PILGRIM NUCLEAR GENERATING STATION

Environmental Radiation Monitoring Program

SEMIANNUAL REPORT NO. 7

JULY 1, 1975 THROUGH DECEMBER 31, 1975

BOSTON EDISON COMPANY
GENERAL OFFICES 800 BOYLSTON STREET
BOSTON, MASSACHUSETTS 02199

March 1, 1976

Director
Region I, Inspection and Enforcement
U. S. Nuclear Regulatory Commission
631 Park Avenue
King of Prussia, Pennsylvania 19406

Docket No. 50-293
License No. DPR-35

Semi-Annual Report No. 7
Environmental Radiation Monitoring Program

Gentlemen:

In accordance with Pilgrim Station, Technical Specification 6.9.C.2, we are hereby submitting our seventh Semi-Annual Report. A separate report covering Technical Specification 6.9.C.1 and entitled, "Semiannual Summary of Radioactive Effluents" has been sent under separate cover.

Very truly yours,

Original Signed by

G. Carl Andognini
Manager -
Nuclear Operations

cc: Director
Office of Inspection and Enforcement
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555 (20)

Director
Office of Management Information
and Program Control
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555 (2)

BOSTON EDISON COMPANY

PILGRIM NUCLEAR GENERATING STATION

Environmental Radiation Monitoring Program

SEMIANNUAL REPORT NO. 7
JULY 1, 1975 THROUGH DECEMBER 31, 1975

Prepared By

Joel I. Cehn
Environmental Sciences Group
Nuclear Engineering Department

March 1976

Approved By: G. James Davis

G. James Davis, Manager
Environmental Sciences Group

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

LIST OF TABLES

LIST OF TABLES - Continued

I. INTRODUCTION AND SUMMARY

This report discusses the data accumulated by the Environmental Radiation Surveillance Program during the semiannual period July 1 through December 31, 1975.

Pilgrim Station operation during the reporting period is detailed in a separate report entitled "Operating and Maintenance Annual Report, 1975." Power levels during this period were limited, administratively, to 70 percent of full power from July through October, and to 60 percent of full power during November and December. These limits on power levels were set by Boston Edison Company for reasons of operation and maintenance. Plant capacity factors (a measure of electrical output as a percentage of full output 100 percent of the time) during the reporting period were: July, 43 percent; August, 53 percent; September, 19 percent; October, 3 percent; November, 50 percent; and December, 53 percent.

The Environmental Radiation Surveillance Program was implemented during the reporting period as required by the Nuclear Regulatory Commission. Plant-related radioactivity levels in marine life and sediments decreased from 1974 levels, as did liquid effluent releases to Cape Cod Bay. The current levels of Mn-54, Co-60, Zn-65 and Cs-137 in these media are less than 1 picocurie per gram.

Gaseous radioiodine was detected onsite at levels less than 1 picocurie per cubic meter. This I-131 was attributed to releases from the reactor building vent.

Finally, marine media data from 1975 were reviewed and calculations showed that the seafood ingestion dose to an individual consuming these media would be less than 0.1 millirem per year.

II. DESCRIPTION OF MONITORING PROGRAM

The Environmental Radiation Monitoring Program is being performed in accordance with the requirements specified in the Pilgrim Facility Operating License (DPR-35). Summaries of the sampled media, sampling locations, frequences of collection, analyses and detection sensitivites are given in Tables 1 through 5A. Sampling locations are shown in Figures 1, 2, 3 and 3A. The summary description provided herein was revised January, 1976; therefore, the sample results reported in Section III of this report may not follow schedules as shown. A more detailed program description is contained in a separate report entitled, "Environmental Radiation Monitoring Program, Program Description and Procedures, January, 1976."

III. MONITORING DATA AND RESULTS

A. Air Surveillance

Weekly air surveillance samples were analyzed for gross beta activity and radioiodine activity. The results are presented in Tables 6, 8 and 8A. The measured radioiodine levels have a computed dose equivalent of less than 0.5 millirem over the reporting period to the thyroid of a continuous occupant at the "warehouse" onsite location. The corresponding offsite radioiodine inhalation dose is less than 0.25 millirem. Monthly gross gamma results, quarterly gamma spectra (composites of weekly samples), and quarterly strontium-90 concentrations are presented in Tables 7, 7A and 7B respectively. These data show lower levels of airborne fallout than reported for the previous reporting periods. This reflects the reduction in atmospheric nuclear weapons testing. Long term variations in airborne radioactivity are shown in Figures 4 and 5.

B. External Gamma Exposure

External gamma exposure rates, measured with $CaSo_4$(Dy) Radiguard dosimeters, are reported in Table 9. The combined exposure for November and December was the result of replacement dosimeters not being available during December. Two unusually high exposures were noted for that period. They occurred at locations OA and WS, both onsite, close-in locations. The source of these exposures is still being investigated and conclusions will be reported in a later report.

C. Milk

Milk was sampled from two locations and from a store in Plymouth. The samples were analyzed monthly for Cs-137, Sr-90, Ba/La-140 and I-131. The results obtained during the reporting period are presented in Table 10. The levels of strontium and cesium measured in Plymouth milk do not exceed the levels measured prior to station operation, as shown in Figure 6. Radiobarium and radioiodine levels were below reporting limits in all cases.

D. Crops

Commercial produce was sampled during the reporting period, including hay, lettuce, cranberries and corn. The results of gamma spectrometry and radiostrontium analyses are presented in Table 11. Activities detected did not exceed preoperational levels.

E. Domestic and Recreational Water

Monthly composites of weekly water samples were analyzed for gross radioactivity and the isotopes H-3, Sr-90 and I-131. The results are shown in Table 12. The results of gamma spectral analyses on selected samples are presented in Table 12A. Radioactivity in the water sampled is primarily due to K-40, Ra-226 and Th-228 (all naturally occurring isotopes).

F. Precipitation

A precipitation collection station in Plymouth, five miles from the plant, was sampled during the reporting period. The radioactivity found in the monthly samples is reported in Table 13.

G. Seawater

Monthly samples were taken from the intake channel, discharge channel, and a control location 7.5 miles NNW of the station. These were analyzed for fractional gross beta (explained in Table 14), gross gamma, ium, and iodine-131. The results of these analyses and of quarterly analyses of intake and discharge seawater for specific radioisotopes are presented in Table 14. Fluctuations in Sr-90 and Cs-137 levels are attributed to reduced accuracy of seawater analysis at very low activities. The results of gamma spectrometry of the monthly samples are given in Table 14A. No plant-related activity was detected.

H. Marine Life

Finfish, shellfish and algae were sampled during the reporting period. The results of radiostrontium and gamma spectral analyses are presented in Table 15. The results of analyses of samples from the previous reporting period, not reported in Semiannual Report #6, are presented in Table 15A. Media in which trace amounts of plant-related radionuclides were detected during 1975 include cunner, Atlantic menhaden, Atlantic cod, blue mussel, Irish moss and rockweed (Ascophyllum nodosum). No plant-related activity was detected beyond two miles from the plant. Potential radiation doses to humans resulting from these levels of radioactivity are discussed in Section IV.

I. Bottom Sediment

Results of analyses of ocean bottom sediments in the vicinity of the plant are presented in Table 16. Sediment is sampled to approximately 1 cm depth; however, core samples are planned for 1976. Trace amounts of plant-related radionuclides were detected in the vicinity of the discharge canal.

IV. 1975 SEAFOOD INGESTION DOSES

Samples of potential seafood taken in 1975, and found to contain plant-related radionuclides, were assumed to have been ingested by consumers, and estimations of dose were made. The activities detected in these samples were averaged within each of the three groups: finfish, shellfish and algae. These average activities are shown in Table 17.

Dose calculations were based on Draft Regulatory Guide 1.AA. Consumption rates and ingestion doses are presented in Table 17. The ingestion doses resulting from 1975 liquid releases totaling 1.2 curies were much less than 1 mrem/year to an average individual.

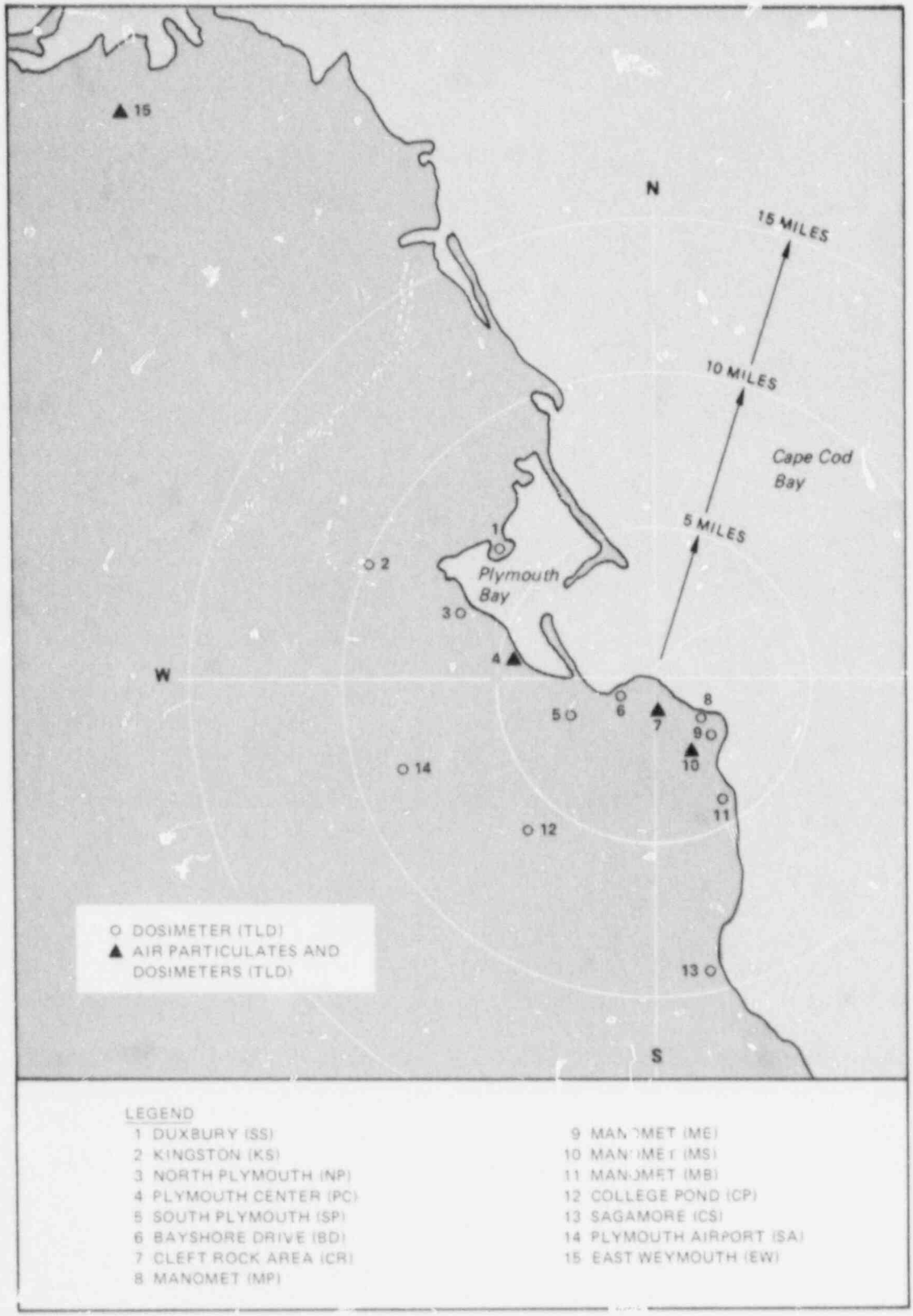


Figure 1. Location of Offsite Monitoring Stations

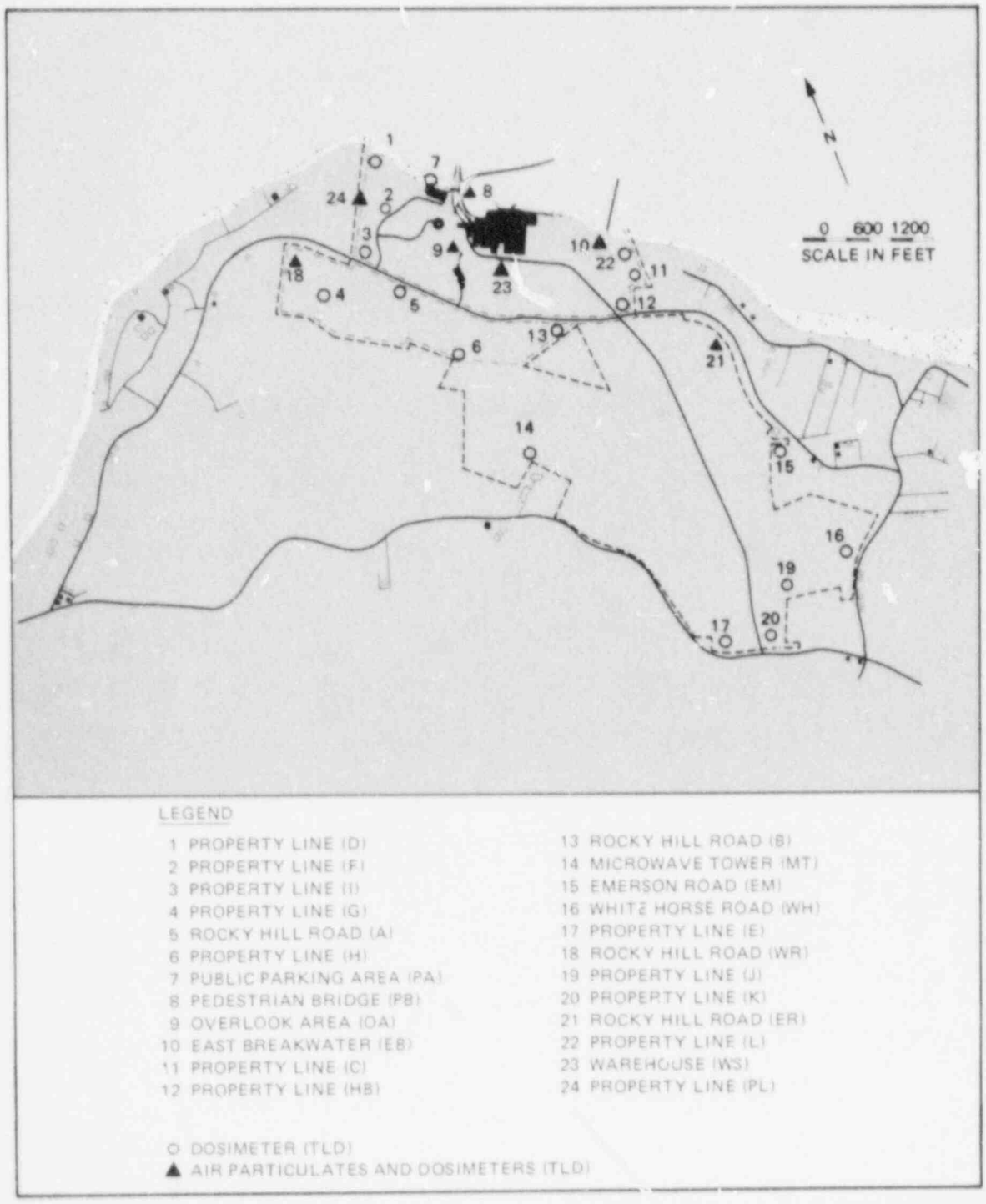
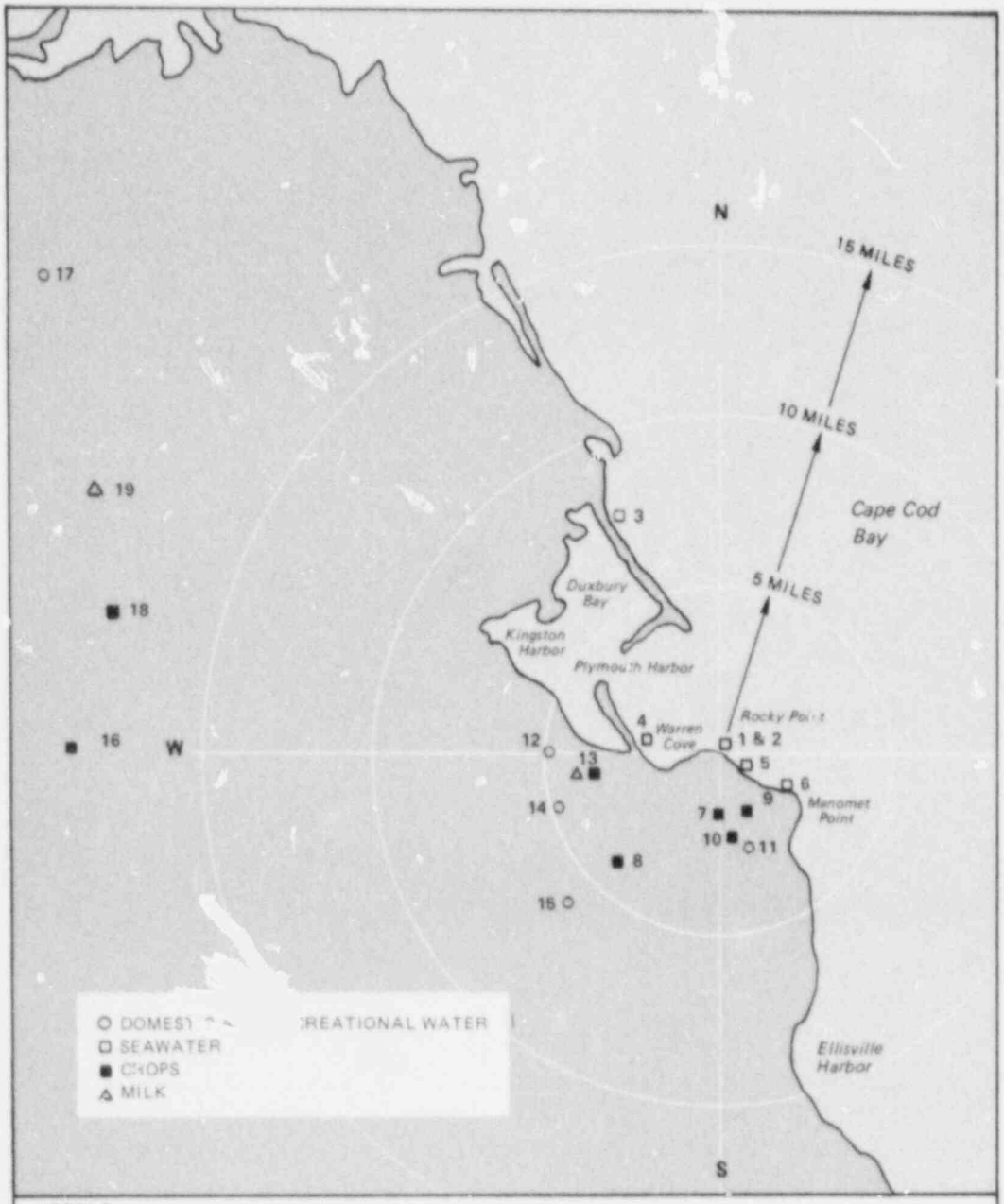


Figure 2. Location of Onsite Monitoring Stations



LEGEND

1 DISCHARGE CHANNEL (DC)
2 COOLING WATER INTAKE (IC)
3 POWDER POINT - DUXBURY (PP)
4 PLYMOUTH BEACH (PLB)
5 PRISCILLA BEACH (PRB)
6 WHITE HORSE BEACH (WEB)
7 BEAVER DAM ROAD BOG (BR)
8 LONG POND ROAD BOG
9 MANOMET (RF)
10 BARTLETT ROAD BOG (BR)
11 WARNER'S POND PUMPING STATION -- MANOMET WELL (MW)
12 DEEP WATER PUMPING STATION -- LOUT POND WELL AND LITTLE SOUTH POND (LW) -- PLYMOUTH
13 PLYMOUTH COUNTY FARM (CF)
14 SOUTH POND
15 COLLEGE POND (CP)
16 BRIDGEWATER STATE FARM (BF)
17 GREAT POND PUMPING STATION (GP) -- SOUTH WEYMOUTH
18 PINE ST BOG, HALIFAX (PS)
19 WHITMAN

Figure 3. Aquatic and Terrestrial Surveillance Stations

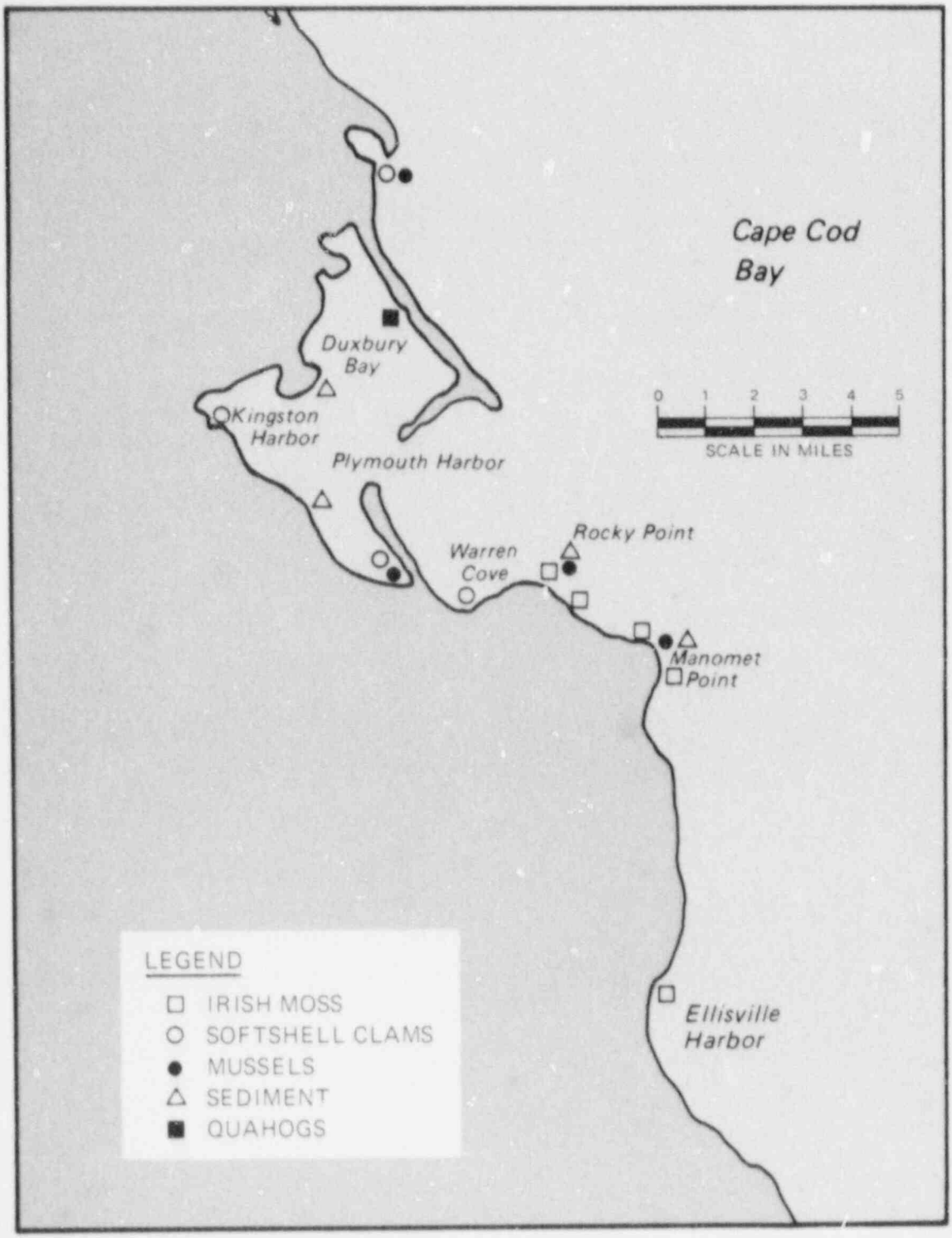


Figure 3A. Mollusc, Algae and Sediment Sampling Stations

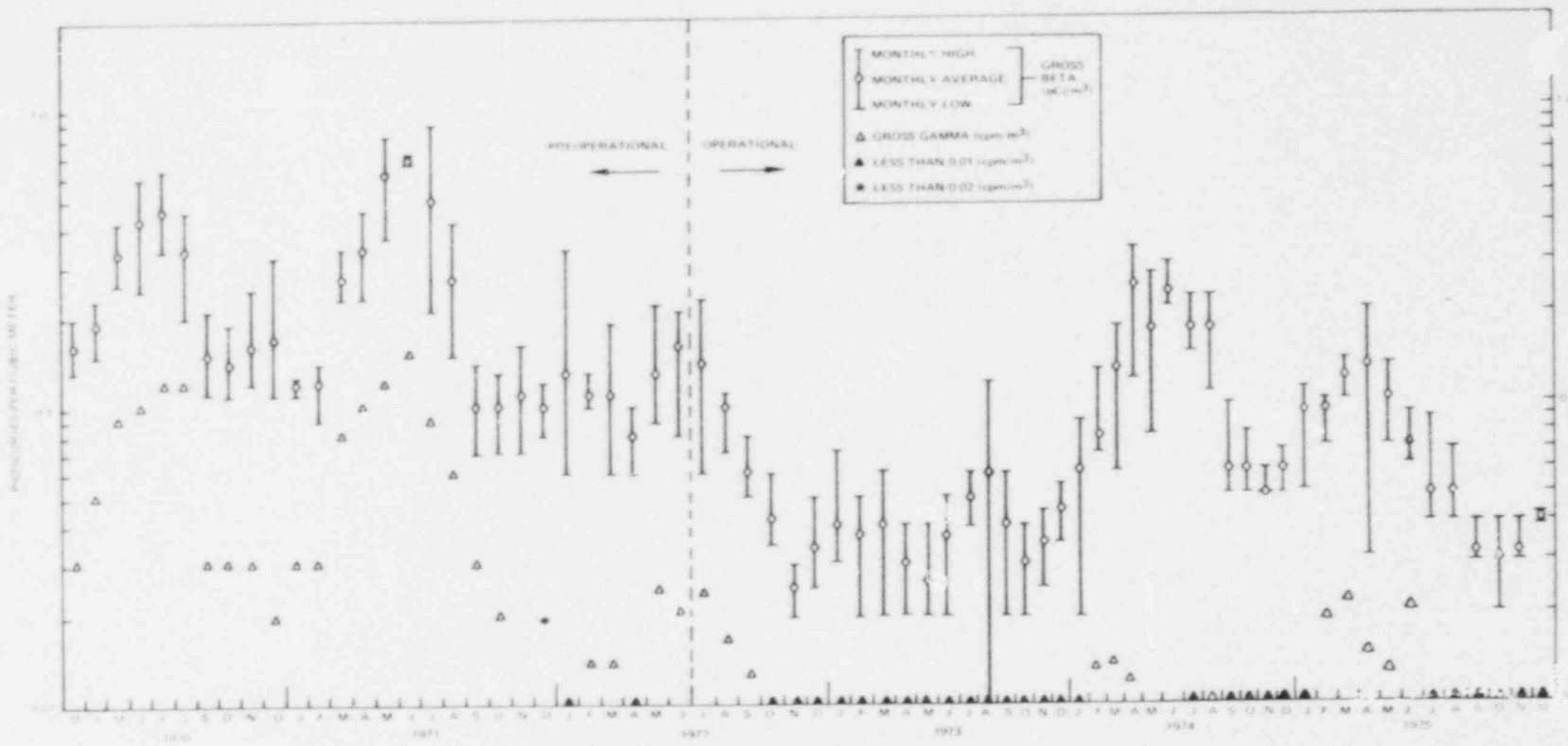


Figure 4. Radioactivity in Air Particulates - East Weymouth (EW)

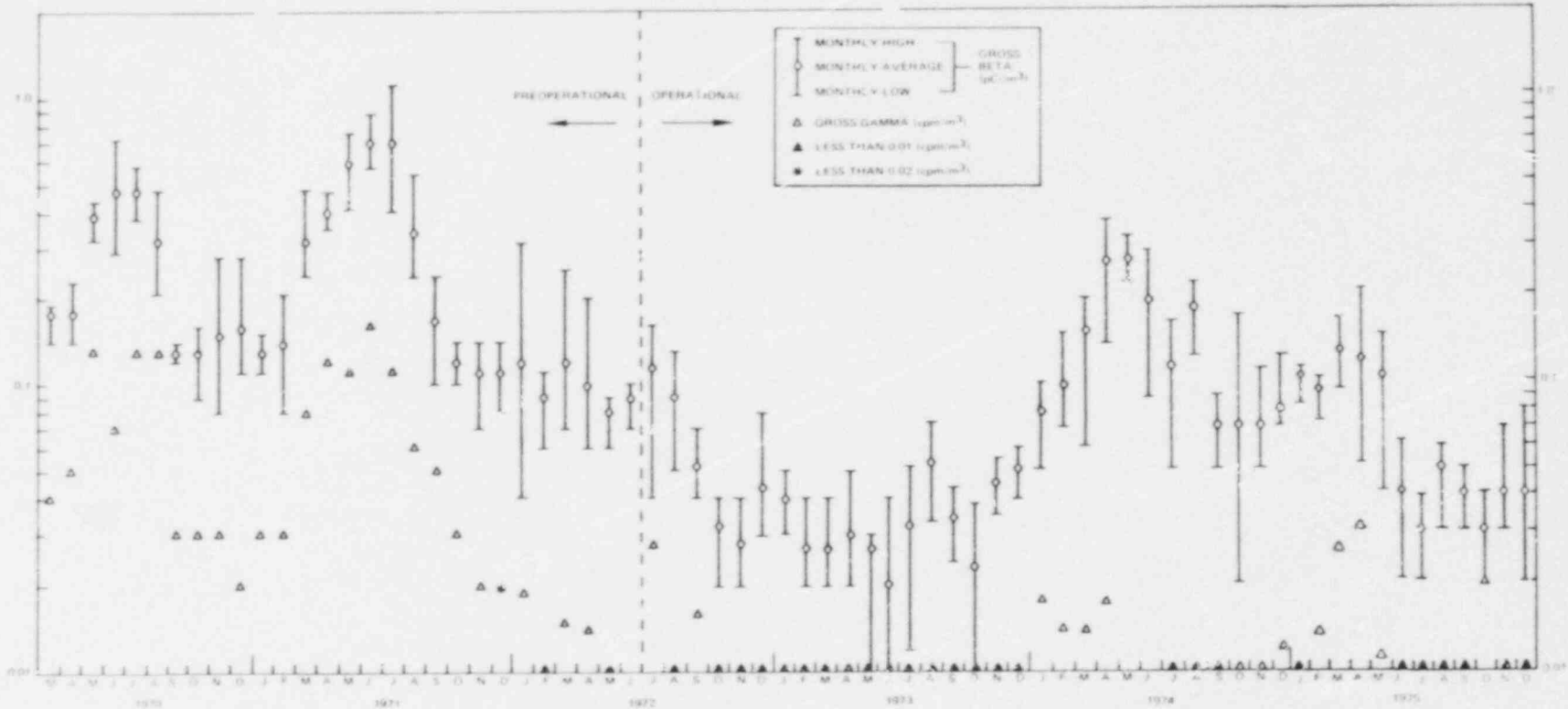


Figure 5. Radioactivity in Air Particulates - Overlook Area (OA)

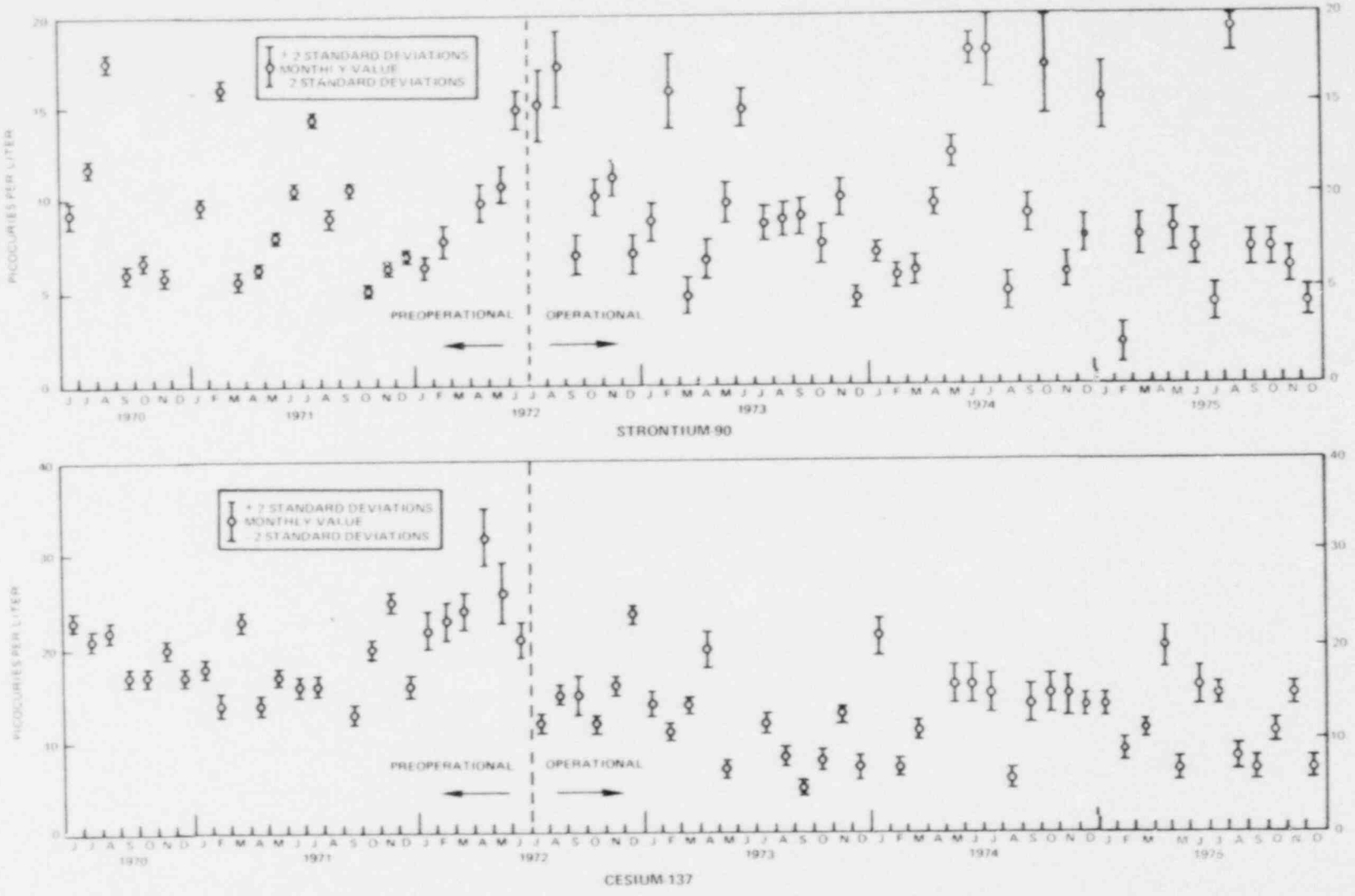


Figure 6. Concentrations of Strontium-90 and Cesium-137 in Milk (Plymouth)

TABLE 1

TERRESTRIAL SAMPLING SCHEDULE

Medium	Frequency	Sample Size	Number of Locations*
Domestic Water	Monthly Composites of Weekly Samples	4 liters	4
Recreation Water	Monthly Composite of Weekly Samples	4 liters	1
All Particulates and Gaseous Iodine	Weekly	10,000 ft^3 air	11
Gamma Radiation	Monthly	4 TLD read-outs per location	39
Precipitation	Monthly	as collected	1
Lettuce and Cabbage	Annually (June or July)	1,000 grams	3
Corn, Potatoes and Hay	Annually (Aug. or Sept.)	1,000 grams	2
Milk	Monthly	2 liters	2
Cranberries	Annually (Sept. or Oct.)	1,000 grams	6

*Locations are given in Tables 2, 3 and 4.

TABLE 1A

MARINE SAMPLING SCHEDULE+

Medium	Frequency	Sample Size	Quantity
Irish Moss (Chondrus crispus)	Alternate months	1 liter dried	1 from each location*
Blue Mussel (Mytulis edulis)	Monthly April-September	1 liter	1 from each location*
Softshell clam (Mya arenaria)	Quarterly, October-March	1 liter	1 from each location*
Quahog (Mercenaria)	Monthly - as available	1 liter	1 from each location*
Lobster (Homarus americanus)	Monthly, May-October	450 grams	2 from each location*
Sediment	Quarterly	Vertical core to 25 cm	1 from each location*
Finfish			
Groups I & II**	Monthly	400 grams	3 from each group
Groups III & IV	Quarterly	400 grams	5 from each group
Seawater	Monthly	4 liters	3 (IC,DC,PP)***
	Quarterly	15 liters	2 (IC,DC)
	June, July, August	4 liters	2 (beaches)

*Sampling locations are shown in Figure 3A. Finfish are from station vicinity.

**Groupings are shown below:

I. Bottom Oriented	II. Near Bottom Distribution	III. Anadromous	IV. Coastal Migratory
Winter flounder	Tautog	Alewife	Bluefish
Yellowtail flounder	Cunner	Rainbow smelt	Atlantic herring
	Atlantic cod	Striped bass	Atlantic menhaden
	Pollock		Atlantic mackerel
	Hakes		

***IC = intake canal. DC = discharge canal. PP = Powder Point, Duxbury.

+This schedule partially implemented in 1975, to be fully implemented in 1976.

TABLE 2

EXTERNAL GAMMA EXPOSURE SURVEILLANCE STATIONS (TLD)

Surveillance Stations				Station Code	Station Location**			
Req'd by Operating License		Not Req'd by Operating License			See Fig.	Item No.	Direction	Distance
Onsite	Offsite	Onsite	Offsite					
Microwave Tower				MT	2	14	S	0.38 m
Overlook Area				OA	2	9	W	0.03 m
Property Line				H	2	6	SSW	0.21 m
Property Line				I	2	3	W	0.14 m
Public Parting Area				PA	2	7	W-NNE	0.07 m
Rocky Hill Road				B	2	13	SSE	0.26 m
Rocky Hill Road				ER	2	21	SE	0.8 m
Rocky Hill Road				WR	2	18	W-WNW	0.3 m
	Cleft Rock Area			CR	1	7	S	0.9 m
	East Weymouth*			EW	1	15	NW	23 m
	Kingston			KS	1	2	WNW	10 m
	Manomet			ME	1	9	SE	2.5 m
	Manomet			MP	1	8	ESE-S	2.25 m
	Manomet			MS	1	10	SSE	2.5 m
	North Plymouth			NP	1	3	WNW	5.5 m
	Plymouth Airport			SA	1	14	WSW	8 m
	Plymouth Center			PC	1	4	W-WNW	4.5 m
	Sagamore			CS	1	13	SSE-S	10 m
	South Plymouth			SP	1	5	WSW	3 m
		East Breakwater		EB	2	10	ESE	0.35 m
		Pedestrian Bridge		PB	2	8	N	0.14 m
		Property Line		C	2	11	SE	0.35 m
		Property Line		D	2	1	NNW	0.37 m
		Property Line		E	2	17	S	1.6 m
		Property Line		F	2	2	NW	0.25 m
		Property Line		G	2	4	W	0.4 m
		Property Line		HB	2	12	SE-SSE	0.35 m
		Property Line		J	2	19	S-SSE	1.6 m
		Property Line		K	2	20	S-SSE	1.7 m
		Property Line		L	2	22	ESE-SE	0.35 m
		Property Line		PL	2	24	NW	0.34 m
		Warehouse		WS	2	23	SSE	0.03 m
			Bayshore Drive	BD	1	6	WNW	0.8 m
			College Pond	CP	1	12	SW	6.5 m
			Duxbury	SS	1	1	NW	5.9 m
			Emerson Road	FM	2	15	SSE	0.96 m
			Manomet	MB	1	11	SSE	3.5 m

* Control Station.

**Distance in miles measured from Unit 1 Reactor Building.

TABLE 3

AIR PARTICULATES AND GASEOUS RADIOIODINE SURVEILLANCE STATIONS

Surveillance Stations				Station Code	Station Location**			
Req'd by Operating License		Not Req'd by Operating License			See Fig.	Item No.	Direction	Distance
Onsite	Offsite	Onsite	Offsite					
Rocky Hill Road				ER	2	21	SE	0.8 m
Overlook Area				OA	2	9	W	0.03 m
Rocky Hill Road				WR	2	18	W-WNW	0.3 m
	Cleft Rock Area			CR	1	7	S	0.9 m
	East Weymouth*			EW	1	15	NW	23 m
	Manomet			MS	1	10	SE	2.5 m
	Plymouth Center			PC	1	14	W-WNW	4.5 m
		East Breakwater		EB	2	10	ESE	0.35 m
		Pedestrian Bridge		PB	2	8	N	0.14 m
		Property Line		PL	2	24	NW	0.34 m
		Warehouse		WS	2	23	SSE	0.03 m

* Control Station.

**Distances in miles, measured from Unit 1 Reactor Building.

TABLE 4

TERRESTRIAL SAMPLING LOCATIONS

Medium	Location	Direction & Distance from Unit 1 Reactor		Refer to Figure 3 Item #
Domestic Water	South Pond	4.75 miles	WSW	14
	Manomet Well	2.75 miles	SSE	11
	Lout Pond	4.75 miles	W	12
	Great Pond	25 miles	WNW	17
Recreation Water	College Pond	6.5 miles	SW	15
Air Particulates	Table 2-3	Table 2-3		Figures 1 and 2
Gamma Radiation	Table 2-4	Table 2-4		Figures 1 and 2
Precipitation	South Pond	4.75 miles	WSW	14
Lettuce & Cabbage	Plymouth County Farm	3.5 miles	W	13
	Bridgewater State Farm	20 miles	W	16
	Karbott Farm	2.0 miles	SSE	9
Hay & Potatoes	Plymouth County Farm	3.5 miles	W	13
	Bridgewater State Farm	20 miles	W	16
Corn	Plymouth County Farm	3.5 miles	W	13
	Robbins Farm	2.0 miles	SSE	9
Milk	Plymouth County Farm	3.5 miles	W	13
	Peaceful Meadows Farm	21 miles	NW	19
Cranberries	Long Pond Road Bog	4.25 miles	SW	8
	Beaver Dam Road Bog	2.0 miles	S	7
	Manomet Pt. Rd. Bog	2.6 miles	SE	8 (Figure 1)
	Bartlett Rd. Bog	2.75 miles	SSE-S	10
	Hall's Bog	0.6 miles	SE	12 (Figure 2)
	Pine St. Bog	17 miles	WNW	18

TABLE 5

ENVIRONMENTAL SAMPLE ANALYSIS PARAMETERS

Sample Type[f] and Number	Analysis	Frequency	Detection Limit	Aliquot
Air Particulate (7)	Gross beta	Weekly	4×10^{-3} pCi/m^3	10,080 ft^3
	Gross gamma	Monthly	2×10^{-3} cpm/m^3[a]	10,080 ft^3
	^{131}I	Weekly	2×10^{-2} pCi/m^3	10,080 ft^3
Gaseous Iodine (7)	^{131}I	Weekly	4×10^{-2} pCi/m^3	10,080 ft^3
Nonsaline Water (4)	Gross beta	Monthly	1 pCi/liter	1,000 ml
	Gross gamma	Monthly	5 cpm/liter[c]	4,000 ml
	Gamma spectrum	(e)	(d)	4,000 ml
	^{90}Sr	Monthly	0.5 pCi/liter	1,000 ml
	^{3}H	Monthly	2.5 pCi/ml	4 ml
Crops and Marine Life	Gross beta	Each Sample	0.2 pCi/g	20 g
	Gross gamma	Each Sample	0.01 cpm/g[c]	1,000 g
	Gamma spectrum	Each Sample	(d)	1,000 g
	^{90}Sr	Each Sample	0.005 pCi/g	100 g
Seawater (3)	Fractional gross beta	Monthly	5 pCi/liter	500 ml
	Gross gamma	Monthly	5 cpm/liter[c]	4,000 ml
	Gamma spectrum	(e)	(d)	4,000 ml
	^{3}H	Quarterly	2.5 pCi/ml	4 ml
	^{90}Sr	Quarterly	0.5 pCi/liter	15,000 ml
	^{137}Cs	Quarterly	0.05 pCi/liter	15,000 ml
	^{54}Mn	Quarterly	5 pCi/liter	1,000 ml
	^{58}Co	Quarterly	5 pCi/liter	1,000 ml
	^{60}Co	Quarterly	5 pCi/liter	1,000 ml
	^{65}Zn	Quarterly	5 pCi/liter	1,000 ml
	^{131}I	Quarterly	5 pCi/liter	1,000 ml
Milk (2)	^{90}Sr	Monthly	2 pCi/liter	1,000 ml
	^{137}Cs	Monthly	1 pCi/liter	1,000 ml
	^{140}Ba	Monthly	5 pCi/liter	1,000 ml
	^{131}I	Monthly	2 pCi/liter	2,000 ml
Bottom Sediment (1)	Gross beta	Semiannually	2 pCi/g	1 g
	Gamma Spectrum	Semiannually	(d)	1,000 g
	^{90}Sr	Semiannually	0.005 pCi/g	100 g
Background Radiation (19)	Gamma exposure rate[a]	Monthly	1 uR/hr	1-month exposure

NOTE: Provided by Interex Corp., Natick, Massachusetts

(a) Measured with thermoluminescent dosimeter.
(b) In the counter used, 1 cpm corresponds to 2.2 pCi of ^{137}Cs.
(c) In the counter used, 1 cpm corresponds to 9 pCi of ^{137}Cs.
(d) Ge(Li) detection sensitivities are given in Table 5A.
(e) Selective gamma analyses are performed based on gross gamma results, with at least one gamma spectrum analysis each quarter.
(f) Numbers in parenthesis are technical specification requirements; actual number of samples is usually greater than the minimum.

TABLE 5A

TYPICAL DETECTION SENSITIVITIES ACHIEVABLE BY HIGH RESOLUTION Ge(Li) GAMMA SPECTROSCOPIC ANALYSIS OF ENVIRONMENTAL SAMPLES

Nuclide	Water (1 liter) pCi/I	Solids (400 gm) pCi/gm	Filters pCi/total filter
Be-7	8E+01	2E-01	2E-01
K-40	2E+02	5E=01	5E+01
Cr-51	8E+01	2E-01	8E+01
Mn-54	8	2E-02	2
Co-59	8	2E-02	2
Fe-59	1E+01	4E-02	3
Co-60	8	2E-02	2
Zr-95	1E+01	4E-02	3
Ru-103	8	2E-02	2
Ru-106	8E+01	2E-01	8E+01
I-131	1E+01	3E-02	2
Cs-134	9	2E-02	2
Cs-137	9	2E-02	2
Ba-140	3E+01	8E-02	6
La-140	2E+01	4E-02	2E+01
Ce-141	2E+01	4E-02	3
Ce-144	8E+01	2E-01	2E+01
Ra-226	6E-01	1E-01	1E+01
Th-228	!E+01	2E-02	1E+01
Zn-65	2E+01	3E-02	3

TABLE 6

AIR PARTICULATES - GROSS BETA CONCENTRATIONS IN WEEKLY SAMPLES (pCi/m^3)

Period (1975)	East Weymouth	Plymouth Center	Cleft Rock Area	Manomet Substation	Rocky Hill Road (West)	Property Line	Overlook Area	Pedestrian Bridge	East Breakwater	Rocky Hill Road (East)	Warehouse
June 26 - July 2	0.09	0.07	0.07[a]	0.07	0.06	0.07	0.05	0.07	0.06	0.06	0.07
July 2 - July 10	0.04	0.05	0.06[a]	0.06	0.05	0.05	0.04	0.05	0.05	0.04	0.05
July 10 - July 17	0.04	0.04	0.04[a]	0.04	0.03	0.03	0.02	0.05	0.03	0.03	0.03
July 17 - July 24	0.04	0.04	0.04[a]	0.04	0.05	0.02	0.03	0.04	0.04	0.04	0.04
July 24 - July 31	0.04	0.04	0.05	0.04	0.05	0.06	0.04	0.02[a]	0.03	0.05	0.04
July 31 - Aug 8	0.04	0.05	0.04	0.02	0.05	0.04	0.03	0.05	0.05	0.05[a]	0.02[a]
Aug 8 - Aug 14	0.07	0.07	0.07	0.07	0.06	0.07	0.06	0.06	0.06	0.01[a]	0.06
Aug 14 - Aug 21	0.04	0.05	0.05	0.04	0.04	0.02	0.03	0.05	0.04	0.05[a]	0.04
Aug 21 - Aug 28	0.04	0.04	0.05	0.05	0.04	0.05	0.03	0.05	0.05	0.05	0.06
Aug 28 - Sep 4	0.04	0.04	0.04	0.04	0.03	(b)[c]	0.04[a]	0.04	0.05	0.04	0.05
Sep 4 - Sep 11	0.04	0.05	0.05	0.05	0.04	0.04[c]	0.03[a]	0.05	0.05[a]	0.04	0.05
Sep 11 - Sep 18	0.03	0.03	0.03	0.04	0.04	0.04	0.04[a]	0.04	0.04	0.03	0.05[a]
Sep 18 - Sep 25	0.03	0.03	0.03	0.03	0.04	0.03	0.03[a]	0.03	(e)	0.04[a]	0.03
Sep 25 - Oct 2	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	(e)	0.03[a]	(e)
Oct 2 - Oct 9	0.03	(e)	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.03
Oct 9 - Oct 16	0.04	0.04	0.05	0.04	0.02	0.04	0.03	0.04	0.03	0.04	0.04
Oct 16 - Oct 23	(e)	0.03	0.03	0.04	0.02	0.03	0.02	0.04	0.04	0.03	<0.01
Oct 23 - Oct 30	0.02	0.04	0.01	0.03	0.03	0.03	0.03	0.02[d]	0.03	0.03	0.02
Oct 30 - Nov 6	0.03	0.03	0.04	0.04	0.03	0.03	0.02	0.03	0.03	0.04	0.02
Nov 6 - Nov 13	0.03	0.03	0.03	(e)	0.04	0.03	0.03	0.03	0.03	0.02	0.03
Nov 13 - Nov 20	0.04	0.04	0.05	0.04	0.04	0.04	0.03	0.04	0.04	0.04	0.03
Nov 20 - Nov 26	0.03	0.03	0.04	0.03	0.04	0.02	0.07	0.04	0.03	0.04	0.02
Nov 26 - Dec 4	0.03	0.04	0.04	0.04	0.04	0.03	0.04	0.05	0.06	0.04	0.05
Dec 4 - Dec 11	0.03	0.03	0.03	0.04	0.03	0.03	0.08	0.03	0.03	0.04	0.05[a]
Dec 11 - Dec 17	0.03	0.02	0.03	0.04	0.03	0.03	0.03	0.03	0.04	0.04	0.10
Dec 17 - Dec 23	(b)[c]	0.03	0.02	0.03	0.04	0.02	0.04	0.03	0.04	0.04	0.04
Dec 23 - Dec 30	0.03	0.03	0.04	0.04	0.03	0.04	0.02	0.03	0.04	0.04	0.06

(a) Instrument malfunction - incomplete or low volume sample.
(b) Instrument inaccessable - no samole.
(c) Two-week sample.
(d) Sample removed 10/28.
(e) Instrument malfunction - no sample.

TABLE 7

AIR PARTICULATES - GROSS GAMMA CONCENTRATION IN MONTHLY COMPOSITES
($cpm/m^3 \times 10^{-3}$) (a)

Collection Period (1975)	Control	Offsite			Onsite						
	East Weymouth	Plymouth Center	Cleft Rock Area	Manomet Substation	Rocky Hill Road (West)	Property Line	Overlook Area	Pedestrian Bridge	East Breakwater	Rocky Hill Road (East)	Warehouse
July	9	8	9	13	6	3	3	9	9	5	4
August	4	7	<3	9	8	<3	6	7	7	11	7
September	5	<3	5	7	9	4	<3	<3	14	8	<3
October	11	9	7	8	4	5	20	7	4	<3	6
November	4	<3	<3	5	<3	6	8	<3	<3	<3	8
December	<3	<3	12	<3	<3	<3	<3	<3	3	<3	10

(a) Analytical error is ±2 or 10%, whichever is larger.

TABLE 7A

AIR PARTICULATES - GAMMA ISOTOPE CONCENTRATION IN MONTHLY COMPOSITES (pCi/m^3) (a)

Collection Period (1975)	Control	Offsite			Onsite						
	East Weymouth	Plymouth Center	Cleft Rock Area	Manomet Substation	Rocky Hill Road (West)	Property Line	Overlook Area	Pedestrian Bridge	East Breakwater	Rocky Hill Road (East)	Warehouse
July											
Cs-137	<0.006	<0.005	<0.009	<0.007	<0.006	<0.007	<0.006	<0.007	<0.006	<0.005	<0.005
Mn-54	<0.007	<0.005	<0.008	<0.007	<0.005	<0.006	<0.006	<0.007	<0.005	<0.005	<0.005
Zn-65	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.009
Co-58	<0.006	<0.004	<0.008	<0.006	<0.005	<0.006	<0.005	<0.007	<0.005	<0.005	<0.004
Co-60	<0.006	<0.005	<0.01	<0.008	<0.005	<0.006	<0.007	<0.006	<0.005	<0.005	<0.005
Other				0.07±0.07 $\bar{K}$-40			0.06±0.05 $\bar{K}$-40	0.3 ±0.08 $\bar{K}$-40 0.009 ±0.007 $\bar{Th}$-228	0.07±0.05 $\bar{K}$-40	0.06±0.05 $\bar{K}$-40	
October											
Cs-137	<0.009	<0.008	<0.007	<0.007	<0.006	<0.007	<0.007	<0.007	<0.006	<0.008	<0.007
Mn-54	<0.008	<0.008	<0.006	<0.007	<0.006	<0.006	<0.007	<0.008	<0.006	<0.008	<0.007
Zn-65	<0.02	<0.02	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.02	<0.02
Co-58	<0.008	<0.008	<0.006	<0.007	<0.007	<0.006	<0.007	<0.01	<0.005	<0.008	<0.007
Co-60	<0.007	<0.009	<0.006	<0.007	<0.007	<0.006	<0.007	<0.008	<0.006	<0.009	<0.007
Other	0.26±0.09 $\bar{K}$-40				0.1 ±0.09 $\bar{K}$-40	0.09±0.09 $\bar{K}$-40	0.02±0.01 $\bar{K}$-40	0.15±0.08 $\bar{K}$-40	0.006±0.004 $\bar{Th}$-228		

(a) Results of Ge(Li) spectrometry. Analysis required quarterly.

TABLE 7B

AIR PARTICULATES - STRONTIUM-90 CONCENTRATION IN QUARTERLY COMPOSITES
($pCi/m^3 \times 10^{-4}$)

Collection Period (1975)	Control	Offsite			Onsite						
	East Weymouth	Plymouth Center	Cleft Rock Area	Manomet Substation	Rocky Hill Road (West)	Property Line	Overlook Area	Pedestrian Bridge	East Breakwater	Rocky Hill Road (East)	Warehouse
Jan - Mar	13 ± 3	13 ± 2	<2	<2	12 ± 2	8 ± 2	11 ± 4	12 ± 2	11 ± 2	14 ± 4	13 ± 2
Apr - June	<6	19 ± 3	17 ± 3	<4	6 ± 2	21 ± 5	14 ± 4	19 ± 4	16 ± 2	10 ± 2	17 ± 4
July - Sep	6 ± 1	5 ± 1	6 ± 1	5 ± 1	7 ± 2	4 ± 1	<3	6 ± 1	4 ± 1	5 ± 1	6 ± 1
Oct - Dec	3 ± 1	4 ± 1	3 ± 1	5 ± 1	3 ± 1	2 ± 2	3 ± 2	1 ± 1	7 ± 2	3 ± 1	<3

TABLE 8

PARTICULATE IODINE-131 IN AIR SAMPLES (pCi/m^3)
JULY - DECEMBER 1975

Collection Period	Control	Offsite			Onsite						
	East Weymouth	Plymouth Center	Cleft Rock Area	Manomet Substation	Rocky Hill Road (West)	Property Line	Overlook Area	Pedestrian Bridge	East Breakwater	Rocky Hill Road (East)	Warehouse
June 26 - July 2	<0.02	<0.03	<0.04[a]	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
July 2 - July 10	<0.02	<0.02	<0.05[a]	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<0.02
July 10 - July 17	<0.04	<0.04	<0.09[a]	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
July 17 - July 24	<0.05	<0.05	<0.11[a]	<0.05	<0.05	<0.06	<0.05	<0.05[f]	<0.05	<0.05	<0.05
July 24 - July 31	<0.03	<0.03	<0.03	<0.03	0.03+0.02	<0.03	<0.03	<0.04[f]	<0.03	<0.03	<0.03[a]
July 31 - Aug 8	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.05[a]
Aug 8 - Aug 14	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02[a]	<0.02
Aug 14 - Aug 21	<0.02	<0.02	<0.02	0.02+0.01	0.02+0.01	<0.02	<0.02	<0.02	<0.02	0.02+0.01[a]	<0.02
Aug 21 - Aug 28	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Aug 28 - Sep 4	<0.05	<0.05	<0.05	<0.05	<0.05	(b)	<0.05	<0.05	<0.05	<0.05	<0.05
Sep 4 - Sep 11	<0.04	<0.04	<0.03	<0.04	<0.03	<0.03[c]	<0.05[a]	<0.04	<0.04[a]	<0.04	<0.04
Sep 11 - Sep 18	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04[a]	<0.04	<0.04	<0.04	<0.04
Sep 18 - Sep 25	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.06[a]	<0.04	(e)	<0.04[a]	<0.05
Sep 25 - Oct 2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	(e)	<0.03	(e)
Oct 2 - Oct 9	<0.02	(e)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<0.02
Oct 9 - Oct 16	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02+0.01	<0.02
Oct 16 - Oct 23	(e)	<0.02	<0.02	<0.02	<0.02	0.02+0.02	0.04+0.02	<0.02	0.03+0.02	<0.02	0.03+0.02
Oct 23 - Oct 30	<0.02	<0.02	0.02+0.01	<0.02	<0.02	<0.02	<0.02	<0.03[d]	<0.02	<0.02	<0.03
Oct 30 - Nov 6	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<0.02	<0.03
Nov 6 - Nov 13	<0.02	0.02+0.01	<0.02	(e)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Nov 13 - Nov 20	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03
Nov 20 - Nov 26	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.03	<0.02	<0.02	<0.02
Nov 26 - Dec 4	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Dec 4 - Dec 11	<0.02	<0.03	<0.02	<0.03	<0.02	<0.02	<0.03	<0.03	<0.02	<0.02	<0.03[a]
Dec 11 - Dec 17	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.04
Dec 17 - Dec 23	(b)[c]	<0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.05	<0.05	0.06+0.03	<0.05
Dec 23 - Dec 30	<0.01	0.02+0.01	<0.03	0.02+0.01	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02+0.02

(a) Instrument malfunction - incomplete or low volume sample.
(b) Instrument inaccessable - no sample.
(c) Two week sample.
(d) Sample removed 10/28.
(e) Instrument malfunction - no sample.
(f) Counting errors are ±2 Standard Deviations; "less than" values are 3 Standard Deviations.

TABLE 8A

GASEOUS IODINE-131 IN AIR SAMPLES (pCi/m^3)
JULY - DECEMBER 1975

Collection Period	Control	Offsite			Onsite						
	East Weymouth	Plymouth Center	Cleft Rock Area	Manomet Substation	Rocky Hill Road (West)	Property Line	Overlook Area	Pedestrian Bridge	East Breakwater	Rocky Hill Road (East)	Warehouse
June 26 - July 2	<0.03	<0.04	<0.06 [a]	<0.04	<0.03	<0.04	<0.04	<0.04	<0.03	<0.03	<0.04
July 2 - July 10	<0.05	<0.05	<0.11 [a]	<0.05	<0.05	<0.05	<0.05	0.06±0.03	<0.05	0.05±0.03	<0.05
July 10 - July 17	<0.05	<0.05	<0.11 [a]	<0.05	<0.04	<0.05	<0.05	0.09±0.04	<0.05	<0.05	<0.05
July 17 - July 24	<0.04	<0.05	<0.10 [a]	<0.05	<0.04	<0.05	<0.05	0.08±0.04	0.06±0.03	<0.04	<0.05
July 24 - July 31	<0.03	<0.03	<0.03	<0.03	0.05±0.02	<0.03	<0.03	0.06±0.03 [a]	0.04±0.02	<0.04	<0.03
July 31 - Aug 8	<0.04	<0.04	<0.04	<0.05	<0.04	<0.04	<0.05	<0.04	<0.04	<0.05	0.24±0.06 [a]
Aug 8 - Aug 14	<0.03	<0.04	0.07±0.02	<0.03	<0.03	<0.04	<0.03	<0.04	<0.04	<0.03 [a]	0.11±0.02
Aug 14 - Aug 21	<0.04	<0.04	0.05±0.03	<0.04	<0.04	<0.04	<0.04	<0.04	0.06±0.03	<0.04 [a]	0.06±0.03
Aug 21 - Aug 28	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.06±0.03	0.08±0.02	<0.04	0.08±0.02
Aug 28 - Sep 4	<0.04	<0.04	<0.04	<0.04	<0.04	(b)	<0.04	0.07±0.03	0.09±0.03	0.07±0.03	0.18±0.03
Sep 4 - Sep 11	<0.05	<0.06	<0.06	<0.06	<0.05	<0.04 [c]	<0.08 [a]	<0.06	0.10±0.04	<0.06	<0.06
Sep 11 - Sep 18	<0.07	<0.07	<0.08	<0.07	<0.07	<0.08	<0.08 [a]	<0.08	<0.08 [a]	0.10±0.05	0.58±0.06
Sep 18 - Sep 25	<0.04	<0.04	<0.04	<0.04	<0.04	<0.05	<0.07 [a]	<0.04	(e)	<0.04 [e]	<0.05 [a]
Sep 25 - Oct 2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	(e)	<0.04	(e)
Oct 2 - Oct 9	<0.04	(e)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.03	<0.04	0.05±0.02
Oct 9 - Oct 16	<0.04	<0.03	<0.04	<0.04	<0.04	<0.04	<0.05	<0.04	<0.04	<0.04	<0.05
Oct 16 - Oct 23	(e)	<0.04	<0.04	<0.04	<0.04	<0.04	0.04±0.03	<0.04 [d]	0.04±0.03	<0.04	0.04±0.03
Oct 23 - Oct 30	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.04	<0.03	<0.03	<0.04
Oct 30 - Nov 6	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05±0.03	<0.03	<0.04	<0.04	<0.04
Nov 6 - Nov 13	<0.04	<0.04	<0.04	(e)	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Nov 13 - Nov 20	<0.03	<0.03	0.03±0.02	<0.03	<0.03	0.03±0.02	<0.03	0.03±0.02	<0.03	<0.03	0.03±0.02
Nov 20 - Nov 26	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07±0.04	<0.06	<0.05	<0.05	<0.05
Nov 26 - Dec 4	<0.03	<0.03	<0.03	<0.03	<0.02	<0.02	<0.03	<0.03	0.04±0.02	<0.03	0.04±0.02
Dec 4 - Dec 11	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.22±0.04	<0.05	<0.05	<0.05	<0.06 [a]
Dec 11 - Dec 17	<0.03	<0.04	<0.03	<0.04	<0.03	<0.03	<0.03	<0.04	<0.03	<0.03	0.17±0.03
Dec 17 - Dec 23	(b)	<0.06	<0.06	<0.06	<0.06	<0.06	0.06±0.04	<0.07	<0.06	0.10±0.05	<0.07
Dec 23 - Dec 30	<0.02 [c]	<0.03	<0.04	<0.03	<0.03	<0.03	<0.03	<0.03	0.04±0.02	<0.02	0.04±0.02

(a) Instrument malfunction - incomplete or low volume sample.
(b) Instrument inaccessable - no sample.
(c) Two week sample.
(d) Sample removed 10/28.
(e) Instrument malfunction - no sample.
(f) Counting errors are ±2 Standard Deviations; "less than" values are 3 Standard Deviations.

TABLE 9

EXTERNAL GAMMA EXPOSURE RATES, JULY - DECEMBER 1975 (μR/hr) [a]

Onsite Monitoring Locations	July	Aug	Sep	Oct	Nov/Dec
Overlook Area (OA)	(b)	31.9	31.5	56.9	145.5
East Breakwater (EB)	7.3	11.2	11.2	11.5	11.3
Emerson Road (EM)	7.5	10.0	10.0	11.0	9.2
Microwave Tower (MT)	6.7	9.7	10.3	10.4	11.4
Public Parking Area (PA)	8.7	12.6	12.6	11.5	(b)
Pedestrian Bridge (PB)	12.5	17.6	17.6	26.5	31.7
White Horse Road (WH)	6.9	8.3	9.6	8.6	6.7
Property Line (A)	9.2	12.4	10.8	10.8	15.1
Property Line (B)	7.9	10.9	12.4	12.1	13.4
Property Line (C)	(b)	9.7	11.2	10.6	11.0
Property Line (D)	8.2	10.9	10.6	10.1	10.2
Property Line (E)	6.4	8.6	9.0	9.6	8.2
Property Line (F)	9.8	12.5	12.0	11.5	12.3
Property Line (G)	7.9	11.2	10.9	11.1	11.6
Property Line (H)	8.6	14.4	11.2	11.8	12.8
Property Line (I)	7.9	9.8	10.3	8.2	10.6
Property Line (J)	6.9	8.0	9.0	8.3	8.2
Property Line (K)	6.3	7.3	8.6	9.4	8.8
Property Line (L)	8.5	10.9	10.7	10.3	10.7
Property Line (PL)	8.7	10.1	11.2	10.4	11.5
Warehouse (WS)	12.8	17.4	16.4	9.6	82.4
Property Line (HB)	8.2	11.0	10.5	12.5	11.1
Average Onsite	10.6	12.1	12.1	11.3	21.6
Offsite Monitoring Locations					
College Pond (CP)	5.9	7.3	8.4	8.3	7.1
Cleft Rock Area (CR)	7.0	8.8	9.6	9.6	9.0
Sagamore (CS)	6.9	9.4	10.3	10.4	10.3
Rocky Hill Rd East (ER)	6.7	8.8	10.0	8.2	9.6
East Weymouth (EW)	6.4	8.0	9.0	9.7	9.0
Kingston (KS)	5.6	6.1	8.1	8.2	7.4
Manomet (MB)	4.8	(b)	12.3	(b)	(b)
Manomet (ME)	7.9	9.4	11.1	11.7	11.2
Manomet (MP)	5.9	7.3	9.2	12.5	9.3
Manomet Substation (MS)	7.3	8.6	10.5	11.1	10.4
North Plymouth (NP)	6.3	8.5	9.6	9.7	6.5
Plymouth Center (PC)	5.5	6.1	8.0	7.6	7.5
Plymouth Airport (SA)	5.9	8.0	8.9	8.1	7.4
South Plymouth (SP)	6.4	8.2	10.3	9.9	10.9
Duxbury (SS)	6.2	6.5	9.5	7.6	7.7
Rocky Hill Rd West (WR)	8.2	9.5	11.4	11.1	12.6
Bayshore Drive (BD)	(b)	(b)	(c)	(c)	(c)
Average Offsite	6.4	8.0	9.7	7.9	8.1

(a) Measured with CaSO4(Dy) Radi-guard dosimeters.
(b) Dosimeter stolen.
(c) Dosimeter not put out.

TABLE 10

RADIONUCLIDE CONCENTRATIONS IN MILK (pCi/l)

Analysis	Collection Period (1975)	Plymouth (County Farm)	Bridgewater	Local Store
Cs-137	July	15 ± 1	16 ± 2	4 ± 1
	Aug	8 ± 1	11 ± 2	14 ± 3
	Sep	7 ± 1	13 ± 1	7 ± 1
	Oct	11 ± 1	12 ± 1	8 ± 1
	Nov	15 ± 1	4 ± 1	16 ± 2
	Dec	7 ± 1	12 ± 1	10 ± 1
Sr-90	April[a]	7 ± 1	8 ± 1	10 ± 1
	July	4 ± 1	18 ± 1	15 ± 1
	Aug	19 ± 2	6 ± 1	5 ± 1
	Sep	7 ± 1	5 ± 1	5 ± 1
	Oct	7 ± 1	7 ± 1	6 ± 1
	Nov	6 ± 1	8 ± 1	9 ± 1
	Dec	4 ± 1	6 ± 1	6 ± 1
I-131	July	<2	<2	<2
	Aug	<2	<2	<2
	Sep	<5[b]	<5[b]	<4[b]
	Oct	<2	<2	<2
	Nov	<2	<2	<2
	Dec	<2	<2	<2
Ba/La-140	July	<5	<5	<5
	Aug	<20[b]	<20[b]	<20[b]
	Sep	<5	<5	<5
	Oct	<5	<5	<5
	Nov	<5	<5	<5
	Dec	<5	<5	<5

(a) Data not included in previous report.
(b) Determined by gamma spectrometry.

TABLE 11

RADIOACTIVITY IN CROPS

Sample Type	Location	Sample Date (1975)	Results - pCi/gm						
			Gross Beta	Sr-89	Sr-90	I-131	Co-58	Co-60	K-40	Cs-137
Corn	County Farm	Aug 14	4.9 ±0.5	NA	<0.005	<0.008	<0.01	<0.01	2.9±0.3	<0.01
Corn	Bridgewater Farm*	Aug 25	0.4 ±0.2	<0.01	0.007±0.005	<0.4	<0.02	<0.01	3.1±0.3	<0.01
Corn	Karbott Farm	Aug 25	3.8 ±0.4	<0.01	0.008±0.005	<0.6	<0.02	<0.02	5.3±0.5	<0.02
Corn	Karbott Farm	Aug 27	3.5 ±0.4	<0.01	<0.005	<0.4	<0.02	<0.02	3.8±0.4	<0.02
Cranberries	Manomet Pt Rd Bog	Sep 15	0.81±0.02	<0.02	0.094±0.003	NA	<0.05	<0.04	<1	0.52±0.05
Cranberries	Beaver Dam Rd Bog	Sep 29	1.7 ±0.1	<0.01	0.088±0.002	<0.2	<0.02	<0.02	<0.4	0.18±0.02
Cranberries	Hall's Bog	Sep 29	1.3 ±0.1	<0.04	0.045±0.004	<0.4	<0.04	<0.04	<0.9	0.3 ±0.04
Cranberries	Long Pond Rd Bog	Sep 29	0.91±0.02	<0.01	0.035±0.002	<0.3	<0.04	<0.03	<0.8	<0.04
Cranberries	Halifax*	Sep 30	1 ±0.1	<0.02	0.043±0.002	<0.2	<0.03	<0.03	<0.5	<0.04
Cranberries	Bartlett Rd Bog	Oct 13	13 ±1	<0.03	0.03 ±0.002	NA	<0.02	<0.02	0.5±0.2	0.05±0.01
Hay	Bridgewater Farm*	Jul 28	6.5 ±0.7	<0.02	0.108±0.005	<0.01	<0.01	<0.02	4 ±0.4	<0.01
Hay	County Farm	Aug 14	14 ±1	<0.09	0.457±0.046	NA	<0.1	<0.7	20 ±2	0.12±0.06
Hay	Bridgewater Farm*	Aug 25	7.5 ±0.8	<0.04	0.382±0.038	<1	<0.06	<0.05	9.3±0.09	0.11±0.06
Lettuce	Karbott Farm	Aug 25	0.8 ±0.2	<0.01	<0.005	<0.2	<0.01	<0.01	2.8±0.3	<0.01
Lettuce	County Farm	Aug 28	1.5 ±0.2	<0.01	0.034±0.005	<0.2	<0.01	<0.01	3.1±0.3	<0.02
Potatoes	County Farm	Oct 9	5.7 ±0.6	<0.01	<0.005	<0.01	<0.01	<0.1	5.8±0.8	<0.01

NA = Not analyzed
* Control locations

TABLE 12

RADIOACTIVITY IN DOMESTIC AND RECREATIONAL WATER

Analysis	Collection Date (1975)	Great Pond[a]	Little South Pond	College Pond	Lout Pond Well	Manomet Well
Gross Beta (pCi/l)	July	4.6 ±1.0	<1.0	2.6 ±1.0	1.1 ±1.0	<1.0
	Aug	5.4 ±1.0	1.1 ±1.0	2.4 ±1.0	1.5 ±1.0	<1.0
	Sep	1.8 ±1.0	1.0 ±1.0	1.8 ±1.0	<1.0	<1.0
	Oct	4.9 ±1.0	3.0 ±1.0	5.0 ±1.0	1.0 ±1.0	<1.0
	Nov	5.7 ±1.0	2.2 ±1.0	4.2 ±1.0	8.0 ±1.0	<1.0
	Dec	4.4 ±1.0	2.0 ±1.0	1.5 ±1.0	<1.0	<1.0
Gross Gamma (cpm/l)	July	<5	5 ±5	6 ±5	<5	<5
	Aug	<5	<5	<5	12 ±5	12 ±5
	Sep	<5	<5	<5	<5	<5
	Oct	<5	<5	<5	5 ±5	<5
	Nov	<5	<5	<5	19 ±5	14 ±5
	Dec	<5	<5	<5	11 ±5	17 ±5
Strontium-90 (pCi/l)	July	<0.5	<0.5	<0.5	0.7 ±0.5	<0.5
	Aug	0.7 ±0.5	0.5 ±0.5	<0.5	<0.5	<0.5
	Sep	1.0 ±0.5	<0.5	0.9 ±0.5	<0.5	<0.5
	Oct	0.6 ±0.5	<0.5	<0.6	<0.5	<0.6
	Nov	<0.5	<0.5	<0.5	<0.5	<0.5
	Dec	<0.5	<0.5	<0.5	0.5 ±0.5	<0.5
Iodine-131 (pCi/l)	July	<5	<5	<5	<5	<5
	Aug	<5	<5	<5	<5	<5
	Sep	(b)	(b)	(b)	<5	<5
	Oct	<5	<5	<5	(b)	(b)
	Nov	<5	<5	<5	<5	<5
	Dec	<5	<5	<5	<5	<5
Tritium (pCi/ml)	July	<2.5	<2.5	<2.5	<2.5	<2.5
	Aug	<2.5	<2.5	<2.5	<2.5	<2.5
	Sep	<2.5	<2.5	<2.5	<2.5	<2.5
	Oct	<2.5	<2.5	<2.5	<2.5	<2.5
	Nov	<2.5	<2.5	<2.5	<2.5	<2.5
	Dec	<2.5	<2.5	<2.5	<2.5	<2.5

(a) Control location.
(b) Iodine aliquot accidentally contaminated.

TABLE 12A

GAMMA ISOTOPIC CONCENTRATIONS IN DOMESTIC AND RECREATIONAL WATER (pCi/liter)
MONTHLY COMPOSITES - 1975

Location	Date	Cs-137	Mn-54	Co-58	Co-60	Zn-65	I-131	K-40	Other
Lout Pond Well	Aug	<20	<20	<10	<20	<30	<20		
	Oct	<20	<20	<20	<20	<40	<30		Ra-226 40 ±20
	Nov	<20	<20	<20	<20	<40	<20	300 ±200	
Manomet Well	Aug	<20	<20	<10	<20	<30	<20	200 ±100	
	Oct	<20	<20	<20	<20	<40	<30	300 ±200	
South Plymouth	Sep	<20	<20	<20	<20	<40	<120	400 ±300	Th-228 20 ±20
	Oct	<20	<20	<20	<20	<30	<50	400 ±200	
Great Pond Pumping Station	Oct	<20	<20	<20	<20	<40	<80	400 ±200	
College Pond	Nov	<20	<20	<20	<20	<40	<40	300 ±200	

TABLE 13

RADIOACTIVITY IN PRECIPITATION - PLYMOUTH MASSACHUSETTS[a]

Collection Period (1975)	Gross Beta (pCi/m^2)	Gross Gamma (cpm/m^2)	Sr-90 (pCi/m^2)	H-3 (pCi/m^2)
May[b]	410 ±110	<120	60 ±30	<150
June[b]	470 ±110	1480 ±300	100 ±90	<240
July	1170 ±100	<120	70 ±60	<290
August	<180	<120	<70	<290
September	<340	<180	<110	<540
October	220 ±170	<120	<50	<260
November	220 ±190	270 ±120	<65	<290
December	370 ±240	940 ±20	<71	<360

(a) Analysis not required by operating license.

(b) Results listed as incomplete in last report.

TABLE 14

RADIOACTIVITY IN SEAWATER
JULY - DECEMBER 1975

Location	Collection Date	Fractional Gross Beta (pCi/l)[a] Frac I	Frac II	Frac III	Frac IV	Gross Gamma (cpm/l)	Concentration H-3 (pCi/ml)	I-131 (pCi/l)
Pilgrim Intake	July	<5	<5	<5	<5	7 ±5	<2.5	<5
	Aug	<5	<5	<5	<5	<5	<2.5	<5
	Sep	<5	<5	<5	<5	<5	<2.5	<60[b]
	Oct	<5	<5	<5	<5	<5	<2.5	<5
	Nov	<5	<5	<5	<5	<5	<2.5	<5
	Dec	<5	<5	<5	<5	<5	<2.5	<5
Pilgrim Discharge	July	<5	<5	<5	<5	8 ±5	<2.5	<5
	Aug	<5	<5	<5	<5	<5	<2.5	<5
	Sep	<5	<5	<5	<5	<5	<2.5	<120[b]
	Oct	<5	<5	<5	<5	5 ±5	<2.5	<5
	Nov	<5	<5	<5	<5	<5	<2.5	<5
	Dec	<5	<5	<5	<5	<5	<2.5	<5
Powder Point	Aug	<5	<5	<5	<5	9 ±5	<2.5	<5
	Sep	<5	<5	<5	<5	6 ±5	<2.5	<5
	Oct	<5	<5	<5	<5	<5	<2.5	<5
	Nov	<5	<5	<5	<5	<5	<2.5	<5
	Dec	<5	<5	<5	<5	<5	<2.5	<5
Priscilla Beach	Sep 18	<5	<5	<5	<5	<5	<2.5	(c)
White Horse Beach	Sep 18	<5	<5	<5	<5	<5	<2.5	(c)

QUARTERLY ANALYSIS OF RADIONUCLIDES (pCi/l)

Location	Collection Date	Co-58	Co-60	Zn-65	Sr-90	Cs-137	Mn-54
Pilgrim Intake	1st quarter (1975)	<25	<10	<22	0.18 ±0.11	0.60 ±0.07	<11
	2nd quarter (1975)	<7	<6	<14	<0.29	<0.19	<2
	3rd quarter (1975)	<10	<10	<9	<0.04	0.35 ±0.04	<5
	4th quarter (1975)	<3	<2	<24	0.02 ±0.02	0.67 ±0.07	<10
Pilgrim Discharge	1st quarter (1975)	<15	<7	<30	0.47 ±0.42	0.25 ±0.08	<7
	2nd quarter (1975)	<3	<3	<37	0.06 ±0.06	0.23 ±0.12	<2
	3rd quarter (1975)	<5	<5	<14	0.06 ±0.05	0.51 ±0.05	<5
	4th quarter (1975)	<3	<3	<23	0.03 ±0.01	0.54 ±0.05	<7

(a) The four fractions contain essentially:
1. Insolubles 2. Ru, Cr, Co, Zn 3. Ra, Sr, Ba 4. Cs
(b) Analyzed by gamma spectrometry.
(c) Not analyzed for this isotope.

TABLE 14A

GAMMA EMITTING ISOTOPE CONCENTRATIONS IN SEAWATER (pCi/l)[a]
MONTHLY COMPOSITES 1975

Location	Date	Cs-137	Mn-54	Co-58	Co-60	Zn-65	K-40	Other
Pilgrim Intake	July	<20	<10	<10	<20	<30	300 ±200	
	Aug	<20	<20	<20	<20	<40	900 ±200	Th-228 30 ±20
	Sept	<20	<20	<20	<20	<40	900 ±100	
	Oct	<20	<20	<20	<20	<40	600 ±200	
	Nov	<20	<20	<20	<20	<40	600 ±200	
	Dec	<20	<20	<20	<20	<40	600 ±200	
Pil. Discharge	July	<20	<10	<10	<20	<50	500 ±200	Th-228 60 ±20
	Aug	<20	<20	<20	<20	<40	900 ±200	
	Sep	<20	<20	<10	<20	<40	800 ±200	
	Oct	<20	<20	<20	<20	<30	800 ±200	
	Nov	<20	<20	<20	<20	<40	600 ±200	
	Dec	<20	<20	<20	<20	<40	600 ±200	
Powder Point	Aug	<20	<10	<10	<20	<40	300 ±200	
	Sep	<20	<20	<20	<20	<40	700 ±200	
	Oct	<10	<10	<20	<20	<30	700 ±200	
	Nov	<20	<20	<20	<20	<40	400 ±200	
	Dec	<20	<20	<20	<20	<30	500 ±200	
Priscilla Beach	Sep 18	<20	<20	<20	<20	<30	600 ±200	
White Horse Beach	Sep 18	<20	<10	<20	<20	<40	500 ±200	

(a) Results of Ge(Li) spectrometry.

TABLE 15

RADIOACTIVITY IN MARINE LIFE, 1975

Sample Type	Location	Sample Date (1975)	Gross Beta	Results - pci/gm Sr-89	Sr-90	Mn-54	Co-58	Co-60	K-40	Cs-137
Bluefish	Rocky Point	Aug 12	2.9 ±0.3	<0.05	0.006±0.005	<0.03	<0.06	<0.02	5.5±0.6	0.03±0.02
Clams (Mya)	Warren Cove	July 16	2 ±0.2	<0.2	<0.02	<0.02	<0.04	<0.02	<0.6	<0.02
Clams (Mya)	Plymouth Harbor	July 17	1.3 ±0.1	<0.2	<0.01	0.02	<0.03	<0.02	<0.5	<0.02
Clams (Mya)	Duxbury Bay	July 18	0.86±0.09	<0.1	<0.008	<0.02	<0.03	<0.02	1.1±0.3	<0.02
Clams (Mya)	Rocky Nook	July 18	1.4 ±0.1	<0.2	<0.02	<0.02	<0.03	<0.02	0.9±0.3	<0.02
Clams (Mya)	Plymouth Harbor	Aug 28	1.1 ±0.2	<0.02	<0.005	<0.03	<0.06	<0.03	2.6±0.4	<0.03
Clams (Mya)	Duxbury Bay	Aug 29	1.3 ±0.2	<0.04	<0.014	<0.04	<0.07	<0.04	2 ±0.5	<0.04
Clams (Mya)	Rocky Nook	Aug 29	1.6 ±0.1	<0.2	0.017±0.006	<0.03	<0.05	<0.03	1.5±0.6	<0.03
Clams (Mya)	Warren Cove	Aug 29	4.3 ±0.4	<0.08	0.015±0.014	<0.04	<0.08	<0.04	3.6±0.5	<0.04
Clams (Mya)	Duxbury Bay	Sep 26	3.2 ±0.3	<0.02	<0.007	<0.03	<0.05	<0.04	6.3±0.6	<0.04
Clams (Mya)	Rocky Nook	Sep 26	1.6 ±0.2	<0.03	<0.013	<0.03	<0.03	<0.04	2.3±0.5	<0.04
Clams (Mya)	Plymouth Harbor	Sep 30	1.3 ±0.2	<0.03	<0.006	<0.03	<0.04	<0.04	3.7±0.5	<0.03
Clams (Mya)	Warren Cove	Sep 30	1 ±0.2	<0.01	<0.006	<0.03	<0.04	<0.04	2.6±0.4	<0.03
Cod	Rocky Point	July 16	3.5 ±0.4	<0.05	<0.005	<0.02	<0.06	<0.02	5.5±0.6	0.03±0.02
Cunner	Rocky Point	July 16	2.1 ±0.2	<0.05	<0.005	<0.03	<0.07	0.06±0.02	5.6±0.6	0.04±0.01
Winter Flounder	Rocky Point	Aug 4	2.4 ±0.2	<0.06	<0.005	<0.03	<0.06	<0.02	4.6±0.5	<0.02
Winter Flounder	Rocky Point	Aug 4	3.1 ±0.3	<0.2	0.036±0.015	<0.03	<0.06	<0.02	5.3±0.5	<0.02
Irish Moss	Ellisville	Aug 27	31±3	<0.4	<0.03	<0.05	<0.1	<0.05	32 ±3	<0.04
Irish Moss	Manomet Pt. (North)	Aug 27	28±3	<0.5	<0.06	<0.04	<0.06	<0.04	24 ±4	<0.04
Irish Moss	Manomet Pt. (South)	Aug 27	30±3	<0.1	0.15 ±0.02	<0.04	<0.07	<0.05	25 ±2	<0.04
Irish Moss	Rocky Point	Aug 28	42±4	<0.1	0.014±0.007	0.08±0.04	<0.08	0.19±0.05	27 ±3	0.06±0.03
Irish Moss	White Horse Beach	Aug 28	32±3	<0.08	0.012±0.008	<0.08	<0.2	<0.07	37 ±4	0.06±0.03
Irish Moss	Ellisville	Oct 30	23±1	<0.5	<0.05	<0.06	<0.07	<0.06	23.5±2.4	<0.07
Irish Moss	Manomet Pt. (North)	Oct 30	12±1	<0.8	<0.07	<0.06	<0.06	0.16±0.06	34 ±3.4	<0.05
Lobster	Rocky Point	July 16	0.72±0.14	<0.3	0.022±0.010	<0.02	<0.04	<0.02	<0.4	0.03±0.02
Lobster	Rocky Point	July 16	0.92±0.15	<0.3	<0.02	<0.03	<0.05	<0.02	<0.5	0.06±0.03
Lobster	Rocky Point	July 21	0.96±0.11	<0.2	0.025±0.008	<0.03	<0.05	<0.03	<0.8	<0.03
Lobster	Rocky Point	Aug 13	1.20±0.10	<0.2	<0.020	<0.03	<0.05	<0.04	<0.9	<0.03
Lobster	Rocky Point	Aug 13	0.79±0.12	<0.2	<0.020	<0.03	<0.04	<0.03	<0.5	<0.03
Atlantic Mackerel	Rocky Point	July 16	4.2 ±0.4	<0.01	0.008±0.005	<0.02	<0.04	<0.01	5.5±0.6	<0.01
Atlantic Menhaden	Rocky Point	July 16	3.5±0.4	<0.03	<0.005	<0.04	<0.1	<0.04	5.3±0.5	<0.02

TABLE 15 - Continued

Sample Type	Location	Sample Date (1975)	Gross Beta	Results - pci/gm Sr-89	Sr-90	Mn-54	Co-58	Co-60	K-40	Cs-137
Blue Mussel	Discharge Canal	July 16	0.02±0.02	<0.06	<0.008	<0.1	<0.1	<0.1	4 ±2	<0.1
Blue Mussel	Discharge Outfall	July 16	1.2 ±0.4	<0.7	<0.05	<0.03	<0.05	<0.03	<0.7	<0.03
Blue Mussel	Plymouth Harbor	July 17	1.6 ±0.3	<0.5	<0.04	<0.02	<0.04	<0.02	<0.6	<0.02
Blue Mussel	Discharge Canal	Aug 28	1.1 ±0.2	<0.02	<0.005	<0.01	<0.03	0.02±0.01	2.2±0.4	<0.01
Blue Mussel	Plymouth Harbor	Aug 28	0.7 ±0.2	(a)	(a)	<0.01	<0.03	<0.01	2 ±0.2	<0.01
Blue Mussel	Discharge Outfall	Sep 29	3.1 ±0.3	(a)	(a)	<0.01	<0.01	0.03±0.01	1.5±0.2	<0.009
Blue Mussel	Plymouth Harbor	Sep 30	2.1 ±0.2	(a)	(a)	<0.02	<0.02	<0.02	1.8±0.2	<0.02
Pollock	Rocky Point	July 16	2.8 ±0.3	<0.04	05	<0.02	<0.05	<0.02	5.7±0.6	0.03±0.02
Quahogs	Powder Point	Sep 2	1.3 ±0.1	<0.08	<0.006	<0.03	<0.05	<0.03	<0.7	0.03±0.02
Quahogs	Powder Point	Sep 2	1.6 ±0.1	<0.1	0.007±0.004	<0.02	<0.03	<0.02	0.9±0.4	<0.02
Rockweed	Pilgrim East Breakwater	July 31	8.9 ±0.9	<0.02	<0.005	<0.007	<0.007	0.05±0.01	4.5±0.4	<0.007
Rockweed	Manomet Pt.	July 31	7 ±0.7	<0.03	<0.005	<0.01	<0.01	0.04±0.02	7.7±0.8	0.01±0.01
Rockweed	Discharge Outfall	July 31	6.2 ±0.6	<0.01	0.006±0.005	<0.01	<0.009	0.32±0.03	5.1±0.5	<0.009
Rockweed	Rocky Point	July 31	7.4 ±0.7	<0.01	0.008±0.005	0.03±0.01	<0.01	0.49±0.05	<6.6	<0.01
Rockweed	Pilgrim East Breakwater	Sep 11	7.3 ±0.7	<0.02	<0.005	<0.01	<0.01	0.07±0.01	7.1±0.7	<0.01
Rockweed	Manomet Pt.	Sep 11	9.3 ±0.9	<0.03	<0.007	<0.01	<0.02	<0.02	9.3±0.9	<0.01
Rockweed	Discharge Outfall	Sep 11	8.4 ±0.8	<0.01	<0.005	<0.01	<0.02	0.48±0.05	11 ±1	<0.02
Rockweed	Rocky Point	Sep 11	6.3 ±0.6	<0.02	<0.005	0.02±0.01	<0.2	0.53±0.05	9.5±0.9	<0.1
Tautog	Rocky Point	Aug 13	7.2 ±0.7	<0.05	<0.005	<0.06	<0.05	<0.05	7.9±0.8	<0.05

Note: Errors are reported as ±2 sigma or 10%, whichever is larger.

(a) Sample lost in analysis

TABLE 15A

RADIOACTIVITY IN MARINE LIFE, JANUARY - JUNE 1975[a]

Sample Type	Location	Sample Date (1975)	Gross Beta	Results - pci/gm Sr-89	Sr-90	Mn-54	Co-58	Co-60	K-40	Cs-137
Clams (Mya)	Warren Cove	June 15	1.5 ±0.2	0.05±0.05	<0.005	<0.01	<0.08	<0.01	1.6±0.2	<0.01
Clams (Mya)	Plymouth Harbor	May 20	1 ±0.2	<0.05	<0.005	<0.01	<0.08	<0.01	1.5±0.2	<0.01
Clams (Mya)	Duxbury Bay	May 28	1.2 ±0.2	<0.01	<0.005	<0.01	<0.01	<0.01	0.7±0.2	<0.01
Clams (Mya)	Rocky Nook	May 28	1.3 ±0.2	<0.02	<0.005	<0.01	<0.02	<0.01	1.5±0.2	<0.01
Clams (Mya)	Plymouth Harbor	June 19	1.1 ±0.01	<0.01	<0.005	<0.02	<0.02	<0.02	1.5±0.3	<0.02
Clams (Mya)	Warren Cove	June 19	1.3 ±0.2	<0.01	<0.005	<0.01	<0.02	<0.01	1.2±0.2	<0.01
Clams (Mya)	Duxbury Bay	June 20	1.4 ±0.2	<0.08	<0.005	<0.01	<0.08	<0.01	1.7±0.2	<0.01
Clams (Mya)	Rocky Nook	June 20	1.1 ±0.2	<0.03	<0.005	<0.01	<0.01	<0.01	0.9±0.2	<0.01
Atlantic Cod	Rocky Point	June 26	6 ±0.6	<0.04	<0.005	<0.01	<0.04	<0.02	5.5±0.6	0.03±0.02
Cunner	Rocky Point	June 26	4.6 ±0.5	<0.1	0.01 ±0.005	<0.03	<0.1	<0.03	5.2±0.5	<0.02
Winter Flounder	Rocky Point	May 8	4.4 ±0.4	<0.01	<0.005	<0.01	<0.01	<0.01	3.1±0.3	<0.01
Winter Flounder	Rocky Point	June 9	3.1 ±0.3	<0.09	<0.005	<0.02	<0.06	<0.01	5.1±0.5	<0.01
Winter Flounder	Rocky Point	June 9	2.6 ±0.3	<0.01	<0.005	<0.03	<0.09	<0.02	6.2±0.8	<0.02
Irish Moss	Ellisville	June 17	38±4 (b)	<0.01	<0.005	<0.04	<0.05	<0.04	26 ±2	<0.04
Irish Moss	Manomet Pt. (North)	June 18	58±6 (b)	<0.08	<0.009	<0.04	<0.04	<0.04	24 ±2	<0.03
Irish Moss	Manomet Pt. (South)	June 18	52±5 (b)	(c)	(c)	<0.05	<0.05	<0.05	32 ±3	0.07±0.04
Irish Moss	Rocky Point	June 18	83±8 (b)	<0.02	<0.005	0.13±0.04	<0.05	0.31±0.06	33 ±3	<0.04 (e)
Irish Moss	White Horse Beach	June 18	18±2 (b)	<0.02	<0.005	<0.03	<0.03	<0.03	17 ±2	<0.03
Blue Mussel	Discharge Outfall	May 21	0.5 ±0.2	<0.03	<0.005	<0.02	<0.08	0.04±0.01	1.6±0.2	<0.01
Blue Mussel	Plymouth Harbor	May 21	0.7 ±0.2	<0.02	<0.005	<0.01	<0.02	<0.01	1.6±0.2	<0.01
Blue Mussel	Discharge Canal	June 18	0.3 ±0.2	<0.07	0.01 ±0.002	<0.02	<0.02	0.04±0.01	1.3±0.3	<0.02
Blue Mussel	Discharge Canal	June 18	0.68±0.05	<0.02	<0.005	<0.02	<0.03	0.06±0.02	0.6±0.3	<0.03
Blue Mussel	Discharge Outfall	June 18	0.3 ±0.2	<0.02	<0.005	<0.02	<0.02	0.04±0.01	1.3±0.3	<0.02
Blue Mussel	Plymouth Harbor	June 19	0.4 ±0.2	<0.02	<0.005	<0.004	<0.005	<0.005	<0.6	<0.004
Pollock	Rocky Point	May 8	3.2 ±0.3	<0.01	<0.005	<0.01	<0.01	<0.01	3 ±0.3	0.02±0.01
Pollock	Rocky Point	May 8	4.9 ±0.5	<0.01	<0.005	<0.02	<0.02	<0.02	3.1±0.3	<0.02
Pollock	Rocky Point	May 8	4.3 ±0.4	<0.01	<0.005	<0.02	<0.02	<0.02	<3.3	0.03±0.01
Pollock	Rocky Point	May 8	4.5 ±0.4	<0.01	<0.005	<0.02	<0.02	<0.02	3.6±0.4	0.03±0.01
Pollock	Rocky Point	May 8	4.7 ±0.5	<0.01	<0.005	<0.02	<0.02	<0.02	4.2±0.4	<0.02
Pollock	Rocky Point	May 8	4.3 ±0.4	<0.01	<0.005	<0.02	<0.02	<0.02	4.4±0.4	<0.02

TABLE 15A - Continued

Sample Type	Location	Sample Date (1975)	Gross Beta	Results - pci/gm Sr-89	Sr-90	Mn-54	Co-58	Co-60	K-40	Cs-137
Rockweed	Pilgrim East Breakwater	June 2	6.7 ±0.7	(d)	<0.006	<0.01	<0.01	0.12±0.02	8.4±0.8	<0.02
Rockweed	Discharge Outfall	June 2	7.5 ±0.8	(d)	0.009±0.005	0.05±0.01	<0.01	0.41±0.02	5.3±0.5	<0.01
Rockweed	Manomet Pt.	June 2	7.5 ±0.8	(d)	<0.005	<0.007	0.02±0.01	0.02±0.01	5.5±0.5	<0.008
Rockweed	Rocky Point	June 2	8.6 ±0.9	<0.02	<0.005	0.04±0.01	<0.01	0.62±0.06	7.4±0.7	<0.01
Tautog	Rocky Point	June 29	4.5 ±0.4	<0.06	<0.005	<0.02	<0.07	<0.03	4.8±0.5	<0.03

(a) Data not included in previous report.
(b) Abnormal ash weight.
(c) Sample lost in analysis.
(d) Not analyzed for this isotope.
(e) Zn-65 detected at 0.25±0.09 pci/gm.

TABLE 16

RADIONUCLIDES IN BOTTOM SEDIMENT (pCi/g)[a]

Location	Date (1975)	K-40	Mn-54	Co-58	Co-60	Cs-137	Ra-226	Sr-89	Sr-90
Discharge Outfall	Mar 21	18 ±2	<0.05	<0.05	<0.06	<0.05		(c)	<0.009[b]
Manomet Point	Mar 21	12 ±1	<0.05	<0.05	<0.06	<0.05		(c)	<0.002[b]
Warren Cove	Mar 21	12 ±1	<0.05	<0.05	<0.06	<0.05		(c)	<0.003[b]
Discharge Outfall	June 18	18.9 ±1.9	0.03 ±0.02	<0.02	0.04 ±0.02	0.04 ±0.02		<0.7	<0.04
Warren Cove	June 19	10 ±1	<0.03	<0.04	<0.03	<0.03		0.01 ±0.01	<0.002
Rocky Point	Aug 12	16 ±2	<0.2	<0.2	0.5 ±0.1	0.3 ±0.2	0.3 ±0.2	<0.02	0.03 ±0.01
Manomet Point	Aug 12	13 ±2	<0.1	<0.1	<0.1	<0.1	0.4 ±0.2	<0.03	<0.007
Discharge Canal	Sep 11	21.6 ±2.2	0.29 ±0.06	0.14 ±0.07	0.8 ±0.09	0.3 ±0.04		<0.5	<0.04
Plymouth Beach	Sep 18	12.2 ±1.2	<0.01	<0.02	<0.01	<0.01		<0.5	<0.04
Priscilla Beach	Sep 18	6.32 ±0.63	<0.01	<0.02	<0.01	<0.01		<0.5	<0.04
White Horse Beach	Sep 18	10 ±	<0.02	<0.02	<0.01	<0.02		<0.5	<0.04
Discharge Outfall	Sep 29	15 ±1	<0.4	<0.6	<0.4	<0.4	0.3 ±0.07	<0.01	<0.002
Manomet Point	Sep 29	13 ±1	<0.4	<0.6	<0.4	<0.3	0.25 ±0.05	<0.04	<0.007
Warren Cove	Sep 29	14 ±1	<0.5	<0.7	<0.4	<0.4	0.33 ±0.06	<0.06	<0.006

(a) Results of Ge(Li) spectrometry (except Sr-89, 90). Sensitivities are given in Table 5A.
(b) Listed as incomplete in previous report.
(c) Not analyzed for this isotope.

TABLE 17

1975 SEAFOOD INGESTION DOSES

Edible Seafood Type	Average Activity Detected[a] (pCi/g) Co-60	Cs-137[b]	Zn-65	Mn-54	Assumed Consumption Rate (Kgm/yr)
Finfish	0.06	0.04	0.02	(c)	18
Shellfish	0.05	(c)	(c)	0.02	9
Algae[d]	0.3	0.05	0.03	0.15	0.73
Calculated Ingestion Dose (mrem/yr)					**Total**
Whole Body	0.008	0.005	0.0021	0.0002	0.015
GI-tract	0.068	0.0011	0.0042	0.004	0.077
Bone	0	0.048	0.0011	0	0.049

(a) Average of samples containing plant related activity.
(b) Cs-137 is conservatively assumed to be totally plant related.
(c) Not detected.
(d) Irish moss only.

APPENDIX A

SUMMARY OF RADIOACTIVE EFFLUENTS

This summary will be supplied in a separate report entitled "Semi-annual Summary of Radioactive Effluents, July 1 through December 31, 1975."

APPENDIX B

ANALYSIS OF NATIONAL BUREAU OF STANDARDS REFERENCE MATERIAL

The Standard Reference Material obtained from the U.S. National Bureau of Standards (SRM 4350) contained approximately 100 g of freeze-dried, sieved river sediment, spiked with environmental levels of radioactivity.

For the analysis, the SRM was divided into two 50 g samples, each of which was then combined with 400 g of ordinary sand. The mixtures (Standards) were each sent, along with a sample of ordinary beach sand (Blank), to Interex Corp. and Teledyne Isotopes for analysis. The results are reported in Table B-1.

The NBS-determined radioactivities in pico-Curies per gram of the samples prepared on August 8, 1975 are shown in the indicated columns. The results of the Teledyne and Interex analyses, shown under the appropriate headings, agree reasonably well with the certified activities.

TABLE B-1

ANALYSIS OF NBS STANDARD REFERENCE MATERIAL (pCi/g)

Isotope	NBS Analysis for Standard *** Sent to Interex	Interex Results		NBS Analysis for Standard *** Sent to Teledyne	Teledyne Results		NBS Uncertainty %
		Standard	Blank		Standard	Blank	
K-40	2.16	16 ±2	13 ±2	2.09	10.4 ±1.1	9.86 ±1.16	8.8
Mn-54	0.0047	<0.2	<0.1	0.0045	<0.04	<0.04	11.6
Co-60	0.59	0.5 ±0.1	<0.1	0.57	0.446 ±0.068	<0.04	5.6
Zn-65	0.025	<0.4	<0.4	0.024	<0.03	<0.03	13.5
Sr-90	0.04	0.03 ±0.01	<0.007	0.039	0.13 ±0.02	<0.04	15.0
Cs-137	0.4	0.3 ±0.2	<0.1	0.39	0.371 ±0.057	<0.04	4.5
Eu-152	0.96	0.6 ±0.1*	NV	0.93	0.801 ±0.168+	NV	5.8
Eu-154	0.21	0.63 ±0.06*	NV	0.20	0.167 ±0.128+	NV	7.5
Ac-228	0.14	0.7 ±0.2**	0.5 ±0.1**	0.13	0.417 ±0.042**	0.257 ±0.026**	19.1
Pu-239 Pu-240	0.0058	NA	NA	0.0056	0.0039 ±0.0012	<0.0002	8.5

*Rerun for Eu with longer count time by request.
**Th-228
***Values obtained by multiplying NBS values by dilution ratio of NBS standard to blank sand (see text).
+Eu peaks calculated by request.
NA - not analyzed.
NV - no value reported.