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Peach Bottom Atomic Power Station

Annual Radiological Environmental

Operating Report No. 45

1 January 1987 through 31 December 1987

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TABLE OF CONTENTS

SUMMARY AND CONCLUSIONS

I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program (REMP) conducted at the Peach Bottom Atomic Power Station (PBAPS) by Philadelphia Electric Company (PECo) covers the period 1 January 1987 through 31 December 1987. This report combines the results of the programs conducted by Teledyne Isotopes (TI) and Clean Harbors (CH) Laboratories. During this period 3,333 analyses were performed on 2,263 samples.

Surface water and drinking (potable) water samples were analyzed for concentrations of gross alpha, gross beta, gamma spectrometry, and tritium. Additionally, drinking water samples were analyzed for concentrations of Iodine-131. Results of these analyses showed no significant differences between control locations and potentially-affected stations. The values observed were within the ranges noted in the preoperational report.

The remaining sample media representing the aquatic environment included fish and sediment samples. Fish samples were analyzed for concentrations of gamma emitters and Strontium-89 and Strontium-90. Gross alpha, gross beta, and gamma spectrometry analyses were performed on sediment samples. As in previous years the program detected plant related activity at low levels in fish and sediment samples in Conowingo Pond. Cs-137, Cs-134, and Zn-65 were found in fish samples from off-site locations. Slightly higher concentrations of these nuclides and Co-60 and Ru-106 were found in samples from the plant water discharge system. Sediment samples at indicator locations showed Cs-137 and Cs-134. Co-60 and Zn-65 were found at one location. The resulting doses to the maximum exposed individual were less than 1% of 10CFR50 Appendix I design objectives. All results from these analyses were comparable to those of previous years.

The atmospheric environment was divided into two parts for examination: airborne and terrestrial. Sample media for determining airborne effects include air particulates and air iodine samples. Analyses performed on air particulate samples included gross beta and gamma spectrometry. The results from both analyses were generally consistent with results from the previous years. Furthermore, no notable differences among results from on-site, intermediate, and distant locations in either analysis were observed. These findings indicate no measurable effects from the operation of PBAPS.

High sensitivity Iodine-131 analyses were performed on weekly air samples. All results were less than the minimum detectable level.

Examination of the terrestrial environment was accomplished by analyzing milk, vegetation, soil, and well water samples. Milk samples were analyzed for concentrations of Strontium-89, Strontium-90, Cesium-134, Cesium-137, and Iodine-131. Results from all analyses were consistent with those from previous years and no indication of PBAPS effect.

Analyses performed on well water samples included gross alpha, gross beta, gamma spectrometry, and uranium. Results from these analyses were generally comparable to those of previous years. Results from the indicator and control locations were similar indicating no PBAPS effect.

Analyses performed on vegetation samples included Strontium-89 and Strontium-90 and gamma spectrometry. Higher concentrations of Strontium-90 were detected in wild vegetation than cultivated crops, possibly due to the longer growing season, resulting in a greater accumulation of fallout. These results were comparable to previous years. Gamma spectrometry results were similar to those seen in previous years. No notable difference was observed between indicator and control locations.

Analyses performed on soil samples included gross beta, Strontium-89 and Strontium-90, and gamma spectrometry. Results from gross beta, strontium analyses, and gamma spectrometry were comparable to those of previous years. No notable difference was observed between indicator and control locations.

Ambient gamma radiation levels were measured monthly and quarterly throughout the year. All monthly and quarterly measurements were below 10 mR/std. month. These results were slightly lower than those from previous years.

Except for fish and sediment samples, no measurable amounts of radioactivity were found off-site by the REMP which could be attributed to the operation of PBAPS.

INTRODUCTION

PEACH BOTTOM ATOMIC POWER STATION
Radiological Environmental Monitoring Program

II. Introduction

Peach Bottom Atomic Power Station (PBAPS) is located along the Susquehanna River between Holtwood and Conowingo Dams in Peach Bottom Township, York County, Pennsylvania. The initial loading of fuel into Unit 1, a 40 MWE (net) high temperature, gas-cooled reactor, began on 5 February 1966, and initial criticality was achieved on 3 March 1966. Shutdown of Peach Bottom Unit 1 for decommissioning was on 31 October 1974. For the purposes of the monitoring program, the beginning of the operational period for Unit 1 was considered to be 5 February 1966. A summary of the Unit 1 preoperational monitoring program was presented in a previous report [1]. PBAPS Units 2 and 3 are boiling water reactors each with a power output of approximately 1050 MWe (net). The first fuel was loaded into Peach Bottom Unit 2 on 9 August 1973, criticality was achieved on 16 September 1973, and full power was reached on 16 June 1974. The first fuel was loaded into Peach Bottom Unit 3 on 5 July 1974, and full power was first reached on 21 December 1974. Preoperational summary reports [2][3] for Units 2 and 3 have been previously issued and summarize the results of all analyses performed on samples collected from 5 February 1966 through 8 August 1973.

The Teledyne Isotopes (TI) program complements an existing program being conducted by Clean Harbors (CH) which has been carried out since 1960.

Analysis of the media was conducted by both laboratories as follows:

TI was the primary analytical laboratory for surface and drinking water, air iodine, and TLD samples, and the comparison laboratory for air particulates.

CH was the primary analytical laboratory for air particulates, fish, sediment, soil, well water, and vegetation, and the secondary laboratory for surface and drinking water.

Responsibility was shared for milk samples, with TI primary for I-131 analysis and CH primary for Cs-134 and Cs-137.

The total PBAPS REMP far exceeds the requirements of the Radiological Environmental Technical Specifications both in media sampled and analyses performed.

A. Objectives

The objectives of the REMP are:

1. To identify, measure, and evaluate existing radionuclides in the environs of PBAPS site and any fluctuations in radioactivity levels which may occur.

2. To monitor and evaluate ambient radiation levels.

3. To determine within the scope of the program, any measurable quantity of radioactivity introduced to the environment by the operation of PBAPS.

B. Implementation

Implementation of the stated objectives is accomplished by identifying significant exposure pathways, establishing baseline radiological data of media within those pathways, and monitoring those media during plant operation to assess plant effects (if any) on man and the environment.

In order to achieve the stated objectives, the current programs include the following analyses on samples collected:

1. Concentrations of tritium in surface water, drinking water, and well water.

2. Concentrations of alpha emitters in surface water, drinking water, well water, and sediment.

3. Concentrations of beta emitters in surface water, drinking water, well water, air particulates, soil, and sediment.

4. Concentrations of Strontium-89 and Strontium-90 in milk, vegetation, and fish.

5. Concentrations of gamma emitters in surface water, drinking water, well water, air particulates, milk, vegetation, soil, sediment, and fish.

6. Concentrations of Iodine-131 in drinking water, air, and milk. (Vegetation only if milk samples were not collected.)

7. Ambient gamma radiation levels at various site environs.

8. Concentrations of uranium in well water.

PROGRAM DESCRIPTION

III. Program Description

A. Sample Collection

This section describes the basic collection methods used to obtain environmental samples. For a more detailed account, including equipment used, refer to Appendix E, Section 1: Synopsis of Procedures - Collection Methods.

Aquatic Environment

The aquatic environment was examined by analyzing samples of surface water, drinking water, fish, and sediment. Surface water from two locations (1LL and 1MM) and drinking water from two locations (4L and 6I) were collected weekly from a tank at each location and were composited into a monthly sample for analysis. Two additional surface water locations (13A and 13B) were collected as grab samples. Control locations were 1LL and 6I.

Fish samples from two groups, catfish (bottom feeder) and white crappie or smallmouth bass (predator) were collected semi-annually at six locations: 1X, 1EE, 4I, and 4J (indicators) and 6H and 6J (controls).

Sediment samples composed of recently deposited substrate were collected at six locations semi-annually: 1X, 1BB, 4J, 4D, and 4T (indicators) and 6F (control).

Atmospheric Environment

The atmospheric environment was examined by analyzing airborne and terrestrial samples. These consisted of air particulates, airborne iodine, milk, well water, vegetation, and soil samples. Air particulate samples were collected and analyzed weekly from sixteen locations (1A, 1B, 2, 3A, 4B, 5, 6B, 12A, 12D, 14, 15, 17, 31, 32, 33A, and 38). Control locations were 4B, 6B, 12A, and 12D. Air iodine samples were collected from eight locations (1B, 1Z, 2, 3A, 5, 6B, 12D, and 14). Control locations were 6B and 12D. Air particulate and air iodine samples were obtained using a vacuum sampler, glass fiber and charcoal filters, respectively. The filters were replaced weekly and sent to the appropriate laboratory for analysis. The vacuum samplers were run continuously at approximately 1 cubic foot per minute.

Milk samples were collected from six locations (A, B, G, O, J, and N) monthly from December through March and bi-weekly during the grazing season (April through November). Additionally, samples from four locations (C, E, L, and M) were collected quarterly. Locations A, B, G, and E were controls.

Well water samples were collected from four locations (1U, 1V, 7, and 40) quarterly. The control location was 7.

Vegetation samples were collected three times a year from seven locations (1, 3A, 4N, 5, 6D, 8, 23). Stems, leaves, and fruit were collected; foods whenever possible. Control locations were 4N, 6D, and 8.

Soil samples from six locations (1AA, 2, 3A, 4N, 5, and 6G) were collected and analyzed semi-annually. Control locations were 4N and 6G.

Ambient Gamma Radiation

Direct radiation measurements were made using thermoluminescent dosimeters (TLDs) consisting of calcium sulfate ($CaSO_4$) doped with dysprosium (Dy). Samples were collected from forty-seven locations. The TLD locations were placed on and around the PBAPS site using a "three ring concept":

A site boundary ring consisting of thirteen locations (1B, 1C, 1D, 1E, 1F, 1G, 1H, 1J, 1L, 1M, 1NN, 2 and 40) near and within the site perimeter, representing fencepost doses (i.e., at locations where the doses will be greater than maximum annual off-site doses) from PBAPS releases;

A middle ring consisting of twenty-five locations (3A, 4K, 5, 6B, 14, 15, 17, 22, 23, 26, 27, 31, 32, 33A, 38, 42, 43, 44, 45, 46, 47, 48, 49, 50, and 51) extending to approximately ten miles from the site, designed to measure possible exposures to close-in population;

An outer ring consisting of seven locations (12B, 16, 18, 19, 20, 21B, and 24) extending from approximately 10 to 60 miles from the site, and considered to be unaffected by station releases.

Two on-site locations (1A and 1I), designated as plant complex locations, are not included in any of the three rings.

The specific TLD locations were determined by the following criteria:

1. The presence of relatively dense population;

2. Site meterological data taking into account distance and elevation for each of the 36 ten-degree sectors around the site, where estimated annual dose from PBAPS, if any, would be more significant;

3. On hills free from local obstructions and within sight of the vents (where practical);

4. Near the dwelling closest to the main stack in the prevailing down wind direction.

A TLD set was placed at each location in a locked formica "birdhouse" or polyethylene jar located approximately six feet above ground level. The TLD sets were exchanged monthly and quarterly, then sent to the laboratory for analysis.

B. Data Interpretation

Several factors are important for interpretation of the data presented in this report. These factors are discussed here to avoid unnecessary repetition in the discussion of the results.

The minimum detectable level (MDL) was defined as the two sigma counting statistic. It represents the range of values into which 95% of repeated counts of the same aliquot would fall. For all analyses an activity that was greater than or equal to the MDL was reported as "activity plus/minus the MDL value". When an activity was less than the MDL, the result was reported as the "<MDL value". Data received from the laboratories were reported using the convention of rounding the result to the same number of significant places as the first significant digit in the error term (e.g., 3.62 ± 1.24 rounds to 4 ± 1).

Results for each type of sample were grouped according to the analyses performed. Means and standard deviations of these results were calculated. These standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty. For these calculations, all results below the MDL were considered to be at the MDL. As a result, the means were biased high, and the standard deviations were generally biased low.

C. Program Changes

A review of the ongoing REMP program resulted in the following changes to the program.

1. Tritium analysis of milk was discontinued since tritium does not concentrate in milk and other pathways are available to monitor it.

2. The desired predator species of fish was changed from white crappie to smallmouth bass effective the second quarter due to the limited availability of white crappie.

D. Program Exceptions

For 1987 the PBAPS REMP had a sample collection recovery rate of approximately 99%. The exceptions to this program are listed below:

1. Surface water sampler at location 1LL was out of service from 06/26/87 to 07/03/87. Daily grab samples were collected instead.

2. Surface water sampler at location 1MM was out of service from 06/12/87 to 06/26/87 and 09/18/87 to 12/18/87. Daily grab samples were collected instead.

3. Drinking water sampler at location 6I was out of service from 06/27/87 to 07/03/87 and 09/26/87 to 10/03/87 due to pump malfunction.

4. Drinking water sampler at location 4L was out of service from 05/23/87 to 05/30/87 due to pump malfunction.

5. No white crappie or smallmouth bass were available from locations 1EE or 1X throughout the year.

6. Air particulate and air iodine samples were not available from the following locations due to out-of-service equipment: 5 from 01/25/87 to 02/07/87; 14 from 04/04/87 to 04/11/87.

7. Air particulate samples were not available from the following locations due to out of service equipment: 4B from 02/14/87 to 02/21/87 and 11/22/87 to 12/06/87; 33A from 07/25/87 to 08/01/87 and 08/08/87 to 08/15/87. All air particulate samples for the period 11/01/87 to 11/07/87 were lost in the mail.

8. No well water samples were collected for the second quarter due to a sample collection error.

9. TLD samples were not available from the following locations due to vandalism: 1D for August and third quarter; 1I for September and third quarter; and 16 for April, May, and June and second quarter.

RESULTS AND DISCUSSION

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were collected from four locations monthly (1LL, 1MM, 13A and 13B). 1LL served as the control location. The following analyses were performed.

Gross Alpha

Samples from all locations were analyzed for concentrations of gross alpha in both soluble and insoluble fractions (Table C-I.1 and C-I.2). Detectable activity was observed in the soluble fraction in five of forty-nine samples. The data ranged from <.1 to 1.1 pCi/l. Activity was observed in the insoluble fraction, ranging from <.03 to 3 pCi/l. In comparing the insoluble data from previous years with that of 1987, no notable differences were observed. Comparison of the control and indicator locations presents no notable difference. The similarity of results when comparing preoperational and 1987 data, as well as indicator to control locations, suggests no increased effects in receiving water bodies due to the operation of PBAPS.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta in both soluble and insoluble fractions (Table C-I.1 and C-I.2 and Figures C-1 and C-2). The results for the soluble fraction ranged from 1.2 to 4 pCi/l. The mean for the three indicator locations was 2.7 pCi/l, compared to the mean value of 2.8 pCi/l from the control location. The results from analysis of the insoluble portion of all samples from the surface water locations ranged from <.3 to 31 pCi/l. The value of 31 pCi/l (13B, December 1987) was due to an increased level of solids at that location. The gamma analysis of that sample showed K-40 concentrations of 20 ± 10 pCi/l.) Excluding this value the mean of the indicator locations and control location were 1.7 pCi/l and .8 pCi/l, respectively.

Tritium

Samples from three locations (1LL, 1MM, 13A) were analyzed for concentrations of aqueous tritium

(Table C-I.1 and C-I.2). Results ranged from <80 to 400 pCi/l and were within the range found during the preoperational period. Means from indicator and control locations compared well, with values of 176 pCi/l and 165 pCi/l, respectively.

Gamma Spectrometry

Samples from all locations were analyzed for concentrations of gamma emitters (Table C-I.3 and C-I.4). The nuclides searched for were below the minimum detectable level with the exception of naturally occurring K-40, which was found at all locations. The values ranged from <4 to 20 pCi/l.

2. Drinking (Potable) Water

Samples were collected from two locations monthly (4L and 6I). 6I served as the control location. The following analyses were performed.

Gross Alpha

Samples from both locations were analyzed for concentrations of gross alpha activity in soluble and insoluble fractions (Table C-II.1). Gross alpha activity for the soluble fraction of all samples was at or less than MDL. Analysis of the insoluble fraction for both locations showed results ranging from <.04 to .5 pCi/l. These values were consistent with those seen in the preoperational period.

Gross Beta

Samples from both locations were analyzed for concentrations of gross beta activity in soluble and insoluble fractions (Table C-II.1 and Figures C-3 and C-4). Positive beta activity was detected in all soluble fraction samples from both locations ranging from 1.3 to 5 pCi/l. The values from the insoluble fraction ranged from <.3 to 1.9 pCi/l. Only slight differences were observed between the means of the control and indicator stations. The values were generally below those seen in the preoperational period.

Tritium

Samples from both locations were analyzed for tritium concentration quarterly (Table C-II.1). Results from both indicator and control locations indicate positive tritium activity, with no

notable difference between the two locations. The indicator location values ranged from <70 to 180 pCi/l with a mean of 125 pCi/l and control location values ranged from 80 to 300 pCi/l with a mean of 178 pCi/l. The concentrations were within the range found during the preoperational period.

Iodine-131

Samples from both locations were analyzed monthly for I-131 concentrations (Table C-II.1). Results from both the indicator and control locations were all less than MDL.

Gamma Spectrometry

Samples from both locations were analyzed for concentrations of gamma emitters (Table C-II.2). The nuclides searched for were below the minimum detectable level.

3. Fish

Samples were collected from five locations quarterly (1EE, 1X, 4I, 4J, and 6). The control locations was 6. The following analyses were performed.

Strontium-89 and Strontium-90

Samples from all locations were analyzed for concentrations of Sr-89 and Sr-90 (Table C-III.1 and Figure C-5). All Sr-89 values were at or less than MDL. Positive concentrations of Sr-90 were detected at all indicator and control locations. Results ranged from .0062 to .047 pCi/g wet at indicator locations and from .005 to .05 pCi/g wet at the control location. The indicator and control location results did not show notable differences.

Gamma Spectrometry

Positive activity was observed for the nuclides K-40, Co-60, Zn-65, Cs-134, and Cs-137 (Table C-III.2). The values for Co-60 ranged from <.005 to .012 pCi/g wet. Data for Zn-65 ranged from <.01 to .04 pCi/g wet. Data for Cs-134 ranged from <.005 to .046 pCi/g wet and values for Cs-137 ranged from <.005 to .063 pCi/g wet. In addition to these nuclides, several others (Ru-106, Te-129m, Cs-136, La-140, Ra-226 and Th-228) were found at their respective MDL values and may be

the result of counting statistics. Figure C-6 illustrates the Cs-137 activity for indicator and control locations from the beginning of the operational period through the present. The maximum dose calculated using the USNRC Regulatory Guide 1.109 Model and assumptions is 1.52 E-01 mrem to a teenager's liver. The actual dose due to PBAPS operations was less, since the maximum concentrations of radionuclides were assumed to exist all year. In addition, no credit was taken for Cs-137 from sources other than PBAPS. The calculated dose was 0.76% of the 10CFR50 Appendix I design objectives.

4. Sediment

Samples were collected from six locations monthly (1BB, 1X, 4D, 4J, 4T, and 6F). The control location was 6F. The following analyses were performed.

Gross Alpha

Samples from all locations were analyzed for concentrations of gross alpha semi-annually (Table C-IV.1). Results from indicator locations ranged from 2.6 to 9 pCi/g dry. The mean value was 5 pCi/g dry for the control location, and 5.1 pCi/g dry for the indicator locations.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta semi-annually (Table C-IV.1). Results from indicator locations ranged from .9 to 5.6 pCi/g dry with a mean of 2.5 pCi/g dry. The control location mean was 2.6 pCi/g dry. These concentrations were consistent with those found in the preoperational period.

Gamma Spectrometry

Samples from all locations were analyzed for concentrations of gamma emitters (Tables C-IV.1). Positive values of naturally-occuring K-40 were found at all locations. Co-60 was found at two indicator locations and ranged from <.03 to .28 pCi/g dry. Location 4J had the highest average concentration of Co-60 (.26 pCi/g dry). Cs-137, Ra-226, and Th-228 activity was found at all locations and Cs-134 was found at all locations except 4D. Positive Zn-65 activity was found at location 4J. In addition to these nuclides, Be-7, Nb-95, and Sb-125 were found at their respective

MDL values in samples from Holtwood Pond, Conowingo Pond, and the plant water discharge system. The results were consistent with those from previous years. Figure C-6 illustrates the comparison of activities of Cs-137 detected at the control location and two indicator locations from the preoperational period through the present. If it is assumed that all cesium, Co-60 and Zn-65 found at off-site indicator locations was due to PBAPS releases, a dose calculation using the USNRC Regulatory Guide 1.109 model and assumptions results in a calculated dose of 5.91 E-03 mrem to a teenager's skin. This calculation conservatively assumes that the teenager was exposed to the maximum concentrations found for the entire period. The calculated dose was 0.03% of the 10CFR50 Appendix I design objectives.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Samples were collected from 16 locations (1A, 1B, 2, 3A, 4B, 5, 6B, 12A, 12D, 14, 15, 17, 31, 32, 33A, and 38). Control locations were 4B, 6B, 12A, and 12D. The following analyses were performed.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Tables C-V.1 and C-V.2 and Figures C-8 and C-9). Air particulate locations are divided into three groups: Group I, consisting of 1A, 1B, and 2, located on site at PBAPS; Group II, comprised of 3A, 4B, 5, 6B, 14, 15, 17, 31, 32, 33A and 38, located at intermediate distances from PBAPS; and Group III, consisting of 12A and 12D, located at remote distances from PBAPS. Comparison of results among these three groups aids in determining the effects, if any, resulting from the operation of PBAPS. The results from site location samples ranged from .009 to .043 pCi/m^3, with a mean of .025 pCi/m^3. The results from intermediate locations ranged from .002 to .046 pCi/m^3, with a mean of .024 pCi/m^3. The results from distant locations ranged from .012 to .044 pCi/m^3, with a mean of .024 pCi/m^3. Comparison of the mean values indicate no

notable difference among the three groups suggesting no effects from operation of PBAPS.

Gamma Spectrometry

Samples from all locations were analyzed monthly for the presence of gamma emitters (Tables C-V.3 and C-V.4). Naturally occuring Be-7 was found in most samples as has been the case in the past. Other nuclides, including K-40, Nb-95, Te-129m, Cs-136, Ra-226, and Th-228 were found at or slightly above the detection limit in a few samples from all three groups. Due to the wide dispersal of the nuclides and their extremely low level, no PBAPS contribution is indicated.

b. Airborne Iodine

Continuous air samples were collected weekly at eight locations and analyzed for I-131 (Table C-VI.1). All results were less than the minimum detectable level.

2. Terrestrial

a. Milk

Samples were collected from ten locations, (A, B, C, E, G, J, L, M, N, and O). Farms A, B, C, and E were control locations. The following analyses were performed.

Strontium-89 and Strontium-90

Samples from all locations were analyzed quarterly for concentrations of Sr-89 and Sr-90 (Table C-VII.1). Positive values of Sr-89 were observed at the detection limit in samples from February (Farms J and L), May (Farms C and J), and August (Farms J, M, and N). All samples indicated positive Sr-90 activity with results ranging from 1.3 to 3.6 pCi/l. Sr-90 activities of samples from the nearby farms (G, J, and O) and intermediate farms (L, M, and N) were slightly higher than the activities detected in samples from the distant farms (A, B, C, and E). Comparing means from the three groups: nearby farms had a mean for all samples of 2.6 pCi/l, intermediate farms had a mean of 2.4 pCi/l, and the distant farms had a mean of 2.1 pCi/l. The trend for detecting higher activity at the nearby farms is consistent with results from

both the preoperational and operational periods. The preoperational/operational mean ratios were similar and therefore the higher Sr-90 radioactivity concentrations observed at the near farms are not due to PBAPS operation.

Cesium-134 and Cesium-137

Samples from all locations were analyzed quarterly for concentrations of Cs-134 and Cs-137 (Table C-VII.1 and Figure C-10). Positive concentrations of Cs-137 were detected in some samples from most farms, ranging from <2 to 6 pCi/l and was attributed to atmospheric nuclear testing. Cs-134 activity at the detection limit (5 ± 5), was observed in one sample from Farm L. The absence, in general, of Cs-134 and the declining levels of Cs-137 over the past several years supports the nuclear testing assumption.

Iodine-131

Samples from all locations were analyzed for concentrations of I-131 (Tables C-VII.2 and C-VII.3). All results from all analyses were less than the minimum detectable level.

b. Well Water

Samples from four locations (1U, 1V, 40 and 7) were collected quarterly. Location 7 was the control. The following analyses were performed.

Gross Alpha

Samples from all locations were analyzed for concentrations of gross alpha (Table C-VIII.1). Results from analysis of samples from all locations were similar and ranged for <.2 to 3 pCi/l. The results for well water samples were similar to the results of previous years.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Table C-VIII.1). Results ranged from <.4 to 2.6 pCi/l. Results from the control location were slightly higher than those from the indicator locations. Results were within the range found in the PBAPS preoperational period.

Tritium

Samples from all locations were analyzed for concentrations of aqueous tritium (Table C-VIII.1). Values ranged from <70 to 410 pCi/l. There was no notable difference between these results and those from previous years.

Uranium

Samples from all locations were analyzed for concentrations of uranium (Table C-VIII.1). Positive concentrations of uranium were detected in all locations. Values ranged from <.05 ug/l to .30 ug/l. Results were generally lower than recent years. Uranium is naturally occurring in most rocks and is not of plant origin.

Gamma Spectrometry

Samples from all locations were analyzed for concentrations of gamma emitters (Table C-VIII.2). Positive concentrations of Ra-226 and Th-228 were detected in several samples. The Ra-226 activity was determined by the presence of Pb-214 and Bi-214, two short-lived daughter products of Rn-222. It was assumed that they were in equilibrium with Ra-226; however, after comparing these results with the corresponding gross alpha data, it was determined that activity would best be attributed to the presence of Rn-222. No differences were observed between indicator and control locations.

c. Vegetation

Samples from seven locations (1, 3A, 4N, 5, 6D, 8, and 23) were collected and analyzed. The control locations were 4N, 6D, and 8. The following analyses were performed.

Strontium-89 and Strontium-90

Samples from all locations were analyzed for concentrations of Sr-89 and Sr-90 (Table C-IX.1). Positive activities of Sr-90 were detected at all locations ranging from .0032 to .474 pCi/g wet. These results were comparable to those of the previous year, as well as, preoperational data. Positive concentrations of Sr-89 were detected in three samples at or slightly above the detection

limit, with no notable difference between positive values at control and indicator locations.

Gamma Spectrometry

Samples from all locations were analyzed for concentrations of gamma emitters (Table C-IX.2). Positive concentrations of Be-7 and K-40 were detected in most samples with Be-7 activity ranging from <.08 to .9 pCi/g wet and K-40 activity ranging from .8 to 7.1 pCi/g wet. Cs-137, Ra-226, and Th-228 were found in several samples and may be due to soil contamination. Other instances of positive activities of the remaining nuclides searched for were at or slightly above the detection limit and therefore are not considered significant. No notable difference between the indicator and control locations was evident.

d. Soil

Samples were collected from six locations (1AA, 2, 3A, 4N, 5, and 6G) semi-annually. Control locations were 4N and 6G. The following analyses were performed.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Table C-X.1). Positive values were detected in all samples ranging from 3.4 to 8 pCi/g dry. Results from indicator and control locations were not notably different. 1987 results were within the range of PBAPS preoperational data.

Strontium-89 and Strontium-90

Samples from all locations were analyzed for concentrations of Sr-89 and Sr-90 (Table C-X.1). Positive values of Sr-90 were detected in all samples with activities ranging from .040 to .261 pCi/g dry. The highest activities were found at location 2, with a mean of .254 pCi/g dry. The higher activity at location 2 has been previously noted and attributed to the accumulation of vegetative material at that location. Sr-89 concentration was slightly above the detection limit in one sample, probably due to counting statistics. There was no notable difference

between the 1987 Sr-89 and Sr-90 results and those of previous years.

Gamma Spectrometry

Samples from all locations were analyzed for concentrations of gamma emitters (Tables C-X.1 and C-X.2). Positive concentrations of K-40, Cs-137, Ra-226, and Th-228 were detected at all locations. Concentrations of Be-7, Zr-95, Nb-95, Ag-110m, I-131, and Cs-134 at or slightly above the detection limit were found at several locations. There was no notable difference between the 1987 cesium results and those of previous years.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured at forty-seven locations (as described in the program description section) using $CaSO_4$:Dy thermoluminescent dosimeters (Tables C-XI.1 through C-XI.4 and Figures C-11 and C-12). All monthly and quarterly TLD readings were below 10 mR/std. month with a range of 3.6 to 9.4 mR /std. month for the monthly's and 2.6 to 8.5 mR/std. month for the quarterly's. No notable differences were observed among site-boundary, middle, and outer ring measurements. Data indicated that operation of PBAPS does not affect the existing ambient gamma radiation levels.

REFERENCES

V. References

1. Preoperational Environs Radioactivity Survey Summary Report, March, 1960 through January, 1966. (September 1967).

2. Interex Corporation, Peach Bottom Atomic Power Station Regional Environs Radiation Monitoring Program Preoperational Summary Report. Units 2 and 3, 5 February 1966 through 8 August 1973, June 1977, Natick Massachusetts.

3. Radiation Management Corporation Publication, Peach Bottom Atomic Power Station Preoperational Radiological Monitoring Report for Unit 2 and 3, January, 1974, Philadelphia, Pennsylvania.

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION
LOCATION OF FACILITY: YORK COUNTY, PA
DOCKET NO.: 50-277 & 50-278
REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GROSS ALPHA INSOLUBLE	49	N/A	.6 (22/37) (.1-3)	.27 (10/12) (.05-.6)	1.1 (7/12) (.3-3)	13B (INDICATOR) CHESTER WATER INTAKE PUMP 2.4 MILES ESE OF SITE	0
	GROSS ALPHA SOLUBLE	49	N/A	.9 (3/37) (.7-1)	.9 (2/12) (.7-1.1)	1.0 (1/12) (1.0-1.0)	13B (INDICATOR) CHESTER WATER INTAKE PUMP 2.4 MILES ESE OF SITE	0
	GROSS BETA INSOLUBLE	49	2.5	3.1 (29/37) (.4-31)	1.1 (8/12) (.4-2.4)	8.0 (8/12) (.5-31)	13B (INDICATOR) CHESTER WATER INTAKE PUMP 2.4 MILES ESE OF SITE	0
	GROSS BETA SOLUBLE	49	2.5	2.7 (37/37) (1.2-4)	2.8 (12/12) (1.8-4)	2.8 (12/12) (1.3-4)	13B (INDICATOR) CHESTER WATER INTAKE PUMP 2.4 MILES ESE OF SITE	0
	AQUEOUS H3 TOTAL	12	1200	176 (8/8) (70-400)	193 (3/4) (90-400)	220 (4/4) (70-400)	1MM (INDICATOR) CANAL DISCHARGE-COMPOSITE 1.0 MILES SE OF SITE	0
	GAMMA	49						
	K-40		N/A	12 (4/37) (8-20)	8 (2/12) (6-11)	15 (2/12) (10-20)	13B (INDICATOR) CHESTER WATER INTAKE PUMP 2.4 MILES ESE OF SITE	0
	MN-54		9	< MDL	< MDL	< MDL		0
	CO-58		9	< MDL	< MDL	< MDL		0
	FE-59		18	< MDL	< MDL	< MDL		0
	CO-60		9	< MDL	< MDL	< MDL		0
	ZN-65		18	< MDL	< MDL	< MDL		0
	ZR-95		9	< MDL	< MDL	< MDL		0
	NB-95		9	< MDL	< MDL	< MDL		0
	CS-134		9	< MDL	< MDL	< MDL		0
	CS-137		11	1 (1/37) (1-1)	< MDL	1 (1/12) (1-1)	13B (INDICATOR) CHESTER WATER INTAKE PUMP 2.4 MILES ESE OF SITE	0
	BA-140		35	< MDL	< MDL	< MDL		0
	LA-140		9	< MDL	< MDL	< MDL		0
	RA-226		N/A	20 (1/37) (20-20)	< MDL	20 (1/12) (20-20)	1MM (INDICATOR) DISCHARGE CANAL 1.0 MILES SE OF SITE	0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
DRINKING WATER (PCI/LITER)	GROSS ALPHA INSOLUBLE	24	N/A	.09 (2/12) (.08-.1)	.20 (4/12) (.09-.5)	.20 (4/12) (.09-.5)	6I (CONTROL) HOLTWOOD STATION INTAKE-COMPOSITE 5.8 MILES NW OF SITE	0
	GROSS ALPHA SOLUBLE	24	N/A	.8 (1/12) (.8-.8)	.6 (1/12) (.6-.6)	.8 (1/12) (.8-.8)	4L (INDICATOR) CONOWINGO DAM EL. 33FT. COMPOSITE 8.6 MILES SE OF SITE	0
	GROSS BETA INSOLUBLE	24	2.5	.6 (6/12) (.5-.8)	1.2 (6/12) (.7-1.9)	1.2 (6/12) (.7-1.9)	6I (CONTROL) HOLTWOOD STATION INTAKE-COMPOSITE 5.8 MILES NW OF SITE	0
	GROSS BETA SOLUBLE	24	2.5	2.8 (12/12) (1.3-4)	2.7 (12/12) (1.7-5)	2.8 (12/12) (1.3-4)	4L (INDICATOR) CONOWINGO DAM EL. 33FT. COMPOSITE 8.6 MILES SE OF SITE	0
	I-131 TOTAL	24	N/A	< MDL	< MDL	< MDL		0
	AQUEOUS H3 TOTAL	8	1200	140 (3/4) (70-180)	178 (4/4) (80-300)	178 (4/4) (80-300)	6I (CONTROL) HOLTWOOD STATION INTAKE-COMPOSITE 5.8 MILES NW OF SITE	0
	GAMMA	24						
	MN-54		9	< MDL	< MDL	< MDL		0
	CO-58		9	< MDL	< MDL	< MDL		0
	FE-59		18	< MDL	< MDL	< MDL		0
	CO-60		9	< MDL	< MDL	< MDL		0
	ZN-65		18	< MDL	< MDL	< MDL		0
	ZR-95		9	< MDL	< MDL	< MDL		0
	NB-95		9	< MDL	< MDL	< MDL		0
	CS-134		9	< MDL	< MDL	< MDL		0
	CS-137		11	< MDL	< MDL	< MDL		0
	BA-140		35	< MDL	< MDL	< MDL		0
	LA-140		9	< MDL	< MDL	< MDL		0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION — DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA — REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
CATFISH (PCI/GRAM ASH)	SR-89	20	N/A	.2 (1/16) (.2-.2)	< MDL	.2 (1/4) (.2-.2)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0
	SR-90	20	N/A	.58 (16/16) (.30-.97)	.46 (4/4) (.2-.66)	.70 (4/4) (.33-.97)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
(PCI/GRAM WET)	SR-89	20	N/A	.008 (1/16) (.008-.008)	< MDL	.008 (1/4) (.008-.008)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0
	SR-90	20	N/A	.0250 (16/16) (.0062-.047)	.019 (4/4) (.005-.032)	.027 (4/4) (.023-.035)	1X (INDICATOR) COOLING TOWER POND B1 0.3 MILES ESE OF SITE	0
	GAMMA K-40	20	N/A	2.4 (16/16) (1.5-3.1)	2.1 (4/4) (.7-3)	2.6 (4/4) (2.2-3.1)	4I (INDICATOR) CONOWINGO POND NET TRAP 8 0.3 MILES N OF SITE	0
	MN-54		.08	< MDL	< MDL	< MDL		0
	CO-58		.08	< MDL	< MDL	< MDL		0
	FE-59		.16	< MDL	< MDL	< MDL		0
	CO-60		.08	.012 (1/16) (.012-.012)	< MDL	.012 (1/4) (.012-.012)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0
	ZN-65		.16	.03 (8/16) (.02-.04)	< MDL	.04 (2/4) (.03-.04)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0
	RU-106		N/A	.07 (1/16) (.07-.07)	< MDL	.07 (1/4) (.07-.07)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0
	TE-129M		N/A	< MDL	< MDL	< MDL		0
	CS-134		.09	.015 (7/16) (.006-.046)	< MDL	.021 (3/4) (.006-.046)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0

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APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION — DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA — REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
CATFISH (PCI/GRAM WET)	GAMMA	20						
	CS-136		N/A	.02 (1/16) (.02-.02)	< MDL	.02 (1/4) (.02-.02)	1X (INDICATOR) COOLING TOWER POND B1 0.3 MILES ESE OF SITE	0
	CS-137		.09	.022 (14/16) (.01-.063)	.011 (1/4) (.011-.011)	.029 (4/4) (.01-.063)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0
	LA-140		N/A	.01 (2/16) (.01-.01)	.01 (1/4) (.01-.01)	.01 (1/4) (.01-.01)	1EE (INDICATOR) DISCHARGE CANAL DISCHARGE CANAL	0
	RA-226		N/A	.04 (2/16) (.02-.06)	< MDL	.06 (1/4) (.06-.06)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	TH-228		N/A	.04 (3/16) (.03-.05)	.03 (1/4) (.03-.03)	.04 (2/4) (.03-.05)	4I (INDICATOR) CONOWINGO POND NET TRAP 8 0.3 MILES N OF SITE	0
CRAPPIE (PCI/GRAM ASH)	SR-89	2	N/A	< MDL	< MDL	< MDL		0
	SR-90	2	N/A	.50 (1/1) (.50-.50)	.49 (1/1) (.49-.49)	.50 (1/1) (.50-.50)	4I (INDICATOR) CONOWINGO POND NET TRAP 8 0.3 MILES N OF SITE	0
(PCI/GRAM WET	SR-89	2	N/A	< MDL	< MDL	< MDL		0
	SR-90	2	N/A	.027 (1/1) (.027-.027)	.027 (1/1) (.027-.027)	.027 (1/1) (.027-.027)	4I (INDICATOR) CONOWINGO POND NET TRAP 8 0.3 MILES N OF SITE	0
	GAMMA	2						
	K-40		N/A	2.7 (1/1) (2.7-2.7)	3.3 (1/1) (3.3-3.3)	3.3 (1/1) (3.3-3.3)	6H (CONTROL) HOLTWOOD POND 6.2 MILES NW OF SITE	0
	MN-54		.08	< MDL	< MDL	< MDL		0
	CO-58		.08	< MDL	< MDL	< MDL		0
	FE-59		.16	< MDL	< MDL	< MDL		0
	CO-60		.08	< MDL	< MDL	< MDL		0
	ZN-65		.16	< MDL	< MDL	< MDL		0

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APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
CRAPPIE	GAMMA	2						
(PCI/GRAM WET	CS-134		.09	< MDL	< MDL	< MDL		0
	CS-137		.09	.009 (1/1) (.009-.009)	< MDL	.009 (1/1) (.009-.009)	4I (INDICATOR) CONOWINGO POND NET TRAP 8 0.3 MILES N OF SITE	0
SM BASS (PCI/GRAM ASH)	SR-89	10	N/A	< MDL	< MDL	< MDL		0
	SR-90	10	N/A	.59 (7/7) (.40-1.18)	.55 (3/3) (.33-.9)	.68 (4/4) (.40-1.18)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
(PCI/GRAM WET)	SR-89	10	N/A	< MDL	< MDL	< MDL		0
	SR-90	10	N/A	.023 (7/7) (.015-.034)	.022 (3/3) (.007-.05)	.025 (4/4) (.015-.034)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	GAMMA K-40	10	N/A	3.2 (7/7) (2.5-3.6)	3.4 (3/3) (3.3-3.5)	3.5 (1/1) (3.5-3.5)	6H (CONTROL) HOLTWOOD POND 6.2 MILES NW OF SITE	0
	ZN-65		N/A	.02 (2/7) (.02-.02)	< MDL	.02 (2/4) (.02-.02)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	TE-129M		N/A	< MDL	.3 (1/3) (.3-.3)	.3 (1/2) (.3-.3)	6J (CONTROL) HOLTWOOD POND 10.7 MILES NNW OF SITE	0
	CS-134		N/A	.013 (2/7) (.012-.014)	< MDL	.013 (2/4) (.012-.014)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	CS-137		N/A	.014 (6/7) (.01-.02)	.008 (1/3) (.008-.008)	.015 (4/4) (.01-.02)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	LA-140		N/A	< MDL	.02 (1/3) (.02-.02)	.02 (1/2) (.02-.02)	6J (CONTROL) HOLTWOOD POND 10.7 MILES NNW OF SITE	0
	RA-226		N/A	.02 (1/7) (.02-.02)	< MDL	.02 (1/3) (.02-.02)	4I (INDICATOR) CONOWINGO POND NET TRAP 8 0.3 MILES N OF SITE	0

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APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SILT (PCI/GRAM DRY)	GROSS ALPHA	12	N/A	5.1 (10/10) (2.6-9)	5 (2/2) (4-6)	8 (2/2) (6-9)	4T (INDICATOR) CONOWINGO POND NEAR CONOWINGO DAM 8.1 MILES SE OF SITE	0
	GROSS BETA	12	N/A	2.5 (10/10) (.9-5.6)	3.2 (2/2) (2.6-3.7)	4.7 (2/2) (3.7-5.6)	4T (INDICATOR) CONOWINGO POND NEAR CONOWINGO DAM 8.1 MILES SE OF SITE	0
	GAMMA	12						
	BE-7		N/A	.3 (1/10) (.3-.3)	.3 (1/2) (.3-.3)	.3 (1/2) (.3-.3)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	K-40		N/A	16.4 (10/10) (4.1-23)	11.4 (2/2) (6.8-16)	21.9 (2/2) (21-22.8)	1X (INDICATOR) COOLING TOWER POND B1 0.3 MILES ESE OF SITE	0
	CO-60		N/A	.19 (3/10) (.04-.28)	< MDL	.26 (2/2) (.24-.28)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	ZN-65		N/A	.18 (1/10) (.18-.18)	< MDL	.18 (1/2) (.18-.18)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	NB-95		N/A	.04 (1/10) (.04-.04)	.05 (2/2) (.04-.06)	.05 (2/2) (.04-.06)	6F (CONTROL) HOLTWOOD DAM EAST SHORE UPSTREAM 5.8 MILES NW OF SITE	0
	SB-125		N/A	.06 (1/10) (.06-.06)	< MDL	.06 (1/2) (.06-.06)	1X (INDICATOR) COOLING TOWER POND B1 0.3 MILES ESE OF SITE	0
	CS-134		.10	.08 (6/10) (.03-.14)	.04 (2/2) (.03-.04)	.13 (2/2) (.11-.14)	4J (INDICATOR) CONOWINGO POND NET TRAP 15 1.4 MILES SE OF SITE	0
	CS-137		.10	.25 (8/10) (.03-.49)	.19 (2/2) (.17-.2)	.41 (2/2) (.32-.49)	4T (INDICATOR) CONOWINGO POND NEAR CONOWINGO DAM 8.1 MILES SE OF SITE	0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SILT (PCI/GRAM DRY)	GAMMA	12						
	RA-226		N/A	.81 (10/10) (.32-1.5)	1.09 (2/2) (.78-1.4)	1.4 (2/2) (1.2-1.5)	4T (INDICATOR) CONOWINGO POND NEAR CONOWINGO DAM 8.1 MILES SE OF SITE	0
	TH-228		N/A	1.0 (10/10) (.2-1.8)	1.1 (2/2) (.8-1.3)	1.6 (2/2) (1.4-1.8)	4T (INDICATOR) CONOWINGO POND NEAR CONOWINGO DAM 8.1 MILES SE OF SITE	0
AIR PARTICULATE (PCI/CU. METER)	GROSS BETA	812	0.006	.025 (607/607) (.002-.046)	.024 (205/205) (.012-.044)	.026 (51/51) (.015-.043)	1A (INDICATOR) WEATHER STATION 1 0.3 MILES SE OF SITE	0
	GAMMA	192						
	BE-7		N/A	.16 (136/144) (.07-.3)	.15 (46/48) (.06-.3)	.19 (11/12) (.08-.3)	15 (INDICATOR) SILVER SPRING ROAD 3.6 MILES N OF SITE	0
	K-40		N/A	.20 (31/144) (.1-.4)	.17 (17/48) (.1-.4)	.3 (2/12) (.3-.3)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0
	MN-54		N/A	.009 (1/144) (.009-.009)	.005 (1/48) (.005-.005)	.009 (1/12) (.009-.009)	33A (INDICATOR) FULTON WEATHER STATION 1.7 MILES ENE OF SITE	0
	CO-57		N/A	.003 (1/144) (.003-.003)	< MDL	.003 (1/12) (.003-.003)	17 (INDICATOR) RIVERVIEW ROAD 4.0 MILES ESE OF SITE	0
	ZN-65		N/A	.02 (1/144) (.02-.02)	< MDL	.02 (1/12) (.02-.02)	2 (INDICATOR) SITE 130 DEGREE SECTOR HILL 0.9 MILES SE OF SITE	0
	ZR-95		N/A	.01 (1/144) (.01-.01)	.02 (1/48) (.02-.02)	.02 (1/12) (.02-.02)	12A (CONTROL) 900 SANSOM ST., PHILADELPHIA, PA 63 MILES ENE OF SITE	0
	NB-95		N/A	.009 (4/144) (.007-.01)	< MDL	.01 (2/12) (.01-.01)	14 (INDICATOR) PETERS CREEK 1.9 MILES ESE OF SITE	0
	AG-110M		N/A	< MDL	.007 (1/48) (.007-.007)	.007 (1/12) (.007-.007)	12D (CONTROL) 2301 MARKET ST., PHILADELPHIA, PA 62 MILES ENE OF SITE	0

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RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (PCI/CU. METER)	GAMMA	192						
	SB-125		N/A	.01 (1/144) (.01-.01)	< MDL	.01 (1/12) (.01-.01)	33A (INDICATOR) FULTON WEATHER STATION 1.7 MILES ENE OF SITE	0
	TE-129M		N/A	< MDL	.2 (3/48) (.2-.3)	.3 (1/12) (.3-.3)	12A (CONTROL) 900 SANSOM ST., PHILADELPHIA, PA 63 MILES ENE OF SITE	0
	CS-134		.04	< MDL	< MDL	< MDL		0
	CS-136		N/A	.09 (2/144) (.07-.11)	.06 (1/48) (.06-.06)	.11 (1/12) (.11-.11)	2 (INDICATOR) SITE 130 DEGREE SECTOR HILL 0.9 MILES SE OF SITE	0
	CS-137		.04	.005 (1/144) (.005-.005)	< MDL	.005 (1/12) (.005-.005)	17 (INDICATOR) RIVERVIEW ROAD 4.0 MILES ESE OF SITE	0
	LA-140		N/A	.07 (2/144) (.04-.1)	< MDL	.1 (1/12) (.1-.1)	31 (INDICATOR) PILOTTOWN ROAD 4.9 MILES SE OF SITE	0
	CE-141		N/A	.02 (2/144) (.01-.02)	< MDL	.02 (1/12) (.02-.02)	33A (INDICATOR) FULTON WEATHER STATION 1.7 MILES ENE OF SITE	0
	RA-226		N/A	.014 (12/144) (.007-.03)	.01 (1/48) (.01-.01)	.03 (1/12) (.03-.03)	15 (INDICATOR) SILVER SPRING ROAD 3.6 MILES N OF SITE	0
	TH-228		N/A	.02 (2/144) (.02-.02)	.02 (1/48) (.02-.02)	.02 (1/12) (.02-.02)	12A (CONTROL) 900 SANSOM ST., PHILADELPHIA, PA 63 MILES ENE OF SITE	0
AIR IODINE (PCI/CU. METER)	I-131	414	0.04	< MDL	< MDL	< MDL		0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION
LOCATION OF FACILITY: YORK COUNTY, PA
DOCKET NO.: 50-277 & 50-278
REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	SR-89	39	N/A	.9 (6/23) (.9-1)	.8 (1/16) (.8-.8)	1 (1/4) (1-1)	N (INDICATOR) INTERMEDIATE DISTANCE FARM N EAST OF CONOWINGO POND	0
	SR-90	39	N/A	2.5 (23/23) (1.3-3.6)	2.1 (16/16) (1.2-3.7)	3.2 (3/3) (3.0-3.4)	G (INDICATOR) NEARBY FARM G WEST OF CONOWINGO POND	0
	I-131	142	0.6	< MDL	< MDL	< MDL		0
	CS-134	40	10	5 (1/24) (5-5)	4 (2/16) (3-5)	5 (1/4) (5-5)	B (CONTROL) DISTANT FARM B WEST OF CONOWINGO POND	0
	CS-137	40	10	4 (8/24) (2-6)	5 (6/16) (3-6)	6 (2/4) (6-6)	E (CONTROL) DISTANT FARM E EAST OF CONOWINGO POND	0
WELL WATER (PCI/LITER)	GROSS ALPHA	16	N/A	1.0 (11/12) (.4-3)	< MDL	1.3 (3/4) (.4-3)	40 (INDICATOR) PEACH BOTTOM SITE AREA 1.5 MILES SW OF SITE	0
	GROSS BETA	16	2.5	1.9 (11/12) (.7-2.6)	2.2 (4/4) (1.9-2.6)	2.2 (4/4) (1.9-2.6)	7 (CONTROL) DARLINGTON, MD AREA 9.6 MILES SSE OF SITE	0
	URANIUM (A)	16	N/A	.14 (6/12) (.07-.30)	.16 (2/4) (.06-.26)	.19 (3/4) (.07-.30)	1U (INDICATOR) UTILITY BUILDING 0.3 MILES S OF SITE	0
	AQUEOUS H3	16	1200	175 (8/12) (100-410)	240 (2/4) (150-330)	270 (2/4) (130-410)	1U (INDICATOR) UTILITY BUILDING 0.3 MILES S OF SITE	0
	GAMMA	8						
	MN-54		9	< MDL	< MDL	< MDL		0
	CO-58		9	< MDL	< MDL	< MDL		0
	FE-59		18	< MDL	< MDL	< MDL		0
	CO-60		9	< MDL	< MDL	< MDL		0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
WELL WATER (PCI/LITER)	GAMMA	8						
	ZN-65		18	< MDL	< MDL	< MDL		0
	ZR-95		9	< MDL	< MDL	< MDL		0
	NB-95		9	< MDL	< MDL	< MDL		0
	CS-134		9	< MDL	< MDL	< MDL		0
	CS-137		11	< MDL	< MDL	< MDL		0
	BA-140		35	< MDL	< MDL	< MDL		0
	LA-140		9	< MDL	< MDL	< MDL		0
	RA-226		N/A	8 (3/6) (6-9)	19 (1/2) (19-19)	19 (1/2) (19-19)	7 (CONTROL) DARLINGTON, MD AREA 9.6 MILES SSE OF SITE	0
	TH-228		N/A	7 (1/6) (7-7)	< MDL	7 (1/2) (7-7)	10 (INDICATOR) UTILITY BUILDING 0.3 MILES S OF SITE	0
VEGETATION (PCI/GRAM ASH)	SR-89	36	N/A	1.2 (2/21) (.4-2)	.8 (1/15) (.8-.8)	1.2 (2/6) (.4-2)	1 (INDICATOR) PEACH BOTTOM SITE AREA SITE AREA	0
	SR-90	36	N/A	13.7 (21/21) (7.2-93)	6.9 (15/15) (.4-12.2)	28.4 (6/6) (7.6-93)	23 (INDICATOR) 150 SECTOR HILL 1.0 MILES SSE OF SITE	0
(PCI/GRAM WET)	SR-89	36	N/A	.03 (2/21) (.01-.05)	.03 (1/15) (.03-.03)	.03 (2/6) (.01-.05)	1 (INDICATOR) PEACH BOTTOM SITE AREA SITE AREA	0
	SR-90	36	N/A	.183 (21/21) (.021-.474)	.1304 (15/15) (.0032-.269)	.275 (6/6) (.078-.474)	23 (INDICATOR) 150 SECTOR HILL 1.0 MILES SSE OF SITE	0
	GAMMA	36						
	BE-7		N/A	.37 (13/21) (.14-.9)	.31 (11/15) (.08-.7)	.5 (3/6) (.2-.9)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0
	K-40		N/A	3.2 (21/21) (.8-7.1)	3.7 (15/15) (1.5-5.8)	4.2 (6/6) (2.9-6.6)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/GRAM WET)	GAMMA	36						
	ZR-95		N/A	.05 (2/21) (.04-.05)	< MDL	.05 (1/6) (.05-.05)	1 (INDICATOR) SITE AREA SITE AREA	0
	SB-125		N/A	< MDL	.03 (1/15) (.03-.03)	.03 (1/6) (.03-.03)	6D (CONTROL) HOLTWOOD, PA	0
	I-131		.36	< MDL	< MDL	< MDL		0
	CS-134		.04	< MDL	< MDL	< MDL		0
	CS-137		.04	.03 (3/21) (.01-.07)	.018 (5/15) (.01-.03)	.07 (1/6) (.07-.07)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0
	RA-226		N/A	.07 (5/21) (.02-.2)	.03 (3/15) (.02-.04)	.11 (2/6) (.02-.2)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0
	TH-228		N/A	.07 (7/21) (.03-.18)	.05 (5/15) (.03-.1)	.11 (2/6) (.03-.18)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0
SOIL (PCI/GRAM DRY)	GROSS BETA	12	N/A	5.0 (8/8) (3.4-8)	5.3 (4/4) (3.9-6.0)	5.8 (2/2) (3.6-8)	1AA (INDICATOR) DISCHARGE CANAL BANK 0.5 MILES SE OF SITE	0
	SR-89	12	N/A	< MDL	.011 (1/4) (.011-.011)	.011 (1/2) (.011-.011)	6G (CONTROL) HOLTWOOD, PA 5.8 MILES NW OF SITE	0
	SR-90	12	N/A	.159 (8/8) (.040-.261)	.126 (4/4) (.076-.212)	.254 (2/2) (.246-.261)	2 (INDICATOR) 130 DEGREE SECTOR HILL 0.9 MILES SE OF SITE	0
	GAMMA	12						
	BE-7		N/A	.7 (3/8) (.4-.8)	.5 (1/4) (.5-.5)	.8 (1/2) (.8-.8)	1AA (INDICATOR) DISCHARGE CANAL BANK 0.5 MILES SE OF SITE	0
	K-40		N/A	18.1 (8/8) (11.7-29)	13.4 (4/4) (4.4-19)	26 (2/2) (23-29)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

APPENDIX A
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: PEACH BOTTOM ATOMIC POWER STATION DOCKET NO.: 50-277 & 50-278
LOCATION OF FACILITY: YORK COUNTY, PA REPORTING PERIOD: 1987

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED MINIMUM DETECTABLE LEVEL (MDL)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SOIL (PCI/GRAM DRY)	GAMMA	12						
	ZR-95		N/A	.07 (1/8) (.07-.07)	< MDL	.07 (1/2) (.07-.07)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0
	NB-95		N/A	.05 (3/8) (.05-.06)	< MDL	.06 (1/2) (.06-.06)	3A (INDICATOR) DELTA, PA SUBSTATION 3.6 MILES SW OF SITE	0
	AG-110M		N/A	.04 (1/8) (.04-.04)	< MDL	.04 (1/2) (.04-.04)	5 (INDICATOR) WAKEFIELD, PA 4.6 MILES E OF SITE	0
	I-131		N/A	< MDL	.5 (1/4) (.5-.5)	.5 (1/2) (.5-.5)	6G (CONTROL) HOLTWOOD, PA 5.8 MILES NW OF SITE	0
	CS-134		N/A	.03 (2/8) (.03-.03)	< MDL	.03 (1/2) (.03-.03)	1AA (INDICATOR) DISCHARGE CANAL BANK 0.5 MILES SE OF SITE	0
	CS-137		N/A	.75 (8/8) (.21-2.5)	.54 (4/4) (.24-.69)	1.70 (2/2) (.89-2.5)	2 (INDICATOR) SITE 130 DEGREE SECTOR HILL 0.9 MILES SE OF SITE	0
	RA-226		N/A	1.0 (8/8) (.74-1.3)	.96 (4/4) (.36-1.3)	1.3 (2/2) (1.3-1.3)	6G (CONTROL) HOLTWOOD, PA 5.8 MILES NW OF SITE	0
	TH-228		N/A	1.2 (8/8) (.99-1.6)	1.0 (4/4) (.37-1.6)	1.4 (2/2) (1.2-1.6)	6G (CONTROL) HOLTWOOD, PA 5.8 MILES NW OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN / STD. MONTH)	TLD-MONTHLY	536	N/A	6.7 (455/455) (3.6-9.4)	6.6 (81/81) (5.2-9.3)	8.1 (12/12) (7.2-9.4)	42 (INDICATOR) MUDDY RUN ENVIRONMENTAL LAB 4.2 MILES NNW OF SITE	0
	TLD-QUARTERLY	178	N/A	6.3 (151/151) (2.6-8.5)	6.1 (27/27) (4.6-7.6)	7.6 (4/4) (6.9-8.5)	42 (INDICATOR) MUDDY RUN ENVIRONMENTAL LAB 4.2 MILES NNW OF SITE	0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY. FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES. (F)

SAMPLE DESIGNATION

AND LOCATIONS

APPENDIX B: SAMPLE DESIGNATION AND LOCATIONS

LIST OF TABLES AND FIGURES

TABLES

FIGURES

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
A. Surface Water				
1LL	Peach Bottom Units 2 and 3 Intake-Composite (Control)	Continuous sampler On-Site at Units 2 and 3 Intake 1200' ENE of Units 2 and 3.	Water is continuously sampled from the Peach Bottom Units 2 and 3 Intake and is collected in a 190 gallon tank. Each week 2 quarts are withdrawn from the tank prior to draining the tank and placed in a 2 gallon polyethylene bottle to form a monthly composite sample.	Aqueous Tritium-quarterly-TI Gross Beta(S&I)-monthly-TI,CH Gamma Spec-monthly-TI,CH Gross Alpha(S&I)-monthly-CH
1MM	Peach Bottom Canal Discharge-composite	Continuous sampler On-Site at canal discharge 1.0 miles SE of Units 2 and 3.	Same as 1LL but sample is collected from the discharge canal.	Same as location 1LL
13A	Chester Water Intake (raw)	On east shore of Conowingo Pond at Chester water Authority Intake, 2.4 miles ESE of Units 2 and 3.	Water is continuously sampled from the Chester Water Intake. Each week 2 qts. are withdrawn and placed in a 2 gallon polyethylene bottle to form a monthly composite sample.	Same as location 1LL
13B	Chester Water Intake	At Chester water Authority intake. The same as 13A but the sample is collected from the pump discharge.	Same as 13A but sample is collected from the pump discharge.	Gross Beta (S&I)-monthly-TI,CH Gamma Spec-monthly-TI,CH Gross Alpha (S&I)-monthly-CH.

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, (contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
B. Drinking (Potable) Water				
4L	Conowingo Dam EL 33' MSL - composite	Continuous sampler in Conowingo Hydroelectric Station; about 8.6 miles SE of Units 2 and 3.	Water is continuously sampled from a header which draws pond water from elevation 33' MSL and is collected in a 175 gallon tank. Each week 2 quarts are withdrawn from the tank prior to draining the tank and placed in a 2 gallon polyethylene bottle to form a monthly composite sample.	Gross Beta(S&I)-monthly-TI,CH Tritium-quarterly-TI I-131-monthly-TI Gamma Spec-monthly-TI,CH Gross Alpha(S&I)-monthly-CH
6I	Holtwood Dam Hydroelectric Station composite(control)	Continuous sampler at Holtwood Dam, PA, 5.8 miles NW of Units 2 and 3.	Water is continuously sampled from the Holtwood Hydroelectric Station Intake and is collected in a 175 gallon tank. Each week 2 quarts are withdrawn from the tank and placed in a 2 gallon polyethylene bottle to form a monthly composite sample.	Same as location 4L.

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program,
(contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
C. Well Water				
1U	Peach Bottom Site-Utility Building	Well at Plant Site. 1400' S of Units 2 and 3.	Well pump is run for several minutes prior to sampling in order to flush the sample line. Then two gallon grab sample is taken from the building faucet quarterly.	Tritium-quarterly-TI Gross Beta-quarterly-TI,CH Gross Alpha-quarterly-CH Gamma Spec-quarterly-CH Uranium-quarterly-CH
1V	Peach Bottom Site-Information Center	Well at Plant Site. 1400' SSE of Units 2 and 3.	Same as location 1U above	Same as location 1U above
40	Peach Bottom Site Area	Well in Site Area, 1.5 miles SW of Units 2 and 3.	Same as location 1U above	Same as location 1U above
7	Darlington, MD. Area (control)	9.6 miles SSE of Units 2 and 3 in Hartford Co., MD.	Same as location 1U above	Same as location 1U above
D. Air Particulate - Air Iodine				
1A	Weather Station #1	On-site at Weather Station #1, 0.3 miles SE of Units 2 and 3.	About 1 cfm continuous flow through glass fiber filters (approx. 2" diameter) which are installed for a week and replaced.	Gross Beta-weekly-CH Gamma Spec monthly-CH
1B	Weather Station #2	On-site at Weather Station #2 0.5 miles N of Units 2 and 3.	About 1 cfm continuous flow through glass fiber and charcoal filters (approx. 2" diameter) which are installed for a week and replaced.	Gross Beta-weekly-CH Gamma Spec monthly-CH I-131-weekly-TI

*Primary laboratory listed first.

TABLE B-I: (contd.) Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
D. Air Particulate - Air Iodine (contu.)				
1Z	Weather Station #1	On-site at Weather Station #1, 0.3 miles SE of Units 2 and 3.	Same as location 1B	Gross Beta-weekly-TI Gamma Spec monthly-TI I-131-TI
2	On-Site - 130° Sector Hill	On-site, 0.9 miles SE of Units 2 and 3.	Same as location 1B	Same as location 1B
3A	Delta, PA - Substation	3.6 miles SW of Units 2 and 3, 0.5 miles N of Maryland border.	Same as location 1B	Same as location 1B
4A	Conowingo Dam - Power House Roof	8.6 miles SE of Units 2 and 3 on Power House Roof in Cecil County, MD.	Same as location 1B	Gross Beta-weekly-TI Gamma Spec monthly-TI
4B	Conowingo Dam - Power House Roof (control)	8.6 miles SE of Units 2 and 3 on Power House Roof in Cecil County, MD.	Same as location 1B	Same as location 1A
5	Wakefield, PA	4.6 miles E of Units 2 and 3.	Same as location 1B	Same as location 1B
6B	Holtwood Dam - Hydroelectric Station(control)	5.8 miles NW of Units 2 and 3.	Same as location 1B	Same as location 1B
12A	900 Sansom Street Philadelphia, PA (control)	63 miles ENE of Units 2 and 3 on the roof of 900 Sansom Street.	Same as location 1B	Same as location 1B
12D	2301 Market Street Philadelphia, PA (control)	62 miles ENE of Units 2 and 3 on the Roof of 2301 Market Street.	Same as location 1B	Same as location 1B
14	Peters Creek	1.9 miles ESE of Units 2 and 3.	Same as location 1B	Same as location 1B

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program.
(contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
D. Air Particulate - Air Iodine (contd.)				
15	Silver Spring Road	3.6 miles N of Units 2 and 3.	Same as location 1B	Same as location 1A
17	Riverview Road	4.0 miles ESE of Units 2 and 3.	Same as location 1B	Same as location 1A
31	Pilottown Road	4.9 miles SE of Units 2 and 3 near Pilot-town Road.	Same as location 1B	Same as location 1A
32	Slate Hill Road	2.7 miles ENE of Units 2 and 3 near Slate Hill Road.	Same as location 1B	Same as location 1A
33A	Fulton Weather Station	Fulton Main Weather Station 1.7 miles ENE of Units 2 and 3.	Same as location 1B	Same as location 1A
38	Peach Bottom Road	3.0 miles E of Units 2 and 3 near Peach Bottom Road.	Same as location 1B	Same as location 1A
E. Milk				
A	Regional Farm A (control)	West Side of Pond (distant)	Two gallon grab sample is collected at each farm from a bulk tank containing milk biweekly while cows are on pasture, monthly otherwise.	I-131-Biweekly,monthly**-TI I-131-quarterly-CH Cs-134,137-quarterly-CH Sr-89,90-quarterly-CH
B	Regional Farm B (control)	West side of Pond (distant)	Same as Farm A	I-131-Biweekly,monthly**-TI Cs-134,137-quarterly-CH Sr-89,90-quarterly-CH

*Primary laboratory listed first.

**Monthly from December through March when cows are off pasture.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, (contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
E. Milk (contd.)				
C	Regional Farm C (control)	West side of pond (distant)	Same as Farm A except collection frequency was quarterly throughout the year.	I-131-quarterly-TI,CH Cs-134,137-quarterly-CH Sr-89,90-quarterly-CH
E	Regional Farm E (control)	East side of pond (distant)	Same as Farm C	I-131-quarterly-TI Cs-134,137-quarterly-CH Sr-89,90-quarterly-CH
G	Regional Farm G	West side of pond (near)	Same as Farm A	Same as Farm A
J	Regional Farm J	West side of pond (near)	Same as Farm A	I-131-biweekly,monthly-TI** Cs-134,137-quarterly-CH Sr-89,90-quarterly-CH,TI I-131-quarterly-CH Gamma Spec-quarterly-TI
L	Regional Farm L	East side of pond (intermediate)	Same as Farm C	Same as Farm E
M	Regional Farm M	East side of pond (intermediate)	Same as Farm C	Same as Farm E
N	Regional Farm N	East side of pond (intermediate)	Same as Farm A	Same as Farm B
O	Regional Farm O	West side of pond (near)	Same as Farm A	Same as Farm B

*Primary laboratory listed first.

**Monthly from December through March when cows are off pasture.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, (contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
F. Soil				
1AA	Discharge Canal Bank	Located about 2400' SE of Units 2 and 3 on the discharge canal bank.	Seven cores (2" in diameter and 6" deep) are collected from a 50 x 50 foot area semi-annually. Top 1 inch and bottom 5 inches are separated, sealed in plastic bags, and shipped to laboratory.	Gross Beta-semi-annually-CH Sr-89,90-semi-annually-CH Gamma Spec semi-annually-CH
2	130° Sector Hill	On-site 0.9 miles SE of Units 2 and 3.	Same as location 1AA	Same as location 1AA
3A	Delta, PA - Substation	3.6 miles SW of Units 2 and 3, 0.5 miles N of Maryland border.	Same as location 1AA	Same as location 1AA
4N	Conowingo Dam - Environmental Station(control)	Environmental monitoring Station on west shore upstream of Conowingo Hydroelectric Station about 8.6 miles SE of Units 2 and 3.	Same as location 1AA	Same as location 1AA
5	Wakefield, PA	4.6 miles E of Units 2 and 3.	Same as location 1AA	Same as location 1AA
6G	Holtwood, PA (control)	5.8 miles NW of Units 2 and 3 near Holtwood Dam in Lancaster Co.	Same as location 1AA	Same as location 1AA

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, (contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
G. Sediment				
1BB	Peach Bottom Discharge Canal	On-site in the Station Discharge canal, 3300' SE of Units 2 and 3.	Recently deposited sediment collected below the waterline, monthly	Gross Alpha-semi-annually-CH Gross Beta-semi-annually-CH Gamma Spec-semi-annually-CH
1X	Cooling Tower Pond B1	About 1750' ESE of Units 2 and 3.	Same as location 1BB	Same as location 1BB
4J	Conowingo Pond net trap 15	Located in Conowingo Pond about 1.4 miles SE of Units 2 and 3.	Same as location 1BB	Same as location 1BB
4D	Conowingo Pond, PA	500' downstream from the Peach Bottom Station discharge.	Same as location 1BB	Same as location 1BB
4T	Conowingo Pond near Conowingo Dam	Near middle of Conowingo Pond, about 8.1 miles SE of Units 2 and 3.	Same as location 1BB	Same as location 1BB
6F	Holtwood Dam East shore upstream (control)	5.8 miles NW of Units 2 and 3 near Holtwood Dam in Lancaster Co.	Same as location 1BB	Same as location 1BB

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, (contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
H. Fish				
1EE	Peach Bottom - Discharge Canal	In discharge canal, between the Peach Bottom Units 2 and 3 liquid radwaste discharge and canal exit.	Fish from two groups representing predator and bottom feeder species collected by electrofishing or other fishery gear, quarterly.	Sr-89,90-quarterly-CH Gamma Spec-quarterly-CH
1X	Cooling Tower Pond B1	About 1750' ESE of Units 2 and 3.	Same as location 1EE	Same as location 1EE
4I	Conowingo Pond - Trap Net 8	Located in Conowingo Pond about 1400' N of Units 2 and 3.	Same as location 1EE	Same as location 1EE
4J	Conowingo Pond - Trap Net 15	Located in Conowingo Pond about 1.4 miles SE of Units 2 and 3.	Same as location 1EE	Sames as location 1EE
6	Holtwood Pond (control)	Located in Holtwood Pond NW of Units 2 and 3.	Same as location 1EE	Same as location 1EE

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, (contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
I. Vegetation				
1	Peach Bottom Site Area	Located in Site Area.	Stems, leaves, and fruit of vegetation collected spring, summer and fall.	I-131-CH Gamma Spec-CH Sr-89,90-CH
3A	Delta substation	3.6 miles SW of Units 2 and 3, 0.5 miles N of Maryland border.	Same as location 1	Same as location 1
4M	Conowingo Dam (control)	Environmental Monitoring Station on west shore upstream of Conowingo Hydroelectric Station about 8.6 miles SE of Units 2 and 3.	Same as location 1	Same as location 1
5	Wakefield, PA	4.6 miles E of Units 2 and 3.	Same as location 1	Same as location 1
6D	Holtwood, PA (control)	5.8 miles NW of Units 2 and 3 near Holtwood Dam in Lancaster Co.	Same as location 1	Same as location 1
8	Colora, MD (control)	9.9 miles ENE of Units 2 and 3 in Cecil Co.	Same as location 1	Same as location 1
23	Peach Bottom 150° Sector Hill	Off-site, Hill 1.0 miles SSE of Units 2 and 3.	Same as location 1	Same as location 1

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program,
(contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
C. Environmental Dosimetry - TLD				
At each of the following locations there are 2 environmental dosimeter packets with 4 TLDs per package. One packet is replaced monthly, and one quarterly. The packets for each time period are collected and replaced on the same day at all the stations.				
1A	Peach Bottom Weather Station No.1	On-Site, 0.3 miles SE of Units 2 and 3.	Procedure for collection is described in the placement procedure in Section III., A.	TLD-monthly and quarterly-TI
1B	Peach Bottom Weather Station No.2	On-Site, 0.5 miles NW of Units 2 and 3.		TLD-monthly and quarterly-TI
1C	Peach Bottom South Sub-station Road	On-Site, 0.9 miles SSE of Units 2 and 3.		TLD-monthly and quarterly-TI
1D	Peach Bottom 140° Sector Site Boundary	On-Site, 0.7 miles SE of Units 2 and 3.		TLD-monthly and quarterly-TI
1E	Peach Bottom 350° Sector Site Boundary	On-Site, 0.6 miles NNW of Units 2 and 3.		TLD-monthly and quarterly-TI
1F	Peach Bottom 200° Sector Hill	On-Site, 0.6 miles SSW of Units 2 and 3.		TLD-monthly and quarterly-TI
1G	Peach Bottom North Substation	On-Site, 0.7 miles WNW of Units 2 and 3.		TLD-monthly and quarterly-TI
1H	Peach Bottom Site 270° Sector Hill	On-Site, 0.6 miles W of Units 2 and 3.		TLD-monthly and quarterly-TI

*Primary laboratory listed first.

TABLE B-I (contd.) Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program. Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
J. Environmental Dosimetry - TLD (contd.)				
1I	Peach Bottom South Substation	On-Site, 0.6 miles SSE of Units 2 and 3.	Procedure for collection is described in the placement procedure in Section III., A.	TLD-monthly and quarterly-TI
1J	Peach Bottom Site 180° Sector Hill	On-Site, 0.7 miles S of Units 2 and 3.		TLD-monthly and quarterly-TI
1L	Peach Bottom Unit 3 Intake	Located near Unit 3 Intake structure; 0.2 miles ENE of Units 2 and 3.		TLD-monthly and quarterly-TI
1M	Peach Bottom Canal Discharge	Located near Canal Discharge structure; 1.0 miles SE of Units 2 and 3.		TLD-monthly and quarterly-TI
1MM	Peach Bottom Site	On-Site, 0.5 miles WSW of Units 2 and 3.		TLD-monthly and quarterly-TI
2	Peach Bottom Site 130° Sector Hill	On-Site, 0.9 miles SE of Units 2 and 3.		TLD-monthly and quarterly-TI
3A	Delta, PA Substation	3.6 miles SW of Units 2 and 3.		TLD-monthly and quarterly-TI
4K	Conowingo Dam Power House Roof	On roof of Conowingo Power House, 8.6 miles SE of Units 2 and 3.		TLD-monthly and quarterly-TI
5	Wakefield, PA	At Wakefield, PA, 4.6 miles E of Units 2 and 3.		TLD-monthly and quarterly-TI
6B	Holtwood Dam Hydroelectric Station	On roof of Hydroelectric Station, 5.8 miles NW of Units 2 and 3.		TLD-monthly and quarterly-TI

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, (contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
v. Environmental Dosimetry - TLD (contd.)				
12B	Philadelphia, PA 3508 Market Street(control)	On roof of 3508 Market Street, Philadelphia, PA, 64 miles E of Units 2 and 3.	Procedure for collection is described in the placement procedure in Section III., A.	TLD-monthly and quarterly-TI
14	Peters Creek	1.9 miles ESE of Units 2 and 3 near the mouth of Peters Creek.		TLD-monthly and quarterly-TI
15	Silver Spring Road	3.6 miles N of Units 2 and 3 near Silver Spring Road.		TLD-monthly and quarterly-TI
16	Nottingham, PA Substation (control)	12.8 miles E of Units 2 and 3 at Nottingham Substation.		TLD-monthly and quarterly-TI
17	Riverview Road	4.0 miles ESE of Units 2 and 3 near Riverview Road.		TLD-monthly and quarterly-TI
18	Fawn Grove, PA	10 miles W of Units 2 and 3 at Fawn Grove, PA.		TLD-monthly and quarterly-TI
19	Red Lion, PA (control)	20.6 miles WNW of Units 2 and 3 at Red Lion, PA.		TLD-monthly and quarterly-TI
20	Bel Air, MD Area (control)	15.1 miles SSW of Units 2 and 3 near Bel Air, MD.		TLD-monthly and quarterly-TI
21B	Lancaster, PA Area (control)	19 miles NNW of Units 2 and 3 near Lancaster, PA.		TLD-monthly and quarterly-TI
22	Eagle Road	2.4 miles NNE of Units 2 and 3 near Eagle Road.		TLD-monthly and quarterly-TI

*Primary laboratory listed first.

TABLE B-1 (contd.) Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program, Peach Bottom Atomic Power Station, 1987

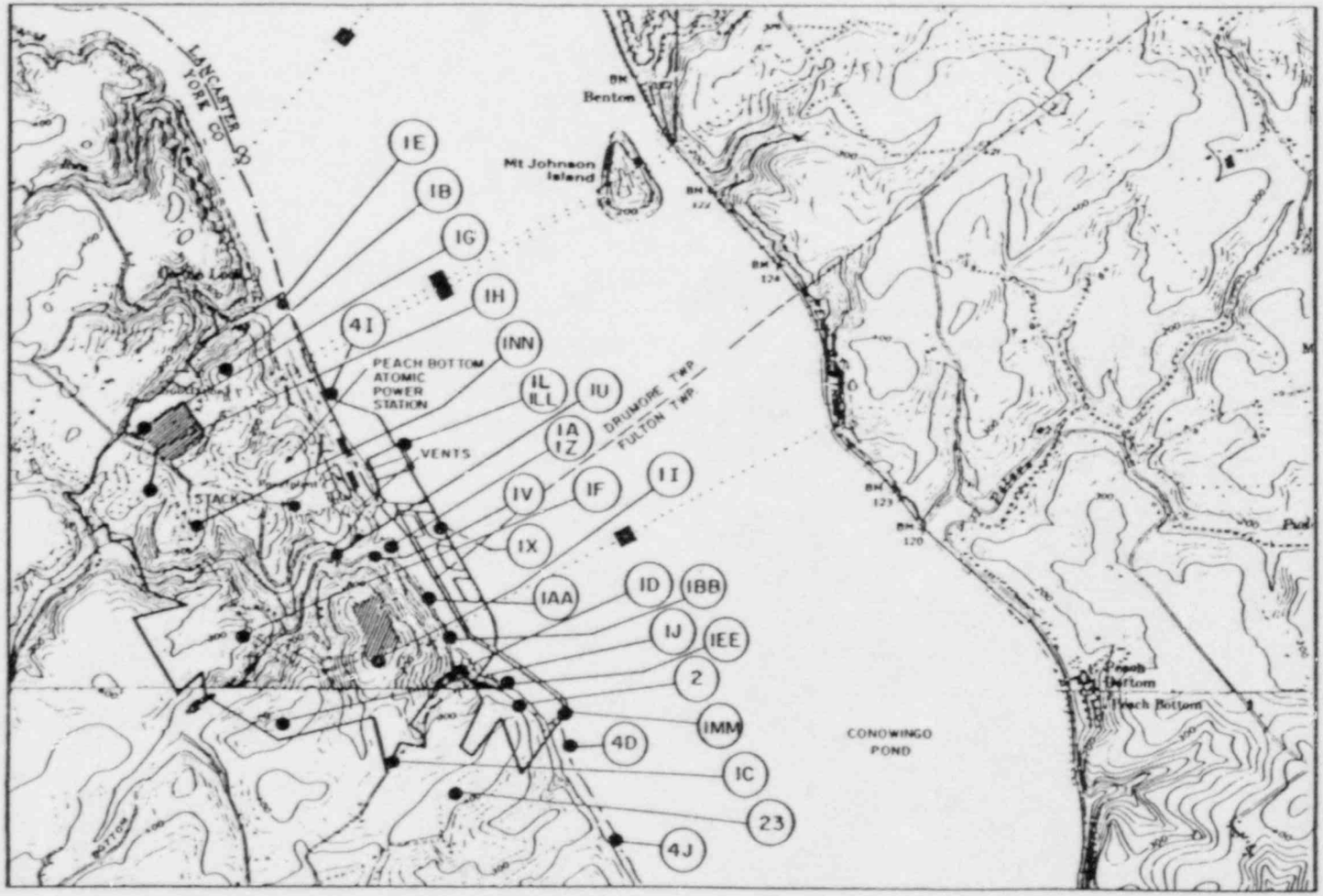
ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
J. Environmental Dosimetry - TLD (contd.)				
23	Peach Bottom 150° Sector Hill Off-site	Off-site Hill 1.0 miles ESE of Units 2 and 3.	Procedure for collection is described in the placement procedure in Section III., A.	TLD-monthly and quarterly-TI
24	Harrisville, MD Substation (control)	10.9 miles ESE of Units 2 and 3 at Harris Substation.		TLD-monthly and quarterly-TI
26	Slab Road	4.7 miles NW of Units 2 and 3 near Slab Road.		TLD-monthly and quarterly-TI
27	N. Cooper Road	2.6 miles S of Units 2 and 3 near N. Cooper Road.		TLD-monthly and quarterly-TI
31	Pilottown Road	4.9 miles SE of Units 2 and 3 near Pilottown Road.		TLD-monthly and quarterly-TI
32	Slate Hill Road	2.7 miles ENE of Units 2 and 3 near Slate Hill Road.		TLD-monthly and quarterly-TI
33A	Fulton Main Weather Station	1.7 miles ENE of Units 2 and 3.		TLD-monthly and quarterly-TI
38	Peach Bottom Road	3.0 miles E of Units 2 and 3 near Peach Bottom Road.		TLD-monthly and quarterly-TI
40	Peach Bottom Site Area	In site area about 1.2 miles SW of Units 2 and 3.		TLD-monthly and quarterly-TI
42	Muddy Run Environmental Laboratory	4.2 miles NNW of Units 2 and 3.		TLD-monthly and quarterly-TI

*Primary laboratory listed first.

TABLE B-I: Sample Collection and Anaiysis Program for the Radiological Environmental Monitoring Program.
(contd.) Peach Bottom Atomic Power Station, 1987

ENVIRONMENTAL LOCATION	LOCATION DESCRIPTION	DIRECTION & DISTANCE FROM PEACH BOTTOM	COLLECTION METHOD AND FREQUENCY	ANALYSIS AND FREQUENCY PERFORMED-CONSULTANT*
J. Environmental Dosimetry - TLD (contd.)				
43	Drumore Township School	5.0 miles NNE of Units 2 and 3.	Procedure for collection is described in the placement procedure in Section III., A.	TLD-monthly and quarterly-TI
44	Goshen Mill Road	5.1 miles NE of Units 2 and 3.		TLD-monthly and quarterly-TI
45	PB-Keeney Line	3.3 miles ENE of Units 2 and 3.		TLD-monthly and quarterly-TI
46	Broad Creek	4.5 miles SSE of Units 2 and 3 near Flintville Road.		TLD-monthly and quarterly-TI
47	Broad Creek Scout Camp	4.3 miles S of Units 2 and 3.		TLD-monthly and quarterly-TI
48	Macton Substation	5.0 miles SSW of Units 2 and 3.		TLD-monthly and quarterly-TI
49	PB-Conastone Line	4.1 miles WSW of Units 2 and 3.		TLD-monthly and quarterly-TI
50	TRANSCO Pumping Station	4.9 miles W of Units 2 and 3.		TLD-monthly and quarterly-TI
51	Fin Substation	4.0 miles WNW of Units 2 and 3.		TLD-monthly and quarterly-TI

*Primary laboratory listed first.



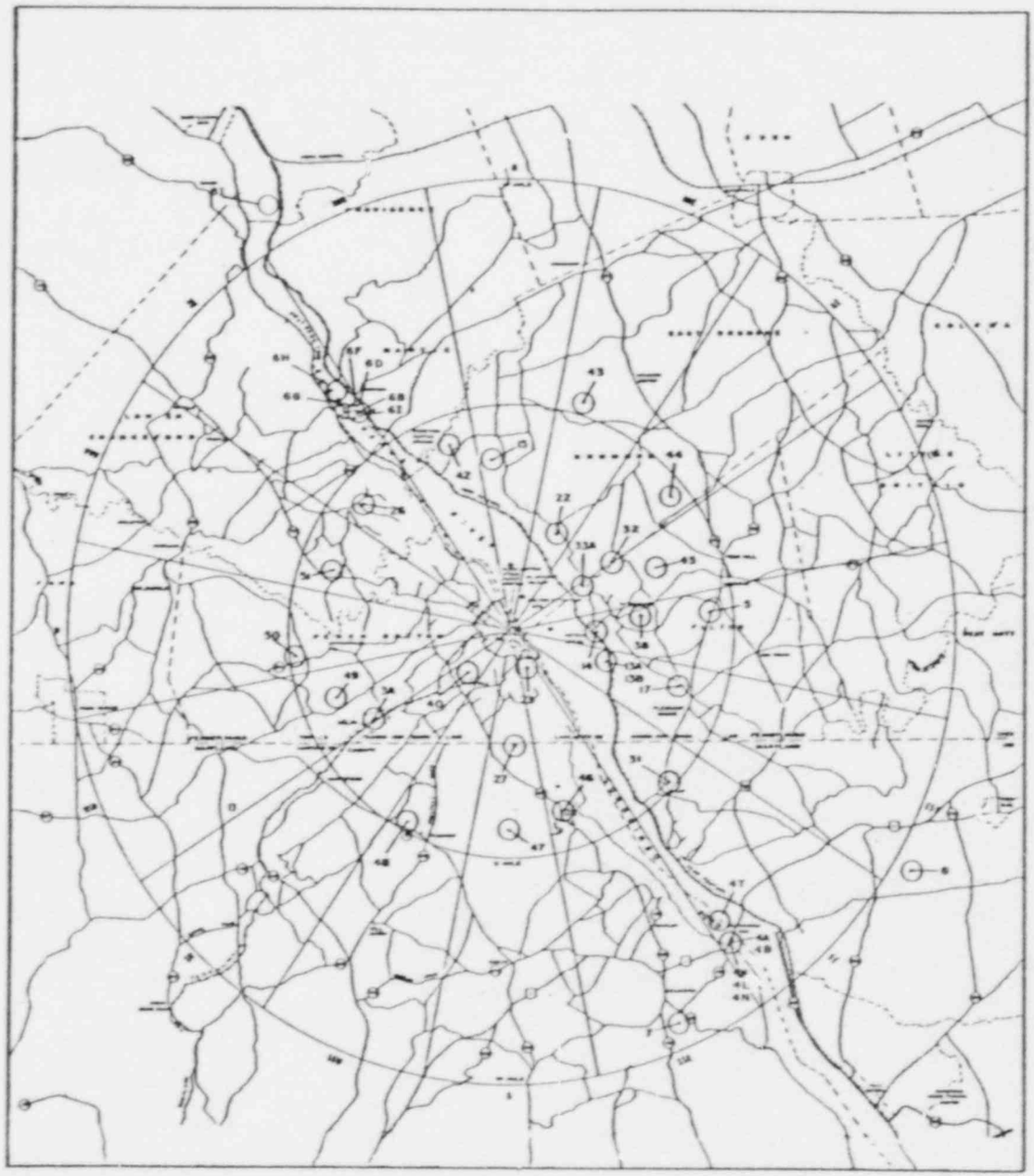
LEGEND

ENVIRONMENTAL SAMPLING LOCATIONS

I	PEACH BOTTOM SITE AREA
1A	PEACH BOTTOM WEATHER STATION #1
IAA	PEACH BOTTOM DISCHARGE CANAL BANK
Ia	PEACH BOTTOM WEATHER STATION #2
IBB	PEACH BOTTOM DISCHARGE CANAL
IC	PEACH BOTTOM SOUTH SUBSTATION RD.
ID	PEACH BOTTOM 140° SECTOR SITE BOUNDARY
IE	PEACH BOTTOM 350° SECTOR SITE BOUNDARY
IEE	PEACH BOTTOM DISCHARGE CANAL - BELOW RADWASTE
IF	PEACH BOTTOM SITE - 200° SECTOR HILL
IG	PEACH BOTTOM NORTH SUBSTATION
IH	PEACH BOTTOM SITE - 270° SECTOR HILL
II	PEACH BOTTOM SOUTH SUBSTATION
IJ	PEACH BOTTOM SITE - 180° SECTOR HILL
IL	PEACH BOTTOM UNITS 2 & 3 INTAKE
ILL	PEACH BOTTOM UNITS 2 & 3 INTAKE COMPOSITE
IMM	PEACH BOTTOM CANAL DISCHARGE COMPOSITE
INN	PEACH BOTTOM SITE - 260° SECTOR
IU	PEACH BOTTOM SITE - UTILITY BUILDING
IV	PEACH BOTTOM SITE - INFORMATION CENTER
IX	PEACH BOTTOM SITE COOLING TOWER POND BI
IZ	PEACH BOTTOM WEATHER STATION #1
2	PEACH BOTTOM 130° SECTOR HILL
4D	CONOWINGO POND, PA.
4I	CONOWINGO POND NET TRAP NO. 8
4J	CONOWINGO POND NET TRAP NO. 15
23	PEACH BOTTOM 150° SECTOR HILL OFF SITE

ENVIRONMENTAL SAMPLING LOCATIONS ON OR NEAR PEACH BOTTOM SITE

FIGURE 1

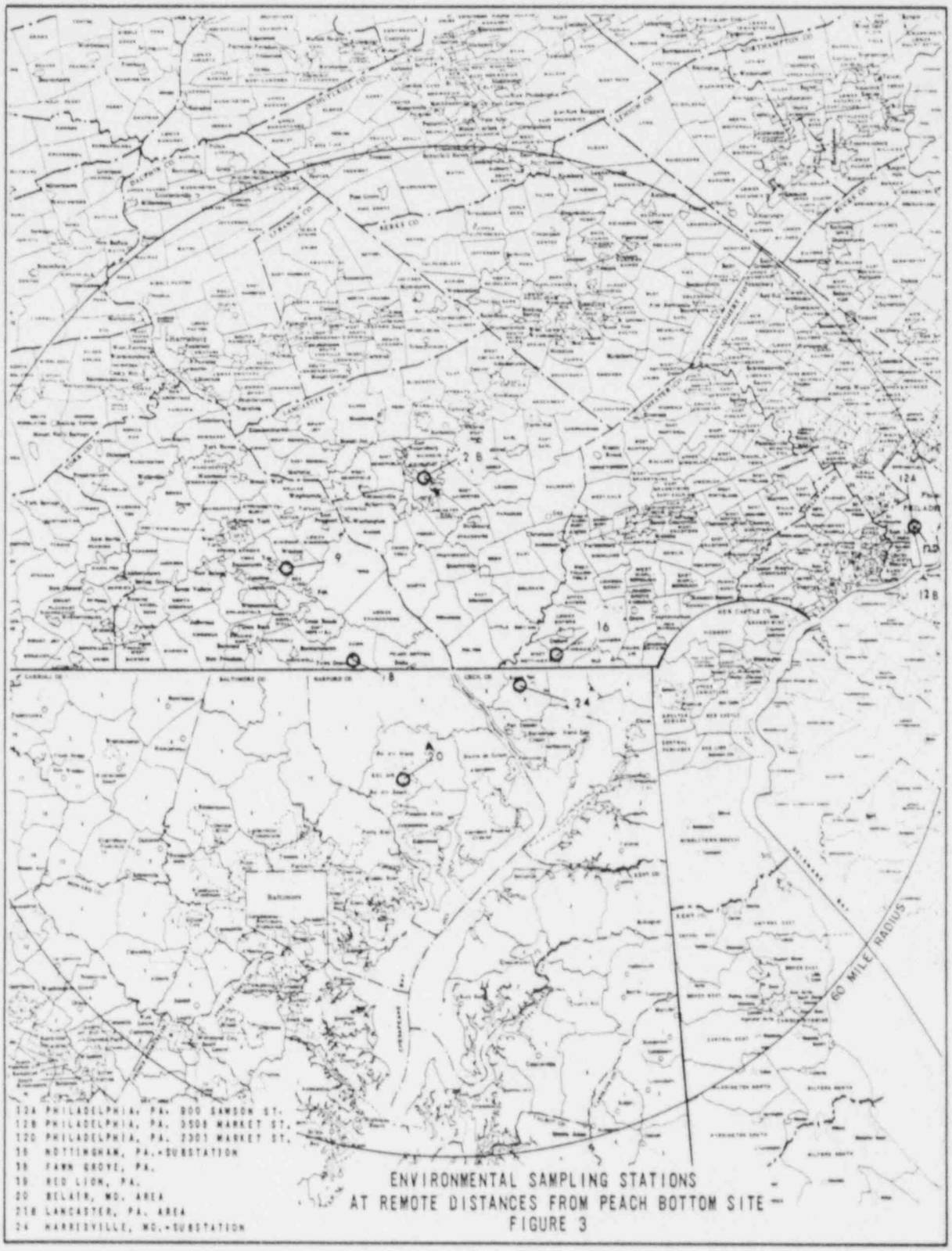


LEGEND

● ENVIRONMENTAL SAMPLING LOCATIONS

3A	DELTA, PA. - SUBSTATION
4A	CONOWINGO DAM - POWERHOUSE ROOF
4B	CONOWINGO DAM - POWERHOUSE ROOF
4K	CONOWINGO DAM - POWERHOUSE ROOF
4L	CONOWINGO DAM - EL. 33' MSL COMPOSITE
4N	CONOWINGO DAM - ENVIRONMENTAL STATION
4T	CONOWINGO POND, NEAR CONOWINGO DAM
5	WAKEFIELD, PA.
8B	HOLTWOOD DAM - HYDROELECTRIC STATION
6D	HOLTWOOD, PA.
6F	HOLTWOOD DAM - EAST SHORE UPSTREAM
6G	HOLTWOOD, PA.
6H	HOLTWOOD POND, PA.
6I	HOLTWOOD DAM - HYDROELECTRIC STATION
6J	HOLTWOOD POND, PA.
7	DARLINGTON, MD. AREA
8	COLORA, MD.
13A	CHESTER WATER INTAKE - POND
13B	CHESTER WATER INTAKE - PUMP DISCHARGE
14	PETERS CREEK
15	SILVER SPRING ROAD
17	RIVERVIEW ROAD
22	EAGLE ROAD
23	PEACH BOTTOM - 150° SECTOR OFF SITE
26	SLAR ROAD
27	NORTH COOPER ROAD
31	PILOTOWN ROAD
32	SLATE HILL ROAD
33A	FULTON WEATHER STATION
38	PEACH BOTTOM ROAD
40	PEACH BOTTOM SITE AREA
42	MUDDY RUN ECOLOGICAL LAB
43	DRUMORE TOWNSHIP SCHOOL
44	GOSHENVILLE ROAD
45	PB-KEENEY LINE
46	BROADCREEK
47	BROADCREEK SCOUT CAMP
48	WACTON SUBSTATION
49	PB-CONASTONE LINE
50	TRANSCO PIPELINE SITE
51	FIN SUBSTATION

ENVIRONMENTAL SAMPLING LOCATIONS
AT INTERMEDIATE DISTANCES FROM PEACH BOTTOM SITE
FIGURE 2



ENVIRONMENTAL SAMPLING STATIONS
AT REMOTE DISTANCES FROM PEACH BOTTOM SITE
FIGURE 3

DATA TABLES AND FIGURES

PRIMARY LABORATORY

APPENDIX C: DATA TABLES AND FIGURES - PRIMARY LABORATORY

TABLES

Figures

TABLE C-I.1 ANALYTICAL DATA FOR SURFACE WATER GRAB SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION DATE	GROSS ALPHA SOLUBLE	GROSS ALPHA INSOLUBLE	GROSS BETA SOLUBLE	GROSS BETA INSOLUBLE	AQUEOUS H3 TOTAL
13A	01/04/87	< .9	< .06	1.6 ± .9	< .4	
	01/31/87	< .8	< .1	2.2 ± .9	< .5	
	02/28/87	< .7	< .05	2.1 ± .9	.5 ± .3	
	01/04-02/28/87					90 ± 80
	04/04/87	< .5	.3 ± .2	2.3 ± .8	1.7 ± .5	
	05/02/87	< .6	< .09	2.1 ± .8	.5 ± .4	
	05/30/87	< .7	.1 ± .1	2.7 ± .8	1.7 ± .6	
	06/27/87	< .9	.5 ± .3	4 ± 1	1.0 ± .6	
	04/04-06/27/87					120 ± 90
	08/01/87	< .8	< .06	2.5 ± .9	< .5	
	08/29/87	< .7	.4 ± .2	3 ± 1	.5 ± .4	
	10/03/87	< .5	.2 ± .2	2.0 ± .8	.7 ± .5	
	08/01-10/03/87					240 ± 70
	11/01/87	< .6	< .04	3.3 ± .9	.5 ± .4	
	12/06/87	< .3	< .03	3.2 ± .9	.4 ± .4	
	12/31/87	< .3	< .09	2.5 ± .9	2.7 ± .6	
	11/01-12/31/87					80 ± 60
	MEAN	< .6	.16 ± .30	2.6 ± 1.3	.9 ± 1.4	133 ± 147
13B	01/22/87	< .6	< .04	2.1 ± .9	< .3	
	02/25/87	< .1	< .06	3 ± 1	< .3	
	03/20/87	< .6	< .08	1.3 ± .7	< .4	
	04/14/87	< .2	< .1	1.6 ± .7	.5 ± .4	
	05/22/87	1.0 ± .8	3 ± 1	2.8 ± .8	9 ± 1	
	06/19/87	< .9	1.6 ± .6	3 ± 1	6 ± 1	
	07/13/87	< .7	< .06	2.6 ± .9	1.5 ± .5	
	08/21/87	< .8	.3 ± .2	4 ± 1	< .4	
	09/23/87	< .5	.3 ± .3	4 ± 1	12 ± 1	
	10/16/87	< .4	.3 ± .2	4 ± 1	3.1 ± .6	
	11/19/87	< .5	.5 ± .2	2.5 ± .9	.9 ± .4	
	12/29/87	< .4	2 ± 2	2.5 ± .9	31 ± 2	
	MEAN	.6 ± .5	.7 ± 1.9	2.8 ± 1.8	5.5 ± 17.9	

TABLE C-I.2 ANALYTICAL DATA FOR SURFACE WATER COMPOSITE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	GROSS ALPHA SOLUBLE	GROSS ALPHA INSOLUBLE	GROSS BETA SOLUBLE	GROSS BETA INSOLUBLE	AQUEOUS H3 TOTAL
1LL	01/02-01/30/87	< 1	< .08	3 ± 1	< .4	
	01/30-02/27/87	< .9	.3 ± .2	1.8 ± .9	< .3	
	02/27-04/03/87	< .8	< .1	1.9 ± .8	< .4	
	01/02-04/03/87					< 80
	04/03-05/01/87	< .6	.2 ± .2	2.9 ± .8	1.2 ± .5	
	05/01-05/29/87	1.1 ± .9	.2 ± .1	2.7 ± .8	< .5	
	05/29-06/26/87	< .8	.6 ± .3	2.4 ± .9	1.0 ± .6	
	04/03-06/26/87					90 ± 80
	06/26-07/31/87	< 1	.1 ± .1	3.1 ± .9	2.4 ± .6	
	07/31-08/28/87	< .8	.1 ± .1	4 ± 1	.6 ± .5	
	08/28-10/02/87	< .5	.3 ± .2	2.8 ± .8	.7 ± .5	
	06/26-10/02/87					400 ± 90
	10/02-10/30/87	< .6	.5 ± .2	4 ± 1	1.0 ± .4	
	10/30-12/04/87	.7 ± .6	.3 ± .1	2.4 ± .9	1.2 ± .5	
	12/04-01/01/88	< .2	.05 ± .05	2.0 ± .8	.4 ± .4	
	10/02-01/01/88					90 ± 50
	MEAN	.8 ± .5	.24 ± .35	2.8 ± 1.4	.8 ± 1.2	165 ± 313
1MM	01/02-01/30/87	< .9	.8 ± .3	2.3 ± .9	.9 ± .5	
	01/30-02/27/87	< .9	.3 ± .2	1.9 ± .9	< .3	
	02/27-04/03/87	1 ± 1	< .09	2.0 ± .8	.7 ± .5	
	01/02-04/03/87					270 ± 80
	04/03-05/01/87	< .4	.3 ± .3	2.0 ± .7	3.7 ± .6	
	05/01-05/29/87	.7 ± .7	.3 ± .1	2.7 ± .8	1.9 ± .6	
	05/29-06/26/87	< .6	1.0 ± .4	3 ± 1	3.4 ± .7	
	04/03-06/26/87					140 ± 90
	06/26-07/31/87	< .4	< .09	3.2 ± .9	1.0 ± .5	
	07/31-08/28/87	< 1	.2 ± .2	4 ± 1	.6 ± .5	
	08/28-10/02/87	< .6	.3 ± .2	3.9 ± .9	.8 ± .5	
	06/26-10/02/87					400 ± 100
	10/02-10/30/87	< .4	.4 ± .2	2.0 ± .8	.8 ± .4	
	10/30-12/04/87	< .4	.2 ± .1	3 ± 1	.8 ± .4	
	12/04-01/01/88	< .4	.13 ± .09	1.2 ± .8	.8 ± .4	
	10/02-01/01/88					70 ± 40
	MEAN	.6 ± .5	.34 ± .56	2.6 ± 1.7	1.3 ± 2.2	220 ± 292

TABLE C-I.3 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER
GRAB SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	K-40	MN-54	CO-58	FE-59	CO-60	ZN-65	ZR-95	NB-95	CS-134	CS-137	BA-140	LA-140	RA-226
13A	01/04/87	< 4	< .4	< .4	< .9	< .4	< .7	< .9	< .5	< .4	< .3	< 3	< 2	< 7
	01/31/87	< 5	< .4	< .4	< 1	< .4	< .7	< .9	< .5	< .4	< .3	< 5	< 2	< 7
	02/28/87	< 6	< .4	< .4	< 1	< .4	< .8	< .9	< .5	< .4	< .4	< 4	< 1	< 9
	04/04/87	11 ± 6	< .3	< .4	< .7	< .4	< .7	< .8	< .4	< .4	< .4	< 2	< 1	< 9
	05/02/87	< 4	< .4	< .4	< .9	< .3	< .7	< .7	< .4	< .3	< .3	< 3	< 1	< 6
	05/30/87	< 20	< .8	< .9	< 2	< .6	< 2	< 2	< .9	< .8	< .7	< 8	< 3	< 10
	06/27/87	< 7	< .3	< .4	< 1	< .4	< .8	< .9	< .5	< .4	< .4	< 4	< 2	< 7
	08/01/87	< 6	< .4	< .5	< 1	< .4	< .9	< .9	< .5	< .4	< .4	< 4	< 2	< 10
	08/29/87	< 5	< .3	< .4	< .9	< .3	< .8	< .9	< .4	< .3	< .4	< 4	< 2	< 9
	10/03/87	< 6	< .3	< .4	< .9	< .3	< .8	< .8	< .4	< .3	< .3	< 4	< 2	< 7
	11/01/87	< 5	< .4	< .4	< .8	< .3	< .7	< .8	< .4	< .4	< .3	< 2	< 1	< 6
	12/06/87	< 6	< .3	< .4	< .8	< .4	< .8	< .9	< .4	< .4	< .4	< 2	< 1	< 8
	12/31/87	8 ± 6	< .3	< .4	< .7	< .3	< .7	< .8	< .3	< .4	< .3	< 2	< .9	< 7
	MEAN	7 ± 9	< .4	< .4	< 1.0	< .4	< .9	< .9	< .5	< .4	< .4	< 4	< 1.6	< 8
13B	01/22/87	< 4	< .3	< .5	< 1	< .3	< .7	< 1	< .6	< .4	< .3	< 20	< 10	< 5
	02/25/87	< 5	< .4	< .4	< 1	< .4	< .7	< 1	< .5	< .4	< .4	< 5	< 2	< 9
	03/20/87	< 4	< .3	< .4	< .9	< .3	< .6	< .8	< .4	< .3	< .3	< 4	< 2	< 5
	04/14/87	< 6	< .3	< .5	< 1	< .3	< .7	< 1	< .5	< .4	< .4	< 10	< 4	< 7
	05/22/87	< 4	< .3	< .5	< 1	< .3	< .7	< .9	< .4	< .4	< .3	< 5	< 3	< 6
	06/19/87	< 6	< .4	< .5	< 1	< .3	< .7	< 1	< .5	< .4	< .4	< 6	< 2	< 9
	07/13/87	< 4	< .3	< .4	< .9	< .3	< .7	< .9	< .4	< .4	< .3	< 3	< 2	< 6
	08/21/87	10 ± 5	< .3	< .4	< .9	< .3	< .6	< .7	< .4	< .3	< .3	< 4	< 2	< 5
	09/23/87	< 20	< .9	< 1	< 3	< .7	< 2	< 2	< 1	< .9	< .8	< 20	< 6	< 10
	10/16/87	< 6	< .4	< .4	< 1	< .4	< .7	< .9	< .4	< .4	< .4	< 7	< 3	< 7
	11/19/87	< 5	< .3	< .3	< .9	< .4	< .8	< .9	< .4	< .3	< .4	< 2	< 1	< 8
	12/29/87	20 ± 10	< .3	< .4	< .8	< .3	< .8	< .8	< .4	< .4	1 ± 1	< 2	< .9	< 7
	MEAN	8 ± 12	< .4	< .5	< 1.1	< .4	< .8	< 1.0	< .5	< .4	.4 ± .4	< 7	< 3.2	< 7

TABLE C-I.4 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER
COMPOSITE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	K-40	MN-54	CO-58	FE-59	CO-60	ZN-65	ZR-95	NB-95	CS-134	CS-137	BA-140	LA-140	RA-226
1LL	01/02-01/30/87	< 7	< .4	< .5	< 1	< .4	< .9	< 1	< .6	< .4	< .4	< 6	< 3	< 9
	01/30-02/27/87	< 4	< .4	< .4	< 1	< .4	< .7	< .9	< .5	< .4	< .4	< 3	< 2	< 7
	02/27-04/03/87	< 4	< .4	< .4	< .8	< .4	< .7	< .8	< .4	< .3	< .3	< 2	< 1	< 6
	04/03-05/01/87	< 7	< .4	< .4	< 1	< .4	< .7	< .9	< .5	< .4	< .4	< 4	< 2	< 8
	05/01-05/29/87	< 7	< .3	< .4	< 1	< .4	< .8	< .9	< .5	< .4	< .4	< 4	< 2	< 8
	05/29-06/26/87	< 6	< .4	< .5	< 1	< .3	< .8	< 1	< .5	< .4	< .4	< 4	< 2	< 9
	06/26-07/31/87	< 7	< .4	< .5	< 1	< .4	< .8	< .9	< .5	< .4	< .5	< 4	< 2	< 10
	07/31-08/28/87	11 ± 5	< .3	< .4	< .8	< .3	< .7	< .8	< .4	< .3	< .3	< 3	< 1	< 6
	08/28-10/02/87	< 4	< .3	< .3	< .7	< .3	< .6	< .7	< .4	< .3	< .3	< 3	< 1	< 5
	10/02-10/30/87	< 4	< .3	< .3	< .8	< .3	< .7	< .8	< .4	< .3	< .3	< 2	< 1	< 6
	10/30-12/04/87	< 5	< .3	< .3	< .8	< .3	< .7	< .8	< .4	< .4	< .4	< 2	< 1	< 7
	12/04-01/01/87	6 ± 5	< .3	< .3	< .7	< .3	< .6	< .6	< .3	< .3	< .3	< 1	< .7	< 5
	MEAN	6 ± 4	< .4	< .4	< .9	< .4	< .7	< .8	< .5	< .4	< .4	< 3	< 1.6	< 7
1MM	01/02-01/30/87	< 8	< .4	< .5	< 1	< .4	< 1	< 1	< .6	< .4	< .5	< 6	< 3	< 9
	01/30-02/27/87	< 6	< .4	< .4	< 1	< .4	< .8	< .9	< .5	< .4	< .4	< 4	< 2	< 7
	02/27-04/03/87	< 6	< .3	< .4	< .9	< .4	< .8	< .8	< .4	< .3	< .4	< 3	< 1	< 7
	04/03-05/01/87	< 6	< .4	< .4	< 1	< .4	< .7	< 1	< .5	< .4	< .5	< 4	< 2	< 10
	05/01-05/29/87	< 6	< .4	< .4	< .8	< .4	< .8	< 1	< .5	< .4	< .4	< 4	< 2	< 10
	05/29-06/26/87	< 20	< .8	< .9	< 2	< .7	< 2	< 2	< 1	< .8	< .8	< 8	< 3	< 10
	06/26-07/31/87	< 8	< .4	< .4	< 1	< .4	< .8	< .8	< .5	< .4	< .5	< 4	< 2	< 9
	07/31-08/28/87	< 6	< .3	< .4	< .9	< .3	< .7	< .8	< .4	< .3	< .4	< 4	< 2	< 7
	08/28-10/02/87	< 5	< .4	< .4	< 1	< .3	< .9	< .9	< .4	< .4	< .3	< 4	< 2	< 6
	10/02-10/30/87	< 20	< .7	< .8	< 2	< .7	< 2	< 2	< .9	< .8	< .7	< 5	< 2	< 10
	10/30-12/04/87	< 5	< .3	< .3	< .8	< .4	< .7	< .8	< .4	< .4	< .4	< 2	< 1	< 7
	12/04-01/01/87	< 20	< .7	< .7	< 2	< .7	< 1	< 1	< .7	< .8	< .8	< 3	< 1	20 ± 20
	MEAN	< 10	< .5	< .5	< 1.2	< .5	< 1.0	< 1.1	< .6	< .5	< .5	< 4	< 2	9 ± 7

TABLE C-II.1 ANALYTICAL DATA FOR DRINKING WATER COMPOSITE SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	GROSS ALPHA SOLUBLE	GROSS ALPHA INSOLUBLE	GROSS BETA SOLUBLE	GROSS BETA INSOLUBLE	I-131 TOTAL	AQUEOUS H3 TOTAL
4L	01/04-01/31/87	< 1	< .1	3.0 ± .9	< .5		
	01/25-01/31/87					< .05	
	01/31-02/28/87	< .1	< .09	3 ± 1	< .3		
	02/21-02/28/87					< .07	
	02/28-04/04/87	< .8	< .1	1.5 ± .8	< .4		
	03/28-04/04/87					< .07	
	01/04-04/04/87						170 ± 80
	04/04-05/02/87	< .3	< .1	2.4 ± .8	.5 ± .4		
	04/25-05/02/87					< .06	
	05/02-05/23/87	< .5	< .06	2.2 ± .8	< .4		
	05/30-06/06/87					< 2	
	05/30-06/27/87	< .9	< .1	4 ± 1	< .5		
	06/21-06/27/87					< .06	
	04/04-06/27/87						< 80
	06/27-08/01/87	< .3	< .08	3 ± 1	.6 ± .5		
	07/25-08/01/87					< .08	
	08/01-08/29/87	< .5	.1 ± .1	3 ± 1	.7 ± .4		
	08/21-08/29/87					< .08	
	08/29-10/03/87	< .8	< .1	3.4 ± .9	.8 ± .5		
	09/26-10/03/87					< .06	
	06/27-10/03/87						180 ± 70
	10/03-11/01/87	< .4	< .06	3.3 ± .9	.6 ± .4		
	10/25-11/01/87					< .07	
	11/01-12/06/87	.8 ± .6	.08 ± .06	4 ± 1	.6 ± .4		
	11/29-12/06/87					< .06	
	12/06-01/01/88	< .4	< .06	1.3 ± .7	< .4		
	12/26-01/01/88					< .05	
	11/01-01/01/88						70 ± 40
	MEAN	.6 ± .6	.09 ± .03	2.8 ± 1.7	.5 ± .3	< .2	125 ± 116
6I	01/04-01/31/87	< 1	.1 ± .1	2.8 ± .9	< .5		
	01/25-01/31/87					< .06	
	01/31-02/28/87	< .1	< .04	2 ± .9	< .3		
	02/21-02/28/87					< .08	
	02/28-04/04/87	< .7	< .1	2.2 ± .8	1.2 ± .5		
	03/28-04/04/87					< .1	
	01/04-04/04/87						230 ± 80
	04/04-05/02/87	.6 ± .6	< .09	1.9 ± .7	1.9 ± .6		
	04/25-05/02/87					< .09	
	05/02-05/30/87	< .7	.11 ± .09	2.2 ± .8	< .5		
	05/23-05/30/87					< .07	
	05/30-06/27/87	< .7	< .1	2.0 ± .9	< .5		
	06/21-06/27/87					< .08	
	04/04-06/27/87						100 ± 60
	07/11-08/01/87	< 1	< .09	3 ± 1	< .5		
	07/25-08/01/87					< .08	
	08/01-08/29/87	< 1	.09 ± .08	4 ± 1	< .4		
	08/23-08/29/87					< .08	
	08/29-09/26/87	< .8	.5 ± .3	5 ± .	1.4 ± .5		
	06/27-09/26/87						300 ± 100
	10/10-10/17/87					< .08	
	10/03-11/01/87	< .6	< .08	2.9 ± .9	.7 ± .4		
	10/25-11/01/87					< .08	
	11/01-12/06/87	< .4	< .04	3 ± 1	.9 ± .4		
	11/28-12/06/87					< .08	
	12/06-01/02/88	< .4	< .06	1.7 ± .8	.8 ± .4		
	12/27-01/02/88					< .06	
	11/01-01/02/88						80 ± 50
	MEAN	.7 ± .5	.12 ± .25	2.7 ± 1.9	.8 ± 1.0	< .08	178 ± 211

TABLE C-II.2 CONCENTRATIONS OF GAMMA EMMITERS IN DIRINKING WATER
COMPOSITE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZR-95	NB-95	CS-134	CS-137	BA-140	LA-140
4L	01/04-01/31	< .4	< .5	< 1	< .5	< .9	< 1	< .6	< .4	< .4	< 6	< 2
	01/31-02/28	< .4	< .5	< 1	< .4	< .9	< 1	< .5	< .4	< .4	< 4	< 2
	02/28-04/04	< .4	< .4	< .9	< .5	< .8	< .8	< .4	< .4	< .4	< 3	< 1
	04/04-05/02	< .3	< .4	< .9	< .3	< .7	< .9	< .5	< .4	< .4	< 4	< 2
	05/02-05/23	< .2	< .3	< .8	< .3	< .6	< .6	< .3	< .3	< .2	< 4	< 2
	05/30-06/27	< .7	< .9	< 2	< .7	< 2	< 2	< .9	< .8	< .7	< 8	< 3
	06/27-08/01	< .4	< .4	< 1	< .5	< .9	< .9	< .5	< .4	< .4	< 3	< 1
	08/01-08/29	< .3	< .4	< 1	< .3	< .9	< .9	< .5	< .4	< .4	< 4	< 2
	08/29-10/03	< .3	< .4	< .9	< .3	< .7	< 1	< .4	< .4	< .4	< 4	< 1
	10/03-11/01	< .9	< 1	< 2	< .7	< 2	< 2	< .9	< .9	< .8	< 6	< 2
	11/01-12/06	< .3	< .3	< .6	< .3	< .6	< .6	< .3	< .3	< .3	< 2	< .9
	12/06-01/01	< .3	< .3	< .8	< .4	< .8	< .8	< .4	< .4	< .4	< 2	< .8
	MEAN	< .4	< .4	< 1.1	< .4	< 1.0	< 1.0	< .5	< .5	< .4	< 4	< 1.6
6I	01/04-01/31	< .4	< .4	< .9	< .4	< .8	< 1	< .5	< .4	< .3	< 5	< 3
	01/31-02/28	< .4	< .5	< 1	< .5	< .7	< 1	< .6	< .5	< .4	< 4	< 2
	02/28-04/04	< .4	< .4	< 1	< .4	< .8	< .9	< .5	< .4	< ..	< 3	< 1
	04/04-05/02	< .7	< .8	< 2	< .6	< 1	< 2	< .9	< .7	< .6	< 7	< 3
	05/02-05/30	< .4	< .4	< .9	< .4	< .7	< 1	< .5	< .4	< .4	< 4	< 2
	05/30-06/27	< .3	< .4	< .9	< .3	< .6	< .9	< .4	< .3	< .3	< 3	< 2
	07/03-08/01	< .4	< .4	< .8	< .4	< .7	< .8	< .4	< .4	< .3	< 3	< 1
	08/01-08/29	< .4	< .4	< 1	< .4	< .7	< 1	< .4	< .4	< .4	< 4	< 2
	08/29-09/26	< .3	< .4	< .8	< .3	< .6	< .8	< .4	< .3	< .3	< 4	< 2
	10/03-11/01	< .4	< .4	< .8	< .3	< .8	< .9	< .4	< .4	< .4	< 2	< 1
	11/01-12/06	< .6	< .7	< 2	< .7	< 2	< 1	< .7	< .7	< .7	< 4	< 2
	12/06-01/02	< .3	< .3	< .7	< .3	< .6	< .7	< .3	< .3	< .4	< 2	< .7
	MEAN	< .4	< .5	< 1.1	< .4	< .8	< 1.0	< .5	< .4	< .4	< 4	< 1.8

TABLE C-III.1 CONCENTRATIONS OF SR-89 AND -90 IN FISH SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

STATION CODE	MEDIA	COLLECTION DATE	PCI/GRAM (ASH) ± 2 SIGMA SR-89	PCI/GRAM (ASH) ± 2 SIGMA SR-90	PCI/GRAM (WET) ± 2 SIGMA SR-89	PCI/GRAM (WET) ± 2 SIGMA SR-90
1EE	CATFISH	03/26/87	.2 ± .2	.41 ± .04	.008 ± .007	.019 ± .002
		06/18/87	< .1	.30 ± .02	< .006	.017 ± .001
		09/01/87	< .2	.53 ± .06	< .01	.030 ± .003
		10/26/87	< .2	.52 ± .07	< .01	.026 ± .003
		MEAN	.2 ± .1	.44 ± .22	.009 ± .004	.023 ± .012
1X	CATFISH	04/01/87	< .2	.76 ± .05	< .008	.035 ± .002
		06/18/87	< .2	.58 ± .05	< .007	.024 ± .002
		09/01/87	< .1	.49 ± .05	< .006	.023 ± .002
		10/27/87	< .1	.53 ± .05	< .006	.026 ± .002
		MEAN	< .2	.59 ± .24	< .007	.027 ± .011
4I	CATFISH	03/27/87	< .2	.51 ± .05	< .009	.025 ± .002
		06/16/87	< .3	.5 ± .1	< .01	.016 ± .004
		08/25/87	< .2	.53 ± .06	< .008	.020 ± .002
		10/23/87	< .2	.83 ± .05	< .008	.041 ± .003
		MEAN	< .2	.59 ± .32	< .009	.026 ± .022
	CRAPPIE	03/17/87	< .1	.50 ± .06	< .007	.027 ± .003
		MEAN	< .1	.50 ± .00	< .007	.027 ± .000
	SM BASS	06/16/87	< .09	.43 ± .04	< .004	.020 ± .002
		09/02/87	< .2	.53 ± .06	< .008	.022 ± .002
		10/05/87	< .2	.45 ± .07	< .006	.018 ± .003
		MEAN	< .16	.47 ± .11	< .006	.020 ± .004
4J	CATFISH	03/17/87	< .1	.97 ± .05	< .0009	.0062 ± .0003
		05/13/87	< .1	.55 ± .05	< .007	.026 ± .002
		08/25/87	< .2	.96 ± .07	< .01	.047 ± .003
		10/22/87	< .1	.33 ± .03	< .008	.018 ± .002
		MEAN	< .1	.70 ± .63	< .006	.0243 ± .0344
	SM BASS	03/06/87	< .2	1.18 ± .07	< .003	.019 ± .001
		06/16/87	< .1	.61 ± .05	< .008	.034 ± .003
		08/25/87	< .2	.54 ± .05	< .01	.031 ± .003
		10/05/87	< .1	.40 ± .06	< .005	.015 ± .002
		MEAN	< .2	.68 ± .69	< .007	.025 ± .018
6	CATFISH	04/15/87	< .1	.66 ± .06	< .007	.032 ± .003
		06/16/87	< .2	.47 ± .09	< .009	.018 ± .003
		08/25/87	< .2	.49 ± .05	< .008	.022 ± .002
		11/06/87	< .5	.2 ± .2	< .01	.005 ± .003
		MEAN	< .3	.46 ± .38	< .009	.019 ± .022
	CRAPPIE	03/18/87	< .1	.49 ± .04	< .006	.027 ± .002
		MEAN	< .1	.49 ± .00	< .006	.027 ± .000
	SM BASS	06/16/87	< 1	.9 ± .8	< .07	.05 ± .04
		08/25/87	< .2	.33 ± .05	< .004	.007 ± .001
		10/05/87	< .2	.42 ± .08	< .004	.009 ± .002
		MEAN	< .5	.55 ± .61	< .026	.022 ± .049
MEAN	CATFISH		.2 ± .2	.56 ± .40	.008 ± .004	.0238 ± .0203
	CRAPPIE		< .1	.50 ± .01	< .007	.027 ± .000
	SM BASS		< .2	.58 ± .53	< .012	.023 ± .026

TABLE C-III.2 CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/GRAM (WET) ± 2 SIGMA

STATION CODE	COLLECTION DATE	MEDIA	K-40	MN-54	CO-58	FE-59	CO-60
1EE	04/01/87	CATFISH	2.3 ± .1	< .005	< .005	< .01	< .006
	06/18/87	CATFISH	1.5 ± .1	< .005	< .006	< .02	< .006
	09/01/87	CATFISH	2.4 ± .2	< .007	< .007	< .02	.012 ± .009
	10/26/87	CATFISH	1.9 ± .2	< .007	< .007	< .02	< .009
	MEAN	CATFISH	2.0 ± .8	< .006	< .006	< .02	.008 ± .006
1X	04/01/87	CATFISH	2.5 ± .2	< .007	< .007	< .02	< .008
	06/18/87	CATFISH	3.1 ± .2	< .007	< .008	< .02	< .008
	09/01/87	CATFISH	2.5 ± .2	< .008	< .008	< .02	< .009
	10/27/87	CATFISH	2.2 ± .2	< .007	< .007	< .02	< .008
	MEAN	CATFISH	2.6 ± .8	< .007	< .008	< .02	< .008
4I	03/17/87	CRAPPIE	2.7 ± .2	< .006	< .006	< .02	< .007
	04/14/87	CATFISH	2.2 ± .2	< .005	< .005	< .02	< .006
	06/16/87	CATFISH	2.4 ± .2	< .006	< .007	< .02	< .007
		SM BASS	3.4 ± .2	< .007	< .008	< .02	< .008
	08/25/87	CATFISH	2.8 ± .2	< .009	< .009	< .03	< .01
		SM BASS	3.6 ± .3	< .009	< .01	< .03	< .01
	10/05/87	SM BASS	2.5 ± .3	< .009	< .009	< .03	< .01
	10/23/87	CATFISH	3.1 ± .3	< .008	< .009	< .02	< .01
	MEAN	CATFISH	2.6 ± .8	< .007	< .008	< .02	< .008
		CRAPPIE	2.7 ± .0	< .006	< .006	< .02	< .007
		SM BASS	3.2 ± 1.2	< .008	< .009	< .03	< .009
4J	03/06/87	SM BASS	3.6 ± .2	< .007	< .007	< .02	< .008
	03/24/87	CATFISH	1.8 ± .2	< .007	< .007	< .02	< .007
	05/13/87	CATFISH	2.8 ± .2	< .007	< .007	< .02	< .009
	06/16/87	SM BASS	2.8 ± .2	< .005	< .006	< .02	< .006
	08/25/87	CATFISH	2.8 ± .3	< .009	< .01	< .03	< .01
	09/02/87	SM BASS	3.3 ± .3	< .009	< .01	< .03	< .01
	10/05/87	SM BASS	3.1 ± .2	< .008	< .008	< .02	< .009
	11/05/87	CATFISH	2.6 ± .2	< .008	< .009	< .03	< .01
	MEAN	CATFISH	2.5 ± 1.0	< .008	< .008	< .03	< .009
		SM BASS	3.2 ± .7	< .007	< .008	< .02	< .008
6	03/23/87	CRAPPIE	3.3 ± .2	< .007	< .007	< .02	< .008
	04/15/87	CATFISH	2.4 ± .2	< .007	< .007	< .02	< .008
	06/1[illegible]/87	CATFISH	2.3 ± .2	< .005	< .006	< .02	< .006
		SM BASS	3.5 ± .2	< .007	< .008	< .02	< .008
	08/25/87	CATFISH	3 ± .2	< .008	< .008	< .02	< .009
		SM BASS	3.4 ± .2	< .008	< .009	< .02	< .01
	10/05/87	SM BASS	3.3 ± .3	< .009	< .009	< .03	< .01
	11/06/87	CATFISH	.7 ± .1	< .005	< .005	< .01	< .005
	MEAN	CATFISH	2.1 ± 2.0	< .006	< .007	< .02	< .007
		CRAPPIE	3.3 ± .0	< .007	< .007	< .02	< .008
		SM BASS	3.4 ± .2	< .008	< .009	< .02	< .009
MEAN ALL STATIONS		CATFISH	2.4 ± 1.1	< .007	< .007	< .02	.008 ± .004
		CRAPPIE	3.0 ± .8	< .007	< .007	< .02	< .008
		SM BASS	3.3 ± .7	< .008	< .008	< .02	< .009

TABLE C-III.2 CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/GRAM (WET) ± 2 SIGMA

STATION CODE	COLLECTION DATE	MEDIA	ZN-65	RU-106	TE-129M	CS-134
1EE	04/01/87	CATFISH	< .01	< .04	< .1	.006 ± .005
	06/18/87	CATFISH	< .01	< .05	< .2	< .005
	09/01/87	CATFISH	.04 ± .02	.07 ± .06	< .2	.046 ± .008
	10/26/87	CATFISH	.03 ± .02	< .06	< .2	.012 ± .008
	MEAN	CATFISH	.02 ± .03	.06 ± .03	< .2	.017 ± .039
1X	04/01/87	CATFISH	< .02	< .06	< .2	< .007
	06/18/87	CATFISH	.02 ± .02	< .06	< .3	.017 ± .007
	09/01/87	CATFISH	< .02	< .07	< .2	< .008
	10/27/87	CATFISH	< .02	< .06	< .2	.008 ± .008
	MEAN	CATFISH	.02 ± .00	< .06	< .2	.010 ± .009
4I	03/17/87	CRAPPIE	< .01	< .05	< .1	< .006
	04/14/87	CATFISH	.02 ± .01	< .05	< .1	< .005
	06/16/87	CATFISH	< .02	< .06	< .2	< .006
		SM BASS	< .02	< .06	< .2	< .007
	08/25/87	CATFISH	.03 ± .02	< .07	< .2	< .008
		SM BASS	< .02	< .08	< .3	< .009
	10/05/87	SM BASS	< .02	< .08	< .2	< .009
	10/23/87	CATFISH	.04 ± .02	< .08	< .2	< .009
	MEAN	CATFISH	.03 ± .02	< .07	< .2	< .007
		CRAPPIE	< .01	< .05	< .1	< .006
		SM BASS	< .02	< .07	< .2	< .008
4J	03/06/87	SM BASS	.02 ± .02	< .06	< .2	< .007
	03/24/87	CATFISH	.02 ± .02	< .06	< .2	.009 ± .007
	05/13/87	CATFISH	< .02	< .06	< .2	< .007
	06/16/87	SM BASS	< .01	< .05	< .2	.012 ± .006
	08/25/87	CATFISH	.03 ± .02	< .08	< .3	< .01
	09/02/87	SM BASS	< .02	< .08	< .3	< .009
	10/05/87	SM BASS	.02 ± .02	< .07	< .2	.014 ± .009
	11/05/87	CATFISH	< .02	< .07	< .3	.009 ± .008
	MEAN	CATFISH	.02 ± .01	< .07	< .3	.009 ± .003
		SM BASS	.02 ± .01	< .07	< .2	.011 ± .006
6	03/23/87	CRAPPIE	< .02	< .06	< .2	< .007
	04/15/87	CATFISH	< .02	< .06	< .2	< .007
	06/16/87	CATFISH	< .01	< .05	< .2	< .005
		SM BASS	< .02	< .06	< .2	< .007
	08/25/87	CATFISH	< .02	< .06	< .2	< .007
		SM BASS	< .02	< .07	< .2	< .008
	10/05/87	SM BASS	< .02	< .07	.3 ± .3	< .009
	11/06/87	CATFISH	< .01	< .04	< .1	< .005
	MEAN	CATFISH	< .02	< .05	< .2	< .006
		CRAPPIE	< .02	< .06	< .2	< .007
		SM BASS	< .02	< .07	.2 ± .1	< .008
MEAN ALL STATIONS		CATFISH	.02 ± .02	.06 ± .02	< .2	.010 ± .018
		CRAPPIE	< .02	< .06	< .2	< .007
		SM BASS	.02 ± .01	< .07	.2 ± .1	.009 ± .005

TABLE C-III.2 CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/GRAM (WET) ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	MEDIA	CS-136	CS-137	LA-140	RA-226	TH-228
1EE	04/01/87	CATFISH	< .01	.017 ± .006	.01 ± .008	< .01	< .01
	06/18/87	CATFISH	< .03	.01 ± .006	< .02	< .01	< .01
	09/01/87	CATFISH	< .02	.063 ± .009	< .02	< .01	< .02
	10/26/87	CATFISH	< .02	.027 ± .009	< .01	< .02	< .02
	MEAN	CATFISH	< .02	.029 ± .047	.02 ± .01	< .01	< .02
1X	04/01/87	CATFISH	.02 ± .01	< .007	< .009	< .01	< .02
	06/18/87	CATFISH	< .04	.035 ± .008	< .03	.02 ± .01	< .02
	09/01/87	CATFISH	< .02	.014 ± .008	< .02	< .02	.03 ± .02
	10/27/87	CATFISH	< .01	.01 ± .008	< .01	< .02	< .02
	MEAN	CATFISH	.02 ± .03	.017 ± .025	< .017	.02 ± .01	.02 ± .01
4I	03/17/87	CRAPPIE	< .01	.009 ± .006	< .008	< .01	< .02
	04/14/87	CATFISH	< .02	.012 ± .006	< .01	< .01	< .01
	06/16/87	CATFISH	< .03	< .007	< .02	< .01	< .02
		SM BASS	< .04	.014 ± .007	< .02	< .01	< .02
	08/25/87	CATFISH	< .03	.021 ± .009	< .02	< .02	.05 ± .02
		SM BASS	< .05	.01 ± .01	< .03	.02 ± .02	< .02
	10/05/87	SM BASS	< .02	< .01	< .01	< .02	< .02
	10/23/87	CATFISH	< .02	.011 ± .009	< .02	< .02	.03 ± .02
	MEAN	CATFISH	< .03	.013 ± .012	< .02	< .02	.03 ± .03
		CRAPPIE	< .01	.009 ± .000	< .008	< .01	< .02
		SM BASS	< .04	.011 ± .005	< .02	.02 ± .01	< .02
4J	03/06/87	SM BASS	< .01	.01 ± .007	< .008	< .01	< .02
	03/24/87	CATFISH	< .01	.018 ± .007	< .009	< .01	< .02
	05/13/87	CATFISH	< .01	.016 ± .008	.01 ± .01	< .01	< .02
	06/16/87	SM BASS	< .03	.015 ± .006	< .02	< .01	< .02
	08/25/87	CATFISH	< .04	.04 ± .01	< .03	< .02	< .03
	09/02/87	SM BASS	< .03	.02 ± .01	< .02	< .02	< .03
	10/05/87	SM BASS	< .02	.013 ± .009	< .01	< .02	< .02
	11/05/87	CATFISH	< .03	.02 ± .009	< .03	.06 ± .02	< .02
	MEAN	CATFISH	< .02	.024 ± .022	.020 ± .024	.03 ± .05	< .02
		SM BASS	< .02	.015 ± .008	< .015	< .02	< .02
6	03/23/87	CRAPPIE	< .01	< .007	< .01	< .01	< .02
	04/15/87	CATFISH	< .02	< .007	.01 ± .01	< .01	< .02
	06/16/87	CATFISH	< .02	< .006	< .02	< .01	< .01
		SM BASS	< .03	.008 ± .008	< .02	< .01	< .02
	08/25/87	CATFISH	< .02	.011 ± .008	< .02	< .01	.03 ± .02
		SM BASS	< .02	< .009	.02 ± .02	< .02	< .02
	10/05/87	SM BASS	< .03	< .01	< .02	< .02	< .03
	11/06/87	CATFISH	< .02	< .005	< .01	< .009	< .01
	MEAN	CATFISH	< .02	.007 ± .005	.02 ± .01	< .010	.02 ± .02
		CRAPPIE	< .01	< .007	< .01	< .01	< .02
		SM BASS	< .03	.009 ± .002	.02 ± .00	< .02	< .02
MEAN ALL STATIONS		CATFISH	.02 ± .02	.018 ± .028	.017 ± .015	.016 ± .023	.02 ± .02
		CRAPPIE	< .01	.008 ± .003	< .009	< .01	< .02
		SM BASS	< .03	.012 ± .007	.018 ± .013	.02 ± .01	< .02

TABLE C-IV.1 ANALYTICAL DATA FOR SILT/SEDIMENT SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/GRAM (DRY) ± 2 SIGMA

STATION CODE	COLLECTION DATE	GROSS ALPHA	GROSS BETA	BE-7	K-40	CO-60	ZN-65
1BB	06/25/87	2.6 ± .7	.9 ± .3	< .2	9.1 ± .6	.04 ± .02	< .04
	10/20/87	4.2 ± .9	1.6 ± .3	< .2	15.9 ± .8	< .03	< .06
	MEAN	3.4 ± 2.3	1.3 ± 1.0	< .2	12.5 ± 9.6	.04 ± .01	< .05
1X	06/25/87	7 ± 1	3.7 ± .4	< .2	20.8 ± .9	< .03	< .06
	10/20/87	5.6 ± .9	1.5 ± .3	< .3	21 ± 1	< .03	< .07
	MEAN	6.3 ± 2.0	2.6 ± 3.1	< .3	21.9 ± 2.5	< .03	< .07
4D	06/25/87	8 ± 2	3.0 ± .5	< .4	19 ± 1	< .05	< .09
	10/20/87	2.7 ± .9	1.5 ± .3	< .3	4.1 ± .7	< .03	< .07
	MEAN	5.4 ± 7.5	2.3 ± 2.1	< .4	11.6 ± 21.1	< .04	< .08
4J	06/25/87	3 ± 1	1.9 ± .3	< .3	13.7 ± .9	.24 ± .05	< .07
	10/20/87	3.3 ± .8	1.6 ± .3	.3 ± .3	15 ± 1	.26 ± .05	.18 ± .09
	MEAN	3.2 ± .4	1.8 ± .4	.3 ± .0	14.4 ± 1.8	.26 ± .06	.13 ± .16
4T	06/25/87	9 ± 3	5.6 ± .6	< .6	20 ± 2	< .06	< .1
	10/20/87	6 ± 1	3.7 ± .4	< .6	23 ± 2	< .07	< .1
	MEAN	8 ± 4	4.7 ± 2.7	< .6	22 ± 4	< .07	< .1
6F	06/25/87	6 ± 2	2.6 ± .4	< .4	16 ± 1	< .04	< .09
	10/20/87	4 ± 1	2.6 ± .4	.3 ± .2	6.8 ± .7	< .03	< .06
	MEAN	5 ± 3	2.6 ± .0	.4 ± .1	11.4 ± 13.0	< .04	< .08
MEAN ALL STATIONS		9.0 ± 26.2	2.6 ± 2.7	.3 ± .3	15.5 ± 12.4	.08 ± .17	.08 ± .07

TABLE C-IV.1 ANALYTICAL DATA FOR SILT/SEDIMENT SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/GRAM (DRY) ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	NB-95	SB-125	CS-134	CS-137	RA-226	TH-228
1BB	06/25	< .02	< .04	.03 ± .02	.05 ± .02	.32 ± .05	.43 ± .07
	10/20	< .03	< .06	.03 ± .02	.03 ± .02	.71 ± .07	.91 ± .09
	MEAN	< .03	< .05	.03 ± .00	.04 ± .03	.52 ± .55	.67 ± .68
1X	06/25	< .03	.06 ± .06	.04 ± .02	.03 ± .02	.73 ± .07	1.1 ± .1
	10/20	< .04	< .07	< .03	< .03	.56 ± .08	1 ± .1
	MEAN	< .04	.07 ± .01	.04 ± .01	.03 ± .00	.65 ± .24	1.1 ± .1
4D	06/25	< .05	< .1	< .04	.38 ± .06	1.2 ± .1	1.3 ± .2
	10/20	< .04	< .07	< .03	< .03	.34 ± .08	.2 ± .1
	MEAN	< .05	< .09	< .04	.21 ± .49	.77 ± 1.22	.8 ± 1.6
4J	06/25	.04 ± .04	< .08	.11 ± .03	.35 ± .04	.75 ± .08	.8 ± .1
	10/20	< .04	< .09	.14 ± .04	.37 ± .05	.75 ± .09	.8 ± .1
	MEAN	.04 ± .00	< .09	.13 ± .04	.36 ± .03	.75 ± .00	.8 ± .0
4T	06/25	< .08	< .2	< .06	.32 ± .08	1.2 ± .2	1.4 ± .2
	10/20	< .09	< .2	.1 ± .06	.49 ± .08	1.5 ± .2	1.8 ± .2
	MEAN	< .09	< .2	.08 ± .06	.41 ± .24	1.4 ± .4	1.6 ± .6
6F	06/25	.06 ± .05	< .1	.04 ± .04	.17 ± .05	1.4 ± .1	1.3 ± .2
	10/20	.04 ± .03	< .07	.03 ± .03	.2 ± .03	.78 ± .08	.8 ± .1
	MEAN	.05 ± .03	< .09	.04 ± .01	.19 ± .04	1.09 ± .88	1.1 ± .7
MEAN ALL STATIONS		.05 ± .04	.10 ± .10	.06 ± .08	.20 ± .34	.85 ± .78	1.0 ± .9

TABLE C-V.1 CONCENTRATIONS OF GROSS BETTA RADIOACTIVITY IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP I - PEACH BOTTOM SITE

WEEK #	1A	1B	2
1	.035 ± .003	.031 ± .003	.031 ± .003
2	.030 ± .003	.029 ± .003	.026 ± .003
3	.027 ± .003	.024 ± .003	.026 ± .003
4	.024 ± .002	.021 ± .002	.020 ± .002
5	.036 ± .003	.040 ± .004	.038 ± .003
6	.031 ± .003	.027 ± .003	.026 ± .003
7	.024 ± .003	.023 ± .003	.021 ± .002
8	.026 ± .003	.022 ± .003	.024 ± .003
9	.023 ± .003	.019 ± .003	.020 ± .003
10	.023 ± .003	.021 ± .002	.019 ± .002
11	.035 ± .003	.031 ± .003	.030 ± .003
12	.025 ± .003	.024 ± .003	.025 ± .003
13	.020 ± .002	.019 ± .002	.018 ± .002
14	.026 ± .003	.020 ± .003	.022 ± .002
15	.019 ± .002	.020 ± .002	.018 ± .002
16	.018 ± .002	.009 ± .002	.018 ± .002
17	.015 ± .002	.014 ± .002	.013 ± .002
18	.020 ± .004	.019 ± .004	.014 ± .004
19	.025 ± .004	.012 ± .004	.027 ± .004
20	.025 ± .003	.028 ± .003	.028 ± .003
21	.018 ± .002	.017 ± .002	.021 ± .003
22	.024 ± .002	.021 ± .002	.020 ± .002
23	.027 ± .003	.022 ± .002	.024 ± .002
24	.026 ± .003	.025 ± .003	.025 ± .002
25	.022 ± .002	.023 ± .002	.023 ± .002
26	.019 ± .002	.020 ± .003	.020 ± .003
27	.023 ± .003	.023 ± .003	.023 ± .003
28	.023 ± .002	.022 ± .002	.023 ± .002
29	.020 ± .002	.024 ± .002	.024 ± .003
30	.043 ± .003	.039 ± .003	.037 ± .003
31	.025 ± .004	.026 ± .004	.030 ± .004
32	.030 ± .003	.028 ± .003	.029 ± .003
33	.023 ± .005	.018 ± .005	.025 ± .005
34	.032 ± .003	.028 ± .003	.029 ± .003
35	.024 ± .002	.022 ± .002	.023 ± .002
36	.019 ± .003	.025 ± .004	.022 ± .003
37	.030 ± .004	.026 ± .004	.029 ± .004
38	.041 ± .004	.037 ± .004	.038 ± .004
39	.022 ± .004	.019 ± .004	.020 ± .004
40	.033 ± .003	.032 ± .003	.033 ± .003
41	.017 ± .004	.023 ± .004	.024 ± .004
42	.018 ± .002	.018 ± .002	.018 ± .002
43	.037 ± .003	.035 ± .003	.035 ± .003
44	.032 ± .004	.029 ± .003	.031 ± .003
45	(1)	(1)	(1)
46	.031 ± .006	.020 ± .006	.031 ± .005
47	.032 ± .003	.032 ± .003	.033 ± .004
48	.026 ± .003	.023 ± .002	.023 ± .002
49	.019 ± .002	.020 ± .002	.017 ± .002
50	.033 ± .005	.027 ± .004	.028 ± .004
51	.025 ± .004	.020 ± .004	.021 ± .004
52	.035 ± .003	.032 ± .003	.033 ± .003
53	.035 ± .005	.033 ± .005	.032 ± .005
MEAN	.026 ± .013	.024 ± .013	.025 ± .012

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V.1 CONCENTRATIONS OF GROSS BETTA RADIOACTIVITY IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP II - INTERMEDIATE DISTANCE LOCATIONS

WEEK #	3A	4B	5	6B	14
1	.032 ± .003	.029 ± .003	.027 ± .002	.023 ± .002	.031 ± .003
2	.025 ± .003	.025 ± .003	.027 ± .003	.031 ± .003	.029 ± .003
3	.025 ± .003	.025 ± .003	.023 ± .003	.023 ± .002	.025 ± .003
4	.021 ± .002	.020 ± .002	.022 ± .003	.018 ± .002	.020 ± .002
5	.033 ± .004	.032 ± .003	(1)	.033 ± .003	.038 ± .003
6	.024 ± .003	.027 ± .003	(1)	.028 ± .003	.029 ± .003
7	.024 ± .003	.021 ± .002	.028 ± .004	.020 ± .002	.017 ± .002
8	.026 ± .003	(1)	.023 ± .003	.023 ± .003	.022 ± .003
9	.021 ± .003	.019 ± .003	.020 ± .003	.019 ± .003	.028 ± .003
10	.019 ± .002	.017 ± .002	.019 ± .002	.017 ± .002	.020 ± .002
11	.032 ± .003	.030 ± .003	.031 ± .003	.031 ± .003	.020 ± .002
12	.022 ± .003	.023 ± .003	.020 ± .003	.024 ± .003	.013 ± .002
13	.016 ± .002	.014 ± .002	.018 ± .003	.017 ± .002	.017 ± .002
14	.029 ± .003	.018 ± .003	.022 ± .003	.024 ± .003	.019 ± .002
15	.019 ± .002	.014 ± .002	.019 ± .002	.018 ± .002	(1)
16	.020 ± .002	.019 ± .002	.019 ± .002	.020 ± .002	.018 ± .002
17	.012 ± .002	.015 ± .002	.014 ± .002	.015 ± .002	.012 ± .002
18	.022 ± .004	.022 ± .004	.020 ± .004	.021 ± .004	.026 ± .004
19	.022 ± .004	.018 ± .004	.027 ± .004	.025 ± .004	.027 ± .004
20	.026 ± .003	.028 ± .003	.025 ± .003	.028 ± .003	.029 ± .003
21	.019 ± .002	.019 ± .003	.017 ± .002	.018 ± .002	.017 ± .002
22	.018 ± .002	.020 ± .002	.019 ± .002	.019 ± .002	.023 ± .003
23	.023 ± .002	.025 ± .002	.025 ± .002	.024 ± .002	.028 ± .003
24	.025 ± .002	.028 ± .003	.025 ± .003	.025 ± .003	.026 ± .003
25	.024 ± .003	.024 ± .002	.023 ± .002	.021 ± .002	.023 ± .002
26	.019 ± .003	.018 ± .003	.021 ± .002	.019 ± .002	.018 ± .002
27	.021 ± .003	.017 ± .002	.028 ± .003	.024 ± .003	.023 ± .003
28	.021 ± .002	.020 ± .003	.022 ± .002	.023 ± .002	.021 ± .002
29	.023 ± .002	.021 ± .002	.023 ± .002	.023 ± .002	.021 ± .002
30	.038 ± .003	.039 ± .003	.038 ± .003	.037 ± .003	.03 ± .003
31	.023 ± .004	.026 ± .004	.026 ± .004	.032 ± .004	.029 ± .004
32	.026 ± .002	.020 ± .002	.027 ± .003	.026 ± .003	.026 ± .003
33	.025 ± .005	.021 ± .005	.021 ± .005	.024 ± .005	.028 ± .005
34	.026 ± .003	.029 ± .004	.024 ± .002	.025 ± .002	.028 ± .003
35	.022 ± .002	.025 ± .002	.023 ± .003	.023 ± .003	.022 ± .003
36	.024 ± .003	.019 ± .003	.022 ± .004	.025 ± .004	.024 ± .004
37	.027 ± .004	.026 ± .004	.031 ± .004	.026 ± .004	.031 ± .004
38	.041 ± .004	.028 ± .004	.040 ± .004	.037 ± .004	.046 ± .004
39	.021 ± .004	.019 ± .004	.028 ± .004	.020 ± .004	.019 ± .004
40	.035 ± .003	.028 ± .003	.034 ± .003	.032 ± .003	.035 ± .003
41	.018 ± .004	.020 ± .004	.019 ± .004	.022 ± .004	.019 ± .004
42	.019 ± .002	.020 ± .002	.019 ± .002	.018 ± .002	.017 ± .002
43	.034 ± .003	.032 ± .003	.032 ± .003	.035 ± .003	.033 ± .003
44	.032 ± .003	.031 ± .003	.025 ± .003	.028 ± .003	.030 ± .003
45	(1)	(1)	(1)	(1)	(1)
46	.033 ± .006	.040 ± .010	.035 ± .004	.034 ± .004	.035 ± .004
47	.033 ± .004	.026 ± .004	.035 ± .005	.032 ± .005	.036 ± .005
48	.023 ± .002	(1)	.023 ± .003	.024 ± .003	.024 ± .003
49	.016 ± .002	(1)	.015 ± .002	.015 ± .002	.016 ± .002
50	.028 ± .005	.025 ± .005	.029 ± .004	.025 ± .005	.028 ± .004
51	.027 ± .004	.024 ± .004	.023 ± .005	.021 ± .005	.019 ± .005
52	.033 ± .003	.031 ± .003	.027 ± .002	.030 ± .002	.033 ± .003
53	.033 ± .006	.038 ± .005	.038 ± .006	.035 ± .005	.017 ± .008
MEAN	.025 ± .012	.024 ± .012	.025 ± .012	.025 ± .012	.025 ± .014

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V,1 CONCENTRATIONS OF GROSS BETTA RADIOACTIVITY IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP II - INTERMEDIATE DISTANCE LOCATIONS

WEEK #	15	17	31	32	33A	38
1	.029 ± .003	.032 ± .003	.028 ± .002	.030 ± .003	.031 ± .003	.033 ± .003
2	.029 ± .003	.030 ± .003	.028 ± .003	.026 ± .003	.030 ± .003	.028 ± .003
3	.022 ± .002	.024 ± .003	.024 ± .003	.027 ± .003	.018 ± .002	.028 ± .003
4	.020 ± .002	.021 ± .002	.022 ± .002	.020 ± .002	.020 ± .002	.020 ± .002
5	.035 ± .004	.036 ± .004	.038 ± .003	.036 ± .003	.025 ± .003	.036 ± .003
6	.027 ± .003	.024 ± .003	.023 ± .003	.026 ± .003	.024 ± .003	.025 ± .003
7	.021 ± .002	.020 ± .002	.002 ± .001	.022 ± .002	.021 ± .002	.023 ± .002
8	.024 ± .003	.023 ± .003	.023 ± .003	.021 ± .003	.023 ± .003	.026 ± .003
9	.020 ± .003	.021 ± .003	.021 ± .003	.018 ± .003	.025 ± .003	.019 ± .003
10	.020 ± .002	.019 ± .002	.017 ± .002	.018 ± .002	.019 ± .002	.020 ± .002
11	.033 ± .003	.033 ± .003	.033 ± .003	.029 ± .003	.032 ± .003	.030 ± .003
12	.024 ± .003	.022 ± .002	.022 ± .003	.023 ± .002	.021 ± .002	.023 ± .002
13	.018 ± .002	.015 ± .003	.018 ± .002	.018 ± .002	.017 ± .002	.021 ± .003
14	.022 ± .003	.022 ± .002	.023 ± .003	.024 ± .003	.022 ± .002	.021 ± .002
15	.018 ± .002	.019 ± .002	.018 ± .002	.017 ± .002	.017 ± .002	.016 ± .002
16	.015 ± .002	.017 ± .002	.020 ± .002	.019 ± .002	.017 ± .002	.017 ± .002
17	.013 ± .002	.014 ± .002	.013 ± .002	.013 ± .002	.015 ± .002	.014 ± .002
18	.019 ± .004	.020 ± .004	.015 ± .004	.021 ± .004	.020 ± .004	.018 ± .004
19	.028 ± .004	.026 ± .004	.029 ± .004	.019 ± .003	.027 ± .004	.026 ± .003
20	.026 ± .003	.024 ± .003	.026 ± .003	.027 ± .003	.026 ± .003	.028 ± .003
21	.013 ± .002	.017 ± .002	.020 ± .002	.014 ± .002	.015 ± .002	.018 ± .003
22	.021 ± .002	.021 ± .002	.020 ± .002	.019 ± .002	.021 ± .002	.020 ± .002
23	.019 ± .002	.025 ± .002	.027 ± .003	.023 ± .002	.022 ± .002	.022 ± .003
24	.023 ± .002	.025 ± .002	.025 ± .003	.024 ± .002	.025 ± .002	.027 ± .002
25	.020 ± .002	.020 ± .002	.023 ± .002	.020 ± .002	.025 ± .002	.024 ± .002
26	.018 ± .002	.017 ± .002	.020 ± .003	.019 ± .002	.019 ± .002	.021 ± .002
27	.021 ± .003	.023 ± .003	.022 ± .003	.020 ± .003	.023 ± .003	.025 ± .003
28	.021 ± .002	.022 ± .002	.023 ± .002	.020 ± .002	.023 ± .003	.021 ± .002
29	.021 ± .002	.020 ± .002	.024 ± .003	.021 ± .002	.021 ± .002	.021 ± .002
30	.036 ± .003	.039 ± .003	.041 ± .003	.040 ± .003	.042 ± .003	.042 ± .003
31	.029 ± .004	.032 ± .004	.031 ± .004	.030 ± .004	(1)	.030 ± .004
32	.028 ± .003	.027 ± .003	.027 ± .003	.026 ± .003	.025 ± .003	.026 ± .003
33	.022 ± .005	.025 ± .005	.025 ± .005	.027 ± .005	(1)	.025 ± .004
34	.024 ± .002	.025 ± .002	.023 ± .003	.026 ± .002	.031 ± .003	.023 ± .002
35	.019 ± .002	.023 ± .003	.023 ± .003	.021 ± .003	.023 ± .003	.028 ± .003
36	.021 ± .004	.024 ± .004	.025 ± .004	.024 ± .004	.027 ± .004	.024 ± .003
37	.028 ± .004	.030 ± .004	.026 ± .004	.025 ± .004	.027 ± .006	.027 ± .004
38	.037 ± .004	.033 ± .004	.038 ± .004	.035 ± .004	.037 ± .004	.041 ± .004
39	.021 ± .004	.019 ± .004	.017 ± .004	.017 ± .004	.019 ± .004	.024 ± .004
40	.030 ± .003	.036 ± .003	.035 ± .003	.034 ± .003	.032 ± .003	.034 ± .003
41	.014 ± .004	.016 ± .004	.019 ± .004	.017 ± .004	.014 ± .004	.016 ± .004
42	.016 ± .002	.016 ± .002	.019 ± .002	.018 ± .002	.019 ± .002	.018 ± .002
43	.032 ± .003	.034 ± .003	.038 ± .003	.031 ± .002	.036 ± .003	.036 ± .003
44	.030 ± .003	.029 ± .003	.029 ± .003	.029 ± .003	.031 ± .003	.030 ± .003
45	(1)	(1)	(1)	(1)	(1)	(1)
46	.035 ± .005	.030 ± .004	.032 ± .004	.034 ± .004	.038 ± .004	.035 ± .004
47	.031 ± .005	.031 ± .005	.034 ± .005	.029 ± .005	.032 ± .004	.038 ± .005
48	.024 ± .002	.023 ± .002	.024 ± .003	.020 ± .003	.022 ± .002	.024 ± .003
49	.015 ± .002	.013 ± .002	.015 ± .002	.013 ± .002	.015 ± .002	.016 ± .002
50	.028 ± .004	.022 ± .005	.031 ± .004	.022 ± .005	.027 ± .004	.028 ± .005
51	.020 ± .005	.021 ± .005	.017 ± .005	.019 ± .005	.019 ± .005	.023 ± .006
52	.026 ± .003	.028 ± .002	.030 ± .002	.030 ± .002	.034 ± .003	.030 ± .002
53	.035 ± .008	.038 ± .006	.036 ± .006	.039 ± .008	.039 ± .008	.037 ± .008
MEAN	.024 ± .013	.025 ± .013	.025 ± .015	.024 ± .013	.025 ± .014	.026 ± .013

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V.1 CONCENTRATIONS OF GROSS BETTA RADIOACTIVITY IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP III - DISTANT LOCATIONS

WEEK #	12A	12D
1	.027 ± .003	.024 ± .003
2	.026 ± .003	.021 ± .002
3	.021 ± .002	.020 ± .002
4	.025 ± .003	.020 ± .003
5	.034 ± .003	.030 ± .003
6	.020 ± .002	.020 ± .003
7	.018 ± .002	.022 ± .003
8	.018 ± .003	.019 ± .003
9	.012 ± .002	.013 ± .003
10	.027 ± .003	.027 ± .003
11	.026 ± .003	.028 ± .003
12	.019 ± .003	.017 ± .002
13	.023 ± .003	.020 ± .002
14	.017 ± .002	.015 ± .002
15	.019 ± .003	.020 ± .002
16	.013 ± .002	.014 ± .002
17	.014 ± .002	.014 ± .002
18	.020 ± .004	.022 ± .004
19	.030 ± .004	.037 ± .004
20	.024 ± .003	.022 ± .002
21	.015 ± .002	.015 ± .002
22	.030 ± .003	.027 ± .003
23	.022 ± .002	.022 ± .002
24	.025 ± .002	.024 ± .002
25	.025 ± .003	.021 ± .003
26	.025 ± .004	.016 ± .002
27	.024 ± .002	.022 ± .002
28	.027 ± .003	.024 ± .003
29	.029 ± .003	.025 ± .003
30	.036 ± .003	.034 ± .003
31	.023 ± .004	.018 ± .004
32	.025 ± .003	.024 ± .003
33	.017 ± .005	.018 ± .005
34	.025 ± .003	.025 ± .003
35	.019 ± .003	.017 ± .002
36	.026 ± .003	.022 ± .003
37	.024 ± .004	.026 ± .004
38	.035 ± .004	.038 ± .004
39	.018 ± .002	.022 ± .002
40	.029 ± .003	.022 ± .002
41	.020 ± .004	.020 ± .004
42	.027 ± .003	.024 ± .003
43	.032 ± .003	.028 ± .003
44	.035 ± .004	.030 ± .004
45	.044 ± .005	.040 ± .006
46	.034 ± .004	.031 ± .004
47	.039 ± .008	.020 ± .004
48	.013 ± .003	.021 ± .004
49	.013 ± .004	.038 ± .005
50	.028 ± .005	.027 ± .005
51	.021 ± .002	.021 ± .002
52	.031 ± .003	.031 ± .003
53	.036 ± .005	.033 ± .005
MEAN	.025 ± .014	.024 ± .013

TABLE C-V.2 MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS (PCI/CU.M) IN AIR PARTICULATE SAMPLE COLLECTED IN THE VICINITY OF PBAPS, 1987

GROUP I				GROUP II				GROUP III			
COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD
01/04/87-01/31/87	.020	.040	.028 ± .013	01/04/87-01/31/87	.018	.038	.026 ± .011	12/29/86-02/02/87	.020	.034	.025 ± .009
01/31/87-02/28/87	.019	.031	.024 ± .007	01/31/87-02/28/87	.002	.029	.022 ± .009	02/02/87-03/02/87	.012	.022	.018 ± .007
02/28/87-04/04/87	.018	.035	.024 ± .011	02/28/87-04/04/87	.013	.033	.022 ± .012	03/02/87-03/[illegible]/87	.017	.028	.023 ± .008
04/04/87-05/02/87	.009	.020	.018 ± .008	04/04/87-05/02/87	.012	.029	.018 ± .007	03/30/87-05/[illegible]/87	.013	.020	.016 ± .005
05/02/87-05/30/87	.012	.028	.022 ± .010	05/02/87-05/30/87	.013	.029	.022 ± .009	05/04/87-06/01/87	.015	.037	.024 ± .014
05/30/87-07/03/87	.019	.027	.023 ± .004	05/30/87-07/03/87	.017	.028	.023 ± .006	06/01/87-06/29/87	.016	.025	.022 ± .006
07/03/87-08/01/87	.020	.043	.028 ± .015	07/03/87-08/01/87	.020	.042	.028 ± .015	06/29/87-08/03/87	.018	.036	.026 ± .011
08/01/87-08/29/87	.018	.032	.026 ± .008	08/01/87-08/29/87	.019	.031	.025 ± .005	08/03/87-08/31/87	.017	.025	.021 ± .008
08/29/87-10/03/87	.019	.041	.028 ± .014	08/29/87-10/03/87	.017	.046	.028 ± .014	08/31/87-09/28/87	.018	.038	.026 ± .014
10/03/87-11/01/87	.017	.037	.026 ± .015	10/03/87-11/01/87	.014	.038	.025 ± .015	09/28/87-11/03/87	.020	.035	.027 ± .010
11/08/87-11/29/87	.020	.033	.028 ± .010	11/07/87-11/29/87	.020	.040	.030 ± .011	11/03/87-11/30/87	.013	.044	.030 ± .022
11/29/87-01/01/88	.017	.035	.027 ± .013	11/28/87-01/02/88	.013	.039	.026 ± .016	11/30/87-01/04/88	.013	.036	.028 ± .015
01/04/87-01/01/88	.009	.043	.025 ± .013	01/04/87-01/02/88	.002	.046	.024 ± .013	12/29/86-01/04/88	.012	.044	.024 ± .013

NOTE:

GROUP I CONSISTS OF STATIONS 1A, 1B, 2
GROUP II CONSISTS OF STATIONS 3A, 4B, 5, 6B, 14, 16,17, 31, 31, AND 38
GROUP III CONSISTS OF STATIONS 12A AND 12D

TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP I - SITE LOCATIONS

STATION CODE	COLLECTION PERIOD	BE-7	K-40	CS-134	CS-137	RA-226	TH-228
1A	JAN 87	.14 ± .05	< .08	< .003	< .004	< .007	< .009
	FEB 87	.21 ± .07	< .1	< .005	< .005	< .01	< .01
	MAR 87	.21 ± .08	< .09	< .004	< .004	< .008	< .01
	APR 87	.12 ± .06	< .09	< .004	< .004	< .008	< .01
	MAY 87	.15 ± .06	< .1	< .005	< .005	< .008	< .01
	JUN 87	.14 ± .07	< .1	< .005	< .006	< .01	< .02
	JUL 87	.17 ± .06	< .09	< .004	< .004	< .007	< .01
	AUG 87	.16 ± .07	.3 ± .1	< .005	< .004	< .01	< .01
	SEP 87	.11 ± .06	< .09	< .004	< .004	< .007	< .01
	OCT 87	.09 ± .07	.2 ± .1	< .005	< .005	< .008	< .01
	NOV 87	.1 ± .1	< .2	< .007	< .008	< .01	< .02
	DEC 87	.09 ± .05	< .09	< .004	< .005	< .008	< .01
	MEAN	.14 ± .08	.13 ± .14	< .005	< .005	< .008	< .012
1B	JAN 87	.13 ± .06	< .1	< .004	< .004	< .009	< .01
	FEB 87	.25 ± .07	< .1	< .004	< .004	.01 ± .01	< .01
	MAR 87	.18 ± .09	< .1	< .006	< .006	< .01	< .02
	APR 87	.22 ± .08	< .1	< .006	< .005	< .01	< .02
	MAY 87	.12 ± .09	< .1	< .005	< .006	< .01	< .02
	JUN 87	.21 ± .08	< .2	< .005	< .006	.03 ± .01	< .02
	JUL 87	.12 ± .06	.2 ± .1	< .004	< .004	.007 ± .007	< .01
	AUG 87	.19 ± .07	< .1	< .006	< .005	< .01	< .01
	SEP 87	.07 ± .07	< .1	< .004	< .005	< .009	< .01
	OCT 87	.23 ± .08	< .1	< .005	< .004	< .009	< .01
	NOV 87	.17 ± .09	.2 ± .1	< .007	< .007	< .01	< .02
	DEC 87	.07 ± .06	.1 ± .1	< .004	< .004	.01 ± .008	< .01
	MEAN	.16 ± .12	.1 ± .1	< .005	< .005	.011 ± .010	< .01
2	JAN 87	.08 ± .06	.1 ± .1	< .004	< .004	< .008	< .01
	FEB 87	.16 ± .06	< .1	< .004	< .005	< .009	< .01
	MAR 87	.2 ± .09	< .1	< .005	< .005	< .009	< .01
	APR 87	.15 ± .06	< .1	< .004	< .005	< .009	< .01
	MAY 87	.15 ± .07	< .1	< .005	< .004	< .008	< .01
	JUN 87	.23 ± .08	< .1	< .006	< .005	< .01	< .02
	JUL 87	.21 ± .06	.1 ± .1	< .004	< .004	< .008	< .01
	AUG 87	.19 ± .07	.3 ± .1	< .005	< .005	.01 ± .01	< .01
	SEP 87	.13 ± .05	.11 ± .09	< .004	< .004	< .008	< .01
	OCT 87	.19 ± .08	.3 ± .1	< .005	< .005	< .008	< .01
	NOV 87	.2 ± .09	.3 ± .2	< .006	< .007	< .01	< .02
	DEC 87	.11 ± .06	.3 ± .1	< .004	< .004	< .007	< .01
	MEAN	.17 ± .09	.17 ± .20	< .005	< .005	.009 ± .002	< .01
MEAN GROUP I		.16 ± .10	.14 ± .15	< .005	< .005	.009 ± .007	< .012

TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP II - NEAR SITE LOCATIONS

STATION CODE	COLLECTION PERIOD	BE-7	K-40	CS-134	CS-137	RA-226	TH-228
3A	JAN 87	.07 ± .05	< .08	< .004	< .004	< .007	< .009
	FEB 87	.15 ± .07	< .1	< .005	< .005	< .01	< .02
	MAR 87	.17 ± .09	< .1	< .005	< .006	< .01	< .02
	APR 87	.2 ± .09	< .1	< .006	< .006	< .01	< .01
	MAY 87	.16 ± .08	< .1	< .005	< .004	< .008	< .01
	JUN 87	.21 ± .08	< .1	< .005	< .006	< .01	< .02
	JUL 87	.2 ± .07	< .1	< .005	< .005	< .009	< .01
	AUG 87	.17 ± .08	< .1	< .005	< .006	< .01	< .02
	SEP 87	.15 ± .07	< .1	< .005	< .005	< .009	< .01
	OCT 87	.14 ± .09	< .1	< .006	< .006	< .01	< .02
	NOV 87	.1 ± .1	.2 ± .2	< .007	< .008	< .01	< .02
	DEC 87	.09 ± .06	.3 ± .1	< .005	< .004	< .009	< .01
	MEAN	.15 ± .09	.12 ± .13	< .005	< .005	< .009	< .015
4B	JAN 87	.09 ± .05	.2 ± .1	< .004	< .005	< .009	< .01
	FEB 87	.11 ± .09	.3 ± .2	< .007	< .008	< .01	< .02
	MAR 87	.18 ± .07	< .1	< .005	< .005	< .009	< .01
	APR 87	.17 ± .07	< .1	< .004	< .005	< .008	< .01
	MAY 87	.18 ± .07	< .1	< .004	< .005	< .008	< .01
	JUN 87	.17 ± .08	< .1	< .006	< .006	< .01	< .02
	JUL 87	.16 ± .06	.2 ± .1	< .004	< .005	< .007	< .01
	AUG 87	.11 ± .06	.1 ± .1	< .004	< .006	< .009	< .01
	SEP 87	.14 ± .05	< .09	< .004	< .004	< .007	< .01
	OCT 87	< .07	.2 ± .1	< .005	< .005	< .009	< .01
	NOV 87	< .2	.4 ± .3	< .01	< .01	< .02	< .03
	DEC 87	.12 ± .09	< .2	< .006	< .006	.01 ± .01	< .02
	MEAN	.14 ± .08	.17 ± .19	< .005	< .006	.010 ± .007	< .01
5	JAN 87	.14 ± .08	.3 ± .2	< .006	< .006	< .01	< .02
	FEB 87	.2 ± .1	< .2	< .01	< .009	< .02	< .02
	MAR 87	.21 ± .08	< .1	< .005	< .004	< .008	< .01
	APR 87	.13 ± .07	< .1	< .006	< .006	< .009	< .01
	MAY 87	.18 ± .07	< .1	< .005	< .005	< .008	< .01
	JUN 87	.25 ± .08	< .1	< .005	< .006	< .01	< .02
	JUL 87	.16 ± .07	< .1	< .004	< .005	< .009	< .01
	AUG 87	.19 ± .07	< .1	< .006	< .006	< .01	< .01
	SEP 87	.12 ± .06	< .1	< .005	< .005	< .009	< .01
	OCT 87	.15 ± .08	.3 ± .1	< .005	< .005	< .01	< .01
	NOV 87	.12 ± .08	< .2	< .007	< .006	< .01	.02 ± .02
	DEC 87	.11 ± .05	< .09	< .004	< .004	< .007	< .01
	MEAN	.16 ± .09	.15 ± .16	< .006	< .006	< .010	.01 ± .01
6B	JAN 87	.1 ± .05	< .08	< .004	< .004	< .007	< .009
	FEB 87	.11 ± .06	< .1	< .004	< .005	< .008	< .01
	MAR 87	.14 ± .09	< .1	< .006	< .006	< .01	< .01
	APR 87	.3 ± .08	< .1	< .005	< .004	< .008	< .01
	MAY 87	.23 ± .08	< .1	< .005	< .005	< .009	< .01
	JUN 87	.12 ± .07	< .1	< .006	< .006	< .01	< .01
	JUL 87	.16 ± .06	.1 ± .09	< .004	< .004	< .007	< .01
	AUG 87	.16 ± .07	< .1	< .005	< .005	< .009	< .01
	SEP 87	.12 ± .05	< .09	< .004	< .004	< .006	< .01
	OCT 87	.07 ± .07	.1 ± .1	< .005	< .005	< .008	< .01
	NOV 87	.17 ± .09	< .1	< .007	< .006	< .01	< .02
	DEC 87	.06 ± .06	.1 ± .1	< .004	< .004	< .008	< .01
	MEAN	.15 ± .13	.10 ± .01	< .005	< .005	< .008	< .011

TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEARS, 198

RESULTS IN UNITS OF PCI/CUBIC METER ± 2 SIGMA

GROUP II - NEAR SITE LOCATIONS

LOCATION CODE	COLLECTION PERIOD	BE-7	K-40	CS-134	CS-137	RA-226	TH-228
14	JAN 87	.11 ± .05	.08	< .004	< .004	< .007	< .01
	FEB 87	.16 ± .06	< .09	< .004	< .004	< .008	< .01
	MAR 87	.14 ± .07	< .09	< .005	< .004	< .008	< .01
	APR 87	.2 ± .1	< .2	< .007	< .007	< .01	< .02
	MAY 87	.17 ± .07	< .1	< .005	< .004	< .008	< .01
	JUN 87	.17 ± .08	< .1	< .006	< .005	< .01	< .01
	JUL 87	.2 ± .07	< .1	< .004	< .004	.008 ± .008	< .01
	AUG 87	.17 ± .07	< .1	< .006	< .006	< .01	< .01
	SEP 87	.15 ± .06	< .1	< .005	< .004	< .009	< .01
	OCT 87	.18 ± .09	< .1	< .006	< .006	< .009	< .02
	NOV 87	.2 ± .1	.2	< .008	< .007	< .0	< .02
	DEC 87	.1 ± .06	.1 ± .1	< .00	< .005	< .008	< .01
	MEAN	.16 ± .07	.11 ± .08	< .005	< .005	.009 ± .002	< .01
15	JAN 87	.08 ± .05	< .08	< .004	< .003	< .007	< .01
	FEB 87	.16 ± .07	< .1	< .006	< .006	< .01	< .02
	MAR 87	.3 ± .1	.2 ± .2	< .006	< .006	< .01	< .02
	APR 87	.21 ± .07	< .09	< .004	< .005	< .00	< .01
	MAY 87	.2 ± .07	< .1	< .005	< .005	< .00	< .01
	JUN 87	.26 ± .08	< .2	< .006	< .006	.03 ± .0	< .01
	JUL 87	.25 ± .07	.1 ± .1	< .005	< .005	< .009	± .01
	AUG 87	.17 ± .07	< .1	< .005	< .005	< .009	< .01
	SEP 87	.16 ± .07	< .1	< .004	< .005	< .009	< .01
	OCT 87	.1 ± .08	< .1	< .005	< .005	< .01	< .01
	NOV 87	< .1	.2 ± .2	< .006	< .007	< .01	< .02
	DEC 87	.17 ± .07	.2 ± .1	< .005	< .004	< .009	< .01
	MEAN	.18 ± .13	.13 ± .10	< .005	< .005	.011 ± .012	.01 ± .01
17	JAN 87	.13 ± .06	< .1	< .005	< .005	< .009	< .01
	FEB 87	.22 ± .07	.2 ± .1	< .00	< .007	.02 ± .01	< .02
	MAR 87	.16 ± .09	< .1	< .00	< .006	.01 ± .01	< .02
	APR 87	.18 ± .08	< .1	< .005	< .006	< .01	< .02
	MAY 87	.17 ± .07	< .1	< .00	< .005	.009 ± .008	< .01
	JUN 87	.18 ± .07	< .1	< .00	< .005	< .01	< .02
	JUL 87	.15 ± .07	< .1	< .004	< .004	< .008	< .01
	AUG 87	.19 ± .07	< .1	< .005	< .006	< .01	< .02
	SEP 87	.15 ± .06	< .09	< .004	< .004	< .008	< .01
	OCT 87	.15 ± .08	.2 ± .1	< .005	.005 ± .005	< .009	< .01
	NOV 87	< .09	< .2	< .007	< .008	< .01	< .02
	DEC 87	.11 ± .06	< .09	< .004	< .004	< .008	< .01
	MEAN	.16 ± .07	.12 ± .09	< .005	.005 ± .002	.010 ± .006	< .02
31	JAN 87	.13 ± .05	< .07	< .004	< .004	< .007	< .008
	FEB 87	< .06	< .1	< .005	< .006	< .01	< .01
	MAR 87	.19 ± .09	< .1	< .006	< .006	< .01	< .02
	APR 87	.15 ± .07	< .1	< .004	< .004	< .008	< .01
	MAY 87	.22 ± .08	< .1	< .004	< .005	< .008	< .01
	JUN 87	.22 ± .08	< .1	< .006	< .006	< .01	< .01
	JUL 87	.19 ± .06	.11 ± .0	< .004	< .004	< .008	< .0
	AUG 87	.17 ± .07	< .1	< .005	< .005	< .01	< .0
	SEP 87	.22 ± .07	< .1	< .005	< .005	< .008	< .01
	OCT 87	.13 ± .09	< .1	< .005	< .005	< .01	< .02
	NOV 87	.13 ± .09	< .1	< .007	< .007	< .01	< .02
	DEC 87	< .06	.2 ± .1	< .004	< .004	< .009	< .01
	MEAN	.16 ± .11	.11 ± .06	< .005	< .005	< .009	< .012

TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP II - NEAR SITE LOCATIONS

STATION CODE	COLLECTION PERIOD	BE-7	K-40	CS-134	CS-137	RA-226	TH-228
32	JAN 87	.08 ± .06	< .1	< .005	< .005	< .009	< .01
	FEB 87	.19 ± .07	< .1	< .004	< .005	< .009	< .01
	MAR 87	.18 ± .07	< .1	< .004	< .006	< .009	< .01
	APR 87	.15 ± .08	< .1	< .006	< .005	< .01	< .01
	MAY 87	.15 ± .07	< .1	< .005	< .005	< .008	< .01
	JUN 87	.18 ± .08	< .1	< .005	< .005	.01 ± .01	< .01
	JUL 87	.14 ± .06	< .1	< .004	< .005	< .008	< .01
	AUG 87	.1 ± .07	< .1	< .006	< .006	< .009	< .01
	SEP 87	.14 ± .06	.14 ± .09	< .004	< .004	< .007	< .01
	OCT 87	.12 ± .08	< .1	< .006	< .006	< .009	< .02
	NOV 87	.3 ± .1	< .2	< .008	< .008	< .01	< .02
	DEC 87	< .05	.1 ± .1	< .004	< .005	< .008	< .01
	MEAN	.15 ± .13	.11 ± .06	< .005	< .005	.009 ± .002	< .01
33A	JAN 87	.11 ± .05	.14 ± .09	< .004	< .003	< .007	< .008
	FEB 87	.17 ± .06	< .1	< .005	< .005	< .009	< .01
	MAR 87	.19 ± .09	< .1	< .006	< .006	< .01	< .01
	APR 87	.21 ± .08	< .1	< .005	< .005	< .01	< .01
	MAY 87	.17 ± .07	< .1	< .005	< .005	< .008	< .0
	JUN 87	.19 ± .08	< .1	< .005	< .006	.01 ± .01	< .01
	JUL 87	.18 ± .09	< .2	< .006	< .006	< .01	< .02
	AUG 87	.17 ± .09	< .2	< .006	< .006	< .01	< .02
	SEP 87	.18 ± .07	< .1	< .005	< .005	< .01	< .01
	OCT 87	.19 ± .09	< .1	< .005	< .005	< .01	< .01
	NOV 87	< .08	.4 ± .2	< .006	< .007	< .01	< .02
	DEC 87	< .05	.2 ± .1	< .004	< .005	< .008	< .01
	MEAN	.16 ± .10	.15 ± .18	< .005	< .005	.009 ± .002	< .012
38	JAN 87	.1 ± .05	< .08	< .003	< .003	< .007	< .009
	FEB 87	.18 ± .06	< .09	< .005	< .005	< .009	< .01
	MAR 87	.19 ± .07	< .1	< .004	< .004	< .009	< .01
	APR 87	.17 ± .06	< .09	< .004	< .004	< .008	< .01
	MAY 87	.2 ± .07	< .1	< .004	< .005	< .008	< .01
	JUN 87	.22 ± .08	< .2	< .005	< .006	< .01	< .01
	JUL 87	.17 ± .06	< .1	< .004	< .005	< .009	< .01
	AUG 87	.17 ± .07	.1 ± .1	< .004	< .005	< .008	< .01
	SEP 87	.14 ± .06	< .09	< .004	< .004	< .007	< .009
	OCT 87	.17 ± .08	< .1	< .005	< .005	< .009	< .01
	NOV 87	.2 ± .1	< .2	< .007	< .007	< .01	< .02
	DEC 87	< .07	< .1	< .005	< .005	< .01	< .01
	MEAN	.17 ± .09	.11 ± .08	< .005	< .005	< .009	< .011
MEAN GROUP II		.16 ± .10	.13 ± .12	< .005	.005 ± .002	.009 ± .005	.013 ± .010

TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

GROUP III - DISTANT LOCATIONS

STATION CODE	COLLECTION PERIOD	BE-7	K-40	CS-134	CS-137	RA-226	TH-228
12A	JAN 87	.1 ± .06	< .1	< .004	< .005	< .008	< .01
	FEB 87	.15 ± .07	< .1	< .006	< .005	< .01	< .02
	MAR 87	.2 ± .1	< .1	< .006	< .005	< .01	< .01
	APR 87	.22 ± .07	< .08	< .005	< .004	< .007	< .01
	MAY 87	.21 ± .08	< .1	< .005	< .005	< .008	< .01
	JUN 87	.21 ± .09	< .2	< .007	< .007	< .01	< .02
	JUL 87	.17 ± .06	.12 ± .09	< .004	< .004	< .008	< .01
	AUG 87	.14 ± .06	< .1	< .005	< .005	< .009	< .01
	SEP 87	.22 ± .06	< .09	< .004	< .004	< .008	< .01
	OCT 87	.11 ± .07	.2 ± .1	< .005	< .005	< .009	.02 ± .01
	NOV 87	.12 ± .07	< .1	< .005	< .006	< .01	< .02
	DEC 87	.08 ± .06	.2 ± .1	< .004	< .004	< .008	< .01
	MEAN	.16 ± .10	.12 ± .09	< .005	< .005	< .009	.01 ± .01
12D	JAN 87	.11 ± .06	< .1	< .005	< .005	< .008	< .01
	FEB 87	.14 ± .06	.1 ± .1	< .004	< .005	< .008	< .01
	MAR 87	.2 ± .08	.1 ± .1	< .005	< .005	< .008	< .01
	APR 87	.14 ± .08	< .2	< .006	< .006	< .01	< .02
	MAY 87	.2 ± .08	< .1	< .004	< .005	< .008	< .01
	JUN 87	.21 ± .08	< .1	< .005	< .006	< .01	< .02
	JUL 87	.2 ± .06	.1 ± .1	< .004	< .004	< .007	< .01
	AUG 87	.18 ± .07	< .1	< .005	< .005	< .01	< .01
	SEP 87	.14 ± .06	.1 ± .1	< .004	< .004	< .007	< .01
	OCT 87	.13 ± .08	< .1	< .005	< .006	< .01	< .02
	NOV 87	.12 ± .07	.2 ± .1	< .005	< .004	< .01	< .01
	DEC 87	.14 ± .07	< .1	< .005	< .005	< .009	< .01
	MEAN	.16 ± .07	.1 ± .1	< .005	< .005	< .009	< .01
MEAN GROUP III		.16 ± .09	.12 ± .08	< .005	< .005	< .009	.01 ± .01

TABLE C-V.4 ADDITIONAL GAMMA EMITTING NUCLIDES FOUND IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

NUCLIDE	COLLECTION PERIOD	1A	1B	2	4B	5	6B	14	15	17	31	32	33A	12A	12D
MN-54	JAN 87	-	-	-	-	-	-	-	-	-	-	-	-	.005±.005	-
	JUN 87	-	-	-	-	-	-	-	-	-	-	-	.009±.006	-	-
CO-57	DEC 87	-	-	-	-	-	-	-	-	.003±.003	-	-	-	-	-
ZN-65	NOV 87	-	-	.02±.02	-	-	-	-	-	-	-	-	-	-	-
ZR-95	OCT 87	-	.01±.01	-	-	-	-	-	-	-	-	-	-	-	-
	NOV 87	-	-	-	-	-	-	-	-	-	-	-	-	.02±.01	-
NB-95	JAN 87	.007±.006	-	-	-	-	-	-	-	-	-	-	-	-	-
	MAR 87	-	-	-	-	-	-	.01±.01	-	-	-	-	-	-	-
	SEP 87	-	-	-	-	-	-	-	.009±.008	-	-	-	-	-	-
	OCT 87	-	-	-	-	-	-	.01±.01	-	-	-	-	-	-	-
AG-110M	MAY 87	-	-	-	-	-	-	-	-	-	-	-	-	-	.007±.007
SB-125	FEB 87	-	-	-	-	-	-	-	-	-	-	-	.01±.01	-	-
TE-129M	MAR 87	-	-	-	-	-	-	-	-	-	-	-	-	.3±.3	-
	MAY 87	-	-	-	.2±.2	-	-	-	-	-	-	-	-	-	-
	SEP 87	-	-	-	-	-	.2±.2	-	-	-	-	-	-	-	-
CS-136	MAR 87	-	-	-	-	-	-	-	-	-	-	.07±.07	-	-	-
	JUN 87	-	-	-	-	-	.06±.04	-	-	-	-	-	-	-	-
	NOV 87	-	-	.11±.07	-	-	-	-	-	-	-	-	-	-	-
LA-140	MAR 87	-	-	-	-	-	-	-	-	-	.1±.1	-	-	-	-
	SEP 87	-	-	-	-	.04±.04	-	-	-	-	-	-	-	-	-
CE-141	MAR 87	-	-	-	-	-	-	-	.01±.01	-	-	-	-	-	-

TABLE C-VI.1 ANALYTICAL DATA FOR AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

WEEK	GROUP I			GROUP II				GROUP III
#	1B	1Z	2	3A	5	6B	14	12D
1	< .01	< .01	< .01	< .01	< .007	< .01	< .01	< .01
2	< .02	< .02	< .02	< .02	< .02	< .03	< .02	< .01
3	< .02	< .02	< .02	< .02	< .01	< .02	< .01	< .01
4	< .02	< .02	< .02	< .02	< .03	< .02	< .02	< .01
5	< .02	< .02	< .02	< .02	(1)	< .02	< .02	< .01
6	< .02	< .02	< .02	< .02	(1)	< .01	< .02	< .01
7	< .02	< .02	< .02	< .02	< .02	< .01	< .01	< .01
8	< .01	< .01	< .01	< .01	< .01	< .02	< .02	< .006
9	< .02	< .02	< .02	< .02	< .009	< .01	< .01	< .01
10	< .03	< .03	< .03	< .03	< .02	< .03	< .03	< .01
11	< .01	< .01	< .01	< .01	< .007	< .01	< .01	< .01
12	< .01	< .01	< .01	< .01	< .007	< .01	< .01	< .01
13	< .03	< .03	< .03	< .03	< .02	< .03	< .02	< .006
14	< .02	< .02	< .02	< .02	< .01	< .02	< .02	< .01
15	< .02	< .02	< .02	< .02	< .02	< .02	(1)	< .01
16	< .01	< .01	< .01	< .01	< .01	< .01	< .007	< .01
17	< .01	< .01	< .01	< .01	< .009	< .01	< .01	< .01
18	< .01	< .01	< .02	< .02	< .009	< .01	< .01	< .01
19	< .02	< .02	< .02	< .02	< .01	< .01	< .009	< .009
20	< .01	< .01	< .01	< .01	< .01	< .02	< .009	< .01
21	< .02	< .02	< .02	< .02	< .01	< .01	< .01	< .009
22	< .01	< .01	< .01	< .01	< .01	< .02	< .009	< .008
23	< .03	< .03	< .03	< .03	< .02	< .03	< .03	< .01
24	< .01	< .01	< .01	< .01	< .007	< .01	< .01	< .01
25	< .02	< .02	< .02	< .02	< .02	< .02	< .02	< .01
26	< .02	< .02	< .02	< .02	< .01	< .02	< .01	< .006
27	< .02	< .02	< .02	< .02	< .01	< .02	< .01	< .009
28	< .01	< .01	< .01	< .01	< .01	< .01	< .008	< .008
29	< .03	< .03	< .03	< .03	< .02	< .03	< .03	< .008
30	< .01	< .01	< .01	< .01	< .007	< .01	< .01	< .01
31	< .01	< .01	< .01	< .01	< .01	< .02	< .009	< .01
32	< .01	< .01	< .01	< .01	< .01	< .02	< .009	< .01
33	< .02	< .02	< .02	< .02	< .02	< .02	< .01	< .01
34	< .02	< .02	< .02	< .02	< .01	< .01	< .008	< .009
35	< .01	< .01	< .01	< .01	< .01	< .01	< .02	< .006
36	< .01	< .01	< .01	< .01	< .01	< .02	< .009	< .005
37	< .03	< .03	< .03	< .03	< .02	< .03	< .03	< .02
38	< .01	< .01	< .01	< .01	< .01	< .01	< .02	< .01
39	< .02	< .02	< .02	< .02	< .01	< .02	< .02	< .01
40	< .01	< .01	< .01	< .02	< .009	< .02	< .02	< .008
41	< .04	< .04	< .04	< .04	< .02	< .02	< .03	< .007
42	< .01	< .01	< .01	< .02	< .009	< .01	< .01	< .01
43	< .01	< .01	< .01	< .01	< .007	< .01	< .01	< .005
44	< .01	< .01	< .01	< .01	< .01	< .009	< .01	< .005
45	< .02	< .02	< .02	< .02	< .02	< .03	< .02	< .01
46	< .02	< .02	< .02	< .02	< .007	< .01	< .01	< .005
47	< .006	< .007	< .007	< .007	< .007	< .01	< .007	< .02
48	< .02	< .02	< .02	< .02	< .02	< .02	< .02	< .006
49	< .01	< .01	< .01	< .01	< .006	< .009	< .01	< .02
50	< .01	< .01	< .009	< .01	< .006	< .01	< .01	< .006
51	< .02	< .02	< .02	< .02	< .02	< .02	< .02	< .004
52	< .02	< .02	< .02	< .02	< .006	< .02	< .02	< .003
53	< .02	< .02	< .02	< .02	< .01	< .02	< .02	< .01
MEAN	< .017	< .017	< .017	< .017	< .012	< .017	< .015	< .009

(1) SEE PROGRAM EXCEPTION SECTION FOR EXPLANATION

TABLE C-VII.1 ANALYTICAL DATA FOR MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION DATE	SR-89	SR-90	CS-134	CS-137
G	02/16/87	< .9	3.3 ± .3	< 3	6 ± 3
	05/18/87	< .8	3.0 ± .3	< 2	< 2
	08/10/87	< .7	3.4 ± .3	< 6	< 5
	11/16/87	(1)	(1)	< 5	< 4
	MEAN	< .8	3.2 ± .4	< 4	4 ± 3
J	02/16/87	.9 ± .8	2.4 ± .3	< 3	6 ± 2
	05/18/87	1 ± 1	2.2 ± .3	< 3	2 ± 2
	08/10/87	.9 ± .9	2.8 ± .3	< 3	< 2
	11/16/87	< 1	2.4 ± .3	< 4	4 ± 4
	MEAN	1.0 ± .1	2.5 ± .5	< 3	4 ± 4
O	02/16/87	< .7	2.2 ± .3	< 3	< 2
	05/18/87	< .9	1.8 ± .2	< 2	< 2
	08/10/87	< .8	2.8 ± .3	< 4	< 4
	11/16/87	< 1	2.1 ± .3	< 4	< 4
	MEAN	< .9	2.2 ± .8	< 3	< 3
MEAN NEARBY FARMS		.9 ± .2	2.6 ± 1.0	< 4	4 ± 3
L	02/16/87	.9 ± .8	1.3 ± .2	< 2	5 ± 2
	05/18/87	< 1	2.7 ± .4	5 ± 5	5 ± 4
	08/10/87	< .7	2.7 ± .3	< 5	< 4
	11/16/87	< .9	2.7 ± .3	< 3	< 2
	MEAN	.9 ± .3	2.4 ± 1.4	4 ± 3	4 ± 3
M	02/16/87	< .7	1.7 ± .3	< 2	2 ± 2
	05/18/87	< .6	2.3 ± .2	< 3	< 2
	08/10/87	.9 ± .8	2.8 ± .3	< 4	< 3
	11/16/87	< 2	3.6 ± .4	< 9	< 7
	MEAN	1.1 ± 1.3	2.6 ± 1.6	< 5	4 ± 5
N	02/16/87	< .9	2.0 ± .3	< 2	3 ± 2
	05/18/87	< .9	3.0 ± .2	< 2	< 2
	08/10/87	1 ± 1	2.4 ± .3	< 5	< 4
	11/16/87	< 2	3.0 ± .4	< 2	< 2
	MEAN	1.2 ± 1.1	2.6 ± 1.0	< 3	3 ± 2
MEAN INTERMEDIATE FARMS		1.0 ± .9	2.4 ± 1.2	4 ± 4	3 ± 3

(1) SEE PROGRAM EXCEPTION SECTION FOR EXPLANATION

TABLE C-VII.1 ANALYTICAL DATA FOR MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION DATE	SR-89	SR-90	CS-134	CS-137
A	02/16/87	< .7	2.2 ± .3	< 2	4 ± 2
	05/18/87	< .6	1.2 ± .2	< 2	< 2
	08/10/87	< .6	1.9 ± .3	< 4	< 3
	11/16/87	< 2	2 ± 1	< 6	< 5
	MEAN	< 1.0	1.8 ± .9	< 4	4 ± 3
B	02/16/87	< .7	1.6 ± .2	< 3	3 ± 3
	05/18/87	< .6	1.9 ± .2	< 3	< 3
	08/10/87	< .8	2.2 ± .3	5 ± 4	4 ± 3
	11/16/87	< 7	3.7 ± .9	< 5	< 5
	MEAN	< 2.3	2.4 ± 1.9	4 ± 2	4 ± 2
C	02/16/87	< .7	1.5 ± .3	< 3	5 ± 2
	05/18/87	.8 ± .8	1.8 ± .3	< 2	< 2
	08/10/87	< 1	3.2 ± .5	< 6	< 6
	11/16/87	< 1	2.2 ± .4	< 5	< 4
	MEAN	.9 ± .3	2.2 ± 1.5	< 4	4 ± 3
E	02/16/87	< .7	1.6 ± .3	< 3	< 2
	05/18/87	< .9	3.6 ± .3	3 ± 3	6 ± 2
	08/10/87	< .7	2.0 ± .3	< 7	6 ± 6
	11/16/87	< 1	1.5 ± .3	< 4	< 3
	MEAN	< .8	2.2 ± 1.9	4 ± 4	4 ± 4
MEAN DISTANT FARMS		1.2 ± 3.1	2.1 ± 1.5	4 ± 3	4 ± 3

OVERALL MEANS

NEARBY FARMS

02/16/87	.8 ± .2	2.6 ± 1.2	< 3	5 ± 5
05/18/87	.9 ± .2	2.3 ± 1.2	< 2	2 ± 0
08/10/87	.8 ± .2	3.0 ± .7	< 4	< 4
11/16/87	< 1	2.3 ± .4	< 4	4 ± 0

INTERMEDIATE FARMS

02/16/87	.8 ± .2	1.7 ± .7	< 2	3 ± 3
05/18/87	< .8	2.7 ± .7	3 ± 3	3 ± 3
08/10/87	.9 ± .3	2.6 ± .4	< 5	< 4
11/16/87	< 1.6	3.1 ± .9	< 5	< 4

DISTANT FARMS

02/16/87	< .7	1.7 ± .6	< 3	4 ± 3
05/18/87	.7 ± .3	2.1 ± 2.3	3 ± 1	3 ± 4
08/10/87	< .8	2.3 ± 1.2	6 ± 3	5 ± 3
11/16/87	< 3	2.4 ± 1.9	< 5	< 4
MEAN ALL FARMS	1.2 ± 3.1	2.1 ± 1.4	4 ± 3	4 ± 3

TABLE C-VII.2 AVERAGE CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION DATE	NEARBY FARMS (G,J,O)	INTERMEDIATE FARMS (D,L,M,N)	DISTANT FARMS (A,B,C,E)	ALL FARMS
01/19/87	< .04	< .05	< .05	< .05
02/16/87	< .06	< .06	< .06	< .06
03/16/87	< .05	< .05	< .05	< .05
04/06/87	< .05	< .05	< .05	< .05
04/20/87	< .05	< .05	< .05	< .05
05/04/87	< .04	< .04	< .04	< .04
05/18/87	< .04	< .05	< .04	< .04
06/01/87	< .05	< .04	< .05	< .05
06/15/87	< .05	< .04	< .05	< .05
06/29/87	< .04	< .04	< .05	< .04
07/13/87	< .05	< .04	< .05	< .05
07/27/87	< .04	< .04	< .04	< .04
08/10/87	< .04	< .05	< .04	< .05
08/24/87	< .04	< .04	< .05	< .05
09/07/87	< .06	< .04	< .06	< .05
09/21/87	< .05	< .04	< .05	< .05
10/05/87	< .05	< .04	< .05	< .05
10/19/87	< .05	< .05	< .05	< .05
11/02/87	< .04	< .06	< .05	< .05
11/16/87	< .05	< .06	< .05	< .05
12/07/87	< .04	< .05	< .05	< .04

TABLE C-VII.3 CONCENTRATIONS OF I-131 IN MILK SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION DATE	A	B	C	E	G	J	L	M	N	O
01/19/87	< .05	< .05			< .04	< .04			< .05	< .05
02/16/87	< .06	< .07	< .06	< .06	< .07	< .06	< .07	< .06	< .06	< .06
03/16/87	< .05	< .05			< .05	< .05			< .05	< .05
04/06/87	< .05	< .05			< .05	< .04			< .05	< .05
04/20/87	< .05	< .05			< .05	< .05			< .05	< .05
05/04/87	< .04	< .04			< .04	< .04			< .04	< .04
05/18/87	< .03	< .04	< .03	< .06	< .05	< .04	< .06	< .05	< .04	< .03
06/01/87	< .04	< .05			< .04	< .05			< .04	< .05
06/15/87	< .05	< .05			< .05	< .05			< .04	< .05
06/29/87	< .04	< .05			< .05	< .04			< .04	< .04
07/13/87	< .05	< .05			< .05	< .05			< .04	< .06
07/27/87	< .04	< .04			< .04	< .04			< .04	< .04
08/10/87	< .04	< .04	< .04	< .05	< .04	< .04	< .06	< .06	< .04	< .04
08/24/87	< .05	< .05			< .04	< .04			< .04	< .05
09/07/87	< .06	< .05			< .04	< .04			< .04	< .09
09/21/87	< .05	< .05			< .04	< .05			< .04	< .05
10/05/87	< .05	< .05			< .05	< .04			< .04	< .05
10/19/87	< .05	< .05			< .05	< .04			< .05	< .05
11/02/87	< .05	< .05			< .04	< .05			< .06	< .04
11/16/87	< .05	< .05	< .04	< .07	< .05	< .06	< .06	< .06	< .05	< .04
12/07/87	< .04	< .05			< .02	< .04			< .05	< .05
MEAN	< .05	< .05	< .04	< .06	< .05	< .05	< .06	< .06	< .05	< .05

TABLE C-VIII.1 ANALYTICAL DATA FOR WELL WATER SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION DATE	GROSS ALPHA	GROSS BETA	URANIUM (A)	AQUEOUS H3
1U	02/28/87 (1)	1.1 ± .7	< .4	.2	130 ± 90
	08/01/87	.7 ± .5	1.2 ± .6	< .05	< 70
	11/03/87	1.4 ± .5	2.2 ± .4	.30	410 ± 70
	01/01/88	.7 ± .4	1.9 ± .4	.07	< 80
	MEAN	1.0 ± .7	1.4 ± 1.6	.16 ± .23	173 ± 321
1V	02/28/87 (1)	1.3 ± .6	1.0 ± .4	< .05	< 90
	08/01/87	.4 ± .4	2.1 ± .7	< .05	100 ± 80
	11/03/87	.9 ± .4	2.0 ± .4	< .05	< 90
	01/01/88	.8 ± .3	2.0 ± .5	.07	140 ± 80
	MEAN	.9 ± .7	1.8 ± 1.0	.06 ± .02	105 ± 48
7	03/17/87 (1)	< .5	2 ± 2	< .05	< 70
	08/01/87	< .3	2.2 ± .7	< .05	150 ± 80
	10/29/87	< .2	1.9 ± .4	.26	330 ± 80
	01/04/88	< .4	2.6 ± .5	.06	< 90
	MEAN	< .4	2.2 ± .6	.11 ± .21	160 ± 237
40	02/28/87 (1)	3 ± 1	.7 ± .4	< .05	220 ± 90
	08/01/87	< .4	2.3 ± .7	< .05	100 ± 60
	11/03/87	.4 ± .3	2.6 ± .5	.12	200 ± 100
	12/31/87	.6 ± .4	2.6 ± .5	.08	100 ± 80
	MEAN	1.1 ± 2.5	2.1 ± 1.8	.08 ± .07	155 ± 128
MEAN ALL STATIONS		.8 ± 1.4	1.9 ± 1.4	.10 ± .16	148 ± 196

NOTE: (A) URANIUM CONCENTRATION IN UG/LITER

(1) SEE PROGRAM EXCEPTION SECTION FOR EXPLANATION

TABLE C-VIII.2 CONCENTRATIONS OF GAMMA EMITTERS IN WELL WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZR-95	NB-95
1U	08/01/87	< 3	< 4	< 10	< 4	< 8	< 7	< 4
	01/01/88	< 2	< 3	< 8	< 3	< 6	< 5	< 3
	MEAN	< 3	< 4	< 9	< 4	< 7	< 6	< 4
1V	08/01/87	< 4	< 4	< 10	< 4	< 9	< 7	< 5
	01/01/88	< 2	< 3	< 7	< 2	< 5	< 5	< 3
	MEAN	< 3	< 4	< 9	< 3	< 7	< 6	< 4
7	08/01/87	< 4	< 4	< 10	< 4	< 8	< 7	< 4
	01/04/88	< 2	< 3	< 7	< 3	< 6	< 5	< 3
	MEAN	< 3	< 4	< 9	< 4	< 7	< 6	< 4
40	08/01/87	< 3	< 4	< 10	< 4	< 9	< 7	< 5
	12/31/87	< 2	< 3	< 8	< 3	< 6	< 5	< 4
	MEAN	< 3	< 4	< 9	< 4	< 8	< 6	< 5
MEAN ALL STATIONS		< 3	< 4	< 9	< 3	< 7	< 6	< 4

TABLE C-VIII.2 CONCENTRATIONS OF GAMMA EMITTERS IN WELL WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	CS-134	CS-137	BA-140	LA-140	RA-226 (1)	TH-228
1U	08/01/87	< 3	< 3	< 30	< 9	8 ± 7	< 9
	01/01/88	< 2	< 3	< 30	< 9	6 ± 5	7 ± 7
	MEAN	< 3	< 3	< 30	< 9	7 ± 3	8 ± 3
1V	08/01/87	< 4	< 4	< 30	< 10	9 ± 8	< 10
	01/01/88	< 2	< 2	< 30	< 9	< 5	< 7
	MEAN	< 3	< 3	< 30	< 10	7 ± 6	< 9
7	08/01/87	< 4	< 4	< 20	< 7	19 ± 8	< 10
	01/04/88	< 2	< 2	< 30	< 8	< 5	< 7
	MEAN	< 3	< 3	< 25	< 8	12 ± 20	< 9
40	08/01/87	< 4	< 4	< 30	< 10	< 8	< 10
	12/31/87	< 2	< 3	< 30	< 10	< 5	< 7
	MEAN	< 3	< 4	< 30	< 10	< 7	< 9
MEAN ALL STATIONS		< 3	< 3	< 29	< 9	8 ± 9	8 ± 3

(1) RA-226 ACTIVITY WAS DETECTED FROM PB-214 AND BI-214, THE DAUGHTER PRODUCTS OF RN-222, AND WERE ASSUMED TO BE BE IN EQUILIBRIUM.

TABLE C-IX.1 CONCENTRATIONS OF SR-89 AND -90 IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

STATION CODE	COLLECTION DATE	MEDIA	PCI/GRAM (ASH) ± 2 SIGMA SR-89	PCI/GRAM (ASH) ± 2 SIGMA SR-90	PCI/GRAM (WET) ± 2 SIGMA SR-89	PCI/GRAM (WET) ± 2 SIGMA SR-90
1	08/01/87	BEANS	< .2	8.24 ± .09	< .006	.256 ± .003
		CORN	< .3	3.5 ± .1	< .005	.051 ± .002
	08/29/87	CORN	< 1	2.2 ± .1	< .01	.021 ± .001
		WATERMELON VINES	2 ± 1	5.7 ± .1	.05 ± .04	.188 ± .004
	10/10/87	BEANS	.4 ± .3	4.2 ± .2	.01 ± .01	.138 ± .006
		PEPPERS	< .3	4.68 ± .08	< .01	.157 ± .003
	MEAN		.7 ± 1.4	4.75 ± 4.14	.015 ± .034	.135 ± .174
3A	08/01/87	WILD VEG	< .7	24.3 ± .5	< .006	.211 ± .004
	08/29/87	WILD VEG	< 1	31.6 ± .5	< .02	.422 ± .006
	10/10/87	WILD VEG	< .8	8.1 ± .3	< .006	.059 ± .002
	MEAN		< .8	21.3 ± 24.1	< .011	.231 ± .365
4N	08/01/87	WILD VEG	< .7	12.2 ± .2	< .008	.144 ± .003
	08/29/87	WILD VEG	< .009	9.8 ± .2	< .0001	.114 ± .003
	10/10/87	WILD VEG	< .6	5.4 ± .2	< .006	.054 ± .002
	MEAN		< .44	9.1 ± 6.9	< .0047	.104 ± .092
5	08/01/87	BEANS	< .2	5.6 ± .1	< .004	.111 ± .002
		CABBAGE	< .2	3.86 ± .07	< .005	.109 ± .002
	08/29/87	CORN	< .6	4.1 ± .1	< .007	.054 ± .002
		LIMA BEANS	< .3	4.75 ± .08	< .01	.163 ± .003
	10/10/87	BEANS	< .2	3.77 ± .08	< .006	.105 ± .002
		PEPPERS	< .2	3.0 ± .1	< .01	.143 ± .006
	MEAN		< .3	4.18 ± 1.79	< .007	.114 ± .075
6D	08/01/87	CORN	< .3	2.1 ± .1	< .004	.028 ± .001
		WATERMELON	< .8	5.87 ± .08	< .03	.191 ± .003
	08/29/87	CANTELOUPE	.8 ± .6	6.03 ± .09	.03 ± .02	.188 ± .003
		CORN	< .3	.4 ± .1	< .002	.0032 ± .0008
	10/10/87	MELON VINES	< .3	7.5 ± .1	< .01	.250 ± .003
		TOMATOES	< .3	5.1 ± .1	< .006	.097 ± .002
	MEAN		.5 ± .5	4.50 ± 5.38	.014 ± .026	.1262 ± .1979
8	08/01/87	PEPPERS	< .5	10.1 ± .2	< .007	.150 ± .003
		TOMATOES	< .3	6.99 ± .09	< .01	.269 ± .003
	08/29/87	CUCUMBER	< .9	11.1 ± .2	< .009	.107 ± .002
		SQUASH	< .7	5.7 ± .2	< .006	.049 ± .001
	10/10/87	CABBAGE	< .5	10.5 ± .2	< .01	.196 ± .003
		PEPPERS	< .4	5.7 ± .1	< .008	.126 ± .003
	MEAN		< .6	8.35 ± 4.99	< .008	.150 ± .152
23	08/01/87	APPLES	< .6	21.0 ± .2	< .01	.368 ± .004
		PEACHES	< .5	16.3 ± .2	< .009	.313 ± .004
	08/29/87	APPLES (1)	< 10	93 ± 3	< .02	.197 ± .006
		PEACHES	< 1	15.7 ± .2	< .02	.220 ± .003
	10/10/87	APPLES STEM/LEAV	< .7	7.6 ± .2	< .007	.078 ± .002
		PEACH STEMS/LEAV	< .6	16.9 ± .1	< .02	.474 ± .004
	MEAN		< 2.2	28.4 ± 63.9	< .014	.275 ± .279
MEAN ALL STATIONS			.8 ± 3.2	10.9 ± 31.1	.011 ± .019	.1609 ± .2190

(1) SAMPLE HAD A VERY SMALL ASH WEIGHT

TABLE C-IX.2 CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/GRAM (WET) ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	MEDIA	BE-7	K-40	ZR-95	SB-125	I-131
1	08/01	BEANS	.4 ± .1	7.1 ± .4	< .02	< .03	< .02
		CORN	.14 ± .08	3.6 ± .3	< .02	< .02	< .02
	08/29	CORN	.6 ± .2	1.4 ± .4	< .03	< .04	< .07
		WATERMELON VINES	.2 ± .2	2.4 ± .6	< .04	< .05	< .02
	10/10	BEANS	.4 ± .1	3.2 ± .4	< .02	< .04	< .03
		PEPPERS	.4 ± .2	2.8 ± .7	.05 ± .04	< .06	< .04
	MEAN		.36 ± .33	3.4 ± 3.9	.03 ± .03	< .04	< .03
3A	08/01	WILD VEG	.2 ± .2	4.1 ± .6	< .04	< .06	< .05
	08/29	WILD VEG	.4 ± .1	2.3 ± .4	.04 ± .03	< .04	< .04
	10/10	WILD VEG	.4 ± .1	5.3 ± .5	< .03	< .04	< .02
	MEAN		.3 ± .2	3.9 ± 3.0	.04 ± .01	< .05	< .04
4N	08/01	WILD VEG.	< .3	5 ± 1	< .07	< .09	< .05
	08/29	WILD VEG	< .1	2.4 ± .4	< .03	< .04	< .03
	10/10	WILD VEG	.2 ± .2	3.6 ± .5	< .03	< .04	< .02
	MEAN		.2 ± .2	3.7 ± 2.6	< .04	< .06	< .03
5	08/01	BEANS	.2 ± .2	3.9 ± .8	< .05	< .07	< .04
		CABBAGE	< .1	3.2 ± .5	< .03	< .04	< .02
	08/29	CORN	< .2	2.9 ± .6	< .03	< .05	< .02
		LIMA BEANS	< .3	5 ± 1	< .07	< 1	< .06
	10/10	BEANS	.9 ± .1	3.8 ± .3	< .02	< .03	< .08
		PEPPERS	.4 ± .2	6.6 ± .5	< .03	< .04	< .07
	MEAN		.4 ± .6	4.2 ± 2.7	< .04	< .06	< .05
6D	08/01	CORN	.08 ± .06	4 ± .2	< .01	< .02	< .01
		WATERMELON	.18 ± .07	4.1 ± .2	< .01	< .02	< .02
	08/29	CANTALOUPE	.3 ± .2	3.4 ± .6	< .03	< .05	< .02
		CORN	< .1	2.6 ± .5	< .03	< .04	< .02
	10/10	MELON VINES	.4 ± .1	5.1 ± .4	< .02	< .02	< .02
		TOMATOES	.5 ± .1	4 ± .3	< .02	.03 ± .03	< .03
	MEAN		.26 ± .34	3.9 ± 1.7	< .02	.03 ± .03	< .02
8	08/01	PEPPERS	< .1	5.8 ± .6	< .03	< .04	< .02
		TOMATOES	.7 ± .2	4.9 ± .5	< .03	< .05	< .03
	08/29	CUCUMBERS	.35 ± .09	1.5 ± .3	< .02	< .02	< .01
		SQUASH	.2 ± .1	2 ± .4	< .03	< .04	< .02
	10/10	CABBAGE	.2 ± .1	2.8 ± .3	< .02	< .03	< .08
		PEPPERS	.3 ± .2	4.8 ± .6	< .03	< .04	< .03
	MEAN		.31 ± .42	3.6 ± 3.5	< .03	< .04	< .03
23	08/01	APPLES	< .08	1.1 ± .3	< .02	< .03	< .01
		PEACHES	< .08	3.5 ± .3	< .02	< .02	< .02
	08/29	APPLES	.2 ± .1	1.1 ± .3	< .02	< .03	< .02
		PEACHES	< .1	2 ± .3	< .02	< .03	< .01
	10/10	APPLES/STEMS/LEA	< .1	.8 ± .3	< .02	< .04	< .02
		PEACHS/STEMS/LEA	< .2	1.3 ± .7	< .05	< .07	< .04
	MEAN		.13 ± .12	1.6 ± 2.0	< .03	< .04	< .02
MEAN ALL STATIONS			.28 ± .37	3.4 ± 3.1	.03 ± .03	.04 ± .04	< .03

TABLE C-IX.2 CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/GRAM (WET) ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	MEDIA	CS-134	CS-137	RA-226	TH-228
1	08/01	BEANS	< .01	< .01	.03 ± .03	.05 ± .04
		CORN	< .009	.01 ± .01	< .02	.03 ± .03
	08/29	CORN	< .01	< .02	< .03	< .04
		WATERMELON VINES	< .02	< .02	.07 ± .04	< .06
	10/10	BEANS	< .01	< .01	< .03	< .04
		PEPPERS	< .03	< .03	< .05	< .07
	MEAN		< .015	.02 ± .02	.04 ± .04	.05 ± .03
3A	08/01	WILD VEG	< .02	< .02	< .05	< .07
	08/29	WILD VEG	< .01	.02 ± .02	.03 ± .03	.09 ± .04
	10/10	WILD VEG	< .01	< .02	< .03	< .04
	MEAN		< .01	.02 ± .00	.04 ± .02	.07 ± .05
4N	08/01	WILD VEG.	< .04	< .04	< .08	.1 ± .1
	08/29	WILD VEG	< .01	< .01	< .03	< .04
	10/10	WILD VEG	< .02	< .02	< .03	< .04
	MEAN		< .02	< .02	< .05	.06 ± .07
5	08/01	BEANS	< .03	< .03	< .06	< .09
		CABBAGE	< .02	< .02	< .04	< .05
	08/29	CORN	< .02	< .02	< .04	< .06
		LIMA BEANS	< .04	< .04	< .08	< .1
	10/10	BEANS	< .01	< .01	.02 ± .02	.03 ± .03
		PEPPERS	< .02	.07 ± .02	.2 ± .04	.18 ± .05
	MEAN		< .02	.03 ± .04	.07 ± .13	.09 ± .11
6D	08/01	CORN	< .007	.017 ± .007	.02 ± .01	.06 ± .02
		WATERMELON	< .008	.012 ± .008	.03 ± .02	.03 ± .02
	08/29	CANTALOUPE	< .02	< .02	< .04	< .06
		CORN	< .02	< .02	< .04	< .05
	10/10	MELON VINES	< .01	.03 ± .01	< .02	< .03
		TOMATOES	< .01	< .01	< .02	.04 ± .03
	MEAN		< .013	.018 ± .014	.03 ± .02	.05 ± .03
8	08/01	PEPPERS	< .02	< .02	< .03	< .05
		TOMATOES	< .02	< .02	.04 ± .04	< .05
	08/29	CUCUMBERS	< .009	.01 ± .01	< .02	< .03
		SQUASH	< .02	< .02	< .03	.04 ± .04
	10/10	CABBAGE	< .01	< .01	< .02	< .03
		PEPPERS	< .02	.02 ± .02	< .03	< .05
	MEAN		< .017	.02 ± .01	.03 ± .02	.04 ± .02
23	08/01	APPLES	< .01	< .01	< .02	< .03
		PEACHES	< .009	< .01	< .02	.03 ± .03
	08/29	APPLES	< .01	< .01	< .03	.05 ± .04
		PEACHES	< .01	< .01	< .02	< .03
	10/10	APPLES/STEMS/LEA	< .01	< .01	< .03	< .04
		PEACHS/STEMS/LEA	< .03	< .03	< .06	< .08
	MEAN		< .013	< .01	< .03	.04 ± .04
MEAN ALL STATIONS			< .016	.020 ± .024	.04 ± .06	.05 ± .06

TABLE C-X.1 ANALYTICAL DATA FOR SOIL SAMPLES COLLECTED IN THE VICINITY OF [illegible]APS, 1987

RESULTS IN UNITS OF PCI/GRAM (DRY) ± 2 SIGMA

STATION CODE	COLLECTION DATE	GROSS BETA	SR-89	SR-90	BE-7	K-40	ZR-95	NB-95
1AA	06/27/87	3.6 ± .4	< .03	.241 ± .005	< .3	19 ± 1	< .06	.05 ± .04
	11/01/87	8 ± 1	< .02	.080 ± .003	.8 ± .4	19 ± 1	< .07	< .06
	MEAN	5.8 ± 6.2	< .03	.161 ± .228	.6 ± .7	19 ± 0	< .07	.06 ± .01
2	06/27/87	5.3 ± .5	< .02	.246 ± .007	.8 ± .5	15 ± 1	< .09	< .06
	11/01/87	5.0 ± .9	< .02	.261 ± .008	< .3	15 ± 1	< .06	< .05
	MEAN	5.2 ± .4	< .02	.254 ± .021	.6 ± .7	15 ± 0	< .08	< .06
3A	06/27/87	3.4 ± .5	< .008	.118 ± .004	.4 ± .3	11.7 ± .8	< .05	.06 ± .04
	11/01/87	4.8 ± .9	< .02	.227 ± .007	< .2	13.4 ± .7	< .04	< .03
	MEAN	4.1 ± 2.0	< .014	.173 ± .154	.3 ± .3	12.6 ± 2.4	< .05	.05 ± .04
4N	06/27/87	5.8 ± .7	< .02	.135 ± .007	.5 ± .3	4.4 ± .6	< .04	< .03
	11/01/87	5.5 ± .9	< .01	.079 ± .005	< .3	14.1 ± .8	< .05	< .04
	MEAN	5.7 ± .4	< .02	.107 ± .079	.4 ± .3	9.3 ± 13.7	< .05	< .04
5	06/27/87	5.3 ± .6	< .009	.040 ± .003	< .2	23 ± 1	.07 ± .05	.05 ± .03
	11/01/87	4.3 ± .7	< .02	.059 ± .004	< .3	29 ± 1	< .07	< .06
	MEAN	4.8 ± 1.4	< .015	.050 ± .027	< .3	26 ± 8	.07 ± .00	.06 ± .01
6G	06/27/87	6.0 ± .6	.011 ± .008	.076 ± .004	< .3	19 ± 1	< .06	< .04
	11/01/87	3.9 ± .9	< .02	.212 ± .006	< .4	16 ± 1	< .07	< .06
	MEAN	5.0 ± 3.0	.016 ± .013	.144 ± .192	< .4	18 ± 4	< .07	< .05
MEAN ALL STATIONS		5.1 ± 2.5	.017 ± .013	.148 ± .167	.4 ± .4	16.6 ± 12.2	.06 ± .03	.05 ± .02

TABLE C-X.1 ANALYTICAL DATA FOR SOIL SAMPLES COLLECTED IN THE VICINITY OF PBAPS,1987

RESULTS IN UNITS OF PCI/GRAM (DRY) ± 2 SIGMA

STATION CODE	COLLECTION DATE	AG-110M	I-131	CS-134	CS-137	RA-226	TH-228
1AA	06/27/87	< .04	< .1	< .03	.52 ± .05	.84 ± .09	1 ± .1
	11/01/87	< .04	< .4	.03 ± .03	.55 ± .06	1.3 ± .1	1.3 ± .1
	MEAN	< .04	< .3	.03 ± .00	.54 ± .04	1.07 ± .65	1.2 ± .4
2	06/27/87	< .05	< .2	< .04	2.5 ± .1	1 ± .1	1.3 ± .2
	11/01/8	< .04	< .2	< .03	.89 ± .06	.92 ± .09	1.1 ± .1
	MEAN	< .05	< .2	< .04	1.70 ± 2.28	1.0 ± .1	1.2 ± .3
3A	06/27/87	< .03	< .1	.03 ± .02	.45 ± .05	.93 ± .09	1.1 ± .1
	11/01/87	< .03	< .2	< .02	.52 ± .04	.74 ± .06	.99 ± .09
	MEAN	< .03	< .2	.03 ± .01	.49 ± .10	.84 ± .27	1.05 ± .16
4N	06/27/87	< .03	< .09	< .02	.69 ± .05	.36 ± .06	.37 ± .08
	11/01/87	< .03	< .3	< .02	.54 ± .04	.87 ± .08	1 ± .1
	MEAN	< .03	< .20	< .02	.62 ± .21	.62 ± .72	.7 ± .9
5	06/27/87	.04 ± .03	< .09	< .02	.21 ± .03	.86 ± .07	1.1 ± .1
	11/01/87	< .04	< .4	< .03	.39 ± .04	1.3 ± .1	1.6 ± .1
	MEAN	.04 ± .00	< .25	< .03	.30 ± .25	1.08 ± .62	1.4 ± .7
6G	06/27/87	< .04	< .1	< .03	.24 ± .04	1.3 ± .1	1.6 ± .1
	11/01/87	< .04	.5 ± .4	< .03	.67 ± .06	1.3 ± .1	1.2 ± .1
	MEAN	< .04	.3 ± .6	< .03	.46 ± .61	1.3 ± .0	1.4 ± .6
MEAN ALL STATIONS		.04 ± .01	.22 ± .29	.03 ± .01	.68 ± 1.21	1.0 ± .6	1.1 ± .6

TABLE C-XI.1 MONTHLY TLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 1987
RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 S.D.

STATION CODE	MEAN ± 2 S.D. (1)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1A	7.0 ± 1.1	8.4 ± 0.5	7.1 ± 0.5	7.0 ± 0.5	7.1 ± 0.5	6.8 ± 0.4	7.5 ± 0.5	6.8 ± 0.4	7.2 ± 0.5	6.4 ± 0.6	6.4 ± 0.4	6.4 ± 0.4	7.4 ± 0.4
1B	5.8 ± 1.1	7.0 ± 0.3	5.5 ± 0.3	5.4 ± 0.3	5.9 ± 0.3	5.8 ± 0.3	6.7 ± 0.7	5.6 ± 0.3	5.6 ± 0.4	5.5 ± 0.3	5.5 ± 0.3	5.3 ± 0.3	6.3 ± 0.1
1C	6.9 ± 1.1	7.7 ± 0.2	6.0 ± 0.4	6.7 ± 0.5	7.0 ± 0.4	6.7 ± 0.5	7.7 ± 0.6	6.7 ± 0.7	7.0 ± 0.3	6.4 ± 0.4	6.7 ± 0.5	6.9 ± 0.3	7.9 ± 0.3
1D	6.4 ± 0.9	7.4 ± 0.3	6.0 ± 0.5	6.0 ± 0.3	6.5 ± 0.4	6.2 ± 0.7	6.6 ± 0.3	6.3 ± 0.4	(2)	6.3 ± 0.2	6.2 ± 0.5	6.2 ± 0.3	7.0 ± 0.4
1E	6.5 ± 1.0	7.4 ± 0.4	6.2 ± 0.4	5.9 ± 0.4	6.6 ± 0.6	6.1 ± 0.4	7.0 ± 0.5	6.2 ± 0.5	6.5 ± 0.4	6.1 ± 0.7	6.1 ± 0.5	6.2 ± 0.2	7.4 ± 0.5
1F	7.6 ± 1.2	8.5 ± 0.4	7.2 ± 0.4	7.4 ± 0.6	7.7 ± 0.7	7.1 ± 0.8	8.6 ± 0.5	7.1 ± 0.4	8.0 ± 0.8	7.2 ± 0.6	7.0 ± 0.7	7.5 ± 0.5	8.3 ± 0.3
1G	5.1 ± 0.8	6.1 ± 0.3	4.9 ± 0.2	4.9 ± 0.2	5.1 ± 0.2	5.0 ± 0.3	5.5 ± 0.4	5.0 ± 0.2	5.0 ± 0.2	4.8 ± 0.2	4.8 ± 0.3	4.7 ± 0.2	5.6 ± 0.2
1H	6.8 ± 0.8	7.3 ± 0.3	6.5 ± 0.5	6.2 ± 0.4	6.8 ± 0.3	6.5 ± 0.3	7.3 ± 0.4	6.7 ± 0.7	7.1 ± 1.3	6.5 ± 0.5	6.4 ± 0.5	6.4 ± 0.5	7.3 ± 0.4
1I	5.6 ± 1.0	6.6 ± 0.1	5.4 ± 0.2	5.2 ± 0.3	5.5 ± 0.3	5.4 ± 0.4	6.4 ± 0.4	5.3 ± 0.4	5.4 ± 0.5	(2)	5.1 ± 0.3	5.4 ± 0.2	6.1 ± 0.3
1J	7.5 ± 1.1	8.3 ± 0.6	6.5 ± 0.4	7.5 ± 0.5	7.7 ± 0.6	7.2 ± 0.4	8.2 ± 0.5	7.4 ± 0.2	7.9 ± 0.6	7.1 ± 0.4	7.1 ± 0.6	7.3 ± 0.3	8.3 ± 0.5
1L	4.8 ± 1.4	6.5 ± 0.3	5.4 ± 0.3	4.3 ± 0.2	4.5 ± 0.2	4.1 ± 0.3	5.0 ± 0.5	4.5 ± 0.3	4.4 ± 0.5	4.3 ± 0.2	4.2 ± 0.3	4.4 ± 0.3	5.5 ± 0.3
1M	4.2 ± 1.1	5.3 ± 0.2	4.0 ± 0.2	3.7 ± 0.1	4.1 ± 0.2	3.9 ± 0.3	5.0 ± 0.2	3.9 ± 0.2	4.0 ± 0.4	3.9 ± 0.3	3.6 ± 0.1	4.0 ± 0.0	4.9 ± 0.3
1NN	7.7 ± 1.0	8.9 ± 0.5	7.2 ± 0.6	7.4 ± 0.5	7.4 ± 0.3	7.6 ± 0.6	8.2 ± 0.9	7.7 ± 0.3	7.8 ± 0.6	7.4 ± 0.5	7.4 ± 0.5	7.4 ± 0.4	8.4 ± 0.7
2	6.4 ± 1.0	7.5 ± 0.4	5.9 ± 0.3	6.2 ± 0.6	6.4 ± 0.5	6.1 ± 0.2	7.0 ± 0.7	6.3 ± 0.3	6.5 ± 0.2	6.0 ± 0.4	5.8 ± 0.9	6.1 ± 0.2	6.9 ± 0.5
3A	5.0 ± 1.1	6.2 ± 0.3	4.8 ± 0.1	4.5 ± 0.4	4.9 ± 0.4	4.6 ± 0.2	5.8 ± 0.2	4.8 ± 0.3	4.8 ± 0.3	4.6 ± 0.3	4.6 ± 0.2	4.7 ± 0.2	5.5 ± 0.3
4K	4.8 ± 0.9	5.9 ± 0.2	4.7 ± 0.1	4.4 ± 0.2	4.6 ± 0.4	4.5 ± 0.1	5.3 ± 0.3	4.7 ± 0.8	4.5 ± 0.2	4.4 ± 0.2	4.4 ± 0.6	4.6 ± 0.1	5.2 ± 0.1
5	6.4 ± 1.0	7.5 ± 0.7	7.2 ± 1.3	6.0 ± 0.4	6.5 ± 0.2	6.1 ± 0.2	6.9 ± 0.7	6.3 ± 0.5	6.5 ± 0.4	5.9 ± 0.2	6.0 ± 0.3	5.9 ± 0.2	6.5 ± 0.2
6B	5.6 ± 1.1	6.9 ± 0.5	5.9 ± 0.3	5.0 ± 0.2	5.5 ± 0.2	5.6 ± 1.1	6.1 ± 0.3	5.3 ± 0.3	5.1 ± 0.4	5.2 ± 0.4	5.1 ± 0.4	5.7 ± 0.4	5.9 ± 0.2
14	6.6 ± 1.1	7.6 ± 0.4	6.3 ± 0.3	6.3 ± 0.3	6.6 ± 0.3	6.7 ± 0.8	7.1 ± 0.7	6.4 ± 0.2	6.9 ± 0.6	6.3 ± 0.6	5.6 ± 0.3	6.5 ± 0.4	7.4 ± 0.2
12B	6.8 ± 1.8	9.3 ± 2.0	6.7 ± 0.8	6.9 ± 0.7	6.6 ± 0.2	6.3 ± 0.2	6.4 ± 0.4	6.7 ± 0.3	6.2 ± 0.4	7.9 ± 0.1	6.2 ± 0.3	6.9 ± 0.6	6.1 ± 0.3
15	6.9 ± 1.1	7.6 ± 0.4	6.1 ± 0.2	6.6 ± 0.5	6.9 ± 0.6	6.7 ± 0.4	7.5 ± 0.5	6.8 ± 0.3	7.2 ± 0.9	6.3 ± 0.4	6.3 ± 0.4	6.6 ± 0.2	7.7 ± 0.8
16	6.8 ± 1.1	7.9 ± 0.3	6.5 ± 0.5	6.5 ± 0.5	(2)	(2)	(2)	6.6 ± 0.4	6.9 ± 0.6	6.4 ± 0.4	6.2 ± 0.4	6.6 ± 0.3	7.3 ± 0.7
17	7.5 ± 1.4	8.2 ± 0.4	5.5 ± 0.4	7.3 ± 0.5	7.8 ± 0.8	7.4 ± 0.3	7.9 ± 0.4	7.4 ± 0.4	8.0 ± 0.3	7.3 ± 0.6	7.5 ± 1.2	7.6 ± 0.5	7.8 ± 0.5
18	7.0 ± 1.1	7.7 ± 0.4	6.6 ± 0.5	6.8 ± 0.7	7.0 ± 0.6	6.8 ± 0.3	8.0 ± 0.3	6.6 ± 0.3	7.0 ± 0.2	6.3 ± 0.5	6.7 ± 0.4	6.7 ± 0.4	7.8 ± 0.4

1. MEAN AND TWO TIMES THE STANDARD DEVIATION OF THE MONTHLY RESULTS.
2. SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION.

TABLE C-XI.1 MONTHLY TLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 1987
RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 S.D.

STATION CODE	MEAN ± 2 S.D. (1)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
19	6.8 ± 1.0	7.8 ± 0.5	6.1 ± 0.9	6.3 ± 0.2	6.9 ± 0.4	6.3 ± 0.7	7.3 ± 0.3	6.9 ± 0.5	7.1 ± 0.3	6.4 ± 0.4	6.6 ± 0.6	6.5 ± 0.3	7.0 ± 0.1
20	6.0 ± 1.1	7.1 ± 0.2	5.6 ± 0.2	5.6 ± 0.5	6.1 ± 0.3	5.5 ± 0.4	6.4 ± 0.6	5.8 ± 0.4	6.1 ± 0.5	5.5 ± 0.4	5.4 ± 0.2	6.1 ± 0.3	6.8 ± 0.3
21B	6.9 ± 1.4	8.8 ± 0.3	6.6 ± 0.3	6.8 ± 0.7	6.7 ± 0.4	6.5 ± 0.3	7.1 ± 0.3	6.6 ± 0.4	7.[illegible] ± 0.3	6.4 ± 0.4	6.1 ± 0.5	6.5 ± 0.3	7.3 ± 0.4
22	7.3 ± 1.1	8.7 ± 0.4	6.9 ± 0.4	6.9 ± 0.5	7.3 ± 0.4	6.8 ± 0.3	7.4 ± 0.3	7.2 ± 0.6	7.3 ± 0.2	6.8 ± 0.5	6.8 ± 0.6	7.0 ± 0.4	7.9 ± 0.5
23	7.2 ± 1.1	8.5 ± 0.5	6.7 ± 0.7	7.0 ± 0.4	7.2 ± 0.3	6.8 ± 0.3	7.8 ± 0.5	7.0 ± 0.5	7.4 ± 0.4	6.8 ± 0.3	6.9 ± 0.4	6.8 ± 0.6	7.5 ± 0.6
24	5.6 ± 1.1	7.1 ± 0.1	5.3 ± 0.4	5.2 ± 0.3	5.5 ± 0.2	5.2 ± 0.3	6.1 ± 0.4	5.6 ± 0.2	5.7 ± 0.7	5.3 ± 0.3	5.6 ± 0.9	5.2 ± 0.2	5.7 ± 0.1
26	7.6 ± 1.2	8.8 ± 0.3	7.0 ± 0.4	7.2 ± 0.5	7.6 ± 0.5	7.5 ± 1.0	8.1 ± 0.9	7.7 ± 0.5	7.9 ± 0.7	7.1 ± 0.4	7.2 ± 0.6	7.2 ± 0.3	8.5 ± 0.6
27	7.2 ± 1.1	8.3 ± 0.4	6.6 ± 0.3	7.0 ± 0.6	7.3 ± 0.5	6.8 ± 0.6	7.4 ± 0.5	6.9 ± 0.7	7.3 ± 0.5	6.8 ± 0.5	6.8 ± 0.5	6.7 ± 0.4	8.2 ± 0.8
31	6.7 ± 1.1	8.2 ± 0.4	6.2 ± 0.3	6.6 ± 0.4	6.6 ± 0.6	6.5 ± 0.3	7.2 ± 0.4	6.7 ± 0.4	6.7 ± 0.8	6.4 ± 0.2	6.4 ± 0.4	6.3 ± 0.3	6.9 ± 0.5
32	7.3 ± 1.2	8.6 ± 0.4	6.4 ± 0.5	7.0 ± 0.5	7.5 ± 0.4	7.1 ± 0.5	7.9 ± 0.6	7.3 ± 0.3	7.2 ± 0.5	6.9 ± 0.5	6.8 ± 0.4	7.0 ± 0.4	7.8 ± 0.6
33A	5.4 ± 1.0	6.6 ± 0.1	5.0 ± 0.3	5.2 ± 0.2	5.5 ± 0.3	5.1 ± 0.2	5.8 ± 0.5	5.2 ± 0.1	5.3 ± 0.6	5.0 ± 0.1	5.0 ± 0.3	5.0 ± 0.1	6.1 ± 0.3
38	7.1 ± 1.1	8.3 ± 0.6	6.3 ± 0.4	7.1 ± 0.7	7.0 ± 0.3	6.7 ± 0.5	7.7 ± 0.5	7.1 ± 0.4	7.1 ± 0.6	6.9 ± 0.4	6.9 ± 0.6	6.9 ± 0.3	7.7 ± 0.3
40	7.6 ± 1.1	8.9 ± 0.4	7.2 ± 0.4	7.4 ± 0.4	7.3 ± 0.8	7.3 ± 0.4	7.8 ± 0.2	7.8 ± 1.3	7.8 ± 0.7	7.2 ± 0.3	7.5 ± 0.4	7.0 ± 0.4	8.4 ± 0.6
42	8.1 ± 1.2	9.4 ± 0.4	7.2 ± 0.3	8.0 ± 0.5	7.9 ± 0.4	7.6 ± 0.4	8.4 ± 0.9	7.9 ± 0.6	8.1 ± 0.4	8.0 ± 0.4	7.6 ± 0.6	7.8 ± 0.2	8.8 ± 0.5
43	7.6 ± 1.2	8.5 ± 0.6	6.6 ± 0.5	7.4 ± 0.4	7.4 ± 0.5	7.4 ± 1.3	8.1 ± 0.8	7.6 ± 0.7	7.6 ± 0.6	8.4 ± 0.6	7.1 ± 0.3	6.9 ± 0.4	8.3 ± 0.4
44	6.4 ± 1.0	7.6 ± 0.4	5.5 ± 0.2	6.9 ± 0.4	6.4 ± 0.3	6.1 ± 0.3	6.8 ± 0.5	6.4 ± 0.5	6.4 ± 0.6	6.3 ± 0.4	6.1 ± 0.5	6.2 ± 0.4	6.7 ± 0.4
45	7.2 ± 1.0	8.2 ± 0.7	6.5 ± 0.4	7.1 ± 0.6	7.0 ± 0.3	6.6 ± 0.4	7.7 ± 0.5	7.2 ± 0.5	7.4 ± 0.3	7.2 ± 0.5	7.0 ± 0.5	7.0 ± 0.2	7.8 ± 0.4
46	6.6 ± 1.1	7.9 ± 0.3	6.3 ± 0.4	6.3 ± 0.4	6.3 ± 0.4	6.0 ± 0.3	7.0 ± 0.4	6.5 ± 0.4	6.6 ± 0.4	6.3 ± 0.3	6.3 ± 0.4	6.2 ± 0.5	7.3 ± 0.5
47	7.7 ± 1.1	8.8 ± 0.3	6.9 ± 0.3	7.7 ± 0.5	7.7 ± 0.6	7.2 ± 0.3	8.2 ± 0.6	7.3 ± 0.7	8.1 ± 0.7	7.6 ± 0.4	7.5 ± 0.5	7.2 ± 0.3	8.4 ± 0.7
48	7.1 ± 1.2	8.2 ± 0.5	6.4 ± 0.4	6.7 ± 1.0	6.7 ± 0.4	6.4 ± 0.3	7.5 ± 0.6	7.1 ± 0.8	7.9 ± 0.9	6.9 ± 0.5	6.6 ± 0.5	6.6 ± 0.3	7.7 ± 0.3
49	7.1 ± 0.9	8.1 ± 0.5	6.6 ± 0.4	7.1 ± 0.4	7.4 ± 0.4	6.6 ± 0.6	7.5 ± 0.7	6.8 ± 0.3	6.9 ± 0.4	6.6 ± 0.6	7.3 ± 1.1	6.8 ± 0.2	7.0 ± 0.4
50	8.0 ± 1.1	9.0 ± 0.8	7.1 ± 0.4	8.2 ± 0.7	8.3 ± 0.4	7.6 ± 0.5	8.3 ± 0.6	8.0 ± 0.6	8.2 ± 0.6	8.0 ± 0.5	7.5 ± 0.6	7.4 ± 0.4	8.5 ± 0.5
51	7.2 ± 1.3	8.2 ± 0.4	5.9 ± 0.3	7.0 ± 0.6	7.5 ± 0.5	6.5 ± 0.3	7.7 ± 0.6	7.0 ± 0.6	7.1 ± 0.4	7.2 ± 0.4	7.4 ± 0.5	6.8 ± 0.4	8.2 ± 0.6

1. MEAN AND TWO TIMES THE STANDARD DEVIATION OF THE MONTHLY RESULTS.

TABLE XI.2 QUARTERLY TLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 1987
RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 S.D.

STATION CODE	MEAN ± 2 S.D. (1)	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC
1A	6.4 ± 1.1	6.7 ± 0.6	7.0 ± 0.8	6.3 ± 0.7	5.7 ± 0.5
1B	5.3 ± 0.9	5.3 ± 0.2	4.9 ± 0.3	5.0 ± 0.4	5.9 ± 0.3
1C	6.4 ± 1.6	6.3 ± 0.4	7.5 ± 0.1	6.5 ± 0.5	5.5 ± 0.2
1D	6.5 ± 1.9	5.6 ± 0.1	7.5 ± 0.4	(2)	6.3 ± 0.3
1E	5.7 ± 0.3	5.9 ± 0.4	5.6 ± 0.5	5.8 ± 0.4	5.6 ± 0.2
1F	7.2 ± 0.2	7.2 ± 0.5	7.3 ± 0.8	7.2 ± 0.6	7.1 ± 0.5
1G	4.4 ± 0.3	4.6 ± 0.2	4.5 ± 0.1	4.2 ± 0.1	4.4 ± 0.2
1H	6.3 ± 0.7	6.2 ± 0.4	5.9 ± 0.3	6.2 ± 0.3	6.7 ± 0.3
1I	5.2 ± 1.1	5.2 ± 0.3	4.7 ± 0.3	(2)	5.8 ± 0.7
1J	7.2 ± 0.8	7.0 ± 0.3	7.0 ± 0.6	7.1 ± 0.5	7.8 ± 1.1
1L	4.2 ± 1.2	4.8 ± 0.2	3.6 ± 0.3	3.8 ± 0.2	4.7 ± 0.1
1M	3.7 ± 1.8	2.6 ± 0.3	4.5 ± 0.3	3.3 ± 0.2	4.3 ± 0.2
1NN	7.4 ± 1.2	6.8 ± 0.5	7.7 ± 0.6	7.1 ± 0.6	8.1 ± 0.4
2	5.9 ± 0.4	5.9 ± 0.5	5.7 ± 0.4	6.0 ± 0.4	6.2 ± 0.7
3A	4.6 ± 1.2	4.1 ± 0.4	5.1 ± 0.3	4.1 ± 0.2	5.2 ± 0.4
4K	4.2 ± 1.0	4.3 ± 0.2	3.8 ± 0.3	3.9 ± 0.3	4.9 ± 0.1
5	5.7 ± 0.9	5.3 ± 0.4	5.4 ± 0.2	5.7 ± 0.3	6.3 ± 0.2
6B	5.3 ± 0.9	5.3 ± 0.5	5.5 ± 0.2	4.6 ± 0.2	5.6 ± 0.2
14	6.1 ± 0.8	6.1 ± 0.3	5.7 ± 0.4	5.9 ± 0.4	6.6 ± 0.2
12B	6.1 ± 1.1	5.6 ± 0.2	6.6 ± 0.5	5.8 ± 0.2	6.6 ± 0.2
15	6.6 ± 1.1	5.9 ± 0.4	7.2 ± 0.6	6.4 ± 0.6	6.9 ± 0.4
16	6.2 ± 0.5	6.3 ± 0.3	(2)	5.9 ± 0.5	6.4 ± 0.3
17	6.9 ± 0.7	7.0 ± 0.4	6.5 ± 0.3	6.9 ± 0.4	7.3 ± 0.5
18	6.7 ± 1.0	6.3 ± 0.3	7.3 ± 0.3	6.3 ± 0.6	7.0 ± 0.2

1. MEAN AND TWO TIMES THE STANDARD DEVIATION OF THE QUARTERLY RESULTS.
2. SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION.

TABLE XI.2 QUARTERLY TLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 1987
RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 S.D.

STATION CODE	MEAN ± 2 S.D. (1)	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC
19	6.5 ± 0.9	6.0 ± 0.6	7.1 ± 1.2	6.3 ± 0.3	6.5 ± 0.7
20	5.6 ± 1.2	5.1 ± 0.4	6.0 ± 0.3	5.1 ± 0.2	6.2 ± 0.7
21B	6.6 ± 1.6	5.8 ± 0.1	7.6 ± 0.4	6.2 ± 0.6	6.9 ± 0.4
22	6.8 ± 1.1	6.3 ± 0.3	7.4 ± 0.4	6.4 ± 0.5	7.1 ± 0.5
23	6.9 ± 1.1	6.2 ± 0.2	7.5 ± 0.6	6.7 ± 0.6	7.1 ± 0.3
24	5.2 ± 1.4	4.6 ± 0.2	6.1 ± 0.2	4.8 ± 0.3	5.4 ± 0.1
26	7.2 ± 0.9	6.6 ± 0.6	7.6 ± 0.5	7.1 ± 0.9	7.4 ± 0.3
27	6.7 ± 1.3	6.2 ± 0.4	7.6 ± 0.4	6.7 ± 0.8	6.2 ± 0.3
31	6.3 ± 1.2	5.8 ± 0.3	7.2 ± 0.7	6.0 ± 0.4	6.4 ± 0.2
32	6.9 ± 1.2	6.3 ± 0.5	7.6 ± 0.5	7.2 ± 0.7	6.6 ± 0.4
33A	5.0 ± 1.4	4.4 ± 0.2	5.7 ± 0.4	4.5 ± 0.2	5.6 ± 0.3
38	6.9 ± 1.3	6.7 ± 1.4	7.8 ± 0.4	6.6 ± 0.5	6.4 ± 0.5
40	7.2 ± 1.6	6.7 ± 0.5	8.4 ± 0.7	6.8 ± 0.8	6.8 ± 0.5
42	7.6 ± 1.4	6.9 ± 0.4	8.5 ± 0.7	7.7 ± 0.7	7.3 ± 0.3
43	6.9 ± 1.8	6.3 ± 0.5	8.1 ± 1.4	7.0 ± 0.5	6.1 ± 0.3
44	6.2 ± 1.9	5.1 ± 0.3	7.1 ± 0.1	5.7 ± 0.4	6.8 ± 0.4
45	6.8 ± 1.5	6.0 ± 0.3	7.7 ± 0.6	6.9 ± 0.5	6.4 ± 0.4
46	6.3 ± 1.3	5.4 ± 0.4	6.8 ± 1.0	6.2 ± 0.5	6.8 ± 0.4
47	7.3 ± 1.6	6.3 ± 0.4	8.0 ± 0.6	7.9 ± 1.1	6.9 ± 0.5
48	7.0 ± 2.5	5.9 ± 0.4	7.6 ± 0.6	8.5 ± 0.8	6.0 ± 0.3
49	6.8 ± 1.1	6.1 ± 0.6	7.1 ± 0.6	6.7 ± 0.5	7.4 ± 0.3
50	7.3 ± 0.8	6.8 ± 0.4	7.8 ± 0.6	7.2 ± 0.7	7.2 ± 0.5
51	6.8 ± 1.3	6.6 ± 0.9	7.7 ± 0.2	6.5 ± 0.5	6.3 ± 0.4

1. MEAN AND TWO TIMES THE STANDARD DEVIATION OF THE QUARTERLY RESULTS.

TABLE C-XI.3 1987 MEAN TLD RESULTS FROM PEACH BOTTOM ATOMIC POWER STATION FOR THE SITE BOUNDARY, MIDDLE, AND OUTER RINGS

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 STD. DEV. OF THE STATION DATA

SAMPLE TYPE	EXPOSURE PERIOD	SITE	MIDDLE RING	OUTER RING
MONTHLY	JAN 1987	7.4 ± 2.1	8.0 ± 1.7	8.0 ± 1.6
	FEB 1987	6.0 ± 1.9	6.3 ± 1.4	6.2 ± 1.1
	MAR 1987	6.1 ± 2.5	6.7 ± 2.0	6.3 ± 1.3
	APR 1987	6.4 ± 2.4	6.9 ± 1.9	6.5 ± 1.1
	MAY 1987	6.1 ± 2.3	6.5 ± 1.7	6.1 ± 1.2
	JUN 1987	7.0 ± 2.4	7.3 ± 1.7	6.9 ± 1.4
	JUL 1987	6.2 ± 2.4	6.7 ± 1.8	6.4 ± 1.0
	AUG 1987	6.5 ± 2.8	6.9 ± 2.1	6.6 ± 1.1
	SEP 1987	6.1 ± 2.3	6.6 ± 2.0	6.3 ± 1.7
	OCT 1987	6.0 ± 2.4	6.5 ± 1.9	6.1 ± 1.0
	NOV 1987	6.1 ± 2.3	6.5 ± 1.7	6.4 ± 1.1
	DEC 1987	7.1 ± 2.4	7.4 ± 1.9	6.9 ± 1.5
QUARTERLY	JAN-MAR 1987	5.8 ± 2.5	5.9 ± 1.6	5.7 ± 1.3
	APR-JUN 1987	6.2 ± 3.0	7.0 ± 2.3	6.8 ± 1.3
	JUL-SEP 1987	5.8 ± 2.7	6.4 ± 2.3	5.8 ± 1.2
	OCT-DEC 1987	6.1 ± 2.4	6.5 ± 1.4	6.4 ± 1.1

TABLE C-XI.4 SUMMARY OF THE 1987 AMBIENT DOSIMETRY PROGRAM FOR PEACH BOTTOM ATOMIC POWER STATION

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO.

SAMPLE TYPE	LOCATION	NO. OF SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.	PRE-OP MEAN ± 2 S.D. (1)
MONTHLY	SITE	155	3.6	8.9	6.4 ± 2.5	5.3 ± 2.2
	MIDDLE RING	300	4.4	9.4	6.9 ± 2.0	6.0 ± 2.0
	OUTER RING	81	5.2	9.3	6.5 ± 1.6	6.2 ± 1.4
QUARTERLY	SITE	51	2.6	8.4	5.9 ± 2.6	5.4 ± 1.7
	MIDDLE RING	100	3.8	8.5	6.4 ± 2.0	5.3 ± 1.3
	OUTER RING	27	4.6	7.6	6.1 ± 1.5	5.7 ± 1.8

(1) THE PRE-OPERATIONAL MEAN WAS CALCULATED FROM TLD READINGS 1/07/73 TO 8/05/73. STATIONS 1M, 31 AND 32 WERE ADDED TO THE PROGRAM 7/06/73 AND STATIONS 33A AND 38 WERE NOT IN THE PRE-OPERATIONAL PROGRAM. STATIONS 1NN AND 40 THROUGH 51 WERE ADDED TO THE PROGRAM ON 07/12/80.

SITE BOUNDARY RING STATIONS - 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1J, 1L, 1M, 1NN, 2, AND 40.

MIDDLE RING STATIONS - 3A, 4K, 5, 6B, 14, 15, 17, 22, 23, 26, 27, 31, 32, 33A, 38, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51.

OUTER RING STATIONS - 12B, 16, 18, 19, 20, 21B, 24.

TABLE C-XII.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

AIR PARTICULATE & AIR IODINE

GROUP I - SITE BOUNDARY LOCATIONS

WEEK # OR MTH, COMP,	1A	1B	1Z	2
1	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87
2	01/04-01/11/87	01/04-01/11/87	01/04-01/11/87	01/04-01/11/87
3	01/11-01/17/87	01/11-01/17/87	01/11-01/17/87	01/11-01/17/87
4	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87
5	01/25-01/31/87	01/25-01/31/87	01/25-01/31/87	01/25-01/31/87
JAN 87	12/27-01/31/87	12/27-01/31/87		12/27-01/31/87
6	01/31-02/07/87	01/31-02/07/87	01/31-02/07/87	01/31-02/07/87
7	02/07-02/14/87	02/07-02/14/87	02/07-02/14/87	02/07-02/14/87
8	02/14-02/21/87	02/14-02/21/87	02/14-02/21/87	02/14-02/21/87
9	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87
FEB 87	01/31-02/28/87	01/31-02/28/87		01/31-02/28/87
10	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87
11	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87
12	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87
13	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87
MAR 87	02/28-03/28/87	02/28-03/28/87		02/28-03/28/87
14	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87
15	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87
16	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87
17	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87
APR 87	03/28-04/25/87	03/28-04/25/87		03/28-04/25/87
18	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87
19	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87
20	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87
21	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87
22	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87
MAY 87	04/25-05/30/87	04/25-05/30/87		04/25-05/30/87
23	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87
24	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87
25	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87
26	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87
JUN 87	05/30-06/27/87	05/30-06/27/87		05/30-06/27/87
27	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87
28	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87
29	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87
30	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87
31	07/25-08/01/87	07/25-08/01/87	07/25-08/01/87	07/25-08/01/87
JUL 87	06/27-08/01/87	06/27-08/01/87		06/27-08/01/87
32	08/01-08/09/87	08/01-08/09/87	08/01-08/09/87	08/01-08/09/87
33	08/09-08/16/87	08/09-08/16/87	08/09-08/16/87	08/09-08/16/87
34	08/16-08/21/87	08/16-08/21/87	08/16-08/21/87	08/16-08/21/87
35	08/21-08/29/87	08/21-08/29/87	08/21-08/29/87	08/21-08/29/87
AUG 87	08/01-08/29/87	08/01-08/29/87		08/01-08/29/87
36	08/29-09/06/87	08/29-09/06/87	08/29-09/06/87	08/29-09/06/87
37	09/06-09/12/87	09/06-09/12/87	09/06-09/12/87	09/06-09/12/87
38	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87
39	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87
40	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87
SEP 87	08/29-10/03/87	08/29-10/03/87		08/29-10/03/87
41	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87
42	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87
43	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87
44	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87
OCT 87	10/03-11/01/87	10/03-11/01/87		10/03-11/01/87
45		11/01-11/08/87	11/01-11/08/87	11/01-11/08/87
46	11/08-11/13/87	11/08-11/13/87	11/08-11/13/87	11/08-11/13/87
47	11/13-11/22/87	11/13-11/22/87	11/13-11/22/87	11/13-11/22/87
48	11/22-11/29/87	11/22-11/29/87	11/22-11/29/87	11/22-11/29/87
NOV 87	11/01-11/29/87	11/01-11/29/87		11/01-11/29/87
49	11/29-12/06/87	11/29-12/06/87	11/29-12/06/87	11/29-12/06/87
50	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87
51	12/13-12/20/87	12/13-12/20/87	12/13-12/20/87	12/13-12/20/87
52	12/20-12/26/87	12/20-12/26/87	12/20-12/26/87	12/20-12/26/87
53	12/26-01/01/88	12/26-01/01/88	12/26-01/01/88	12/26-01/01/88
DEC 87	11/29-01/01/88	11/29-01/01/88		11/29-01/01/88

TABLE C-XII.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

AIR PARTICULATE & AIR IODINE

GROUP II - INTERMEDIATE DISTANCE LOCATIONS

WEEK # OR MTH. COMP.	3A	4B	5	6B	14
1	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87
2	01/04-01/11/87	01/04-01/11/87	01/04-01/10/87	01/04-01/10/87	01/04-01/10/87
3	01/11-01/17/87	01/11-01/17/87	01/10-01/17/87	01/10-01/17/87	01/10-01/17/87
4	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87
5	01/25-01/31/87	01/25-01/31/87		01/25-01/31/87	01/25-01/31/87
JAN 87	12/27-01/31/87	12/27-01/31/87	12/27-01/31/87	12/27-01/31/87	12/27-01/31/87
6	01/31-02/07/87	01/31-02/07/87		01/31-02/07/87	01/31-02/07/87
7	02/07-02/14/87	02/07-02/14/87	02/07-02/15/87	02/07-02/15/87	02/07-02/15/87
8	02/14-02/21/87		02/15-02/21/87	02/15-02/21/87	02/15-02/21/87
9	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87
FEB 87	01/31-02/28/87	01/31-02/28/87	01/31-02/28/87	01/31-02/28/87	01/31-02/28/87
10	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87
11	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87
12	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87
13	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87
MAR 87	02/28-03/28/87	02/28-03/28/87	02/28-03/28/87	02/28-03/28/87	02/28-03/28/87
14	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87
15	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87	
16	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87
17	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87
APR 87	03/28-04/25/87	03/28-04/25/87	03/28-04/25/87	03/28-04/25/87	03/28-04/25/87
18	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87
19	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87
20	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87
21	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87
22	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87
MAY 87	04/25-05/30/87	04/25-05/30/87	04/25-05/30/87	04/25-05/30/87	04/25-05/30/87
23	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87
24	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87
25	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87
26	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87
JUN 87	05/30-06/27/87	05/30-06/27/87	05/30-06/27/87	05/30-06/27/87	05/30-06/27/87
27	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87
28	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87
29	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87
30	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87
31	07/25-08/01/87	07/25-08/01/87	07/25-08/01/87	07/25-08/01/87	07/25-08/01/87
JUL 87	06/27-08/01/87	06/27-08/01/87	06/27-08/01/87	06/27-08/01/87	06/27-08/01/87
32	08/01-08/09/87	08/01-08/09/87	08/01-08/08/87	08/01-08/08/87	08/01-08/08/87
33	08/09-08/16/87	08/09-08/16/87	08/08-08/15/87	08/08-08/15/87	08/08-08/15/87
34	08/16-08/21/87	08/16-08/21/87	08/15-08/23/87	08/15-08/23/87	08/15-08/23/87
35	08/21-08/29/87	08/21-08/29/87	08/23-08/29/87	08/23-08/29/87	08/23-08/29/87
AUG 87	08/01-08/29/87	08/01-08/29/87	08/01-08/29/87	08/01-08/29/87	08/01-08/29/87
36	08/29-09/06/87	08/29-09/06/87	08/29-09/05/87	08/29-09/05/87	08/29-09/05/87
37	09/06-09/12/87	09/06-09/12/87	09/05-09/12/87	09/05-09/12/87	09/05-09/12/87
38	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87
39	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87
40	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87
SEP 87	08/29-10/03/87	08/29-10/03/87	08/29-10/03/87	08/29-10/03/87	08/29-10/03/87
41	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87
42	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87
43	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87
44	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87
OCT 87	10/03-11/01/87	10/03-11/01/87	10/03-11/01/87	10/03-11/01/87	10/03-11/01/87
45	11/01-11/08/87		11/01-11/07/87	11/01-11/07/87	11/01-11/07/87
46	11/08-11/13/87	11/08-11/13/87	11/07-11/13/87	11/07-11/13/87	11/07-11/13/87
47	11/13-11/22/87	11/13-11/22/87	11/13-11/21/87	11/13-11/21/87	11/13-11/21/87
48	11/22-11/29/87		11/21-11/28/87	11/21-11/28/87	11/21-11/28/87
NOV 87	11/01-11/29/87	11/01-11/29/87	11/01-11/28/87	11/01-11/28/87	11/01-11/28/87
49	11/29-12/06/87		11/28-12/06/87	11/28-12/06/87	11/28-12/06/87
50	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87
51	12/13-12/20/87	12/13-12/20/87	12/13-12/19/87	12/13-12/19/87	12/13-12/19/87
52	12/20-12/26/87	12/20-12/26/87	12/19-12/27/87	12/19-12/27/87	12/19-12/27/87
53	12/26-01/01/88	12/26-01/01/88	12/27-01/02/88	12/27-01/02/88	12/27-12/31/87
DEC 87	11/29-01/01/88	11/29-01/01/88	11/28-01/02/88	11/28-01/02/88	11/28-12/31/88

TABLE C-XII.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

AIR PARTICULATE & AIR IODINE

GROUP II - INTERMEDIATE DISTANCE LOCATIONS

WEEK # OR MTH, COMP,	15	17	31	32	33A	38
1	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87	12/27-01/04/87
2	01/04-01/10/87	01/04-01/10/87	01/04-01/10/87	01/04-01/10/87	01/04-01/10/87	01/04-01/10/87
3	01/10-01/17/87	01/10-01/17/87	01/10-01/17/87	01/10-01/17/87	01/10-01/17/87	01/10-01/17/87
4	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87	01/17-01/25/87
5	01/25-01/31/87	01/25-01/31/87	01/25-01/31/87	01/25-01/31/87	01/25-01/31/87	01/25-01/31/87
JAN 87	12/27-01/31/87	12/27-01/31/87	12/27-01/31/87	12/27-01/31/87	12/27-01/31/87	12/27-01/31/87
6	01/31-02/07/87	01/31-02/07/87	01/31-02/07/87	01/31-02/07/87	01/31-02/07/87	01/31-02/07/87
7	02/07-02/15/87	02/07-02/15/87	02/07-02/15/87	02/07-02/15/87	02/07-02/15/87	02/07-02/15/87
8	02/15-02/21/87	02/15-02/21/87	02/15-02/21/87	02/15-02/21/87	02/15-02/21/87	02/15-02/21/87
9	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87	02/21-02/28/87
FEB 87	01/31-02/28/87	01/31-02/28/87	01/31-02/28/87	01/31-02/28/87	01/31-02/28/87	01/31-02/28/87
10	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87	02/28-03/07/87
11	03/04-03/14/87	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87	03/07-03/14/87
12	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87	03/14-03/21/87
13	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87	03/21-03/28/87
MAR 87	02/28-03/28/87	02/28-03/28/87	03/28-02/28/87	02/28-03/28/87	02/28-03/28/87	02/28-03/28/87
14	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87	03/28-04/04/87
15	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87	04/04-04/11/87
16	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87	04/11-04/18/87
17	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87	04/18-04/25/87
APR 87	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87	04/25-05/02/87
18	03/28-04/25/87	03/28-04/25/87	03/28-04/25/87	03/28-04/25/87	03/28-04/25/87	03/28-04/25/87
19	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87	05/02-05/09/87
20	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87	05/09-05/16/87
21	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87	05/16-05/23/87
22	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87	05/23-05/30/87
MAY 87	04/25-05/30/87	04/25-05/30/87	04/25-05/30/87	04/25-05/30/87	04/25-05/30/87	04/25-05/30/87
23	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87	05/30-06/06/87
24	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87	06/06-06/13/87
25	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87	06/13-06/21/87
26	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87	06/21-06/27/87
JUN 87	05/30-06/27/87	05/30-06/27/87	05/30-06/27/87	05/30-06/27/87	05/30-06/27/87	05/30-06/27/87
27	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87	06/27-07/03/87
28	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87	07/03-07/11/87
29	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87	07/11-07/18/87
30	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87	07/18-07/25/87
31	07/25-08/01/87	07/25-08/01/87	07/25-08/01/87	07/25-08/01/87		07/25-08/01/87
JUL 87	06/27-08/01/87	06/27-08/01/87	06/27-08/01/87	06/27-08/01/87	06/27-08/01/87	06/27-08/01/87
32	08/01-08/08/87	08/01-08/08/87	08/01-08/08/87	08/01-08/08/87	08/01-08/08/87	08/01-08/08/87
33	08/08-08/15/87	08/08-08/15/87	08/08-08/15/87	08/08-08/15/87		08/08-08/15/87
34	08/15-08/23/87	08/15-08/23/87	08/15-08/23/87	08/15-08/23/87	08/15-08/23/87	08/15-08/23/87
35	08/23-08/29/87	08/23-08/29/87	08/23-08/29/87	08/23-08/29/87	08/23-08/29/87	08/23-08/29/87
AUG 87	08/01-08/29/87	08/01-08/29/87	08/01-08/29/87	08/01-08/29/87	08/01-08/29/87	08/01-08/29/87
36	08/29-09/05/87	08/29-09/05/87	08/29-09/05/87	08/29-09/05/87	08/29-09/05/87	08/29-09/05/87
37	09/05-09/12/87	09/05-09/12/87	09/05-09/12/87	09/05-09/12/87	09/05-09/12/87	09/05-09/12/87
38	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87	09/12-09/19/87
39	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87	09/19-09/26/87
40	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87	09/26-10/03/87
SEP 87	08/29-10/03/87	08/29-10/03/87	08/29-10/03/87	08/29-10/03/87	08/29-10/03/87	08/29-10/03/87
41	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87	10/03-10/10/87
42	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87	10/10-10/17/87
43	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87	10/17-10/25/87
44	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87	10/25-11/01/87
OCT 87	10/03-11/01/87	10/03-11/01/87	10/03-11/01/87	10/03-11/01/87	10/03-11/01/87	10/03-11/01/87
45						
46	11/07-11/13/87	11/07-11/13/87	11/07-11/13/87	11/07-11/13/87	11/07-11/13/87	11/07-11/13/87
47	11/13-11/21/87	11/13-11/21/87	11/13-11/21/87	11/13-11/21/87	11/13-11/21/87	11/13-11/21/87
48	11/21-11/28/87	11/21-11/28/87	11/21-11/28/87	11/21-11/28/87	11/21-11/28/87	11/21-11/28/87
NOV 87	11/01-11/28/87	11/01-11/28/87	11/01-11/28/87	11/01-11/28/87	11/01-11/28/87	11/01-11/28/87
49	11/28-12/06/87	11/28-12/06/87	11/28-12/06/87	11/28-12/06/87	11/28-12/06/87	11/28-12/06/87
50	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87	12/06-12/13/87
51	12/13-12/19/87	12/13-12/19/87	12/13-12/19/87	12/13-12/19/87	12/13-12/19/87	12/13-12/19/87
52	12/19-12/27/87	12/19-12/27/87	12/19-12/27/87	12/19-12/27/87	12/19-12/27/87	12/19-12/27/87
53	12/27-12/31/87	12/27-01/02/88	12/27-01/02/88	12/27-12/31/87	12/27-12/31/87	12/27-12/31/87
DEC 87	11/28-12/31/87	11/28-01/02/88	11/28-01/02/88	11/28-12/31/87	11/28-12/31/87	11/28-12/31/87

TABLE C-XII.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

AIR PARTICULATE & AIR IODINE

GROUP III - DISTANT LOCATIONS

WEEK # OR MTH, COMP.	12A	12D
1	12/29-01/05/87	12/29-01/05/87
2	01/05-01/12/87	01/05-01/12/87
3	01/12-01/20/87	01/12-01/20/87
4	01/20-01/26/87	01/20-01/26/87
5	01/26-02/02/87	01/26-02/02/87
JAN 87	12/29-02/02/87	12/29-02/02/87
6	02/02-02/09/87	02/02-02/09/87
7	02/09-02/17/87	02/09-02/17/87
8	02/17-02/24/87	02/17-02/24/87
9	02/24-03/02/87	02/24-03/02/87
FEB 87	02/02-03/02/87	02/02-03/02/87
10	03/02-03/09/87	03/02-03/09/87
11	03/09-03/16/87	03/09-03/16/87
12	03/16-03/23/87	03/16-03/23/87
13	03/23-03/30/87	03/23-03/30/87
MAR 87	03/02-03/30/87	03/02-03/30/87
14	03/30-04/06/87	03/30-04/06/87
15	04/06-04/13/87	04/06-04/13/87
16	04/13-04/20/87	04/13-04/20/87
17	04/20-04/27/87	04/20-04/27/87
APR 87	03/30-04/27/87	03/30-04/27/87
18	04/27-05/04/87	04/27-05/04/87
19	05/04-05/11/87	05/04-05/11/87
20	05/11-05/18/87	05/11-05/18/87
21	05/18-05/26/87	05/18-05/26/87
22	05/26-06/01/87	05/26-06/01/87
MAY 87	04/27-06/01/87	04/27-06/01/87
23	06/01-06/08/87	06/01-06/08/87
24	06/08-06/15/87	06/08-06/15/87
25	06/15-06/22/87	06/15-06/22/87
26	06/22-06/29/87	06/22-06/29/87
JUN 87	06/01-06/29/87	06/01-06/29/87
27	06/29-07/06/87	06/29-07/06/87
28	07/06-07/13/87	07/06-07/13/87
29	07/13-07/20/87	07/13-07/20/87
30	07/20-07/27/87	07/20-07/27/87
31	07/27-08/03/87	07/27-08/03/87
JUL 87	06/29-08/03/87	06/29-08/03/87
32	08/03-08/10/87	08/03-08/10/87
33	08/10-08/17/87	08/10-08/17/87
34	08/17-08/24/87	08/17-08/24/87
35	08/24-08/31/87	08/24-08/31/87
AUG 87	08/03-08/31/87	08/03-08/31/87
36	08/31-09/08/87	08/31-09/08/87
37	09/08-09/14/87	09/08-09/14/87
38	09/14-09/21/87	09/14-09/21/87
39	09/21-09/28/87	09/21-09/28/87
40	08/31-10/05/87	08/31-10/05/87
SEP 87	09/28-10/05/87	09/28-10/05/87
41	10/05-10/13/87	10/05-10/13/87
42	10/13-10/19/87	10/13-10/19/87
43	10/19-10/26/87	10/19-10/26/87
44	10/26-11/03/87	10/26-11/03/87
OCT 87	10/05-11/03/87	10/05-11/03/87
45	11/03-11/09/87	11/03-11/09/87
46	11/09-11/16/87	11/09-11/16/87
47	11/16-11/23/87	11/16-11/23/87
48	11/23-11/30/87	11/23-11/30/87
NOV 87	11/03-11/30/87	11/03-11/30/87
49	11/30-12/07/87	11/30-12/07/87
50	12/07-12/14/87	12/07-12/14/87
51	12/14-12/21/87	12/14-12/21/87
52	12/21-12/29/87	12/21-12/29/87
53	12/29-01/04/88	12/29-01/04/88
DEC 87	11/30-01/04/88	11/30-01/04/88

TABLE C-XII.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

TLD - MONTHLY

STATION CODE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1A	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
1B	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
1C	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
1D	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01		08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
1E	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
1F	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
1G	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
1H	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
1I	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29		10/03-11/01	11/01-12/06	12/06-12/31
1J	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
1L	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
1M	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
1NN	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
2	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
3A	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
4K	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
5	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
6B	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
14	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
12B	01/05-02/02	02/02-03/02	03/02-04/06	04/06-05/04	05/04-06/01	06/01-07/02	07/02-08/03	08/03-09/09	09/09-10/05	10/05-11/02	11/02-11/30	11/30-01/04
15	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
16	01/04-01/31	01/31-02/28	02/28-04/04				06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
17	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
18	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
19	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
20	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
21B	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
22	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
23	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/01
24	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/01-01/02
26	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
27	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
31	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
32	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
33A	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
38	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
40	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
42	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
43	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
44	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-01/02
45	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/3
46	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/3
47	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/3
48	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
49	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
50	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31
51	01/04-01/31	01/31-02/28	02/28-04/04	04/04-05/02	05/02-05/30	05/30-06/27	06/27-08/01	08/01-08/29	08/29-10/03	10/03-11/01	11/01-12/06	12/06-12/31

TABLE C-XII.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

TLD - QUARTERLY

STATION CODE	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC
1A	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
1B	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
1C	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
1D	01/04-04/04	04/04-06/27		10/03-01/01
1E	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
1F	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
1G	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
1H	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
1I	01/04-04/04	04/04-06/27		10/03-12/31
1J	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
1L	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
1M	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
1NN	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
2	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
3A	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
4K	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
5	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
6B	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
14	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
12B	01/05-04/06	04/06-07/02	07/02-10/05	10/05-01/04
15	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
16	01/04-04/04		06/27-10/03	10/03-01/02
17	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
18	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
19	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
20	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
21B	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
22	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
23	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/01
24	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
26	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
27	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
31	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
32	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
33A	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
38	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
40	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
42	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
43	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
44	01/04-04/04	04/04-06/27	06/27-10/03	10/03-01/02
45	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
46	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
47	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
48	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
49	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
50	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31
51	01/04-04/04	04/04-06/27	06/27-10/03	10/03-12/31

FIGURE C-1
MONTHLY INSOLUBLE GROSS BETA CONCENTRATIONS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PIAPS, 1987

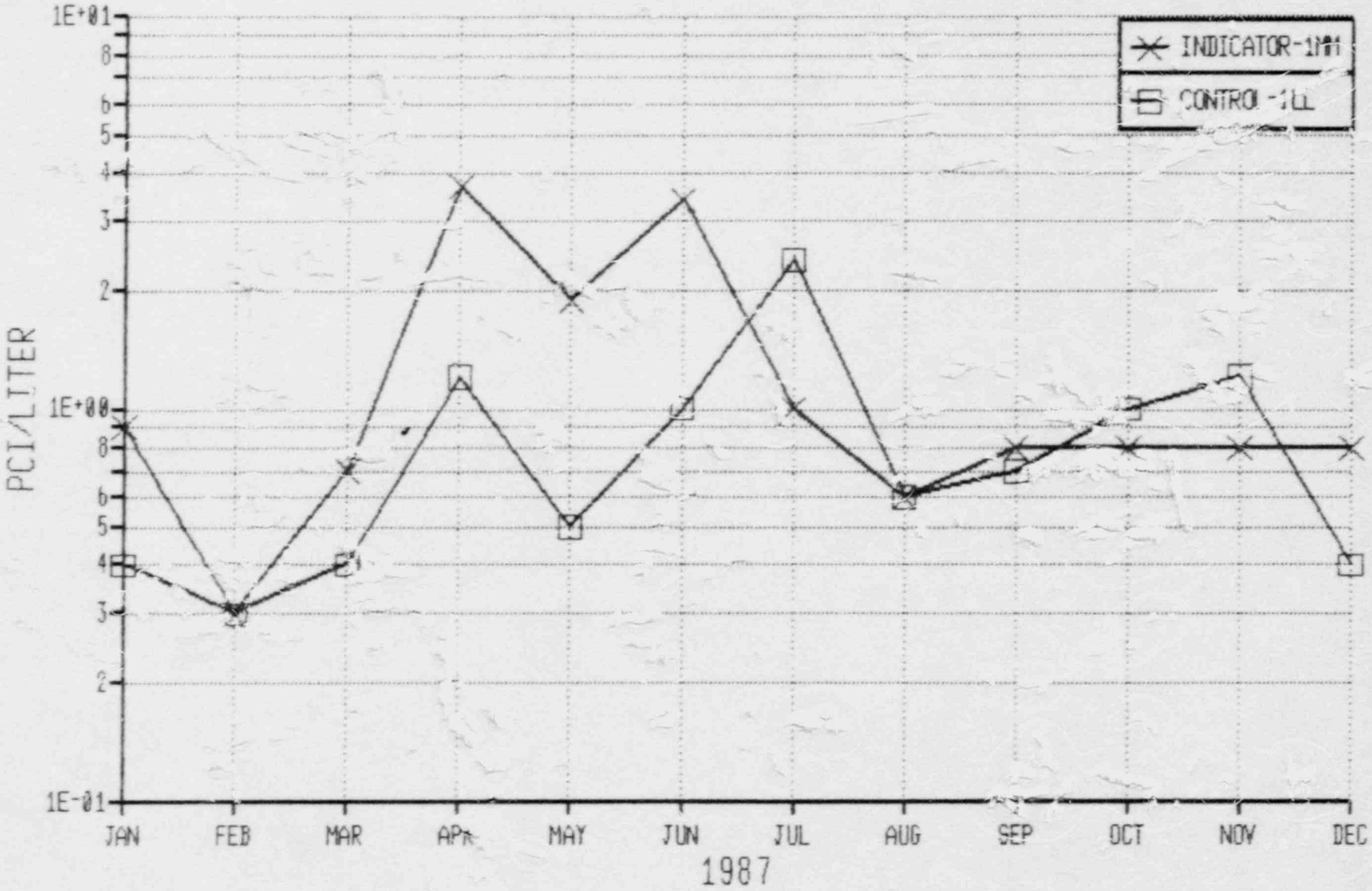


FIGURE C-2
MONTHLY SOLUBLE GROSS BETA CONCENTRATIONS IN SURFACE
WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

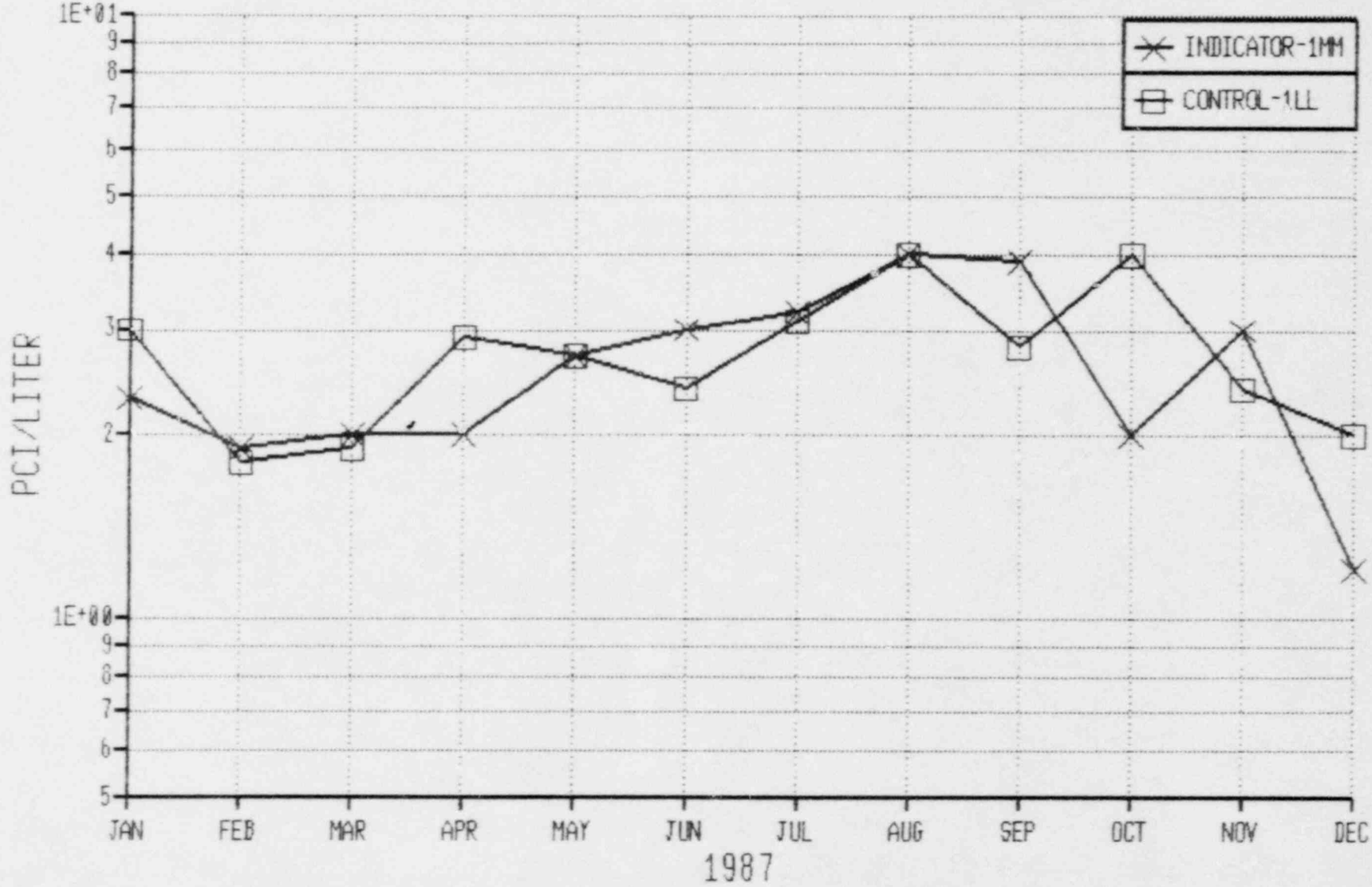


FIGURE C-3
MONTHLY INSOLUBLE GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

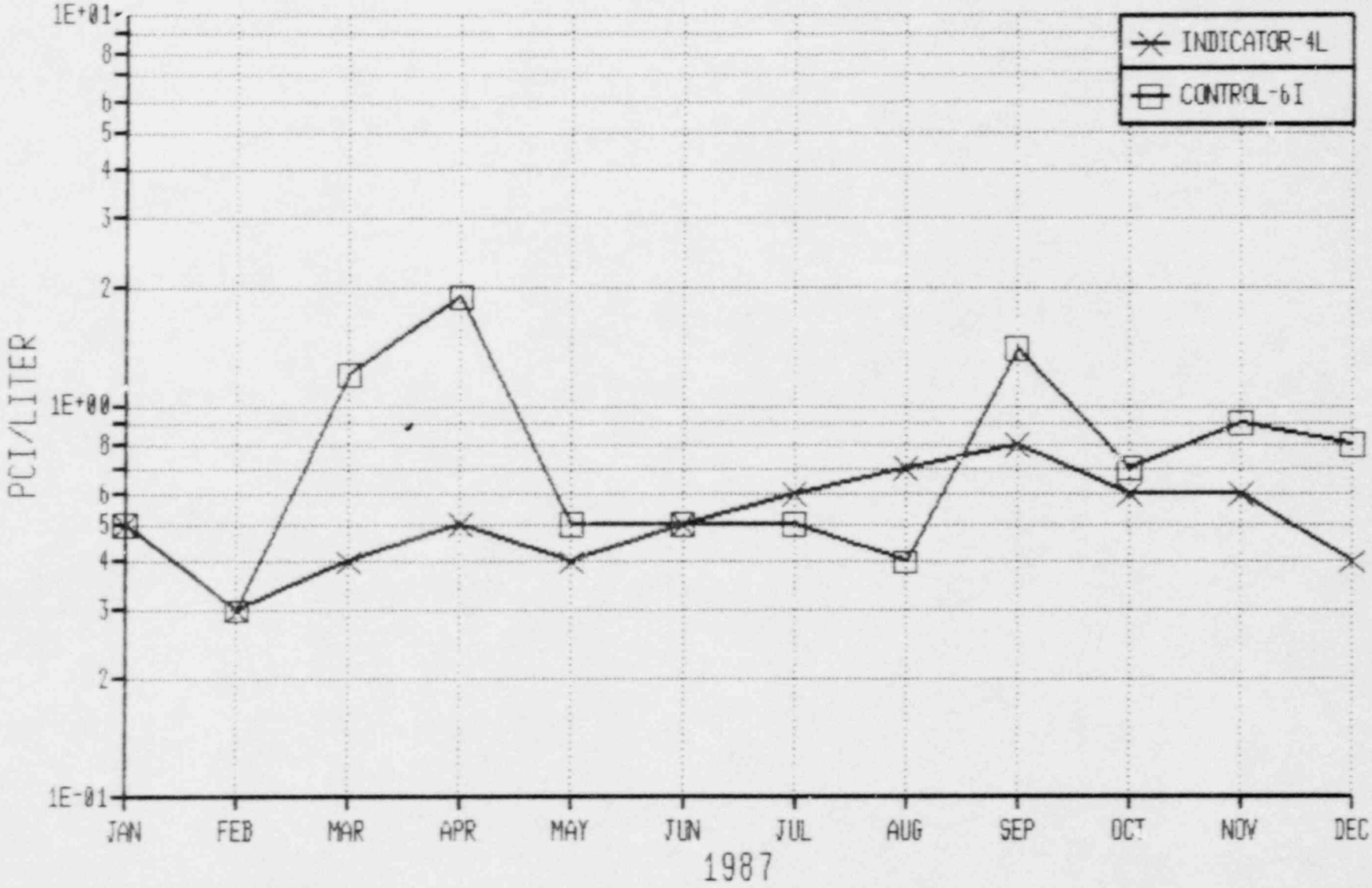


FIGURE C-4
MONTHLY SOLUBLE GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

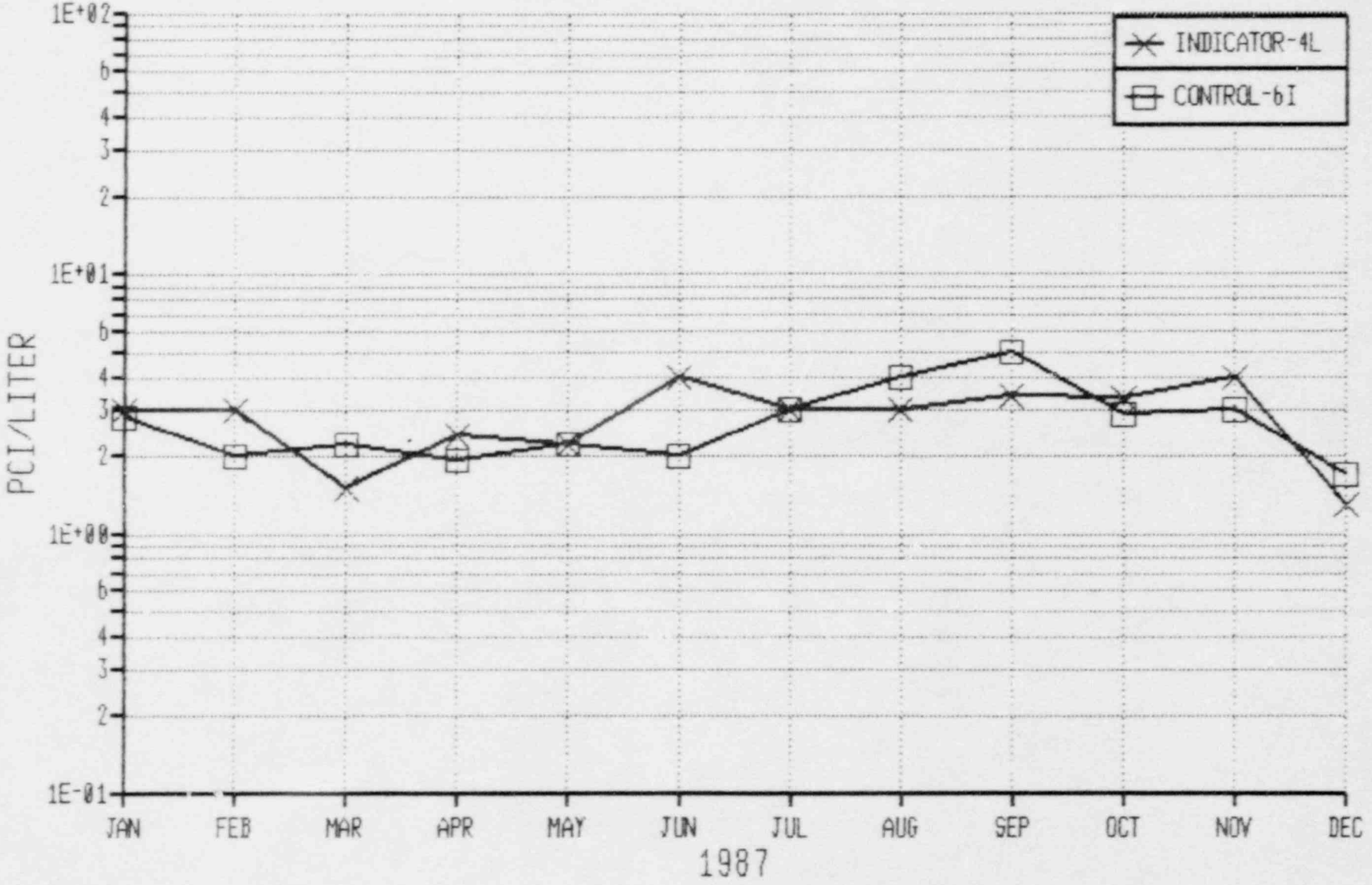


FIGURE C-5
MEAN ANNUAL SR-90 CONCENTRATIONS IN FISH
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1966-1987

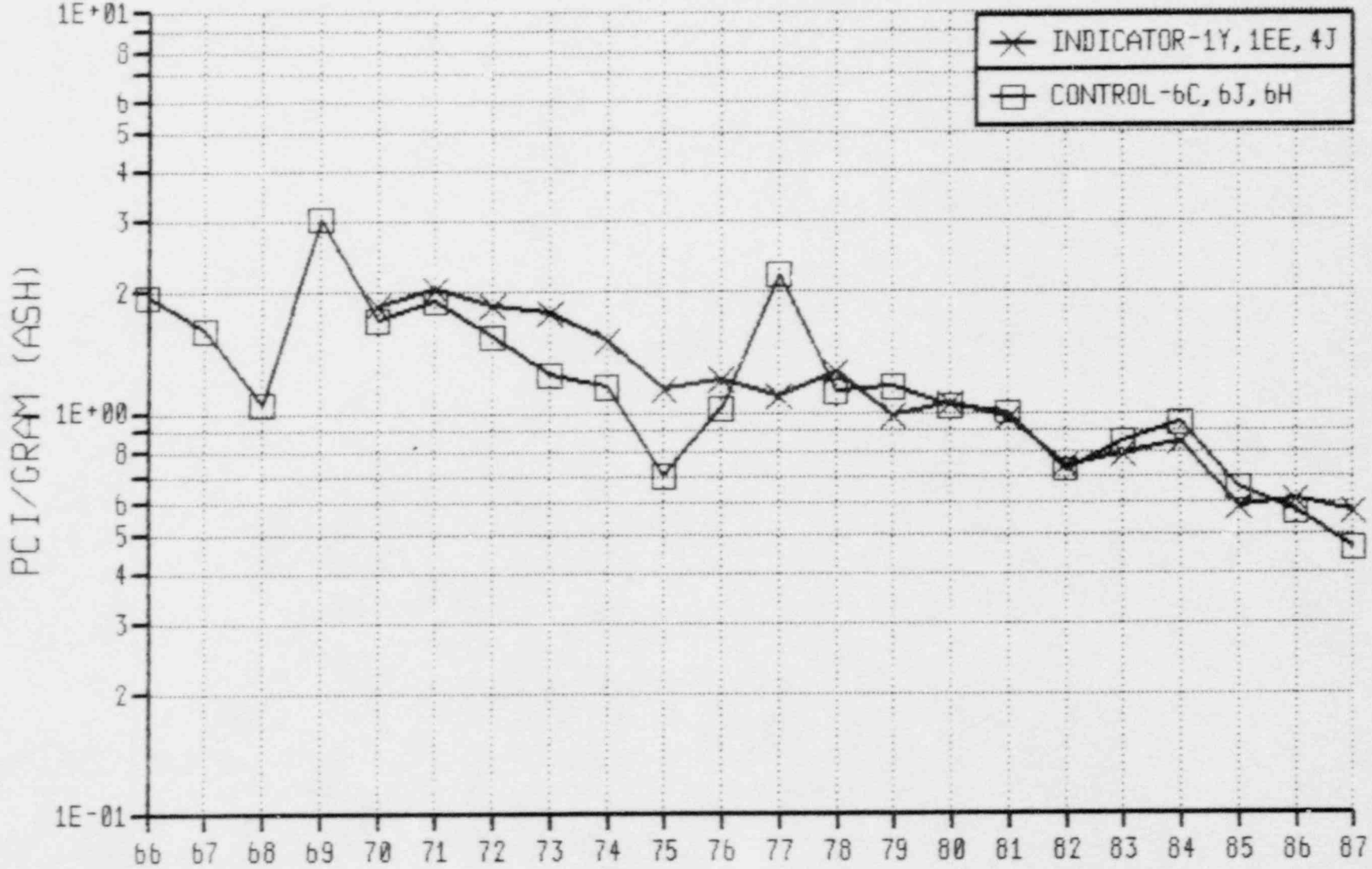


FIGURE C-6
MEAN ANNUAL CS-137 CONCENTRATIONS IN FISH
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971-1987

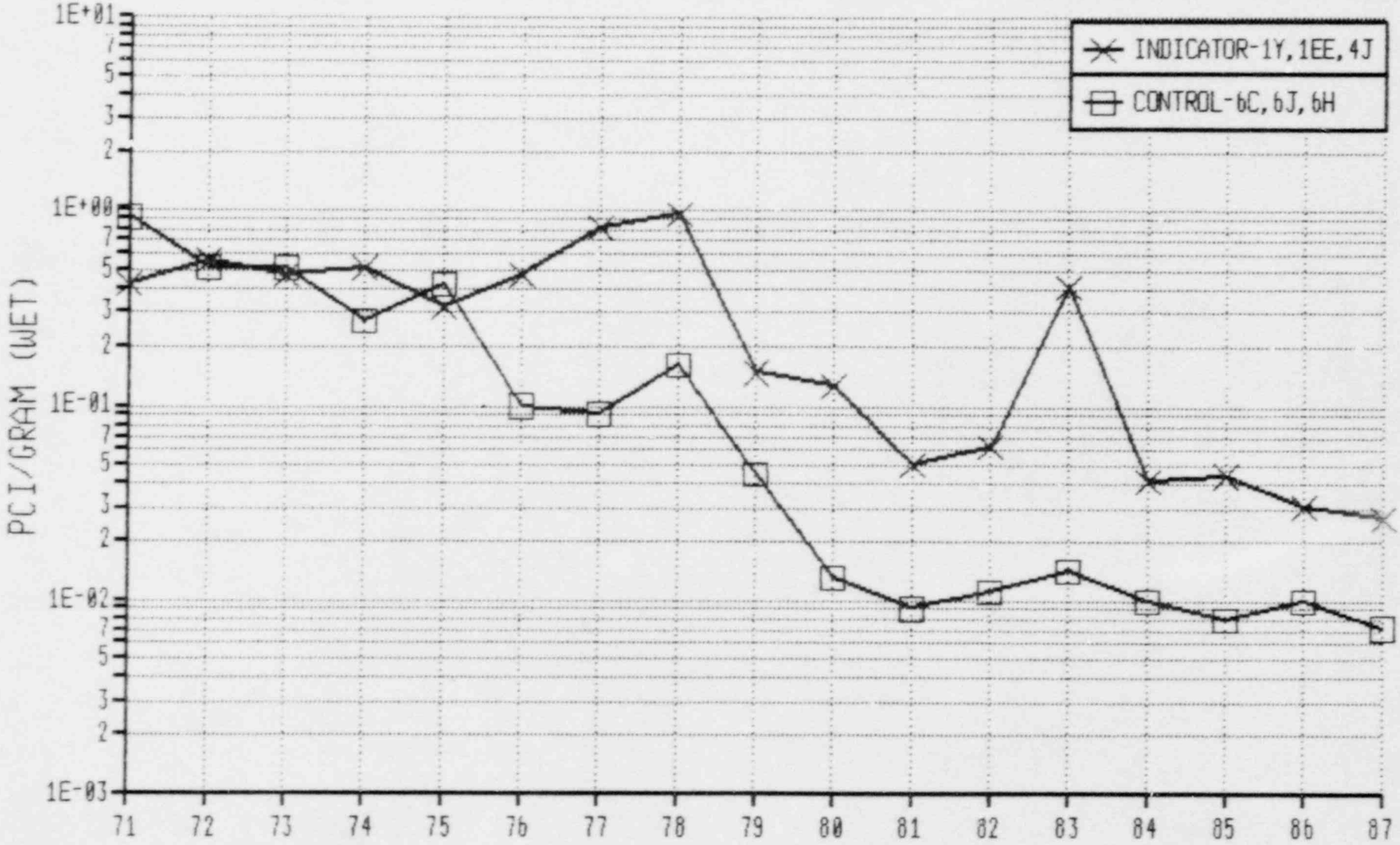


FIGURE C-7
MEAN ANNUAL CS-137 CONCENTRATIONS IN SEDIMENT SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1971-1987

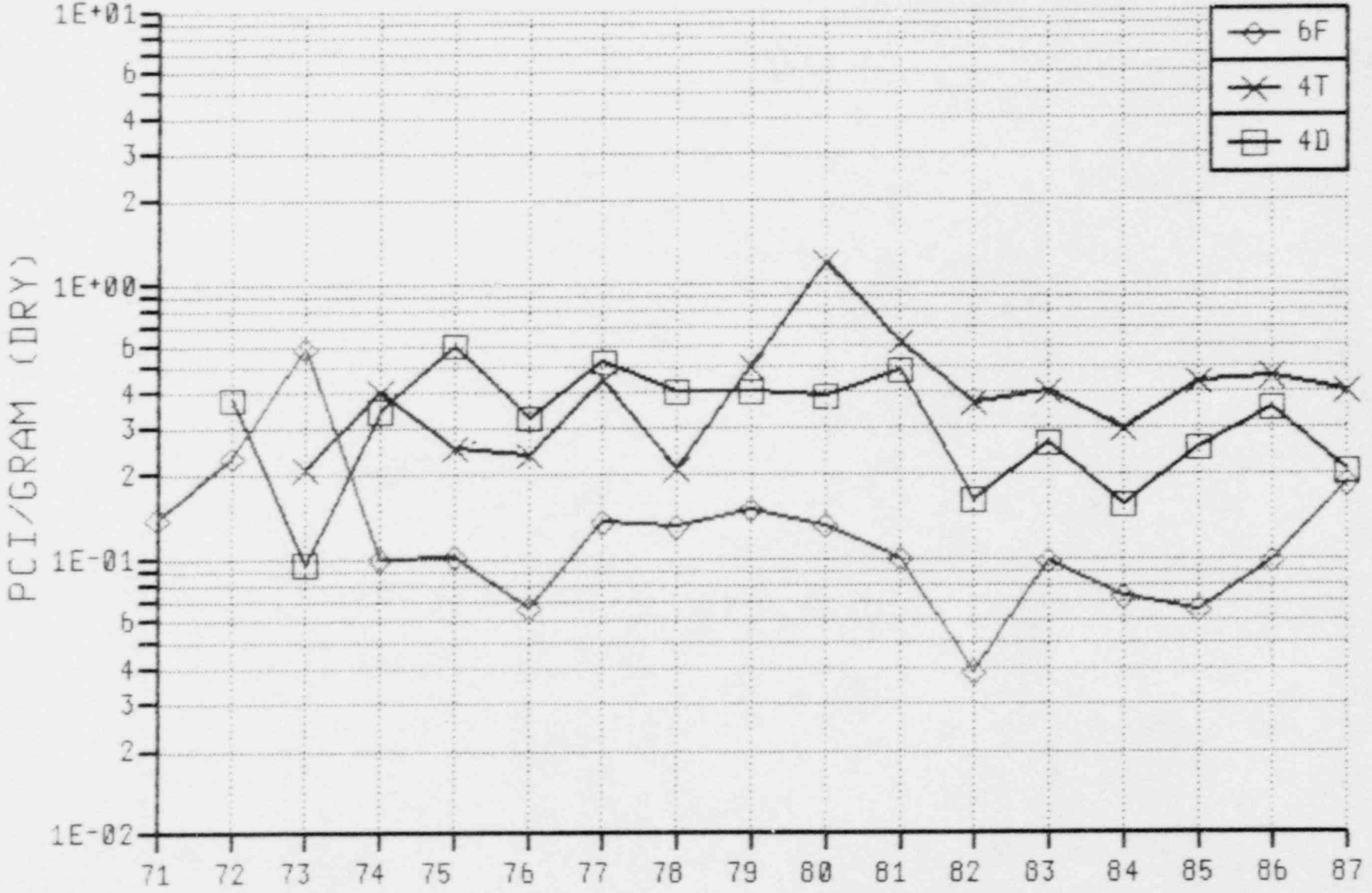


FIGURE C-8
MEAN WEEKLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

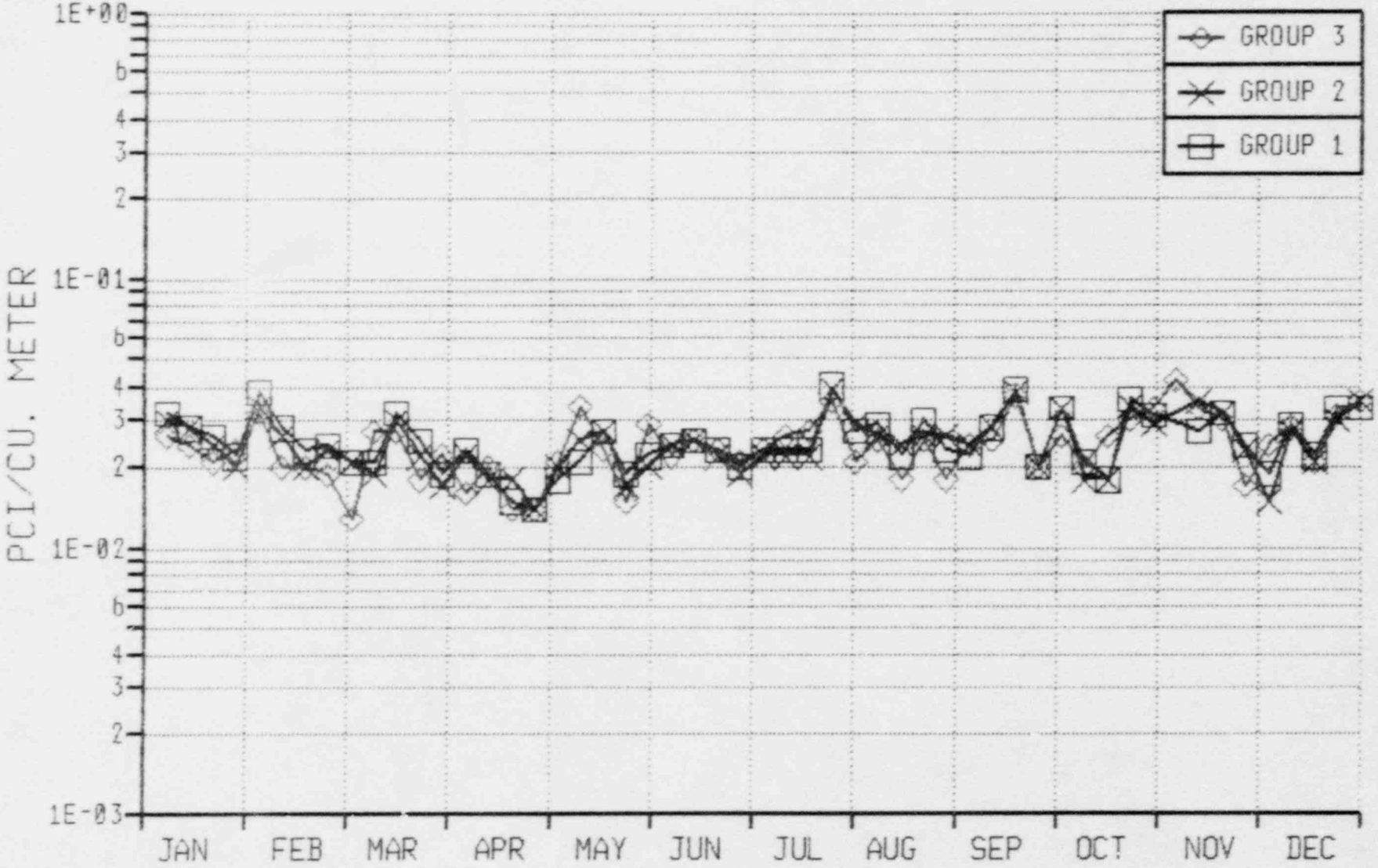


FIGURE C-9
MEAN MONTHLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1970-1987

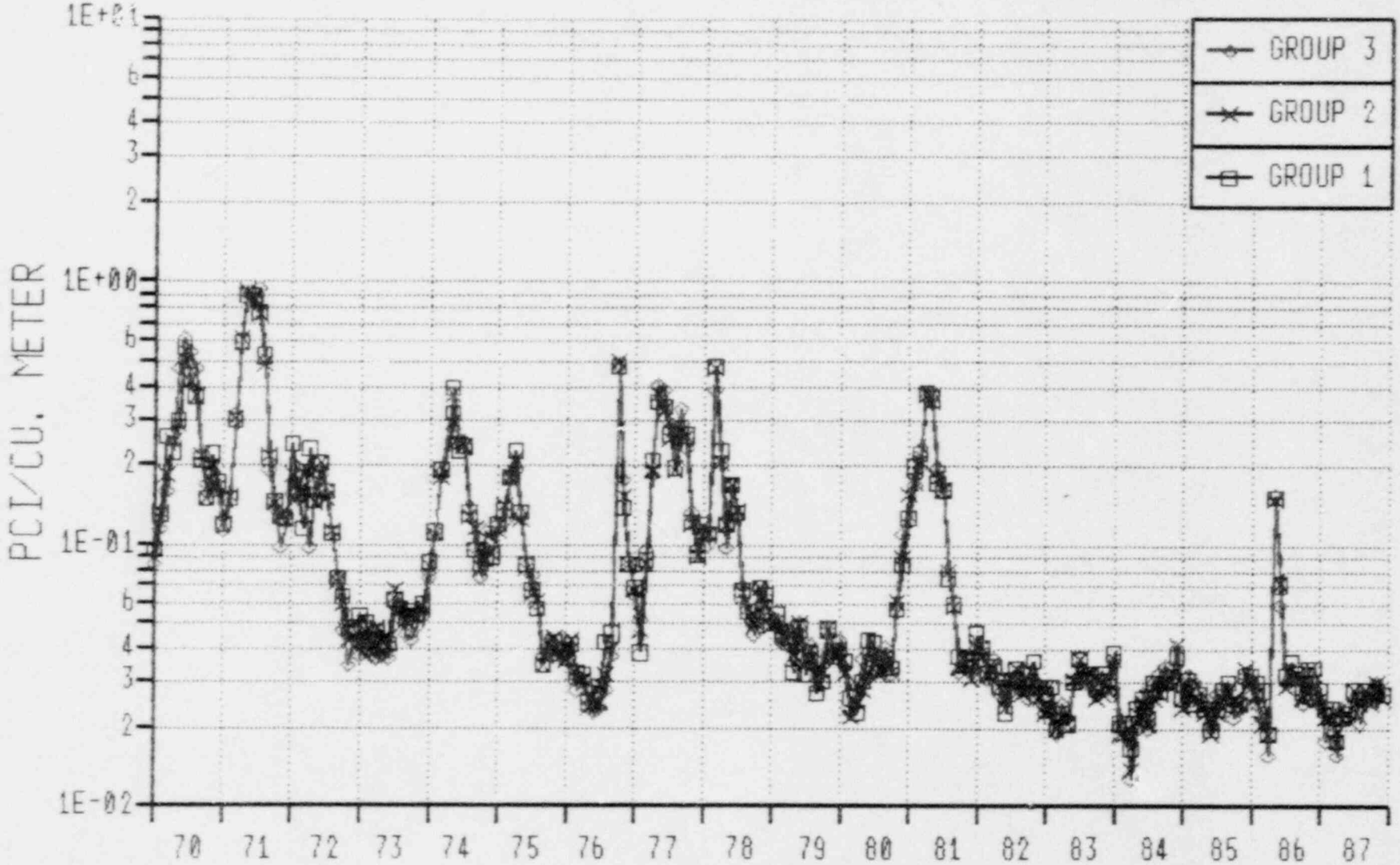


FIGURE C-10
MEAN ANNUAL CS-137 CONCENTRATIONS IN MILK
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971-1987

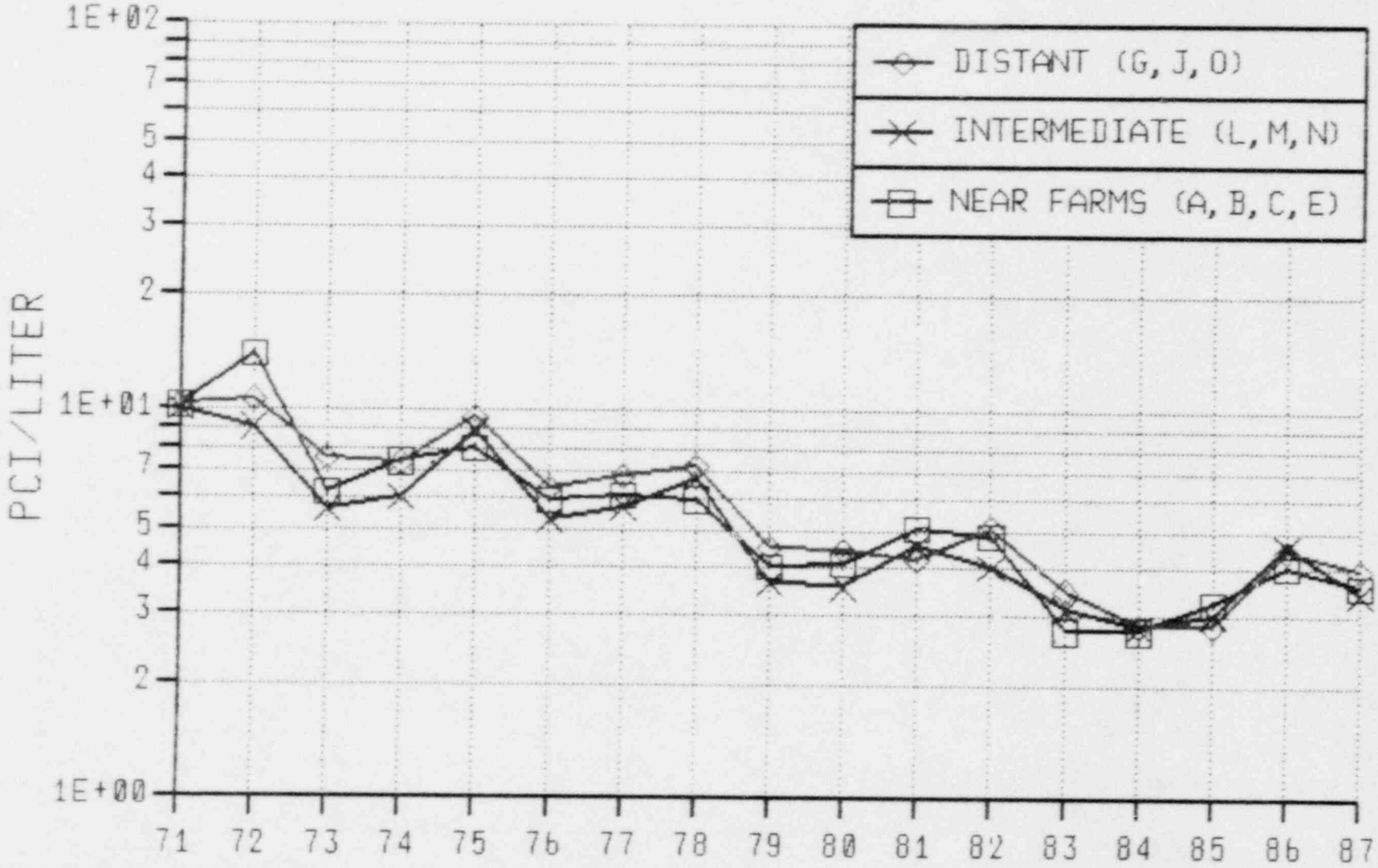


FIGURE C-11
MEAN MONTHLY AMBIENT GAMMA RADIATION
LEVELS (TLD) IN THE VICINITY OF PBAPS, 1987

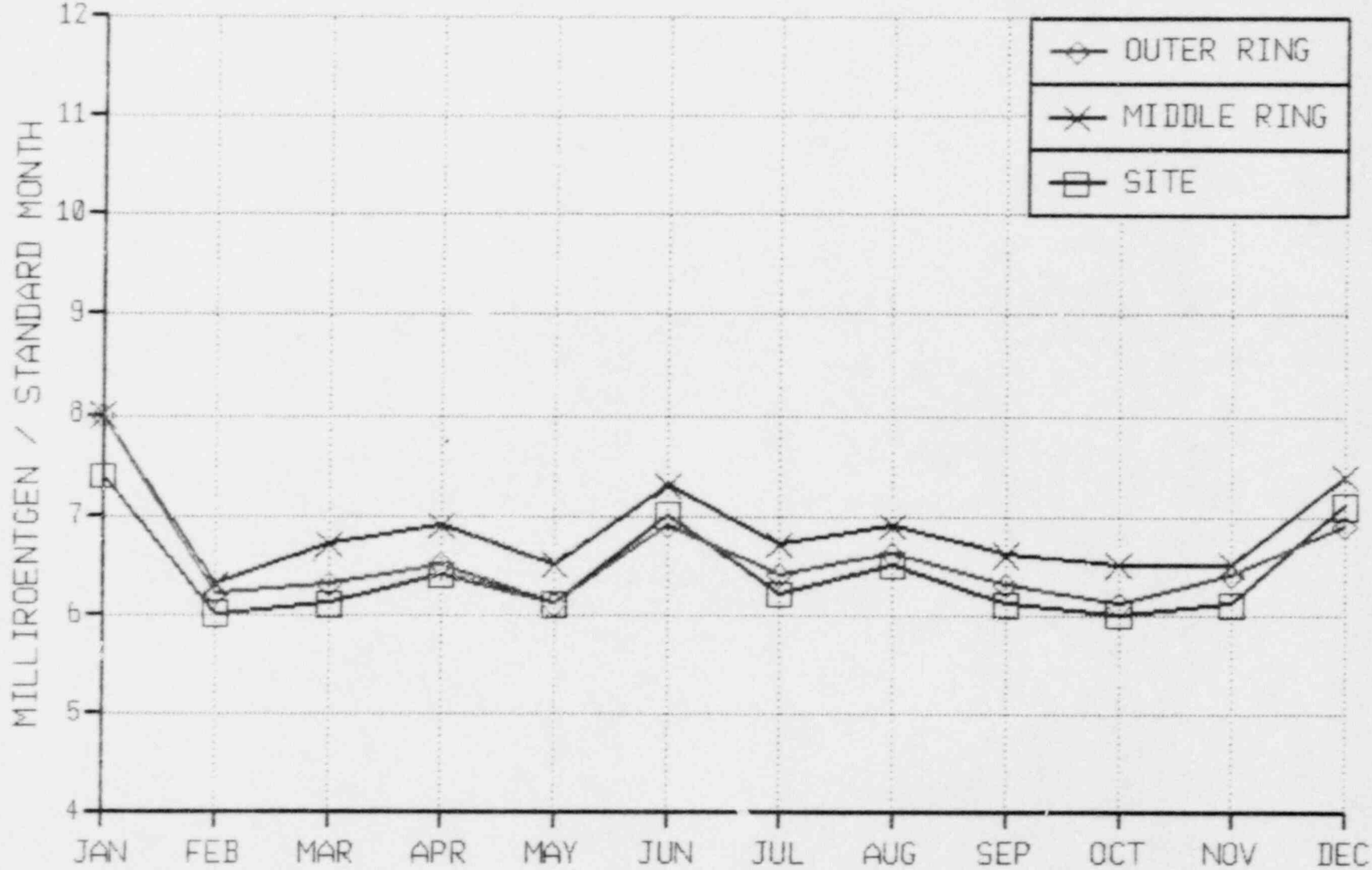
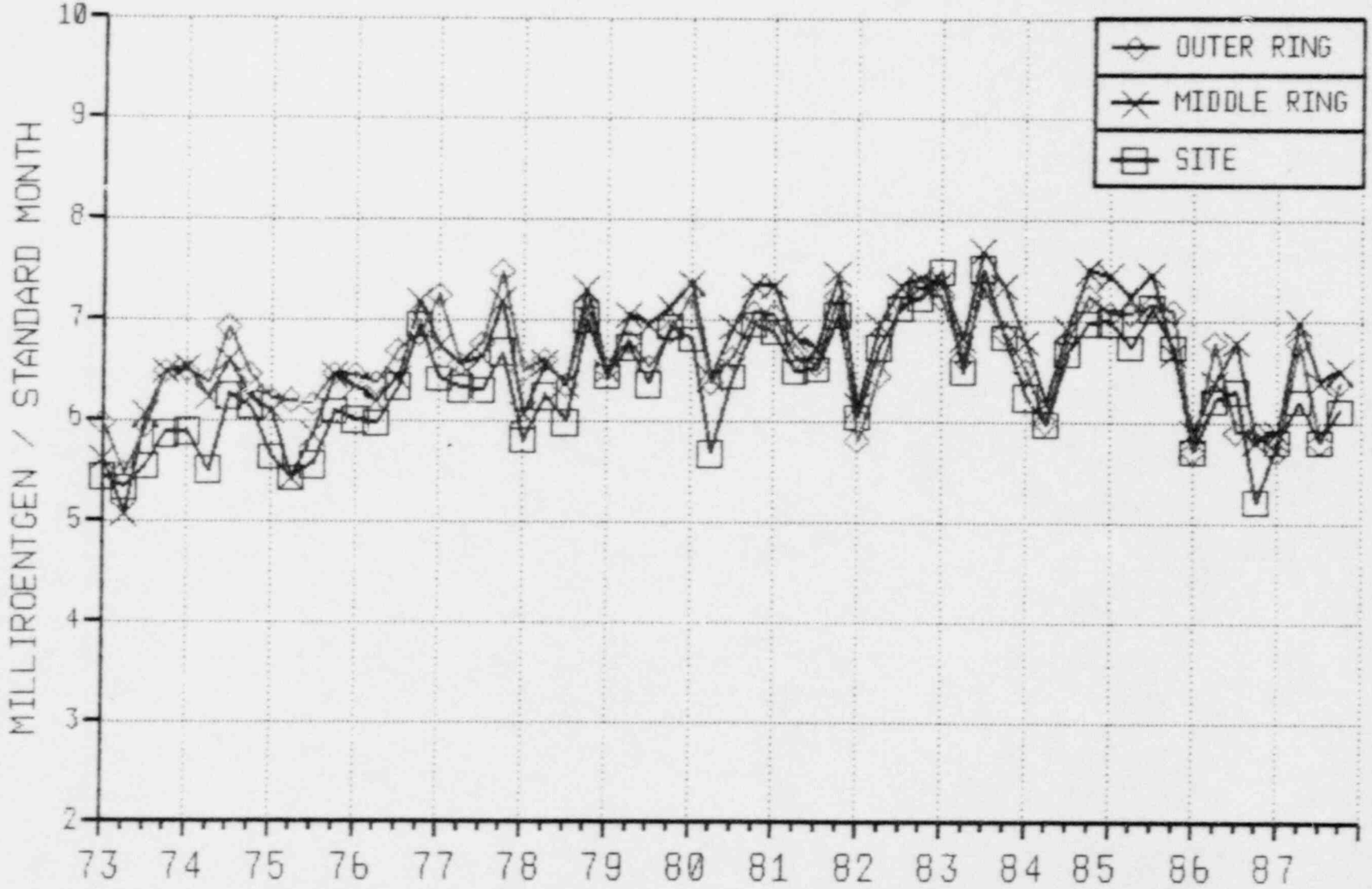


FIGURE C-12
MEAN QUARTERLY AMBIENT GAMMA RADIATION
LEVELS (TLD) IN THE VICINITY OF PBAPS, 1973-1987



DATA TABLES AND FIGURES

COMPARISON LABORATORY

APPENDIX D: DATA TABLES AND FIGURES - COMPARISON LABORATORY

Table

Figures

The following section contains data and figures illustrating the analyses performed by the secondary laboratory. Duplicate samples were obtained from several locations and media and split between Teledyne Isotopes (TI) and Clean Harbors (CH). Comparison of the results for most media were within expected ranges, though occasional differences were seen:

1. TI gross beta results in water were generally higher than CH. However, CH K-40 results were generally higher than TI results.

2. CH results for gross beta in air particulates were consistently higher than those obtained from TI. It was observed that the ratio between the two laboratories remained relatively constant throughout the year (Figure D-1 and D-2). Inspection of the EPA results (see Appendix F) indicated a similar ratio. Discussions with the respective laboratories indicated that the differences may be accounted for by slightly different calibration procedures.

TABLE D-I.1 ANALYTICAL DATA FOR SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION DATE	GROSS BETA SOLUBLE	GROSS BETA INSOLUBLE	BE-7	K-40	CR-51	MN-54	CO-58
13A	01/04/87	4 ± 2	< .4	< 20	90 ± 40	< 20	< 2	< 2
	01/31/87	3 ± 2	.5 ± .5	< 20	70 ± 40	< 30	< 2	< 2
	02/28/87	< 2	.1 ± .1	< 20	70 ± 40	< 20	< 2	< 2
	04/04/87	< 2	< .4	< 20	< 40	< 20	< 2	< 2
	05/02/87	1.9 ± .5	.13 ± .09	< 20	< 40	< 20	< 2	< 2
	05/30/87	3.2 ± .6	.4 ± .1	20 ± 20	60 ± 40	< 20	< 2	< 2
	06/27/87	3.2 ± .7	1.1 ± .2	< 30	< 60	< 40	< 3	< 3
	08/01/87	3.5 ± .8	< .1	< 20	< 60	< 30	< 3	< 3
	08/29/87	2.9 ± .7	.9 ± .2	< 20	< 50	< 10	< 2	< 2
	10/03/87	2.0 ± .6	.5 ± .1	< 20	< 50	< 10	< 2	< 2
	11/01/87	2.3 ± .6	< .08	< 20	< 50	< 10	< 2	< 3
	12/06/87	2.1 ± .5	.09 ± .08	< 30	< 50	< 40	< 2	< 3
	12/31/87	2.7 ± .5	.3 ± .1	< 20	< 50	< 30	< 2	< 3
	MEAN	2.7 ± 1.4	.38 ± .64	22 ± 8	57 ± 28	< 25	< 2	< 2
13B	01/22/87	< 2	< .08	< 30	90 ± 50	< 50	< 3	< 3
	02/25/87	1.5 ± .6	< .4	< 20	< 40	< 20	< 2	< 2
	03/20/87	3 ± 2	< .4	< 20	120 ± 50	< 30	< 2	< 3
	04/14/87	1.3 ± .4	.16 ± .09	< 20	< 50	< 30	< 2	< 3
	05/22/87	2.1 ± .5	4.0 ± .4	< 20	< 50	< 20	< 2	< 2
	06/19/87	1.8 ± .6	2.1 ± .3	< 30	< 60	< 40	< 3	< 3
	07/13/87	2.6 ± .8	< .1	< 30	< 60	< 50	< 3	< 3
	08/21/87	2.3 ± .6	.3 ± .1	< 20	< 50	< 30	< 2	< 3
	09/23/87	3.4 ± .7	.9 ± .2	< 20	< 50	< 30	< 2	< 3
	10/16/87	1.5 ± .5	.7 ± .2	< 30	< 50	< 40	< 2	< 3
	11/19/87	2.2 ± .5	1.0 ± .1	< 30	< 50	< 60	< 3	< 4
	12/29/87	2.0 ± .5	5 ± 3	< 20	60 ± 60	< 30	< 2	< 3
	MEAN	2.1 ±1.2	1.3 ± 3.3	< 24	61 ± 45	< 36	< 2	< 3
1LL	01/02-01/30/87	3 ± 2	< .5	< 20	< 40	< 30	< 2	< 3
	01/30-02/27/87	< 2	.8 ± .2	< 20	< 40	< 20	< 2	< 2
	02/27-04/03/87	< 2	< .4	< 20	< 40	< 20	< 2	< 2
	04/03-05/01/87	1.4 ± .4	.2 ± .1	< 20	< 40	< 20	< 2	< 2
	05/01-05/29/87	2.5 ± .5	.3 ± .1	< 20	70 ± 40	< 20	< 2	< 2
	05/29-06/26/87	1.8 ± .6	1.2 ± .2	< 30	< 60	40 ± 30	< 3	< 3
	06/26-07/31/87	3.9 ± .9	.3 ± .2	< 20	< 60	< 30	< 3	< 3
	07/31-08/28/87	2.7 ± .7	.4 ± .2	< 20	< 50	< 20	< 2	< 2
	08/28-10/02/87	3.0 ± .7	.6 ± .2	< 20	< 50	< 20	< 2	< 2
	10/02-10/30/87	2.1 ± .6	.9 ± .2	< 20	< 60	< 30	< 2	< 3
	10/30-12/04/87	2.5 ± .5	.5 ± .1	< 20	< 50	< 30	< 2	< 3
	12/04-01/01/88	1.9 ± .4	.11 ± .08	< 20	< 50	< 30	< 2	< 3
	MEAN	2.4 ± 1.4	.52 ± .63	< 21	51 ± 20	26 ± 13	< 2	< 3
1MM	01/02-01/30/87	2 ± 2	.9 ± .5	< 20	90 ± 50	< 30	< 2	< 3
	01/30-02/27/87	< 2	.5 ± .1	< 20	130 ± 50	< 20	< 2	< 2
	02/27-04/03/87	2 ± 2	.7 ± .4	< 20	< 50	< 20	< 2	< 2
	04/03-05/01/87	1.5 ± .4	.8 ± .2	< 20	< 50	< 20	< 2	< 2
	05/01-05/29/87	2.4 ± .5	.4 ± .1	< 20	< 60	< 30	< 3	< 3
	05/29-06/26/87	3.1 ± .7	2.1 ± .3	< 30	< 60	< 40	< 3	< 3
	06/26-07/31/87	1.9 ± .7	.6 ± .2	< 30	< 60	< 30	< 3	< 3
	07/31-08/28/87	3.1 ± .7	.7 ± .2	< 20	< 50	< 20	< 2	< 2
	08/28-10/02/87	3.2 ± .7	.8 ± .2	20 ± 20	< 50	< 20	< 2	< 2
	10/02-10/30/87	1.5 ± .5	.3 ± .1	< 20	< 50	< 30	< 2	< 3
	10/30-12/04/87	2.2 ± .5	.5 ± .1	< 30	< 50	< 30	< 3	< 3
	12/04-01/01/88	2.6 ± .5	.5 ± .1	< 20	< 50	< 30	< 3	< 3
	MEAN	2.3 ± 1.2	.7 ± .9	23 ± 9	63 ± 48	< 27	< 2	< 3

TABLE D-I.1 ANALYTICAL DATA FOR SURFACE WATER SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION DATE	ZN-65	ZR-95	NB-95	RU-106	SB-125	I-131	CS-134
13A	01/04/87	< 5	< 4	< 2	< 20	< 5	< 7	< 2
	01/31/87	< 5	< 5	< 3	20 ± 20	< 6	< 10	< 2
	02/28/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	04/04/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	05/02/87	< 4	< 3	< 2	< 20	< 5	< 3	< 2
	05/30/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	06/27/87	< 7	< 6	< 4	< 30	< 7	20 ± 20	< 3
	08/01/87	< 6	< 5	< 3	< 20	< 7	< 7	< 3
	08/29/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	10/03/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	11/01/87	< 5	< 4	3 ± 3	< 20	< 6	< 6	< 2
	12/06/87	< 6	< 5	< 4	< 20	< 6	< 30	< 2
	12/31/87	< 6	< 5	< 3	< 20	< 6	< 8	< 2
	MEAN	< 5	< 4	3 ± 2	21 ± 6	< 6	8 ± 16	< 2
13B	01/22/87	< 6	< 6	< 5	< 20	< 6	< 70	< 2
	02/25/87	< 5	< 4	< 2	< 20	< 6	< 4	< 2
	03/20/87	< 5	< 5	< 3	< 20	< 6	< 10	< 2
	04/14/87	< 6	< 5	< 3	20 ± 20	< 6	< 10	< 2
	05/22/87	< 5	< 4	< 3	< 20	< 6	< 6	2 ± 2
	06/19/87	< 7	< 6	< 4	< 30	9 ± 7	< 30	< 3
	07/13/87	< 7	< 7	< 5	< 30	< 7	< 40	< 3
	08/21/87	< 6	< 5	< 3	< 20	< 6	< 7	< 2
	09/23/87	< 5	< 5	< 3	< 20	< 6	< 10	< 2
	10/16/87	< 5	< 5	< 4	< 20	< 6	< 20	< 2
	11/19/87	< 6	< 6	< 6	< 20	< 6	< 100	< 2
	12/29/87	< 6	< 5	< 3	< 20	< 6	< 10	< 2
	MEAN	< 6	< 5	< 4	22 ± 8	6 ± 2	< 26	2 ± 1
1LL	01/02-01/30/87	< 5	< 4	< 3	< 20	< 6	< 10	< 2
	01/30-02/27/87	< 4	< 4	< 2	< 20	< 6	< 3	< 2
	02/27-04/03/87	< 5	< 4	< 3	< 20	< 6	< 4	< 2
	04/03-05/01/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	05/01-05/29/87	< 5	< 4	2 ± 2	< 20	< 5	< 3	< 2
	05/29-06/26/87	< 7	< 6	< 4	< 20	< 7	< 20	< 3
	06/26-07/31/87	< 6	< 5	< 3	< 20	< 7	< 6	< 3
	07/31-08/28/87	< 5	< 4	< 2	< 20	< 6	< 4	< 2
	08/28-10/02/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	10/02-10/30/87	< 6	< 5	< 3	< 20	< 6	< 10	< 2
	10/30-12/04/87	< 6	< 5	< 4	< 20	< 6	< 20	< 2
	12/04-01/01/87	< 6	< 5	< 3	< 20	< 6	< 10	< 2
	MEAN	< 5	< 5	3 ± 2	< 20	< 6	< 8	< 2
1MM	01/02-01/30/87	< 6	< 5	< 3	< 20	< 6	< 10	< 2
	01/30-02/27/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	02/27-04/03/87	< 5	< 4	< 3	< 20	< 6	< 4	< 2
	04/03-05/01/87	< 5	< 4	< 3	< 20	< 6	< 4	< 2
	05/01-05/29/87	< 6	< 5	< 3	< 20	< 7	< 6	< 3
	05/29-06/26/87	< 7	< 6	< 4	< 20	< 7	< 20	< 3
	06/26-07/31/87	< 7	< 5	< 3	< 30	< 7	< 8	< 3
	07/31-08/28/87	< 5	< 4	< 2	< 20	< 6	< 3	< 2
	08/28-10/02/87	< 5	< 5	< 3	< 20	< 6	< 4	< 2
	10/02-10/30/87	< 5	< 5	< 3	< 20	< 6	< 10	< 2
	10/30-12/04/87	< 6	6 ± 5	< 4	< 20	< 6	< 20	< 2
	12/04-01/01/87	< 5	< 5	< 3	< 20	< 6	< 10	< 2
	MEAN	< 6	5 ± 2	< 3	< 21	< 6	< 9	< 2

TABLE D-I.1 ANALYTICAL DATA FOR SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION DATE	CS-136	CS-137	BA-140	LA-140	RA-226	TH-228
13A	01/04/87	< 4	< 2	< 10	< 3	< 4	< 6
	01/31/87	< 8	< 2	< 20	< 8	< 5	< 6
	02/[illegible]/87	< 4	< 2	< 9	< 3	< 5	< 6
	04/04/87	< 4	< 2	< 10	< 3	< 5	< 6
	05/02/87	< 3	< 2	< 9	< 3	< 4	< 6
	05/30/87	< 4	< 2	< 10	< 3	< 5	< 6
	06/27/87	< 10	< 3	< 30	< 10	< 6	< 8
	08/01/87	< 7	< 3	< 20	< 6	< 6	< 8
	08/29/87	< 4	< 2	< 10	< 4	< 5	< 6
	10/03/87	< 4	< 2	< 10	< 3	< 5	< 7
	11/01/87	< 6	3 ± 3	< 20	< 5	6 ± 5	< 7
	12/06/87	< 20	3 ± 2	< 40	< 10	< 5	< 7
	12/31/87	< 7	< 2	< 20	< 6	< 5	< 7
	MEAN:	< 7	2 ± 1	< 17	< 5	5 ± 1	< 7
13B	01/22/87	< 30	< 2	< 70	< 20	< 5	< 7
	02/25/87	< 4	< 2	< 10	< 4	< 5	< 6
	03/20/87	< 9	< 2	< 20	< 8	< 5	< 7
	04/14/87	< 10	< 2	< 30	9 ± 8	< 5	< 6
	05/22/87	6 ± 6	< 2	< 20	< 5	< 5	< 6
	06/19/87	< 20	< 3	< 40	< 10	< 6	< 8
	07/13/87	< 20	< 3	< 50	< 20	< 6	< 8
	08/21/87	< 7	< 2	< 20	< 6	< 5	8 ± 7
	09/23/87	< 9	3 ± 2	< 20	< 8	< 5	< 7
	10/16/87	< 10	< 2	< 40	< 10	< 5	< 7
	11/19/87	< 40	< 3	< 100	< 30	< 5	< 7
	12/29/87	< 10	< 3	< 30	< 9	< 5	< 7
	MEAN	15 ± 22	2 ± 1	< 38	12 ± 15	< 5	7 ± 1
1LL	01/02-01/30/87	< 10	< 2	< 20	< 8	< 5	< 6
	01/30-02/27/87	< 4	< 2	< 9	< 3	< 5	< 6
	02/27-04/03/87	< 4	< 2	10 ± 10	< 4	< 5	< 6
	04/03-05/01/87	< 4	< 2	< 10	< 3	< 5	< 7
	05/01-05/29/87	< 4	< 2	< 10	< 3	< 4	< 6
	05/29-06/26/87	< 10	< 3	< 30	< 9	< 6	< 8
	06/26-07/31/87	< 7	< 3	< 20	< 5	< 6	< 8
	07/31-08/28/87	< 4	< 3	< 10	< 4	< 5	12 ± 7
	08/28-10/02/87	< 4	< 2	< 10	< 3	< 5	< 7
	10/02-10/30/87	< 8	< 2	< 20	< 7	5 ± 5	< 7
	10/30-12/04/87	< 10	< 2	< 30	< 10	< 5	< 7
	12/04-01/01/87	< 9	< 2	< 30	< 7	< 5	< 7
	MEAN	< 7	< 2	17 ± 17	< 6	5 ± 1	7 ± 3
1MM	01/02-01/30/87	< 10	3 ± 2	< 30	< 8	< 5	< 7
	01/30-02/27/87	< 4	< 2	< 10	< 3	< 5	< 7
	02/27-04/03/87	< 5	< 2	< 10	7 ± 4	< 5	< 7
	04/03-05/01/87	< 5	< 3	< 10	5 ± 4	< 5	< 7
	05/01-05/29/87	< 6	< 3	< 20	< 5	< 6	< 8
	05/29-06/26/87	< 10	< 3	< 40	< 10	< 6	< 8
	06/26-07/31/87	< 8	< 3	< 20	< 6	< 6	15 ± 8
	07/31-08/28/87	< 4	< 2	< 10	< 3	< 5	< 7
	08/28-10/02/87	< 4	3 ± 3	< 10	< 4	< 5	< 7
	10/02-10/30/87	< 9	< 2	< 20	< 7	< 5	< 7
	10/30-12/04/87	< 10	< 3	< 30	< 10	< 5	< 7
	12/04-01/01/87	< 9	< 2	< 20	< 8	< 5	< 6
	MEAN	< 7	3 ± 1	< 19	6 ± 5	< 5	8 ± 5

TABLE D-II.1 ANALYTICAL DATA FOR DRINKING WATER SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	GROSS BETA SOLUBLE	GROSS BETA INSOLUBLE	K-40	MN-54	CO-58	FE-59	CO-60	ZN-65	ZR-95
4L	01/04-01/31/87	2 ± 2	< .6	200 ± 60	< 3	< 3	< 9	< 3	< 7	< 6
	01/31-02/28/87	2.0 ± .6	< .6	< 50	< 3	< 3	< 7	< 3	< 6	< 5
	02/28-04/04/87	2 ± 2	< .5	< 40	< 2	< 2	< 5	< 2	< 5	< 4
	04/04-05/02/87	1.5 ± .4	< .1	110 ± 50	< 3	< 3	< 7	< 3	< 6	< 5
	05/02-05/23/87	1.1 ± .4	< .1	< 60	< 2	< 2	< 6	< 3	< 6	< 4
	05/30-06/27/87	2.9 ± .7	.2 ± .2	< 80	< 4	< 4	< 10	< 4	< 9	< 8
	06/27-08/01/87	2.9 ± .7	< .1	< 70	< 3	< 3	< 9	< 3	< 7	< 6
	08/01-08/29/87	2.3 ± .6	.5 ± .2	< 50	< 2	< 2	< 6	< 3	< 6	< 5
	08/29-10/03/87	3.1 ± .7	.4 ± .1	< 50	< 2	< 2	< 6	< 2	< 5	< 4
	10/03-11/01/87	1.8 ± .6	.2 ± .1	< 60	< 2	< 3	< 7	< 3	< 6	< 5
	11/01-12/06/87	1.5 ± .4	.20 ± .09	< 50	< 2	< 3	< 8	< 3	< 6	< 5
	12/06-01/01/88	2.0 ± .4	.2 ± .1	< 60	< 3	< 3	< 9	< 3	< 7	< 6
	MEAN	2.1 ± 1.2	.31 ± .40	73 ± 88	< 3	< 3	< 7	< 3	< 6	< 5
6I	01/04-01/31/87	3 ± 2	< .5	< 40	< 2	< 2	< 7	< 2	< 5	< 5
	01/31-02/28/87	1.8 ± .6	< .4	140 ± 50	< 2	< 2	< 6	< 3	< 5	< 4
	02/28-04/04/87	2 ± 2	< .4	< 50	< 2	< 2	< 6	< 3	< 5	< 4
	04/04-05/02/87	1.7 ± .4	< .08	< 50	< 2	< 2	< 6	< 3	< 5	< 4
	05/02-05/30/87	1.9 ± .5	.1 ± .1	110 ± 50	< 3	< 3	< 7	< 3	< 6	< 5
	05/30-06/27/87	2.8 ± .7	.2 ± .1	< 70	< 3	< 4	< 10	< 3	< 8	< 7
	07/11-08/01/87	2.2 ± .8	< .2	< 60	< 3	< 3	< 8	< 3	< 7	< 6
	08/01-08/29/87	2.6 ± .7	.2 ± .1	< 50	< 2	< 2	< 6	< 3	< 5	< 4
	08/29-09/26/87	3.0 ± .7	1.0 ± .2	< 60	< 2	< 3	< 8	< 3	< 6	< 5
	10/03-11/01/87	1.4 ± .5	.3 ± .1	70 ± 60	< 3	< 3	< 8	< 3	< 6	< 5
	11/01-12/06/87	1.9 ± .5	.14 ± .08	< 50	< 2	< 3	< 8	< 3	< 6	< 5
	12/06-01/02/88	1.7 ± .4	< .1	< 70	< 3	< 3	< 9	< 3	< 7	< 6
	MEAN	2.2 ± 1.1	.30 ± .52	68 ± 58	< 2	< 3	< 7	< 3	< 6	< 5

TABLE D-II.1 ANALYTICAL DATA FOR DRINKING WATER SAMPLES
COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	NB-95	CS-134	CS-136	CS-137	BA-140	LA-140	RA-226	TH-228
4L	01/04-01/31/87	< 4	< 3	< 10	< 3	< 30	< 9	< 6	< 8
	01/31-02/28/87	< 3	< 3	< 5	< 3	< 10	< 4	< 6	< 8
	02/28-04/04/87	< 2	< 2	< 4	3 ± 2	< 10	< 4	< 5	< 6
	04/04-05/02/87	< 3	< 3	6 ± 5	< 3	< 10	< 4	< 6	< 8
	05/02-05/23/87	< 3	< 2	< 5	< 3	< 10	< 4	< 5	< 7
	05/30-06/27/87	< 6	< 4	< 20	< 4	< 60	< 20	< 8	< 10
	06/27-08/01/87	< 4	< 3	< 8	< 3	< 20	< 7	< 6	10 ± 9
	08/01-08/29/87	< 3	< 2	< 6	< 3	< 10	< 4	< 5	8 ± 7
	08/29-10/03/87	< 2	< 2	< 5	2 ± 2	< 10	< 4	< 5	< 6
	10/03-11/01/87	< 3	< 2	< 8	< 2	< 20	< 6	6 ± 5	< 7
	11/01-12/06/87	< 4	< 2	< 10	< 2	< 30	< 9	< 5	< 7
	12/06-01/01/88	< 4	< 3	< 10	< 3	< 30	< 10	< 6	< 8
	MEAN	< 3	< 3	8 ± 9	3 ± 1	< 21	< 7	6 ± 2	8 ± 3
6I	01/04-01/31/87	< 3	< 2	< 9	< 2	< 30	< 8	< 5	< 6
	01/31-02/28/87	< 2	< 2	7 ± 4	< 2	< 10	< 3	< 5	< 6
	02/28-04/04/87	< 2	< 2	< 4	< 2	< 10	< 4	< 5	< 7
	04/04-05/02/87	< 2	< 2	< 4	< 2	< 10	< 4	< 5	< 7
	05/02-05/30/87	< 3	< 3	< 6	< 3	< 10	< 5	< 6	< 8
	05/30-06/27/87	7 ± 5	< 3	< 20	< 3	< 40	< 10	< 7	< 9
	07/11-08/01/87	< 4	< 3	< 8	< 3	< 20	< 7	< 6	< 8
	08/01-08/29/87	< 3	< 2	< 5	< 2	< 10	< 4	< 5	< 7
	08/29-09/26/87	< 3	< 3	< 9	< 3	< 20	< 8	< 5	< 8
	10/03-11/01/87	< 3	< 3	< 8	3 ± 3	< 20	< 6	< 6	< 7
	11/01-12/06/87	< 4	< 2	< 10	< 3	< 30	< 10	< 5	< 7
	12/06-01/02/88	< 4	< 3	< 10	< 3	< 30	< 10	< 7	< 9
	MEAN	3 ± 3	< 3	8 ± 8	3 ± 1	< 20	< 7	< 6	< 7

TABLE D-III.1 CONCENTRATIONS OF GROSS BETA RADIOACTIVITY IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

WEEK #	1Z	4A
1	.024 ± .003	.020 ± .003
2	.022 ± .004	.020 ± .003
3	.017 ± .004	.015 ± .004
4	.017 ± .003	.014 ± .003
5	.031 ± .004	.031 ± .005
6	.024 ± .004	.023 ± .004
7	.019 ± .003	.017 ± .003
8	.018 ± .003	.015 ± .003
9	.015 ± .003	.014 ± .003
10	.014 ± .003	.014 ± .003
11	.025 ± .004	.022 ± .003
12	.017 ± .003	.016 ± .003
13	.012 ± .003	.012 ± .003
14	.017 ± .003	.016 ± .003
15	.015 ± .003	.012 ± .003
16	.012 ± .003	.015 ± .003
17	.008 ± .003	.008 ± .003
18	.014 ± .003	.011 ± .003
19	.019 ± .003	.019 ± .003
20	.018 ± .003	.017 ± .003
21	.013 ± .003	.015 ± .003
22	.009 ± .003	.011 ± .004
23	.022 ± .004	.018 ± .004
24	.023 ± .004	.023 ± .004
25	.016 ± .003	.017 ± .003
26	.012 ± .004	.011 ± .004
27	.021 ± .004	.016 ± .004
28	.016 ± .003	.017 ± .003
29	.016 ± .003	.015 ± .003
30	.033 ± .004	.034 ± .004
31	.027 ± .004	.027 ± .004
32	.024 ± .003	.022 ± .003
33	.013 ± .003	.015 ± .003
34	.025 ± .005	.020 ± .004
35	.022 ± .003	.021 ± .003
36	.017 ± .003	.015 ± .003
37	.017 ± .004	.022 ± .004
38	.023 ± .003	.022 ± .003
39	.016 ± .003	.017 ± .004
40	.031 ± .004	.027 ± .004
41	.017 ± .003	.017 ± .003
42	.028 ± .003	.025 ± .003
43	.027 ± .003	.025 ± .003
44	.026 ± .004	.022 ± .004
45	.034 ± .004	.036 ± .004
46	.021 ± .005	.018 ± .004
47	.024 ± .003	.025 ± .003
48	.021 ± .003	.016 ± .003
49	.016 ± .003	.015 ± .003
50	.022 ± .004	.023 ± .004
51	.018 ± .003	.019 ± .003
52	.029 ± .004	.031 ± .005
53	.023 ± .004	.020 ± .004
MEAN	.020 ± .012	.019 ± .012

TABLE D-III.2 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/CU. METER ± 2 SIGMA

STATION CODE	COLLECTION PERIOD	BE-7	K-40	CS-134	CS-137
1Z	JAN 87	.07 ± .01	< .006	< .0005	< .0004
	FEB 87	.11 ± .03	< .02	< .0008	< .0009
	MAR 87	.13 ± .02	< .01	< .0006	< .0007
	APR 87	.11 ± .01	< .009	< .0005	< .0005
	MAY 87	.18 ± .03	< .02	< .001	< .001
	JUN 87	.14 ± .04	< .03	< .001	< .001
	JUL 87	.13 ± .02	< .02	< .0009	< .0009
	AUG 87	.16 ± .02	< .01	< .0008	< .0008
	SEP 87	.13 ± .02	< .01	< .0008	< .0008
	OCT 87	.10 ± .01	< .007	< .0004	< .0004
	NOV 87	.09 ± .01	< .009	< .0006	< .0005
	DEC 87	.07 ± .01	< .009	< .0005	< .0005
	MEAN	.12 ± .07	< .013	< .0007	< .0007
4A	JAN 87	.08 ± .02	< .009	< .0007	< .0006
	FEB 87	.09 ± .03	.06 ± .03	< .002	< .001
	MAR 87	.14 ± .02	< .009	< .0005	< .0005
	APR 87	.11 ± .01	< .009	< .0005	< .0004
	MAY 87	.14 ± .02	< .01	< .0008	< .0007
	JUN 87	.12 ± .02	< .010	< .0006	< .0006
	JUL 87	.13 ± .01	< .010	< .0005	< .0005
	AUG 87	.14 ± .02	< .007	< .0006	< .0005
	SEP 87	.13 ± .03	< .03	< .001	< .001
	OCT 87	.11 ± .02	< .03	< .001	< .0009
	NOV 87	.09 ± .02	< .009	< .0005	< .0006
	DEC 87	.07 ± .01	< .009	< .0005	< .0005
	MEAN	.11 ± .05	.017 ± .032	< .0008	< .0007

TABLE D-IV.1 ANALYTICAL DATA FOR MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION	COLLECTION DATE	SR-89	SR-90	I-131	K-40	CS-134	CS-137	BA-140	LA-140
G	02/16/87			< .3					
	05/18/87			< .1					
	08/10/87			< .2					
	11/16/87			< .2					
	MEAN			< .2					
J	02/16/87	< 2	2.0 ± .5	< .09	1300 ± 100	< 3	< 3	< 10	< 4
	05/18/87	< 1	2.5 ± .6	< .1	1200 ± 100	< 2	< 2	< 6	< 2
	08/10/87	< 2	2.7 ± .7	< .2	1300 ± 100	< 2	< 2	< 5	< 2
	11/16/87	< 3	1.7 ± .7	< .2	1500 ± 200	< 3	< 3	< 9	< 3
	MEAN	< 2	2.2 ± .9	< .15	1325 ± 252	< 3	< 3	< 8	< 3
A	02/16/87			< .09					
	05/18/87			< .1					
	08/10/87			< .2					
	11/16/87			< .2					
	MEAN			< .15					
C	02/16/87			< .1					
	05/18/87			< .1					
	08/10/87			< .2					
	11/16/87			< .2					
	MEAN			< .2					

TABLE D-V.1 CONCENTRATIONS OF GROSS BETA RADIOACTIVITY IN WELL WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STATION	COLLECTION DATE	GROSS BETA TOTAL	
1U	02/28/87	.8	± .7
	08/01/87	2.8	± .8
	11/03/87	2.1	± .7
	12/31/87	1.5	± .9
	MEAN	1.8	± 1.7
1V	02/28/87	9	± 1
	08/01/87	2.9	± .8
	11/03/87	1.5	± .6
	12/31/87	1.5	± .9
	MEAN	3.7	± 7.2
7	03/17/87	3.0	± .8
	08/01/87	2.8	± .8
	10/29/87	2.2	± .7
	12/31/87	3	± 1
	MEAN	2.8	± .8
40	02/28/87	3.7	± .9
	08/01/87	2.9	± .8
	11/03/87	3.3	± .6
	12/31/87	3	± 1
	MEAN	3.2	± .7

TABLE D-VI.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1987

AIR PARTICULATE

WEEK #	1Z	4A
1	12/27-01/04/87	12/27-01/04/87
2	01/04-01/11/87	01/04-01/11/87
3	01/11-01/17/87	01/11-01/17/87
4	01/17-01/25/87	01/17-01/25/87
5	01/25-01/31/87	01/25-01/31/87
JAN 87	12/27-01/31/87	12/27-01/31/87
6	01/31-02/07/87	01/31-02/07/87
7	02/07-02/14/87	02/07-02/14/87
8	02/14-02/21/87	02/14-02/21/87
9	02/21-02/28/87	02/21-02/28/87
FEB 87	01/31-02/28/87	01/31-02/28/87
10	02/28-03/07/87	02/28-03/07/87
11	03/07-03/14/87	03/07-03/14/87
12	03/14-03/21/87	03/14-03/21/87
13	03/21-03/28/87	03/21-03/28/87
MAR 87	02/28-03/28/87	02/28-03/28/87
14	03/28-04/04/87	03/28-04/04/87
15	04/04-04/11/87	04/04-04/11/87
16	04/11-04/18/87	04/11-04/18/87
17	04/18-04/25/87	04/18-04/25/87
18	04/25-05/02/87	04/25-05/02/87
APR 87	03/28-05/02/87	03/28-05/02/87
19	05/02-05/09/87	05/02-05/09/87
20	05/09-05/16/87	05/09-05/16/87
21	05/16-05/23/87	05/16-05/23/87
22	05/23-05/30/87	05/23-05/30/87
MAY 87	05/02-05/30/87	05/02-05/30/87
23	05/30-06/06/87	05/30-06/06/87
24	06/06-06/13/87	06/06-06/13/87
25	06/13-06/21/87	06/13-06/21/87
26	06/21-06/27/87	06/21-06/27/87
JUN 87	05/30-06/27/87	05/30-06/27/87
27	06/27-07/03/87	06/27-07/03/87
28	07/03-07/11/87	07/03-07/11/87
29	07/11-07/18/87	07/11-07/18/87
30	07/18-07/25/87	07/18-07/25/87
31	07/25-08/01/87	07/25-08/01/87
JUL 87	06/27-08/01/87	06/27-08/01/87
32	08/01-08/09/87	08/01-08/09/87
33	08/09-08/16/87	08/09-08/16/87
34	08/16-08/21/87	08/16-08/21/87
35	08/21-08/29/87	08/21-08/29/87
AUG 87	08/01-08/29/87	08/01-08/29/87
36	08/29-09/06/87	08/29-09/06/87
37	09/06-09/12/87	09/06-09/12/87
38	09/12-09/19/87	09/12-09/19/87
39	09/19-09/26/87	09/19-09/26/87
SEP 87	08/29-09/26/87	08/29-09/26/87
40	09/26-10/03/87	09/26-10/03/87
41	10/03-10/10/87	10/03-10/10/87
42	10/10-10/17/87	10/10-10/17/87
43	10/17-10/25/87	10/17-10/25/87
44	10/25-11/01/87	10/25-11/01/87
OCT 87	09/26-11/01/87	09/26-11/01/87
45	11/01-11/08/87	11/01-11/08/87
46	11/08-11/13/87	11/08-11/13/87
47	11/13-11/22/87	11/13-11/22/87
48	11/22-11/29/87	11/22-11/29/87
NOV 87	11/01-11/29/87	11/01-11/29/87
49	11/29-12/06/87	11/29-12/06/87
50	12/06-12/13/87	12/06-12/13/87
51	12/13-12/20/87	12/13-12/20/87
52	12/20-12/26/87	12/20-12/26/87
53	12/26-01/01/88	12/26-01/01/88
DEC 87	11/29-01/01/87	11/29-01/01/88

FIGURE D-1
WEEKLY GROSS BETA CONCENTRATIONS IN AIR
PARTICULATE SAMPLES COLLECTED FROM PBAPS
LOCATIONS 1A AND 1Z, 1987

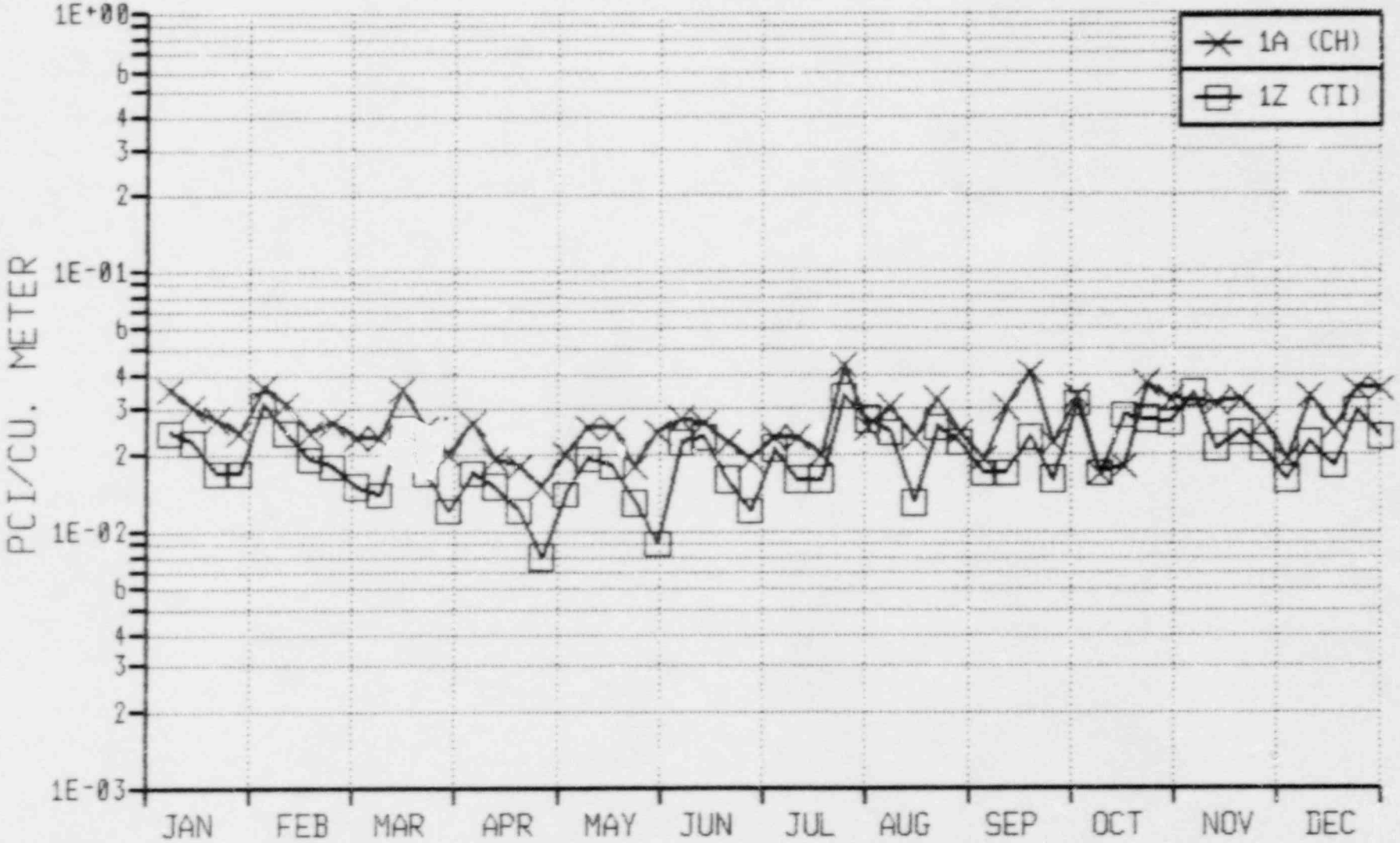
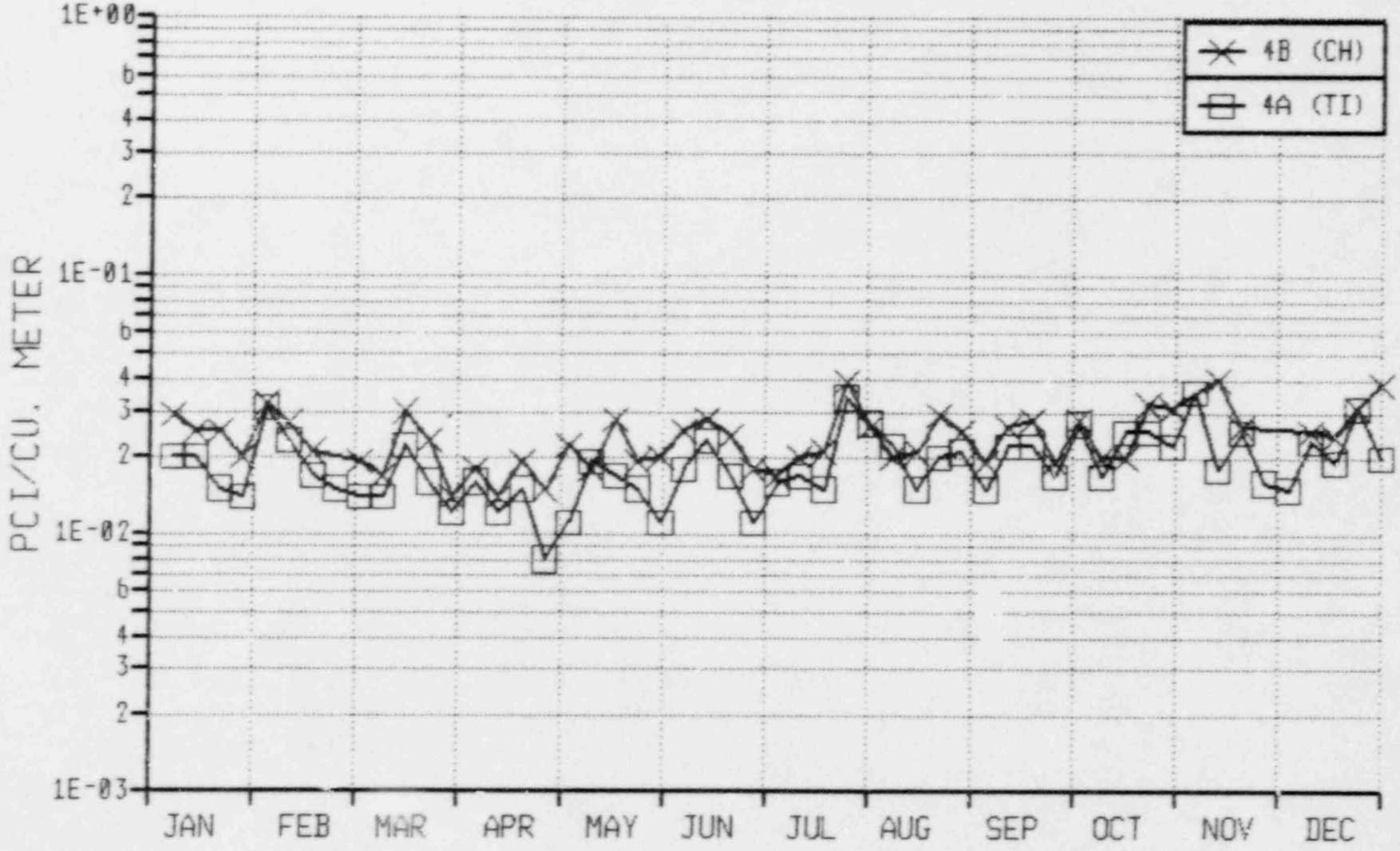


FIGURE D-2
WEEKLY GROSS BETA CONCENTRATIONS IN AIR
PARTICULATE SAMPLES COLLECTED FROM PBAPS
LOCATIONS 4A AND 4B, 1987



SYNOPSIS OF ANALYTICAL PROCEDURES

APPENDIX E: SYNOPSIS OF ANALYTICAL PROCEDURES

The following appendix is comprised of two sections: Section 1 describes the collection methods used to obtain samples for the REMP, and Section 2 describes the methods and formulas used by TI and CH to obtain the sample activities.

Section 3: Collection Methods

Surface and Drinking Water Samples

Surface and drinking water samples are composited over a one month period at four locations (1LL, 1MM, 4L, and 6I). Water is continuously sampled at each location and collected in large tanks. Two quarts of water are removed from the tank each week and put into a clean two gallon polyethylene bottle to form a monthly composite. At locations 13A and 13B a monthly grab sample is obtained.

Well Water Samples

Prior to collection of well water samples, the well pump is run for several minutes to flush the line. Two gallon grab samples are then collected from the building faucets. This sampling method is utilized at all four sampling locations.

Air Particulate and Air Iodine Samples

Air particulate samples are obtained using a system consisting of a pump, a glass fiber filter with a 35mm diameter orifice, and a running time meter to indicate the total period of operation. At those locations where airborne iodine was also sampled a charcoal filter was mounted behind the glass fiber filter. The volume sampled for the period is determined from the known flow rate and the running time. At the end of each weekly air particulate collection period, the air sampling unit is stopped. The filter is then removed from the holder and replaced with a clean filter, and the air sampling unit is returned to operation.

Soil Samples

Collection of soil samples is accomplished by obtaining three inch plugs of soil 4-6 inches deep from a four square foot area and mixing them in a plastic bag. The composite is placed in a plastic bottle and consists of approximately 1000 grams.

Sediment Samples

Sediment samples are collected by one of two methods, determined by the depth from which the sediment is obtained. In water greater than four feet deep, sediment is collected by either a Ponar or Ekman Grab with a surface area of 81 square inches. In shallow water, (1-4 feet), sediment is collected by scooping up mud with a plastic two gallon bucket.

Milk Samples

Milk samples are obtained by removing two gallons from the dairyman's bulk tank. The sample from each location is therefore a composite of all the milk from the dairy herd (from one to three milkings). The milk is scooped from the agitated bulk tank and placed in new plastic containers.

Vegetation Samples

Samples of approximately 500 grams of cut grass and wild greens are placed in polyethylene bags and sealed for shipment. Crops are collected when available and shipped in plastic bottles.

Fish Samples

Fish samples are collected via several methods at Conowingo Pond locations; canal fish are caught by net trapping. Fish at other locations are caught by seine or electroshocking techniques.

Section 2: Analytical Methods and Calculations

DETERMINATION OF GROSS ALPHA AND/OR BETA ACTIVITY IN WATER SAMPLES

(SUSPENDED AND DISSOLVED FRACTION)

TI

This describes the process used to measure the radioactivity of water samples without identifying the radioactive species present. No chemical separation techniques are involved.

To perform the analyses, one liter of the sample is filtered under vacuum through a 0.45 micron Millipore filter. This filter represents the insoluble portion of the sample. The filter is dried and mounted on a 2-inch stainless steel planchet. The filtrate which represents the soluble portion of the sample, is evaporated on a hotplate, and the residue is transferred and dried on another planchet.

The planchets are counted for 50 minutes in a low-background gas flow proportional counter. Calculation of activity includes a self-absorption correction for counter efficiency based on the weight of residue on each planchet.

Calculation of sample activity or of the MDL

$$\underset{\text{Unit volume or weight}}{\underline{\text{Net pCi on Analysis Date}}} = \underbrace{\frac{\frac{N}{t} - B}{2.22(v)(y)(DF)(E)}}_{\text{Net Activity}} \pm \underbrace{\frac{2\left(\frac{\frac{N}{t} + B}{t}\right)^{1/2}}{2.22(v)(y)(DF)(E)}}_{\text{Counting Error}}$$

where:

N	=	total counts from sample (counts)
t	=	counting time for sample (min)
B	=	background rate of counter (cpm)
2.22	=	$\frac{\text{dpm}}{\text{pci}}$
v(w)	=	volume or weight of sample analyzed
y	=	chemical yield of the mount or sample counted
DF	=	decay factor from the collection to the counting date
E	=	efficiency of the counter
2	=	multiples of counting error

For gross alpha and gross beta calculations set y = 1 and DF = 1.

If the net activity $(\frac{N}{t} - B)$ is less than the counting error, the activity on the collection date is below the limits of detection and is called "less than" (L.T.) or "minimum detectable level" (MDL).

The MDL is defined as that value equal to the two sigma error of the result. Less than MDL is reported as the result when this value is greater than the measured result defined above.

CH

This describes the process used to measure the overall radioactivity of water samples without identifying the radioactive species present. No chemical separation techniques are involved.

For well water samples, a 1 liter aliquot is evaporated almost to dryness in a beaker and then transferred to a 2" ringed planchet. It is then evaporated to dryness and counted using a gas flow proportional counter.

For surface and drinking water samples, the samples are first filtered through membrane filters of 0.45 micron mean pore size. The filtrate is treated as above. The filter papers are transferred to a pre-weighed planchet, ignited using acetone and a flame, and then put into a muffle furnace for final ashing. The ash is then counted using a gas flow proportional counter.

Calculation of the sample activity and 2 sigma error:

Result

$$(pCi/l) = [C(s)/T(s) - C(b)/T(b)] \times 1/E \times 1/A \times 1/2.22$$

2 Sigma

$$\text{error} = 2 \times [C(s)/T(s)^2 + C(b)/T(b)^2]^{1/2} \times 1/E \times 1/A \times 1/2.22$$

where:

C(s)	=	total gross sample counts
T(s)	=	sample count time
C(b)	=	total background count
T(b)	=	background count time
E	=	counting efficiency based on Cs-137 or uranium for the weight of planchetted sample
A	=	aliquot size in liters
2.22	=	dpm per pCi

DETERMINATION OF GROSS BETA ACTIVITY IN AIR PARTICULATE SAMPLES

TI

This describes the process used to measure the overall beta activity of air particulate filters without identifying the radioactive species present. No chemical separation techniques are involved. Each air particulate filter is placed directly on a 2-inch stainless steel planchet. The planchets are then counted for beta activity in a low-background gas flow proportional counter. Calculation of activity includes an empirical self-absorption correction curve which allows for the change in effective counting efficiency caused by the residue mass. Self-absorption is not considered in the case of air particulate filters because of the impracticality of accurately weighing the deposit and because the penetration depth of the deposit into the filter is unknown.

$$\underline{\text{Net pCi on Analysis Date}}_{\text{Unit Volume or Weight}} = \underbrace{\frac{\frac{N}{t} - B}{2.22(v)(E)}}_{\text{Net Activity}} \pm \underbrace{\frac{2\left(\frac{\frac{N}{t} + B}{t}\right)^{1/2}}{2.22(v)(E)}}_{\text{Counting Error}}$$

where:

N	=	total counts from sample (counts)
t	=	counting time for sample (min)
B	=	background rate of counter (cpm)
2.22	=	$\frac{\text{dpm}}{\text{pCi}}$
v(W)	=	volume or weight of sample analyzed
E	=	efficiency of the counter
2	=	multiples of counting error

If the net activity $\left(\frac{N}{t} - B\right)$ is less than the counting error, the activity on the collection date is below the limits of detection and is called "Less Than" (L.T.) or "Minimum Detectable Level" (MDL).

Each filter paper is placed in a 2" diameter planchet and counted using a gas flow proportional counter.

Calculation of sample activity and 2 sigma error:

$$\text{Result } (pCi/m^3) = [C(s)/T(s) - C(b)/T(b)] \times 1/E \times 1/V \times 1/.02832 \times 1/2.22$$

$$\text{2 Sigma error} = 2 \times [C(s)/T(s)^2 + C(b)/T(b)^2]^{1/2} \times 1/E \times 1/V \times 1/.02832 \times 1/2.22$$

where:

C(s)	=	total gross sample counts
T(s)	=	sample count time
C(b)	=	total background count
T(b)	=	background count time
E	=	counting efficiency based on Cs-137
V	=	sample volume in cubic feet calculated from the elapsed time meter readings and the flow rate
.02832	=	conversion to cubic meters
2.22	=	dpm per pCi

DETERMINATION OF GROSS ALPHA AND GROSS BETA ACTIVITIES IN SOIL AND SEDIMENT SAMPLES

CH

To perform the analyses on both sample types, a ten gram aliquot of dried sample is acid leached. The leachings are filtered and the filtrate diluted to ten ml. A two ml quantity is plancheted, evaporated and counted using a gas flow proportional counter.

Calculation of the sample activity and 2 Sigma error:

$$\text{Result (pCi/g)} = [C(s)/T(s) - C(b)/T(b)] \times 1/E \times 1/A \times 1/2.22$$

$$\text{2 Sigma error} = 2 \times [C(s)/T(s)^2 + C(b)/T(b)^2]^{1/2} \times 1/E \times 1/A \times 1/2.22$$

where:

C(s)	=	total gross sample counts
T(s)	=	sample count time
C(b)	=	total background count time
E	=	counting efficiency based on Cs-137 or uranium for the weight of plancheted sample
A	=	aliquot size in grams
2.22	=	dpm per pCi

DETERMINATION OF TRITIUM ACTIVITY IN WATER SAMPLES

TI

A 2 ml aliquot is dissociated into oxygen and hydrogen gas by means of a heated granular zinc conversion column. The hydrogen gas is then collected in an activated charcoal trap and then transferred into a previously evacuated one liter proportional counter. Non-tritiated hydrogen and ultra-high purity methane are added and then counted. Backgrounds and standards are counted in the same gas mixture as the samples.

Calculation of the sample activity or the MDL:

$$\frac{\text{Net pCi}}{\text{Unit Vol.}} = \frac{3.234 \times TU \times V^1}{CPM^1 \times V^2} \left[CPM^2 - BKG \pm m \left(G^2 + B^2\right)^{1/2}\right]$$

where:
- TU = the tritium units of the standard
- V^1 = volume of the standard used to calibrate the efficiency of the detector (psia)
- V^2 = volume of the sample loaded into the detector (psia)
- CPM^1 = the cpm activity of the standard of volume V^1
- CPM^2 = the gross activity of the sample of volume V^2 and the detector background
- BKG = the background of the detector in cpm
- 3.234 = conversion factor changing TU to pCi/l
- m = multiple of the counting error
- G = standard deviation of the gross activity of the sample and the detector background, in cpm
- B = standard deviation of the background, in cpm

If the net activity (CPM) - BKG is equal to or less than twice the counting error, the activity on the collection date is below the limits of detection and is called "less than" (L.T.) or "minimum detectable level" (MDL).

$$\text{thus L.T.} = \frac{2 \times 3.234 \times TU \times V^1 \times \left(G^2 + B^2\right)^{1/2}}{CPM^1 \times V^2}$$

where:
- G = standard deviation of the gross activity of the sample and the detector background, in cpm
- B = standard deviation of the background, in cpm

DETERMINATION OF I-131 IN MILK AND WATER SAMPLES BY RADIOCHEMISTRY AND LIQUID PHASE BY ANALYSIS

TI

The following describes the radiochemical method for determining I-131 activity in milk and water samples by coincidence counting in the liquid phase.

Four liters of sample are first equilibrated with stable iodide carrier. A batch treatment with anion exhange resin is used to remove iodide from the sample. The iodine is then stripped from the resin with sodium hypochloride, reduced with hydroxylamine hydrochloride, and extracted into carbon tetrachloride as free iodine. It is then back-extracted as iodide into sodium bisulfite solution.

The iodide sample solution is oxidized to the free state using $NaNO_2$ reagent and is extracted several times into a total of 15 ml of toluene. A 200 microliter aliquot is taken for determining chemical yield by spectrophotometer. The decolorizing agent, 2-methyl-2-butene is added to the toluene-iodine solution to form an inert molecule and to minimize liquid scintillation quenching. A toluene-based liquid scintillation counting solution is added to the sample, which is then analyzed by a beta-gated gamma coincidence counting system.

Calculation of the sample activity:

$$\frac{\text{Net pCi on collection date}}{\text{liter}} = \frac{\frac{N}{t} - B}{2.22(v)(y)(DF)(E)} \pm \frac{2\left(\frac{\frac{N}{t} + B}{t}\right)^{1/2}}{2.22(v)(y)(DF)(E)}$$

where:

- N = total counts from sample (counts)
- t = counting time for sample (min)
- B = background rate of counter (cpm)
- 2.22 = $\frac{\text{dpm}}{\text{pCi}}$
- v = volume of sample analyzed (liters)
- y = chemical yield of the mount or sample counted
- DF = decay factor from the collection to the mid-count time
- E = efficiency of the counter for I-131

Note: Efficiency is determined by counting an I-131 standard. Consequently, the branching intensity (abundance) of the I-131 gamma does not appear in the above equation.

Calculation of the MDL

If the net activity (previously defined) is less than a specified multiple of the background counting error, the activity on the collection date is below the limits of detection and is called "less than" (L.T.) or "minimum detectable level" (MDL).

The L.T. value can be specified by stating only the counting error at a predetermined multiple (m) of the one sigma statistics. A sigma multiple (m) of 4.66 is used for calculation of the L. T. values unless another multiple, such as 2.83, is specified.

$$\text{thus L.T.} = \frac{m \left(\frac{B}{t}\right)^{1/2}}{2.22(v)(y)(DF)(E)}$$

Definition of symbols is consistent with those for sample activity calculation.

Analysis for determination of I-131 activity is performed by initially adding iodide carrier to an aliquot of sample. The iodide is concentrated by stirring with ion exchange resin, eluted from the resin, and then purified by extraction into chloroform and back extraction. The iodide is precipitated as palladium iodide for counting in a low-background beta counter or a beta-gamma coincidence counter.

Calculation of the sample activity and 2 sigma errors:

$$\text{Result (pCi/l)} = [C(s)/T(s) - C(b)/T(b)] \times 1/E \times 1/A \times 1/y \times 1/DF \times 1/2.22$$

$$\text{2 sigma error} = 2 \times [C(s)/T(s)^2 + C(b)/T(b)^2]^{1/2} \times 1/E \times 1/A \times 1/y \times 1/DF \times 1/2.22$$

where:

C(s)	=	total gross sample counts
T(s)	=	sample count time
C(b)	=	total background counts
T(b)	=	background count time
E	=	counting efficiency for I-131
A	=	aliquot size in liters
y	=	iodine yield
DF	=	decay factor from time of sampling to the midpoint of the sample count
2.22	=	dpm per pCi

DETERMINATION OF STRONTIUM ACTIVITY IN MILK SAMPLES

TI

To determine strontium activity, stable strontium carrier is added to a one liter aliquot of the sample, followed by the addition of tri-chloracetic acid (TCA) to produce a curd. The curd is separated by filtration and discarded. An oxalate precipitation is performed on the filtrate and the precipitate is ashed in a muffle furnace. The ash is then leached in hydrochloric acid. Calcium and strontium are precipitated as phosphates, collected by vacuum filtration, then dissolved in nitric acid. Strontium is precipitated as $Sr(NO_3)_2$ repeatedly using 90%, then 70% nitric acid. A barium chromate scavenge and an iron (ferric hydroxide) scavenge are then performed. Stable yttrium carrier is added and the sample is allowed to stand for five days or longer for yttrium ingrowth. The yttrium oxalate is mounted on a nylon planchet and counted in a low level beta counter to infer Sr-90 activity. Sr-89 activity is determined by precipitating $SrCO_3$ from the sample after yttrium separation. The precipitate is mounted on a nylon planchet and covered with an 80 mg/cm^2 aluminum absorber for low level beta counting.

Calculation of the sample activity or MDL for Sr-89:

$$\frac{\text{Net pCi}}{\text{Liter}} = \frac{\frac{N}{t} - B^1 - B^2}{2.22(v)(Ys)(DFSr\text{-}89)(ESr\text{-}89)} \pm \frac{2\left(\frac{\frac{N}{t} + B^1 + B^2}{t}\right)^{1/2}}{2.22(v)(Ys)(DFSr\text{-}89)(ESr\text{-}89)}$$

(Corrected to collection date) — Net Activity — Counting Error 2 sigma

where:

N	=	total counts from sample (counts)
t	=	counting time for sample (min)
B^1	=	background rate of counter (cpm) using absorber configuration
2.22	=	$\frac{\text{dpm}}{\text{pCi}}$
v	=	volume of sample analyzed (liters)
B^2	=	background addition from Sr-90 and in-growth of y-90, cpm
Ys	=	chemical yield of strontium
DFSr-89	=	decay factor from the mid collection date to the counting date for Sr-89
ESr-89	=	efficiency of the counter Sr-89 with the 80 mg/cm^2 aluminum absorber
2	=	multiples of counting error

Calculation of sample activity or of the MDL for Sr-90:

$$\frac{\text{Net pCi on collection date}}{\text{(unit volume or weight)}} = \underbrace{\frac{\frac{N}{t} - B}{2.22(v)(y1)(y2)(DF)(IF)(E)}}_{\text{Net Activity}} \pm \underbrace{\frac{2\left(\frac{\frac{N}{t} + B}{t}\right)^{1/2}}{2.22(v)(y1)(y2)(DF)(E)(IF)}}_{\text{Counting Error}}$$

where:

N	=	total counts from sample (counts)
t	=	counting time for sample (min)
B	=	background rate of counter (cpm)
2.22	=	$\frac{\text{dpm}}{\text{pCi}}$
v	=	volume or weight of sample analyzed
y1	=	volume or weight of sample counted
y2	=	chemical yield of strontium
DF	=	decay factor of yttrium from the milking time to the mid count time
E	=	efficiency of the counter
IF	=	ingrowth factor for Y-90 from scavenge time to milking time
2	=	multiples of counting error

The minimum detectable level is defined as that value equal to the two sigma error of the result. Less than MDL is reported as the result when the value is greater than the measured result defined above.

DETERMINATION OF STRONTIUM ACTIVITY

CH

A description of the analytical methods, beginning with milk samples, used for each sample type is presented, followed by the general formula used for calculation of the sample activities.

To a one liter aliquot of milk sample, strontium and cesium carriers are added. After cesium removal, the liquid is made basic and the strontium is precipitated as oxalate. After filtration, the oxalate is muffled and then dissolved. The strontium is purified by several precipitations as the nitrate. Possible interfering nuclides are removed by an iron hydroxide and then a barrium chromate scavenge. The Y-90 is allowed to grow into the purified strontium fraction for a predetermined amount of time. The Y-90 is separated as the hydroxide and then precipitated as the oxalate for counting in a low-background beta counter. The strontium is precipitated as the carbonate and counted in a low-background beta counter. Prior to precipitation, a known aliquot is taken for determination of the strontium yield by atomic absorption.

An aliquot of vegetation sample is wet ashed, and then dry ashed. The ash is then acid leached, followed by precipitation of strontium as the carbonate. The carbonate precipitate is dissolved and strontium is purified by several precipitations as the nitrate. The procedure for analysis of milk samples is followed from this point. Fish samples are analyzed by the same procedure as that for vegetation samples.

An aliquot of soil sample is sieved, followed by the addition of strontium and cesium carriers. The sample is then leached with HCl, filtered and silicates are removed. Cesium is then collected, and the supernate is removed for strontium analysis. Strontium is separated from the supernate as strontium oxalate, which is removed by filtration and then muffled. The procedure for analysis of milk samples is followed from this point.

Calculation of Sr-89 activity from counting the strontium carbonate:

$$\text{Result (pCi/unit volume)} = [(C(Sr)/T(Sr) - C(b)/T(b)) - C(Sr') - C(Y)] \times 1/y(Sr) \times 1/E \times 1/DF \times 1/A \times 1/2.22$$

$$2 \text{ sigma error} = 2 \times [(C(Sr)/T(Sr)^2 - C(b)/T(b)^2]^{1/2} - C(Sr') - C(y) \times 1/y(Sr) \times 1/E \times 1/DF \times 1/A \times 1/2.22$$

where:

C(Sr)	=	gross Sr-89 counts
T(Sr)	=	Sr-89 count time
C(b)	=	total background counts
T(b)	=	background count time
C(Sr')	=	counts due to Sr-90
C(Y)	=	counts due to Y-90
y(Sr)	=	strontium yield
E	=	Sr-89 counting efficiency
DF	=	decay factor from the sample time to the midpoint of the Sr-89 count time
A	=	aliquot size in unit volume (varies according to sample type)
2.22	=	dpm per pCi

Calculation of Sr-90 activity from counting the Y-90:

$$\text{Result (pCi/unit volume)} = [C(Y)/T(Y) - C(b)/T(b)] \times 1/E \times 1/A \times 1/DF \times 1/GF \times 1/y(Y) \times 1/y(Sr)$$

$$2 \text{ sigma error} = 2 \times [C(Y)/T(Y)^2 + C(b)/T(b)^2]^{1/2} \times 1/E \times 1/A \times 1/DF \times 1/GF \times 1/y(Y) \times 1/y(Sr)$$

where:

C(Y)	=	gross Y-90 counts

T(Y)	=	Y-90 count time
C(b)	=	total background counts
T(b)	=	background count time
E	=	Y-90 counting efficiency
A	=	aliquot size in unit volume (varies according to sample type)
DF	=	decay factor for Y-90 from the time of separation to the midpoint of the count time
GF	=	growth factor for Y-90 into the purified Sr-90 from the time of the hydroxide scavenge to the time of yttrium precipitation
y(Y)	=	yttrium yield
y(Sr)	=	strontium yield

DETERMINATION OF GAMMA EMITTING RADIOISOTOPES

TI

Gamma emitting radioisotopes are determined with the use of a lithium drifted germanium (Ge(Li)) and high purity germanium detectors with high resolution spectrometry in specific media; such as, air particulate filters, charcoal filters, milk and water. Each sample to be assayed is prepared and counted in standard geometries such as one liter wrap-around Marinelli containers, 300 ml or 150 ml bottles, or two-inch filter paper source geometries.

Samples are counted on large (>55 cc volume) Ge(Li) detectors connected to Nuclear Data 6620 data acquisition and computation systems. All resultant spectra are stored on magnetic tape.

The analysis of each sample consists of calculating the specific activities of all detected radionuclides or the detection limits from a standard list of nuclides. The Ge(Li) systems are calibrated for each standard geometry using certified radionuclide standards traceable to the National Bureau of Standards.

Calculation of the sample activity and counting error:

$$\text{Net pCi/vol. or mass} = \underbrace{\frac{N - B}{2.22(v)(E)(BI)(DF)(\Delta t)}}_{\text{Net activity}} \pm \underbrace{\frac{2\sqrt{N + B}}{2.22(v)(E)(BI)(DF)(\Delta t)}}_{\text{Counting error}}$$

where: N = area, in counts, of a special region containing a gamma emission of the nuclide of interest.

Note: if the detector exhibits a peak in this region when counting a blank (i.e., from natural background (BB)(t) is subtracted from N before using the above equation. BB is the count rate of the blank, cpm, in the background peak.

B = background counts in the region of interest, calculated by fitting a straight line across the region connecting the two adjacent region.

Δt = counting interval of sample, minutes

2.22 = $\frac{\text{dpm}}{\text{pCi}}$

v = volume or mass of sample analyzed

E = efficiency of counter at the energy region of interest

BI = branching intensity of the nuclide at the gamma emission energy under consideration.

DF = decay factor from sample collection time to midpoint of the counting interval.

Calculation of minimum detectable level (MDL):

$$\text{MDL pCi/vol or mass} = \frac{2\sqrt{N}}{2.22(v)(E)(BI)(DF)(\Delta t)}$$

The width of the spectral band around the emission energy is calculated differently from the case of an identified peak, so that the value of N used in two equations may differ.

A detection limit (MDL) or "less than" (LT) value is reported if no activity is found. If no spectral lines are identified at the energies appropriate to a nuclide, the LT value is calculated by the above equation. If spectral lines are identified but the 2 sigma error in the first equation is greater than 60% of the net activity, than a LT value is also assigned by the second equation.

The analyst's judgment is exercised in the decision to report an activity or an MDL. The agreement between various spectral lines of the same nuclide, and possible interface from other nuclides, are considered in this decision.

CH

The procedure for detection of gamma emitting radioisotopes generates high resolution gamma spectra which are used for quantitative determination and identification. Standard geometries have been established to maximize efficiency, for all sample types; primarily air particulate filters, water, vegetation, soil, sediment, and fish.

A description of the analytical methods, beginning with air particulates, used for each sample type is presented, followed by the general formula used for calculation of the sample activities.

Air particulate samples from each location are placed in a petri dish and counted on GeLi detectors connected to a multichannel analyzer and micro-computer. Spectra are stored first on floppy disks then on magnetic tape.

Water samples are placed into the appropriate sized container, depending on the volume of sample available. The preferred volume is 3.5 liters. The samples are counted and spectra are stored as with air particulate samples.

Vegetation samples are packed tightly in a tared container and weighed. Samples that contain excess liquid due to preservatives or decomposition are drained before weighing, and then returned to the container for counting. Samples such as grass are air dryed to remove surface moisture before weighing and counting. Samples are counted and spectra stored as with air particulate samples.

Soil and sediment samples are dried prior to weighing. An aliquot of dried sample is placed in a marinelli beaker and counted and spectra stored as with air particulate samples.

Fish samples from each location are placed into marinelli beakers for counting. The aliquot size may vary, depending on availability of sample, up to 4 liters. The samples are counted and spectra stored as for air particulate samples.

Calculation of the sample activity and 2 sigma error:

$$\text{Results (pCi/unit vol.)} = \frac{P(J) - B(J) \times M \times E(J) \times G \times .06}{A \times T \times DF(J)}$$

$$\text{2 sigma error} = 2 \times \frac{[P(J) + B(J)]^{1/2} \times M \times E(J) \times G \times .06}{A \times T \times DF(J)}$$

where
- P(J) = number of gross counts in peak channels for nuclide J
- B(J) = number of background counts in peak channels for nuclide J
- M = relative GeLi efficiency (GeLi 1=1)
- E(J) = pCi/cpm for nuclide J
- G = geometry factor for deviation from 1 liter in volume
- A = aliquot size in unit volume (varies according to sample type)
- T = time counted in kiloseconds
- .06 = conversion to minutes
- DF(J) = decay factor for nuclide J from time of sampling to time of counting

DETERMINATION OF Cs-134 AND Cs-137 ACTIVITY IN MILK SAMPLES

CH

Cesium carrier is added to an aliquot of sample, which is ashed with acid, then muffled. The ash is extracted with acid, cesium is collected onto ammonium molybdophosphate by stirring and the supernate is removed for other strontium analysis. The cesium is purified as cesium cobaltinitrite and finally precipitated as the chloroplatinate for mounting and counting. The samples are then counted on a GeLi detector connected to a multi-channel analyzer and micro-computer. Spectra are stored first on floppy disks then on magnetic tape.

The Cs-134 and Cs-137 are calculated using the 796 KeV peak for Cs-134 and the 662 KeV peak for Cs-137.

Calculation of the sample activity and 2 sigma:

$$\text{Results (pCi/l)} = \frac{P(J) - B(J) \times M \times E(J) \times .06}{A \times T \times DF(J) \times Y}$$

$$\text{2 sigma error} = 2 \times \frac{[P(J) + B(J)]^{1/2} \times M \times E(J) \times .06}{A \times T \times DF(J) \times Y}$$

where:

P(J)	=	number of gross counts in peak channels for nuclide J
B(J)	=	number of background counts in peak channel for nuclide J
M	=	relative GeLi efficiency (GeLi 1=1)
E(J)	=	pCi/cpm for nuclide J on a plastic mount
A	=	aliquot in liters
T	=	time counted in kiloseconds
.06	=	conversion to minutes
DF(J)	=	decay factor for nuclide J from time of sampling to time of counting
Y	=	cesium yield

ENVIRONMENTAL DOSIMETRY

TI

TI dosimeters are rectangular teflon wafers impregnated with 25% $CaSO_4$: Dy phosphor. They are annealed in a hot air oven prior to use and are inserted into black polyethylene pouches. The filled pouches are labelled and placed in rectangular holders which contain copper shielding to filter out low energy radiation. After exposure in the environment, four separate areas of the dosimeter are read in a Teledyne Isotopes model 8300 TLD reader. The dosimeter is then re-irradiated by a standardized Cs-137 source and the four areas are read again. Calculation of the environmental exposure is preformed by computer, using the re-irradiation readings to determine the sensitivity of each area of the dosimeter. The reading of control dosimeters are subtracted to allow for transit dose and system background.

a. For any given area of the dosimeter, the dose mR is calculated by the formula:

$$\text{Dose} = R \left(\frac{\text{redose}}{RR}\right) - \text{avcontrol}$$

where:

R	=	initial reading of the area
RR	=	second reading of the area (after re-irradiation)
redose	=	re-irradiation dose in mR
avcontrol	=	Average of control values calculated as explained below. If no controls are used, avcontrol = 0 and gross exposures result.

b. Each area of each control is calculated by the formula:

$$\text{cdose} = \text{cr} \left(\frac{\text{credose}}{\text{crr}}\right)$$

where:

cdose	=	control area dose in mR
cr	=	initial reading of the control area
crr	=	second reading of the control area (after re-irradiation)
credose	=	re-irradiation dose of the control dosimeter in mR

The average of control values is then calculated from all four areas of all controls by the formula:

$$\text{avcontrol} = \frac{\sum_{1}^{4N} \text{cdose}}{4N}$$

where: N = total number of control dosimeters

c. The average and standard deviation of the area readings for each dosimeter are calculated by standard methods.

d. Using the criteria that if one standard deviation is greater than 10% of the average of the four readings and that if the value of one area is outside the range of 3 standard deviations of the average of the other three areas, then that area will be eliminated and the results will be based on the remaining areas.

DETERMINATION OF URANIUM ACTIVITY IN WELL WATER SAMPLES

CH

Uranium is separated and purified by passing an aliquot of sample through an ion exchange column. After eluting from the resin and concentrating, an aliquot is evaporated onto a platiunum dish and fused with a NaF/LiF pellet. The uranium activity is determined by fluorescence.

Calculation of uranium activity:

Result (μg/l) = R x CF

R = fluorometer reading

CF = calibration factor from standard curve.

QUALITY CONTROL

APPENDIX F: INTER-LABORATORY COMPARISON PROGRAM

TI and CH participate in the EPA Radiological Inter-laboratory Comparison (cross check) Program. This participation includes analyses on various sample media as found in the Peach Bottom REMP. This participation provides an objective measurement of analytical precision and accuracy as well as a bias estimation of the results are obtained.

Examination of the data shows that the vast majority were within the EPA control limits. Each case of exceeding the control limits was investigated. There is no evidence to suggest systematic errors. For CH the results from participation in the EPA progam are the basis for continued certification by the Commonwealth of Massachusetts in radiological analysis.

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Gross Alpha and Beta

Sample No.	Sample Date	Sample Type	Gross Alpha	Gross Beta
36215	1/23/87	Water(a)	7	9
			12	12
			9	11
		Lab Avg.	9(3)	11(2)
		EPA Known	11(5,9)	10(5,9)
		EPA Gr. Avg.	10(3)	11(2)
36348	3/20/87	Water(a)	4	14
			4	13
			6	13
		Lab Avg.	5(1)	13(1)
		EPA Known	3(5,9)	13(5,9)
		EPA Gr. Avg.	4(1)	13(3)
36403	4/10/87	APT(b)	4	43
			0	41
			1	44
		Lab Avg.	2(2)	43(2)
		EPA Known	16(5,9)	43(5,9)
		EPA Gr. Avg.	15(3)	45(5)
36412	4/20/87	Water(a)	29	Not Required
			26	
			23	
		Lab Avg.	26(3)	
		EPA Known	30(8,14)	
		EPA Gr. Avg.	28(8)	
36413	4/20/87	Water(a)	Not Required	53
				49
				50
		Lab Avg.		51(2)
		EPA Known		66(5,9)
		EPA Gr. Avg.		65(7)

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Gross Alpha and Beta

Sample No.	Sample Date	Sample Type	Gross Alpha	Gross Beta
36501	5/22/87	Water(a)	14	6
			15	7
			13	6
		Lab Avg.	14(1)	6(1)
		EPA Known	11(5,9)	7(5,9)
		EPA Gr. Avg.	10(3)	8(2)
36790	7/24/87	Water(a)	4	7
			2	6
			3	5
		Lab Avg.	3(1)	6(1)
		EPA Known	5(5,9)	5(5,9)
		EPA Gr. Avg.	5(1)	6(2)
37040	8/28/87	APT(b)	LT1	23
			LT1	20
			LT1	18
		Lab Avg.	LT1	20(3)
		EPA Known	10(5,9)	30(5,9)
		EPA Gr. Avg.	10(2)	30(4)
37117	9/18/87	Water(a)	4	11
			3	11
			3	12
		Lab Avg.	4(1)	11(1)
		EPA Known	4(5,9)	12(5,9)
		EPA Gr. Avg.	4(1)	12(2)
202468	10/21/87	Water(a)	23	Not Required
			21	
			25	
		Lab Avg.	23(2)	
		EPA Known	28(7,12)	
		EPA Gr. Avg.	28(8)	

Note: (a) pCi/l
(b) pCi/Filter

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Gross Alpha and Beta

Sample No.	Sample Date	Sample Type	Gross Alpha	Gross Beta
202469	10/21/87	Water(a)	Not Required	75
				75
				75
		Lab Avg.		75(0)
		EPA Known		72(5,9)
		EPA Gr. Avg.		75(9)

(a) pCi/l
(b) pCi/filter

The parenthesis next to the "Lab Avg." is the experienced 1 SD, 1 determination. A parenthesis next to a lab result means that the 1 SD of the procedure is greater than the EPA decreed SD. The first number in the parenthesis after the "EPA Known" value is the EPA decreed 1 SD, 1 determination. The next value is 3 SD, 3 determinations, i.e. the EPA control limit. A value in parenthesis next to the "EPA Gr. Avg." is the experienced 1 SD where it significantly differs from the EPA value.

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Gamma

Sample No.	Sample Date	Sample Type
36248	2/6/87	Water

Nuclide (pCi/l)		Nuclide (pCi/l)	
Cs-137	77	Co-60	45
	84		50
	86		48
Lab Avg.	82(5)	Lab Avg.	48(3)
EPA Known	87(5,9)	EPA Known	50(5,9)
EPA Gr. Avg.	87(5)	EPA Gr. Avg.	50(4)
Nuclide (pCi/l)	87	Nuclide (pCi/l)	92
Zn-65	88	Ru-106	91
	94		86
Lab Avg.	90(4)	Lab Avg.	90(3)
EPA Known	91(5,9)	EPA Known	100(5,9)
EPA Gr. Avg.	94(8)	EPA Gr. Avg.	95(16)
Nuclide (pCi/l)	55		
Cs-134	56		
	51		
Lab Avg.	54(3)		
EPA Known	59(5,9)		
EPA Gr. Avg.	55(3)		

Sample No.	Sample Date	Sample Type
36413	4/20/87	Water

Nuclide (pCi/l)		Nuclide (pCi/l)	
Co-60	6	Co-134	21
	7		20
	8		18
Lab Avg.	7(1)	Lab Avg.	20(2)
EPA Known	8(5,9)	EPA Known	20(5,9)
EPA Gr. Avg.	9(2)	EPA Gr. Avg.	18(3)

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Gamma

Sample No.	Sample Date	Sample Type
36413	4/20/87	Water

Nuclide (pCi/l)		17
Cs-137		16
		16
	Lab Avg.	16(1)
	EPA Known	15(5,9)
	EPA Gr. Avg.	16(2)

Sample No.	Sample Date	Sample Type
36578	6/5/87	Water

Nuclide (pCi/l)		LT 90
Cr-51		LT 90
		LT 94
	Lab Avg.	LT 91
	EPA Known	41(5,9)
	EPA Gr. Avg.	39(14)

Nuclide (pCi/l)		56
Co-60		64
		63
	Lab Avg.	61(4)
	EPA Known	64(5,9)
	EPA Gr. Avg.	65(4)

Nuclide (pCi/l)		15
Zn-65		16
		19
	Lab Avg.	17(2)
	EPA Known	10(5,9)
	EPA Gr. Avg.	11(2)

Nuclide (pCi/l)		102
Ru-106		85
		95
	Lab Avg.	94(9)
	EPA Known	75(5,9)
	EPA Gr. Avg.	73(11)

Nuclide (pCi/l)		35
Cs-134		41
		33
	Lab Avg.	36(4)
	EPA Known	40(5,9)
	EPA Gr. Avg.	37(3)

Nuclide (pCi/l)		75
Cs-137		74
		80
	Lab Avg.	76(3)
	EPA Known	80(5,9)
	EPA Gr. Avg.	80(5)

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Gamma

Sample No.	Sample Date	Sample Type
36649	6/26/87	Milk

Nuclide (pCi/l)		73	Nuclide (mg/l)	1119*
Cs-137		72	K-40	1138*
		63		1140*
	Lab Avg.	69(6)	Lab Avg.	1132*(12)
	EPA Known	74(5,9)	EPA Known	1525(76,132)
	EPA Gr. Avg.	75(6)	EPA Gr. Avg.	1577(113)

Sample No.	Sample Date	Sample Type
201998	10/9/87	Water

Nuclide (pCi/l)		41	Nuclide (pCi/l)	14
Cr-51		LT 41	Co-60	16
		LT 47		16
	Lab Avg.	LT 43	Lab Avg.	15(1)
	EPA Known	70(5,9)	EPA Known	15(5,9)
	EPA Gr. Avg.	69(9)	EPA Gr. Avg.	16(2)
Nuclide (pCi/l)		39	Nuclide (pCi/l)	35
Zn-65		49	Ru-106	56
		42		46
	Lab Avg.	43(5)	Lab Avg.	46(11)
	EPA Known	46(5,9)	EPA Known	61(5,9)
	EPA Gr. Avg.	47(5)	EPA Gr. Avg.	60(10)
Nuclide (pCi/l)		20	Nuclide (pCi/l)	42
Cs-134		23	Cs-137	51
		24		44
	Lab Avg.	22(2)	Lab Avg.	46(5)
	EPA Known	25(5,9)	EPA Known	51(5,9)
	EPA Gr. Avg.	24(2)	EPA Gr. Avg.	52(3)

Note: * = the conversion factor (.86) for mg/l to pCi/l which was multiplied by instead of divided by. When the conversion factor is correctly performed the CHAS result is acceptable. The results correctly converted were 1513, 1539, and 1541.

Table F-1
EPA Intercomparison Samples
Clean Harbors Analyti al Services, Inc.

Gamma

Sample No.	Sample Date	Sample Type
202469	10/21/87	Water

Nuclide (pCi/l)			Nuclide (pCi/l)	
Co-60		16	Cs-134	14
		15		13
		18		14
	Lab Avg.	16(2)	Lab Avg.	14(1)
	EPA Known	16(5,9)	EPA Known	16(5,9)
	EPA Gr. Avg.	17(2)	EPA Gr. Avg.	16(3)

Nuclide (pCi/l)		
Cs-137		26
		26
		23
	Lab Avg.	25(2)
	EPA Known	24(5,9)
	EPA Gr. Avg.	24(2)

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Sr-89 and Sr-90

Sample No.	Sample Date	Sample Type	Sr-89	Sr-90
36158	1/9/87	Water(a)	32	24
			28	26
			33	24
		Lab Avg.	31(3)	25(1)
		EPA Known	25(5,9)	25(2,3)
		EPA Gr. Avg.	23(6)	23(3)
36403	4/10/87	APT(b)	Not Required	17
				17
				17
		Lab Avg.		17(0)
		EPA Known		17(2,3)
		EPA Gr. Avg.		18(2)
36413	4/20/87	Water(a)	23	10
			21	10
			22	10
		Lab Avg.	22(1)	10(0)
		EPA Known	19(5,9)	10(2,3)
		EPA Gr. Avg.	17(4)	10(2)
36484	5/8/87	Water(a)	40	18
			39	19
			38	18
		Lab Avg.	39(1)	18(1)
		EPA Known	41(5,9)	20(2,3)
		EPA Gr. Avg.	39(7)	20(3)
36649	6/26/87	Milk(a)	24	9
			25	10
			25	9
		Lab Avg.	25(1)	9(1)
		EPA Known	69(5,9)	36(2,3)
		EPA Gr. Avg.	64(14)	34(5)

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Sr-89 and Sr-90

Sample No.	Sample Date	Sample Type	Sr-89	Sr-90
37040	8/28/87	APT(b)	Not Required	10
				10
				9
		Lab Avg.		10(1)
		EPA Known		10(2,3)
		EPA Gr. Avg.		10(2)
202469	10/21/87	Water(a)	19	11
			19	10
			19	11
		Lab Avg.	19(0)	11(1)
		EPA Known	16(5,9)	10(2,3)
		EPA Gr. Avg.	15(4)	10(1)

Note: (a) pCi/l
(b) pCi/filter

Table F-1
Clean Harbors Analytical Services
EPA Intercomparison Samples

Cs-137

Sample No.	Sample Date	Sample Type	Cs-137
36403	4/10/87	APT(b)	16
			15
			17
		Lab Avg.	16(1)
		EPA Known	8(5,9)
		EPA Gr. Avg.	9(2)
37040	8/28/87	APT(b)	10
			13
			10
		Lab Avg.	11(2)
		EPA Known	10(5,9)
		EPA Gr. Avg.	11(2)

Note: (a) pCi/l
(b) pCi/filter

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

I-131 (pCi/l)

Sample No.	Sample Date	Sample Type	I-131
36282	2/27/87	Milk	7
			7
			8
		Lab Avg.	7(1)
		EPA Known	9(1,2)
		EPA Gr. Avg.	9(2)
36374	4/3/87	Water	5
			4
			5
		Lab Avg.	5(1)
		EPA Known	7(1,2)
		EPA Gr. Avg.	7(1)
36649	6/26/87	Milk	70
			72
			70
		Lab Avg.	71(1)
		EPA Known	59(6,10)
		EPA Gr. Avg.	62(6)
36893	8/7/87	Water	49
			54
			53
		Lab Avg.	52(3)
		EPA Known	48(6,10)
		EPA Gr. Avg.	47(5)
8712049	12/4/87	Water	27
			28
			27
		Lab Avg.	27(1)
		EPA Known	26(6,10)
		EPA Gr. Avg.	27(3)

Table F-1
EPA Intercomparison Samples
Clean Harbors Analytical Services, Inc.

Uranium (pCi/l)

Sample No.	Sample Date	Sample Type	Uranium
36412	4/20/87	Water	4
			4
			3
		Lab Avg.	4(1)
		EPA Known	5(6,10)
		EPA Gr. Avg.	5(2)
202468	10/21/87	Water	3
			3
			2
		Lab Avg.	3(1)
		EPA Known	3(6,10)
		EPA Gr. Avg.	3(1)

TABLE F-2

INTER-LABORATORY COMPARISONS, 1987

TELEDYNE ISOTOPES

Collection Date	Media	Nuclide	EPA-Results(a)	Teledyne Isotopes Results(b)	All Participants Mean ± 2 s.d.
10/22/86	Water (Sample A)	Gross Alpha	40.00 ± 17.32	51.00 ± 6.00	35.76 ± 18.50
10/22/86	Water (Sample B)	Gross Beta	51.00 ± 8.66	48.00 ± 3.00	46.63 ± 12.16
		Sr-89	10.00 ± 8.66	11.33 ± 1.74	9.14 ± 5.16
		Sr-90	4.00 ± 2.60	4.00 ± 0.00	3.84 ± 1.80
		Co-60	24.00 ± 8.66	29.33 ± 12.12	24.45 ± 4.46
		Cs-134	12.00 ± 8.66	12.00 ± 3.00	11.30 ± 3.72
		Cs-137	8.00 ± 8.66	7.67 ± 1.74	8.83 ± 3.78
01/09/87	Water	Sr-89	25.00 ± 8.66	22.66 ± 1.74	23.28 ± 6.34
		Sr-90	25.00 ± 2.60	26.00 ± 0.00	23.33 ± 5.66
01/23/87	Water	Gross Alpha	11.00 ± 8.66	18.33 ± 3.45 (d)	10.15 ± 5.26
		Gross Beta	10.00 ± 8.66	11.66 ± 1.74	11.19 ± 4.60
01/30/87	Food (c)	Sr-90	49.00 ± 17.32	50.00 ± 8.49	43.06 ± 20.34
		I-131	78.00 ± 13.85	74.00 ± 4.23	80.90 ± 12.46
		Cs-137	84.00 ± 8.66	91.00 ± 16.98	87.86 ± 10.08
		K	980.00 ± 84.87	984.00 ±201.30	984.23 ±141.50
02/06/87	Water	Co-60	50.00 ± 8.66	50.33 ± 4.56	50.40 ± 8.04
		Zn-65	91.00 ± 8.66	108.33 ± 7.53 (e)	93.88 ± 16.28
		Ru-106	100.00 ± 8.66	100.33 ± 33.45	95.01 ± 31.02
		Cs-134	59.00 ± 8.66	62.00 ± 16.71	54.77 ± 6.90
		Cs-137	87.00 ± 8.66	92.00 ± 10.80	87.31 ± 10.84
02/13/87	Water	H-3	4209.00 ±729.19	4100.00 ±600.00	4155.66 ±835.40
02/27/87	Water	I-131	9.00 ± 1.55	8.67 ± 1.75	8.58 ± 3.00
03/20/87	Water	Gross Alpha	3.00 ± 8.66	3.33 ± 1.74	3.91 ± 2.68
		Gross Beta	13.00 ± 8.66	14.33 ± 1.74	12.83 ± 4.72
04/03/87	Water	I-131	7.00 ± 1.21	6.67 ± 1.74	7.26 ± 2.16

TABLE F-2

INTER-LABORATORY COMPARISONS, 1987

TELEDYNE ISOTOPES

Collection Date	Media	Nuclide	EPA-Results(a)	Teledyne Isotopes Results(b)	All Participants Mean ± 2 s.d.
04/10/87	Air Filter	Gross Alpha	14.00 ± 8.66	18.33 ± 3.45	15.49 ± 6.08
		Gross Beta	43.00 ± 8.66	42.00 ± 7.92	45.31 ± 10.04
		Sr-90	17.00 ± 2.60	15.66 ± 1.74	17.52 ± 3.66
		Cs-137	8.00 ± 8.66	8.00 ± 3.00	9.27 ± 4.20
04/17/87	Water	Gross Alpha	30.00 ± 13.86	33.66 ± 3.45	28.38 ± 16.52
		Gross Beta	66.00 ± 8.66	56.00 ± 5.19 (f)	64.51 ± 14.62
		Sr-89	19.00 ± 8.66	16.33 ± 1.74	17.38 ± 8.70
		Sr-90	10.00 ± 2.60	9.33 ± 1.74	9.98 ± 3.12
		Co-60	8.00 ± 8.66	8.00 ± 3.00	9.04 ± 3.90
		Cs-134	20.00 ± 8.66	15.33 ± 4.56	18.19 ± 5.14
		Cs-137	15.00 ± 8.66	12.33 ± 3.45	15.68 ± 4.34
05/08/87	Water	Sr-89	41.00 ± 8.66	40.33 ± 6.93	38.96 ± 14.20
		Sr-90	20.00 ± 2.60	21.33 ± 1.74	19.57 ± 5.72
05/22/87	Water	Gross Alpha	11.00 ± 8.66	9.67 ± 1.74	9.70 ± 6.10
		Gross Beta	7.00 ± 8.66	8.33 ± 1.74	7.89 ± 4.32
06/05/87	Water	Cr-51	41.00 ± 8.66	LT 53.33	39.25 ± 27.60
		Co-60	64.00 ± 8.66	63.00 ± 13.08	64.80 ± 4.25
		Zn-65	10.00 ± 8.66	LT 9.67	10.93 ± 4.64
		Ru-103	75.00 ± 8.66	72.00 ± 35.37	72.58 ± 21.42
		Cs-134	40.00 ± 8.66	34.66 ± 4.56	36.71 ± 6.72
		Cs-137	80.00 ± 8.60	79.00 ± 13.08	79.59 ± 10.38
06/12/87	Water	H-3	2895.00 ±618.34	2800.00 ±300.00	2784.00 ±585.66
06/26/87	Milk	Sr-89	69.00 ± 8.66	63.67 ± 7.53	63.67 ± 28.42
		Sr-90	35.00 ± 2.60	39.66 ± 3.45 (g)	34.29 ± 10.18
		I-131	59.00 ± 10.39	49.33 ± 9.63 (h)	61.98 ± 11.82
		Cs-137	74.00 ± 8.66	77.00 ± 15.60	75.22 ± 11.42
		K	1525.00 ±131.64	1533.00 ±294.45	1576.61 ±225.18
07/24/87	Water	Gross Alpha	5.00 ± 8.66	6.33 ± 1.74	4.71 ± 2.88
		Gross Beta	5.00 ± 8.66	6.33 ± 1.74	6.05 ± 3.58

TABLE F-2

INTER-LABORATORY COMPARISONS, 1987

TELEDYNE ISOTOPES

Collection Date	Media	Nuclide	EPA-Results(a)	Teledyne Isotopes Results(b)	All Participants Mean ± 2 s.d.
07/31/87	Food	Sr-89	20.00 ± 8.66	18.67 ± 3.45	20.36 ± 13.94
		Sr-90	30.00 ± 2.60	31.00 ± 3.00	27.58 ± 7.85
		I-131	80.00 ± 13.86	88.00 ± 31.74	81.11 ± 14.58
		Cs-137	50.00 ± 8.66	57.33 ± 16.53 (i)	52.07 ± 9.30
		K	1680.00 ±145.49	1603.33 ±603.24	1730.28 ±297.36
08/07/87	Water	I-131	48.00 ± 10.39	58.67 ± 1.74 (j)	47.19 ± 9.74
08/28/87	Air Filter	Gross Alpha	10.00 ± 8.66	11.00 ± 3.00	10.47 ± 4.36
		Gross Beta	30.00 ± 8.66	26.00 ± 5.78	30.31 ± 8.64
		Sr-90	10.00 ± 2.60	9.33 ± 1.74	9.55 ± 3.90
		Cs-137	10.00 ± 8.66	9.00 ± 3.00	10.66 ± 3.72
09/18/87	Water	Gross Alpha	4.00 ± 8.66	2.67 ± 1.74	3.85 ± 2.90
		Gross Beta	12.00 ± 8.66	13.00 ± 3.00	12.00 ± 4.46
10/09/87	Water	Cr-51	70.00 ± 8.66	90.67 ± 34.77 (k)	68.82 ± 17.74
		Co-60	15.00 ± 8.66	16.33 ± 1.74	16.39 ± 4.00
		Zn-65	46.01 ± 8.66	50.67 ± 1.74	47.24 ± 9.32
		Ru-106	61.00 ± 8.66	55.67 ± 12.12	60.12 ± 19.36
		Cs-134	25.00 ± 8.66	25.67 ± 1.74	24.44 ± 4.90
		Cs-137	51.00 ± 8.66	54.67 ± 6.24	51.78 ± 5.98
10/16/87	Water	H-3	4492.00 ±778.04	4300.00 ±300.00	4386.34 ±598.32
10/21/87	Water	Gross Alpha	28.00 ± 12.12	40.67 ± 6.24 (l)	27.96 ± 15.04
		Gross Beta	72.00 ± 8.66	72.67 ± 4.59	75.22 ± 18.56
		Sr-89	16.00 ± 8.66	14.67 ± 1.74	15.21 ± 7.26
		Sr-90	10.00 ± 2.60	9.67 ± 1.74	9.85 ± 2.58
		Co-60	16.00 ± 8.66	19.33 ± 7.56	16.57 ± 4.46
		Cs-134	16.00 ± 8.66	14.33 ± 7.56	15.67 ± 5.18
		Cs-137	24.00 ± 8.66	25.00 ± 10.83	24.29 ± 4.40
11/20/87	Water	Gross Alpha	7.00 ± 8.66	L.T. 1.0 (m)	6.34 ± 4.22
		Gross Beta	19.00 ± 8.66	L.T. 1.0 (m)	18.55 ± 7.32
12/04/87	Water	I-131	26.00 ± 10.39	26.33 ± 4.59	26.61 ± 6.28

TABLE F-2

INTER-LABORATORY COMPARISONS, 1987

TELEDYNE ISOTOPES

Collection Date	Media	Nuclide	EPA-Results(a)	Teledyne Isotopes Results(b)	All Participants Mean ± 2 s.d.

Notes:

(a) EPA Results-Expected laboratory precision (3 sigma). Units are pCi/ℓ for water, and milk except K is in mg/ℓ. Units are total pCi for air particulate filters.

(b) Teledyne Results - Average ± three sigma. Units are pCi/ℓ for water and milk except K is in mg/ℓ. Units are total pCi for air particulate filters.

(c) Units for food analysis are pCi/kg except K which is mg/kg.

(d) No aerosol solution was added to the planchets in the final stages of preparation leading to a more efficient counting geometry. The technicians in the alpha beta laboratory have been instructed to add the aerosol in accordance with Procedure PRO-031-1.

(e) No reason could be ascertained for the high result for Zn-65. Previous results had a normalized deviation from the known of -0.34 (10/10/86) and 0.58 (06/06/86). Therefore this does not appear to be a trend. Further cross-checks will be studied for any problems.

(f) The previous two EPA beta results are 6 percent low, and our in-house beta spikes are low by about the same percentage. Dr. H. Jeter will re-train the analysts in transferring all sample residue into the planchets.

(g) The reported high result was due to small aliquot available for the Sr-90 analysis. Inadvertently a larger aliquot was used for another analysis leaving 40% of the normal volume for Sr-90. Additionally, the narrow acceptance limits defined by EPA is particularly difficult to meet. For this analysis 63% of the participants were beyond the ± 3 sigma limit.

(h) The low result is attributed to the application of the resin method rather than the hydroxide method to this analysis. The resin method is inefficient at absorbing protien-bound iodine thus leading to low results. The results obtained by GeLi were higher.

(i) The Cs-137 results in EPA foods have typically been biased high. We are in the process of performing our annual calibrations. We are using a new Amersham mixed gamma standard rather than the most recently prepared NBS standard which is now several years old. Based on preliminary results the three Cs-137 values would be 52.1, 50.3, and 50.9, which average 51.1.

(j) Erroneously high electrode reading of stable iodide in sample (possibly because of interfering species such as S--) leading to erroneously low chemical yields. After repeating the electrode reading, the calculated average I-131 is 49.6 pCi/ℓ. Technicians have been made aware to be suspicious of high electrode readings. When unusually high readings occur samples will be diluted and/or oxidized and remeasured.

(k) The data for the Cr-51 results were reviewed. The detector efficiencies appear to be correct. The other five isotopes measured in this sample were within two standard deviations indicating there is no systematic error. Chromium-51 is difficult to measure at this activity level because of the low branching intensity of the gamma ray and being in the high background region of the spectrum since Cr-51 has a low energy ray.

TABLE F-2

INTER-LABORATORY COMPARISONS, 1987

TELEDYNE ISOTOPES

Collection Date	Media	Nuclide	EPA-Results(a)	Teledyne Isotopes Results(b)	All Participants Mean ± 2 s.d.

Notes:

(l) The reason for deviation is due to uneven distribution of residue on planchet, resulting probably because of the omission of aerosol application. The residue from the original planchets was dissolved, evaporated and remounted using aerosol. The counting results then became accurate (29±3, 30±3, 26±3). The analysts have been reminded to use aerosol when mounting evaporated liquids.

(m) The EPA sample was not analyzed. A newly trained technician misinterpreted the Sample Receipt Form and proceeded to dilute and analyze instead an in-house blank of deionized water. In the future, all dilutions will be perforemed by the laboratory supervisor or the laboratory manager to ensure accuracy.

PBAPS SURVEY

APPENDIX G: PBAPS SURVEYS

A Land Use Census around the Peach Bottom Atomic Power Station (PBAPS) was conducted by RMC Environmental Services for Philadelphia Electric Company to comply with Section 3/4.8.E.2 of PBAPS's Technical Specifications. The survey was conducted during the May to October 1987 growing season. The results of this survey are summarized in Table G-1.

There were no changes required to the PBAPS REMP as a result of this survey.

TABLE G-1 LOCATION OF THE NEAREST MILK FARM WITHIN A FIVE MILE RADIUS OF PBAPS, 1987

SECTOR	DISTANCE (FT.) FROM VENT
N	18,500
NNE	15,600
NE	11,200
ENE	14,000
E	21,800
ESE	17,000
SE	24,700
SSE	-
S	6,900
SSW	6,900
SW	11,600
WSW	12,400
W	6,000
WNW	8,400
NW	17,900
NNW	-

- INDICATES NO MILK FARM LOCATED

PHILADELPHIA ELECTRIC COMPANY

2301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA. 19101

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May 27, 1988
Docket No. 50-277
50-278

Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Pursuant to the requirements set forth in Section 6.9.2. of Appendix A to the Peach Bottom Station Operating License, Environmental Technical Specifications and Bases, we are enclosing one copy of the 1987 Annual Radiological Environmental Operating Report No. 45.

The Radiological Environmental Monitoring Program found that PBAPS effects on the environment were not measurable in any sample media except silt and fish. A small amount of PBAPS-related Zn-65, Cs-134, and Cs-137 activity was found in fish, and Co-60, Zn-65, Cs-134, and Cs-137 was found in silt. The calculated dose from silt is 5.91E-03 mrem to a teenager's skin and from fish is 1.52E-01 mrem to a teenager's liver. These doses are well below the 10 CFR50 Appendix I design objectives of 20 mrem. In all sample media, the actual doses are much lower due to the conservative assumptions used.

The 1987 Radiological Environmental Monitoring Program confirmed that PBAPS environmental effects from radioactive releases were well below PBAPS Technical Specification and applicable regulatory limits.

Yours truly,

W. B. Willsey
Director
Environmental Affairs

wbw:htr
Attachment

cc: W. T. Russell, Administrator, Region I, USNRC
T. Johnson, Senior Resident Site Inspector

IE48
1/1

DOCKET NO.: 50-277
50-278

PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 and 3

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

Prepared by

PHILADELPHIA ELECTRIC COMPANY

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Radiological Analyses by

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