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Peach Bottom Atomic Power Station Unit Nos. 2 and 3
Facility Operating License Nos. DPR-44 and DPR-56
NRC Docket Nos. 50-277 and 50-278

SUBJECT: Annual Radiological Environmental Operating Report 69
January 1, 2011 through December 31, 2011

In accordance with the requirements of Section 5.6.2 of the Peach Bottom Atomic Power Station, Units 2 and 3 Technical Specifications, this letter submits the Annual Radiological Environmental Operating Report 69. This report provides the 2011 results for the Radiological Environmental Monitoring Program (REMP) as called for in the Offsite Dose Calculation Manual.

In assessing the data collected for the REMP, we have concluded that the operation of PBAPS, Units 2 and 3, had no adverse impact on the environment. There are no commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact Gerard Stenclik at 717-456-4491.

Sincerely,

Garey L. Stathes, Plant Manager
Peach Bottom Atomic Power Station

GLS/RJR/GRS/JCC/EAS/bcb

Enclosure

ccn 12-43

cc: William Dean, Administrator, Region I, USNRC
G. F. Wunder, Project Manager, USNRC
S. Hansell, USNRC Senior Resident Inspector, PBAPS
Joe Furia, Region I, USNRC, 2100 Renaissance Blvd, King of Prussia, PA 19406

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NRR

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U.S. Nuclear Regulatory Commission
Annual Radiological Environmental Operating Report 69
January 1, 2011 through December 31, 2011

bcc: P. Steinhauer, PSEG [patricia.steinhauer@pseg.com]
Susan Grey, State of Maryland [SGray@dnr.state.md.us]
R. R. Janati, Commonwealth of Pennsylvania [rjanati@state.pa.us]
C. Mudrick, Kennett Square
M. Jesse, Kennett Square
T. Dougherty, PBAPS, SMB4-9
G. Stathes, PBAPS, A4-1S
T. Moore, PBAPS, SMB3-2A
J. Bowers, PBAPS, PB-TC
J. Armstrong, PBAPS, SMB4
D. P. Helker, Kennett Square
S. Hesse, PBAPS, SMB4-5
W. R. Nelle, PBAPS
Records Management 2C.112

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PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 and 3

Annual Radiological
Environmental Operating Report

Report No. 69
1 January Through 31 December 2011

Prepared By

Exelon SM
Nuclear

Peach Bottom Atomic Power Station
Delta, PA 17314

May 2012

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I. Executive Summary

In 2011, the dose from both liquid and gaseous effluents was conservatively calculated for the Maximum Exposed Member of the Public for PBAPS. The results of those calculations and their comparison to the allowable limits were as follows:

Effluent	Applicable Organ	Estimated Dose	Age Group	Location		% of Applicable Limit	Limit	Unit
				Distance (meters)	Direction (toward)			
Noble Gas	Gamma - Air Dose	2.18E-01	All	1.10E+03	SSE	1.09E+00	2.00E+01	mrad
Noble Gas	Beta - Air Dose	1.49E-01	All	1.10E+03	SSE	3.72E-01	4.00E+01	mrad
Noble Gas	Total Body (gamma)	2.11E-01	All	1.10E+03	SSE	2.11E+00	1.00E+01	mrem
Noble Gas	Skin (Beta)	2.76E-01	All	1.10E+03	SSE	9.20E-01	3.00E+01	mrem
Iodine, Particulate, Carbon-14 & Tritium	Bone	5.49E-01	Child	1.10E+03	SSE	1.83E+00	3.00E+01	mrem
Iodine, Particulate, Carbon-14 & Tritium	Thyroid	1.17E-01	Child	1.10E+03	SSE	3.90E-01	3.00E+01	mrem
Liquid	Total Body (gamma)	1.92E-04	Adult	Site Boundary		3.20E-03	6.00E+00	mrem
Liquid	Liver	2.25E-04	Child			1.13E-03	2.00E+01	mrem
Direct Radiation	Total Body	3.00E-01	All	1.15E+03	SSE	1.36E+00	2.20E+01	mrem

40 CFR Part 190 Compliance								
Total Dose	Total Body	5.18E-01	All	1.15E+03	SSE	2.07E+00	2.50E+01	mrem
Total Dose	Thyroid	6.35E-01	All	1.15E+03	SSE	8.47E-01	7.50E+01	mrem
Total Dose	Bone	1.07E+00	All	1.15E+03	SSE	4.27E+00	2.50E+01	mrem
Total Dose	Total Body	2.18E-01	All	1.15E+03	SSE	7.28E+00	3.00E+00	mrem
Total Dose	Bone	7.67E-01	All	1.15E+03	SSE	2.56E+01	3.00E+00	mrem
Total Dose	Thyroid	3.35E-01	All	1.15E+03	SSE	6.10E-01	5.50E+01	mrem

Doses calculated were well below all ODCM limits.

This report on the Radiological Environmental Monitoring Program conducted for the Peach Bottom Atomic Power Station (PBAPS) by Exelon Nuclear covers the period 1 January 2011 through 31 December 2011. During that time period, 1,193 analyses were performed on 935 samples.

On March 11, 2011 an earthquake off the Japanese islands produced a massive tsunami that caused a nuclear accident at four of the six Fukushima Daiichi reactors. In planning for the potential radioactive plume reaching the United States, Exelon Nuclear increased the sampling frequency and added additional analyses of select media from pathways that were expected to be the most sensitive to any increase in ambient radiation levels. Low level I-131 analyses and gamma spectroscopy analyses were performed on air particulates, air iodine, and milk, as appropriate.

The resulting radioactive plume was first detected in the environs of Peach Bottom Atomic Power Station on March 22, 2011. The final date of positive detection was April 18, 2011. The radionuclide identified was Iodine-131. Maximum activity levels found by media were 94 E-3 pCi/m^3 for air iodine and 6.9 pCi/L for milk. Samples collected were compared to offsite control locations to verify that these positive detections were not attributable to licensed activities. All other radionuclides analyzed were below the MDC (Minimum Detectable Concentration).

The radioactive half-life of I-131 is about 8 days. This short half-life allowed the affects of this radioactive plume to subside over about 4 weeks. As of April 18, 2011 no further impacts from the Fukushima Daiichi accident were evident.

Surface water samples were analyzed for concentrations of tritium and gamma emitting nuclides. No tritium, fission or activation products were found.

Drinking water samples were analyzed for concentrations of gross beta, tritium, and gamma emitting nuclides. No fission or activation products were found. Gross beta and tritium activities detected were consistent with those observed in previous years. Tritium was not detected in drinking water.

Precipitation samples were analyzed under the RGPP (Radiological Groundwater Protection Program) in 2011. No tritium was detected above the Exelon specified LLD of 200 pCi/l.

The remaining sample media representing the aquatic environment included fish and sediment samples. These media were analyzed for concentrations of gamma emitting nuclides. Fish samples showed no detectable fission or activation products from the operation of PBAPS. Cesium-137 activity was found at all three sediment locations and was consistent with data from previous years.

The atmospheric environment was divided into two parts for examination: airborne and terrestrial. Sample media for determining airborne affects included air particulates and air iodine samples. Analyses performed on air particulate samples included gross beta and gamma spectrometry. No fission or activation products were found. The gross beta results were consistent with results from the

previous years. Furthermore, no notable differences between control and indicator locations 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 activity with the exception of 11 samples which were positive for I-131. These positive results are directly attributed to the Fukushima event in March of 2011.

Examination of the terrestrial environment was accomplished by analyzing milk and food product samples. Milk samples were analyzed for low level concentrations of Iodine-131 and gamma emitting nuclides. Four milk samples were positive for I-131 in the weeks immediately following the Fukushima event. These positive results are directly attributed to the Fukushima event. No activation or fission products were found. Food product samples were analyzed for concentrations of gamma emitting nuclides. No Peach Bottom activation or fission products were detected.

Ambient gamma radiation levels were measured quarterly throughout the year. All measurements were below 10 mR/standard month and the results were consistent with those measured in previous years.

The results of the TLD monitoring program were used to confirm that the Independent Spent Fuel Storage Installation (ISFSI) had no measurable impact on the dose rate in the environs.

In assessing all the data gathered for this report and comparing these results with preoperational data, it was evident that the operation of PBAPS had no adverse radiological impact on the environment.

The Annual Radiological Groundwater Protection Program Report (ARGPPR) is found in Appendix G.

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 1,170 MWe. 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. Criticality was achieved on 7 August 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.

A Radiological Environmental Monitoring Program (REMP) for PBAPS was initiated in 1966. This report covers those analyses performed by Teledyne Brown Engineering (TBE), Mirion Technologies, and Environmental Inc. (Midwest Labs) on samples collected during the period 01 January 2011 through 31 December 2011.

A. Objectives

The objectives of the REMP are:

1. Provide data on measurable levels of radiation and radioactive materials in the site environs.

2. Evaluate the relationship between quantities of radioactive material released from the plant and resultant radiation doses to individuals from principal pathways of exposure.

B. Implementation of the Objectives

Implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.

2. Establishing baseline radiological data of media within those pathways.

3. Continuously monitoring those media before and during plant operation to assess station radiological effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Normandeau Associates Inc., (NAI), collected samples for the PBAPS REMP for Exelon Nuclear. This section describes the general collection methods used by NAI to obtain environmental samples for the PBAPS REMP in 2011. Sample locations and descriptions can be found in Table B-1, and Figures B-1 through B-3, Appendix B. The collection procedures used by NAI are listed in Table B-2, Appendix B.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, drinking water, precipitation, fish, and sediment. Surface water from two locations (1LL and 1MM) and drinking water from three locations (13B, 4L and 6I) were collected weekly by automatic sampling equipment. Weekly samples from each of the surface and drinking water locations were composited into a separate monthly sample for analysis. Approximately two quarts of water were removed from the weekly sample container and placed into a clean two-gallon polyethylene bottle to form a monthly composite. Control locations were 1LL and 6I. Precipitation samples from three locations (1A, 1B, 4M) were collected monthly. Fish samples comprising the flesh from two groups: Bottom Feeder (channel catfish, flathead catfish, and quillback) and Predator (smallmouth bass and largemouth bass) were collected semiannually from two locations (4 and 6; 6 is the control). Sediment samples composed of recently deposited substrate were collected semiannually at three locations (4J, 4T and 6F; 6F is the control).

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on air particulate, and airborne iodine samples. Air particulate and air iodine samples were collected and analyzed weekly from five locations (1B, 1C, 1Z, 3A, and 5H2; 5H2 is the control). Airborne iodine and particulate samples were obtained at each location using a vacuum pump with charcoal and glass fiber filters attached. The pumps were run continuously and sampled air at the rate of approximately 1 cubic foot per

minute. The filters were replaced weekly and sent to the laboratory for analysis.

Terrestrial Environment

The terrestrial environment was evaluated by performing radiological analyses on milk and food product samples. Milk samples were collected biweekly at five locations (J, R, S, U and V; V is the control) from April through November and monthly from December through March. Six additional locations (C, D, E, L, P and W; C and E are the controls) were sampled quarterly. All samples were collected in new unused two gallon plastic bottles from the bulk tank at each location, preserved with sodium bisulfite, and shipped promptly to the laboratory.

Food product samples were collected annually at two locations (1Q, and 55; 55 is the control) in May through October. All samples were collected in new unused plastic bags and shipped promptly to the laboratory.

Ambient Gamma Radiation

Direct radiation measurements were made using Panasonic 814 calcium sulfate ($CaSO_4$) thermoluminescent dosimeters (TLD). The TLD locations were placed on and around the PBAPS site as follows:

A site boundary ring, consisting of 20 locations (1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1NN, 1P, 1Q, 1R, 2, 2B, and 40), near and within the site perimeter representing fence post doses (i.e., at locations where the doses will be potentially greater than maximum annual off-site doses) from PBAPS releases.

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

The balance of four locations (16, 18, 19, and 24) representing control and special interests areas such as population centers, schools, etc.

The specific TLD locations were determined by the following criteria:

1. The presence of relatively dense population;

2. Site meteorological 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. And near the dwelling closest to the vents in the prevailing down wind direction.

Two TLDs – each comprised of three $CaSO_4$ themoluminescent phosphors enclosed in plastic – were placed at each location in a Formica "birdhouse" or polyethylene jar located approximately six feet above ground level. The TLD sets were exchanged quarterly, and sent to the laboratory for analysis.

B. Sample Analysis

This section describes the general analytical methods used by Teledyne Brown Engineering and Environmental Inc. to analyze the environmental samples for radioactivity for the PBAPS REMP in 2011. The analytical procedures used by the laboratories are listed in Table B-2, Appendix B.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of beta emitters in drinking water and air particulates.
2. Concentrations of gamma emitting nuclides in surface and drinking water, air particulates, milk, fish, sediment and food products.
3. Concentrations of tritium in surface, drinking water and precipitation water.
4. Concentrations of I-131 in drinking water, surface water, air and milk.
5. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

The radiological and direct radiation data collected prior to PBAPS becoming operational was used as a baseline with which these operational data were compared. For the purpose of this report, PBAPS was considered operational at initial critically. In addition, data were compared to previous years' operational data for consistency and trending. Several factors are important in the interpretation of the data.

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is defined as the smallest concentration of radioactive material in a sample that would yield a net count (above background) that would be detected with only a 5% probability of falsely concluding that a blank observation represents a "real" signal. The LLD is intended as a before the fact estimate of a system (including instrumentation, procedure and sample type) and not as an after the fact criteria for the presence of activity. All analyses are designed to achieve the required PBAPS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is defined similarly as above for LLD; however the MDC is an after-the-fact estimate vice a before-the-fact as in LLD.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample is calculated by subtracting background activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations will result in sample activity being lower than the background activity affecting a negative number. An MDC is reported in all cases where positive activity was not detected.

Gamma spectroscopy results for each type of sample were grouped as follows:

For surface and drinking 12 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Zr-95, Nb-95, I-131, Cs-134, Cs-137, Ba-140, and La-140 were reported.

For fish eight nuclides, K-40, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Cs-134, and Cs-137 were reported.

For sediment six nuclides, K-40, Mn-54, Co-58, Co-60, Cs-134, and Cs-137 were reported.

For air particulate six nuclides, Be-7, Mn-54, Co-58, Co-60, Cs-134, and Cs-137 were reported.

For milk five nuclides, K-40, Cs-134, Cs-137, Ba-140, and La-140 were reported.

For food product eight nuclides, Be-7, K-40, Mn-54, Co-58, Co-60, I-131, Cs-134, and Cs-137 were reported.

Means and standard deviations of the results were calculated. The standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty.

D. Program Exceptions

For 2011 the PBAPS REMP had a sample collection recovery rate of better than 99%. The exceptions to this program are listed below:

1. Week 11: The Station 1C air sampler was not running at the time of collection 3/17/11. The power outlet was found to be faulty. The outlet was replaced and the sampler restarted on 3/21/11. Due to inadequate air volume, samples were considered invalid. Although the samples were sent to the laboratory, the laboratory was directed not to analyze them. IR# 1227440.

2. Week 13: The particulate and iodine samples collected during the collection period 3/16/11- 3/23/11 were lost (i.e. FedEx is still unable to locate them). The envelope was found open and the samples were not enclosed when the package was received at the laboratory. IR# 1227440.

3. Week 22: For the May 2011 collection period, only one of three samples was available from Indicator Station 1Q and none were available at Indicator Station 2B (no garden planted). However, two of three samples were available from Control Station 55. One of these two samples was split with the Pennsylvania Department of Environmental Protection (PADAP). IR# 1227440.

Each program exception was reviewed to understand the causes of the program exception. Sampling and maintenance errors were reviewed with the personnel involved to prevent a recurrence. Occasional equipment breakdowns and power outages were unavoidable.

E. Program Changes

Starting in May, 2011, I-131 is now being analyzed in drinking water and surface water by the low level method to detect down to 1.0 pCi/L.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken from a continuous sampler at two locations (1LL and 1MM) on a monthly schedule. Of these locations, 1MM located downstream, could be affected by Peach Bottom's effluent releases. The following analyses were performed:

Tritium

Monthly samples from both locations were composited quarterly and analyzed for tritium activity (Table C-I.1, Appendix C). No tritium activity was detected.

Iodine

Starting in May, 2011, monthly samples from both locations were analyzed for I-131. All results were less than the MDC (Table C-I.2, Appendix C).

Gamma Spectrometry

Samples from both locations were analyzed for gamma emitting nuclides (Table C-I.3, Appendix C). All nuclides were less than the MDC.

2. Drinking Water

Monthly samples were collected from continuous water samplers at three locations (13B, 4L and 6I). Two locations (13B and 4L) could be affected by Peach Bottom's effluent releases. The following analyses were performed:

Gross Beta

Samples from both locations were analyzed for concentrations of total gross beta activity (Tables C-II.1 and Figures C-1 Appendix C). Gross beta was detected in 29 of 36 samples. The values ranged from 1.8 to 9.2 pCi/l. Concentrations detected were generally below those detected in previous years.

Tritium

Monthly samples from three locations were composited quarterly and analyzed for tritium activity (Table C-II.2, Appendix C). Tritium activity was not detected in any samples.

Iodine

Starting in May 2011, monthly samples from three locations were analyzed for I-131 (Table C-II.3, Appendix C). All results were less than the MDC.

Gamma Spectrometry

Samples from both locations were analyzed for gamma emitting nuclides (Table C-II.4, Appendix C). All nuclides were less than the MDC.

3. Precipitation

Precipitation samples were analyzed under the RGPP in 2011.

4. Fish

Fish samples comprised of bottom feeder and predator were collected at two locations (4 and 6) semiannually. Location 4 could be affected by Peach Bottom's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma emitting nuclides (Table C-III.1, Appendix C). Naturally occurring K-40 was found at all stations and ranged from 2,950 to 3,880 pCi/kg wet and was consistent with levels detected in previous years. No Peach Bottom fission or activation products were found in 2011. Historical levels of Cs-137 are shown in Figure C-2, Appendix C.

5. Sediment

Aquatic samples were collected at three locations (4J, 4T and 6F) semiannually. Of these locations two, 4J and 4T located downstream, could be affected by Peach Bottom's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from all three locations were analyzed for gamma emitting nuclides (Table C-IV.1, Appendix C). Potassium-40 was found in all locations and ranged from 14,700 to 18,700 pCi/kg dry. The fission product Cs-137 was detected in three of six samples and ranged from 104 to 185 pCi/kg. The activity of Cs-137 detected was consistent with those detected in the preoperational years. Historical levels of Cs-137 are shown in Figure C-3, Appendix C. No other Peach Bottom fission or activation products were found.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from five locations on a weekly basis. The five locations were separated into three groups: Group I represents locations within the PBAPS site boundary (1B, 1C and 1Z), Group II represents the location at an intermediate distance from the PBAPS site (3A), and Group III represents the control location at a remote distance from PBAPS (5H2). The following analyses were performed.

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Tables C-V.1 and C-V.2 and Figures C-5 and C-6, Appendix C).

Detectable gross beta activity was observed at all locations. Comparison of results among the three groups aid in determining the effects, if any, resulting from the operation of PBAPS. The results from the On-Site locations (Group I) ranged from 6 to 39 E-3 pCi/m3, with a mean of 19 E-3 pCi/m3. The results from the Intermediate Distance location (Group II) ranged from 9 to 32 E-3 pCi/m3 with a mean of 20 E-3 pCi/m3. The results from the Distant location (Group III) ranged from 8 to 34 E-3 pCi/m3 with a mean of 17 E-3 pCi/m3. A comparison of the weekly mean values for 2011 indicate no notable differences among the three groups (Figure C-5, Appendix C). In addition, a comparison of the

2011 air particulate data with previous years data indicate no effects from the operation of PBAPS (Figure C-4, Appendix C).

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma emitting nuclides (Table C-V.3, Appendix C). Naturally occurring Be-7 due to cosmic ray activity was detected in all samples. These values ranged from 62 to 103 E-3 pCi/m^3. All other nuclides were less than the MDC. Additional sampling occurred in the weeks immediately following the Fukushima event. Two samples were positive for naturally occurring Be-7. The concentrations ranged from 295 to 338 E-3 pCi/m^3. All other nuclides were less than the MDC and all required LLDs were met.

b. Airborne Iodine

Continuous air samples were collected from five locations (1B, 1Z, 1C, 3A, and 5H2) and analyzed weekly for I-131 (Table C-VI.1, Appendix C). All results were less than the MDC, with the exception of 11 samples which were positive for I-131. These results are directly attributed to the Fukushima event in March of 2011.

2. Terrestrial

a. Milk

Samples were collected from five locations (J, R, S, U and V) biweekly April through November and monthly December through March. Samples from six additional locations (C, D, E, L, P and W) were taken quarterly. The following analyses were performed:

Iodine-131

Milk samples from all locations were analyzed for concentrations of I-131 (Tables C-VII.1, Appendix C). All results were less than the MDC, with the exception of 4 samples which were positive for I-131. The concentrations ranged from 0.8 to 6.9 pCi/l. These results are directly attributed to the Fukushima event in March of 2011. In the weeks immediately following the Fukushima Event in March

of 2011, additional sampling was performed. All results were less than the MDC and all required LLDs were met.

Gamma Spectrometry

Each milk sample from locations J, R, S, U and V was analyzed for concentrations of gamma emitting nuclides (Table C-VII.2, Appendix C).

Naturally occurring K-40 was found in all samples and ranged from 968 to 1,550 pCi/l. All other nuclides were less than the MDC. In the weeks immediately following the Fukushima Event in March of 2011, additional sampling was performed. Naturally occurring K-40 was detected in two samples. The concentrations ranged from 1,230 to 1,280 pCi/L. All other results were less than the MDC and all required LLDs were met. Comparison of the 2011 Cs-137 milk data with previous years data indicate no effects from the operation of PBAPS (Figure C-6, Appendix C).

b. Food Products

Food product samples were collected at two locations (1Q, and 55) when available. Of these locations, 1Q and 55 could be affected by Peach Bottom's effluent releases. The following analysis was performed:

Gamma Spectrometry

Each food product sample from locations 1Q and 55 was analyzed for concentrations of gamma emitting nuclides (Table C-VIII.1, Appendix C).

Naturally occurring Be-7 activity was found in 13 of 26 samples and ranged from 162 to 2,610 pCi/kg wet. Potassium-40 activity was found in all samples and ranged from 2,220 to 10,500 pCi/kg wet. All other nuclides were less than the MDC.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured using Panasonic 814 ($CaSO_4$) thermoluminescent dosimeters. Forty-seven TLD locations were established around the site. Results of TLD measurements are listed in Tables C-IX.1 through CI-X.3 and Figure C-7, Appendix C.

All TLD measurements were below 10 mR per standard month, with a range of 2.1 to 8.2 mR per standard month. A comparison of the Site Boundary and Intermediate Distance data to the Control locations data indicate that the ambient gamma radiation levels from the Control locations 16, 18, 19 and 24 were essentially the same as the other locations. The historical ambient gamma radiation data from the Control locations was plotted along with similar data from the Site and the Intermediate Distance locations (Figure C-7, Appendix C).

D. Independent Spent Fuel Storage Installation (ISFSI)

The Independent Spent Fuel Storage Installation (ISFSI) was utilized beginning June 2000. During 2011, a total of 5 TN-68 casks, each loaded with 68 fuel bundles, were added to the ISFSI pad. Onsite location 1R, which is located on the hillside overlooking the ISFSI showed a general increase of 1 to 2 mR per standard month from pre-ISFSI loading (Figure C-8, Appendix C). Location 2B, which represents the nearest residence, showed no effect in dose rate from the ISFSI pad. Data from location 2B is used to demonstrate compliance to both 40CFR190 and 10CFR72.104 limits.

E. Land Use Census

A Land Use Survey conducted during the 2011 growing season around the Peach Bottom Atomic Power Station (PBAPS) was performed by Normandeau Associates, Inc., NAI Environmental Services Division for Exelon Nuclear to comply with Section 3.8.E.2 of PBAPS's Offsite Dose Calculation Manual Specifications (ODCMS) and Bases. The purpose of the survey was to document the nearest milk producing animal in each of the sixteen meteorological sectors out to five miles. In addition, the nearest residence and garden of >500 square feet were documented. The distance and direction of all locations were positioned using Global Positioning System (GPS) technology. The results of this survey are summarized below.

Distance in Miles from the PBAPS Reactor Buildings				
Sector		Residence Feet	Garden Feet	Milk Farm Feet
1	N	12,522	14,736	14,450
2	NNE	11,142	11,041	10,843
3	NE	10,080	10,080	10,492
4	ENE	10,524	12,417	10,925
5	E	10,369	14,471	14,540
6	ESE	16,085	20,430	20,210
7	SE	19,412	19,412	19,176
8	SSE	3,918	3,918	-
9	S	5,515	5,515	-
10	SSW	6,365	8,167	11,602
11	SW	4,771	4,837	4,860
12	WSW	4,041	18,887	-
13	W	5,242	5,242	5,136
14	WNW	2,903	4,192	22,068
15	NW	2,930	9,427	9,427
16	NNW	5,093	-	-

F. Errata Data

The Annual Radiological Environmental Operating Report #68 January 1, 2010 through December 31, 2010

1. A Program Exception for the 2010 AEROR report should have been reported regarding an LLD not obtained for Station 13B Drinking Water sample for 7/6/2010. The LLD was reported as "<20 pCi/ L" in the sample results because the sample volume was insufficient to obtain the required <15 pCi/ L LLD for Exelon Nuclear Mid-Atlantic sites. This exception should have been reported in the 2010 AEROR. This issue was documented in IR# 1230988. The current required LLD for drinking water is 1 pCi/L.

2. Dose Calculations to the Public

   The noble gas doses were recalculated using the ODCM Revision 13 χ/Q (Dispersion Factor) values. The iodine-131, iodine-133, tritium, carbon-14 and particulate doses were recalculated using the ODCM Revision 13 dose factors for ingestion, inhalation and ground plane pathways. The corrected data are contained in Appendix F "Errata Data".

G. Summary of Results – Inter-Laboratory Comparison Program

The primary and secondary laboratories analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, food

products and water matrices (Appendix E). The PE samples, supplied by Eckert & Ziegler Analytics, Inc., Environmental Resource Associates (ERA) and DOE's Mixed Analyte Performance Evaluation Program (MAPEP), were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

   Analytics' evaluation report provides a ratio of laboratory results and Analytics' known value. Since flag values are not assigned by Analytics, TBE-ES evaluates the reported ratios based on internal QC requirements, which are based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

   The Environmental Resource Associates' evaluation report provides an acceptance range for control and warning limits with associated flag values. The Environmental Resource Associates' acceptance limits are established per the United States Environmental Protection Agency (USEPA), National Environmental Laboratory Accreditation Conference (NELAC), state specific performance testing program requirements or ERA's standard operating procedure for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

   MAPEP's evaluation report provides an acceptance range with associated flag values.

   The MAPEP defines three levels of performance: Acceptable (flag = "A"), Acceptable with Warning (flag = "W"), and Not Acceptable (flag = "N"). Performance is considered acceptable when a mean result for the specified analyte is ± 20% of the reference value. Performance is acceptable with warning when a mean result falls in the range from ±20% to ±30% of the reference value (i.e., 20% < bias < 30%). If the bias is greater than 30%, the results are deemed not acceptable.

For the primary laboratory, 14 out of 18 analytes met the specified acceptance criteria. Three analytes did not meet the specified acceptance criteria for the following reason:

1. Teledyne Brown Engineering's Analytics March 2011 Cr-51 in milk result of 398 pCi/L was higher than the known value of 298 pCi/L, resulting in a found to known ratio of 1.34. NCR 11-13 was initiated to investigate this failure. There was a slightly high bias in all the gamma activities. The June gamma results in milk did not show a high bias. No further action was required.
2. Teledyne Brown Engineering's ERA May 2011 Gross Alpha in water result of 64.1 pCi/L was higher than the known value of 50.1 pCi/L, which exceeded the upper control limit of 62.9 pCi/L. NCR 11-08 was initiated to investigate this failure. The solids on the planchet exceeded 100 mg, which was beyond the range of the efficiency curve.

   Teledyne Brown Engineering's MAPEP March 2011 Gross Alpha in air particulate result of 0.101 Bq/sample was lower than the known value of 0.659 Bq/sample, which exceeded the lower control limit of 0.198 Bq/sample. NCR 11-11 was initiated to investigate this failure. The air particulate filter was counted on the wrong side.
3. Teledyne Brown Engineering's ERA November 2011 Sr-89 in water result of 81.0 pCi/L was higher than the known value of 69.7 pCi/L, which exceeded the upper control limit of 77.9 pCi/L. NCR 11-16 was initiated to investigate this failure. The TBE reported value to known ratio of 1.16 fell within the acceptable range of ± 20%, which TBE considers acceptable.
4. Teledyne Brown Engineering's MAPEP March 2011 Sr-90 in soil, air particulate, and vegetation results were not reported. MAPEP evaluates analytes not reported as failures. NCR 11-11 was initiated to investigate these failures. No further action was required.

For the secondary laboratory, Environmental, Inc., 12 out of 14 analytes met the specified acceptance criteria.

1. Environmental Inc.'s ERA October 2011 Cs-134 in water result of 38.8 pCi/L was higher than the known value of 33.4 pCi/L, which exceeded the upper control limit of 36.7 pCi/L. The sample was reanalyzed. The reanalyzed result of 32.9 was acceptable.
2. Environmental Inc.'s MAPEP February 2011 Sr-90 in air particulate result of 1.89 Bq/sample was higher than the known value of 1.36

Bq/sample, which exceeded the upper control limit of 1.77 Bq/sample. No errors were found in the calculation or procedure. The reanalyzed result of 1.73 Bq/sample was acceptable.

Environmental Inc.'s MAPEP August 2011 Sr-90 in soil result of 219.4 Bq/kg, less than the known value of 320 Bq/kg, was below the lower control limit of 224 Bq/kg. The sample was reanalyzed in triplicate through a strontium column. The reanalyzed result of 304.2 Bq/kg was acceptable.

The Inter-Laboratory Comparison Program provides evidence of "in control" counting systems and methods, and that the laboratories are producing accurate and reliable data.

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.

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE PEACH BOTTOM ATOMIC POWER STATION, 2011

Name of Facility: PEACH BOTTOM ATOMIC POWER STATION **DOCKET NUMBER:** 50-277 & 50-278

Location of Facility: YORK COUNTY PA **REPORTING PERIOD:** 2011

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	H-3	8	200	<LLD	<LLD	-		0
	I-131	16	1	<LLD	<LLD	-		0
	GAMMA	24						
	MN-54		15	<LLD	<LLD	-		0
	CO-58		15	<LLD	<LLD	-		0
	FE-59		30	<LLD	<LLD	-		0
	CO-60		15	<LLD	<LLD	-		0
	ZN-65		30	<LLD	<LLD	-		0

THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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SURFACE WATER (PCI/LITER)	NB-95		15	<LLD	<LLD	-		0
	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0

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DRINKING WATER (PCI/LITER)	GR-B	36	4	4.3 (19/24) (2.0/9.2)	3.6 (10/12) (1.8/6.8)	4.7 (10/12) (2.3/7.2)	13B INDICATOR - CHESTER WATER AUTHORITY SUSQUEHANNA PUMPING STATION 13306 FEET ESE	0
	H-3	12	200	<LLD	<LLD	-		0
	I-131	24	1	<LLD	<LLD	-		0
	GAMMA	36						
	MN-54		15	<LLD	<LLD	-		0
	CO-58		15	<LLD	<LLD	-		0
	FE-59		30	<LLD	<LLD	-		0
	CO-60		15	<LLD	<LLD	-		0

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DRINKING WATER (PCI/LITER)	ZN-65		30	<LLD	<LLD	-		0
	NB-95		15	<LLD	<LLD	-		0
	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0

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BOTTOM FEEDER (PCI/KG WET)	GAMMA	4						
	K-40		NA	3540 (2/2) (3400/3680)	3700 (2/2) (3520/3880)	3700 (2/2) (3520/3880)	6 CONTROL HOLTWOOD POND 57347 FEET NW	0
	MN-54		130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0

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PREDATOR (PCI/KG WET)	CS-137		150	<LLD	<LLD	-		0
	GAMMA	4						
	K-40		NA	3380 (2/2) (2950/3810)	3515 (2/2) (3320/3710)	3515 (2/2) (3320/3710)	6 CONTROL HOLTWOOD POND 57347 FEET NW	0
	MN-54		130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0

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PREDATOR (PCI/KG WET)	CS-134		130	<LLD	<LLD	-		0
	CS-137		150	<LLD	<LLD	-		0
SEDIMENT (PCI/KG DRY)	GAMMA	6						
	K-40		NA	17375 (4/4) (14700/18700)	15550 (2/2) (15300/15800)	18400 (2/2) (18100/18700)	4T INDICATOR CONOWINGO POND NEAR CONOWINGO DAM 41818 FEET SE	0
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	CS-134		150	<LLD	<LLD	-		0

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SEDIMENT (PCI/KG DRY)	CS-137		180	146 (2/4) (107/185)	104 (1/2)	185 (1/2)	4J INDICATOR CONOWINGO POND NEAR BERKIN'S RUN 7346 FEET SE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	255	10	19 (246/255) (6/39)	NA	20 (48/51) (9/36)	1B INDICATOR WEATHER STATION #2 2587 FEET NW	0
	GAMMA	20						
	BE-7		NA	77 (20/20) (62/103)	NA	84 (4/4) (64/97)	1Z INDICATOR WEATHER STATION #1 1396 FEET SE	0
	MN-54		NA	<LLD	NA	-		0
	CO-58		NA	<LLD	NA	-		0
	CO-60		NA	<LLD	NA	-		0
	CS-134		50	<LLD	NA	-		0

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AIR PARTICULATE (E-3 PCI/CU.METER)	CS-137		60	<LLD	NA	-		0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	255	70	55 (11/255) (29/94)	NA	65 (2/51) (36/94)	IZ INDICATOR WEATHER STATION #1 1396 FEET SE	0
MILK (PCI/LITER)	I-131	134	1	2.9 (4/104) (0.8/6.9)	<LLD	4.1 (2/22) (1.3/6.9)	U INDICATOR 11414 FEET SSW	0
	GAMMA K-40	134	NA	1279 (104/104) (1060/1550)	1213 (30/30) (968/1440)	1310 (4/4) (1200/1400)	E CONTROL 46147 FEET N	0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0

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MILK (PCI/LITER)	LA-140		15	<LLD	<LLD	-		0
VEGETATION (PCI/KG WET)	GAMMA	26						
	BE-7		NA	279 (6/12) (162/430)	763 (7/14) (172/2610)	763 (7/14) (172/2610)	55 CONTROL NE SECTOR 52272 FEET NE	0
	K-40		NA	3771 (12/12) (2218/5288)	5778 (14/14) (2329/10470)	5778 (14/14) (2329/10470)	55 CONTROL NE SECTOR 52272 FEET NE	0
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	I-131		60	<LLD	<LLD	-		0

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VEGETATION (PCI/KG WET)	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
DIRECT RADIATION (MILLI-ROENTGEN/STD.MO.)	TLD-QUARTERLY	188	NA	5.4 (172/172) (2.6/8.2)	5.0 (16/16) (2.1/6.4)	7.6 (4/4) (6.6/8.2)	1R INDICATOR TRANSMISSION LINE HILL 2798 FEET SSE	0

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APPENDIX B

SAMPLE DESIGNATION AND LOCATIONS

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2011

Location	Location Description	Distance & Direction from Site
A. Surface Water		
1LL	Peach Bottom Units 2 and 3 Intake - Composite (Control)	1,256 feet NE
1MM	Peach Bottom Canal Discharge -Composite	5,470 feet SE
B. Drinking (Potable) Water		
4L	Conowingo Dam EL 33' MSL - Composite	45,721 feet SE
6I	Holtwood Dam Hydroelectric Station - Composite (Control)	30,337 feet NW
13B	Chester Water Authority (CWA) Susquehanna Pumping Station- Composite	13,306 feet ESE
C. Precipitation		
1A		1,396 feet SE
1B		2,587 feet NW
4M		45,989 feet SE
D. Fish		
4	Conowingo Pond	7,162 feet SE
6	Holtwood Pond (Control)	57,347 feet NW
E. Sediment		
4J	Conowingo Pond near Berkin's Run	7,346 feet SE
4T	Conowingo Pond near Conowingo Dam	41,818 feet SE
6F	Holtwood Dam (Control)	31,469 feet NW
F. Air Particulate - Air Iodine		
1B	Weather Station #2	2,587 feet NW
1Z	Weather Station #1	1,396 feet SE
1A	Weather Station #1	1,396 feet SE
1C	Peach Bottom South Sub Station	4,513 feet SSE
3A	Delta, PA – Substation	19,144 feet SW
5H2	Manor Substation (Control)	162,565 feet NE
G. Milk – bi-weekly / monthly		
J		5,119 feet W
R		4,694 feet WSW
S		19,061 feet SE
U		11,414 feet SSW
V	(Control)	34,584 feet W
H. Milk – quarterly		
C	(Control)	5,037 feet NW
D		18,533 feet NE

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2011

Location	Location Description	Distance & Direction from Site
H. Milk – quarterly (cont'd)		
E	(Control)	46,147 feet N
L		11,194 feet NE
P		10,982 feet ENE
W		89,232 feet S
I. Food Products – monthly when available		
1Q		4,171 feet NW
2B		3,854 feet SSE
55	(Control)	52,272 feet NE
J. Environmental Dosimetry - TLD		
Site Boundary		
1L	Peach Bottom Unit 3 Intake	1,256 feet NE
1P	Tower B & C Fence	2,112 feet ESE
1A	Weather Station #1	1,396 feet SE
1Q	Tower D & E Fence	3,274 feet SE
1D	140° Sector	3,538 feet SE
2	Peach Bottom 130° Sector Hill	4,661 feet SE
2B	Burk Property	3,749 feet SSE
1M	Discharge	5,438 feet SE
1R	Transmission Line Hill	2,798 feet SSE
1I	Peach Bottom South Substation	2,851 feet SSE
1C	Peach Bottom South Substation	4,513 feet SSE
1J	Peach Bottom 180° Sector Hill	3,755 feet S
1K	Peach Bottom Site Area	4,604 feet SW
1F	Peach Bottom 200° Sector Hill	2,707 feet SSW
40	Peach Bottom Site Area	7,709 feet SW
1NN	Peach Bottom Site	2,547 feet WSW
1H	Peach Bottom 270° Sector Hill	3,104 feet W
1G	Peach Bottom North Substation	3,173 feet WNW
1B	Weather Station #2	2,587 feet NW
1E	Peach Bottom 350° Sector Hill	3,136 feet NNW
Intermediate Distance		
5	Wakefield, PA	24,499 feet E
15	Silver Spring Rd	19,449 feet N
22	Eagle Road	13,230 feet NNE
44	Goshen Mill Rd	27,480 feet NE
32	Slate Hill Rd	15,213 feet ENE
45	PB-Keeney Line	18,524 feet ENE
14	Peters Creek	10,397 feet E
17	Riverview Rd	21,966 feet ESE
31A	Eckman Rd	24,105 feet SE
4K	Conowingo Dam Power House Roof	45,721 feet SE
23	Peach Bottom 150° Sector Hill	5,276 feet SSE
27	N. Cooper Road	13,859 feet S
48	Macton Substation	26,347 feet SSW

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2011

Location	Location Description	Distance & Direction from Site
J. Environmental Dosimetry – TLD (cont'd)		
Intermediate Distance (cont'd)		
3A	Delta, PA Substation	19,114 feet SW
49	PB-Conastone Line	20,673 feet WSW
50	TRANSCO Pumping Station	25,677 feet W
51	Fin Substation	20,511 feet WNW
26	Slab Road	22,093 feet NW
6B	Holtwood Dam Power House Roof	30,538 feet NW
42	Muddy Run Environ. Laboratory	21,954 feet NNW
43	Drumore Township School	26,931 feet NNE
46	Broad Creek	23,483 feet SSE
47	Broad Creek Scout Camp	22,153 feet S
Control		
16	Nottingham, PA Substation (Control)	67,788 feet E
24	Harrisville, MD Substation (Control)	58,048 feet ESE
18	Fawn Grove, PA (Control)	51,413 feet W
19	Red Lion, PA (Control)	106,354 feet WNW

TABLE B-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2011

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Surface Water	Tritium	Quarterly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	500 ml	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Surface Water	I-131	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2012 Radioiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in water by an ion exchange
Drinking Water	Gross Beta	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2008 Gross alpha and/or gross beta activity in various matrices Env. Inc., W(DS)-01 Determination of gross alpha and/or gross beta in water (dissolved solids or total residue)
Drinking Water	I-131	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2031 Radioiodine in drinking water Env. Inc., I-131-01 Determination of I-131 in water by an ion exchange
Drinking Water	Gamma Spectroscopy	Monthly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Drinking Water	Tritium	Quarterly composite from a continuous water compositor.	NAI-ER15 Collection of water samples for radiological analysis (Peach Bottom Atomic Power Station)	500 ml	TBE, TBE-2010 Tritium and carbon-14 analysis by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	NAI-ER3 Collection of fish samples for radiological analysis (Peach Bottom Atomic Power Station)	1000 grams (wet)	TBE, TBE-2007 Gamma emitting radioisotope analysis
Sediment	Gamma Spectroscopy	Semi-annual grab samples	NAI-ER2 Collection of sediment samples for radiological analysis (Peach Bottom Atomic Power Station)	500 grams (dry)	TBE, TBE-2007 Gamma emitting radioisotope analysis

TABLE B-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2011

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	NAI-ER16 Collection of air particulate and air iodine samples for radiological analysis (Peach Bottom Atomic Power Station)	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2008 Gross alpha and/or gross beta activity in various matrices Env. Inc., AP-02 Determination of gross alpha and/or gross beta in air particulate filters
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2023 Compositing of samples Env. Inc., AP-03 Procedure for compositing air particulate filters for gamma spectroscopic analysis	13 filters (approximately 3600 cubic meters)	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Air Iodine	Gamma Spectroscopy	One-week composite of continuous air sampling through charcoal filter	NAI-ER8 Collection of air particulate and air iodine samples for radiological analysis (Peach Bottom Atomic Power Station)	1 filter (approximately 280 cubic meters weekly)	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., I-131-02 Determination of I-131 in charcoal canisters by gamma spectroscopy (batch method)
Milk	I-131	Bi-weekly grab sample when cows are on pasture. Monthly all other times	NAI-ER10 Collection of milk samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2012 Radioiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by an ion exchange
Milk	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	NAI-ER10 Collection of milk samples for radiological analysis (Peach Bottom Atomic Power Station)	2 gallon	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
Food Products	Gamma Spectroscopy	Monthly when available	NAI-ER12 Collection of vegetation samples for radiological analysis (Peach Bottom Atomic Power Station)	1000 grams	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by gamma spectroscopy
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two Panasonic 814 (containing 3 each $CaSO_4$ elements)	NAI-ER9 Collection of TLD samples for radiological analysis (Peach Bottom Atomic Power Station)	2 dosimeters	Mirion Tecnologies

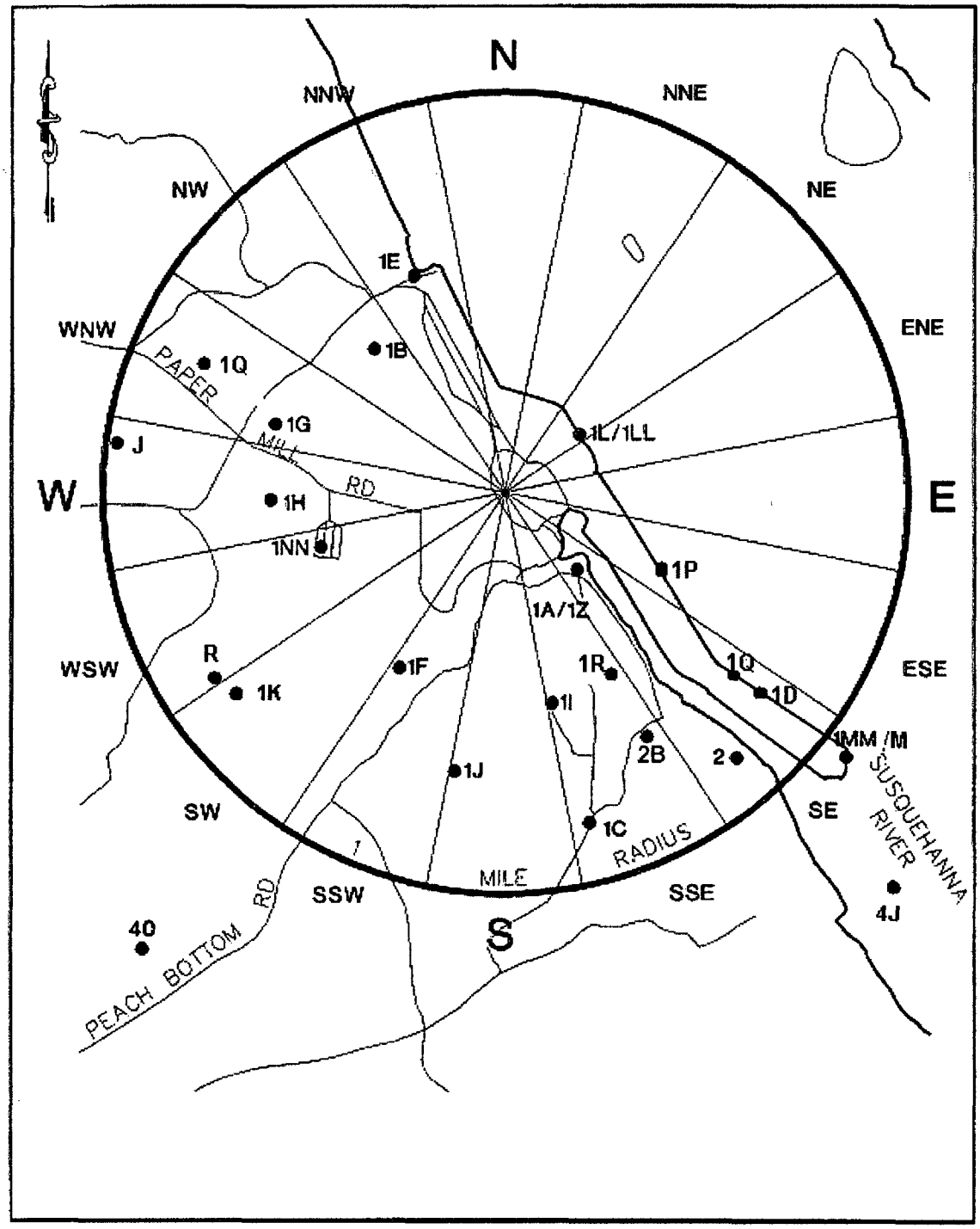


Figure B-1
Environmental Sampling Locations Between Within One
Mile of the Peach Bottom Atomic Power Station, 2011

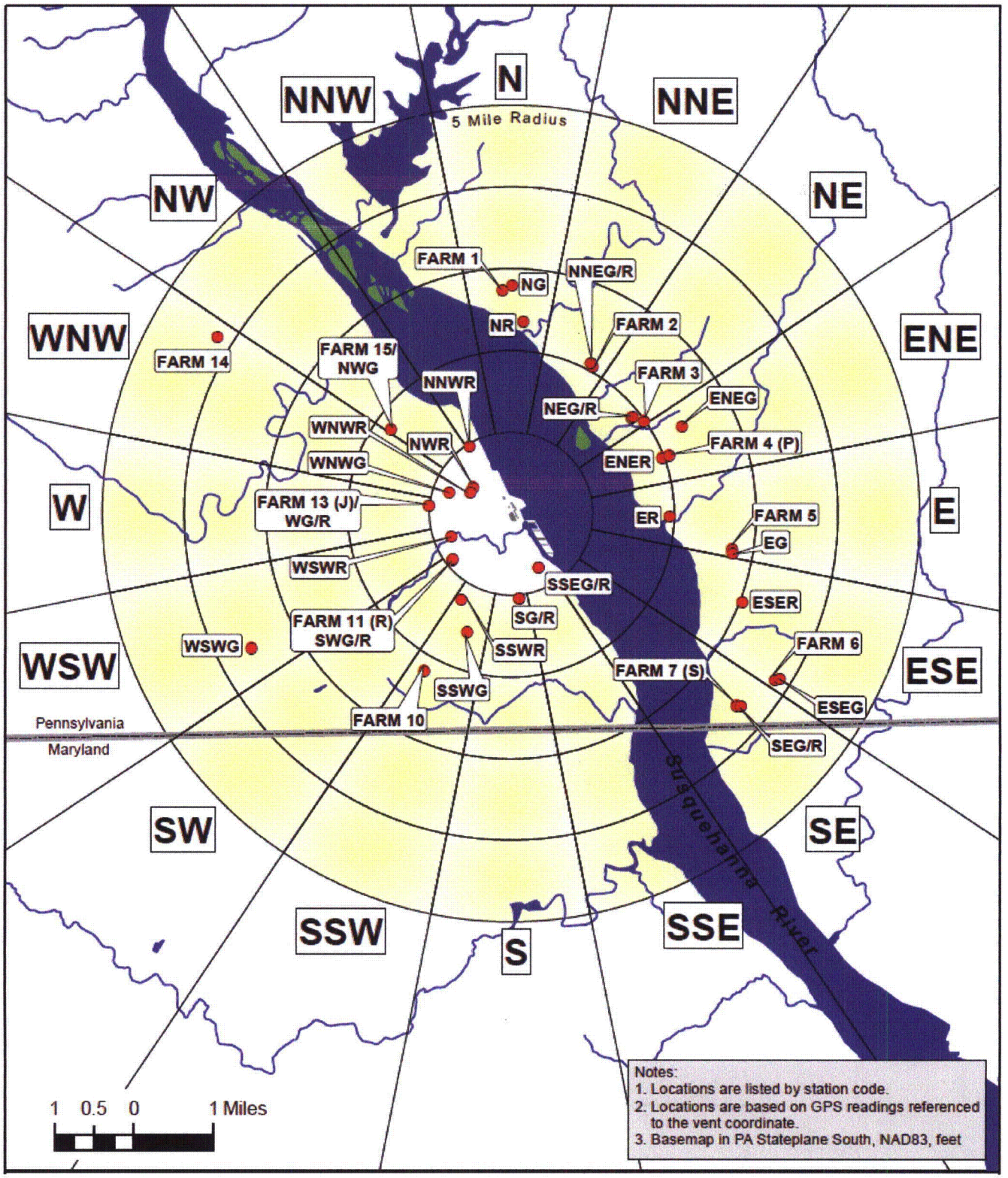


Figure B-2
Environmental Sampling Locations Between One and Approximately Five Miles of the Peach Bottom Atomic Power Station, 2011

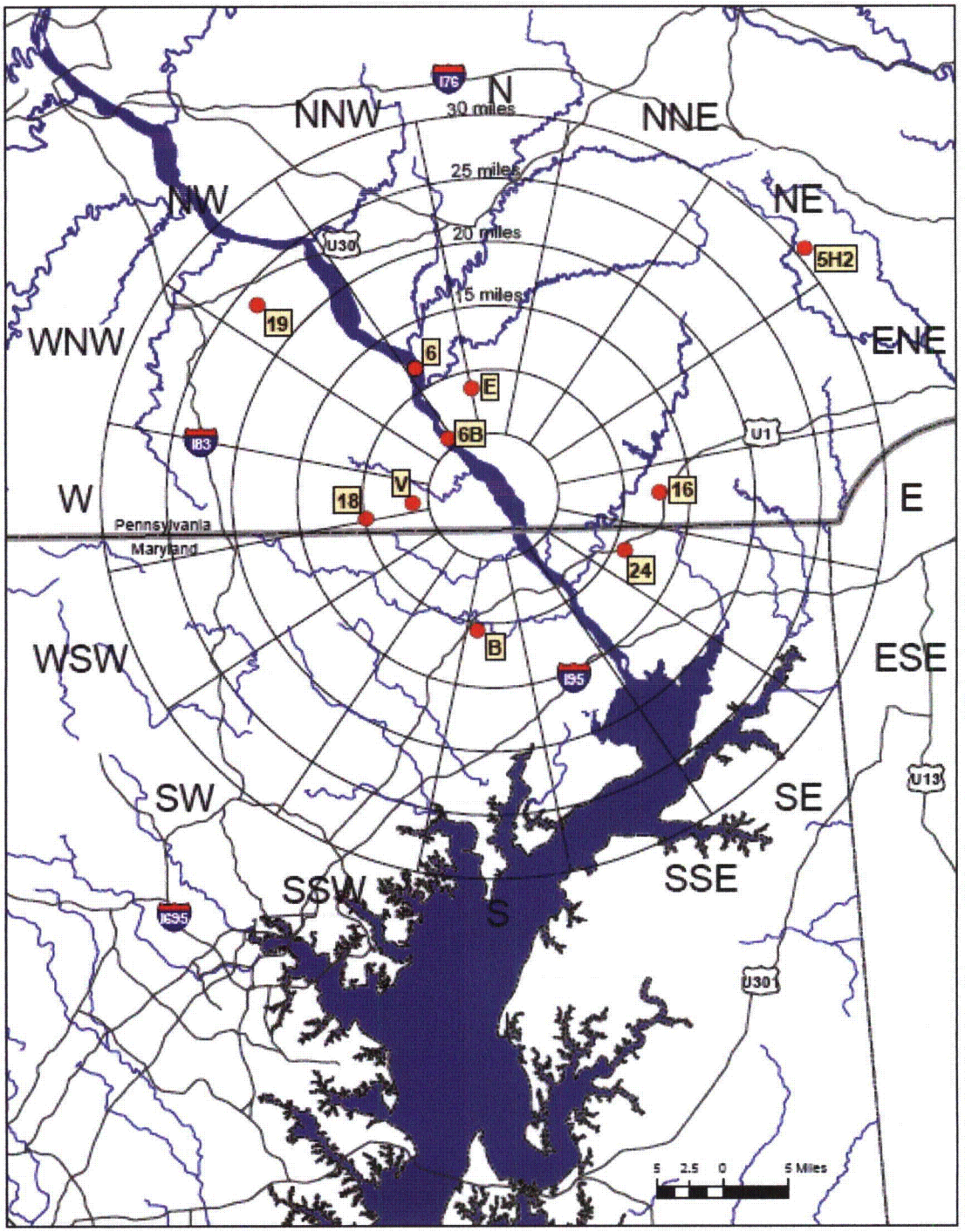


Figure B-3
Environmental Sampling Locations Greater Than
Five Miles from the Peach Bottom Atomic Power Station, 2011

APPENDIX C

DATA TABLES AND FIGURES
PRIMARY LABORATORY

TABLE C-I.1 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	1LL	1MM
12/29/10 - 03/30/11	< 144	< 146
03/30/11 - 06/29/11	< 182	< 183
06/29/11 - 09/28/11	< 190	< 176
09/28/11 - 12/28/11	< 179	< 180
MEAN	-	-

TABLE C-I.2 **CONCENTRATIONS OF I-131 IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	1LL	1MM
04/27/11 - 06/01/11	< 0.8 (1)	< 0.6 (1)
06/01/11 - 06/29/11	< 0.6	< 0.8
06/29/11 - 07/27/11	< 0.8	< 0.9
07/27/11 - 08/31/11	< 0.6	< 0.6
08/31/11 - 09/28/11	< 0.7	< 0.9
09/28/11 - 11/02/11	< 0.7	< 0.7
11/02/11 - 11/30/11	< 0.6	< 0.7
11/30/11 - 12/28/11	< 0.4	< 0.7
MEAN	-	-

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
1LL	12/29/10 - 02/02/11	< 3	< 3	< 7	< 3	< 5	< 3	< 5	< 9	< 3	< 3	< 18	< 5
	02/02/11 - 03/02/11	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 7	< 1	< 1	< 13	< 4
	03/02/11 - 03/30/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 7	< 1	< 1	< 12	< 4
	03/30/11 - 04/27/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 13	< 4
	04/27/11 - 06/01/11	< 4	< 4	< 10	< 4	< 8	< 4	< 7	< 15	< 4	< 4	< 29	< 8
	06/01/11 - 06/29/11	< 3	< 3	< 7	< 4	< 6	< 4	< 6	< 12	< 3	< 3	< 22	< 6
	06/29/11 - 07/27/11	< 7	< 6	< 14	< 6	< 15	< 7	< 13	< 12	< 6	< 7	< 37	< 10
	07/27/11 - 08/31/11	< 6	< 6	< 12	< 5	< 8	< 5	< 9	< 9	< 6	< 6	< 25	< 9
	08/31/11 - 09/28/11	< 5	< 6	< 9	< 5	< 11	< 5	< 8	< 14	< 6	< 6	< 34	< 10
	09/28/11 - 11/02/11	< 4	< 5	< 10	< 5	< 10	< 5	< 8	< 9	< 4	< 4	< 25	< 7
	11/02/11 - 11/30/11	< 5	< 5	< 11	< 6	< 10	< 6	< 8	< 8	< 4	< 5	< 24	< 6
	11/30/11 - 12/28/11	< 5	< 5	< 12	< 5	< 9	< 6	< 9	< 9	< 6	< 6	< 26	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
1MM	12/29/10 - 02/02/11	< 4	< 4	< 9	< 4	< 7	< 4	< 6	< 10	< 3	< 4	< 26	< 7
	02/02/11 - 03/02/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 15	< 5
	03/02/11 - 03/30/11	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 12	< 2	< 2	< 20	< 6
	03/30/11 - 04/27/11	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 11	< 1	< 1	< 13	< 4
	04/27/11 - 06/01/11	< 4	< 5	< 9	< 4	< 8	< 5	< 9	< 15	< 4	< 5	< 30	< 11
	06/01/11 - 06/29/11	< 3	< 3	< 7	< 4	< 6	< 3	< 7	< 11	< 3	< 4	< 23	< 8
	06/29/11 - 07/27/11	< 7	< 6	< 12	< 5	< 17	< 8	< 10	< 15	< 6	< 6	< 37	< 11
	07/27/11 - 08/31/11	< 4	< 5	< 11	< 6	< 11	< 4	< 8	< 6	< 5	< 5	< 18	< 8
	08/31/11 - 09/28/11	< 5	< 4	< 11	< 4	< 8	< 4	< 7	< 12	< 4	< 5	< 28	< 8
	09/28/11 - 11/02/11	< 4	< 4	< 8	< 4	< 7	< 5	< 7	< 13	< 3	< 4	< 28	< 8
	11/02/11 - 11/30/11	< 4	< 4	< 9	< 4	< 8	< 4	< 8	< 14	< 4	< 4	< 29	< 8
	11/30/11 - 12/28/11	< 5	< 4	< 11	< 6	< 11	< 4	< 9	< 11	< 5	< 5	< 28	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.1 CONCENTRATIONS OF GROSS BETA IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13B	4L	6I
01/03/11 - 02/01/11	< 3.6	< 3.6	< 3.7
02/10/11 - 03/01/11	3.4 ± 2.0	3.8 ± 2.0	3.5 ± 2.0
03/07/11 - 03/30/11	6.6 ± 2.3	< 3.0	< 3.0
04/04/11 - 04/26/11	6.5 ± 2.1	3.6 ± 1.9	3.8 ± 1.9
05/04/11 - 05/31/11	3.4 ± 2.1	3.9 ± 2.1	4.2 ± 2.1
06/06/11 - 06/27/11	4.1 ± 2.0	4.2 ± 2.0	3.5 ± 2.0
07/05/11 - 07/26/11	6.6 ± 1.9	2.2 ± 1.5	3.4 ± 1.6
08/02/11 - 08/30/11	< 3.2	4.5 ± 2.2	3.4 ± 2.2
09/06/11 - 09/26/11	7.2 ± 2.2	9.2 ± 2.3	6.8 ± 2.1
10/03/11 - 11/01/11	2.3 ± 1.0	2.0 ± 1.0	1.8 ± 1.0
11/07/11 - 12/01/11	3.7 ± 1.5	< 1.9	2.0 ± 1.3
12/06/11 - 12/27/11	2.8 ± 0.9	2.0 ± 0.9	3.1 ± 1.0
MEAN	4.7 ± 3.7	3.9 ± 4.4	3.6 ± 2.7

TABLE C-II.2 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13B	4L	6I
01/03/11 - 03/30/11	< 143	< 145	< 147
04/04/11 - 06/27/11	< 185	< 180	< 185
07/05/11 - 09/26/11	< 172	< 176	< 172
10/03/11 - 12/27/11	< 173	< 173	< 168
MEAN	-	-	-

TABLE C-II.3 CONCENTRATIONS OF I-131 IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13B	4L	6I
05/04/11 - 05/31/11	< 0.8 (1)	< 0.7 (1)	< 0.6 (1)
06/06/11 - 06/27/11	< 0.6	< 0.7	< 0.7
07/05/11 - 07/26/11	< 0.7	< 0.8	< 0.7
08/02/11 - 08/30/11	< 1.0	< 0.6	< 0.6
09/06/11 - 09/26/11	< 0.6	< 0.7	< 0.7
10/03/11 - 11/01/11	< 0.8	< 0.7	< 0.6
11/07/11 - 12/01/11	< 0.6	< 0.6	< 0.6
12/06/11 - 12/27/11	< 0.5	< 0.9	< 0.6
MEAN	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-II.4 **CONCENTRATIONS OF GAMMA EMITTER IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
13B	01/03/11 - 02/01/11	< 3	< 4	< 9	< 4	< 8	< 4	< 7	< 11	< 3	< 4	< 26	< 9
	02/10/11 - 03/01/11	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	03/07/11 - 03/30/11	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 11	< 1	< 2	< 18	< 6
	04/04/11 - 04/26/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 14	< 4
	05/04/11 - 05/31/11	< 3	< 3	< 9	< 4	< 7	< 4	< 6	< 14	< 3	< 4	< 27	< 8
	06/06/11 - 06/27/11	< 3	< 3	< 7	< 3	< 5	< 3	< 6	< 12	< 3	< 3	< 23	< 6
	07/05/11 - 07/26/11	< 6	< 5	< 13	< 5	< 11	< 6	< 10	< 15	< 7	< 7	< 34	< 11
	08/02/11 - 08/30/11	< 5	< 5	< 10	< 7	< 12	< 5	< 11	< 10	< 5	< 6	< 31	< 10
	09/06/11 - 09/26/11	< 4	< 5	< 11	< 5	< 9	< 5	< 8	< 15	< 4	< 5	< 32	< 11
	10/03/11 - 11/01/11	< 3	< 4	< 9	< 3	< 7	< 4	< 7	< 12	< 3	< 4	< 26	< 8
	11/07/11 - 12/01/11	< 4	< 5	< 9	< 4	< 8	< 5	< 7	< 13	< 4	< 4	< 26	< 9
	12/06/11 - 12/27/11	< 4	< 5	< 10	< 4	< 9	< 5	< 8	< 14	< 4	< 4	< 34	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
4L	12/30/10 - 02/03/11	< 3	< 3	< 7	< 3	< 6	< 4	< 7	< 9	< 3	< 3	< 18	< 5
	02/03/11 - 03/03/11	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 18	< 5
	03/03/11 - 03/31/11	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 8	< 1	< 1	< 14	< 4
	03/31/11 - 04/29/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 13	< 4
	04/29/11 - 06/02/11	< 4	< 5	< 10	< 4	< 8	< 4	< 8	< 13	< 4	< 4	< 31	< 9
	06/02/11 - 06/30/11	< 4	< 4	< 7	< 3	< 7	< 4	< 7	< 11	< 4	< 4	< 25	< 7
	06/30/11 - 07/28/11	< 6	< 6	< 15	< 4	< 10	< 7	< 10	< 15	< 7	< 6	< 33	< 10
	07/28/11 - 09/01/11	< 6	< 6	< 13	< 5	< 12	< 6	< 10	< 9	< 6	< 5	< 25	< 7
	09/01/11 - 09/29/11	< 4	< 5	< 7	< 4	< 8	< 4	< 7	< 10	< 4	< 5	< 26	< 8
	09/29/11 - 11/03/11	< 4	< 5	< 9	< 4	< 7	< 5	< 8	< 13	< 4	< 5	< 30	< 11
	11/03/11 - 12/01/11	< 4	< 4	< 9	< 3	< 11	< 6	< 8	< 14	< 4	< 5	< 30	< 10
	12/01/11 - 12/29/11	< 4	< 5	< 8	< 4	< 9	< 5	< 7	< 14	< 4	< 5	< 28	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.4 **CONCENTRATIONS OF GAMMA EMITTER IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
6I	12/30/10 - 02/03/11	< 3	< 3	< 6	< 3	< 6	< 3	< 5	< 8	< 3	< 3	< 20	< 6
	02/03/11 - 03/03/11	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 7	< 1	< 2	< 12	< 4
	03/03/11 - 03/31/11	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 1	< 1	< 16	< 5
	03/31/11 - 04/29/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 14	< 4
	04/29/11 - 06/02/11	< 5	< 4	< 10	< 4	< 10	< 5	< 8	< 14	< 4	< 5	< 30	< 10
	06/02/11 - 06/30/11	< 5	< 5	< 10	< 5	< 9	< 5	< 8	< 11	< 4	< 5	< 31	< 10
	06/30/11 - 07/28/11	< 6	< 5	< 10	< 4	< 8	< 6	< 7	< 11	< 7	< 6	< 30	< 10
	07/28/11 - 09/01/11	< 6	< 7	< 10	< 7	< 12	< 6	< 9	< 10	< 6	< 6	< 25	< 10
	09/01/11 - 09/29/11	< 7	< 7	< 14	< 9	< 13	< 7	< 13	< 15	< 6	< 5	< 34	< 8
	09/29/11 - 11/03/11	< 4	< 5	< 9	< 4	< 8	< 5	< 9	< 13	< 4	< 5	< 30	< 7
	11/03/11 - 12/01/11	< 5	< 4	< 13	< 4	< 9	< 5	< 8	< 15	< 5	< 5	< 31	< 7
	12/01/11 - 12/29/11	< 5	< 5	< 11	< 6	< 8	< 6	< 10	< 15	< 5	< 5	< 33	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1 CONCENTRATIONS OF GAMMA EMITTERS IN PREDATOR & BOTTOM FEEDER (FISH) SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PC/KG WET ± 2 SIGMA

SITE	COLLECTION DATE	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137
4	PREDATOR								
	06/10/11	2950 ± 711	< 45	< 60	< 137	< 54	< 119	< 47	< 46
	09/29/11	3810 ± 1260	< 81	< 89	< 184	< 46	< 152	< 66	< 83
	MEAN	3380 ± 1216	-	-	-	-	-	-	-
4	BOTTOM FEEDER								
	06/10/11	3680 ± 769	< 60	< 71	< 130	< 57	< 117	< 51	< 58
	09/29/11	3400 ± 1080	< 52	< 61	< 104	< 64	< 97	< 55	< 36
	MEAN	3540 ± 396	-	-	-	-	-	-	-
6	PREDATOR								
	06/13/11	3320 ± 767	< 47	< 45	< 120	< 40	< 114	< 38	< 45
	09/28/11	3710 ± 759	< 56	< 51	< 96	< 58	< 112	< 60	< 54
	MEAN	3515 ± 552	-	-	-	-	-	-	-
6	BOTTOM FEEDER								
	06/15/11	3520 ± 886	< 52	< 43	< 163	< 56	< 87	< 52	< 49
	09/28/11	3880 ± 877	< 72	< 72	< 117	< 85	< 173	< 84	< 85
	MEAN	3700 ± 509	-	-	-	-	-	-	-

TABLE C-IV.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PC/KG DRY ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Mn-54	Co-58	Co-60	Cs-134	Cs-137
4J	06/16/11	14700 ± 1380	< 64	< 52	< 85	< 50	< 57
	12/08/11	18000 ± 1410	< 68	< 59	< 80	< 54	185 ± 73
	MEAN	16350 ± 4667	-	-	-	-	-
4T	06/16/11	18700 ± 1960	< 92	< 79	< 100	< 87	< 131
	12/08/11	18100 ± 1620	< 87	< 77	< 96	< 76	107 ± 53
	MEAN	18400 ± 849	-	-	-	-	-
6F	06/16/11	15800 ± 1900	< 85	< 86	< 80	< 68	104 ± 63
	12/08/11	15300 ± 1240	< 55	< 47	< 68	< 53	< 61
	MEAN	15550 ± 707	-	-	-	-	-

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
12/30/10 - 01/06/11	36 ± 6	36 ± 6	39 ± 6	32 ± 6	
01/03/11 - 01/10/11					28 ± 4
01/06/11 - 01/13/11	22 ± 4	23 ± 4	21 ± 4	25 ± 4	
01/10/11 - 01/17/11					15 ± 5
01/13/11 - 01/20/11	21 ± 6	16 ± 5	17 ± 5	18 ± 5	
01/17/11 - 01/24/11					17 ± 4
01/20/11 - 01/27/11	16 ± 5	24 ± 6	22 ± 5	26 ± 6	
01/24/11 - 01/31/11					15 ± 5
01/27/11 - 02/03/11	20 ± 6	18 ± 6	16 ± 6	16 ± 5	
01/31/11 - 02/07/11					12 ± 5
02/03/11 - 02/10/11	17 ± 5	15 ± 5	21 ± 5	19 ± 5	
02/07/11 - 02/14/11					19 ± 5
02/10/11 - 02/17/11	21 ± 5	17 ± 5	21 ± 5	25 ± 5	
02/14/11 - 02/21/11					20 ± 5
02/17/11 - 02/24/11	10 ± 5	19 ± 5	16 ± 5	10 ± 5	
02/21/11 - 02/28/11					10 ± 4
02/24/11 - 03/03/11	17 ± 5	18 ± 5	16 ± 5	17 ± 5	
02/28/11 - 03/07/11					11 ± 4
03/03/11 - 03/09/11	14 ± 5	9 ± 5	11 ± 5	12 ± 5	
03/07/11 - 03/14/11					13 ± 5
03/09/11 - 03/17/11	9 ± 4	(1)	10 ± 4	9 ± 4	
03/14/11 - 03/22/11					16 ± 4
03/17/11 - 03/24/11	(1)	(1)	(1)	(1)	
03/22/11 - 03/28/11					28 ± 7
03/24/11 - 03/31/11	31 ± 6	31 ± 6	37 ± 6	31 ± 6	
03/28/11 - 04/04/11					26 ± 6
03/31/11 - 04/07/11	34 ± 7	27 ± 6	23 ± 6	29 ± 6	
04/04/11 - 04/11/11					20 ± 5
04/07/11 - 04/14/11	11 ± 4	17 ± 5	15 ± 5	14 ± 5	
04/11/11 - 04/18/11					12 ± 5
04/14/11 - 04/21/11	20 ± 6	20 ± 6	24 ± 6	18 ± 5	
04/18/11 - 04/25/11					12 ± 2
04/21/11 - 04/29/11	11 ± 5	7 ± 5	9 ± 5	13 ± 5	
04/25/11 - 05/02/11					9 ± 5
04/29/11 - 05/05/11	< 8	< 7	11 ± 5	11 ± 5	
05/02/11 - 05/09/11					12 ± 4
05/05/11 - 05/12/11	15 ± 4	17 ± 5	14 ± 4	16 ± 4	
05/09/11 - 05/16/11					8 ± 4
05/12/11 - 05/20/11	< 6	6 ± 4	7 ± 4	< 6	
05/16/11 - 05/23/11					9 ± 5
05/20/11 - 05/26/11	21 ± 6	13 ± 6	22 ± 6	19 ± 6	
05/23/11 - 05/31/11					21 ± 4
05/26/11 - 06/02/11	21 ± 5	19 ± 5	20 ± 5	25 ± 5	
05/31/11 - 06/06/11					8 ± 5
06/02/11 - 06/09/11	28 ± 5	19 ± 5	26 ± 5	21 ± 5	
06/06/11 - 06/13/11					26 ± 5
06/09/11 - 06/16/11	13 ± 5	16 ± 5	14 ± 5	13 ± 5	
06/13/11 - 06/20/11					11 ± 5
06/16/11 - 06/23/11	17 ± 5	15 ± 5	18 ± 5	19 ± 5	
06/20/11 - 06/27/11					16 ± 6
06/23/11 - 06/30/11	9 ± 5	12 ± 5	11 ± 5	12 ± 5	
06/27/11 - 07/05/11					15 ± 4

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
06/30/11 - 07/07/11	27 ± 6	30 ± 6	28 ± 6	32 ± 6	
07/05/11 - 07/11/11					17 ± 7
07/07/11 - 07/14/11	27 ± 6	21 ± 5	25 ± 6	23 ± 5	
07/11/11 - 07/18/11					14 ± 5
07/14/11 - 07/21/11	22 ± 5	25 ± 6	23 ± 6	21 ± 5	
07/18/11 - 07/25/11					31 ± 6
07/21/11 - 07/28/11	27 ± 6	22 ± 6	28 ± 6	26 ± 6	
07/25/11 - 08/01/11					18 ± 5
07/28/11 - 08/04/11	26 ± 6	26 ± 6	25 ± 7	30 ± 7	
08/01/11 - 08/08/11					17 ± 6
08/04/11 - 08/11/11	21 ± 5	20 ± 5	22 ± 6	19 ± 5	
08/08/11 - 08/15/11					18 ± 5
08/11/11 - 08/18/11	12 ± 5	13 ± 5	17 ± 5	14 ± 5	
08/15/11 - 08/22/11					16 ± 5
08/18/11 - 08/25/11	19 ± 5	20 ± 5	24 ± 6	19 ± 5	
08/22/11 - 08/29/11					20 ± 6
08/25/11 - 09/01/11	16 ± 6	12 ± 6	17 ± 6	17 ± 5	
08/29/11 - 09/05/11					22 ± 5
09/01/11 - 09/09/11	15 ± 5	12 ± 5	12 ± 5	15 ± 5	
09/05/11 - 09/12/11					< 8
09/09/11 - 09/15/11	30 ± 7	21 ± 6	21 ± 6	21 ± 6	
09/12/11 - 09/19/11					20 ± 6
09/15/11 - 09/22/11	12 ± 6	13 ± 6	< 8	14 ± 6	
09/19/11 - 09/26/11					15 ± 6
09/22/11 - 09/29/11	9 ± 5	< 7	9 ± 5	< 7	
09/26/11 - 10/03/11					17 ± 6
09/29/11 - 10/06/11	10 ± 5	13 ± 5	11 ± 5	12 ± 5	
10/03/11 - 10/11/11					20 ± 5
10/06/11 - 10/13/11	27 ± 6	22 ± 6	29 ± 6	30 ± 6	
10/11/11 - 10/17/11					16 ± 6
10/13/11 - 10/20/11	16 ± 6	17 ± 6	17 ± 6	18 ± 6	
10/17/11 - 10/24/11					16 ± 5
10/20/11 - 10/27/11	22 ± 6	20 ± 6	20 ± 6	23 ± 6	
10/24/11 - 10/31/11					19 ± 6
10/27/11 - 11/03/11	15 ± 5	12 ± 5	16 ± 5	18 ± 5	
10/31/11 - 11/07/11					18 ± 6
11/03/11 - 11/10/11	18 ± 6	23 ± 6	23 ± 6	23 ± 6	
11/07/11 - 11/14/11					22 ± 6
11/10/11 - 11/17/11	29 ± 6	24 ± 6	24 ± 6	20 ± 6	
11/14/11 - 11/21/11					17 ± 5
11/17/11 - 11/23/11	19 ± 6	19 ± 6	19 ± 6	20 ± 6	
11/21/11 - 11/28/11					14 ± 5
11/23/11 - 12/01/11	20 ± 5	20 ± 5	20 ± 5	19 ± 5	
11/28/11 - 12/05/11					16 ± 5
12/01/11 - 12/08/11	< 8	11 ± 6	12 ± 6	11 ± 6	
12/05/11 - 12/12/11					17 ± 5
12/08/11 - 12/15/11	32 ± 6	32 ± 6	33 ± 6	30 ± 6	
12/12/11 - 12/19/11					34 ± 6
12/15/11 - 12/22/11	29 ± 6	30 ± 6	25 ± 6	24 ± 5	
12/19/11 - 12/27/11					15 ± 5
12/22/11 - 12/29/11	13 ± 6	11 ± 5	13 ± 6	10 ± 5	
12/27/11 - 01/03/12					14 ± 5
MEAN	20 ± 14	19 ± 13	19 ± 14	20 ± 13	17 ± 11

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-V.2 MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

GROUP I - ON-SITE LOCATIONS				GROUP II - INTERMEDIATE DISTANCE LOCATIONS				GROUP III - CONTROL LOCATIONS			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
12/30/10 - 02/03/11	16	39	23 ± 15	12/30/10 - 02/03/11	16	32	23 ± 13	01/03/11 - 01/31/11	15	28	19 ± 13
02/03/11 - 03/03/11	10	21	17 ± 6	02/03/11 - 03/03/11	10	25	18 ± 12	01/31/11 - 02/28/11	10	20	15 ± 10
03/03/11 - 03/31/11	9	37	19 ± 24	03/03/11 - 03/31/11	9	31	17 ± 24	02/28/11 - 03/28/11	11	28	17 ± 16
03/31/11 - 05/05/11	7	34	18 ± 16	03/31/11 - 05/05/11	11	29	17 ± 15	03/28/11 - 05/02/11	9	26	16 ± 14
05/05/11 - 06/02/11	6	22	16 ± 11	05/05/11 - 06/02/11	16	25	20 ± 10	05/02/11 - 05/31/11	8	21	12 ± 12
06/02/11 - 06/30/11	9	28	16 ± 11	06/02/11 - 06/30/11	12	21	16 ± 9	05/31/11 - 06/27/11	8	26	15 ± 16
06/30/11 - 08/04/11	21	30	25 ± 5	06/30/11 - 08/04/11	21	32	26 ± 9	06/27/11 - 08/01/11	14	31	19 ± 14
08/04/11 - 09/01/11	12	24	18 ± 8	08/04/11 - 09/01/11	14	19	17 ± 5	08/01/11 - 08/29/11	16	20	18 ± 3
09/01/11 - 10/06/11	9	30	14 ± 12	09/01/11 - 10/06/11	12	21	15 ± 8	08/29/11 - 10/03/11	15	22	19 ± 7
10/06/11 - 11/03/11	12	29	19 ± 10	10/06/11 - 11/03/11	18	30	22 ± 11	10/03/11 - 10/31/11	16	20	18 ± 4
11/03/11 - 12/01/11	18	29	21 ± 6	11/03/11 - 12/01/11	19	23	20 ± 3	10/31/11 - 11/28/11	14	22	18 ± 7
12/01/11 - 12/29/11	11	33	22 ± 20	12/01/11 - 12/29/11	10	30	19 ± 20	11/28/11 - 01/03/12	14	34	19 ± 17
12/30/10 - 12/29/11	6	39	19 ± 14	12/30/10 - 12/29/11	9	32	20 ± 13	01/03/11 - 01/03/12	8	34	17 ± 11

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-V.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

SITE	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	Cs-134	Cs-137
1B	12/30/10 - 03/31/11	86 ± 47	< 3	< 4	< 3	< 3	< 3
	03/31/11 - 06/30/11	71 ± 49	< 3	< 5	< 3	< 3	< 3
	06/30/11 - 09/29/11	85 ± 32	< 3	< 5	< 3	< 4	< 3
	09/29/11 - 12/29/11	86 ± 27	< 3	< 4	< 4	< 3	< 3
	MEAN	82 ± 15	-	-	-	-	-
1C	12/30/10 - 03/31/11	87 ± 30	< 4	< 7	< 4	< 4	< 3
	03/31/11 - 06/30/11	76 ± 25	< 2	< 3	< 2	< 2	< 2
	06/30/11 - 09/29/11	77 ± 39	< 2	< 4	< 3	< 3	< 2
	09/29/11 - 12/29/11	71 ± 18	< 3	< 2	< 3	< 2	< 2
	MEAN	78 ± 13	-	-	-	-	-
1Z	12/30/10 - 03/31/11	97 ± 35	< 4	< 4	< 3	< 4	< 3
	03/31/11 - 06/30/11	94 ± 32	< 2	< 4	< 3	< 3	< 2
	06/30/11 - 09/29/11	79 ± 35	< 3	< 4	< 3	< 3	< 2
	09/29/11 - 12/29/11	64 ± 29	< 3	< 3	< 3	< 2	< 3
	MEAN	84 ± 30	-	-	-	-	-
3A	12/30/10 - 03/31/11	65 ± 34	< 3	< 5	< 4	< 3	< 2
	03/31/11 - 06/30/11	103 ± 19	< 1	< 2	< 2	< 1	< 1
	06/30/11 - 09/29/11	65 ± 27	< 4	< 5	< 4	< 3	< 3
	09/29/11 - 12/29/11	69 ± 14	< 2	< 1	< 2	< 2	< 2
	MEAN	75 ± 37	-	-	-	-	-
5H2	**03/07/11 - 03/14/11**	**338 ± 166**	**< 41**	**< 35**	**< 42**	**< 38**	**< 35**
	03/14/11 - 03/22/11	**< 232**	**< 26**	**< 24**	**< 22**	**< 26**	**< 25**
	03/22/11 - 03/28/11	**295 ± 181**	**< 44**	**< 31**	**< 37**	**< 33**	**< 38**
	03/28/11 - 04/04/11	**< 312**	**< 35**	**< 31**	**< 35**	**< 44**	**< 39**
	04/04/11 - 04/11/11	**< 274**	**< 33**	**< 24**	**< 47**	**< 36**	**< 36**
	01/03/11 - 03/28/11	70 ± 40	< 3	< 6	< 2	< 3	< 3
	03/28/11 - 06/27/11	65 ± 25	< 2	< 3	< 3	< 3	< 2
	06/27/11 - 10/03/11	62 ± 28	< 3	< 5	< 4	< 3	< 3
	10/03/11 - 01/03/12	72 ± 20	< 3	< 3	< 3	< 3	< 3
	MEAN	150 ± 259	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

BOLDED VALUES INDICATE ADDITIONAL SAMPLING DUE TO THE FUKUSHIMA EVENT

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
12/30/10 - 01/06/11	< 44	< 44	< 43	< 44	
01/03/11 - 01/10/11					< 28
01/06/11 - 01/13/11	< 43	< 43	< 42	< 42	
01/10/11 - 01/17/11					< 17
01/13/11 - 01/20/11	< 42	< 42	< 42	< 42	
01/17/11 - 01/24/11					< 10
01/20/11 - 01/27/11	< 59	< 58	< 57	< 57	
01/24/11 - 01/31/11					< 22
01/27/11 - 02/03/11	< 33	< 33	< 18	< 32	
01/31/11 - 02/07/11					< 15
02/03/11 - 02/10/11	< 30	< 30	< 30	< 30	
02/07/11 - 02/14/11					< 11
02/10/11 - 02/17/11	< 58	< 31	< 57	< 57	
02/14/11 - 02/21/11					< 18
02/17/11 - 02/24/11	< 41	< 40	< 40	< 40	
02/21/11 - 02/28/11					< 21
02/24/11 - 03/03/11	< 69	< 68	< 68	< 29	
02/28/11 - 03/07/11					< 31
03/03/11 - 03/09/11	< 57	< 55	< 57	< 55	
03/07/11 - 03/14/11					< 22
03/09/11 - 03/17/11	< 26	(1)	< 11	< 26	
03/14/11 - 03/22/11					< 16
03/17/11 - 03/24/11	(1)	(1)	(1)	(1)	
03/22/11 - 03/28/11					45 ± 23
03/24/11 - 03/31/11	60 ± 31	59 ± 31	36 ± 27	38 ± 26	
03/28/11 - 04/04/11					57 ± 25
03/31/11 - 04/07/11	47 ± 25	65 ± 33	94 ± 33	73 ± 35	
04/04/11 - 04/11/11					29 ± 29
04/07/11 - 04/14/11	< 37	< 35	< 30	< 30	
04/11/11 - 04/18/11					< 32
04/14/11 - 04/21/11	< 38	< 37	< 37	< 37	
04/18/11 - 04/25/11					< 22
04/21/11 - 04/29/11	< 61	< 60	< 60	< 25	
04/25/11 - 05/02/11					< 43
04/29/11 - 05/05/11	< 59	< 57	< 58	< 58	
05/02/11 - 05/09/11					< 20
05/05/11 - 05/12/11	< 68	< 67	< 37	< 67	
05/09/11 - 05/16/11					< 40
05/12/11 - 05/20/11	< 32	< 32	< 32	< 32	
05/16/11 - 05/23/11					< 15
05/20/11 - 05/26/11	< 54	< 54	< 54	< 54	
05/23/11 - 05/31/11					< 12
05/26/11 - 06/02/11	< 68	< 67	< 67	< 67	
05/31/11 - 06/06/11					< 57
06/02/11 - 06/09/11	< 53	< 52	< 52	< 52	
06/06/11 - 06/13/11					< 20
06/09/11 - 06/16/11	< 43	< 43	< 43	< 43	
06/13/11 - 06/20/11					< 17
06/16/11 - 06/23/11	< 39	< 39	< 40	< 39	
06/20/11 - 06/27/11					< 22
06/23/11 - 06/30/11	< 52	< 52	< 53	< 52	
06/27/11 - 07/05/11					< 16
06/30/11 - 07/07/11	< 52	< 52	< 23	< 52	

* THE MEAN AND 2 STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES
(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
07/05/11 - 07/11/11					< 33
07/07/11 - 07/14/11	< 69	< 69	< 70	< 68	
07/11/11 - 07/18/11					< 20
07/14/11 - 07/21/11	< 41	< 41	< 41	< 40	
07/18/11 - 07/25/11					< 21
07/21/11 - 07/28/11	< 46	< 46	< 46	< 45	
07/25/11 - 08/01/11					< 24
07/28/11 - 08/04/11	< 37	< 16	< 37	< 36	
08/01/11 - 08/08/11					< 17
08/04/11 - 08/11/11	< 69	< 69	< 70	< 67	
08/08/11 - 08/15/11					< 26
08/11/11 - 08/18/11	< 69	< 29	< 70	< 69	
08/15/11 - 08/22/11					< 54
08/18/11 - 08/25/11	< 33	< 33	< 33	< 33	
08/22/11 - 08/29/11					< 15
08/25/11 - 09/01/11	< 47	< 50	< 50	< 44	
08/29/11 - 09/05/11					< 17
09/01/11 - 09/09/11	< 23	< 23	< 24	< 23	
09/05/11 - 09/12/11					< 4
09/09/11 - 09/15/11	< 39	< 40	< 17	< 40	
09/12/11 - 09/19/11					< 17
09/15/11 - 09/22/11	< 19	< 18	< 19	< 10	
09/19/11 - 09/26/11					< 25
09/22/11 - 09/29/11	< 41	< 41	< 42	< 41	
09/26/11 - 10/03/11					< 12
09/29/11 - 10/06/11	< 37	< 37	< 37	< 36	
10/03/11 - 10/11/11					< 30
10/06/11 - 10/13/11	< 24	< 13	< 24	< 24	
10/11/11 - 10/17/11					< 19
10/13/11 - 10/20/11	< 30	< 30	< 30	< 29	
10/17/11 - 10/24/11					< 20
10/20/11 - 10/27/11	< 49	< 48	< 50	< 26	
10/24/11 - 10/31/11					< 29
10/27/11 - 11/03/11	< 55	< 55	< 55	< 55	
10/31/11 - 11/07/11					< 17
11/03/11 - 11/10/11	< 55	< 55	< 30	< 55	
11/07/11 - 11/14/11					< 16
11/10/11 - 11/17/11	< 30	< 30	< 30	< 30	
11/14/11 - 11/21/11					< 29
11/17/11 - 11/23/11	< 23	< 41	< 42	< 41	
11/21/11 - 11/28/11					< 12
11/23/11 - 12/01/11	< 35	< 35	< 36	< 35	
11/28/11 - 12/05/11					< 13
12/01/11 - 12/08/11	< 35	< 15	< 36	< 35	
12/05/11 - 12/12/11					< 23
12/08/11 - 12/15/11	< 39	< 39	< 39	< 39	
12/12/11 - 12/19/11					< 21
12/15/11 - 12/22/11	< 38	< 39	< 39	< 16	
12/19/11 - 12/27/11					< 16
12/22/11 - 12/29/11	< 58	< 58	< 59	< 58	
12/27/11 - 01/03/12					< 21
MEAN	54 ± 18	62 ± 8	65 ± 81	56 ± 50	44 ± 28

* THE MEAN AND 2 STANDARD DEVIATION ARE CALCULATED USING THE POSITIVE VALUES

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

	CONTROL FARM			INDICATOR FARM							
COLLECTION PERIOD	C	E	V	D	J	L	P	R	S	U	W
01/10/11			< 0.5		< 0.5			< 0.6	< 0.5	< 0.6	
02/07/11	< 0.7	< 0.7	< 0.5		< 0.5	< 0.7	< 0.6	< 0.4	< 0.6	< 0.5	< 0.7
03/07/11			< 0.6		< 0.6			< 0.8	< 0.6	< 0.5	
03/17/11				< 0.5							
04/04/11			< 0.4		2.6 ± 0.5			0.8 ± 0.4	< 0.5	6.9 ± 0.8	
04/11/11			**< 0.3**								
04/18/11			< 0.6		< 0.4			< 0.5	< 0.5	1.3 ± 0.4	
04/25/11			**< 0.4**								
05/02/11	< 0.6	< 0.5	< 0.4	< 0.4	< 0.6	< 0.4	< 0.5	< 0.4	< 0.3	< 0.8	< 0.5
05/09/11			< 0.4								
05/16/11			< 0.6		< 0.5			< 0.8	< 0.6	< 0.7	
05/30/11			< 0.5		< 0.7			< 0.6	< 0.5	< 0.6	
06/13/11			< 0.8		< 0.8			< 0.9	< 0.8	< 0.8	
06/27/11			< 0.8		< 0.8			< 0.6	< 0.6	< 0.9	
07/11/11			< 0.8		< 0.8			< 0.9	< 0.8	< 0.9	
07/25/11			< 0.7		< 0.7			< 0.7	< 0.7	< 0.7	
08/08/11	< 0.7	< 0.7	< 0.7	< 0.6	< 0.8	< 0.6	< 0.6	< 0.7	< 0.7	< 0.7	< 0.6
08/22/11			< 0.6		< 0.5			< 0.5	< 0.5	< 0.5	
09/07/11			< 0.7		< 0.6			< 0.6	< 0.7	< 0.6	
09/19/11			< 0.5		< 0.4			< 0.6	< 0.4	< 0.6	
10/03/11			< 0.6		< 0.6			< 0.7	< 0.8	< 0.8	
10/17/11			< 0.7		< 0.7			< 0.8	< 0.8	< 0.8	
10/31/11			< 0.8		< 0.7			< 0.8	< 0.7	< 0.7	
11/15/11	< 0.8	< 0.7	< 0.7	< 0.8	< 0.7	< 1.0	< 0.8	< 0.6	< 0.7	< 0.7	< 0.7
11/28/11			< 0.7		< 0.6			< 0.6	< 0.6	< 0.5	
12/12/11			< 0.7		< 0.7			< 0.6	< 0.7	< 0.7	
MEAN	-	-	-	-	-	-	-	-	-	-	-

BOLDED VALUES INDICATE ADDITIONAL SAMPLING DUE TO THE FUKUSHIMA EVENT

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
C	02/07/11	1320 ± 115	< 5	< 5	< 38	< 11
	05/02/11	1200 ± 132	< 5	< 6	< 39	< 11
	08/08/11	1180 ± 123	< 5	< 6	< 24	< 8
	11/14/11	1110 ± 170	< 7	< 9	< 38	< 11
	MEAN	1203 ± 175	-	-	-	-
D	03/17/11	1360 ± 128	< 4	< 5	< 39	< 14
	05/02/11	1260 ± 146	< 5	< 6	< 35	< 10
	08/08/11	1200 ± 97	< 3	< 4	< 21	< 6
	11/14/11	1380 ± 177	< 5	< 6	< 29	< 9
	MEAN	1300 ± 170	-	-	-	-
E	02/07/11	1400 ± 99	< 4	< 4	< 33	< 11
	05/02/11	1200 ± 114	< 4	< 5	< 36	< 10
	08/08/11	1320 ± 117	< 4	< 5	< 23	< 6
	11/14/11	1320 ± 194	< 8	< 9	< 42	< 12
	MEAN	1310 ± 165	-	-	-	-
J	01/10/11	1260 ± 117	< 4	< 5	< 27	< 8
	02/07/11	1230 ± 123	< 5	< 6	< 40	< 11
	03/07/11	1150 ± 123	< 5	< 6	< 45	< 12
	04/04/11	1350 ± 150	< 6	< 7	< 46	< 12
	04/18/11	1370 ± 44	< 2	< 2	< 8	< 2
	05/02/11	1160 ± 110	< 5	< 5	< 37	< 5
	05/16/11	1160 ± 132	< 5	< 6	< 37	< 12
	05/30/11	1390 ± 119	< 4	< 5	< 37	< 12
	06/13/11	1400 ± 144	< 5	< 6	< 52	< 11
	06/27/11	1300 ± 179	< 7	< 9	< 54	< 12
	07/11/11	1370 ± 152	< 7	< 7	< 35	< 7
	07/25/11	1300 ± 158	< 6	< 8	< 32	< 8
	08/08/11	1350 ± 121	< 4	< 5	< 25	< 9
	08/22/11	1460 ± 196	< 7	< 8	< 39	< 11
	09/07/11	1180 ± 131	< 5	< 5	< 21	< 6
	09/19/11	1320 ± 131	< 5	< 6	< 35	< 9
	10/03/11	1290 ± 192	< 6	< 8	< 36	< 12
	10/17/11	1220 ± 113	< 4	< 5	< 24	< 7
	10/31/11	1150 ± 96	< 4	< 4	< 18	< 6
	11/14/11	1550 ± 219	< 9	< 9	< 52	< 14
	11/28/11	1300 ± 186	< 6	< 8	< 54	< 13
	12/12/11	1180 ± 132	< 5	< 5	< 23	< 7
	MEAN	1293 ± 217	-	-	-	-

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
L	02/07/11	1200 ± 85	< 5	< 5	< 37	< 10
	05/02/11	1230 ± 115	< 5	< 6	< 40	< 13
	08/08/11	1380 ± 122	< 4	< 5	< 20	< 7
	11/14/11	1280 ± 177	< 5	< 7	< 35	< 7
	MEAN	1273 ± 158	-	-	-	-
P	02/07/11	1230 ± 95	< 4	< 4	< 28	< 9
	05/02/11	1330 ± 128	< 5	< 6	< 38	< 12
	08/08/11	1360 ± 108	< 5	< 5	< 24	< 8
	11/14/11	1300 ± 209	< 7	< 8	< 48	< 15
	MEAN	1305 ± 111	-	-	-	-
R	01/10/11	1320 ± 134	< 5	< 7	< 35	< 8
	02/07/11	1320 ± 141	< 6	< 6	< 45	< 14
	03/07/11	1240 ± 144	< 5	< 7	< 35	< 14
	04/04/11	1260 ± 111	< 4	< 5	< 33	< 8
	04/18/11	1170 ± 51	< 2	< 2	< 9	< 3
	05/02/11	1190 ± 143	< 5	< 5	< 43	< 10
	05/16/11	1340 ± 140	< 5	< 6	< 36	< 11
	05/30/11	1230 ± 106	< 5	< 5	< 41	< 14
	06/13/11	1250 ± 134	< 6	< 6	< 47	< 11
	06/27/11	1290 ± 184	< 7	< 7	< 59	< 11
	07/11/11	1350 ± 182	< 7	< 6	< 34	< 9
	07/25/11	1270 ± 174	< 4	< 7	< 33	< 5
	08/08/11	1200 ± 107	< 4	< 5	< 21	< 6
	08/22/11	1340 ± 153	< 7	< 8	< 34	< 7
	09/07/11	1310 ± 183	< 8	< 9	< 37	< 11
	09/19/11	1500 ± 159	< 6	< 6	< 32	< 8
	10/03/11	1360 ± 206	< 7	< 10	< 56	< 13
	10/17/11	1500 ± 142	< 5	< 6	< 30	< 9
	10/31/11	1220 ± 101	< 4	< 4	< 23	< 7
	11/14/11	1180 ± 178	< 7	< 7	< 43	< 10
	11/28/11	1430 ± 107	< 4	< 5	< 34	< 11
	12/12/11	1400 ± 168	< 7	< 8	< 37	< 10
	MEAN	1303 ± 190	-	-	-	-

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
S	01/10/11	1290 ± 123	< 4	< 5	< 27	< 9
	02/07/11	1170 ± 98	< 4	< 5	< 32	< 9
	03/07/11	1280 ± 113	< 4	< 5	< 33	< 7
	04/04/11	1240 ± 122	< 5	< 5	< 44	< 9
	04/18/11	1390 ± 47	< 2	< 2	< 9	< 3
	05/02/11	1300 ± 124	< 4	< 6	< 40	< 12
	05/16/11	1300 ± 143	< 6	< 6	< 44	< 13
	05/30/11	1160 ± 108	< 4	< 5	< 38	< 12
	06/13/11	1290 ± 137	< 5	< 7	< 45	< 15
	06/27/11	1330 ± 133	< 6	< 6	< 49	< 14
	07/11/11	1170 ± 147	< 7	< 7	< 32	< 9
	07/25/11	1180 ± 159	< 7	< 7	< 35	< 8
	08/08/11	1250 ± 127	< 4	< 5	< 24	< 9
	08/22/11	1270 ± 161	< 6	< 7	< 34	< 12
	09/07/11	1140 ± 158	< 5	< 6	< 26	< 8
	09/19/11	1260 ± 127	< 6	< 6	< 29	< 7
	10/03/11	1060 ± 215	< 7	< 8	< 43	< 9
	10/17/11	1250 ± 142	< 8	< 7	< 40	< 11
	10/31/11	1240 ± 135	< 5	< 5	< 26	< 10
	11/14/11	1420 ± 191	< 8	< 10	< 50	< 10
	11/28/11	1230 ± 121	< 4	< 4	< 35	< 13
	12/12/11	1320 ± 172	< 7	< 8	< 37	< 9
	MEAN	1252 ± 166	-	-	-	-
U	01/10/11	1250 ± 95	< 3	< 4	< 20	< 6
	02/07/11	1310 ± 96	< 3	< 4	< 26	< 8
	03/07/11	1330 ± 144	< 6	< 6	< 47	< 12
	04/04/11	1160 ± 40	< 1	< 2	< 11	< 3
	04/18/11	1200 ± 38	< 1	< 2	< 7	< 2
	05/02/11	1280 ± 139	< 5	< 7	< 43	< 12
	05/16/11	1190 ± 117	< 4	< 6	< 31	< 8
	05/30/11	1250 ± 122	< 5	< 5	< 44	< 12
	06/13/11	1300 ± 166	< 5	< 6	< 51	< 15
	06/27/11	1210 ± 136	< 5	< 6	< 42	< 6
	07/11/11	1170 ± 153	< 6	< 8	< 36	< 9
	07/25/11	1230 ± 152	< 7	< 8	< 29	< 11
	08/08/11	1320 ± 127	< 5	< 6	< 28	< 7
	08/22/11	1380 ± 166	< 6	< 8	< 34	< 11
	09/07/11	1260 ± 150	< 5	< 6	< 29	< 10
	09/19/11	1110 ± 135	< 7	< 7	< 34	< 11
	10/03/11	1300 ± 160	< 8	< 8	< 35	< 11
	10/17/11	1080 ± 118	< 6	< 7	< 31	< 6
	10/31/11	1180 ± 97	< 3	< 4	< 20	< 6
	11/14/11	1220 ± 197	< 9	< 7	< 45	< 14
	11/28/11	1380 ± 124	< 5	< 5	< 39	< 11
	12/12/11	1540 ± 184	< 7	< 8	< 38	< 10
	MEAN	1257 ± 202	-	-	-	-

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
V	01/10/11	1120 ± 123	< 4	< 5	< 26	< 10
	02/07/11	1250 ± 103	< 4	< 5	< 32	< 10
	03/07/11	1170 ± 123	< 5	< 6	< 41	< 13
	04/04/11	1190 ± 146	< 5	< 7	< 47	< 15
	04/11/11	**1280 ± 116**	**< 4**	**< 4**	**< 38**	**< 8**
	04/18/11	1260 ± 41	< 2	< 2	< 8	< 2
	04/25/11	**1230 ± 120**	**< 6**	**< 5**	**< 21**	**< 6**
	05/02/11	1330 ± 149	< 5	< 7	< 48	< 13
	05/09/11	1140 ± 165	< 6	< 8	< 33	< 13
	05/16/11	1440 ± 133	< 5	< 6	< 48	< 14
	05/30/11	1240 ± 108	< 4	< 5	< 40	< 14
	06/13/11	1240 ± 136	< 5	< 5	< 45	< 13
	06/27/11	1070 ± 150	< 6	< 7	< 43	< 8
	07/11/11	1200 ± 183	< 7	< 8	< 35	< 11
	07/25/11	1230 ± 193	< 8	< 7	< 39	< 12
	08/08/11	1200 ± 128	< 4	< 5	< 21	< 6
	08/22/11	1310 ± 167	< 7	< 8	< 43	< 11
	09/07/11	1150 ± 158	< 7	< 7	< 30	< 11
	09/19/11	1130 ± 142	< 6	< 7	< 35	< 12
	10/03/11	1150 ± 201	< 7	< 10	< 44	< 9
	10/17/11	1050 ± 123	< 5	< 5	< 25	< 8
	10/31/11	968 ± 106	< 5	< 5	< 28	< 7
	11/14/11	1210 ± 172	< 7	< 10	< 45	< 14
	11/28/11	1140 ± 134	< 5	< 7	< 42	< 15
	12/12/11	1300 ± 171	< 6	< 7	< 35	< 10
	MEAN	1200 ± 197	-	-	-	-
W	02/07/11	1310 ± 89	< 3	< 4	< 24	< 9
	05/02/11	1350 ± 118	< 5	< 5	< 35	< 11
	08/08/11	1290 ± 114	< 4	< 5	< 22	< 5
	11/15/11	1250 ± 150	< 7	< 7	< 37	< 9
	MEAN	1300 ± 83	-	-	-	-

BOLDED VALUES INDICATE ADDITIONAL SAMPLING DUE TO THE FUKUSHIMA EVENT

TABLE C-VIII.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Co-60	I-131	Cs-134	Cs-137
1Q									
Cabbage Leaves	05/30/11	< 65 (1)	4581 ± 177	< 7	< 8	< 8	< 30	< 6	< 7
(Green) Cabbage	06/27/11	188 ± 67	3199 ± 165	< 7	< 7	< 8	< 47	< 7	< 7
Red Cabbage	06/27/11	< 60	3893 ± 157	< 6	< 6	< 7	< 25	< 5	< 6
(Green) Cabbage	07/25/11	< 183	2718 ± 382	< 17	< 18	< 23	< 47	< 17	< 18
Pak Choi	07/25/11	< 184	4555 ± 414	< 20	< 17	< 23	< 36	< 17	< 19
Red Cabbage	07/25/11	< 165	3552 ± 452	< 19	< 20	< 23	< 42	< 15	< 20
Brussel Sprout Leaves	08/22/11	325 ± 140	5288 ± 443	< 18	< 16	< 21	< 33	< 16	< 19
Green Cabbage	08/22/11	< 114	2218 ± 319	< 17	< 17	< 16	< 27	< 15	< 16
Red Cabbage	08/22/11	162 ± 134	3471 ± 403	< 16	< 17	< 26	< 36	< 17	< 18
Brussel Sprout Leaves	09/19/11	430 ± 283	4329 ± 617	< 24	< 27	< 31	< 46	< 22	< 24
Green Cabbage	09/19/11	206 ± 93	2675 ± 272	< 11	< 12	< 15	< 24	< 11	< 12
Red Cabbage	09/19/11	363 ± 167	4769 ± 530	< 18	< 19	< 28	< 43	< 20	< 24
	MEAN	279 ± 218	3770.7 ± 1915	-	-	-	-	-	-
5S									
Cabbage Leaves	05/30/11	< 110	5393 ± 238	< 11	< 12	< 13	< 52	< 11	< 11
Leaf Lettuce	05/30/11	240 ± 119	3900 ± 234	< 12	< 13	< 13	< 56	< 12	< 13
(Green) Cabbage	06/27/11	< 73	2950 ± 184	< 8	< 8	< 10	< 49	< 7	< 8
(Head) Lettuce	06/27/11	172 ± 111	5361 ± 266	< 10	< 11	< 12	< 58	< 9	< 10
Swiss Chard	06/27/11	220 ± 123	9342 ± 356	< 9	< 12	< 12	< 59	< 8	< 10
(Green) Cabbage	07/25/11	< 221	5372 ± 536	< 25	< 24	< 27	< 48	< 22	< 26
(Leaf) Lettuce	07/25/11	< 258	4822 ± 642	< 22	< 13	< 27	< 52	< 21	< 22
Swiss Chard	07/25/11	< 256	10470 ± 943	< 27	< 27	< 37	< 58	< 29	< 28
Green Cabbage	08/22/11	< 173	3508 ± 389	< 18	< 17	< 27	< 32	< 20	< 20
Red Beet Leaves	08/22/11	490 ± 156	7966 ± 557	< 21	< 19	< 25	< 36	< 17	< 20
Sweet Corn Leaves	08/22/11	2610 ± 276	4746 ± 470	< 18	< 20	< 20	< 38	< 16	< 20
Celery Leaves	09/19/11	882 ± 236	6425 ± 512	< 18	< 22	< 23	< 42	< 18	< 19
Green Cabbage	09/19/11	< 142	2329 ± 402	< 18	< 18	< 24	< 40	< 18	< 18
Red Beet Leaves	09/19/11	730 ± 98	8310 ± 278	< 9	< 9	< 12	< 17	< 8	< 9
	MEAN	763 ± 1716	5778.1 ± 4879	-	-	-	-	-	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-IX.1 QUARTERLY TLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH ± STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
2	5.4 ± 1.6	6.2 ± 0.6	4.7 ± 0.7	4.7 ± 0.4	6.0 ± 0.7
5	5.0 ± 0.7	5.4 ± 0.5	4.6 ± 0.3	4.7 ± 0.4	5.1 ± 0.7
14	5.7 ± 1.7	6.2 ± 1.0	5.3 ± 0.2	4.7 ± 0.4	6.5 ± 0.2
15	5.5 ± 1.0	6.1 ± 1.0	5.3 ± 0.7	4.9 ± 0.3	5.7 ± 0.8
16	5.6 ± 1.3	6.2 ± 0.4	4.7 ± 0.2	5.4 ± 1.2	5.9 ± 0.9
17	6.5 ± 1.1	7.0 ± 0.5	6.4 ± 0.3	5.7 ± 0.6	6.7 ± 0.5
18	4.8 ± 3.7	6.4 ± 0.5	2.1 ± 0.4	5.0 ± 0.7	5.6 ± 0.3
19	5.4 ± 1.9	5.9 ± 0.2	4.4 ± 0.5	4.7 ± 0.5	6.4 ± 1.1
1A	5.5 ± 1.4	6.3 ± 0.6	5.2 ± 0.3	4.7 ± 0.3	5.7 ± 0.9
1B	4.7 ± 1.6	5.5 ± 0.4	4.2 ± 0.3	3.8 ± 0.4	5.1 ± 0.4
1C	5.8 ± 1.0	6.1 ± 0.4	5.6 ± 0.9	5.1 ± 0.5	6.2 ± 0.5
1D	5.8 ± 1.7	6.8 ± 1.1	5.1 ± 0.8	5.0 ± 0.9	6.2 ± 1.0
1E	5.5 ± 1.7	6.6 ± 0.8	4.9 ± 0.3	4.8 ± 0.6	5.7 ± 1.1
1F	6.4 ± 1.3	7.2 ± 0.7	6.3 ± 0.7	5.6 ± 0.4	6.6 ± 0.9
1G	4.3 ± 1.4	5.2 ± 0.5	3.8 ± 0.3	3.7 ± 0.2	4.3 ± 0.4
1H	5.7 ± 1.0	6.3 ± 0.8	5.4 ± 0.5	5.2 ± 0.6	5.8 ± 0.6
1I	4.4 ± 1.6	5.5 ± 0.5	4.0 ± 0.6	3.6 ± 0.3	4.4 ± 0.2
1J	6.2 ± 1.0	6.7 ± 0.2	5.8 ± 0.7	5.7 ± 1.3	6.6 ± 0.9
1K	6.0 ± 1.4	6.6 ± 0.6	5.4 ± 0.6	5.3 ± 0.7	6.6 ± 0.5
1L	4.7 ± 1.6	5.8 ± 0.6	4.6 ± 0.7	3.9 ± 0.4	4.5 ± 0.6
1M	3.3 ± 1.4	4.2 ± 0.7	3.0 ± 0.4	2.6 ± 0.5	3.4 ± 0.3
1P	3.7 ± 1.4	4.7 ± 0.6	3.4 ± 0.2	3.1 ± 0.5	3.7 ± 0.4
1Q	4.5 ± 1.0	5.1 ± 0.5	4.1 ± 0.3	4.0 ± 0.4	4.7 ± 0.6
1R	7.6 ± 1.5	8.2 ± 0.3	7.6 ± 0.6	6.6 ± 0.5	8.1 ± 0.9
22	6.1 ± 1.8	6.7 ± 0.6	6.1 ± 0.4	4.8 ± 0.4	6.7 ± 1.7
23	6.0 ± 1.1	6.5 ± 0.9	5.6 ± 1.8	5.4 ± 0.5	6.3 ± 1.4
24	4.4 ± 1.7	5.5 ± 0.8	3.7 ± 0.4	3.7 ± 0.3	4.5 ± 0.4
26	6.3 ± 1.7	7.4 ± 0.4	5.9 ± 1.3	5.5 ± 0.3	6.5 ± 0.8
27	5.9 ± 0.9	6.4 ± 1.0	5.6 ± 0.7	5.5 ± 0.7	6.2 ± 0.5
2B	5.5 ± 1.4	6.0 ± 0.5	6.0 ± 3.4	4.5 ± 0.4	5.6 ± 0.6
32	6.2 ± 1.1	6.7 ± 0.9	5.9 ± 0.5	5.5 ± 0.5	6.6 ± 1.8
3A	4.2 ± 1.1	4.9 ± 0.6	3.8 ± 0.7	3.7 ± 0.6	4.2 ± 0.2
40	6.5 ± 1.4	7.3 ± 1.5	6.2 ± 0.7	5.7 ± 0.6	6.8 ± 0.7
42	4.8 ± 1.0	5.4 ± 0.4	4.5 ± 0.3	4.3 ± 0.4	4.9 ± 0.4
43	6.0 ± 1.2	6.5 ± 0.4	5.9 ± 1.3	5.2 ± 0.5	6.5 ± 0.7
44	5.2 ± 1.3	5.9 ± 0.6	4.8 ± 0.9	4.5 ± 0.4	5.6 ± 1.1
45	6.0 ± 0.9	6.5 ± 0.3	5.7 ± 0.5	5.5 ± 0.9	6.1 ± 1.3
46	4.9 ± 1.5	5.8 ± 0.6	4.1 ± 0.4	4.6 ± 0.6	5.1 ± 0.4
47	6.1 ± 1.2	6.6 ± 0.9	5.7 ± 0.7	5.4 ± 0.4	6.5 ± 0.4
48	5.6 ± 1.3	6.3 ± 1.0	5.5 ± 0.8	4.7 ± 0.3	5.8 ± 0.9
49	5.7 ± 1.4	6.5 ± 0.7	5.4 ± 1.2	4.9 ± 1.1	6.0 ± 0.3
4K	3.5 ± 1.2	4.3 ± 0.8	3.3 ± 0.3	2.8 ± 0.4	3.4 ± 0.5
50	6.3 ± 1.3	6.9 ± 0.6	5.7 ± 0.8	5.8 ± 0.7	6.9 ± 1.0
51	5.7 ± 0.8	6.0 ± 0.4	5.4 ± 1.0	5.2 ± 0.6	6.0 ± 0.5
6B	4.3 ± 1.3	5.2 ± 0.8	3.8 ± 0.5	3.8 ± 0.5	4.4 ± 0.4
1NN	6.0 ± 1.6	6.3 ± 0.8	5.7 ± 0.6	5.0 ± 0.3	6.8 ± 0.5
31A	4.6 ± 1.4	5.5 ± 0.4	4.3 ± 0.6	3.8 ± 0.5	4.6 ± 0.2

TABLE C-IX.2 MEAN QUARTERLY TLD RESULTS FOR THE SITE BOUNDARY, INTERMEDIATE AND CONTROL LOCATIONS FOR PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF MILLI-ROENTGEN/MONTH
STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	SITE BOUNDARY ± 2 S.D.	INTERMEDIATE	CONTROL
JAN-MAR	6.1 ± 1.9	6.1 ± 1.5	6.0 ± 0.8
APR-JUN	5.1 ± 2.2	5.2 ± 1.7	3.7 ± 2.3
JUL-SEP	4.6 ± 2.0	4.8 ± 1.5	4.7 ± 1.5
OCT-DEC	5.6 ± 2.4	5.8 ± 1.9	5.6 ± 1.6

TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH

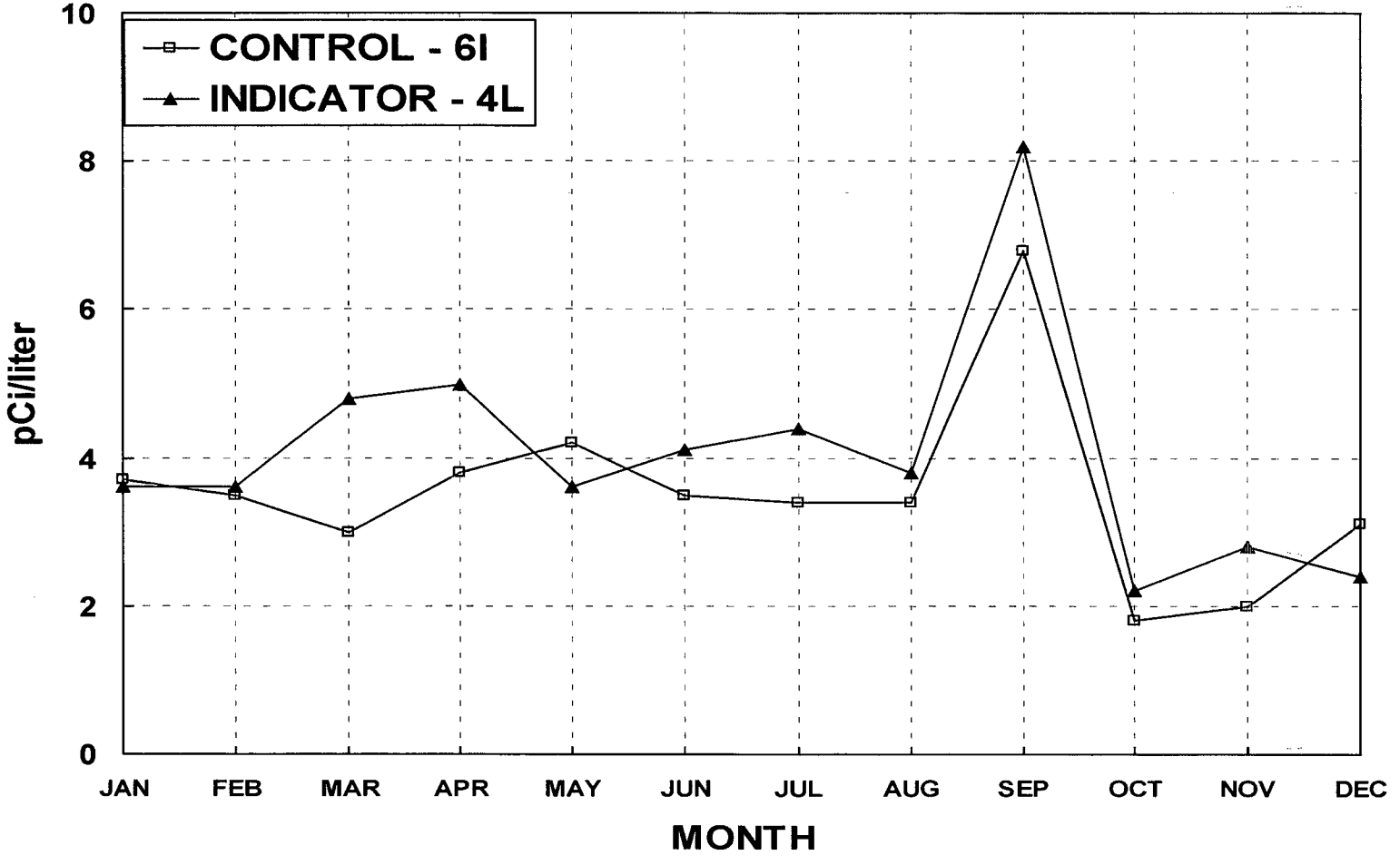
LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
SITE BOUNDARY	80	2.6	8.2	5.4 ± 2.4
INTERMEDIATE	92	2.8	7.4	5.5 ± 1.9
CONTROL	16	2.1	6.4	5.0 ± 2.3

SITE BOUNDARY STATIONS - 1A, 1B, 1C, 1D, 1E, 1F, 1G, 1H, 1I, 1J, 1K, 1L, 1M, 1NN, 1P, 1Q, 1R, 2, 2B, 40

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

CONTROL STATIONS - 16, 18, 19, 24

FIGURE C-1
MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 2011



PBAPS changed to total gross beta at the beginning of 2005.
Previous data included summation of less than values.

FIGURE C-2
MEAN ANNUAL CS-137 CONCENTRATIONS IN FISH SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 – 2011

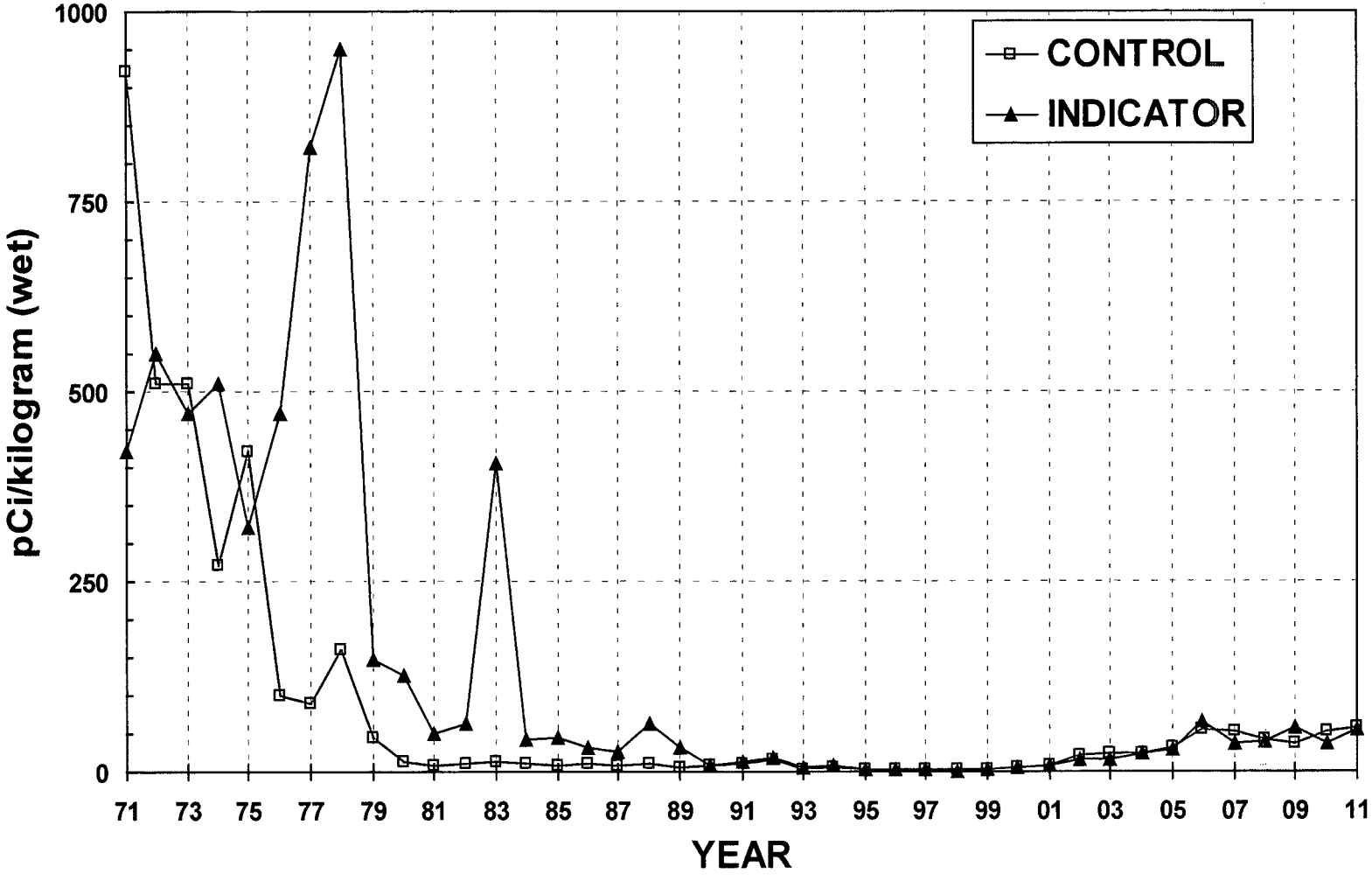
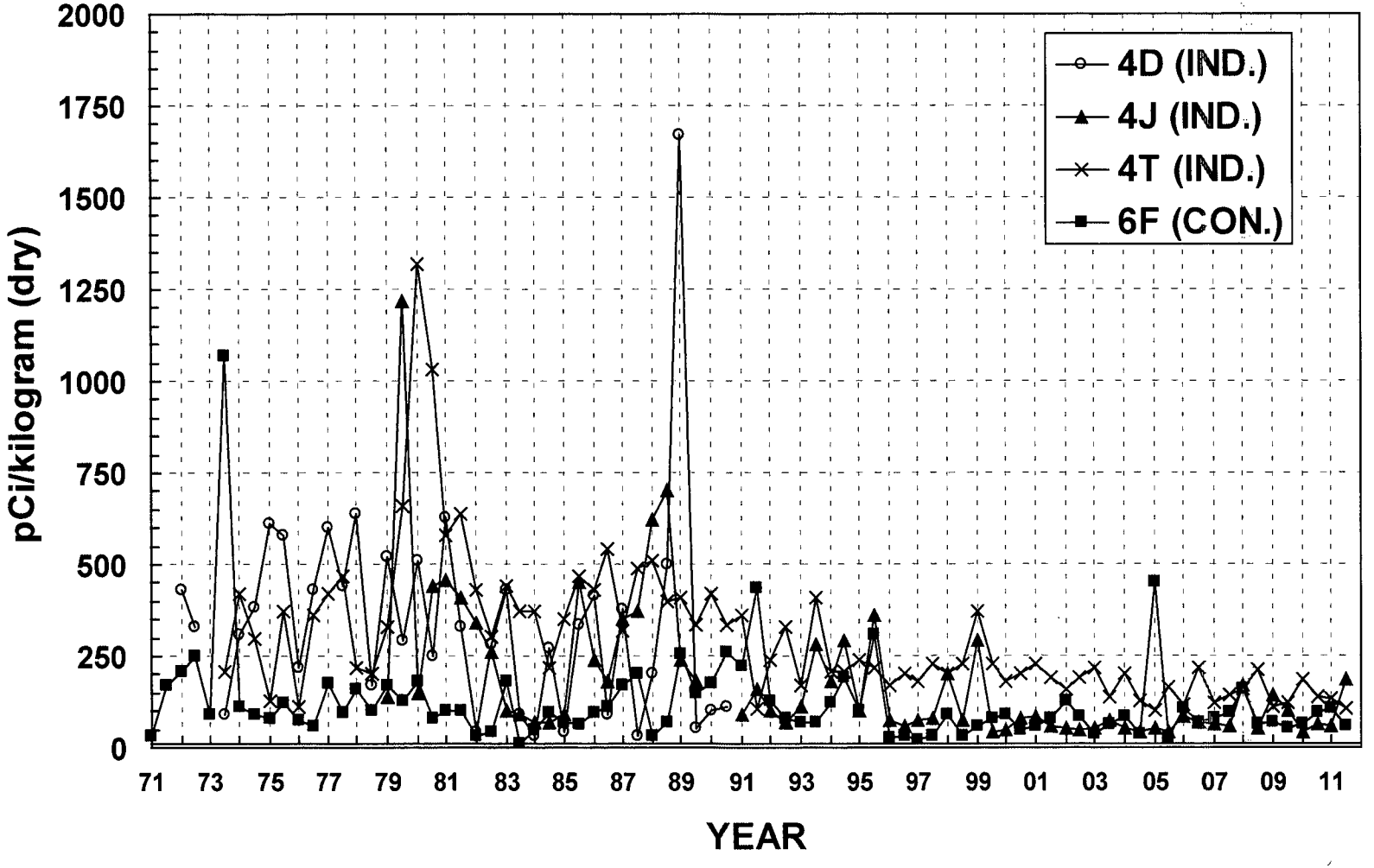


FIGURE C-3
MEAN SEMI-ANNUAL CS-137 CONCENTRATIONS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 – 2011



No sample collected from Station 4J in 1990 and Station 4D discontinued beginning 1991

FIGURE C-4
MEAN WEEKLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 2011

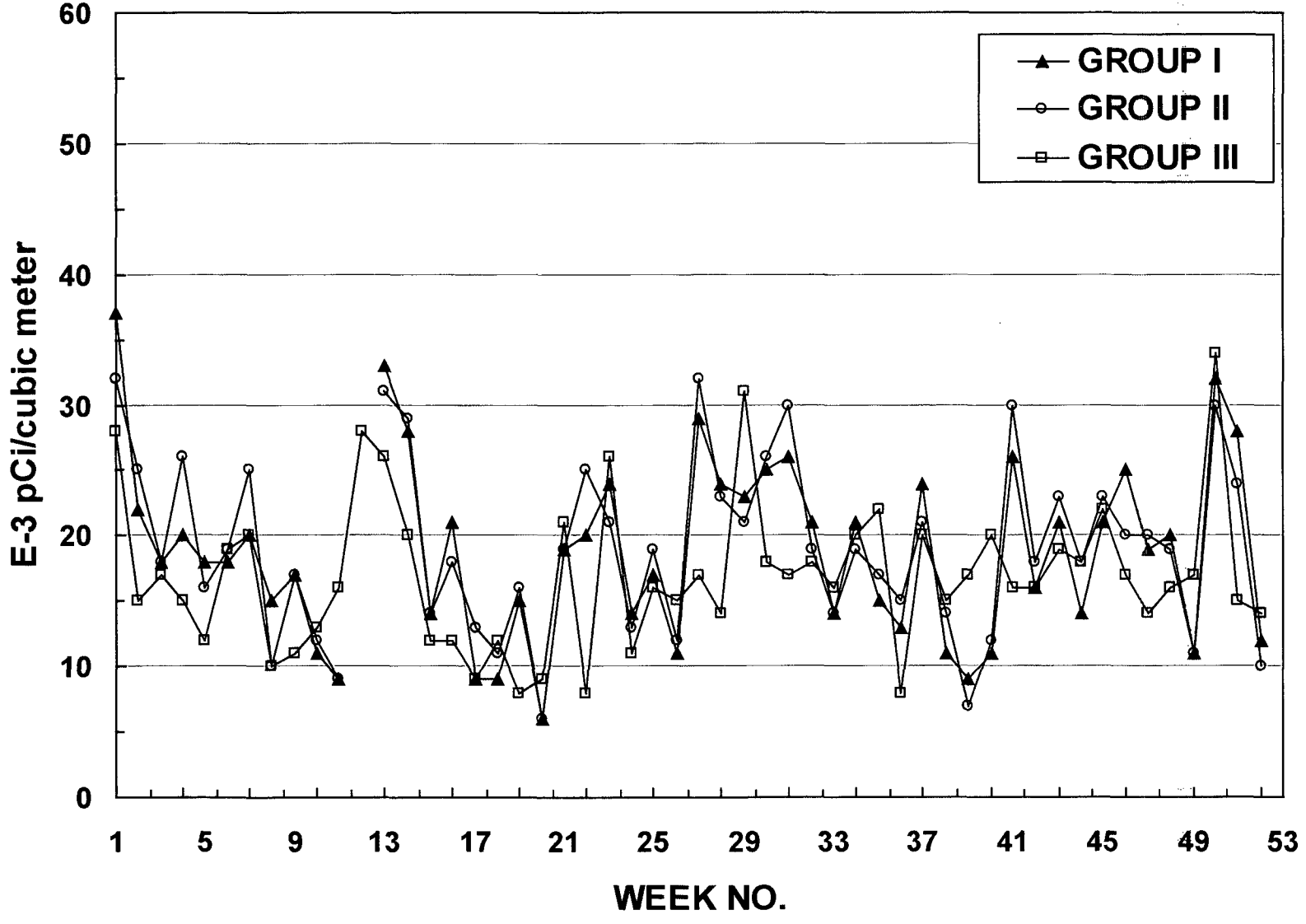


FIGURE C-5
MEAN MONTHLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1970 – 2011

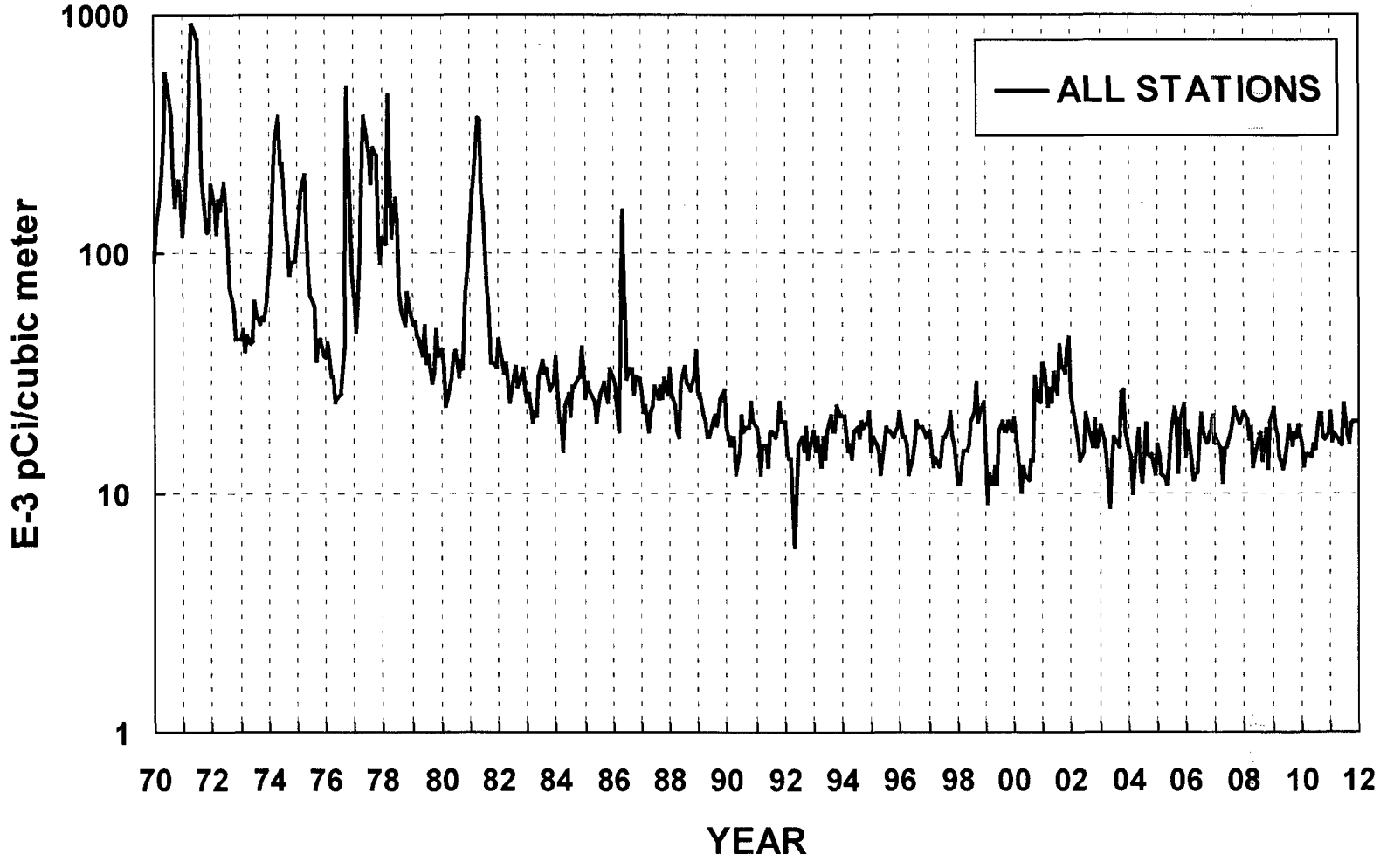
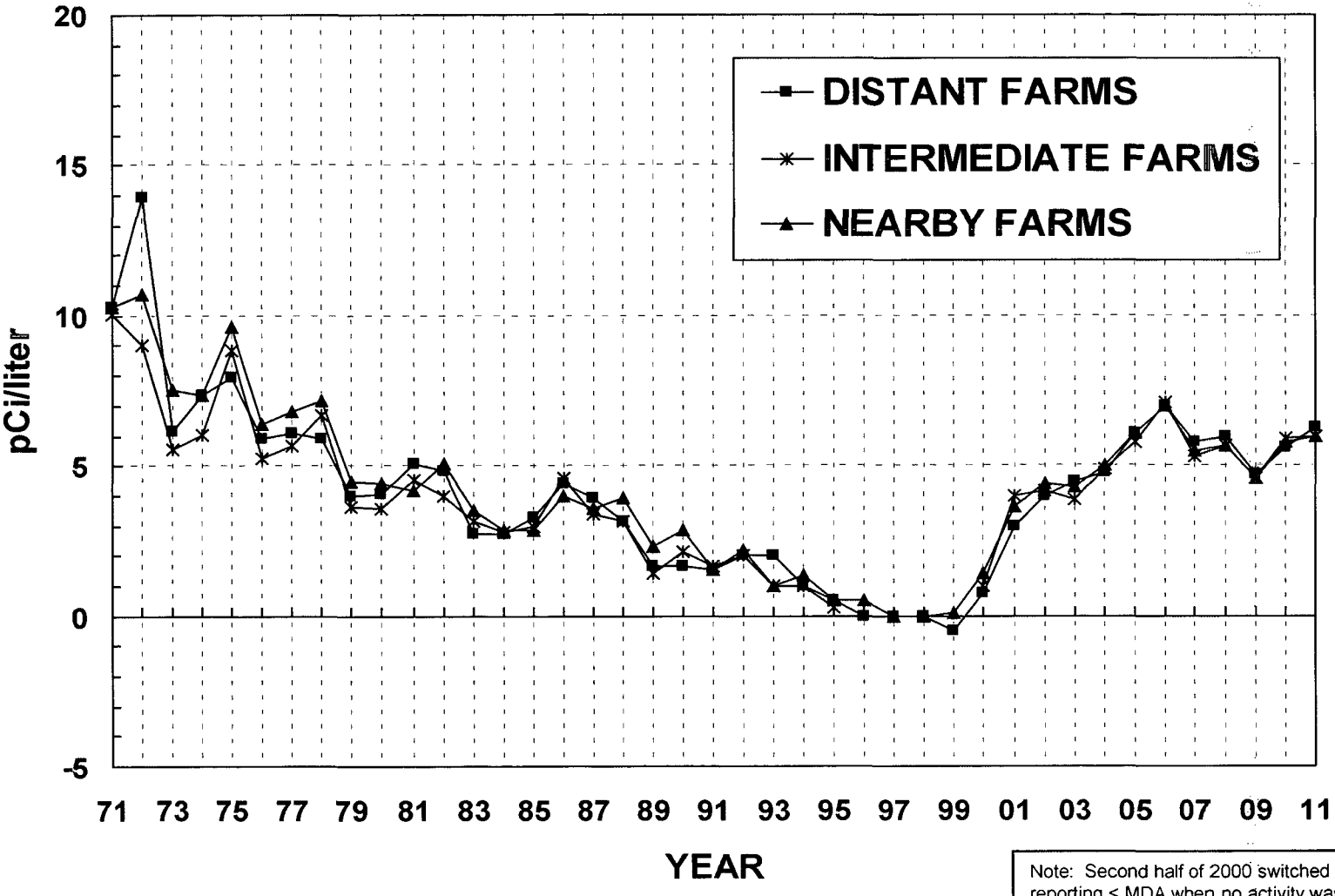


FIGURE C-6
MEAN ANNUAL CS-137 CONCENTRATIONS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 - 2011



Intermediate Farms Discontinued from 1995 - 1999
Cs-137 milk LLD = 18 pCi/liter

Note: Second half of 2000 switched to reporting < MDA when no activity was detected. Using MDA values result in a larger number.

FIGURE C- 7
MEAN QUARTERLY AMBIENT GAMMA RADIATION LEVELS (TLD) IN THE VICINITY OF PBAPS, 1973 – 2011

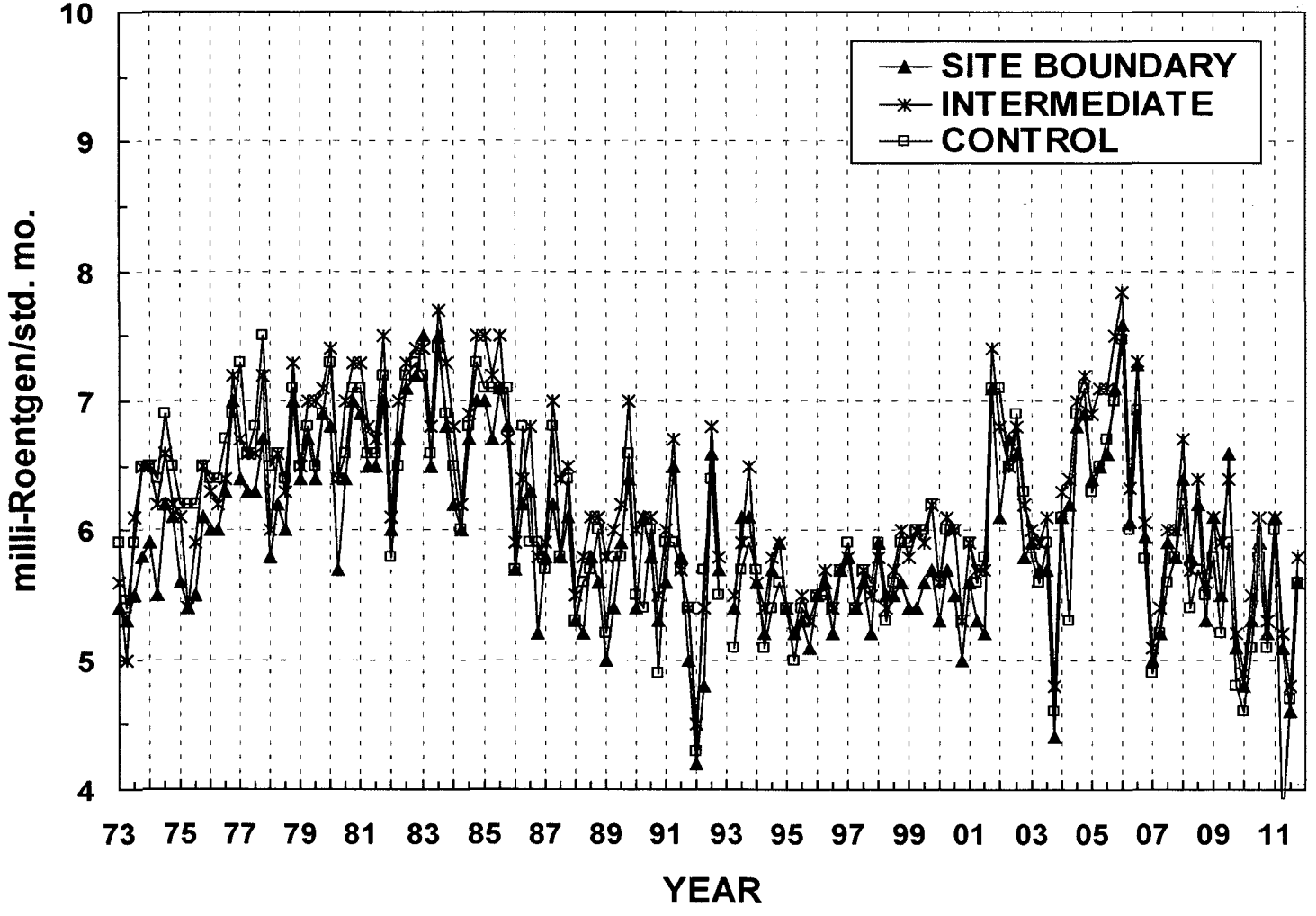
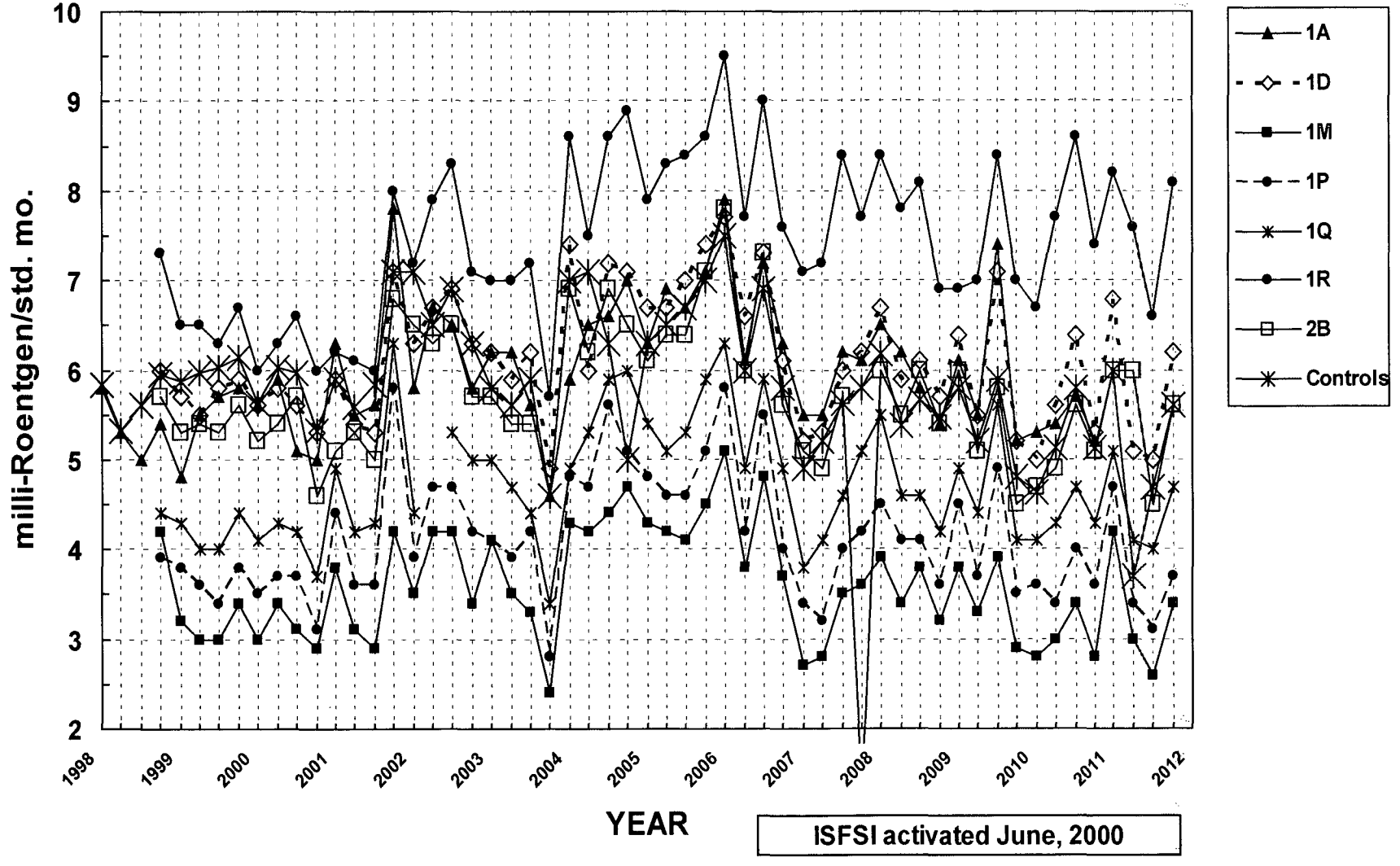


FIGURE C-8
QUARTERLY AMBIENT GAMMA RADIATION LEVELS (TLD)
NEAR THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION
LOCATED AT PBAPS, 1998 – 2011



APPENDIX D

DATA TABLES AND FIGURES
QC LABORATORY

TABLE D-I.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	< 2.1
FEB	< 1.9
MAR	< 1.8
APR	< 1.8
MAY	< 2.1
JUN	< 1.9
JUL	< 1.9
AUG	< 1.7
SEP	< 1.9
OCT	< 0.5
NOV	< 1.9
DEC	< 1.9
MEAN	-

TABLE D-I.2 CONCENTRATIONS OF GROSS BETA SOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	1.2 ± 0.4
FEB	< 0.9
MAR	< 1.7
APR	< 1.7
MAY	< 1.5
JUN	4.0 ± 0.8
JUL	2.3 ± 0.9
AUG	2.6 ± 1.0
SEP	1.9 ± 0.9
OCT	1.0 ± 0.5
NOV	2.1 ± 0.9
DEC	< 0.9
MEAN	1.0 ± 2.0

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES

TABLE D-I.3 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN-MAR	< 165
APR-JUN	< 147
JUL-SEP	< 144
OCT-DEC	< 150
MEAN	-

TABLE D-I.4 CONCENTRATIONS OF I-131 IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	(1) -
FEB	(1) -
MAR	(1) -
APR	(1) -
MAY	(1) -
JUN	(1) -
JUL	< 0.2
AUG	< 0.4
SEP	< 0.2
OCT	< 0.3
NOV	< 0.2
DEC	< 0.3
MEAN	-

* THE MEAN AND 2 STANDARD DEVIATION VALUES ARE CALCULATED USING THE POSITIVE VALUES
(1) IODINE-131 WAS ADDED TO THE PROGRAM IN JULY OF 2011

TABLE D-I.5 CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	FE-59	Co-58	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
4L	JAN	< 2	< 3	< 2	< 1	< 5	< 6	< 2	< 3	< 3	< 12	< 2
	FEB	< 4	< 4	< 2	< 3	< 6	< 3	< 3	< 3	< 2	< 16	< 2
	MAR	< 3	< 3	< 2	< 1	< 5	< 4	< 2	< 4	< 3	< 15	< 2
	APR	< 2	< 7	< 3	< 2	< 4	< 3	< 3	< 3	< 3	< 18	< 3
	MAY	< 2	< 5	< 2	< 2	< 4	< 5	< 3	< 2	< 2	< 8	< 2
	JUN	< 2	< 6	< 2	< 2	< 5	< 5	< 3	< 2	< 2	< 15	< 2
	JUL	< 2	< 3	< 1	< 2	< 4	< 4	< 3	< 3	< 3	< 11	< 4
	AUG	< 2	< 3	< 3	< 1	< 4	< 6	< 3	< 3	< 3	< 10	< 3
	SEP	< 2	< 6	< 2	< 1	< 2	< 3	< 3	< 3	< 3	< 14	< 2
	OCT	< 3	< 7	< 3	< 3	< 4	< 7	< 4	< 4	< 3	< 14	< 4
	NOV	< 4	< 5	< 2	< 4	< 5	< 7	< 4	< 3	< 4	< 16	< 2
	DEC	< 2	< 5	< 2	< 2	< 3	< 4	< 2	< 3	< 2	< 12	< 2
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE D-II.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

COLLECTION PERIOD	1A
1	49 ± 5
2	29 ± 4
3	18 ± 4
4	28 ± 4
5	23 ± 4
6	55 ± 5
7	26 ± 4
8	35 ± 4
9	19 ± 4
10	15 ± 4
11	16 ± 3
12	35 ± 4
13	46 ± 5
14	32 ± 4
15	22 ± 4
16	25 ± 4
17	17 ± 3
18	14 ± 4
19	14 ± 3
20	14 ± 3
21	26 ± 4
22	28 ± 4
23	31 ± 4
24	21 ± 4
25	28 ± 4
26	11 ± 4
27	37 ± 5
28	31 ± 4
29	29 ± 4
30	38 ± 5
31	31 ± 5
32	27 ± 4
33	29 ± 4
34	31 ± 4
35	27 ± 5
36	27 ± 4
37	36 ± 5
38	18 ± 4
39	18 ± 4
40	16 ± 4
41	43 ± 5
42	22 ± 4
43	33 ± 5
44	18 ± 4
45	32 ± 5
46	33 ± 5
47	23 ± 5
48	27 ± 4
49	19 ± 4
50	47 ± 5
51	41 ± 5
52	20 ± 4
MEAN	28 ± 20

TABLE D-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF E-3 PCI/CU METER ± 2 SIGMA

SITE	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	Cs-134	Cs-137
1A	12/30/10 - 03/31/11	62 ± 14	< 0.9	< 0.6	< 0.6	< 0.6	< 0.9
	03/31/11 - 06/30/11	95 ± 14	< 0.5	< 0.6	< 0.7	< 0.8	< 0.8
	06/30/11 - 09/29/11	74 ± 16	< 0.6	< 0.9	< 0.7	< 0.6	< 0.7
	09/29/11 - 12/29/11	72 ± 17	< 1.1	< 0.9	< 0.9	< 0.9	< 0.7
	MEAN*	76 ± 28	-	-	-	-	-

TABLE D-III.1 CONCENTRATIONS OF I-131 BY CHEMICAL SEPARATION AND GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	I-131	K-40	Cs-134	Cs-137	Ba-140	La-140
J	02/07/11	< 0.3	1301 ± 103	< 4	< 3	< 18	< 2
	05/02/11	0.3 ± 0.2	1316 ± 109	< 2	< 3	< 31	< 4
	08/08/11	< 0.5	1545 ± 116	< 4	< 2	< 22	< 4
	11/14/11	< 0.4	1396 ± 138	< 4	< 4	< 22	< 6
	MEAN	-	1390 ± 224	-	-	-	-
S	02/07/11	< 0.3	1362 ± 104	< 3	< 3	< 14	< 2
	05/02/11	< 0.5	1362 ± 114	< 3	< 4	< 22	< 5
	08/08/11	< 0.2	1338 ± 96	< 3	< 2	< 16	< 5
	11/14/11	< 0.4	1350 ± 126	< 3	< 3	< 17	< 2
	MEAN	-	1353 ± 22	-	-	-	-
V	02/07/11	< 0.3	1289 ± 105	< 3	< 3	< 19	< 3
	05/02/11	< 0.3	1319 ± 101	< 4	< 4	< 24	< 4
	08/08/11	< 0.3	1339 ± 109	< 4	< 3	< 26	< 2
	11/14/11	< 0.5	1193 ± 127	< 5	< 4	< 26	< 4
	MEAN	-	1285 ± 130	-	-	-	-

TABLE D-IV.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2011

DRINKING WATER (GROSS BETA & GAMMA SPECTROSCOPY)

COLLECTION PERIOD	4L
JAN	12/30/10 - 02/03/11
FEB	02/03/11 - 03/03/11
MAR	03/03/11 - 03/31/11
APR	03/31/11 - 04/29/11
MAY	04/29/11 - 06/02/11
JUN	06/02/11 - 06/30/11
JUL	06/30/11 - 07/28/11
AUG	07/28/11 - 09/01/11
SEP	09/01/11 - 09/29/11
OCT	09/29/11 - 11/03/11
NOV	11/03/11 - 12/01/11
DEC	12/01/11 - 12/29/11

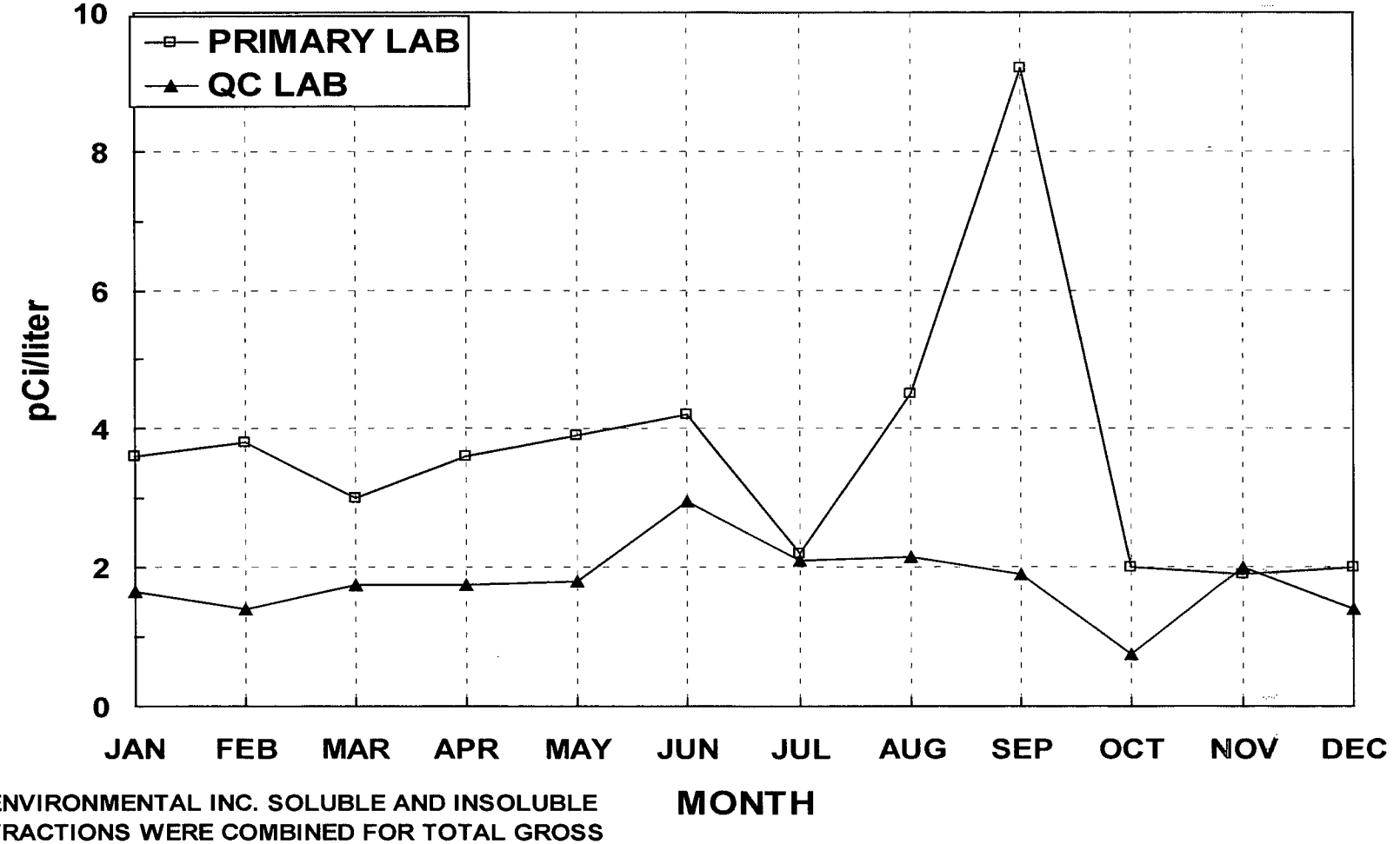
AIR PARTICULATE (GAMMA SPECTROSCOPY)

COLLECTION PERIOD	1A
JAN-MAR	12/30/10 - 03/31/11
APR-JUN	03/31/11 - 06/30/11
JUL-SEP	06/30/11 - 09/29/11
OCT-DEC	09/29/11 - 12/29/11

AIR PARTICULATE (GROSS BETA)

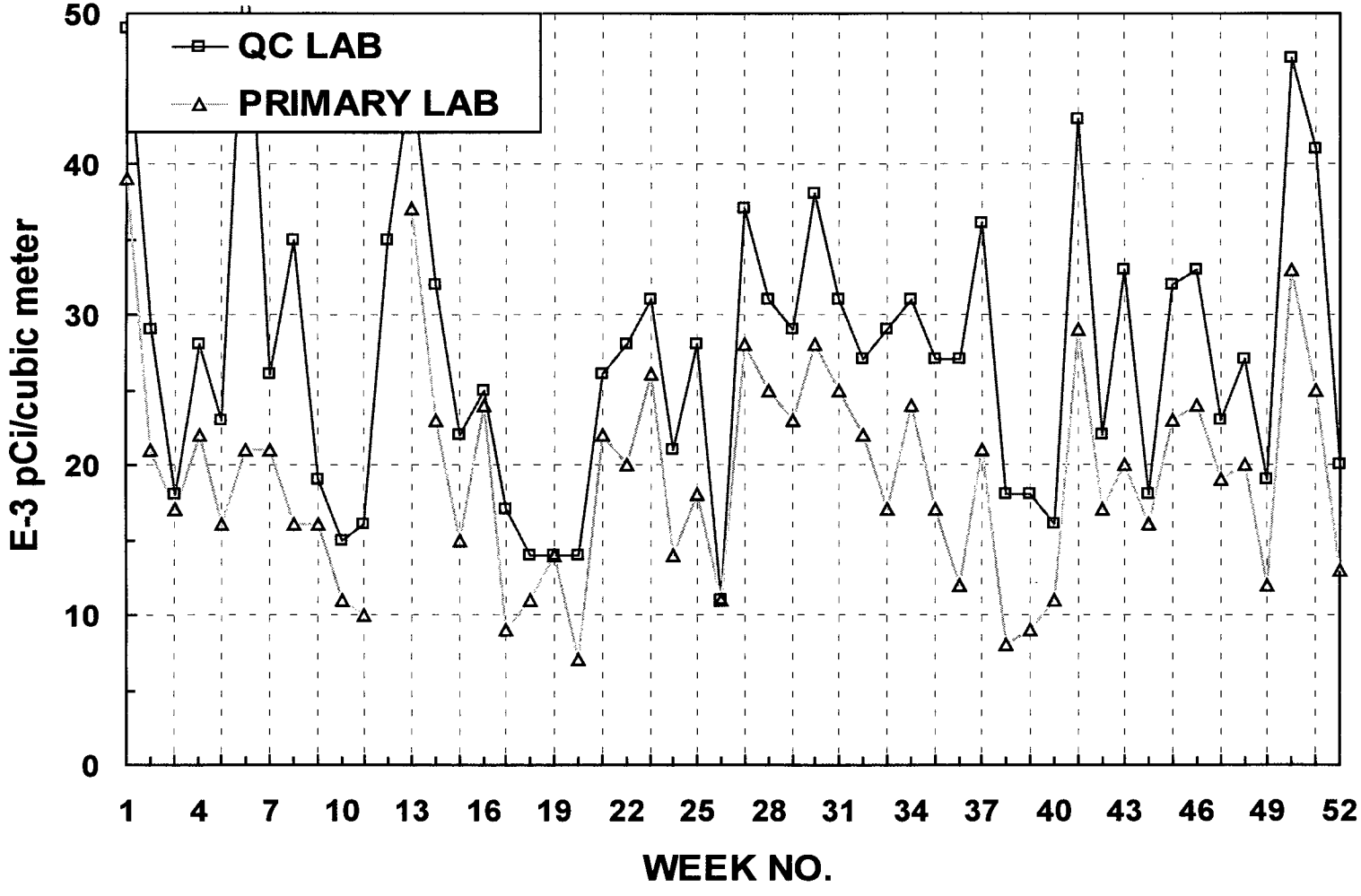
COLLECTION PERIOD	1A	COLLECTION PERIOD	1A
1	12/30/10 - 01/06/11	27	06/30/11 - 07/07/11
2	01/06/11 - 01/13/11	28	07/07/11 - 07/14/11
3	01/13/11 - 01/20/11	29	07/14/11 - 07/21/11
4	01/20/11 - 01/27/11	30	07/21/11 - 07/28/11
5	01/27/11 - 02/03/11	31	07/28/11 - 08/04/11
6	02/03/11 - 02/10/11	32	08/04/11 - 08/11/11
7	02/10/11 - 02/17/11	33	08/11/11 - 08/18/11
8	02/17/11 - 02/24/11	34	08/18/11 - 08/25/11
9	02/24/11 - 03/03/11	35	08/25/11 - 09/01/11
10	03/03/11 - 03/09/11	36	09/01/11 - 09/09/11
11	03/09/11 - 03/17/11	37	09/09/11 - 09/15/11
12	03/17/11 - 03/24/11	38	09/15/11 - 09/22/11
13	03/24/11 - 03/31/11	39	09/22/11 - 09/29/11
14	03/31/11 - 04/07/11	40	09/29/11 - 10/06/11
15	04/07/11 - 04/14/11	41	10/06/11 - 10/13/11
16	04/14/11 - 04/21/11	42	10/13/11 - 10/20/11
17	04/21/11 - 04/29/11	43	10/20/11 - 10/27/11
18	04/29/11 - 05/05/11	44	10/27/11 - 11/03/11
19	05/05/11 - 05/12/11	45	11/03/11 - 11/10/11
20	05/12/11 - 05/20/11	46	11/10/11 - 11/17/11
21	05/20/11 - 05/26/11	47	11/17/11 - 11/23/11
22	05/26/11 - 06/02/11	48	11/23/11 - 12/01/11
23	06/02/11 - 06/09/11	49	12/01/11 - 12/08/11
24	06/09/11 - 06/16/11	50	12/08/11 - 12/15/11
25	06/16/11 - 06/23/11	51	12/15/11 - 12/22/11
26	06/23/11 - 06/30/11	52	12/22/11 - 12/29/11

FIGURE D-1
COMPARISON OF MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES SPLIT BETWEEN THE PRIMARY AND QC LABORATORIES, 2011



ENVIRONMENTAL INC. SOLUBLE AND INSOLUBLE FRACTIONS WERE COMBINED FOR TOTAL GROSS BETA COMPARISON.

FIGURE D-2
COMPARISON OF WEEKLY GROSS BETA CONCENTRATIONS FROM COLLOCATED AIR PARTICULATE LOCATIONS SPLIT BETWEEN THE PRIMARY AND QC LABORATORIES, 2011



APPENDIX E

QUALITY CONTROL INTER-LABORATORY COMPARISON PROGRAM

TABLE E-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2011

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2011	E7460-396	Milk	Sr-89	pCi/L	98.8	97.4	1.01	A
			Sr-90	pCi/L	15.2	15.8	0.96	A
	E7461-396	Milk	I-131	pCi/L	92.9	96.9	0.96	A
			Ce-141	pCi/L	not provided by Analytics for this study			
			Cr-51	pCi/L	398	298	1.34	N (1)
			Cs-134	pCi/L	130	130	1.00	A
			Cs-137	pCi/L	232	205	1.13	A
			Co-58	pCi/L	121	113	1.07	A
			Mn-54	pCi/L	289	266	1.09	A
			Fe-59	pCi/L	201	175	1.15	A
			Zn-65	pCi/L	287	261	1.10	A
			Co-60	pCi/L	186	172	1.08	A
	E7463-396	AP	Ce-141	pCi	not provided by Analytics for this study			
			Cr-51	pCi	243	215	1.13	A
			Cs-134	pCi	85.0	94.2	0.90	A
			Cs-137	pCi	168	148	1.14	A
			Co-58	pCi	89.2	81.8	1.09	A
			Mn-54	pCi	171	192	0.89	A
			Fe-59	pCi	129	126	1.02	A
			Zn-65	pCi	159	189	0.84	A
			Co-60	pCi	132	124	1.06	A
	E7462-396	Charcoal	I-131	pCi	96.5	96.3	1.00	A
June 2011	E7851-396	Milk	Sr-89	pCi/L	96.7	103	0.94	A
			Sr-90	pCi/L	13.8	15.6	0.88	A
	E7852-396	Milk	I-131	pCi/L	110	103.0	1.07	A
			Ce-141	pCi/L	68.1	79.9	0.85	A
			Cr-51	pCi/L	186	206	0.90	A
			Cs-134	pCi/L	164	190	0.86	A
			Cs-137	pCi/L	140	138	1.01	A
			Co-58	pCi/L	141	152	0.93	A
			Mn-54	pCi/L	136	138	0.99	A
			Fe-59	pCi/L	128	123	1.04	A
			Zn-65	pCi/L	263	261	1.01	A
			Co-60	pCi/L	189	195	0.97	A
	E7854-396	AP	Ce-141	pCi	49.9	42.9	1.16	A
			Cr-51	pCi	95.6	110	0.87	A
			Cs-134	pCi	104	102	1.02	A
			Cs-137	pCi	83.8	74.0	1.13	A
			Co-58	pCi	90.7	81.3	1.12	A
			Mn-54	pCi	74.5	73.9	1.01	A
			Fe-59	pCi	62.0	66.1	0.94	A
			Zn-65	pCi	140	140	1.00	A
			Co-60	pCi	119	104	1.14	A
	E7853-396	Charcoal	I-131	pCi	76.2	86.1	0.89	A

TABLE E-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2011
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
September 2011	E8070-396	Milk	Sr-89	pCi/L	102	90.8	1.12	A
			Sr-90	pCi/L	13.2	14.7	0.90	A
	E8071-396	Milk	I-131	pCi/L	74.2	89.2	0.83	A
			Ce-141	pCi/L	66.9	66.7	1.00	A
			Cr-51	pCi/L	249	226	1.10	A
			Cs-134	pCi/L	116	128	0.91	A
			Cs-137	pCi/L	106	114	0.93	A
			Co-58	pCi/L	95.4	97.5	0.98	A
			Mn-54	pCi/L	147	151	0.97	A
			Fe-59	pCi/L	53.1	54.8	0.97	A
			Zn-65	pCi/L	175	180	0.97	A
			Co-60	pCi/L	150	157	0.96	A
	E8073-396	AP	Ce-141	pCi	66.6	67.5	0.99	A
			Cr-51	pCi	263	229	1.15	A
			Cs-134	pCi	139	130	1.07	A
			Cs-137	pCi	110	115	0.96	A
			Co-58	pCi	108	98.6	1.10	A
			Mn-54	pCi	152	153	0.99	A
			Fe-59	pCi	57.5	55.5	1.04	A
			Zn-65	pCi	190	183	1.04	A
			Co-60	pCi	156	159	0.98	A
	E8072-396	Charcoal	I-131	pCi	77.6	80.6	0.96	A
December, 2011	E8230-396	Milk	Sr-89	pCi/L	93.3	93.1	1.00	A
			Sr-90	pCi/L	12.7	15.4	0.82	A
	E8231-396	Milk	I-131	pCi/L	82.5	90.2	0.91	A
			Ce-141	pCi/L	not provided by Analytics for this study			
			Cr-51	pCi/L	465	566	0.82	A
			Cs-134	pCi/L	142	171	0.83	A
			Cs-137	pCi/L	185	210	0.88	A
			Co-58	pCi/L	177	221	0.80	A
			Mn-54	pCi/L	208	241	0.86	A
			Fe-59	pCi/L	164	183	0.90	A
			Zn-65	pCi/L	259	291	0.89	A
			Co-60	pCi/L	224	270	0.83	A
	E8233-396	AP	Ce-141	pCi	not provided by Analytics for this study			
			Cr-51	pCi	344	368	0.93	A
			Cs-134	pCi	105	111	0.95	A
			Cs-137	pCi	129	137	0.94	A
			Co-58	pCi	145	144	1.01	A
			Mn-54	pCi	137	157	0.87	A
			Fe-59	pCi	119	119	1.00	A
			Zn-65	pCi	145	190	0.76	W
			Co-60	pCi	168	176	0.95	A

TABLE E-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2011
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2011	E8232-396	Charcoal	I-131	pCi	100	89.5	1.12	A

(1) Sample appears to be biased high. Corrective Action evaluated after the 2nd Quarter Analytics PE sample; no action required. NCR 11-13

(a) Teledyne Brown Engineering reported result.

(b) The Analytics known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) Ratio of Teledyne Brown Engineering to Analytics results.

(d) Analytics evaluation based on TBE internal QC limits: A= Acceptable. Reported result falls within ratio limits of 0.80-1.20. W-Acceptable with warning. Reported result falls within 0.70-0.80 or 1.20-1.30. N = Not Acceptable. Reported result falls outside the ratio limits of < 0.70 and > 1.30.

TABLE E-2 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2011
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
May 2011	RAD-85	Water	Sr-89	pCi/L	59.8	63.2	51.1 - 71.2	A
			Sr-90	pCi/L	42.5	42.5	31.3 - 48.8	A
			Ba-133	pCi/L	73.3	75.3	63.0 - 82.8	A
			Cs-134	pCi/L	64.9	72.9	59.5 - 80.2	A
			Cs-137	pCi/L	74.6	77.0	69.3 - 87.4	A
			Co-60	pCi/L	87.8	88.8	79.9 - 100	A
			Zn-65	pCi/L	103	98.9	89.0 - 118	A
			Gr-A	pCi/L	64.1	50.1	26.1 - 62.9	N (1)
			Gr-B	pCi/L	51.8	49.8	33.8 - 56.9	A
			I-131	pCi/L	27.4	27.5	22.9 - 32.3	A
			U-Nat	pCi/L	38.5	39.8	32.2 - 44.4	A
			H-3	pCi/L	10057	10200	8870 - 11200	A
	MRAD-14	Filter	Gr-A	pCi/filter	79.7	74.3	38.5 - 112	A
November 2011	RAD-87	Water	Sr-89	pCi/L	81.0	69.7	56.9 - 77.9	N (2)
			Sr-90	pCi/L	35.5	41.4	30.2 - 47.2	A
			Ba-133	pCi/L	90.7	96.9	81.8 - 106	A
			Cs-134	pCi/L	36.6	33.4	26.3 - 36.7	A
			Cs-137	pCi/L	44.7	44.3	39.4 - 51.7	A
			Co-60	pCi/L	118.7	119	107 - 133	A
			Zn-65	pCi/L	80.2	76.8	68.9 - 92.5	A
			Gr-A	pCi/L	34.2	53.2	27.8 - 66.6	A
			Gr-B	pCi/L	39.3	45.9	30.9 - 53.1	A
			I-131	pCi/L	22.9	27.5	22.9 - 32.3	A
			U-Nat	pCi/L	46.8	48.6	39.4 - 54.0	A
			H-3	pCi/L	15733	17400	15200 - 19100	A
	MRAD-15	Filter	Gr-A	pCi/filter	44.6	58.4	30.3 - 87.8	A

(1) The solids on the planchet exceeded 100 mg, which was beyond the range of the efficiency curve. NCR 11-08

(2) Sr-89 TBE to known ratio of 1.16 fell within acceptable range of ± 20%. No action required. NCR 11-16

(a) Teledyne Brown Engineering reported result.

(b) The ERA known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) ERA evaluation: A=acceptable. Reported result falls within the Warning Limits. NA=not acceptable. Reported result falls outside of the Control Limits. CE=check for Error. Reported result falls within the Control Limits and outside of the Warning Limit.

TABLE E-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2011
(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2011	11-MaW24	Water	Cs-134	Bq/L	19.1	21.5	15.1 - 28.0	A
			Cs-137	Bq/L	29.0	29.4	20.6 - 38.2	A
			Co-57	Bq/L	0.139		(1)	A
			Co-60	Bq/L	23.9	24.6	17.2 - 32.0	A
			H-3	Bq/L	265	243	170 - 316	A
			Mn-54	Bq/L	31.8	31.6	22.1 - 41.1	A
			K-40	Bq/L	94.8	91	64 - 118	A
			Sr-90	Bq/L	9.64	8.72	6.10 - 11.34	A
			Zn-65	Bq/L	-0.142		(1)	A
	11-GrW24	Water	Gr-A	Bq/L	0.767	1.136	0.341 - 1.931	A
			Gr-B	Bq/L	3.43	2.96	1.48 - 4.44	A
	11-MaS24	Soil	Cs-134	Bq/kg	612	680	476 - 884	A
			Cs-137	Bq/kg	772	758	531 - 985	A
			Co-57	Bq/kg	910	927	649 - 1205	A
			Co-60	Bq/kg	500	482	337 - 627	A
			Mn-54	Bq/kg	0.607		(1)	A
			K-40	Bq/kg	569	540	378 - 702	A
			Sr-90	Bq/kg	NR	160	112 - 208	N (2)
			Zn-65	Bq/kg	1497	1359	951 - 1767	A
	11-RdF24	AP	Cs-134	Bq/sample	3.26	3.49	2.44 - 4.54	A
			Cs-137	Bq/sample	2.36	2.28	1.60 - 2.96	A
			Co-57	Bq/sample	3.30	3.33	2.33 - 4.33	A
			Co-60	Bq/sample	0.0765		(1)	A
			Mn-54	Bq/sample	2.84	2.64	1.85 - 3.43	A
			Sr-90	Bq/sample	NR	1.36	0.95 - 1.77	N (2)
			Zn-65	Bq/sample	3.30	3.18	2.23 - 4.13	A
	11-GrF24	AP	Gr-A	Bq/sample	0.101	0.659	0.198 - 1.120	N (3)
			Gr-B	Bq/sample	1.23	1.323	0.662 - 1.985	A
	11-RdV24	Vegetation	Cs-134	Bq/sample	4.97	5.50	3.85 - 7.15	A
			Cs-137	Bq/sample	0.0356		(1)	A
			Co-57	Bq/sample	10.8	9.94	6.96 - 12.92	A
			Co-60	Bq/sample	4.89	4.91	3.44 - 6.38	A
			Mn-54	Bq/sample	6.42	6.40	4.48 - 8.32	A
			Sr-90	Bq/sample	NR	2.46	1.72 - 3.20	N (2)
			Zn-65	Bq/sample	3.07	2.99	2.09 - 3.89	A
September 2011	11-MaW25	Water	Cs-134	Bq/L	16.0	19.1	13.4 - 24.8	A
			Cs-137	Bq/L	0.0043		(1)	A
			Co-57	Bq/L	33.1	36.6	25.6 - 47.6	A
			Co-60	Bq/L	26.9	29.3	20.5 - 38.1	A
			H-3	Bq/L	1011	1014	710 - 1318	A
			Mn-54	Bq/L	23.2	25.0	17.5 - 32.5	A
			K-40	Bq/L	147	156	109 - 203	A
			Sr-90	Bq/L	15.8	14.2	9.9 - 18.5	A
			Zn-65	Bq/L	27.3	28.5	20.0 - 37.1	A

TABLE E-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2011
(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
September 2011	11-GrW25	Water	Gr-A	Bq/L	0.894	0.866	0.260 - 1.472	A
			Gr-B	Bq/L	5.87	4.81	2.41 - 7.22	A
	11-MaS25	Soil	Cs-134	Bq/kg	-0.213		(1)	A
			Cs-137	Bq/kg	1110	979	685 - 1273	A
			Co-57	Bq/kg	1290	1180	826 - 1534	A
			Co-60	Bq/kg	731	644	451 - 837	A
			Mn-54	Bq/kg	987	848	594 - 1102	A
			K-40	Bq/kg	753	625	438 - 813	W
			Sr-90	Bq/kg	276	320	224 - 416	A
			Zn-65	Bq/kg	1870	1560	1092 - 2028	A
September 2011	11-RdF25	AP	Cs-134	Bq/sample	-0.043		(1)	A
			Cs-137	Bq/sample	3.09	2.60	1.82 - 3.38	A
			Co-57	Bq/sample	5.36	5.09	3.56 - 6.62	A
			Co-60	Bq/sample	3.41	3.20	2.24 - 4.16	A
			Mn-54	Bq/sample	0.067		(1)	A
			Sr-90	Bq/sample	1.84	1.67	1.17 - 2.17	A
			Zn-65	Bq/sample	5.17	4.11	2.88 - 5.34	W
	11-GrF25	AP	Gr-A	Bq/sample	0.0058		(1)	A
			Gr-B	Bq/sample	-0.01		(1)	A
	11-RdV25	Vegetation	Cs-134	Bq/sample	0.0081		(1)	A
			Cs-137	Bq/sample	4.94	4.71	3.30 - 6.12	A
			Co-57	Bq/sample	0.0639		(1)	A
			Co-60	Bq/sample	3.36	3.38	2.37 - 4.39	A
			Mn-54	Bq/sample	5.89	5.71	4.00 - 7.42	A
			Sr-90	Bq/sample	1.31	1.26	0.88 - 1.64	A
			Zn-65	Bq/sample	6.54	6.39	4.47 - 8.31	A

(1) False positive test.

(2) Evaluated as failed due to not reporting a previously reported analyte. NCR 11-11

(3) The filter for Gross Alpha was counted on the wrong side. Recounted on the correct side resulted in acceptable results. NCR 11-11

(a) Teledyne Brown Engineering reported result.

(b) The MAPEP known value is equal to 100% of the parameter present in the standard as determined by gravimetric and/or volumetric measurements made during standard preparation.

(c) DOE/MAPEP evaluation: A=acceptable, W=acceptable with warning, N=not acceptable.

TABLE E-4 ERA (a) STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM[a]
ENVIRONMENTAL, INC., 2011

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result [b]	ERA Result [c]	Control Limits	Acceptance
STW-1243	04/04/11	Sr-89	68.2 ± 5.8	63.2	51.1 - 71.2	Pass
STW-1243	04/04/11	Sr-90	44.3 ± 2.4	42.5	31.3 - 48.8	Pass
STW-1244	04/04/11	Ba-133	69.8 ± 3.9	75.3	63.0 - 82.8	Pass
STW-1244	04/04/11	Co-60	87.9 ± 3.8	88.8	79.9 - 100.0	Pass
STW-1244	04/04/11	Cs-134	69.5 ± 3.7	72.9	59.5 - 80.2	Pass
STW-1244	04/04/11	Cs-137	77.9 ± 5.3	77.0	69.3 - 87.4	Pass
STW-1244	04/04/11	Zn-65	105.2 ± 8.4	98.9	89.0 - 118.0	Pass
STW-1245	04/04/11	Gr. Alpha	41.5 ± 2.3	50.1	26.1 - 62.9	Pass
STW-1245	04/04/11	Gr. Beta	48.9 ± 1.8	49.8	33.8 - 56.9	Pass
STW-1246	04/04/11	I-131	26.6 ± 1.7	27.5	22.9 - 32.3	Pass
STW-1248	04/04/11	H-3	10322 ± 285	10200.0	8870 - 11200	Pass
STW-1256	10/07/11	Sr-89	68.7 ± 6.0	69.7	56.9 - 77.9	Pass
STW-1256	10/07/11	Sr-90	36.9 ± 2.4	41.1	30.2 - 47.2	Pass
STW-1257	10/07/11	Ba-133	88.2 ± 7.8	96.9	81.8 - 106.0	Pass
STW-1257	10/07/11	Co-60	116.5 ± 7.1	119.0	107.0 - 133.0	Pass
STW-1257 [d]	10/07/11	Cs-134	38.8 ± 8.0	33.4	26.3 - 36.7	Fail
STW-1257	10/07/11	Cs-137	45.6 ± 7.3	44.3	39.4 - 51.7	Pass
STW-1257	10/07/11	Zn-65	84.9 ± 15.4	76.8	68.9 - 92.5	Pass
STW-1258	10/07/11	Gr. Alpha	35.7 ± 3.8	53.2	27.8 - 66.6	Pass
STW-1258	10/07/11	Gr. Beta	36.1 ± 3.3	45.9	30.9 - 53.1	Pass
STW-1259	10/07/11	I-131	25.0 ± 1.1	27.5	22.9 - 32.3	Pass
STW-1261	10/07/11	H-3	17435 ± 382	17400	15200 - 19100	Pass

[a] Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing in drinking water conducted by Environmental Resources Associates (ERA).

[b] Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

[c] Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination) and control limits as provided by ERA.

[d] The sample was reanalyzed. Result of reanalysis was acceptable, 32.9 ± 7.4 pCi/L.

TABLE E-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)[a]
ENVIRONMENTAL, INC., 2011
(Page 1 of 2)

			Concentration [b]			
Lab Code [c]	Date	Analysis	Laboratory result	Activity	Limits [d]	Acceptance
STW-1237	02/01/11	Co-57	< 0.2	0.00	-	Pass
STW-1237	02/01/11	Co-60	24.10 ± 0.40	24.60	17.20 - 32.00	Pass
STW-1237	02/01/11	Cs-134	19.80 ± 0.40	21.50	15.10 - 28.00	Pass
STW-1237	02/01/11	Cs-137	29.40 ± 0.50	29.40	20.60 - 38.20	Pass
STW-1237	02/01/11	H-3	238.90 ± 8.80	243.00	170.00 - 316.00	Pass
STW-1237	02/01/11	K-40	95.40 ± 3.10	91.00	64.00 - 118.00	Pass
STW-1237	02/01/11	Mn-54	32.50 ± 0.60	31.60	22.10 - 41.10	Pass
STW-1237	02/01/11	Sr-90	8.70 ± 0.70	8.72	6.10 - 11.34	Pass
STW-1237	02/01/11	Zn-65	< 0.5	0.00	-	Pass
STW-1238	02/01/11	Gr. Alpha	0.82 ± 0.07	1.14	0.34 - 1.93	Pass
STW-1238	02/01/11	Gr. Beta	2.82 ± 0.07	2.96	1.48 - 4.44	Pass
STVE-1239	02/01/11	Co-57	11.27 ± 0.21	9.94	6.96 - 12.92	Pass
STVE-1239	02/01/11	Co-60	4.95 ± 0.16	4.91	3.44 - 6.38	Pass
STVE-1239	02/01/11	Cs-134	5.18 ± 0.19	5.50	3.85 - 7.15	Pass
STVE-1239	02/01/11	Cs-137	< 0.09	0.00	-	Pass
STVE-1239	02/01/11	Mn-54	6.91 ± 0.25	6.40	4.48 - 8.32	Pass
STVE-1239	02/01/11	Zn-65	3.10 ± 0.32	2.99	2.09 - 3.89	Pass
STSO-1240	02/01/11	Co-57	984.10 ± 4.10	927.00	649.00 - 1205.00	Pass
STSO-1240	02/01/11	Co-60	540.70 ± 3.00	482.00	337.00 - 627.00	Pass
STSO-1240	02/01/11	Cs-134	726.70 ± 5.92	680.00	476.00 - 884.00	Pass
STSO-1240	02/01/11	Cs-137	883.10 ± 4.70	758.00	531.00 - 985.00	Pass
STSO-1240	02/01/11	K-40	622.70 ± 16.70	540.00	378.00 - 702.00	Pass
STSO-1240	02/01/11	Mn-54	-0.30 ± 1.00	0.00	-	Pass
STSO-1240	02/01/11	Zn-65	1671.00 ± 13.10	1359.00	951.00 - 1767.00	Pass
STAP-1241	02/01/11	Co-57	3.48 ± 0.06	3.33	2.33 - 4.33	Pass
STAP-1241	02/01/11	Co-60	0.00 ± 0.02	0.00	-0.10 - 0.10	Pass
STAP-1241	02/01/11	Cs-134	3.44 ± 0.27	3.49	2.44 - 4.54	Pass
STAP-1241	02/01/11	Cs-137	2.46 ± 0.27	2.28	1.60 - 2.96	Pass
STAP-1241	02/01/11	Gr. Alpha	0.39 ± 0.05	0.66	0.20 - 1.12	Pass
STAP-1241	02/01/11	Gr. Beta	1.54 ± 0.07	1.32	0.66 - 1.99	Pass
STAP-1241	02/01/11	Mn-54	2.90 ± 0.10	2.64	1.85 - 3.43	Pass
STAP-1241 e	02/01/11	Sr-90	1.89 ± 0.15	1.36	0.95 - 1.77	Fail
STAP-1241	02/01/11	Zn-65	3.80 ± 0.18	3.18	2.23 - 4.13	Pass
STVE-1250	08/01/11	Co-57	0.01 ± 0.02	0.00	-	Pass
STVE-1250	08/01/11	Co-60	3.57 ± 0.13	3.38	2.37 - 4.39	Pass
STVE-1250	08/01/11	Cs-134	-0.02 ± 0.04	0.00	-0.10 - 0.10	Pass
STVE-1250	08/01/11	Cs-137	5.28 ± 0.20	4.71	3.30 - 6.12	Pass
STVE-1250	08/01/11	Mn-54	6.48 ± 0.22	5.71	4.00 - 7.42	Pass
STVE-1250	08/01/11	Zn-65	7.35 ± 0.34	6.39	4.47 - 8.31	Pass

TABLE E-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)[a] ENVIRONMENTAL, INC., 2011

			Concentration [b]			
Lab Code [c]	Date	Analysis	Laboratory result	Known Activity	Control Limits [d]	Acceptance
STSO-1251	08/01/11	Co-57	1333.90 ± 4.20	1180.00	826.00 - 1534.00	Pass
STSO-1251	08/01/11	Co-60	701.30 ± 3.40	644.00	451.00 - 837.00	Pass
STSO-1251	08/01/11	Cs-134	0.71 ± 1.05	0.00	-	Pass
STSO-1251	08/01/11	Cs-137	1106.00 ± 5.60	979.00	685.00 - 1273.00	Pass
STSO-1251	08/01/11	K-40	749.20 ± 19.00	625.00	438.00 - 813.00	Pass
STSO-1251	08/01/11	Mn-54	984.30 ± 5.40	848.00	594.00 - 1102.00	Pass
STSO-1251 f	08/01/11	Sr-90	219.40 ± 16.70	320.00	224.00 - 416.00	Fail
STSO-1251	08/01/11	Zn-65	1639.90 ± 11.40	1560.00	1092.00 - 2028.00	Pass
STAP-1252	08/01/11	Co-57	5.06 ± 0.08	5.09	3.56 - 6.62	Pass
STAP-1252	08/01/11	Co-60	3.13 ± 0.09	3.20	2.24 - 4.16	Pass
STAP-1252	08/01/11	Cs-134	0.01 ± 0.03	0.00	-0.10 - 0.10	Pass
STAP-1252	08/01/11	Cs-137	2.61 ± 0.09	2.60	1.82 - 3.38	Pass
STAP-1252	08/01/11	Mn-54	0.01 ± 0.03	0.00	-0.10 - 0.10	Pass
STAP-1252	08/01/11	Sr-90	1.65 ± 0.16	1.67	1.17 - 2.17	Pass
STAP-1252	08/01/11	Zn-65	4.46 ± 0.23	4.11	2.88 - 5.34	Pass
STW-1254	08/01/11	Co-57	37.20 ± 0.50	36.60	25.60 - 47.60	Pass
STW-1254	08/01/11	Co-60	28.80 ± 0.40	29.30	20.50 - 38.10	Pass
STW-1254	08/01/11	Cs-134	18.00 ± 0.60	19.10	13.40 - 24.80	Pass
STW-1254	08/01/11	Cs-137	0.06 ± 0.13	0.00	-	Pass
STW-1254	08/01/11	H-3	1039.90 ± 17.90	1014.00	710.00 - 1318.00	Pass
STW-1254	08/01/11	K-40	161.40 ± 4.10	156.00	109.00 - 203.00	Pass
STW-1254	08/01/11	Mn-54	25.70 ± 0.50	25.00	17.50 - 32.50	Pass
STW-1254	08/01/11	Sr-90	15.60 ± 1.80	14.20	9.90 - 18.50	Pass
STW-1254	08/01/11	Zn-65	30.20 ± 0.90	28.50	20.00 - 37.10	Pass
STW-1255	08/01/11	Gr. Alpha	0.72 ± 0.12	0.87	0.26 - 1.47	Pass
STW-1255	08/01/11	Gr. Beta	4.71 ± 0.15	4.81	2.41 - 7.22	Pass

[a] Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the Department of Energy's Mixed Analyte Performance Evaluation Program, Idaho Operations office, Idaho Falls, Idaho

[b] Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

[c] Laboratory codes as follows: STW (water), STAP (air filter), STSO (soil), STVE (vegetation).

[d] MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP. A known value of "zero" indicates an analysis was included in the testing series as a "false positive". MAPEP does not provide control limits.

[e] No errors found in calculation or procedure, results of reanalysis; 1.73 Bq/filter.

[f] The analyses were repeated through a strontium column; mean result of triplicate analyses, 304.2 Bq/kg.

APPENDIX F

ERRATA DATA

Corrected Dose to the Public Data for 2010 Annual Radiological Environmental Operating Report

The doses were adjusted to reflect the corrected doses from liquid and gaseous releases.

Effluent	Applicable Organ	Estimated Dose	Age Group	Location		% of Applicable Limit	Limit	Unit
				Distance (meters)	Direction (toward)			
Noble Gas	Gamma - Air Dose	2.85E-01	All	1097	SSE	1.43E+00	20	mrad
Noble Gas	Beta – Air Dose	1.95E-01	All	1097	SSE	4.87E-01	40	mrad
Noble Gas	Total Body (Gamma)	2.76E-01	All	1097	SSE	2.76E+00	10	mrem
Noble Gas	Skin (Beta)	3.59E-01	All	1097	SSE	1.20E+00	30	mrem
Iodine, Particulate, Carbon-14 & Tritium	Bone	5.55E-01	Child	1097	SSE	1.85E+00	30	mrem
Liquid	Total Body	2.47E-03	Adult	Site Boundary		4.12E-02	6	mrem
Liquid	Bone	3.28E-03	Child			1.64E-02	20	mrem
Direct Radiation	Total Body	<LLD	All	1150	SSE	<LLD	22	mrem

40 CFR Part 190 Compliance								
Total Dose	Total Body	2.88E-01	All	1148	SSE	1.15E+00	25	mrem
Total Dose	Thyroid	4.04E-01	All	1148	SSE	5.39E-01	75	mrem
Total Dose	Bone	8.43E-01	All	1148	SSE	3.37E+00	25	mrem
Total Dose	Total Body	2.88E-01	All	1148	SSE	9.59E+00	3	mrem
Total Dose	Bone	8.43E-01	All	1148	SSE	2.81E+01	3	mrem
Total Dose	Thyroid	4.04E-01	All	1148	SSE	7.35E-01	55	mrem

APPENDIX G

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

Docket No: 50-277
50-278

PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 and 3

Annual Radiological
Groundwater Protection Program Report

1 January 2010 Through 31 December 2011

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon SM
Nuclear

Peach Bottom Atomic Power Station
Delta, PA 17314

May 2012

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Appendices

I. Summary and Conclusions

This report on the Radiological Groundwater Protection Program (RGPP) conducted for the Peach Bottom Atomic Power Station (PBAPS) by Exelon Nuclear covers the period 01 January 2011 through 31 December 2011. This evaluation involved numerous station personnel and contractor support personnel. At Peach Bottom Atomic Power Station, there are 31 permanent groundwater monitoring wells. Installation of the wells began in 2006. Of these monitoring locations, none were assigned to the station's Radiological Environmental Monitoring Program (REMP). This is the fifth in a series of annual reports on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Peach Bottom Atomic Power Station. This report covers groundwater and seep water samples collected from the environment on station property in 2011. During that time period, 1,322 analyses were performed on more than 446 samples from 40 locations. These 40 locations include 27 groundwater monitoring wells, 3 surface water sample points, 3 groundwater seeps and 2 yard drain sumps (groundwater), and 5 precipitation water sampling points. Phase 1 of the monitoring was part of a comprehensive study initiated by Exelon to determine whether groundwater or surface water in the vicinity of Peach Bottom Atomic Power Station had been adversely impacted by any releases of radionuclides. Phase 1 was conducted by Conestoga Rovers and Associates (CRA) and the conclusions were made available to state and federal regulators as well as the public. Phase 2 of the RGPP was conducted by Exelon corporate and station personnel to initiate follow up of Phase 1 and begin long-term monitoring at groundwater and surface water locations selected during Phase 1. All analytical results from Phase 2 monitoring are reported herein.

In assessing all the data gathered for this report, it was concluded that the operation of Peach Bottom Atomic Power Station had no adverse radiological impact on the environment, and there are no known active releases into the groundwater at Peach Bottom Atomic Power Station.

Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective Lower Limits of Detection (LLDs) as specified in the Offsite Dose Calculation Manual (ODCM) in any of the groundwater or surface water samples. In the case of tritium, Exelon specified that its laboratories achieve a lower limit of detection 10 times lower than that required by federal regulation.

Strontium-90 was not detected in any of the samples and the required LLD of 1.0 pCi/liter was met (Table B–I.1, Appendix B).

Precipitation water samples have been moved from the environmental program to the RGPP program.

Tritium was detected in one groundwater location at concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L. Low levels of tritium were detected at concentrations greater than the LLD of 200 pCi/L in 13 of 27 groundwater and seep water monitoring locations. The tritium concentrations ranged from 208 ± 120 pCi/L to 67,500 ± 6,780 pCi/L. Tritium was not detected at concentrations greater than the LLD of 200 pCi/L in any surface water or precipitation water sample locations. Based on the sample data, tritium is not migrating off the station property at detectable concentrations.

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater samples during 2011. This is the second year these analyses were performed as part of the RGPP for Peach Bottom to establish baseline levels. Gross Alpha (dissolved) was detected in six of 25 groundwater locations analyzed. The concentrations ranged from 1.1 to 17.3 pCi/L. Gross Alpha (suspended) was detected in 10 of 25 groundwater locations analyzed. The concentrations ranged from 1.0 to 12.2 pCi/L. Gross Beta (dissolved) was detected in 23 of 25 groundwater locations analyzed. The concentrations ranged from 1.2 to 34.3 pCi/L. Gross Beta (suspended) was detected in 10 of 25 groundwater locations analyzed. The concentrations ranged from 0.8 to 11.4 pCi/L. The activity detected is consistent with historical levels.

Hard-To-Detect analyses were performed on a select group of groundwater and surface water locations to establish baseline levels. The analyses for groundwater included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-233/234, U-235, and U-238. The isotopes of U-233/234 and U-238 were detected in three of eight groundwater monitoring locations. The U-233/234 concentrations ranged from 0.83 to 5.78 pCi/L and the U-238 concentrations ranged from 0.39 to 2.46 pCi/L. No plant produced radionuclides were detected.

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 1170 MWe. 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. Criticality was achieved on 7 August 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.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) on samples collected in 2011.

A. Objective of the RGPP

The objectives of the RGPP are as follows:

1. Ensure that the site characterization of geology and hydrology provides an understanding of predominant ground water gradients based upon current site conditions.

2. Identify site risk based on plant design and work practices.

3. Establish an on-site ground water monitoring program to ensure timely detection of inadvertent radiological releases to ground water.

4. Establish a remediation protocol to prevent migration of licensed material off-site and to minimize decommissioning impacts.

5. Ensure that records of leaks, spills, remediation efforts are retained and retrievable to meet the requirements of 10 CFR 50.75(g).

6. Conduct initial and periodic briefings of their site specific Groundwater Protection Initiative (GPI) program with the designated State/Local officials.

7. Make informal communication as soon as practicable to appropriate State/Local officials, with follow-up notifications to the NRC, as appropriate, regarding significant "on-site leaks/spills into ground water and on-site or off-site water sample results exceeding the criteria in the REMP as described in the OCDM/ODAM.

8. Submit a written 30-day report to the NRC for any water sample result for on-site ground water that is or may be used as a source of drinking water that exceeds any of the criteria in the licensee's existing REMP/ODCM for 30-day reporting of off-site water sample results.

9. Document all on-site ground water sample results and a description of any significant on-site leaks/spills into ground water for each calendar year in the Annual Radiological Environmental Operating Report (AREOR) for REMP or the Annual Radioactive Effluent Release Report (ARERR) for the RETS as contained in the appropriate Site reporting procedure.

10. Perform a self-assessment of the GPI program.

11. Conduct a review of the GPI program, including at a minimum the licensee's self assessments, under the auspices of NEI.

B. Implementation of the Objectives

The objectives identified have been implemented at Peach Bottom Atomic Power Station via Corporate and Site specific procedures. These procedures include:

1. EN-AA-407, Response to Inadvertent Releases of Licensed Materials to Groundwater, Surface Water or Soil.

2. EN-AA-408, Radiological Groundwater Protection Program

3. EN-AA-408-4000, Radiological Groundwater Protection Program Implementation.

4. EN-PB-408-4160, Peach Bottom RGPP Reference Material.

C. Program Description

1. Sample Collection

Sample locations can be found in Table A–1 and Figures A–1 and A–2, Appendix A.

Groundwater and Surface Water

Samples of water are collected, managed, transported and analyzed in accordance with approved procedures. Both groundwater and surface water are collected. Sample locations, sample collection frequencies and analytical frequencies are controlled in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs, as well as nuclear industry audits. Station personnel review and evaluate all analytical data deliverables as data are received.

Analytical data results are reviewed by both station personnel and an independent hydro geologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 (He-3). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by TBE and EIML to analyze the environmental samples for radioactivity for the Peach Bottom Atomic Power Station RGPP in 2011.

In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of gamma emitters in groundwater and surface water.

2. Concentrations of strontium in groundwater.

3. Concentrations of tritium in groundwater and surface water.

4. Concentrations of 'hard-to-detect' isotopes (Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-233/234, U-235, U-238, Fe-55 and Ni-63) in groundwater. These analyses are required based on tritium results.

B. Data Interpretation

The radiological data collected prior to Peach Bottom Atomic Power Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Peach Bottom Atomic Power Station was considered operational at initial criticality. Several factors were important in the interpretation of the data:

1. <u>Lower Limit of Detection</u>

The lower limit of detection (LLD) is a minimum sensitivity value

that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

The estimated uncertainty in measurement of tritium in environmental samples is frequently on the order of 50% of the measurement value.

Statistically, the exact value of a measurement is expressed as a range with a stated level of confidence. The convention is to report results with a 95% level of confidence. The uncertainty comes from calibration standards, sample volume or weight measurements, sampling uncertainty and other factors. Exelon reports the uncertainty of a measurement created by statistical process (counting error) as well as all sources of error (Total Propagated Uncertainty or TPU). Each result has two values calculated. Exelon reports the TPU by following the result with plus or minus ± the estimated sample standard deviation, as TPU, that is obtained by propagating all sources of analytical uncertainty in measurements.

Analytical uncertainties are reported at the 95% confidence level in this report for reporting consistency with the AREOR.

Gamma spectroscopy results for each type of sample were grouped as follows:

For groundwater and surface water 12 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, I-131, Cs-134, Cs-137, Ba-140 and La-140 were reported.

C. Background Analysis

A pre-operational radiological environmental monitoring program (pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life, and foodstuffs. The results of the monitoring were detailed in the report entitled, Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, September 1970- August 1973, January 1974 and Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, June 1977.
The pre-operational REMP contained analytical results from samples

collected from the surface water, discharge, well and rain water.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others. Additional detail may be found by consulting references (CRA 2006).

a. Tritium Production

Tritium is created in the environment from naturally occurring processes both cosmic and subterranean, as well as from anthropogenic (i.e., man-made) sources. In the upper atmosphere, "Cosmogenic" tritium is produced from the bombardment of stable nuclides and combines with oxygen to form tritiated water, which will then enter the hydrologic cycle. Below ground, "lithogenic" tritium is produced by the bombardment of natural lithium present in crystalline rocks by neutrons produced by the radioactive decay of naturally abundant uranium and thorium. Lithogenic production of tritium is usually negligible compared to other sources due to the limited abundance of lithium in rock. The lithogenic tritium is introduced directly to groundwater.

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2006. RadNet provides tritium precipitation concentration data for

samples collected at stations through out the U.S. from 1960 up to and including 2006. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations have typically been below 100 pCi/L since around 1980. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Surface water level measurements were collected at the surface water monitoring locations during the groundwater level measurement event. The purpose of the surface water monitoring was to provide surface water elevation data to evaluate the groundwater/surface water interaction at the Station.

The USEPA RadNet surface water data typically has a reported 'Combined Standard Uncertainty' of 35 to 50 pCi/L. According to USEPA, this corresponds to a ± 70 to 100 pCi/L 95% confidence bound on each given measurement. Therefore, the typical background data provided may be subject to measurement uncertainty of approximately ± 70 to 100 pCi/L.

The radio-analytical laboratory is counting tritium results to an Exelon specified LLD of 200 pCi/L. Typically, the lowest positive measurement will be reported within a range of 40 – 240 pCi/L or 140 ± 100 pCi/L. Clearly, these sample results cannot be distinguished as different from background at this concentration.

IV. Results and Discussion

A. Groundwater Results

Groundwater

Samples were collected from on-site wells throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from 39 locations were analyzed for tritium activity (Table B–I.1, Appendix B). Tritium values ranged from the detection limit to 67,500 pCi/l. Within the station boundary, concentrations of tritium in shallow groundwater reached 67,500 pCi/L. The existing wells at or near the owner-controlled boundary showed no tritium. The location most representative of potential offsite user of drinking water is less than the LLD (Table B–I.1, Appendix B).

Strontium

Strontium-90 was not detected in any of the samples and the required LLD of 1.0 pCi/liter (Table B–I.1, Appendix B).

Gross Alpha and Gross Beta (dissolved and suspended)

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater samples during 2011. Gross Alpha (dissolved) was detected in six of 25 groundwater locations analyzed. The concentrations ranged from 1.1 to 17.3 pCi/L. Gross Alpha (suspended) was detected in 10 of 25 groundwater locations analyzed. The concentrations ranged from 1.0 to 12.2 pCi/L. Gross Beta (dissolved) was detected in 23 of 25 groundwater locations analyzed. The concentrations ranged from 1.2 to 34.3 pCi/L. Gross Beta (suspended) was detected in 10 of 25 groundwater locations analyzed. The concentrations ranged from 0.8 to 11.4 pCi/L. The activity detected is naturally occurring and the levels are considered to be background.

Hard-To-Detect

Hard-To-Detect analyses were performed on a select group of groundwater and surface water locations to establish baseline levels. The analyses for groundwater included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-233/234, U-235, and U-238. The isotopes of U-233/234 and U-238 were detected in three of eight groundwater monitoring locations. The U-233/234 concentrations ranged from 0.83 to 5.78 pCi/L and the U-238 concentrations ranged from 0.39 to 2.46 pCi/L. The activity detected is naturally occurring and the levels are considered to be background (Table B–I.3, Appendix B).

Gamma Emitters

No power-production gamma emitters were detected in any of the samples (Table B–I.2, Appendix B).

B. Surface Water Results

Surface Water

Samples were collected from surface water locations throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from three locations were analyzed for tritium activity. Tritium was not detected in any samples (Table B–II.1, Appendix B).

Gamma Emitters

No power-production gamma emitters were detected in any of the samples. No other gamma emitting nuclides were detected (Table B–II.2, Appendix B).

C. Precipitation Water Results

Precipitation Water

Samples were collected monthly at five locations (1A, 1B, 1S, 1Z, and 4M). The following analysis was performed:

Tritium

Monthly samples from five locations were analyzed for tritium activity. Tritium activity was not detected in any samples (Table B-III.1, Appendix B).

D. Drinking Water Well Survey

A drinking water well survey was conducted during the summer 2006 by CRA (CRA 2006) around the Peach Bottom Atomic Power Station.

E. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE and Environmental Inc. (Midwest Labs) are presented in the AREOR.

F. Leaks, Spills, and Releases

There were no leaks, spills or releases of water containing licensed material to environment in 2011.

G. Trends

A tritium plume has been identified northeast of the Unit 3 Turbine Building. The highest tritium concentration is in well MW-PB-25. The plume extends eastward toward well MW-PB-4. The plume is bounded on the north by wells MW-PB-12 and MW-PB-22. The plume is bounded on the south by wells MW-PB-20 and MW-PB-21.

One sample from the Unit 2 Yard Drain Sump identified tritium at 249 ± 119 pCi/L. All other samples from the Unit 2 and 3 Yard Drain Sump samples were less than the detection limit. The yard drain sump system collects groundwater that accumulates on the west side of the plant. A valve leak was repaired in the Unit 3 Condensate Storage Tank moat in July 2009. Tritium activity has decreased in the sumps since the repair.

Overall, there was a decreasing trend in tritium activity in samples obtained from groundwater monitoring wells in 2011.

H. Investigations

MW-PB-4

In 2006, monitoring wells MW-PB-1 through MW-PB-14 were installed. Tritium activity was detected in MW-PB-4, located north of the Unit 3 Circulating Water Pump Structure and MW-PB-12, north of the Administration Building. Groundwater flow on site is from west to east. Monitoring wells were installed to the west, southwest and northwest of monitoring wells MW-PB-4 and MW-PB-12. The wells with the highest tritium activity were the wells installed directly east and adjacent to the Unit 3 Turbine, wells MW-PB-24, 25, 26 and 27.

Investigation of potential sources identified that the likely source of groundwater contamination was due to degraded floor seams in the Unit 3 Turbine Moisture Separator area 116' elevation. Leaks internal to the building entered the groundwater through the degraded floor seams. The floor seams were repaired in August 2010. The floor in the Unit 3 Turbine Moisture Separator area 116' elevation was sealed and recoated in October 2011. Monitoring well activity has been decreasing since floor seam repairs were completed.

MW-PB-29, 30 and 31

An extent-of-condition inspection of the Unit 2 Turbine Moisture Separator area 116' elevation floor was performed in October 2010. Minor degradation of the floor seams was identified and repaired. In May 2011, monitoring wells MW-PB-29 and 30 were installed directly east of and adjacent to the Unit 2 Turbine Building; MW-PB-31 was installed southeast and adjacent to the Unit 2 Turbine Building. These wells were installed to determine if a condition existed east of the Unit 2 Turbine that was similar to the condition east of the Unit 3 Turbine Building.

Wells MW-PB-29, 30 and 31 were sampled a total of 24 times in 2011. Tritium activity in the wells ranged from less than the LLD to 1,220 ± 202 pCi/L. Samples from these wells were also analyzed for gamma emitting isotopes and hard to detect radionuclides. All results were less than the LLD for each isotope.

MW-PB-4, 24, 25, 26 and 27

Wells MW-PB-4, 24, 25, 26 and 27 are considered the wells of primary interest and were sampled on a frequency that ranged from weekly to monthly. Below are 2 tables. The first lists the highest tritium activity of the wells of primary interest and the date of the sampling. The second table lists the tritium activity of the wells from the last sampling of 2011. The tritium activity is in pCi/L.

Well #	Tritium Activity	Date
MW-PB-4	17,200	5/24/2010
MW-PB-24	33,500	3/15/2010
MW-PB-25	161,000	3/8/2010
MW-PB-26	196,000	3/8/2010
MW-PB-27	71,800	2/22/2010

Well #	Tritium Activity	Date
MW-PB-4	2,730	12/19/2011
MW-PB-24	880	12/19/2011
MW-PB-25	15,300	12/19/2011
MW-PB-26	612	12/19/2011
MW-PB-27	2,030	12/19/2011

Potential sources of tritium in the groundwater were investigated via procedural processes and documented in the corrective action program. The most likely pathway for tritium to enter the groundwater has been determined to be leaks internal to the Unit 3 Turbine Building Moisture Separator 116', migrating through degraded floor seams. The floor seams were repaired and the entire floor was sealed and a coating applied during the refuel outage in the fall of 2011. The wells have been on a decreasing trend since these repairs were completed.

I. Actions Taken

1. Compensatory Actions

Wells, MW-PB-4, 24, 25, 26 and 27 were sampled and analyzed for tritium on a weekly to monthly frequency. Wells MW-PB-21, 29, 30, and 31 were sampled and analyzed for tritium on a monthly to quarterly frequency. Wells MW-PB-12, 19, 20, 22 and 28 were sampled and analyzed on a weekly to quarterly frequency. Well sampling frequency varied based on tritium activity trends in the wells. All sample frequencies

were within frequencies established by station procedure. Well sampling frequency decreased with a decreasing overall trend in tritium activity.

Intake and discharge canal water and domestic water continued to be sampled at an increased frequency in 2011. Intake and discharge canal sampling varied from weekly to monthly, based on monitoring well activity. Domestic water sampling varied from daily to weekly, based on monitoring well activity. There has been no detectable tritium in the intake and discharge canal water and domestic water samples.

2. Installation of Monitoring Wells

A total of 3 monitoring wells were installed in May 2011. Monitoring wells MW-PB-29 and 30 were installed directly east of and adjacent to the Unit 2 Turbine Building; MW-PB-31 was installed southeast of and adjacent to the Unit 2 Turbine Building. All wells are overburden wells. MW-PB-29 is 9.5' deep, MW-PB-30 is 15' deep and MW-PB-31 is 8' deep.

These wells were installed to determine if a condition existed east of the Unit 2 Turbine that was similar to the condition east of the Unit 3 Turbine Building. Additionally, MW-PB-31 is considered to be an early detection well for the Radwaste Discharge line, the Unit 2 Condensate Storage Tank and the Refuel Water Storage Tank. MW-PB-31 is located west of these components, down gradient from the groundwater flow path identified in hydrologic studies.

3. Actions to Recover/Reverse Plumes

None.

J. Deviations

The data tables show that duplicate samples were obtained at several wells during 2011. These duplicate samples were obtained and analyzed for quality control purposes.

There are no additional deviations to report.

V. References

1. Conestoga Rovers and Associates, Fleetwide Assessment, Peach Bottom Atomic Power station, Delta, PA, Fleetwide Assessment, Rev. 1, September 1, 2006.

2. Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, June 1977.

3. Peach Bottom Atomic Power Station, Environs Radiation Monitoring Program, Preoperational Summary Report units 2 and 3, September 1970-August 1973, January 1974.

4. AMO Environmental Decisions, March 18, 2009 Report, Fall 2008 Routine Groundwater and Surface Water Monitoring Round Summary of Results, Conclusions and Recommendations for Future Monitoring Rounds Peach Bottom Atomic Power Station, Delta, Pennsylvania.

5. AMO Environmental Decisions, April 18, 2011, November 2010 RGPP Summary Monitoring Report.

APPENDIX A

SAMPLING LOCATIONS, DISTANCE AND DIRECTION

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Peach Bottom Atomic Power Station, 2011

Site	Site Type	Sector	Distance (ft.)
MW-PB-1	Groundwater Well	SW	1,166.6
MW-PB-2	Groundwater Well	WNW	309.0
MW-PB-3	Groundwater Well	SSE	709.7
MW-PB-4	Groundwater Well	ENE	350.2
MW-PB-5	Groundwater Well	NNW	1,146.1
MW-PB-6	Groundwater Well	NE	1,072.4
MW-PB-7	Groundwater Well	SE	813.9
MW-PB-8	Groundwater Well	SE	1,167.0
MW-PB-9	Groundwater Well	SE	2,816.9
MW-PB-10	Groundwater Well	SSE	1,125.1
MW-PB-11	Groundwater Well	SE	438.4
MW-PB-12	Groundwater Well	NNE	317.2
MW-PB-13	Groundwater Well	NW	329.4
MW-PB-14	Groundwater Well	S	1,231.2
MW-PB-15	Groundwater Well	SE	1,087.9
MW-PB-16	Groundwater Well	SE	1,101.6
MW-PB-17	Groundwater Well	SE	1,005.4
MW-PB-18	Groundwater Well	SE	1,010.0
MW-PB-19	Groundwater Well	NW	226.8
MW-PB-20	Groundwater Well	E	260.5
MW-PB-21	Groundwater Well	E	363.3
MW-PB-22	Groundwater Well	NE	315.4
MW-PB-24	Groundwater Well	N	185.9
MW-PB-25	Groundwater Well	N	159.7
MW-PB-26	Groundwater Well	NNE	121.1
MW-PB-27	Groundwater Well	NNE	139.1
MW-PB-28	Groundwater Well	NW	249.6
MW-PB-29	Groundwater Well	SE	325.0
MW-PB-30	Groundwater Well	SE	379.2
MW-PB-31	Groundwater Well	SE	450.1
SW-PB-1	Surface Water	NNW	2,850.5
SW-PB-5	Surface Water	SE	675.1
SW-PB-6	Surface Water	SE	1,305.9
SP-PB-1	Groundwater Seep	S	514.2
SP-PB-2	Groundwater Seep	WNW	311.6
SP-PB-3	Groundwater Seep	NNW	1,281.1
U/2 YARD DRAIN SUMP	Groundwater	SSE	498.7
U/3 YARD DRAIN SUMP	Groundwater	WSW	175.8
1A	Precipitation Water	SE	1,396
1B	Precipitation Water	NW	2,587
1S	Precipitation Water	S	1,315
1Z	Precipitation Water	SE	1,396
4M	Precipitation Water	SE	45,989

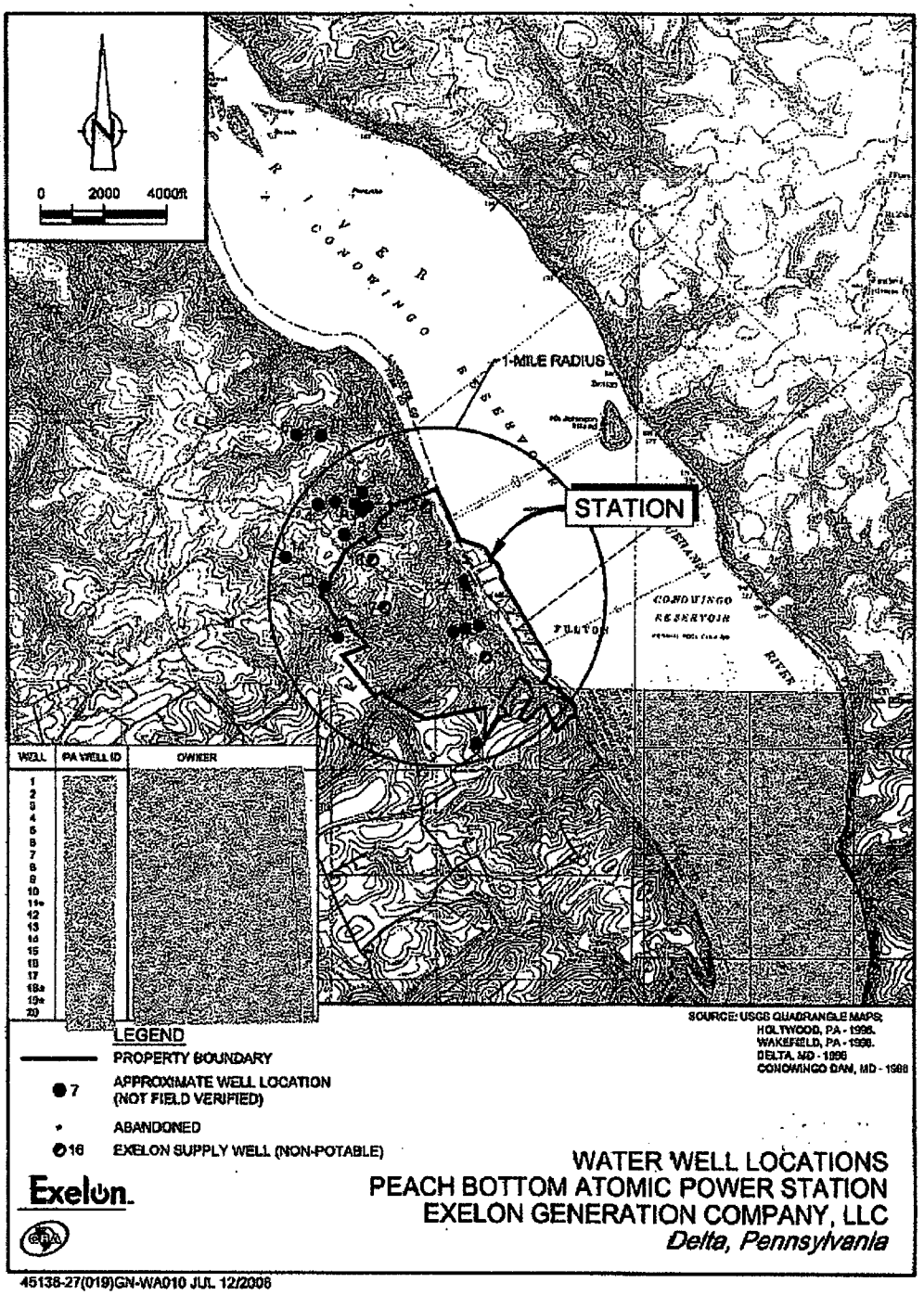

Figure A-1
Well Water Locations, Peach Bottom Atomic Power Station, 2011

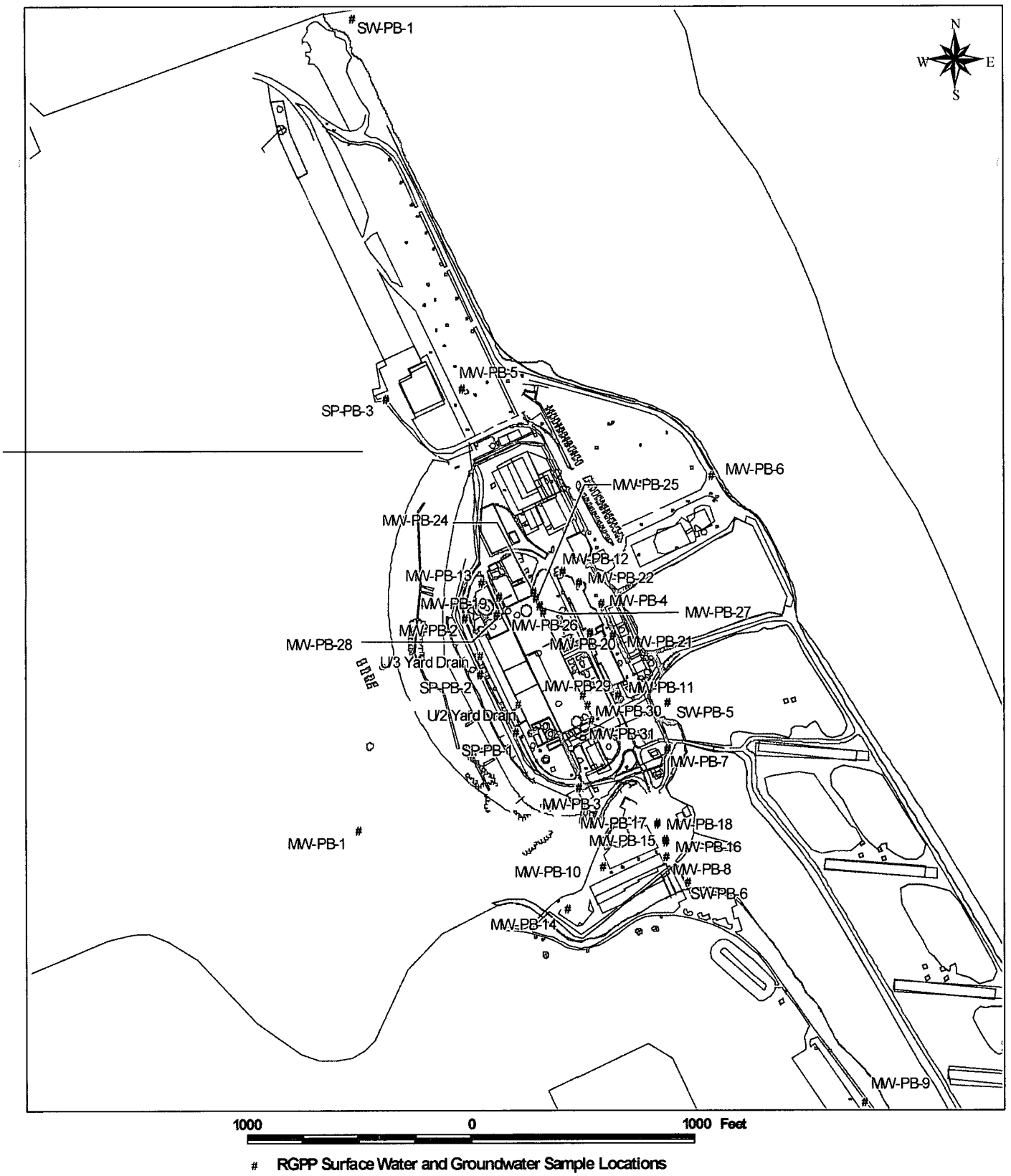

Figure A-2
RGPP Monitoring Locations, Peach Bottom Atomic Power Station, 2011

APPENDIX B

DATA TABLES

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-1	05/16/11		< 177					
MW-PB-10	01/31/11		< 180					
MW-PB-10	04/26/11		< 175	< 0.7	< 2.2	8.2 ± 1.9	6.7 ± 3.4	10.4 ± 2.2
MW-PB-10	08/03/11		< 175					
MW-PB-10	11/02/11		< 182					
MW-PB-11	01/31/11		< 179					
MW-PB-11	01/31/11		< 181					
MW-PB-11	04/25/11		< 192	< 0.5	< 0.5	1.1 ± 0.7	3.8 ± 1.0	< 1.7
MW-PB-11	04/25/11		< 191	< 0.5	< 0.5	< 0.7	3.4 ± 0.9	< 1.7
MW-PB-11	08/01/11		< 197					
MW-PB-11	11/01/11		< 171					
MW-PB-12	01/10/11		598 ± 131					
MW-PB-12	01/31/11		606 ± 129					
MW-PB-12	03/07/11		722 ± 133					
MW-PB-12	04/04/11		531 ± 118					
MW-PB-12	04/26/11		312 ± 132	< 0.8	< 0.5	< 0.4	1.2 ± 0.7	< 1.6
MW-PB-12	05/16/11		437 ± 137					
MW-PB-12	06/13/11		385 ± 136					
MW-PB-12	08/02/11		503 ± 134					
MW-PB-12	08/22/11		300 ± 127					
MW-PB-12	08/29/11		448 ± 132					
MW-PB-12	09/26/11		445 ± 139					
MW-PB-12	10/31/11		357 ± 139					
MW-PB-12	10/31/11		326 ± 139					
MW-PB-12	10/31/11	EIML	474 ± 99					
MW-PB-12	11/28/11		342 ± 132					
MW-PB-12	12/19/11		300 ± 130					
MW-PB-13	01/31/11		< 173					
MW-PB-13	04/25/11		< 194	< 0.7	17.3 ± 7.0	< 3.0	34.3 ± 6.8	< 6.5
MW-PB-13	08/01/11		< 173					
MW-PB-13	10/31/11		< 196					
MW-PB-14	04/26/11		< 171					
MW-PB-15	01/31/11		< 179					
MW-PB-15	04/26/11		< 173	< 0.8	< 0.9	1.5 ± 0.9	11.3 ± 1.3	3.2 ± 1.3
MW-PB-15	08/02/11		< 172					
MW-PB-15	11/01/11		< 172					
MW-PB-16	01/31/11		< 181					
MW-PB-16	04/26/11		< 175	< 0.7	13.9 ± 3.6	12.2 ± 2.1	7.9 ± 2.8	9.2 ± 2.0
MW-PB-16	08/02/11		< 173					
MW-PB-16	11/01/11		< 169					
MW-PB-19	01/10/11		385 ± 122					
MW-PB-19	01/31/11		448 ± 125					
MW-PB-19	03/07/11		277 ± 111					
MW-PB-19	04/04/11		283 ± 106					
MW-PB-19	04/25/11		< 192	< 0.6	< 0.4	< 0.6	2.9 ± 0.8	< 1.7
MW-PB-19	05/16/11		253 ± 125					
MW-PB-19	06/13/11		< 193					
MW-PB-19	08/01/11		< 175					
MW-PB-19	08/22/11		< 185					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE		H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-19	08/29/11		< 174					
MW-PB-19	09/26/11		< 186					
MW-PB-19	10/31/11		< 197					
MW-PB-19	10/31/11		< 198					
MW-PB-19	10/31/11	EIML	< 147					
MW-PB-19	11/28/11		< 181					
MW-PB-2	02/14/11		< 177					
MW-PB-2	04/26/11		< 190	< 0.7	3.5 ± 0.8	< 0.6	13.8 ± 1.1	< 1.6
MW-PB-2	08/01/11		< 177					
MW-PB-2	11/01/11		< 171					
MW-PB-20	01/10/11		< 167					
MW-PB-20	01/31/11		< 171					
MW-PB-20	03/07/11		< 159					
MW-PB-20	04/04/11		< 148					
MW-PB-20	04/25/11		< 190	< 0.7	< 1.4	8.4 ± 3.3	8.0 ± 1.8	31.7 ± 4.3
MW-PB-20	05/16/11		< 178					
MW-PB-20	06/13/11		< 197					
MW-PB-20	08/02/11		< 173					
MW-PB-20	08/22/11		< 182					
MW-PB-20	08/29/11		< 176					
MW-PB-20	09/26/11		< 186					
MW-PB-20	10/31/11		< 198					
MW-PB-20	11/28/11		< 183					
MW-PB-21	01/10/11		369 ± 122					
MW-PB-21	01/31/11		372 ± 122					
MW-PB-21	03/07/11		407 ± 118					
MW-PB-21	04/04/11		< 149					
MW-PB-21	04/26/11		< 190	< 0.7	< 1.0	< 0.4	11.2 ± 1.4	< 1.6
MW-PB-21	05/16/11		< 181					
MW-PB-21	06/13/11		< 198					
MW-PB-21	08/01/11		< 177					
MW-PB-21	11/28/11		263 ± 127					
MW-PB-21	12/19/11		257 ± 128					
MW-PB-22	01/03/11		1520 ± 211					
MW-PB-22	01/10/11		1900 ± 248					
MW-PB-22	01/24/11		1480 ± 212					
MW-PB-22	01/31/11		1060 ± 169					
MW-PB-22	02/07/11		1290 ± 182					
MW-PB-22	03/07/11		927 ± 148					
MW-PB-22	04/04/11		852 ± 136					
MW-PB-22	04/25/11		1410 ± 210	< 0.7	< 0.7	< 1.0	2.1 ± 0.8	3.8 ± 1.5
MW-PB-22	05/16/11		1260 ± 184					
MW-PB-22	06/13/11		1590 ± 229					
MW-PB-22	08/01/11		1250 ± 199					
MW-PB-22	08/22/11		1510 ± 216					
MW-PB-22	08/29/11		1670 ± 227					
MW-PB-22	09/26/11		1030 ± 167					
MW-PB-22	10/31/11		670 ± 155					
MW-PB-22	11/28/11		1240 ± 184					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-22	12/19/11	673 ± 150					
MW-PB-24	01/03/11	709 ± 145					
MW-PB-24	01/10/11	525 ± 130					
MW-PB-24	01/18/11	971 ± 155					
MW-PB-24	01/24/11	411 ± 126					
MW-PB-24	01/31/11	< 169					
MW-PB-24	02/07/11	693 ± 129					
MW-PB-24	02/14/11	261 ± 119					
MW-PB-24	02/22/11	< 173					
MW-PB-24	02/28/11	297 ± 116					
MW-PB-24	03/07/11	1410 ± 192					
MW-PB-24	03/14/11	2290 ± 273					
MW-PB-24	03/21/11	1810 ± 242					
MW-PB-24	04/04/11	985 ± 150					
MW-PB-24	04/18/11	4860 ± 535					
MW-PB-24	04/26/11	2850 ± 332	< 0.6	< 0.7	< 0.7	2.6 ± 0.9	< 1.6
MW-PB-24	05/16/11	1350 ± 193					
MW-PB-24	06/13/11	7650 ± 818					
MW-PB-24	07/11/11	2960 ± 365					
MW-PB-24	07/18/11	461 ± 133					
MW-PB-24	07/25/11	460 ± 138					
MW-PB-24	08/02/11	3970 ± 433					
MW-PB-24	08/08/11	2800 ± 327					
MW-PB-24	08/15/11	8340 ± 880					
MW-PB-24	08/22/11	7140 ± 768					
MW-PB-24	08/29/11	6580 ± 707					
MW-PB-24	09/06/11	6380 ± 682					
MW-PB-24	09/12/11	3510 ± 401					
MW-PB-24	09/19/11	1070 ± 171					
MW-PB-24	09/26/11	3160 ± 369					
MW-PB-24	10/03/11	1500 ± 215					
MW-PB-24	10/10/11	459 ± 136					
MW-PB-24	10/17/11	1080 ± 176					
MW-PB-24	10/24/11	386 ± 128					
MW-PB-24	10/31/11	721 ± 151					
MW-PB-24	11/07/11	306 ± 124					
MW-PB-24	11/14/11	368 ± 136					
MW-PB-24	11/21/11	901 ± 151					
MW-PB-24	11/28/11	3010 ± 350					
MW-PB-24	12/05/11	1100 ± 166					
MW-PB-24	12/12/11	2580 ± 308					
MW-PB-24	12/19/11	880 ± 159					
MW-PB-25	01/03/11	67500 ± 6780					
MW-PB-25	01/10/11	58400 ± 5540					
MW-PB-25	01/18/11	56900 ± 5730					
MW-PB-25	01/24/11	39400 ± 3980					
MW-PB-25	01/31/11	34900 ± 3530					
MW-PB-25	01/31/11	37200 ± 3770					
MW-PB-25	02/07/11	15200 ± 1560					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-25	02/14/11	26600 ± 2710					
MW-PB-25	02/22/11	31100 ± 3150					
MW-PB-25	02/28/11	27000 ± 2730					
MW-PB-25	03/07/11	4830 ± 526					
MW-PB-25	03/14/11	17700 ± 1810					
MW-PB-25	03/21/11	15700 ± 1620					
MW-PB-25	04/04/11	10700 ± 1100					
MW-PB-25	04/18/11	3420 ± 393					
MW-PB-25	04/26/11	8400 ± 881	< 0.8	< 0.6	< 0.7	7.3 ± 1.0	< 1.6
MW-PB-25	04/26/11	8550 ± 895	< 1.0	< 0.7	< 0.7	7.5 ± 1.0	< 1.6
MW-PB-25	05/16/11	4360 ± 483					
MW-PB-25	06/13/11	8990 ± 954					
MW-PB-25	07/11/11	25300 ± 2580					
MW-PB-25	07/18/11	20200 ± 2070					
MW-PB-25	07/25/11	27000 ± 2750					
MW-PB-25	08/02/11	18800 ± 1900					
MW-PB-25	08/08/11	22500 ± 2290					
MW-PB-25	08/15/11	13900 ± 1430					
MW-PB-25	08/22/11	16300 ± 1680					
MW-PB-25	08/29/11	16500 ± 1700					
MW-PB-25	09/06/11	24400 ± 2470					
MW-PB-25	09/12/11	31300 ± 3170					
MW-PB-25	09/19/11	31200 ± 3160					
MW-PB-25	09/26/11	31000 ± 3120					
MW-PB-25	10/03/11	26800 ± 2730					
MW-PB-25	10/10/11	30500 ± 3080					
MW-PB-25	10/17/11	26200 ± 2660					
MW-PB-25	10/24/11	23400 ± 2380					
MW-PB-25	10/31/11	14600 ± 1510					
MW-PB-25	11/07/11	23100 ± 2350					
MW-PB-25	11/14/11	28900 ± 2930					
MW-PB-25	11/21/11	31900 ± 3220					
MW-PB-25	11/28/11	30900 ± 3140					
MW-PB-25	12/05/11	26400 ± 2680					
MW-PB-25	12/12/11	17400 ± 1780					
MW-PB-25	12/19/11	15300 ± 1560					
MW-PB-26	01/03/11	2430 ± 297					
MW-PB-26	01/10/11	2330 ± 289					
MW-PB-26	01/18/11	3000 ± 348					
MW-PB-26	01/24/11	2810 ± 338					
MW-PB-26	01/31/11	3140 ± 370					
MW-PB-26	02/07/11	3330 ± 380					
MW-PB-26	02/14/11	3890 ± 447					
MW-PB-26	02/22/11	3630 ± 415					
MW-PB-26	02/28/11	3710 ± 419					
MW-PB-26	03/07/11	3140 ± 359					
MW-PB-26	03/14/11	2370 ± 280					
MW-PB-26	03/21/11	3220 ± 380					
MW-PB-26	04/04/11	5690 ± 610					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-26	04/18/11	4190 ± 467					
MW-PB-26	04/25/11	7150 ± 771	< 0.6	1.8 ± 0.7	< 0.6	6.2 ± 1.0	< 1.6
MW-PB-26	05/16/11	2640 ± 315					
MW-PB-26	06/13/11	932 ± 167					
MW-PB-26	07/11/11	1080 ± 188					
MW-PB-26	07/18/11	1340 ± 199					
MW-PB-26	07/25/11	1150 ± 183					
MW-PB-26	08/02/11	1040 ± 149					
MW-PB-26	08/08/11	954 ± 161					
MW-PB-26	08/15/11	845 ± 146					
MW-PB-26	08/22/11	430 ± 132					
MW-PB-26	08/29/11	532 ± 136					
MW-PB-26	09/06/11	1080 ± 170					
MW-PB-26	10/10/11	1010 ± 162					
MW-PB-26	10/17/11	964 ± 168					
MW-PB-26	10/24/11	821 ± 148					
MW-PB-26	10/31/11	906 ± 161					
MW-PB-26	11/07/11	771 ± 148					
MW-PB-26	11/14/11	886 ± 161					
MW-PB-26	11/21/11	734 ± 142					
MW-PB-26	11/28/11	730 ± 151					
MW-PB-26	12/05/11	723 ± 146					
MW-PB-26	12/12/11	570 ± 144					
MW-PB-26	12/19/11	612 ± 145					
MW-PB-27	01/03/11	9520 ± 999					
MW-PB-27	01/10/11	8980 ± 946					
MW-PB-27	01/18/11	8080 ± 850					
MW-PB-27	01/24/11	6140 ± 667					
MW-PB-27	01/31/11	6670 ± 719					
MW-PB-27	02/07/11	3500 ± 395					
MW-PB-27	02/14/11	4550 ± 510					
MW-PB-27	02/22/11	4040 ± 456					
MW-PB-27	02/28/11	4330 ± 480					
MW-PB-27	03/07/11	4830 ± 527					
MW-PB-27	03/14/11	4380 ± 478					
MW-PB-27	03/21/11	4790 ± 534					
MW-PB-27	04/04/11	3470 ± 389					
MW-PB-27	04/18/11	4420 ± 492					
MW-PB-27	04/26/11	4670 ± 510	< 0.7	1.6 ± 0.7	< 0.4	5.3 ± 1.0	< 1.6
MW-PB-27	05/16/11	3660 ± 413					
MW-PB-27	06/13/11	6950 ± 750					
MW-PB-27	07/11/11	3800 ± 446					
MW-PB-27	07/18/11	4690 ± 525					
MW-PB-27	07/25/11	3480 ± 404					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-27	08/02/11	3860 ± 422					
MW-PB-27	08/08/11	3200 ± 368					
MW-PB-27	08/15/11	5030 ± 550					
MW-PB-27	08/22/11	3610 ± 417					
MW-PB-27	08/29/11	5810 ± 632					
MW-PB-27	09/06/11	2890 ± 339					
MW-PB-27	09/12/11	3540 ± 404					
MW-PB-27	09/19/11	1720 ± 230					
MW-PB-27	09/26/11	1950 ± 251					
MW-PB-27	10/03/11	1570 ± 220					
MW-PB-27	10/10/11	1510 ± 203					
MW-PB-27	10/17/11	1450 ± 209					
MW-PB-27	10/24/11	1700 ± 226					
MW-PB-27	10/31/11	2170 ± 271					
MW-PB-27	11/07/11	1630 ± 222					
MW-PB-27	11/14/11	1750 ± 234					
MW-PB-27	11/21/11	1430 ± 199					
MW-PB-27	11/28/11	2130 ± 267					
MW-PB-27	12/05/11	1370 ± 189					
MW-PB-27	12/12/11	1940 ± 246					
MW-PB-27	12/19/11	2030 ± 257					
MW-PB-28	01/10/11	< 172					
MW-PB-28	01/31/11	280 ± 118					
MW-PB-28	03/07/11	223 ± 110					
MW-PB-28	04/04/11	276 ± 107					
MW-PB-28	04/25/11	< 193	< 0.6	< 0.4	5.7 ± 1.7	3.0 ± 0.8	9.8 ± 1.8
MW-PB-28	05/16/11	251 ± 123					
MW-PB-28	06/13/11	< 197					
MW-PB-28	08/01/11	214 ± 121					
MW-PB-28	08/01/11	208 ± 120					
MW-PB-28	08/22/11	< 184					
MW-PB-28	08/29/11	< 182					
MW-PB-28	09/26/11	< 184					
MW-PB-28	10/31/11	< 197					
MW-PB-28	11/28/11	< 183					
MW-PB-29	06/13/11	< 193					
MW-PB-29	07/11/11	< 192					
MW-PB-29	08/01/11	< 195	< 0.5	< 0.7	< 0.6	4.1 ± 0.8	< 1.5
MW-PB-29	08/08/11	350 ± 127					
MW-PB-29	08/29/11	< 177					
MW-PB-29	09/26/11	< 188					
MW-PB-29	11/01/11	< 172					
MW-PB-29	11/28/11	< 183					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-29	12/19/11	< 182					
MW-PB-3	01/31/11	< 178					
MW-PB-3	04/26/11	< 190	< 0.6	1.1 ± 0.6	< 0.6	2.3 ± 0.8	< 1.6
MW-PB-3	08/01/11	< 177					
MW-PB-3	11/01/11	< 171					
MW-PB-30	06/13/11	904 ± 166					
MW-PB-30	07/11/11	1220 ± 202					
MW-PB-30	08/01/11	693 ± 145	< 0.7	< 0.9	1.7 ± 1.0	3.1 ± 0.9	5.2 ± 1.6
MW-PB-30	08/08/11	1060 ± 165					
MW-PB-30	08/29/11	1150 ± 179					
MW-PB-30	09/26/11	871 ± 163					
MW-PB-30	11/01/11	< 184					
MW-PB-30	11/28/11	994 ± 164					
MW-PB-30	12/19/11	229 ± 125					
MW-PB-31	06/13/11	358 ± 138					
MW-PB-31	07/11/11	473 ± 153					
MW-PB-31	08/01/11	379 ± 138	< 0.6	< 0.6	1.0 ± 0.6	1.4 ± 0.8	< 1.5
MW-PB-31	08/08/11	527 ± 136					
MW-PB-31	08/29/11	230 ± 120					
MW-PB-31	12/19/11	252 ± 130					
MW-PB-4	01/03/11	4320 ± 485					
MW-PB-4	01/10/11	4260 ± 475					
MW-PB-4	01/18/11	4430 ± 488					
MW-PB-4	01/31/11	4540 ± 508					
MW-PB-4	02/07/11	3870 ± 432					
MW-PB-4	02/14/11	3760 ± 433					
MW-PB-4	02/22/11	3980 ± 452					
MW-PB-4	02/28/11	3510 ± 400					
MW-PB-4	03/07/11	3760 ± 421					
MW-PB-4	03/14/11	3880 ± 428					
MW-PB-4	03/21/11	3880 ± 443					
MW-PB-4	04/04/11	3580 ± 400					
MW-PB-4	04/18/11	3750 ± 425					
MW-PB-4	04/26/11	3980 ± 457	< 0.9	< 1.0	< 0.4	7.4 ± 1.2	< 1.6
MW-PB-4	04/26/11	3930 ± 453	< 0.7	< 1.1	1.4 ± 0.7	7.1 ± 1.2	< 1.7
MW-PB-4	05/16/11	4540 ± 501					
MW-PB-4	06/13/11	4680 ± 528					
MW-PB-4	07/11/11	5540 ± 618					
MW-PB-4	07/18/11	5210 ± 571					
MW-PB-4	07/25/11	5460 ± 601					
MW-PB-4	08/02/11	5020 ± 534					
MW-PB-4	08/02/11	5690 ± 603					
MW-PB-4	08/08/11	2780 ± 328					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
MW-PB-4	08/15/11	5020 ± 549					
MW-PB-4	08/22/11	4360 ± 492					
MW-PB-4	08/29/11	4710 ± 521					
MW-PB-4	09/06/11	4260 ± 473					
MW-PB-4	09/12/11	3400 ± 390					
MW-PB-4	09/19/11	4060 ± 459					
MW-PB-4	09/26/11	3410 ± 393					
MW-PB-4	10/03/11	3910 ± 446					
MW-PB-4	10/10/11	3330 ± 379					
MW-PB-4	10/17/11	3460 ± 402					
MW-PB-4	10/24/11	3480 ± 400					
MW-PB-4	10/31/11	3320 ± 382					
MW-PB-4	11/07/11	3050 ± 357					
MW-PB-4	11/14/11	3300 ± 379					
MW-PB-4	11/21/11	3310 ± 378					
MW-PB-4	11/28/11	3340 ± 384					
MW-PB-4	12/05/11	2590 ± 305					
MW-PB-4	12/12/11	2280 ± 278					
MW-PB-4	12/19/11	2730 ± 325					
MW-PB-5	04/26/11	< 175					
MW-PB-6	04/27/11	< 176					
MW-PB-7	01/31/11	< 176					
MW-PB-7	01/31/11	< 177					
MW-PB-7	06/03/11	< 170	< 1.0	< 2.7	< 0.7	7.5 ± 1.7	< 2.0
MW-PB-7	08/03/11	< 174					
MW-PB-7	11/02/11	< 182					
MW-PB-8	01/31/11	< 176					
MW-PB-8	04/26/11	< 175	< 0.7	< 2.2	7.0 ± 1.7	16.1 ± 4.0	11.4 ± 2.2
MW-PB-8	08/02/11	< 172					
MW-PB-8	11/01/11	< 187					
SP-PB-1	02/01/11	< 175					
SP-PB-1	04/26/11	< 193					
SP-PB-1	08/01/11	< 195					
SP-PB-1	11/01/11	< 173					
SP-PB-2	02/01/11	< 180					
SP-PB-2	04/26/11	< 191					
SP-PB-2	08/01/11	< 180					
SP-PB-2	11/01/11	< 171					
SP-PB-3	02/07/11	< 152					
SP-PB-3	04/27/11	< 174					
SP-PB-3	08/03/11	< 173					
SP-PB-3	11/01/11	< 167					
U/2 YARD DRAIN	02/09/11	249 ± 119					

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM-90, GROSS ALPHA AND GROSS BETA IN GROUNDWATER AND SEEP SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90	GR-A (DIS)	GR-A (SUS)	GR-B (DIS)	GR-B (SUS)
U/2 YARD DRAIN	06/13/11	< 199	< 0.8	< 0.8	< 0.3	< 1.3	0.9 ± 0.5
U/2 YARD DRAIN	09/22/11	< 190					
U/3 YARD DRAIN	02/09/11	< 177					
U/3 YARD DRAIN	06/13/11	< 195	< 1.0	< 0.5	< 0.2	< 1.1	0.8 ± 0.5
U/3 YARD DRAIN	09/22/11	< 188					

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER AND SEEP WATER SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-PB-1	05/16/11	< 9	< 9	< 21	< 10	< 27	< 13	< 15	< 11	< 10	< 10	< 36	< 13
MW-PB-10	04/26/11	< 1	< 1	< 3	< 1	< 2	< 1	< 3	< 12	< 1	< 1	< 18	< 7
MW-PB-11	04/25/11	< 4	< 5	< 8	< 5	< 9	< 5	< 8	< 13	< 4	< 4	< 32	< 7
MW-PB-11	04/25/11	< 4	< 4	< 7	< 4	< 8	< 4	< 6	< 14	< 4	< 4	< 28	< 11
MW-PB-12	04/26/11	< 3	< 4	< 9	< 4	< 8	< 4	< 6	< 10	< 3	< 4	< 25	< 8
MW-PB-13	04/25/11	< 5	< 5	< 10	< 5	< 10	< 5	< 9	< 15	< 5	< 5	< 30	< 10
MW-PB-14	04/26/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 15	< 5
MW-PB-15	01/31/11	< 3	< 2	< 8	< 5	< 7	< 4	< 7	< 10	< 4	< 3	< 20	< 6
MW-PB-15	04/26/11	< 5	< 6	< 12	< 5	< 9	< 6	< 8	< 13	< 5	< 5	< 26	< 9
MW-PB-15	08/02/11	< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 8	< 2	< 2	< 16	< 5
MW-PB-15	11/01/11	< 3	< 4	< 8	< 3	< 6	< 4	< 6	< 11	< 3	< 3	< 24	< 7
MW-PB-16	01/31/11	< 6	< 6	< 10	< 5	< 10	< 7	< 9	< 14	< 5	< 5	< 32	< 10
MW-PB-16	04/26/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 15	< 4
MW-PB-16	08/02/11	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 8	< 3	< 3	< 18	< 7
MW-PB-16	11/01/11	< 4	< 4	< 9	< 4	< 8	< 5	< 7	< 15	< 4	< 4	< 29	< 11
MW-PB-19	04/25/11	< 4	< 4	< 9	< 4	< 8	< 4	< 8	< 14	< 4	< 5	< 30	< 6
MW-PB-2	04/26/11	< 5	< 4	< 10	< 4	< 8	< 5	< 9	< 13	< 4	< 4	< 32	< 10
MW-PB-20	04/25/11	< 4	< 5	< 11	< 5	< 10	< 5	< 10	< 14	< 5	< 6	< 34	< 13
MW-PB-21	04/26/11	< 4	< 3	< 9	< 4	< 7	< 4	< 6	< 12	< 4	< 4	< 25	< 8
MW-PB-22	04/25/11	< 5	< 4	< 12	< 5	< 10	< 4	< 7	< 14	< 5	< 4	< 34	< 10
MW-PB-24	04/26/11	< 4	< 3	< 8	< 4	< 6	< 4	< 6	< 11	< 4	< 4	< 23	< 6
MW-PB-24	10/31/11	< 4	< 5	< 9	< 5	< 10	< 6	< 9	< 11	< 4	< 4	< 26	< 7
MW-PB-25	04/26/11	< 5	< 4	< 9	< 3	< 8	< 5	< 9	< 11	< 4	< 5	< 28	< 8
MW-PB-25	04/26/11	< 5	< 5	< 12	< 5	< 10	< 6	< 8	< 14	< 4	< 5	< 29	< 11
MW-PB-25	10/31/11	< 5	< 5	< 11	< 6	< 12	< 7	< 10	< 13	< 5	< 6	< 28	< 10
MW-PB-26	04/25/11	< 4	< 3	< 8	< 5	< 6	< 5	< 7	< 14	< 4	< 5	< 31	< 10
MW-PB-26	10/31/11	< 5	< 5	< 10	< 5	< 11	< 7	< 8	< 10	< 6	< 5	< 25	< 9
MW-PB-27	04/26/11	< 4	< 4	< 9	< 5	< 7	< 6	< 8	< 13	< 4	< 5	< 30	< 12
MW-PB-27	10/31/11	< 4	< 3	< 7	< 3	< 6	< 4	< 6	< 8	< 3	< 3	< 22	< 5
MW-PB-28	04/25/11	< 4	< 4	< 11	< 4	< 9	< 5	< 9	< 15	< 4	< 5	< 34	< 9
MW-PB-29	08/01/11	< 2	< 2	< 5	< 2	< 3	< 2	< 3	< 6	< 2	< 2	< 13	< 5
MW-PB-3	04/26/11	< 4	< 3	< 11	< 5	< 7	< 4	< 8	< 14	< 4	< 4	< 28	< 11

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER AND SEEP WATER SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-PB-30	08/01/11	< 2	< 3	< 6	< 3	< 5	< 3	< 5	< 7	< 2	< 2	< 17	< 7
MW-PB-31	08/01/11	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 7	< 2	< 2	< 15	< 5
MW-PB-4	04/26/11	< 4	< 4	< 7	< 4	< 8	< 4	< 8	< 12	< 3	< 4	< 24	< 7
MW-PB-4	04/26/11	< 4	< 4	< 11	< 4	< 10	< 6	< 8	< 14	< 4	< 5	< 30	< 10
MW-PB-4	10/31/11	< 6	< 6	< 15	< 6	< 11	< 7	< 10	< 12	< 5	< 5	< 32	< 11
MW-PB-5	04/26/11	< 4	< 4	< 8	< 3	< 7	< 4	< 7	< 11	< 4	< 4	< 24	< 9
MW-PB-6	04/27/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 17	< 4
MW-PB-7	06/03/11	< 4	< 4	< 10	< 5	< 11	< 5	< 9	< 14	< 5	< 6	< 32	< 9
MW-PB-8	01/31/11	< 5	< 6	< 13	< 6	< 13	< 7	< 10	< 15	< 5	< 6	< 38	< 13
MW-PB-8	04/26/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 13	< 4
MW-PB-8	08/02/11	< 2	< 3	< 7	< 3	< 4	< 3	< 5	< 8	< 2	< 3	< 18	< 6
MW-PB-8	11/01/11	< 4	< 4	< 7	< 3	< 7	< 5	< 7	< 13	< 3	< 4	< 29	< 9
U/2 YARD DRAIN	06/13/11	< 7	< 5	< 13	< 7	< 11	< 6	< 11	< 8	< 7	< 7	< 28	< 9
U/3 YARD DRAIN	06/13/11	< 6	< 6	< 11	< 6	< 13	< 6	< 10	< 8	< 6	< 7	< 24	< 6
SP-PB-1	04/26/11	< 3	< 3	< 7	< 3	< 6	< 4	< 6	< 8	< 3	< 4	< 22	< 8
SP-PB-2	04/26/11	< 5	< 5	< 13	< 6	< 10	< 5	< 12	< 15	< 5	< 7	< 34	< 10
SP-PB-3	04/27/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 16	< 5

TABLE B-I.3 **CONCENTRATIONS OF HARD-TO-DETECTS IN GROUNDWATER SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	AM-241	CM-242	CM-243/244	PU-238	PU-239/240	U-234	U-235	U-238	FE-55	NI-63
MW-PB-24	04/26/11	< 0.08	< 0.04	< 0.08	< 0.18	< 0.18	< 0.08	< 0.03	< 0.06	< 176	< 3.99
MW-PB-25	04/26/11	< 0.14	< 0.07	< 0.07	< 0.20	< 0.12	0.83 ± 0.24	< 0.07	0.39 ± 0.16	< 144	< 3.96
MW-PB-25	04/26/11	< 0.14	< 0.10	< 0.11	< 0.13	< 0.05	1.04 ± 0.26	< 0.03	0.42 ± 0.17	< 156	< 3.94
MW-PB-26	04/25/11	< 0.19	< 0.07	< 0.10	< 0.09	< 0.02	5.78 ± 0.86	< 0.10	2.46 ± 0.50	< 71	< 3.72
MW-PB-27	04/26/11	< 0.08	< 0.05	< 0.04	< 0.12	< 0.06	5.78 ± 0.75	< 0.05	1.83 ± 0.37	< 153	< 3.96
MW-PB-29	08/01/11	< 0.06	< 0.04	< 0.13	< 0.10	< 0.07	< 0.14	< 0.07	< 0.14	< 152	< 3.94
MW-PB-30	08/01/11	< 0.12	< 0.05	< 0.13	< 0.09	< 0.08	< 0.12	< 0.11	< 0.08	< 122	< 3.92
MW-PB-31	08/01/11	< 0.14	< 0.09	< 0.15	< 0.09	< 0.09	< 0.14	< 0.09	< 0.12	< 144	< 3.96
MW-PB-4	04/26/11	< 0.08	< 0.04	< 0.02	< 0.12	< 0.08	< 0.09	< 0.08	< 0.14	< 88	< 3.94
MW-PB-4	04/26/11	< 0.07	< 0.06	< 0.03	< 0.07	< 0.17	< 0.02	< 0.03	< 0.06	< 81	< 3.98

TABLE B-II.1 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3
SW-PB-1	01/31/11	< 180
SW-PB-1	04/27/11	< 174
SW-PB-1	08/03/11	< 192
SW-PB-1	08/03/11	< 194
SW-PB-1	11/02/11	< 179
SW-PB-5	01/31/11	< 177
SW-PB-5	04/27/11	< 174
SW-PB-5	04/27/11	< 173
SW-PB-5	08/03/11	< 167
SW-PB-5	10/31/11	< 196
SW-PB-6	01/31/11	< 180
SW-PB-6	04/27/11	< 181
SW-PB-6	08/03/11	< 171
SW-PB-6	10/31/11	< 195
SW-PB-6	10/31/11	< 200
SW-PB-6	10/31/11 EIML	< 147

TABLE B-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
SW-PB-1	04/27/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 13	< 3
SW-PB-5	04/27/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 18	< 6
SW-PB-5	04/27/11	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 15	< 5
SW-PB-6	04/27/11	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 15	< 5

TABLE B-III.1 CONCENTRATIONS OF TRITIUM IN PRECIPITATION WATER SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3
1A	02/03/11	< 146
1A	03/03/11	< 143
1A	03/31/11	< 173
1A	04/29/11	< 170
1A	06/02/11	< 177
1A	06/30/11	< 165
1A	07/28/11	< 179
1A	09/01/11	< 179
1A	09/29/11	< 199
1A	11/03/11	< 181
1A	12/01/11	< 199
1B	02/03/11	< 148
1B	03/03/11	< 143
1B	03/31/11	< 172
1B	04/29/11	< 171
1B	06/02/11	< 168
1B	06/30/11	< 169
1B	07/28/11	< 180
1B	09/01/11	< 175
1B	09/29/11	< 197
1B	11/03/11	< 187
1B	12/01/11	< 200
1S	04/04/11	< 169
1S	04/29/11	< 173
1S	06/02/11	< 179
1S	06/30/11	< 168
1S	07/28/11	< 177
1S	09/01/11	< 176
1S	09/29/11	< 173
1S	11/03/11	< 181
1S	12/01/11	< 199
1Z	03/03/11	< 193
1Z	03/31/11	< 173
1Z	04/29/11	< 171
1Z	06/02/11	< 183
1Z	06/30/11	< 167
1Z	07/28/11	< 178
1Z	09/01/11	< 178
1Z	09/29/11	< 172
1Z	11/03/11	< 183
1Z	12/01/11	< 174
4M	02/03/11	< 145
4M	03/03/11	< 145
4M	03/31/11	< 172
4M	04/29/11	< 171
4M	06/02/11	< 184

TABLE B-III.1 CONCENTRATIONS OF TRITIUM IN PRECIPITATION WATER SAMPLES COLLECTED AS PART OF THE RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM, PEACH BOTTOM ATOMIC POWER STATION, 2011

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3
4M	06/30/11	< 168
4M	07/28/11	< 181
4M	09/01/11	< 178
4M	09/29/11	< 173
4M	11/03/11	< 183
4M	12/01/11	< 197