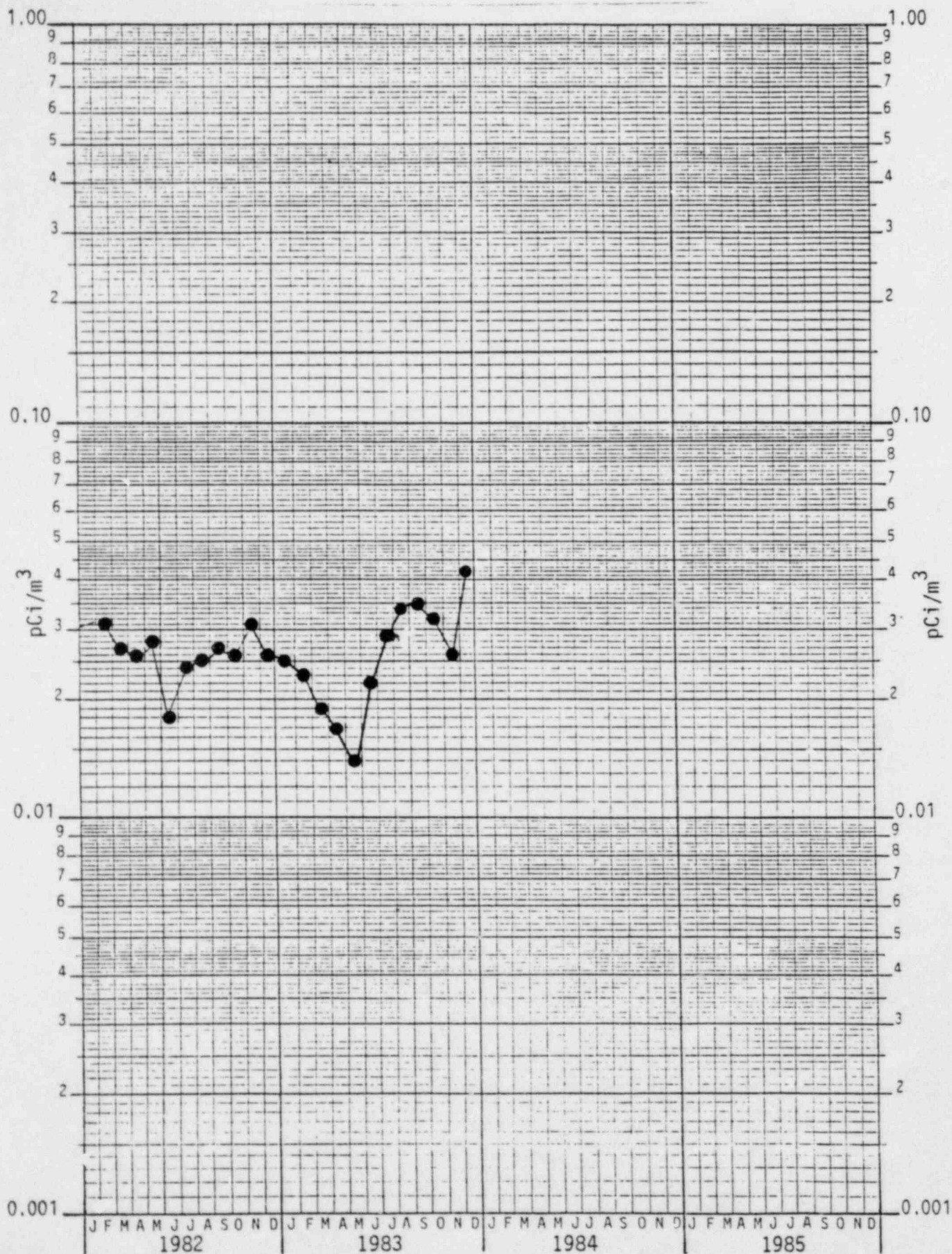


Figure 8. Airborne particulate samples, Location CL-8, gross beta activity, monthly averages. A dashed line indicates missing data.

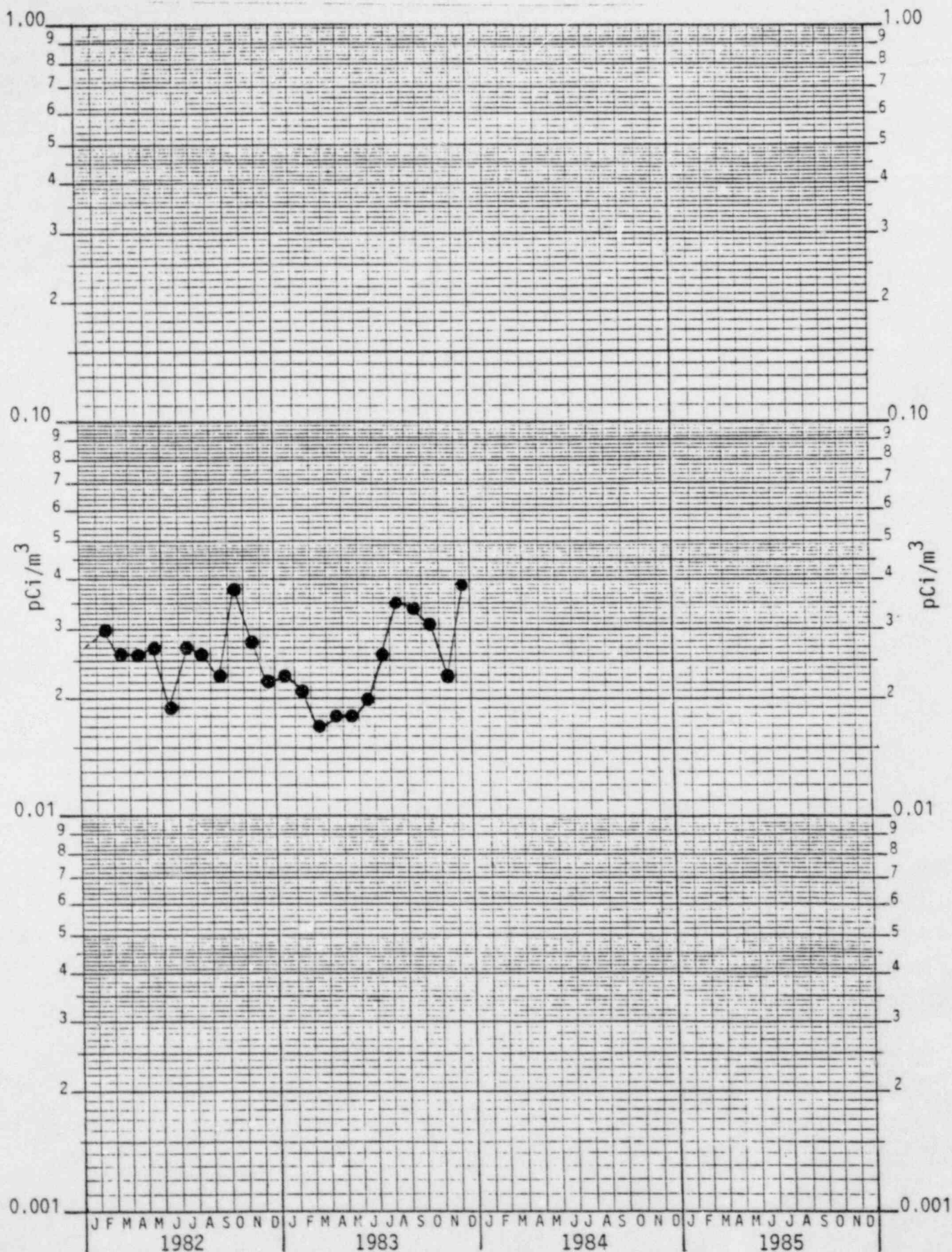


Figure 9. Airborne particulate samples. Location CL-11, gross beta activity, monthly averages. A dashed line indicates missing data.

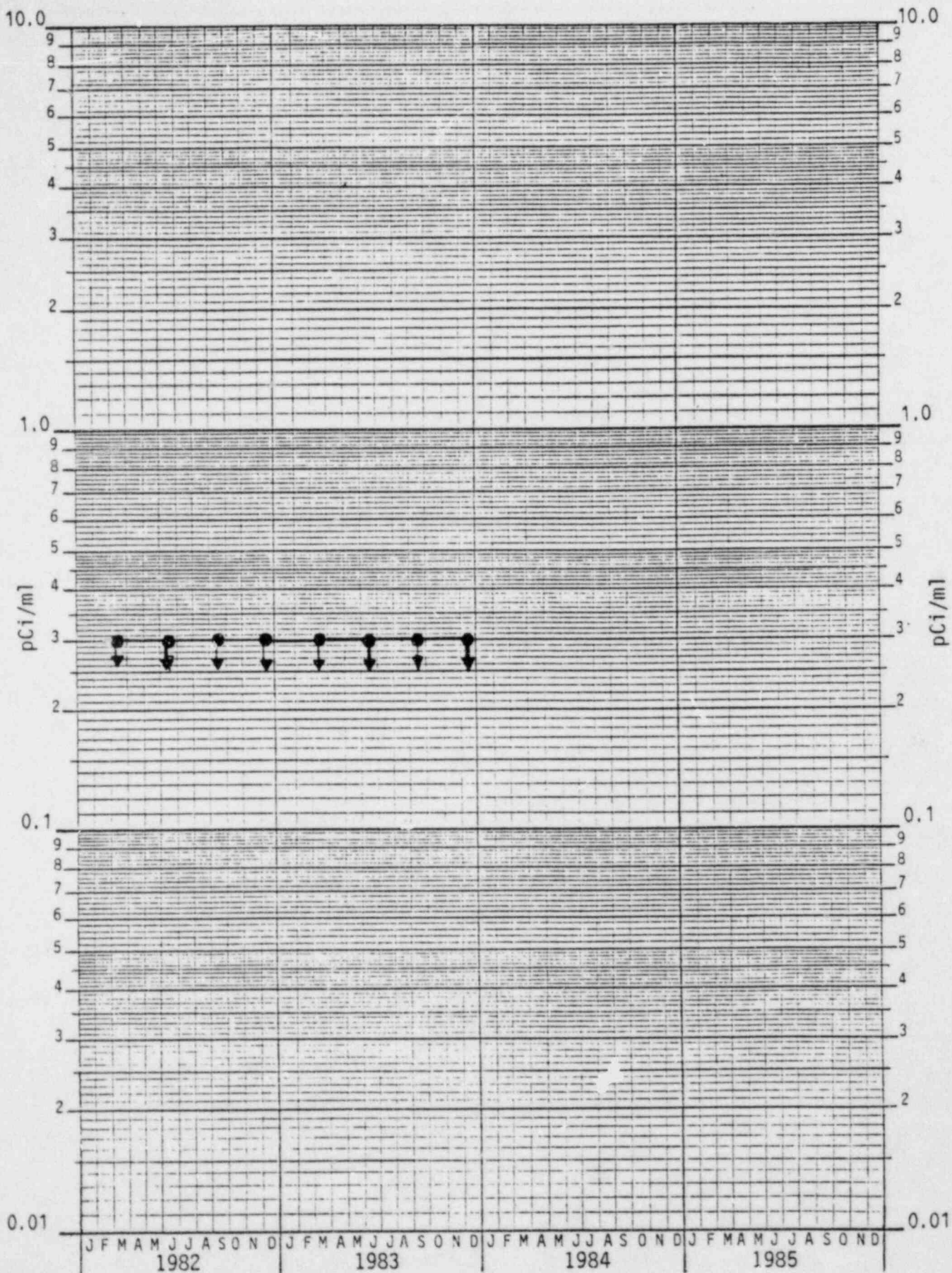


Figure 10. Surface water samples, tritium activity, Location CL-9, (17,500 feet E of station). (↓ indicates less than value.)

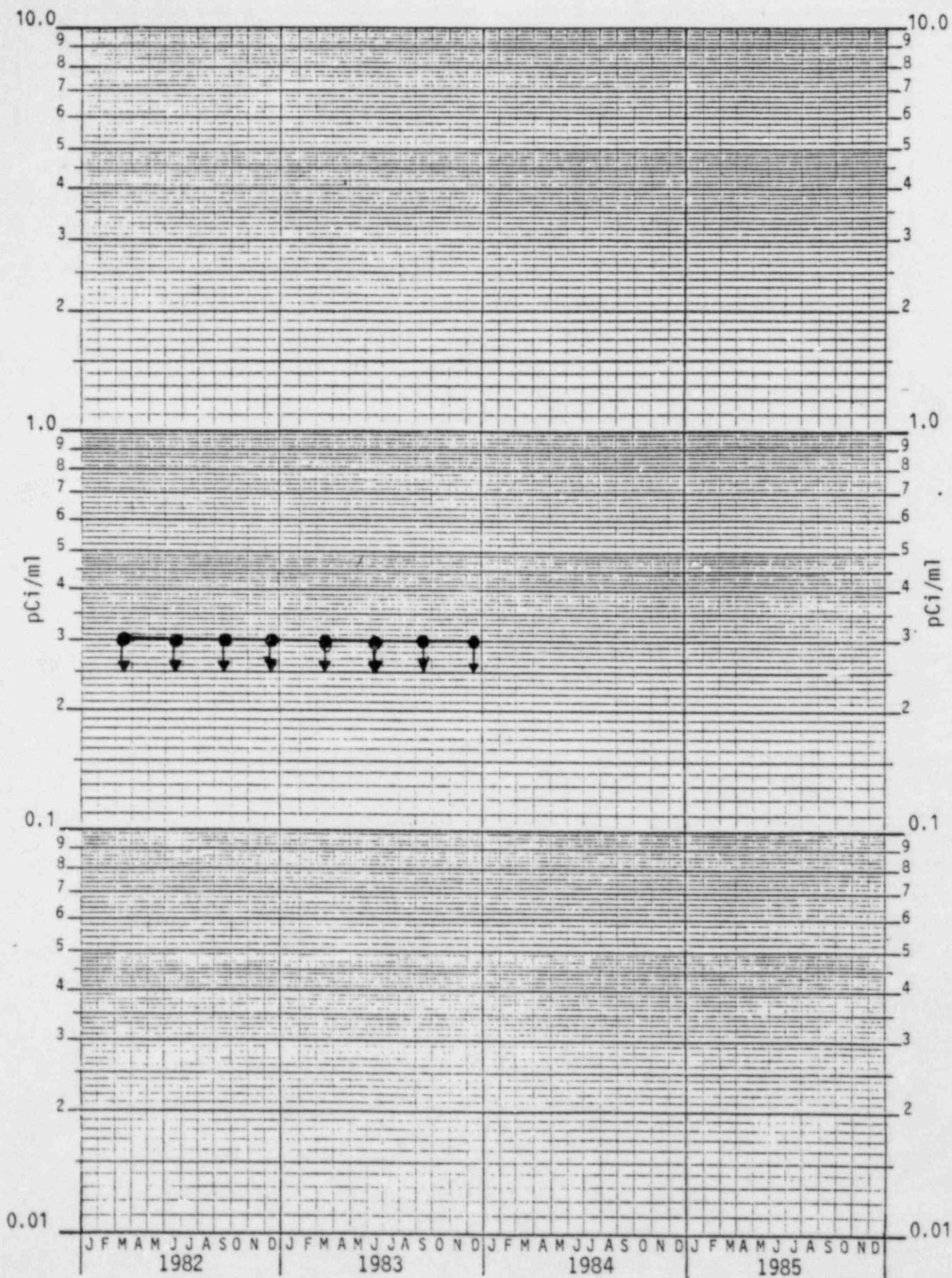


Figure 11. Surface water samples, Location CL-10, (26,250 feet ENE of station), tritium activity. (↓) indicates a less than value.

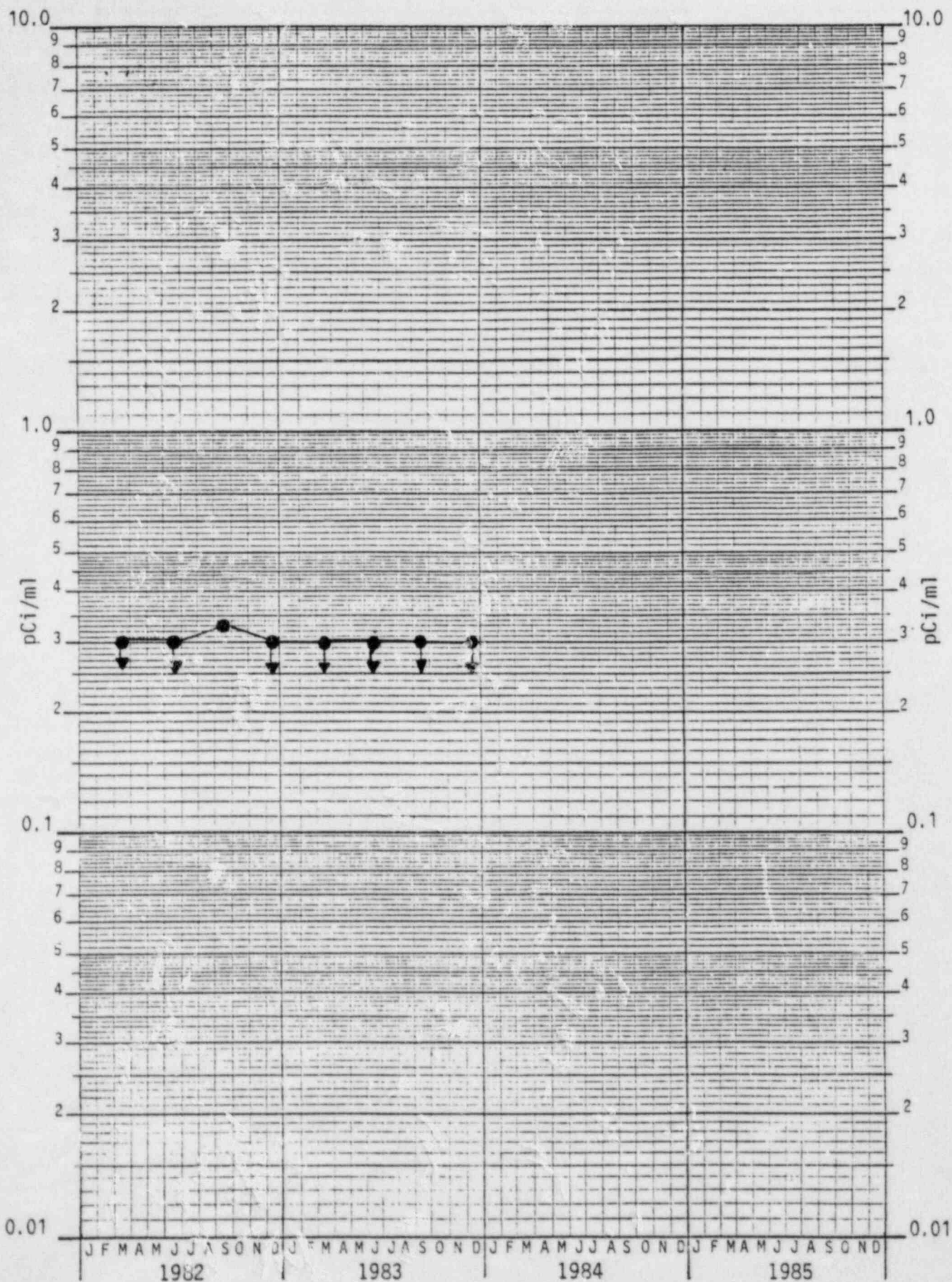


Figure 12. Surface water samples, Location CL-13 (20,000 feet SW of station), tritium activity. (↓) indicates a less than value.

3.0 Data Tables

Data tables are presented on the following pages.

Table 1. Sampling locations, Clinton Power Station.

Code	Location Type ^a	Location
CL-1		9750 feet NNW of station
CL-2		3000 feet NNE of station
CL-3		3000 feet NE of station
CL-4		3000 feet WSW of station
CL-5		3000 feet N of station
CL-6		3000 feet SW of station
CL-7		11750 feet SE of station
CL-8		13750 feet ENE of station
CL-9		17500 feet E of station
CL-10	C	26250 feet ENE of station
CL-11	C	10 miles S of station
CL-12		1.6 miles E of station
CL-13		20000 feet SW of station
CL-14		In station service building
CL-15		Within 100 feet of CL-1 air sampler
CL-16		Within 100 feet of CL-2 air sampler
CL-17		Within 100 feet of CL-8 air sampler
CL-18		R. Kuntz residence, approximately 2.5 miles W of the station.
CL-19		Discharge flume area
CL-21-32, 34-52		15 sectors in an inner ring in the general area of the site boundary. 16 sectors in an outer ring in the 4 to 5 mile range from the site.
CL-33	C	11 miles SW of station, at Maroa

^aControl locations are indicated by "C" in this column. All other locations are indicators.

Table 2. Type and frequency of collection. Clinton Power Station.

Code	Location Type ^a	Weekly	Semi-Monthly	Monthly	Quarterly	Semi-Annually
CL-1		AP, AI ^b			TLD	
CL-2		AP, AI			TLD	
CL-3		AP, AI			TLD	
CL-4		AP, AI			TLD	
CL-5					TLD	
CL-6		AP, AI			TLD	
CL-7		AP, AI		WW	TLD	BS, SS, SL
CL-8		AP, AI			TLD	
CL-9				SW		
CL-10	C			SW		BS, SS, SL
CL-11	C	AP, AI		MC	TLD	VE ^d
CL-12				WW		
CL-13				SW		
CL-14			Dwe			
CL-15				MC		
CL-16				MC		
CL-17				MC		
CL-18						VE ^d
CL-19						F
CL-21-32					TLD	
CL-33	C				TLD	
CL-34-52					TLD	

^a Control locations are indicated by "C" in this column. All other locations are indicators.

^b Not collected at this time. Collection will commence 6 months before fuel loading.

^c Milk is collected monthly from November through April; semi-monthly during grazing season - May through October. NOTE: Milk is not available at this time, grass is collected in lieu of milk.

^d Vegetables are collected once a year at the time of harvest.

^e Hourly aliquots composited into semi-monthly, monthly and quarterly composites.

Table 3. Samples codes used in Table 2.

Code	Description
AP	Airborne Particulates
AI	Airborne Iodine
TLD	Thermoluminescent Dosimeter
M	Milk
DW	Drinking Water
SW	Surface Water
WW	Well Water
VE	Green Leafy Vegetables and Tuborous Vegetables
G	Grass
F	Fish
SL	Slime or Aquatic Vegetation
BS	Bottom Sediments
SS	Shoreline Sediments

Table 4. Airborne particulates collected at Location CL-1, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	287	0.039±0.004	7-06-83	283	0.017±0.003
1-12-83	272	0.029±0.004	7-13-83	301	0.029±0.004
1-19-83	280	0.014±0.003	7-20-83	253	0.034±0.004
1-26-83	279	0.025±0.003	7-27-83	306	0.030±0.004
2-03-83	283	0.033±0.004	8-03-83	257	0.027±0.004
2-09-83	278	0.022±0.004	8-10-83	295	0.035±0.004
2-16-83	269	0.030±0.004	8-17-83	284	0.032±0.004
2-23-83	278	0.023±0.003	8-24-83	284	0.038±0.003
3-02-83	279	0.021±0.003	8-31-83	264	0.034±0.004
3-09-83	281	0.021±0.003	9-07-83	289	0.037±0.004
3-16-83	273	0.021±0.003	9-14-83	290	0.029±0.004
3-23-83	277	0.016±0.003	9-21-83	289	0.027±0.004
3-30-83	291	0.017±0.003	9-28-83	284	0.045±0.003
1st Qtr. mean ± s.d.		0.024±0.007	3rd Qtr. mean ± s.d.		0.032±0.007
4-06-83	255	0.018±0.003	10-05-83	289	0.051±0.005
4-13-83	274	0.010±0.003	10-12-83	286	0.027±0.004
4-20-83	279	0.023±0.003	10-19-83	285	0.028±0.002
4-27-83	278	0.027±0.004	10-26-83	286	0.019±0.003
5-04-83	277	0.011±0.003	11-02-83	281	0.028±0.004
5-11-83	283	0.011±0.003	11-09-83	289	0.030±0.004
5-18-83	279	0.018±0.003	11-16-83	289	0.024±0.004
5-25-83	294	0.014±0.003	11-23-83	279	0.023±0.004
6-01-83	285	0.011±0.003	11-30-83	294	0.025±0.004
6-08-83	283	0.016±0.003	12-07-83	296	0.037±0.004
6-15-83	279	0.026±0.004	12-14-83	265	0.037±0.003
6-22-83	280	0.021±0.003	12-21-83	299	0.040±0.004
6-29-83	283	0.021±0.003	12-29-83	327	0.043±0.004
2nd Qtr. mean ± s.d.		0.017±0.006	4th Qtr. mean ± s.d.		0.032±0.009

Table 5. Airborne particulates collected at Location CL-2, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	298	0.032±0.004	7-06-83	282	0.018±0.003
1-12-83	278	0.025±0.003	7-13-83	319	0.028±0.004
1-19-83	283	0.016±0.003	7-20-83	255	0.037±0.004
1-26-83	283	0.024±0.003	7-27-83	306	0.033±0.004
2-03-83	280	0.030±0.004	8-03-83	263	0.029±0.004
2-09-83	284	0.021±0.003	8-10-83	306	0.039±0.004
2-16-83	314	0.026±0.003	8-17-83	290	0.039±0.004
2-23-83	281	0.020±0.003	8-24-83	278	0.041±0.003
3-02-83	285	0.019±0.003	8-31-83	271	0.037±0.004
3-09-83	272	0.022±0.003	9-07-83	291	0.044±0.004
3-16-83	287	0.019±0.003	9-14-83	287	0.033±0.004
3-23-83	278	0.017±0.003	9-21-83	289	0.029±0.004
3-30-83	308	0.020±0.003	9-28-83	287	0.044±0.003
1st Qtr. mean ± s.d.		0.022±0.005	3rd Qtr. mean ± s.d.		0.035±0.007
4-06-83	253	0.016±0.003	10-05-83	290	0.058±0.005
4-13-83	288	0.011±0.003	10-12-83	289	0.022±0.003
4-20-83	291	0.020±0.003	10-19-83	282	0.028±0.004
4-27-83	278	0.022±0.003	10-26-83	281	0.022±0.004
5-04-83	260	0.011±0.003	11-02-83	284	0.023±0.004
5-11-83	281	0.009±0.003	11-09-83	283	0.030±0.004
5-18-83	276	0.016±0.003	11-16-83	286	0.025±0.004
5-25-83	283	0.012±0.003	11-23-83	282	0.022±0.004
6-01-83	281	0.015±0.003	11-30-83	285	0.027±0.004
6-08-83	289	0.016±0.003	12-07-83	299	0.034±0.004
6-15-83	282	0.021±0.003	12-14-83	265	0.039±0.003
6-22-83	283	0.017±0.003	12-21-83	295	0.038±0.004
6-29-83	283	0.024±0.003	12-29-83	317	0.045±0.004
2nd Qtr. mean ± s.d.		0.016±0.005	4th Qtr. mean ± s.d.		0.032±0.011

Table 6. Airborne particulates collected at Location CL-3, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	290	0.035±0.004	7-06-83	283	0.019±0.003
1-12-83	272	0.029±0.004	7-13-83	304	0.031±0.004
1-19-83	283	0.016±0.003	7-20-83	260	0.039±0.004
1-26-83	276	0.028±0.003	7-27-83	309	0.029±0.004
2-03-83	274	0.039±0.004	8-03-83	260	0.031±0.004
2-09-83	281	0.022±0.003	8-10-83	293	0.038±0.004
2-16-83	280	0.030±0.004	8-17-83	283	0.035±0.004
2-23-83	147 ^a	0.016±0.005	8-24-83	284	0.039±0.003
3-02-83	273	0.021±0.003	8-31-83	267	0.039±0.004
3-09-83	270	0.017±0.003	9-07-83	291	0.043±0.004
3-16-83	274	0.018±0.003	9-14-83	284	0.032±0.004
3-23-83	277	0.019±0.004	9-21-83	284	0.028±0.004
3-30-83	284	0.023±0.003	9-28-83	287	0.040±0.003
1st Qtr. mean ± s.d.		0.024±0.008	3rd Qtr. mean ± s.d.		0.034±0.007
4-06-83	263	0.020±0.003	10-05-83	294	0.053±0.005
4-13-83	279	0.012±0.003	10-12-83	289	0.024±0.003
4-20-83	282	0.022±0.003	10-19-83	288	0.029±0.004
4-27-83	287	0.023±0.003	10-26-83	278	0.020±0.004
5-04-83	265	0.011±0.003	11-02-83	281	0.027±0.004
5-11-83	236	0.015±0.003	11-09-83	282	0.028±0.004
5-18-83	273	0.016±0.003	11-16-83	284	0.022±0.004
5-25-83	285	0.014±0.003	11-23-83	280	0.019±0.003
6-01-83	278	0.010±0.003	11-30-83	282	0.029±0.004
6-08-83	22 ^b	0.007±0.003	12-07-83	294	0.034±0.004
6-15-83	267	0.023±0.004	12-14-83	259	0.043±0.003
6-22-83	286	0.019±0.003	12-21-83	296	0.038±0.004
6-29-83	274	0.024±0.003	12-31-83	408	0.045±0.004
2nd Qtr. mean ± s.d.		0.017±0.006	4th Qtr. mean ± s.d.		0.032±0.010

^a Low volume due to blown fuse.

^b Fuse had blown after running 13.1 hours.

Table 7. Airborne particulates collected at Location CL-4, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	291	0.033±0.004	7-06-83	280	0.016±0.003
1-12-83	273	0.029±0.004	7-13-83	310	0.027±0.004
1-19-83	289	0.016±0.003	7-20-83	255	0.040±0.004
1-26-83	276	0.023±0.003	7-27-83	306	0.030±0.004
2-03-83	283	0.034±0.004	8-03-83	256	0.026±0.004
2-09-83	284	0.022±0.003	8-10-83	299	0.048±0.006
2-16-83	286	0.030±0.004	8-17-83	284	0.034±0.004
2-23-83	283	0.022±0.003	8-24-83	298	0.036±0.003
3-02-83	286	0.020±0.003	8-31-83	275	0.039±0.005
3-09-83	274	0.023±0.003	9-07-83	291	0.040±0.004
3-16-83	279	0.018±0.003	9-14-83	296	0.027±0.004
3-23-83	281	0.019±0.003	9-21-83	295	0.029±0.004
3-30-83	291	0.021±0.003	9-28-83	296	0.042±0.003
1st Qtr. mean ± s.d.		0.024±0.006	3rd Qtr. mean ± s.d.		0.033±0.009
4-06-83	265	0.016±0.002	10-05-83	291	0.053±0.005
4-13-83	285	0.010±0.002	10-12-83	295	0.018±0.003
4-20-83	285	0.019±0.003	10-19-83	296	0.028±0.004
4-27-83	281	0.026±0.003	10-26-83	292	0.022±0.004
5-04-83	277	0.014±0.003	11-02-83	296	0.030±0.004
5-11-83	281	0.014±0.003	11-09-83	294	0.027±0.004
5-18-83	273	0.022±0.003	11-16-83	295	0.024±0.004
5-25-83	280	0.012±0.003	11-23-83	291	0.020±0.003
6-01-83	277	0.012±0.003	11-30-83	300	0.025±0.004
6-08-83	283	0.016±0.003	12-07-83	307	0.036±0.004
6-15-83	282	0.023±0.004	12-14-83	265	0.041±0.003
6-22-83	283	0.018±0.003	12-21-83	305	0.042±0.004
6-29-83	277	0.023±0.003	12-29-83	321	0.049±0.004
2nd Qtr. mean ± s.d.		0.017±0.005	4th Qtr. mean ± s.d.		0.032±0.011

Table 8. Airborne particulates collected at Location CL-6, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	303	0.033±0.004	7-06-83	283	0.018±0.003
1-12-83	285	0.029±0.004	7-13-83	320	0.029±0.004
1-19-83	292	0.017±0.003	7-20-83	263	0.030±0.004
1-26-83	288	0.023±0.003	7-27-83	312	0.036±0.004
2-03-83	342	0.029±0.003	8-03-83	270	0.027±0.004
2-09-83	344	0.017±0.003	8-10-83	310	0.034±0.004
2-16-83	340	0.026±0.003	8-17-83	288	0.032±0.004
2-23-83	285	0.020±0.003	8-24-83	284	0.033±0.003
3-02-83	344	0.017±0.003	8-31-83	297	0.038±0.004
3-09-83	294	0.021±0.003	9-07-83	300	0.037±0.004
3-16-83	293	0.017±0.003	9-14-83	313	0.028±0.004
3-23-83	293	0.015±0.003	9-21-83	309	0.027±0.004
3-30-83	306	0.022±0.003	9-28-83	296	0.041±0.003
1st Qtr. mean ± s.d.		0.022±0.006	3rd Qtr. mean ± s.d.		0.032±0.006
4-06-83	271	0.018±0.003	10-05-83	297	0.050±0.005
4-13-83	288	0.009±0.002	10-12-83	301	0.020±0.003
4-20-83	280	0.021±0.003	10-19-83	299	0.032±0.004
4-27-83	284	0.027±0.004	10-26-83	289	0.020±0.003
5-04-83	294	0.011±0.003	11-02-83	293	0.030±0.004
5-11-83	283	0.011±0.003	11-09-83	289	0.028±0.004
5-18-83	288	0.017±0.003	11-16-83	301	0.023±0.004
5-25-83	288	0.012±0.003	11-23-83	294	0.019±0.003
6-01-83	288	0.014±0.003	11-30-83	297	0.024±0.004
6-08-83	283	0.013±0.003	12-07-83	308	0.037±0.004
6-15-83	293	0.011±0.003	12-14-83	270	0.040±0.003
6-22-83	277	0.017±0.003	12-21-83	309	0.040±0.004
6-29-83	300	0.019±0.003	12-31-83	415	0.039±0.003
2nd Qtr. mean ± s.d.		0.016±0.005	4th Qtr. mean ± s.d.		0.031±0.010

Table 9. Airborne particulates collected at Location CL-7, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	288	0.033±0.004	7-06-83	291	0.016±0.003
1-12-83	283	0.028±0.004	7-13-83	310	0.030±0.004
1-19-83	ND ^a	ND	7-20-83	255	0.041±0.004
1-26-83	282	0.025±0.003	7-27-83	309	0.033±0.004
2-03-83	283	0.031±0.004	8-03-83	272	0.030±0.004
2-09-83	286	0.019±0.003	8-10-83	296	0.033±0.004
2-16-83	286	0.030±0.004	8-17-83	298	0.036±0.004
2-23-83	272	0.023±0.004	8-24-83	301	0.034±0.003
3-02-83	285	0.021±0.003	8-31-83	291	0.037±0.004
3-09-83	263	0.020±0.003	9-07-83	308	0.045±0.004
3-16-83	279	0.017±0.003	9-14-83	301	0.028±0.004
3-23-83	293	0.016±0.003	9-21-83	295	0.026±0.004
3-30-83	283	0.021±0.003	9-28-83	299	0.041±0.003
1st Qtr. mean ± s.d.		0.024±0.006	3rd Qtr. mean ± s.d.		0.033±0.008
4-06-83	255	0.019±0.003	10-05-83	300	0.058±0.005
4-13-83	274	0.011±0.003	10-12-83	300	0.022±0.003
4-20-83	294	0.020±0.003	10-19-83	137 ^b	0.022±0.006
4-27-83	295	0.021±0.003	10-26-83	298	0.020±0.003
5-04-83	248	0.011±0.003	11-02-83	274	0.033±0.004
5-11-83	304	0.016±0.003	11-09-83	84 ^c	0.030±0.009
5-18-83	262	0.015±0.003	11-16-83	301	0.024±0.004
5-25-83	286	0.014±0.003	11-23-83	297	0.019±0.003
6-01-83	291	0.014±0.003	11-30-83	302	0.023±0.004
6-08-83	277	0.015±0.003	12-07-83	308	0.030±0.004
6-15-83	279	0.025±0.004	12-14-83	276	0.037±0.003
6-22-83	286	0.021±0.003	12-21-83	307	0.038±0.004
6-29-83	280	0.023±0.003	12-31-83	423	0.025±0.003
2nd Qtr. mean ± s.d.		0.017±0.004	4th Qtr. mean ± s.d.		0.029±0.011

^a ND = No data; pump did not run the entire week due to a blown fuse.

^b Pump ran for only 3.1 hours because of blown fuse.

^c Pump ran for only 47.5 hours because of blown fuse

Table 10. Airborne particulates collected at Location CL-8, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	283	0.038±0.004	7-06-83	283	0.016±0.003
1-12-83	280	0.030±0.004	7-13-83	310	0.031±0.004
1-19-83	284	0.019±0.003	7-20-83	255	0.036±0.004
1-26-83	279	0.027±0.003	7-27-83	293	0.031±0.004
2-03-83	280	0.037±0.004	8-03-83	266	0.029±0.004
2-09-83	281	0.021±0.003	8-10-83	294	0.033±0.004
2-16-83	286	0.032±0.004	8-17-83	290	0.035±0.004
2-23-83	278	0.019±0.003	8-24-83	284	0.030±0.003
3-02-83	279	0.018±0.003	8-31-83	277	0.038±0.004
3-09-83	281	0.021±0.003	9-07-83	283	0.042±0.004
3-16-83	285	0.017±0.003	9-14-83	296	0.030±0.004
3-23-83	284	0.019±0.003	9-21-83	303	0.029±0.004
3-30-83	289	0.018±0.003	9-28-83	288	0.039±0.003
1st Qtr. mean ± s.d.		0.024±0.008	3rd Qtr. mean ± s.d.		0.032±0.006
4-06-83	261	0.016±0.002	10-05-83	291	0.048±0.004
4-13-83	282	0.009±0.002	10-12-83	298	0.026±0.003
4-20-83	291	0.022±0.003	10-19-83	285	0.028±0.004
4-27-83	281	0.022±0.003	10-26-83	278	0.022±0.004
5-04-83	277	0.011±0.003	11-02-83	289	0.034±0.004
5-11-83	304	0.013±0.003	11-09-83	283	0.027±0.004
5-18-83	281	0.015±0.003	11-16-83	284	0.025±0.004
5-25-83	283	0.014±0.003	11-23-83	285	0.021±0.003
6-01-83	285	0.017±0.003	11-30-83	288	0.031±0.004
6-08-83	280	0.015±0.003	12-07-83	299	0.035±0.004
6-15-83	279	0.029±0.004	12-14-83	265	0.042±0.003
6-22-83	286	0.019±0.003	12-21-83	266	0.043±0.005
6-29-83	280	0.025±0.003	12-29-83	312	0.049±0.004
2nd Qtr. mean ± s.d.		0.017±0.006	4th Qtr. mean ± s.d.		0.033±0.010

Table 11. Airborne particulates collected at Location CL-11, analysis for gross beta. Collection: Weekly.

Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)	Date Collected	Volume (m ³)	Gross Beta (pCi/m ³)
1-05-83	291	0.028±0.004	7-06-83	18 ^e	<0.064
1-12-83	286	0.030±0.004	7-13-83	298	0.005±0.003
1-19-83	286	0.011±0.003	7-20-83	269	0.039±0.004
1-26-83	ND ^a	ND ^a	7-27-83	321	0.031±0.004
2-03-83	ND ^a	ND ^a	8-03-83	282	0.030±0.004
2-09-83	477	0.023±0.002	8-10-83	317	0.033±0.004
2-16-83	315	0.023±0.003	8-17-83	283	0.037±0.004
2-23-83	279	0.023±0.003	8-24-83	273	0.034±0.003
3-02-83	342	0.014±0.003	8-31-83	2 ^f	0.72±0.39 ^f
3-09-83	269	0.017±0.003	9-07-83	273	0.041±0.004
3-16-83	311	0.017±0.003	9-14-83	301	0.029±0.004
3-23-83	299	0.016±0.003	9-21-83	293	0.025±0.004
3-30-83	278	0.019±0.003	9-28-83	293	0.043±0.003
1st Qtr. mean ± s.d.		0.020±0.006	3rd Qtr. mean ± s.d.		0.032±0.010
4-06-83	261	0.019±0.003	10-05-83	275	0.061±0.005
4-13-83	283	0.011±0.003	10-12-83	292	0.020±0.003
4-20-83	283	0.021±0.003	10-19-83	288	0.026±0.003
4-27-83	281	0.022±0.003	10-26-83	289	0.018±0.003
5-04-83	28 ^b	0.027±0.021	11-02-83	289	0.030±0.004
5-11-83	NCC ^c	NCC ^c	11-09-83	285	0.026±0.004
5-18-83	43 ^d	0.021±0.015	11-16-83	288	0.023±0.004
5-25-83	277	0.009±0.003	11-23-83	285	0.019±0.003
6-01-83	282	0.013±0.003	11-30-83	288	0.025±0.004
6-08-83	285	0.017±0.003	12-07-83	299	0.033±0.003
6-15-83	282	0.024±0.004	12-14-83	265	0.039±0.003
6-22-83	286	0.017±0.003	12-21-83	300	0.040±0.004
6-29-83	283	0.022±0.003	12-29-83	323	0.045±0.004
2nd Qtr. mean ± s.d.		0.019±0.005	4th Qtr. mean ± s.d.		0.031±0.012

^a ND = No Data; pump malfunction.

^b Pump ran for only 16.7 hours.

^c NC = Not collected; no power.

^d Pump ran for only 25.3 hours.

^e Pump ran for only 10.4 hours due to blown fuse.

^f Pump had stopped running after 10.1 hours. Unreliable result was excluded from the determination of average.

Table 12. Airborne particulates, gross beta analyses, monthly averages, minima and maxima, 1983.

Month	Location	Number ^a of samples	Gross beta activity (pCi/m ³)		
			Average	Minimum	Maximum
JANUARY	CL-1	5	0.028	0.014	0.039
	CL-2	5	0.025	0.016	0.032
	CL-3	5	0.029	0.016	0.039
	CL-4	5	0.027	0.016	0.034
	CL-6	5	0.026	0.017	0.033
	CL-7	4	0.029	0.025	0.033
	CL-8	5	0.030	0.019	0.038
	CL-11	3	0.023	0.011	0.030
FEBRUARY	CL-1	4	0.024	0.021	0.030
	CL-2	4	0.022	0.019	0.026
	CL-3	4	0.022	0.016	0.030
	CL-4	4	0.024	0.020	0.030
	CL-6	4	0.020	0.017	0.026
	CL-7	4	0.023	0.019	0.030
	CL-8	4	0.023	0.018	0.032
	CL-11	4	0.021	0.014	0.023
MARCH	CL-1	4	0.019	0.016	0.021
	CL-2	4	0.020	0.017	0.022
	CL-3	4	0.019	0.017	0.023
	CL-4	4	0.020	0.018	0.023
	CL-6	4	0.019	0.015	0.022
	CL-7	4	0.019	0.016	0.021
	CL-8	4	0.019	0.017	0.021
	CL-11	4	0.017	0.016	0.019
APRIL	CL-1	4	0.020	0.010	0.027
	CL-2	4	0.017	0.011	0.022
	CL-3	4	0.019	0.012	0.023
	CL-4	4	0.018	0.010	0.026
	CL-6	4	0.019	0.009	0.027
	CL-7	4	0.018	0.011	0.021
	CL-8	4	0.017	0.009	0.022
	CL-11	4	0.018	0.011	0.022

Table 12. (continued)

Month	Location	Number ^a of samples	Gross beta activity (pCi/m ³)		
			Average	Minimum	Maximum
MAY	CL-1	5	0.013	0.011	0.018
	CL-2	5	0.013	0.009	0.016
	CL-3	5	0.013	0.010	0.016
	CL-4	5	0.015	0.012	0.022
	CL-6	5	0.013	0.011	0.017
	CL-7	5	0.014	0.011	0.016
	CL-8	5	0.014	0.011	0.017
	CL-11	4	0.018	0.009	0.027
JUNE	CL-1	4	0.021	0.016	0.026
	CL-2	4	0.020	0.016	0.024
	CL-3	4	0.018	0.007	0.024
	CL-4	4	0.020	0.016	0.023
	CL-6	4	0.018	0.017	0.022
	CL-7	4	0.021	0.015	0.025
	CL-8	4	0.022	0.015	0.029
	CL-11	4	0.020	0.017	0.024
JULY	CL-1	5	0.027	0.017	0.034
	CL-2	5	0.029	0.018	0.037
	CL-3	5	0.030	0.019	0.039
	CL-4	5	0.028	0.016	0.040
	CL-6	5	0.028	0.018	0.036
	CL-7	5	0.030	0.016	0.041
	CL-8	5	0.029	0.016	0.037
	CL-11	5	0.026	0.005	0.039
AUGUST	CL-1	4	0.035	0.032	0.038
	CL-2	4	0.039	0.037	0.041
	CL-3	4	0.038	0.035	0.039
	CL-4	4	0.039	0.034	0.048
	CL-6	4	0.034	0.032	0.038
	CL-7	4	0.035	0.033	0.037
	CL-8	4	0.034	0.030	0.038
	CL-11	3 ^b	0.035	0.033	0.037

Table 12. (Continued)

Month	Location	Number ^a of samples	Gross beta activity (pCi/m ³)		
			Average	Minimum	Maximum
SEPTEMBER	CL-1	4	0.034	0.027	0.045
	CL-2	4	0.038	0.029	0.044
	CL-3	4	0.036	0.028	0.043
	CL-4	4	0.034	0.026	0.042
	CL-6	4	0.033	0.027	0.041
	CL-7	4	0.035	0.026	0.045
	CL-8	4	0.035	0.029	0.042
	CL-11	4	0.034	0.025	0.043
OCTOBER	CL-1	5	0.031	0.019	0.051
	CL-2	5	0.031	0.022	0.058
	CL-3	5	0.031	0.020	0.053
	CL-4	5	0.030	0.018	0.053
	CL-6	5	0.030	0.020	0.050
	CL-7	5	0.031	0.020	0.058
	CL-8	5	0.032	0.022	0.048
	CL-11	5	0.031	0.018	0.061
NOVEMBER	CL-1	4	0.026	0.023	0.030
	CL-2	4	0.026	0.022	0.030
	CL-3	4	0.025	0.019	0.029
	CL-4	4	0.024	0.020	0.027
	CL-6	4	0.024	0.019	0.028
	CL-7	4	0.024	0.019	0.030
	CL-8	4	0.026	0.021	0.031
	CL-11	4	0.023	0.019	0.026
DECEMBER	CL-1	4	0.039	0.037	0.043
	CL-2	4	0.039	0.034	0.045
	CL-3	4	0.040	0.034	0.045
	CL-4	4	0.042	0.036	0.049
	CL-6	4	0.039	0.037	0.040
	CL-7	4	0.033	0.025	0.038
	CL-8	4	0.042	0.035	0.049
	CL-11	4	0.039	0.033	0.045

^a Unless specified otherwise, data for samples collected on the first, second or third day of a month are grouped with data of the previous month.

^b One unreliable result resulting from pump malfunction was excluded from this table.

Table 13. Airborne particulates, quarterly composites of weekly samples, analysis for gamma-emitting isotopes, 1983.

Location	Isotope	Activity (pCi/m ³)			
		1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
CL-1	Lab Code	CLAP-344	CLAP-442	CLAP-535	CLAP-634
	Volume (m ³)	3627	3629	3679	3765
	Be-7	<0.065	0.115±0.030	0.172±0.028	0.099±0.017
	Nb-95	<0.0029	<0.0017	<0.0036	<0.0033
	Zr-95	<0.0060	<0.0036	<0.0039	<0.0040
	Ru-103	<0.0045	<0.0034	<0.0042	<0.0034
	Ru-106	<0.011	<0.0092	<0.015	<0.014
	Cs-134	<0.0014	<0.0009	<0.0015	<0.0013
	Cs-137	<0.0011	<0.0017	<0.0017	<0.0008
	Ce-141	<0.0060	<0.0088	<0.0064	<0.0038
	Ce-144	<0.013	<0.0090	<0.010	<0.0061
CL-2	Lab Code	CLAP-345	CLAP-443	CLAP-536	CLAP-635
	Volume (m ³)	3731	3628	3724	3738
	Be-7	0.114±0.028	0.126±0.027	<0.068	<0.033
	Nb-95	<0.0045	<0.0023	<0.0034	<0.0064
	Zr-95	<0.0029	<0.0053	<0.0087	<0.0047
	Ru-103	<0.0039	<0.0043	<0.0057	<0.0071
	Ru-106	<0.0073	<0.013	<0.019	<0.026
	Cs-134	<0.0007	<0.0020	<0.0019	<0.0031
	Cs-137	<0.0011	<0.0020	<0.0022	<0.0026
	Ce-141	<0.0062	<0.0067	<0.011	<0.0087
	Ce-144	<0.012	<0.0084	<0.017	<0.012
CL-3	Lab Code	CLAP-346	CLAP-444	CLAP-537	CLAP-636
	Volume (m ³)	3481	3347	3689	3815
	Be-7	<0.054	0.103±0.027	0.213±0.037	0.083±0.026
	Nb-95	<0.0025	<0.0026	<0.0039	<0.0061
	Zr-95	<0.0040	<0.0057	<0.0079	<0.0046
	Ru-103	<0.0062	<0.0037	<0.0054	<0.0056
	Ru-106	<0.0099	<0.023	<0.019	<0.020
	Cs-134	<0.0015	<0.0017	<0.0019	<0.0021
	Cs-137	<0.0017	<0.0017	<0.0026	<0.0022
	Ce-141	<0.011	<0.0087	<0.017	<0.0068
	Ce-144	<0.0082	<0.0081	<0.011	<0.010

Table 13. (continued)

Location	Isotope	Activity (pCi/m ³)			
		1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
CL-4	Lab Code	CLAP-347	CLAP-445	CLAP-538	CLAP-637
	Volume (m ³)	3676	3629	3741	3848
	Be-7	0.093±0.025	0.131±0.028	<0.090	0.101±0.024
	Nb-95	<0.0031	<0.0020	<0.0040	<0.0063
	Zr-95	<0.0020	<0.0019	<0.0056	<0.0064
	Ru-103	<0.0045	<0.0050	<0.0073	<0.0043
	Ru-106	<0.016	<0.012	<0.023	<0.020
	Cs-134	<0.0007	<0.0011	<0.0031	<0.0020
	Cs-137	<0.0008	<0.0014	<0.0023	<0.0019
	Ce-141	<0.0068	<0.0064	<0.0020	<0.0056
	Ce-144	<0.0070	<0.0064	<0.014	<0.0084
CL-6	Lab Code	CLAP-348	CLAP-446	CLAP-539	CLAP-638
	Volume (m ³)	4009	3717	3845	3962
	Be-7	0.095±0.025	0.135±0.031	0.139±0.036	0.092±0.023
	Nb-95	<0.0033	<0.0028	<0.0051	<0.0045
	Zr-95	<0.0048	<0.0028	<0.0057	<0.0066
	Ru-103	<0.0045	<0.0026	<0.0048	<0.0039
	Ru-106	<0.012	<0.013	<0.025	<0.019
	Cs-134	<0.0014	<0.0014	<0.0019	<0.0016
	Cs-137	<0.0010	<0.0012	<0.0017	<0.0014
	Ce-141	<0.0090	<0.0048	<0.0017	<0.0055
	Ce-144	<0.0062	<0.0092	<0.0093	<0.0083
CL-7	Lab Code	CLAP-349	CLAP-447	CLAP-540	CLAP-639
	Volume (m ³)	3383	3631	3826	3607
	Be-7	0.107±0.028	0.105±0.025	0.216±0.043	<0.028
	Nb-95	<0.0025	<0.0030	<0.0056	<0.0048
	Zr-95	<0.0045	<0.0040	<0.0092	<0.0053
	Ru-103	<0.0057	<0.0050	<0.0027	<0.0043
	Ru-106	<0.016	<0.012	<0.022	<0.017
	Cs-134	<0.0015	<0.0009	<0.0020	<0.0020
	Cs-137	<0.0015	<0.0019	<0.0017	<0.0016
	Ce-141	<0.0062	<0.0078	<0.017	<0.0058
	Ce-144	0.023±0.006	<0.0074	<0.011	<0.0092

Table 13. (continued)

Location	Isotope	Activity (pCi/m ³)			
		1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
CL-8	Lab Code	CLAP-350	CLAP-448	CLAP-541	CLAP-640
	Volume (m ³)	3669	3670	3722	3723
	Be-7	0.105±0.028	0.089±0.020	<0.068	0.101±0.024
	Nb-95	<0.0023	<0.0014	<0.0022	<0.0045
	Zr-95	<0.0045	<0.0028	<0.0054	<0.0049
	Ru-103	<0.0045	<0.0031	<0.0048	<0.0057
	Ru-106	<0.015	<0.011	<0.011	<0.016
	Cs-134	<0.0011	<0.0013	<0.0015	<0.0026
	Cs-137	<0.0013	<0.0017	<0.0010	<0.0018
	Ce-141	<0.0067	<0.0031	<0.0079	<0.0060
	Ce-144	<0.0068	<0.0092	<0.010	<0.011
CL-11	Lab Code	CLAP-351	CLAP-449	CLAP-542	CLAP-641
	Volume (m ³)	3433	2874	3223	3477
	Be-7	0.115±0.028	0.118±0.030	<0.048	0.076±0.033
	Nb-95	<0.0025	<0.0040	<0.0015	<0.0060
	Zr-95	<0.0040	<0.0059	<0.0065	<0.0072
	Ru-103	<0.0053	<0.0050	<0.0050	<0.0066
	Ru-106	<0.015	<0.015	<0.015	<0.022
	Cs-134	<0.0017	<0.0020	<0.0019	<0.0026
	Cs-137	<0.0017	<0.0014	<0.0026	<0.0027
	Ce-141	<0.0059	<0.0084	<0.011	<0.0071
	Ce-144	<0.0068	<0.0084	<0.013	<0.0099

Table 14. Ambient gamma radiation (TLD), quarterly exposure, 1983.

Location	mR/91 days			
	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.
CL-1	17.1±0.8	15.5±2.4	16.0±1.1	13.5±0.7
CL-2	18.3±1.1	15.2±1.8	15.9±0.4	15.2±0.6
CL-3	17.3±0.7	12.7±1.0	15.0±0.7	15.0±0.8
CL-4	15.0±1.6	12.0±1.1	15.0±1.2	12.8±1.1
CL-5	16.8±0.8	13.5±1.0	15.0±1.1	12.7±0.6
CL-6	16.8±0.9	13.8±1.0	15.4±1.2	13.9±0.5
CL-7	16.8±1.4	13.9±1.0	16.5±0.8	16.6±1.3
CL-8	16.5±0.8	13.1±1.5	16.1±1.5	12.3±1.8
CL-11	16.1±0.8	12.9±1.4	14.3±1.1	13.1±1.2
CL-21	19.3±2.5	15.5±1.4	16.5±1.0	15.4±1.1
CL-22	17.2±1.8	13.1±1.7	15.2±0.9	15.3±1.9
CL-23	17.3±0.8	13.4±1.3	14.4±0.3	14.7±0.6
CL-24	16.0±1.9	13.5±1.0	14.3±1.4	14.3±1.1
CL-25	13.0±0.8	11.6±2.0	11.2±0.3	13.2±0.7
CL-26	15.4±1.4	12.3±1.0	11.8±0.3	12.5±0.9
CL-27	16.0±1.0	13.7±1.1	15.1±0.8	13.0±0.4
CL-28	16.8±0.7	14.2±1.3	15.3±0.6	14.8±0.5
CL-29	16.4±0.7	15.1±2.2	14.9±0.2	14.3±0.4
CL-30	17.3±2.4	14.2±1.3	14.9±0.8	14.4±1.2
CL-31	13.5±0.9	13.4±1.7	13.2±0.8	13.2±1.1
CL-32	15.4±0.9	14.3±2.0	14.0±0.4	13.3±0.7
CL-33	17.9±4.5	13.3±1.2	16.0±1.0	14.4±1.8
CL-34	18.7±2.7	14.3±1.2	17.3±0.8	15.6±0.8
CL-35	15.7±1.0	14.5±2.2	14.5±0.5	12.7±1.0
CL-36	15.6±1.0	14.0±1.3	17.0±1.5	14.2±0.6
CL-37	17.5±1.5	13.1±2.4	16.1±0.9	14.3±0.9
CL-38	16.0±0.7	13.9±1.4	15.9±0.8	14.5±0.7
CL-39	16.9±2.4	13.8±1.7	15.3±0.9	14.8±0.6
CL-40	16.2±0.8	13.6±1.9	15.4±0.8	13.8±0.7
CL-41	16.5±0.6	13.8±1.1	14.8±0.6	13.6±0.8
CL-42	17.0±0.6	12.7±1.1	14.9±1.4	16.1±2.2
CL-43	17.9±1.5	14.5±1.3	18.3±1.3	15.0±2.1
CL-44	16.6±1.0	14.3±1.0	16.1±0.7	13.8±0.6
CL-45	16.9±0.8	15.1±1.6	15.2±0.6	14.2±0.9
CL-46	15.0±1.0	12.8±1.2	14.4±1.7	13.2±0.9
CL-47	ND ^a	14.0±1.7	16.4±0.8	14.4±0.5
CL-48	17.7±1.7	14.9±1.4	16.0±0.7	15.2±1.0
CL-49	16.4±0.7	13.3±1.2	15.5±0.8	14.4±0.7
CL-50	15.6±0.9	14.1±2.4	14.5±1.1	15.5±1.5
CL-51	16.7±0.9	13.9±1.4	15.0±0.9	14.4±0.5
CL-52	16.1±1.5	13.0±1.4	15.4±1.0	13.9±1.0
Mean ± s.d.	16.5±1.2	13.8±0.9	15.2±1.3	14.2±1.0

^a ND = No Data. TLDs were lost in the field.

Table 15. Surface water samples collected at CL-9, analyses for gamma-emitting isotopes. Collection: Monthly.

Sample Description and Activity (pCi/l)			
Date Collected	1-05-83	2-03-83	3-09-83
Lab Code	CLSW-3926	CLSW-4273	CLSW-4601
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

Date Collected	4-06-83	5-11-83	6-08-83
Lab Code	CLSW-4934	CLSW-5309,10	CLSW-5581
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<22	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 15. (continued)

Sample Description and Activity (pCi/l)			
Date Collected	7-13-83	8-10-83	9-14-83
Lab Code	CLSW-6031	CLSW-6346	CLSW-6709
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<17	<15	<17
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140	<15	<15	<15

Date Collected	10-12-83	11-09-83	12-21-83
Lab Code	CLSW-7124	CLSW-7444	CLSW-7879
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<17	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 16. Surface water samples collected at CL-10, analyses for gamma-emitting isotopes. Collection: Monthly.

Sample Description and Activity (pCi/l)			
Date Collected	1-05-83	2-03-83	3-09-83
Lab Code	CLSW-3927	CLSW-4274	CLSW-4602
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

Date Collected	4-06-83	5-11-83	6-08-83
Lab Code	CLSW-4935	CLSW-5311	CLSW-5582
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 16. (continued)

Sample Description and Activity (pCi/l)			
Date Collected	7-13-83	8-10-83	9-14-83
Lab Code	CLSW-6032	CLSW-6347	CLSW-6710
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<23	<20	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

Date Collected	10-12-83	11-09-83	12-21-83
Lab Code	CLSW-7125	CLSW-7445	CLSW-7880
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 17. Surface water samples collected at CL-13, analyses for gamma-emitting isotopes. Collection: Monthly.

Sample Description and Activity (pCi/l)			
Date Collected Lab Code	1-05-83 CLSW-3928	2-03-83 CLSW-4275,6	3-09-83 CLSW-4603
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

Date Collected Lab Code	4-06-83 CLSW-4936	5-11-83 CLSW-5312	6-08-83 CLSW-5583
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 17. (continued)

Sample Description and Activity (pCi/l)			
Date Collected	7-13-83	8-10-83	9-14-83
Lab Code	CLSW-6033	CLSW-6348	CLSW-6711
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

Date Collected	10-12-83	11-09-83	12-21-83
Lab Code	CLSW-7126	CLSW-7446	CLSW-7881,2
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 18. Surface water samples, analysis for tritium.
Collection: Quarterly composites of monthly collections.

Compositing Period	CL-9	
	Lab Code	Tritium (pCi/l)
1st Quarter, 1983	CLSW-4733	<300
2nd Quarter, 1983	5736	<300
3rd Quarter, 1983	6847	<300
4th Quarter, 1983	7958	<300
Annual mean \pm s.d.		<300

Compositing Period	CL-10	
	Lab Code	Tritium (pCi/l)
1st Quarter, 1983	CLSW-4734	<300
2nd Quarter, 1983	5737	<300
3rd Quarter, 1983	6848	<300
4th Quarter, 1983	7959,60	<300
Annual mean \pm s.d.		<300

Compositing Period	CL-13	
	Lab Code	Tritium (pCi/l)
1st Quarter, 1983	CLSW-4735	<300
2nd Quarter, 1983	5738	<300
3rd Quarter, 1983	6849	<300
4th Quarter, 1983	7961	<300
Annual mean \pm s.d.		<300

Table 19. Well water samples collected at CL-7, analysis for gross beta and gamma-emitting isotopes. Collection: Monthly.

Sample Description and Activity (pCi/l)			
Date Collected Lab Code	1-12-83 CLWW-4003	2-03-83 CLWW-4277	3-09-83 CLWW-4604,5
Gross beta	2.6±1.9	2.3±1.8	2.3±1.3
Mn-54	<15	<15	<15
Fe-59	<30	<30	<31
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<22
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

Date Collected Lab Code	4-06-83 CLWW-4936	5-11-83 CLWW-5313	6-08-83 CLWW-5584,5
Gross beta	3.0±1.6	1.9±1.8	1.6±1.1
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<26	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 19. (continued)

Sample Description and Activity (pCi/l)			
Date Collected	7-13-83	8-10-83	9-14-83
Lab Code	CLWW-6034	CLWW-6349	CLWW-6712
Gross beta	1.7±0.9	2.6±1.3	1.8±1.0
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<19	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140	<15	<15	<15
Date Collected	10-12-83	11-09-83	12-21-83
Lab Code	CLWW-7127	CLWW-7447	CLWW-7883
Gross beta	1.9±1.2	3.1±1.3	4.5±2.1
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 20. Well water samples collected at CL-12, analysis for gross beta and gamma-emitting isotopes. Collection: Monthly.

Sample Description and Activity (pCi/l)			
Date Collected	1-05-83	2-03-83	3-09-83
Lab Code	CLWW-3929	CLWW-4278	CLWW-4606
Gross beta	4.3±3.8	<6.5	4.7±3.9
Mn-54	<15	<15	<15
Fe-59	<30	<30	<39
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<17
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15
Date Collected	4-06-83	5-11-83	6-08-83
Lab Code	CLWW-4938,9	CLWW-5314	CLWW-5586
Gross beta	4.2±2.0	5.1±3.7	<3.4
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140 ^a	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 20. (continued)

Sample Description and Activity (pCi/l)			
Date Collected	7-13-83	8-10-83	9-14-83
Lab Code	CLWW-6035	CLWW-6350	CLWW-6713
Gross beta	2.9±2.7	3.6±2.5	<3.6
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<19	<22	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140	<15	<15	<15
Date Collected	10-12-83	11-09-83	12-21-83
Lab Code	CLWW-7128	CLWW-7448,9	CLWW-7884
Gross beta	2.9±2.4	<4.0	3.6±2.4
Mn-54	<15	<15	<15
Fe-59	<30	<30	<30
Co-58	<15	<15	<15
Co-60	<15	<15	<15
Zn-65	<30	<30	<30
Nb-95	<15	<15	<15
Zr-95	<15	<15	<15
Cs-134	<15	<15	<15
Cs-137	<15	<15	<15
Ba-La-140	<15	<15	<15

^a Ba-La-140 minimum sensitivity is at counting time.

Table 21. Well water samples, analysis for tritium.
Collection: Quarterly composites of monthly collections.

Collection Period	CL-7	
	Lab Code	Tritium (pCi/l)
1st Quarter, 1983	CLWW-4736	<300
2nd Quarter, 1983	5739	<300
3rd Quarter, 1983	6850	<300
4th Quarter, 1983	7962	<300

Collection Period	CL-12	
	Lab Code	Tritium (pCi/l)
1st Quarter, 1983	CLWW-4737	<300
2nd Quarter, 1983	5740	<300
3rd Quarter, 1983	6851	<300
4th Quarter, 1983	7963	<300

Table 22. Fish samples, analysis for gamma-emitting isotopes.
Collection: Semi-annually.

Sample Description and Activity (pCi/g wet)		
Location	CL-19	CL-19
Lab Code	CLF-207	CLF-285
Date Collected	6-14-83	10-17-83
Type	Largemouth bass	Largemouth bass
Portion	Flesh	Flesh
Be-7	<0.76	<0.17
K-40	3.93±0.64	2.51±0.29
Co-58	<0.076	<0.024
Co-60	<0.070	<0.019
Nb-95	<0.13	<0.024
Zr-95	<0.15	<0.033
Ru-103	<0.13	<0.020
Ru-106	<0.59	<0.15
Cs-134	<0.059	<0.020
Cs-137	<0.060	<0.019
Ce-141	<0.30	<0.034
Ce-144	<0.52	<0.12

Table 23. Bottom sediments samples, analysis for gamma-emitting isotopes.
Collection: Semi-annually.

Sample Description and Activity (pCi/g dry)		
Location	CL-7	CL-7
Lab Code	CLBS-136	CLBS-177,8
Date Collected	6-14-83	10-17-83
Be-7	<1.32	<1.04
K-40	18.7±1.4	19.8±1.0
Co-58	<0.091	<0.091
Co-60	<0.064	<0.088
Nb-95	<0.15	<0.14
Zr-95	<0.18	<0.17
Ru-103	<0.18	<0.13
Ru-106	<0.72	<0.77
Cs-134	<0.14	<0.12
Cs-137	0.42±0.06	0.51±0.08
Ce-141	<0.33	<0.15
Ce-144	<0.64	<0.44
Location	CL-10	CL-10
Lab Code	CLBS-137	CLBS-179
Date Collected	6-14-83	10-17-83
Be-7	<1.83	<1.68
K-40	22.7±1.7	21.8±2.3
Co-58	<0.11	<0.15
Co-60	<0.065	<0.11
Nb-95	<0.19	<0.20
Zr-95	<0.22	<0.24
Ru-103	<0.24	<0.20
Ru-106	<1.03	<1.22
Cs-134	<0.21	<0.18
Cs-137	0.80±0.09	0.93±0.12
Ce-141	<0.38	<0.25
Ce-144	<0.79	<0.68

Table 24. Shoreline sediments samples, analysis for gamma-emitting isotopes. Collection: Semi-annually.

Sample Description and Activity (pCi/g dry)		
Location	CL-7	CL-7
Lab Code	CLSS-133,4	CLSS-180
Date Collected	6-14-83	10-17-83
Be-7	<0.56	<0.26
K-40	8.0±0.5	8.8±0.6
Co-58	<0.038	<0.028
Co-60	<0.032	<0.025
Nb-95	<0.062	<0.036
Zr-95	<0.072	<0.043
Ru-103	<0.068	<0.040
Ru-106	<0.33	<0.20
Cs-134	<0.040	<0.029
Cs-137	<0.033	<0.020
Ce-141	<0.13	<0.054
Ce-144	<0.28	<0.13
Location	CL-10	CL-10
Lab Code	CLSS-135	CLSS-181
Date Collected	6-14-83	10-17-83
Be-7	<0.98	<0.76
K-40	16.7±1.2	11.2±0.6
Co-58	<0.066	<0.065
Co-60	<0.058	<0.070
Nb-95	<0.11	<0.10
Zr-95	<0.13	<0.11
Ru-103	<0.13	<0.095
Ru-106	<0.58	<0.61
Cs-134	<0.072	<0.072
Cs-137	<0.056	<0.058
Ce-141	<0.22	<0.11
Ce-144	<0.49	<0.30

Table 25. Slime samples, analysis for gamma-emitting isotopes
Collection: Semi-annually.

Sample Description and Activity (pCi/g dry)		
Location	CL-7	CL-7
Lab Code	CLSL-70	CLSL-103
Date Collected	6-14-83	10-17-83
Be-7	<0.51	<0.59
K-40	4.90±0.51	5.24±0.75
Co-58	<0.051	<0.084
Co-60	<0.041	<0.080
Nb-95	<0.079	<0.090
Zr-95	<0.10	<0.14
Ru-103	<0.081	<0.078
Ru-106	<0.36	<0.61
Cs-134	<0.043	<0.079
Cs-137	<0.038	<0.077
Ce-141	<0.18	<0.10
Ce-144	<0.37	<0.35
Location	CL-10	CL-10
Lab Code	CLSL-71	CLSL-104
Date Collected	6-14-83	10-17-83
Be-7	<0.28	<0.40
K-40	2.93±0.44	3.38±0.49
Co-58	<0.032	<0.049
Co-60	<0.023	<0.050
Nb-95	<0.057	<0.059
Zr-95	<0.086	<0.091
Ru-103	<0.055	<0.049
Ru-106	<0.26	<0.39
Cs-134	<0.022	<0.047
Cs-137	<0.033	<0.050
Ce-141	<0.11	<0.064
Ce-144	<0.16	<0.23

Table 26. Green leafy vegetables and tuberous vegetables, analysis for gamma emitting isotopes.
Collection: Annually at time of harvest.

Sample Description and Activity (pCi/g wet)			
Location	CL-11	CL-11	CL-11
Lab Code	CLVE-123	CLVE-124	CLVE-125
Date Collected	8-10-83	8-10-83	8-10-83
Sample Type	Soybean Plant	Tomatoes	Corn
I-131 ^a	<0.045	--	--
K-40	2.39±0.49	1.63±0.18	1.74±0.25
Cs-134	<0.025	<0.006	<0.011
Cs-137	<0.016	<0.007	<0.010
Ba-La-140	<0.059	<0.040	<0.050
Location	CL-18	CL-18	CL-18
Lab Code	CLVE-126	CLVE-127	CLVE-128
Date Collected	8-10-83	8-10-83	8-10-83
Sample Type	Kohlrabi	Tomatoes	Corn
I-131 ^a	<0.043	--	--
K-40	3.75±0.55	1.73±0.20	1.98±0.24
Cs-134	<0.031	<0.008	<0.007
Cs-137	<0.037	<0.010	<0.009
Ba-La-140	<0.098	<0.066	<0.078

^a I-131 analysis required for green leafy vegetables only.

Table 27. Grass samples, collected at CL-11 in lieu of milk, analysis for Iodine-131 and gamma-emitting isotopes.

Collection: Semi-monthly during grazing season (May - October)
Monthly (November - April).

Sample Description and Activity (pCi/g wet)				
Period Collected	January	February	March	April
Date Collected	(1-05-83)	NC ^b	NC ^b	(4-13-83)
Lab Code	CLG-165			CLG-172
I-131	<0.12			<0.039
K-40	3.65±0.65			0.75±0.29
Cs-134	<0.050			<0.028
Cs-137	<0.080			0.065±0.018
Ba-La-140 ^a	<0.12			<0.040
Period Collected	May	May	June	June
Date Collected	(5-04-83)	(5-18-83)	(6-01-83)	(6-15-83)
Lab Code	CLG-191	CLG-203	CLG-207	CLG-220
I-131	<0.060	<0.029	<0.040	<0.046
K-40	3.24±0.76	3.67±0.48	3.97±0.68	4.28±0.69
Cs-134	<0.051	<0.036	<0.039	<0.047
Cs-137	<0.054	<0.033	<0.033	<0.051
Ba-La-140 ^a	<0.13	<0.030	<0.074	<0.061
Period Collected	July	July	August	August
Date Collected	(7-06-83)	(7-20-83)	(8-10-83)	(8-24-83)
Lab Code	CLG-232	CLG-253	CLG-279	CLG-283
I-131	<0.031	<0.10	<0.060	<0.060
K-40	6.97±0.59	7.06±0.74	3.23±0.66	4.60±0.60
Cs-134	<0.033	<0.064	<0.043	<0.028
Cs-137	<0.035	<0.068	<0.033	<0.031
Ba-La-140 ^a	<0.15	<0.25	<0.071	<0.034

Table 27. (continued)

Sample Description and Activity (pCi/g wet)		
Period Collected	September	September
Date Collected	9-07-83	9-21-83
Lab Code	CLG-294	CLG-301
I-131	<0.045	<0.059
K-40	3.57±0.64	3.35±0.65
Cs-134	<0.020	<0.031
Cs-137	<0.039	<0.040
Ba-La-140 ^a	<0.046	<0.056
Period Collected	October	October
Date Collected	10-05-83	10-19-83
Lab Code	CLG-331	CLG-338
I-131	<0.063	<0.026
K-40	5.34±0.91	5.16±0.51
Cs-134	<0.040	<0.017
Cs-137	<0.046	<0.023
Ba-La-140 ^a	<0.11	<0.030
Period Collected	November	December
Date Collected	11-02-83	12-14-83
Lab Code	CLG-346	CLG-354
I-131	<0.013	<0.028
K-40	3.27±0.19	0.54±0.26
Cs-134	<0.011	<0.020
Cs-137	<0.008	<0.018
Ba-La-140 ^a	<0.016	<0.034

^a Ba-La-140 minimum sensitivity is at counting time.

^b NC = No collection; grass not available.

Table 28. Grass samples, collected at CL-15 in lieu of milk, analysis for Iodine-131 and gamma-emitting isotopes.

Collection: Semi-monthly during grazing season (May - October)
Monthly (November - April).

Sample Description and Activity (pCi/g wet)				
Period Collected	January	February	March	April
Date Collected	1-05-83	NC ^b	NC ^b	(4-13-83)
Lab Code	CLG-166			CLG-173
I-131	<0.081			<0.038
K-40	5.88±0.62			0.67±0.48
Cs-134	<0.040			<0.046
Cs-137	<0.046			<0.057
Ba-La-140 ^a	<0.10			<0.074
Period Collected	May	May	June	June
Date Collected	(5-04-83)	(5-18-83)	(6-01-83)	(6-15-83)
Lab Code	CLG-192	CLG-204	CLG-208	CLG-221
I-131	<0.068	<0.029	<0.031	<0.034
K-40	4.84±0.89	4.49±0.54	3.44±0.69	4.70±0.78
Cs-134	<0.067	<0.032	<0.053	<0.028
Cs-137	<0.074	<0.034	<0.045	<0.043
Ba-La-140 ^a	<0.086	<0.034	<0.031	<0.078
Period Collected	July	July	August	August
Date Collected	(7-06-83)	(7-20-83)	(8-10-83)	(8-24-83)
Lab Code	CLG-233,4	CLG-254	CLG-280	CLG-284
I-131	<0.065	<0.16	<0.060	<0.050
K-40	5.97±0.77	8.53±1.13	6.49±0.86	6.88±0.67
Cs-134	<0.061	<0.079	<0.050	<0.038
Cs-137	<0.067	<0.10	<0.058	<0.046
Ba-La-140 ^a	<0.22	<0.28	<0.16	<0.094

Table 28. (continued)

Sample Description and Activity (pCi/g wet)		
Period Collected	September	September
Date Collected	9-07-83	9-21-83
Lab Code	CLG-295	CLG-302
I-131	<0.028	<0.043
K-40	5.89±0.77	5.36±0.69
Cs-134	<0.026	<0.046
Cs-137	<0.031	<0.040
Ba-La-140 ^a	<0.050	<0.051
Period Collected	October	October
Date Collected	10-05-83	10-19-83
Lab Code	CLG-332,3	CLG-339
I-131	<0.022	<0.043
K-40	5.15±0.20	5.17±0.77
Cs-134	<0.022	<0.031
Cs-137	<0.022	<0.029
Ba-La-140 ^a	<0.029	<0.074
Period Collected	November	December
Date Collected	11-02-83	12-14-83
Lab Code	CLG-347	CLG-355,6
I-131	<0.011	<0.031
K-40	2.63±0.19	2.08±0.25
Cs-134	<0.009	<0.026
Cs-137	<0.011	<0.031
Ba-La-140 ^a	<0.020	<0.072

^a Ba-La-140 minimum sensitivity is at counting time.

^b NC = No collection; grass not available.

Table 29. Grass samples, collected at CL-16 in lieu of milk, analysis for Iodine-131 and gamma-emitting isotopes.

Collection: Semi-monthly during grazing season (May - October)
Monthly (November - April).

Sample Description and Activity (pCi/g wet)				
Period Collected	January	February	March	April
Date Collected	1-05-83	NC ^b	NC ^b	(4-13-83)
Lab Code	CLG-167,8			CLG-174
I-131	<0.058			<0.040
K-40	2.74±0.36			1.44±0.6
Cs-134	<0.017			<0.047
Cs-137	<0.026			<0.057
Ba-La-140 ^a	<0.043			<0.065
Period Collected	May	May	June	June
Date Collected	(5-04-83)	(5-18-83)	(6-01-83)	(6-15-83)
Lab Code	CLG-193	CLG-205	CLG-209	CLG-222,3
I-131	<0.029	<0.073	<0.051	<0.019
K-40	1.53±0.29	4.60±0.76	3.80±0.60	3.08±0.30
Cs-134	<0.023	<0.036	<0.023	<0.019
Cs-137	<0.028	<0.073	<0.039	<0.022
Ba-La-140 ^a	<0.082	<0.071	<0.037	<0.026
Period Collected	July	July	August	August
Date Collected	(7-06-83)	(7-06-83)	(8-10-83)	(8-24-83)
Lab Code	CLG-235	CLG-255	CLG-281	CLG-285
I-131	<0.044	<0.031	<0.069	<0.060
K-40	8.28±0.16	7.33±1.00	4.49±0.64	7.57±0.68
Cs-134	<0.048	<0.022	<0.043	<0.042
Cs-137	<0.050	<0.028	<0.029	<0.046
Ba-La-140 ^a	<0.18	<0.050	<0.050	<0.11

Table 29. (continued)

Sample Description and Activity (pCi/g wet)		
Period Collected	September	September
Date Collected	9-07-83	9-21-83
Lab Code	CLG-296	CLG-303
I-131	<0.020	<0.036
K-40	4.57±0.26	3.32±0.52
Cs-134	<0.014	<0.031
Cs-137	<0.015	<0.025
Ba-La-140 ^a	<0.009	<0.017
Period Collected	October	October
Date Collected	10-05-83	10-19-83
Lab Code	CLG-334	CLG-340
I-131	<0.039	<0.051
K-40	5.12±0.77	4.03±0.58
Cs-134	<0.034	<0.032
Cs-137	<0.039	<0.028
Ba-La-140 ^a	<0.065	<0.046
Period Collected	November	December
Date Collected	11-02-83	12-14-83
Lab Code	CLG-348	CLG-357
I-131	<0.019	<0.017
K-40	2.06±0.26	0.92±0.26
Cs-134	<0.019	<0.023
Cs-137	<0.012	<0.018
Ba-La-140 ^a	<0.034	<0.026

^a Ba-La-140 minimum sensitivity is at counting time.

^b NC = No collection; grass not available.

Table 30. Grass samples, collected at CL-17 in lieu of milk, analysis for Iodine-131 and gamma-emitting isotopes.
Collection: Semi-monthly during grazing season (May - October)
Monthly (November - April).

Sample Description and Activity (pCi/g wet)				
Period Collected	January	February	March	April
Date Collected	1-05-83	NC ^b	NC ^b	(4-13-83)
Lab Code	CLG-169			CLG-175
I-131	<0.13			<0.050
K-40	6.42±1.02			2.39±0.36
Cs-134	<0.079			<0.039
Cs-137	<0.085			<0.045
Ba-La-140 ^a	<0.11			<0.094
Period Collected	May	May	June	June
Date Collected	(5-04-83)	(5-18-83)	(6-01-83)	(6-15-83)
Lab Code	CLG-194	CLG-206	CLG-210	CLG-224
I-131	<0.086	<0.028	<0.025	<0.036
K-40	4.18±0.85	3.15±0.41	3.75±0.42	2.50±0.51
Cs-134	<0.062	<0.027	<0.033	<0.028
Cs-137	<0.060	<0.034	<0.019	<0.025
Ba-La-140 ^a	<0.10	<0.050	<0.034	<0.023
Period Collected	July	July	August	August
Date Collected	(7-06-83)	(7-20-83)	(8-10-83)	(8-24-83)
Lab Code	CLG-236	CLG-257	CLG-282	CLG-286
I-131	<0.080	<0.042	<0.060	<0.047
K-40	4.99±0.20	4.72±0.71	7.39±1.10	8.68±0.64
Cs-134	<0.098	<0.026	<0.034	<0.031
Cs-137	<0.098	<0.025	<0.062	<0.036
Ba-La-140 ^a	<0.25	<0.037	<0.090	<0.077

Table 30. (continued)

Sample Description and Activity (pCi/g wet)		
Period Collected	September	September
Date Collected	9-07-83	9-21-83
Lab Code	CLG-297	CLG-304
I-131	<0.022	<0.043
K-40	5.20±0.40	4.75±0.63
Cs-134	<0.028	<0.038
Cs-137	<0.028	<0.042
Ba-La-140 ^a	<0.014	<0.042
Period Collected	October	October
Date Collected	10-05-83	10-19-83
Lab Code	CLG-335	CLG-341
I-131	<0.052	<0.025
K-40	5.40±0.73	4.50±0.49
Cs-134	<0.048	<0.020
Cs-137	<0.058	<0.034
Ba-La-140 ^a	<0.011	<0.025
Period Collected	November	December
Date Collected	11-02-83	12-14-83
Lab Code	CLG-349	CLG-358
I-131	<0.020	<0.009
K-40	2.21±0.028	0.22±0.10
Cs-134	<0.016	<0.007
Cs-137	<0.016	<0.010
Ba-La-140 ^a	<0.016	<0.013

^a Ba-La-140 minimum sensitivity is at counting time.

^b NC = No collection; grass not available.

Appendix A
Crosscheck Program Results

Appendix A

Crosscheck Program Results

Teledyne Isotopes Midwest Laboratories (formerly Hazleton Environmental Sciences) has participated in interlaboratory comparison (crosscheck) programs since the formulation of its quality control program in December 1971. These programs are operated by agencies which supply environmental-type samples (e.g., milk or water) containing concentrations of radionuclides known to the issuing agency but not to participant laboratories. The purpose of such a program is to provide an independent check on the laboratory's analytical procedures and to alert it to any possible problems.

Participant laboratories measure the concentrations of specified radionuclides and report them to the issuing agency. Several months later, the agency reports the known values to the participant laboratories and specifies control limits. Results consistently higher or lower than the known values or outside the control limits indicate a need to check the instruments or procedures used.

The results in Table A-1 were obtained through participation in the environmental sample crosscheck program for milk and water samples during the period 1980 through 1983. This program has been conducted by the U. S. Environmental Protection Agency Intercomparison and Calibration Section, Quality Assurance Branch, Environmental Monitoring and Support Laboratory, Las Vegas, Nevada.

The results in Table A-2 were obtained for thermoluminescent dosimeters (TLD's) during the period 1976, 1977, 1979, 1980, and 1981 through participation in the Second, Third, Fourth, and Fifth International Intercomparison of Environmental Dosimeters under the sponsorships listed in Table A-2.

Table A-1. U.S. Environmental Protection Agency's crosscheck program, comparison of EPA and Teledyne Isotopes Midwest Laboratory results for milk and water samples, 1980 through 1983^a.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/l ^b	
				TIML Result $\pm 2\sigma^c$	EPA Result $\pm 3\sigma, n=1^d$
STW-206	Water	Jan. 1980	Gross Alpha Gross Beta	19.0 \pm 2.0 48.0 \pm 2.0	30.0 \pm 8.0 45.0 \pm 5.0
STW-208	Water	Jan. 1980	Sr-89 Sr-90	6.1 \pm 1.2 23.9 \pm 1.1	10.0 \pm 0.5 25.5 \pm 1.5
STW-209	Water	Feb. 1980	Cr-51 Co-60 Zn-65 Ru-106 Cs-134 Cs-137	112 \pm 14 12.7 \pm 2.3 29.7 \pm 2.3 71.7 \pm 1.5 12.0 \pm 2.0 30.0 \pm 2.7	101 \pm 5.0 11 \pm 5.0 25 \pm 5.0 51 \pm 5 10 \pm 5.0 30 \pm 5.0
STW-210	Water	Feb. 1980	H-3	1800 \pm 120	1750 \pm 340
STW-211	Water	March 1980	Ra-226 Ra-228	15.7 \pm 0.2 3.5 \pm 0.3	16.0 \pm 2.4 2.6 \pm 0.4
STM-217	Milk	May 1980	Sr-89 Sr-90	4.4 \pm 2.69 10.0 \pm 1.0	5 \pm 5 12 \pm 1.5
STW-221	Water	June 1980	Ra-226 Ra-228	2.0 \pm 0.0 1.6 \pm 0.1	1.7 \pm 0.8 1.7 \pm 0.8
STW-223	Water	July 1980	Gross Alpha Gross Beta	31 \pm 3.0 44 \pm 4	38 \pm 5.0 35 \pm 5.0
STW-224	Water	July 1980	Cs-137 Ba-140 K-40 I-131	33.9 \pm 0.4 <12 1350 \pm 60 <5.0	35 \pm 5.0 0 1550 \pm 78 0
STW-225	Water	Aug. 1980	H-3	1280 \pm 50	1210 \pm 329
STW-226	Water	Sept. 1980	Sr-89 Sr-90	22 \pm 1.2 12 \pm 0.6	24 \pm 8.6 15 \pm 2.6
STW-228	Water	Sept. 1980	Gross Alpha Gross Beta	NA ^e 22.5 \pm 0.0	32.0 \pm 8.0 21.0 \pm 5.0
STW-235	Water	Dec. 1980	H-3	2420 \pm 30	2240 \pm 604

Table A-1. (continued)

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/l ^b	
				TIML Result $\pm 2\sigma^c$	EPA Result $\pm 3\sigma, n=1^d$
STW-237	Water	Jan. 1981	Sr-89	13.0 \pm 1.0	16 \pm 8.7
			Sr-90	24.0 \pm 0.6	34 \pm 2.9
STM-239	Milk	Jan. 1981	Sr-89	<210	0
			Sr-90	15.7 \pm 2.6	20 \pm 3.0
			I-131	30.9 \pm 4.8	26 \pm 10.0
			Cs-137	46.9 \pm 2.9	43 \pm 9.0
			Ba-140	<21	0
			K-40	1330 \pm 53	1550 \pm 134
STW-240	Water	Jan. 1981	Gross alpha	7.3 \pm 2.0	9 \pm 5.0
			Gross beta	41.0 \pm 3.1	44 \pm 5.0
STW-243	Water	Mar. 1981	Ra-226	3.5 \pm 0.06	3.4 \pm 0.5
			Ra-228	6.5 \pm 2.3	7.3 \pm 1.1
STW-245	Water	Apr. 1981	H-3	3210 \pm 115	2710 \pm 355
STW-249	Water	May 1981	Sr-89	51 \pm 3.6	36 \pm 8.7
			Sr-90	22.7 \pm 0.6	22 \pm 2.6
STW-251	Water	May 1981	Gross alpha	24.0 \pm 5.3	21 \pm 5.2
			Gross beta	16.1 \pm 1.9	14 \pm 5.0
STW-252	Water	Jun. 1981	H-3	2140 \pm 95	1950 \pm 596
STW-255	Water	Jul. 1981	Gross alpha	20 \pm 1.5	22 \pm 9.5
			Gross beta	13.0 \pm 2.0	15 \pm 8.7
STW-259	Water	Sep. 1981	Sr-89	16.1 \pm 1.0	23 \pm 5
			Sr-90	10.3 \pm 0.9	11 \pm 1.5
STW-265	Water	Oct. 1981	Gross alpha	71.2 \pm 19.1	80 \pm 20
			Gross beta	123.3 \pm 16.6	111 \pm 5.6
			Sr-89	14.9 \pm 2.0	21 \pm 5
			Sr-90	13.1 \pm 1.7	14.4 \pm 1.5
			Ra-226	13.0 \pm 2.0	12.7 \pm 1.9
STW-269	Water	Dec. 1981	H-3	2516 \pm 181	2700 \pm 355

Table A-1. (continued)

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/l ^b	
				TIML Result $\pm 2\sigma^c$	EPA Result $\pm 3\sigma$, $n=1^d$
STW-270	Water	Jan. 1982	Sr-89 Sr-90	24.3 \pm 2.0 9.4 \pm 0.5	21.0 \pm 5.0 12.0 \pm 1.5
STW-273	Water	Jan. 1982	I-131	8.6 \pm 0.6	8.4 \pm 1.5
STW-275	Water	Feb. 1982	H-3	1580 \pm 147	1820 \pm 342
STW-276	Water	Feb. 1982	Cr-51 Co-60 Zn-65 Ru-106 Cs-134 Cs-137	<61 26.0 \pm 3.7 <13 <46 26.8 \pm 0.7 29.7 \pm 1.4	0 20 \pm 5 15 \pm 5 20 \pm 5 22 \pm 5 23 \pm 5
STW-277	Water	Mar. 1982	Ra-226	11.9 \pm 1.9	11.6 \pm 1.7
STW-278	Water	Mar. 1982	Gross alpha Gross beta	15.6 \pm 1.9 19.2 \pm 0.4	19 \pm 5 19 \pm 5
STW-280	Water	Apr. 1982	H-3	2690 \pm 80	2860 \pm 360
STW-281	Water	Apr. 1982	Gross alpha Gross beta Sr-89 Sr-90 Ra-226 Co-60	75 \pm 7.9 114.1 \pm 5.9 17.4 \pm 1.8 10.5 \pm 0.6 11.4 \pm 2.0 <4.6	85 \pm 21 106 \pm 5.3 24 \pm 5 12 \pm 1.5 10.9 \pm 1.5 0
STW-284	Water	May 1982	Gross alpha Gross beta	31.5 \pm 6.5 25.9 \pm 3.4	27.5 \pm 7 29 \pm 5
STW-285	Water	June 1982	H-3	1970 \pm 1408	1830 \pm 340
STW-286	Water	June 1982	Ra-226 Ra-228	12.6 \pm 1.5 11.1 \pm 2.5	13.4 \pm 3.5 8.7 \pm 2.3
STW-287	Water	June 1982	I-131	6.5 \pm 0.3	4.4 \pm 0.7
STW-290	Water	Aug. 1982	H-3	3210 \pm 140	2890 \pm 619
STW-291	Water	Aug. 1982	I-131	94.6 \pm 2.5	87 \pm 15

Table A-1. (continued)

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/l ^b	
				TIML Result $\pm 2\sigma^c$	EPA Result $\pm 3\sigma$, $n=1^d$
STW-292	Water	Sept. 1982	Sr-89 Sr-90	22.7 \pm 3.8 10.9 \pm 0.3	24.5 \pm 8.7 14.5 \pm 2.6
STW-296	Water	Oct. 1982	Co-60 Zn-65 Cs-134 Cs-137	20.0 \pm 1.0 32.3 \pm 5.1 15.3 \pm 1.5 21.0 \pm 1.7	20 \pm 8.7 24 \pm 8.7 19.0 \pm 8.7 20.0 \pm 8.7
STW-297	Water	Oct. 1982	H-3	2470 \pm 20	2560 \pm 612
STW-298	Water	Oct. 1982	Gross alpha Gross beta Sr-89 Sr-90 Cs-134 Cs-137 Ra-226 Ra-228	32 \pm 30 81.7 \pm 6.1 <2 14.1 \pm 0.9 <2 22.7 \pm 0.6 13.6 \pm 0.3 3.9 \pm 1.0	55 \pm 24 81 \pm 8.7 0 17.2 \pm 2.6 1.8 \pm 8.7 20 \pm 8.7 12.5 \pm 3.2 3.6 \pm 0.9
STW-301	Water	Nov. 1982	Gross alpha Gross beta	12.0 \pm 1.0 34.0 \pm 2.7	19.0 \pm 8.7 24.0 \pm 8.7
STW-302	Water	Dec. 1982	I-131	40.0 \pm 0.0	37.0 \pm 10
STW-303	Water	Dec. 1982	H-3	1940 \pm 20	1990 \pm 345
STW-304	Water	Dec. 1982	Ra-226 Ra-228	11.7 \pm 0.6 <3	11.0 \pm 1.7 0
STW-306	Water	Jan. 1983	Sr-89 Sr-90	20.0 \pm 8.7 21.7 \pm 8.4	29.2 \pm 5 17.2 \pm 1.5
STW-307	Water	Jan. 1983	Gross alpha Gross beta	29.0 \pm 4.0 ^g 29.3 \pm 0.6	29.0 \pm 13 31.0 \pm 8.7
STM-309	Milk	Feb. 1983	Sr-89 Sr-90 I-131 Cs-137 Ba-140 K-40	35 \pm 2.0 13.7 \pm 0.6 55.7 \pm 3.2 29 \pm 1.0 <27 1637 \pm 5.8	37 \pm 8.7 18 \pm 2.6 55 \pm 10.4 26 \pm 8.7 0 1512 \pm 131

Table A-1. (continued)

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/l ^b	
				TIML Result $\pm 2\sigma^c$	EPA Result $\pm 3\sigma$, $n=1^d$
STW-310	Water	Feb. 1983	H-3	2470 \pm 80	2560 \pm 612
STW-311	Water	March 1983	Ra-226 Ra-228	11.9 \pm 1.3 <2.7	12.7 \pm 3.3 0
STW-312	Water	March 1983	Gross alpha Gross beta	31.6 \pm 4.59 27.0 \pm 2.0	31 \pm 13.4 28 \pm 8.7
STW-313	Water	April 1983	H-3	3240 \pm 80	3330 \pm 627
STW-316	Water	May 1983	Gross alpha Gross beta Sr-89 Sr-90 Ra-226 Co-60 Cs-134 Cs-137	94 \pm 7 133 \pm 5 19 \pm 1 12 \pm 1 7.9 \pm 0.4 30 \pm 2 27 \pm 2 29 \pm 1	64 \pm 19.9 149 \pm 12.4 24 \pm 8.7 13 \pm 2.6 8.5 \pm 2.25 30 \pm 8.7 33 \pm 8.7 27 \pm 8.7
STW-317	Water	May 1983	Sr-89 Sr-90	59.7 \pm 2.1 33.7 \pm 1.5	57 \pm 8.7 38 \pm 3.3
STW-318 ^f	Water	May 1983	Gross alpha Gross beta	12.8 \pm 1.5 49.4 \pm 3.9	11 \pm 8.7 57 \pm 8.7
STM-320	Milk	June 1983	Sr-89 Sr-90 I-131 Cs-137 K	20 \pm 0 10 \pm 1 30 \pm 1 52 \pm 2 1553 \pm 57	25 \pm 8.7 16 \pm 2.6 30 \pm 10.4 47 \pm 8.7 1486 \pm 129
STW-321	Water	June 1983	H-3	1470 \pm 89	1529 \pm 583
STW-322	Water	June 1983	Ra-226 Ra-228	4.3 \pm 0.2 <2.5	4.8 \pm 1.24 0
STW-323	Water	July 1983	Gross alpha Gross beta	3 \pm 1 21 \pm 0	7 \pm 8.7 22 \pm 8.7
STW-324	Water	August 1983	I-131	13.3 \pm 0.6	14 \pm 10.4

Table A-1. (continued)

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/l ^b	
				TIML Result $\pm 2\sigma^c$	EPA Result $\pm 3\sigma$, n=1 ^d
STAF-326	Air filter	August 1983	Gross beta	42 \pm 2	36 \pm 8.7
			Sr-90	14 \pm 2	10 \pm 2.6
			Cs-137	19 \pm 1	15 \pm 8.7
STW-328	Water	Sept. 1983	Gross alpha	2.3 \pm 0.6	5 \pm 8.7
			Gross beta	10.7 \pm 1.2	9 \pm 8.7
STW-329	Water	Sept. 1983	Ra-226	3.0 \pm 0.2	3.1 \pm 0.81
			Ra-228	3.2 \pm 0.7	2.0 \pm 0.52
STW-331	Water	Oct. 1983	H-3	1303 \pm 32	1210 \pm 570
STW-335	Water	Dec. 1983	I-131	19.6 \pm 1.9	20 \pm 10.4

^a Results obtained by Teledyne Isotopes Midwest Laboratory as a participant in the environmental sample crosscheck program operated by the Intercomparison and Calibration Section, Quality Assurance Branch, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, (EPA), Las Vegas, Nevada.

^b All results are in pCi/l, except for elemental potassium (K) data which are in mg/l.

^c Unless otherwise indicated, the TIML results given as the mean $\pm 2\sigma$ standard deviations for three determinations.

^d USEPA results are presented as the known values \pm control limits of 3σ for n=1.

^e NA = Not analyzed.

^f Analyzed but not reported to the EPA.

^g Results after calculations corrected (error in calculations when reported to EPA).

Table A-2. Crosscheck program results, thermoluminescent dosimeters (TLDs).

Lab Code	TLD Type	Measurement	mR		Average $\pm 2\sigma$ ^d (all participants)
			Teledyne Result $\pm 2\sigma$ ^a	Known Value	
2nd International Intercomparison ^b					
115-2 ^b	CaF ₂ :Mn Bulb	Gamma-Field	17.0 \pm 1.9	17.1 ^c	16.4 \pm 7.7
		Gamma-Lab	20.8 \pm 4.1	21.3 ^c	18.8 \pm 7.6
3rd International Intercomparison ^e					
115-3 ^e	CaF ₂ :Mn Bulb	Gamma-Field	30.7 \pm 3.2	34.9 \pm 4.8 ^f	31.5 \pm 3.0
		Gamma-Lab	89.6 \pm 6.4	91.7 \pm 14.6 ^f	86.2 \pm 24.0
4th International Intercomparison ^g					
115-49	CaF ₂ :Mn Bulb	Gamma-Field	14.1 \pm 1.1	14.1 \pm 1.4 ^f	16.0 \pm 9.0
		Gamma-Lab (Low)	9.3 \pm 1.3	12.2 \pm 2.4 ^f	12.0 \pm 7.6
		Gamma-Lab (High)	40.4 \pm 1.4	45.8 \pm 9.2 ^f	43.9 \pm 13.2
5th International Intercomparison ^h					
115-5A ^h	CaF ₂ :Mn Bulb	Gamma-Field	31.4 \pm 1.8	30.0 \pm 6.0 ⁱ	30.2 \pm 14.6
		Gamma-Lab at beginning	77.4 \pm 5.8	75.2 \pm 7.6 ⁱ	75.8 \pm 40.4
		Gamma-Lab at the end	96.6 \pm 5.8	88.4 \pm 8.8 ⁱ	90.7 \pm 31.2

Table A-2. (Continued)

Lab Code	TLD Type	Measurement	mR		
			Teledyne Result $\pm 2\sigma^a$	Known Value	Average $\pm 2\sigma^d$ (all participants)
115-5B ^h	LiF-100 Chips	Gamma-Field	30.3 \pm 4.8	30.0 \pm 6 ⁱ	30.2 \pm 14.6
		Gamma-Lab at beginning	81.1 \pm 7.4	75.2 \pm 7.6 ⁱ	75.8 \pm 40.4
		Gamma-Lab at the end	85.4 \pm 11.7	88.4 \pm 8.8 ⁱ	90.7 \pm 131.2

^aLab result given is the mean $\pm 2\sigma$ standard deviations of three determinations.

^bSecond International Intercomparison of Environmental Dosimeters conducted in April of 1976 by the Health and Safety Laboratory (GASL), New York, New York, and the School of Public Health of the University of Texas, Houston, Texas.

^cValue determined by sponsor of the intercomparison using continuously operated pressurized ion chamber.

^dMean $\pm 2\sigma$ standard deviations of results obtained by all laboratories participating in the program.

^eThird International Intercomparison of Environmental Dosimeters conducted in summer of 1977 by Oak Ridge National Laboratory and the School of Public Health of the University of Texas, Houston, Texas.

^fValue $\pm 2\sigma$ standard deviations as determined by sponsor of the intercomparison using continuously operated pressurized ion chamber.

^gFourth International Intercomparison of Environmental Dosimeters conducted in summer of 1979 by the School of Public Health of the University of Texas, Houston, Texas.

^hFifth International Intercomparison of Environmental Dosimeter conducted in fall of 1980 at Idaho Falls, Idaho and sponsored by the School of Public Health of the University of Texas, Houston, Texas and Environmental Measurements Laboratory, New York, New York, U.S. Department of Energy.

ⁱValue determined by sponsor of the intercomparison using continuously operated pressurized ion chamber.

Appendix B
Data Reporting Conventions

Data Reporting Conventions

1.0. All activities are corrected to collection time.

2.0. Single Measurements

Each single measurement is reported as follows:

$$x \pm s$$

where x = value of the measurement;

$s = 2\sigma$ counting uncertainty (corresponding to the 95% confidence level).

In cases where the activity is found to be below the lower limit of detection L it is reported as

$$<L$$

where L = is the lower limit of detection based on 4.66σ uncertainty for a background sample.

3.0. Duplicate Analyses

3.1. Individual results: $x_1 \pm s_1$
 $x_2 \pm s_2$

Reported result: $x \pm s$

where $x = (1/2)(x_1 + x_2)$

$$s = (1/2) \sqrt{s_1^2 + s_2^2}$$

3.2. Individual results: $<L_1$

$<L_2$

Reported result: $<L$

where L = lowest of L_1 and L_2

3.3. Individual results: $x \pm s$

$<L$

Reported result: $x \pm s$ if $x \leq L$;

$<L$ otherwise

4.0. Computation of Averages and Standard Deviations

- 4.1 Averages and standard deviations listed in the tables are computed from all of the individual measurements over the period averaged; for example, an annual standard deviation would not be the average of quarterly standard deviations. The average \bar{x} and standard deviations of a set of n numbers x_1, x_2, \dots, x_n are defined as follows:

$$\bar{x} = \frac{1}{n} \sum x$$

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n-1}}$$

- 4.2 Values below the highest lower limit of detection are not included in the average.
- 4.3 If all of the values in the averaging group are less than the highest LLD, the highest LLD is reported.
- 4.4 If all but one of the values are less than the highest LLD, the single value x and associated two sigma error is reported.
- 4.5. In rounding off, the following rules are followed:
- 4.5.1. If the figure following those to be retained is less than 5, the figure is dropped, and the retained figures are kept unchanged. As an example, 11.443 is rounded off to 11.44.
- 4.5.2 If the figure following those to be retained is greater than 5, the figure is dropped, and the last retained figure is raised by 1. As an example, 11.446 is rounded off to 11.45.
- 4.5.3. If the figure following those to be retained is 5, and if there are no figures other than zeros beyond the five, the figure 5 is dropped, and the last-place figure retained is increased by one if it is an odd number or it is kept unchanged if an even number. As an example, 11.435 is rounded off to 11.44, while 11.425 is rounded off to 11.42.

Appendix C
Sampling Program and Locations

Table C-1. Sample collection and analysis program for the Clinton Power Station.

Sample Type	Sampling Location	Coll. Freq. ^a	Coll. Start Date	Duration of Preop. Program	Type of Analysis	No. of Anal. for 3 years			Comments
						Anal. Freq. ^a	Preop.	Oper.	
1. Air Particulates	CL-1	W	1/82	1 yr.	Gross Beta Gamma Isot.	W	416	416	Continuous sampling Gross beta weekly, composite (by location) for gamma isotopic quarterly.
	CL-2					Q	32	32	
	CL-3								
	CL-4								
	CL-6								
	CL-7								
	CL-8								
2. Airborne Iodine	CL-1	W	- ^b	6 mo.	I-131	W	208	416	Continuous sampling. Analyze weekly for I-131. Collection to start 6 months before fuel loading.
	CL-2								
	CL-3								
	CL-4								
	CL-6								
	CL-7								
	CL-8								
3. TLD	CL-1	Q	4/80	2 yrs.	Ambient Gamma	Q	328	164	Integrated gamma dose quarterly.
	CL-2								
	CL-3								
	CL-4								
	CL-6								
	CL-7								
	CL-8								
4. Milk	CL-11	M	8/82 ^c	1 yr.	I-131 Gamma Isot.	SM	28	72	Semi-monthly collection during grazing period (May-October) monthly otherwise. Start analysis for I-131 in October 1982. I-131 analysis on all samples, gamma isotopic monthly.
	CL-15					M	48	48	
	CL-16								
	CL-17								
5. Drinking Water	CL-14	H	- ^d	1 yr.	I-131	SM			Hourly aliquots composited into semi-monthly, monthly and quarterly composites. Analyze semi-monthly for I-131 only if contamination is suspected or when the dose calculated from the consumption of the water is greater than 1 mrem per year.
					Gross Beta.	M	12	12	
					Gamma Isot.	M	12	12	
					Tritium	Q	4	4	

Table C-1. (Continued)

Sample Type	Sampling Location	Coll. Freq. ^a	Start Date	Duration of Preop. Program	Type of Analysis	Anal. Freq. ^a	No. of Anal. for 3 years Preop. Oper.		Comments
6. Well Water	CL-7 CL-12	M	9/82	1 yr.	Gross Beta.	M	24	24	Gamma isotopic and gross beta monthly. Tritium on quarterly composite.
					Gamma Isot.	M	24	24	
					Tritium	Q	8	8	
7. Surface Water	CL-9 CL-10 CL-13	M	1/82	1 yr	Gamma Isot	M	36	36	Gamma isotopic monthly. Tritium on quarterly composite.
					Tritium	Q	12	12	
8. Green Leafy Vegetables and Tuberous Veg.	CL-11 CL-18	A	8/82	1 yr.	Gamma Isot.	A	4	4	At time of harvest.
9. Bottom Sediments	CL-7 CL-10	SA	5/80	2 yrs.	Gamma Isot.	SA	8	4	Gamma Isotopic semi-annually
10. Shoreline Sediments	CL-7 CL-10	SA	5/80	2 yrs.	Gamma Isot.	SA	8	4	Gamma isotopic semi-annually
11. Slime	CL-7 CL-10	SA	5/80	2 yrs.	Gamma Isot.	SA	8	4	Gamma isotopic semi-annually
12. Fish	CL-19	SA	5/80	2 yrs.	Gamma Isot.	SA	4	2	Gamma isotopic on edible portion only, semi-annually.

^a Collection and analysis frequencies are coded as follows:

H=Hourly; SM=Semi-Monthly; M=Monthly; Q=Quarterly; SA=Semi-Annually; A=Annually.

^b Collection will start six months before fuel loading.

^c Grass collected in lieu of milk.

^d Sampling will commence twelve months prior to fuel loading.