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PEACH BOTTOM ATOMIC POWER STATION
UNITS 2 and 3

Annual Radiological
Environmental Operating Report

Report No. 66
1 January 2008 Through 31 December 2008

Prepared By

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Peach Bottom Atomic Power Station
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I. Executive Summary

In 2008, 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	4.503E-02	All	1097	SSE	2.25E-01	20	mRad
Noble Gas	Beta – Air Dose	3.22E-02	All	1097	SSE	8.051E-02	40	mRad
Gaseous	Total Body	3.47E-01	Infant	396	E	3.47E+00	10	mrem
Gaseous	Skin	4.68E-01	All	396	E	1.56E+00	30	mrem
Iodine, Particulate & Tritium	Thyroid	1.366E+00	Infant	1097	SSE	4.55E+00	30	mrem
Direct Radiation	Total Body	<LLD	All	1150	SSE	<LLD	22	mrem
Liquid	Total Body	4.291E-03	Adult	Site Boundary		7.152E-02	6	mrem
Liquid	GI-LLI	9.724E-03	Adult	Site Boundary		4.862E-02	20	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 2008 through 31 December 2008. During that time period, 1,136 analyses were performed on 971 samples.

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 activities detected were consistent with those observed in previous years. No tritium was found.

Precipitation samples were analyzed for concentrations of tritium. Tritium was detected.

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 three sediment locations and was consistent with data from previous years. Low levels of Cs-137

activity were detected in sediment. The dose to a teenager's skin from the sediment pathway was calculated to be 2.80 E-05 mrem/year, which represents 0.003% of the allowable fraction of 10 CFR 50, Appendix I limits. The dose to a teenager's whole body from the sediment pathway was calculated to be 7.99 E-05 mrem/year, which represents 0.008% of the allowable fraction of 10 CFR 50, Appendix I limits. The most likely source of the contamination is a RHR Heat Exchanger.

The atmospheric environment was divided into two parts for examination: airborne and terrestrial. Sample media for determining airborne effects 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.

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. 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. 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 determine if the Independent Spent Fuel Storage Installation (ISFSI) had any 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 second Annual Radiological Groundwater Protection Program Report (ARGPPR) is found in Appendix F.

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.

A Radiological Environmental Monitoring Program (REMP) for PBAPS was initiated in 1966. This report covers those analyses performed by Teledyne Brown Engineering (TBE), Global Dosimetry, and Environmental Inc. (Midwest Labs) on samples collected during the period 01 January 2008 through 31 December 2008.

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 2008. 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 two locations (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 and flathead catfish) and Predator (smallmouth bass, largemouth bass, walleye, rockbass, bluegill, brown trout, and green sunfish) were collected semiannually from two locations: 4 and 6 (control). Sediment samples composed of recently deposited substrate were collected semiannually at three locations: 4J, 4T and 6F (control). An additional set of sediment samples was collected in December to validate results.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on air particulate, airborne iodine and milk samples. Air particulate and air iodine samples were collected and analyzed weekly from five locations (1B, 1C, 1Z, 3A, and 5H2). The control location was 5H2. 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. Milk samples were collected biweekly at five locations (J, R, S, T and U) from April through November and monthly from December through March. Six additional locations (C, D, E, L, P and W) were sampled quarterly. Locations C, E, and T were controls. 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 three locations (1Q, 2B, and 55) in 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 19 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, then 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 2008. 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 and drinking water.
4. Concentrations of I-131 in 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. <u>Lower Limit of Detection and Minimum Detectable Concentration</u>

The lower limit of detection (LLD) was 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 was 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 were designed to achieve the required PBAPS detection capabilities for environmental sample analysis.

The minimum detectable concentration (MDC) is defined above with the exception that the measurement is an after the fact estimate of the presence of activity.

2. Net Activity Calculation and Reporting of Results

Net activity for a sample was 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 effecting a negative number. An MDC was 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 seven nuclides, Be-7, 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 2008 the PBAPS REMP had a sample collection recovery rate of better than 99%. The exceptions to this program are listed below:

1. The sample pump for REMP airborne particulate/iodine station, located 1396 feet SE of the site, had restricted air flow. The pump was replaced and normal flow was restored for the following period and location (AR# 720461):

   01/10/08, Location 1Z

2. The sample pump for REMP airborne particulate/iodine station, located 19,144 feet SW of the site, was replaced for the following period and location (AR# 720461):

   04/10/08, Location 3A

3. No broad leaf vegetation samples (i.e. edible leave or leaves from plants that produced edible products) were available for the following period and location (AR# 786958):

   May, Location 2B

4. No vegetation samples (i.e. edible leave or leaves from plants that produced edible products) were available for the following period and location (AR# 786958):

   June, Location 2B

5. Cesium-137 was detected in sediment samples taken on 06/24/2008; doses calculated were negligible for the following period and locations (AR# 805826):

   06/24/08, Location 4J – 168 pCi/kg Cs-137
   06/24/08, Location 6F – 161 pCi/kg Cs-137
   06/24/08, Location 4T – 157 pCi/kg Cs-137

6. Only two broadleaf vegetation samples (i.e. edible leaves or leaves from plants that produce edible products) were available for the following period and location (AR# 830567):

   September, Location 1Q

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

Quarterly Milk Farm F went out of business on May 13, 2008. The Barrow farm is located in the South Sector with the following directions and distance(s): Sector South Direction S-0-59-2W, distance 68,372.7 feet. The milk farm was replaced by Milk Farm W (Dallam Farm) with the following direction and distances: Sector South-Direction (azimuth) 181, distance 89,354.4 feet (AR# 775002).

Control Milk farm T went out of business on December 18, 2008, the farm was located 34,584 feet W of the site. Station T has been replaced by Station V, which is located 6.2 miles (32,736 feet) W of the site (AR# 856762).

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.

Gamma Spectrometry

Samples from both locations were analyzed for gamma emitting nuclides (Table C-I.2, Appendix C). All nuclides were less than the MDC.

2. Drinking Water

Monthly samples were collected from continuous water samplers at two locations (4L and 6I). One location (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 23 of 24 samples. The values ranged from 2.0 to 5.1 pCi/l. Concentrations detected were generally below those detected in previous years.

Tritium

Monthly samples from both locations were composited quarterly and analyzed for tritium activity (Table C-II.2, Appendix C). No tritium activity was detected.

Gamma Spectrometry

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

3. Precipitation

Samples were collected monthly at three locations (1A, 1B, and 4M). The following analyses were performed:

Tritium

Monthly samples from three locations were analyzed for tritium activity (Table C-III.1, Appendix C). Tritium was detected in three of 36 samples and ranged from 140 to 180 pCi/l.

4. Fish

Fish samples comprised of bottom feeder (catfish) and predator (bass) 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 2,170 to 3,910 pCi/kg wet and was consistent with levels detected in previous

years. No fission or activation products were found. Historical levels of Cs-137 are shown in Figure C-3, 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 11,900 to 19,800 pCi/kg dry. The fission product Cs-137 was detected in five of six samples and ranged from 65 to 213 pCi/kg. The activity of Cs-137 detected was consistent with those detected in the preoperational years. No other Peach Bottom fission or activation products were found. The shoreline doses due to the activity in the sediment were calculated using the methodology of Regulatory Guide 1.109, Calculation of Annual Doses to Man From Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance With 10 CFR Part 50, Appendix I. The following nuclides concentrations (Pu-238, Pu-239, Pu-241, Am-241, Cm-242 and Cm-244, C-14, Ni-63 and Tc-99) were scaled from 10 CFR 61 analyses and added to the dose calculations. Based on the Co-60 concentration of 162 pCi/kg, the dose to a teenager's skin from the sediment pathway was calculated to be 8.68 E-05 mrem/year, which represents 0.009% of the allowable fraction of 10 CFR 50, Appendix I limits. The dose to a teenager's whole body from the sediment pathway was calculated to be 2.46 E-04 mrem/year, which represents 0.025% of the allowable fraction of 10 CFR 50, Appendix I limits. Based on the Cs-137 concentration of 120 pCi/kg, the dose to a teenager's skin from the sediment pathway was calculated to be 1.03 E-04 mrem/year, which represents 0.01% of the allowable fraction of 10 CFR 50, Appendix I limits. The dose to a teenager's whole body from the sediment pathway was calculated to be 2.91 E-04 mrem/year, which represents 0.029% of the allowable fraction of 10 CFR 50, Appendix I limits. Doses were neglible.

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 <7 to 30 E-3 pCi/m^3, with a mean of 17 E-3 pCi/m^3. The results from the Intermediate Distance location (Group II) ranged from <7 to 34 E-3 pCi/m^3 with a mean of 18 E-3 pCi/m^3. The results from the Distant location (Group III) ranged from <7 to 31 E-3 pCi/m^3 with a mean of 16 E-3 pCi/m^3 A comparison of the weekly mean values for 2008 indicate no notable differences among the three groups (Figure C-5, Appendix C). In addition, a comparison of the 2008 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 20 samples. These values ranged from 55 to 94 E-3 pCi/m^3. All other nuclides were less than the MDC.

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.

2. Terrestrial

a. Milk

Samples were collected from five locations (J, R, S, T and U) 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.

Gamma Spectrometry

Each milk sample from locations J, R, S, T and U 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 947 to 1,480 pCi/l. All other nuclides were less than the MDC. Comparison of the 2008 Cs-137 milk data with previous years data indicate no effects from the operation of PBAPS (Figure C-7 (Appendix C).

b. Food Products

Food product samples were collected at three locations (1Q, 2B and 55) when available. Of these locations two, 2B 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, 2B and 55 was analyzed for concentrations of gamma emitting nuclides (Table C-VIII.1, Appendix C).

Nuclides detected were naturally occurring Be-7, and K-40. Beryllium-7 activity was found in 29 of 38 samples and ranged from 111 to 2,320 pCi/kg wet. Potassium-40 activity was found in all samples and ranged from 1,570 to 12,400 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 C-IX.3 and Figure C-7, Appendix C.

All TLD measurements were below 10 mR per standard month, with a range of 3.2 to 9.2 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. As of 2008, a total of 41 TN-68 casks, each loaded with 68 fuel bundles were in place on the ISFSI pad. As part of the overall REMP, additional TLDs were placed at locations near the site boundary and at the nearest resident. Although there was a general trend for increased dose at all REMP locations (see Figure C-7, Appendix C), Onsite location 1R, which is located on the hillside overlooking the ISFSI showed an decrease trend of 1.1 to 0.5 mR per standard month when compared to controls (Figure C-8, Appendix C). Location 2B, which represents the nearest residence showed no increase in dose rates when compared to controls. 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 2008 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 Miles	Garden Miles	Milk Farm Miles
1 N	2.4	2.8	2.7
2 NNE	2.1	2.1	2.1
3 NE	2.0	2.0	2.1
4 ENE	2.0	2.4	2.1
5 E	2.0	2.8	2.8
6 ESE	3.9	3.9	3.8
7 SE	3.7	3.7	3.6
8 SSE	0.7	0.7	-
9 S	1.0	1.0	-
10 SSW	1.2	1.8	2.7
11 SW	0.9	0.9	4.6
12 WSW	0.8	-	0.9
13 W	1.0	1.0	1.0
14 WNW	0.5	0.8	4.2
15 NW	0.6	1.8	1.8
16 NNW	1.0	-	-

F. 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 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

   ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, NELAC, state specific PT program requirements or ERA's SOP 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, 16 out of 18 analytes met the specified acceptance criteria. Two samples did not meet the specified acceptance criteria for the following reasons:

1. Teledyne Brown Engineering's Analytics December 2008 Sr-89 in milk result of 18.0 pCi/L was higher than the known value of 12.6 pCi/L, resulting in a found to known ratio of 1.43. NCR 09-02 was initiated to investigate this failure.

2. Teledyne Brown Engineering's Analytics' ERA Quik Response water sample January 2008 Sr-89 result of 37.33 pCi/L exceeded the upper acceptance limit of 25.2 pCi/L. No cause could be found for the failure. Studies bracketing these results, RAD 71 and RAD 72 had acceptable Sr-89 results. NCR 08-03

For the secondary laboratory, all of the 15 analytes met the specified acceptance criteria.

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, 2008

Name of Facility: PEACH BOTTOM ATOMIC POWER STATION **DOCKET NUMBER:** 50-277 & 50-278
Location of Facility: YORK COUNTY PA **REPORTING PERIOD:** 2008

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	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	H-3	8	200	<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
	NB-95		15	<LLD	<LLD	-	-	0
	ZR-95		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)	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
DRINKING WATER (PCI/LITER)	GR-B	24	4	3.6 (11/12) (2.3/5.1)	3.2 (12/12) (2.0/5.0)	3.6 (11/12) (2.3/5.1)	4L INDICATOR CONOWINGO DAM EL 33' MSL 8.66 MILES SE OF SITE	0
	H-3	8	200	<LLD	<LLD	-	-	0
	GAMMA MN-54	24	15	<LLD	<LLD	-	-	0

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DRINKING WATER (PCI/LITER)	CO-58		15	<LLD	<LLD	-	-	0
	FE-59		30	<LLD	<LLD	-	-	0
	CO-60		15	<LLD	<LLD	-	-	0
	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

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DRINKING WATER (PCI/LITER)	CS-137		18	<LLD	<LLD	-	-	0
	BA-140		60	<LLD	<LLD	-	-	0
	LA-140		15	<LLD	<LLD	-	-	0
PRECIPITATION WATER (PCI/LITER)	H-3	36	NA	151 (3/36) (132/180)	NA	160 (2/12) (140/180)	1A INDICATOR WEATHER STATION #1 0.26 MILES SE OF SITE	0
BOTTOM FEEDER (PCI/KG WET)	GAMMA K-40	4	NA	2455 (2/2) (2170/2740)	2765 (2/2) (2680/2850)	2765 (2/2) (2680/2850)	6 CONTROL HOLTWOOD POND LOCATED IN HOLTWOOD POND	0
	MN-54		130	<LLD	<LLD	-	-	0
	CO-58		130	<LLD	<LLD	-	-	0
	FE-59		260	<LLD	<LLD	-	-	0

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BOTTOM FEEDER (PCI/KG WET)	CO-60		130	<LLD	<LLD	-	-	0
	ZN-65		260	<LLD	<LLD	-	-	0
	CS-134		130	<LLD	<LLD	-	-	0
	CS-137		150	<LLD	<LLD	-	-	0
PREDATOR (PCI/KG WET)	H-3	1	NA	<LLD	<LLD	-	-	0
	GAMMA	4						
	K-40		NA	3740 (2/2) (3570/3910)	3580 (2/2) (3270/3890)	3740 (2/2) (3570/3910)	4 INDICATOR CONOWINGO POND LOCATED IN CONOWINGO	0
	MN-54		130	<LLD	<LLD	-	-	0
	CO-58		130	<LLD	<LLD	-	-	0

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PREDATOR (PCI/KG WET)	FE-59		260	<LLD	<LLD	-	-	0
	CO-60		130	<LLD	<LLD	-	-	0
	ZN-65		260	<LLD	<LLD	-	-	0
	CS-134		130	<LLD	<LLD	-	-	0
	CS-137		150	<LLD	<LLD	-	-	0
SEDIMENT (PCI/KG DRY)	GAMMA	6						
	K-40		NA	16250 (4/4) (12200/19800)	12950 (2/2) (11900/14000)	18800 (2/2) (17800/19800)	4T INDICATOR CONOWINGO POND NEAR CONOWINGO DAM 7.92 MILES SE OF SITE	0
	MN-54		NA	<LLD	<LLD	-	-	0
	CO-58		NA	<LLD	<LLD	-	-	0

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SEDIMENT (PCI/KG DRY)	CO-60		NA	<LLD	<LLD	-	-	0
	CS-134		150	<LLD	<LLD	-	-	0
	CS-137		180	179 (3/4) (157/213)	113 (2/2) (65/161)	185 (2/2) (157/213)	4T INDICATOR CONOWINGO POND NEAR CONOWINGO DAM 7.92 MILES SE OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	260	10	17 (254/260) (6/34)	NA	18 (51/52) (8/30)	1Z INDICATOR WEATHER STATION #1 0.26 MILES SE OF SITE	0
	GAMMA BE-7	20	NA	74.9 (20/20) (54.9/93.8)	NA	85.9 (4/4) (65.3/93.4)	1Z INDICATOR WEATHER STATION #1 0.26 MILES SE OF SITE	0
	MN-54		NA	<LLD	NA	-	-	0
	CO-58		NA	<LLD	NA	-	-	0
	CO-60		NA	<LLD	NA	-	-	0

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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	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	CS-134		50	<LLD	NA	-	-	0
	CS-137		60	<LLD	NA	-	-	0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	259	70	<LLD	NA	-	-	0
MILK (PCI/LITER)	I-131	128	1	<LLD	<LLD	-	-	0
	GAMMA K-40	105	NA	1273 (63/63) (1070/1480)	1266 (42/42) (947/1480)	1284 (21/21) (1200/1480)	J INDICATOR 0.97 MILES W OF SITE	0
	CS-134		15	<LLD	<LLD	-	-	0
	CS-137		18	<LLD	<LLD	-	-	0
	BA-140		60	<LLD	<LLD	-	-	0

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR THE PEACH BOTTOM ATOMIC POWER STATION, 2008

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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	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	LA-140		15	<LLD	<LLD	-	-	0
VEGETATION (PCI/KG WET)	GAMMA	38						
	BE-7		NA	737.9 (19/24) (111/2000)	716.6 (10/14) (114/2320)	1237.7 (6/11) (302/2000)	2B INDICATOR SSE SECTOR	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
	CS-134		60	<LLD	<LLD	-	-	0
	CS-137		80	<LLD	<LLD	-	-	0

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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	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
DIRECT RADIATION (MILLI-ROENTGEN/STD.QTR.)	TLD-QUARTERLY	188	NA	6 (172/172) (3.2/9.2)	5.7 (16/16) (4.6/7.0)	7.8 (4/4) (6.9/8.4)	1R INDICATOR TRANSMISSION LINE HILL 0.53 MILES SSE	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)

APPENDIX B

SAMPLE DESIGNATION AND LOCATIONS

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TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2008

Location	Location Description	Distance & Direction from PBAPS Vents
A. Surface Water		
1LL	Peach Bottom Units 2 and 3 Intake - Composite (Control)	0.24 miles NE
1MM	Peach Bottom Canal Discharge -Composite	1.04 miles SE
B. Drinking (Potable) Water		
4L	Conowingo Dam EL 33' MSL - Composite	8.66 miles SE
6I	Holtwood Dam Hydroelectric Station - Composite (Control)	5.75 miles NW
C. Precipitation		
1A		0.29 miles SE
1B		0.48 miles NW
4M		8.71 miles SE
D. Fish		
4	Conowingo Pond	Located in Conowingo Pond below the discharge
6	Holtwood Pond (Control)	Located in Holtwood Pond
E. Sediment		
4J	Conowingo Pond near Berkin's Run	1.39 miles SE
4T	Conowingo Pond near Conowingo Dam	7.92 miles SE
6F	Holtwood Dam (Control)	5.96 miles NW
F. Air Particulate - Air Iodine		
1B	Weather Station #2	0.49 miles NW
1Z	Weather Station #1	0.26 miles SE
1A	Weather Station #1	0.26 miles SE
1C	Peach Bottom South Sub Station	0.85 miles SSE
3A	Delta, PA – Substation	3.62 miles SW
5H2	Manor Substation	30.79 miles NE
G. Milk – bi-weekly / monthly		
J		0.97 miles W
R		0.89 miles WSW
S		3.61 miles SE
T	(Control)	6.55 miles W
U		2.20 miles SSW
H. Milk – quarterly		
C	(Control)	9.54 miles NW
D		3.51 miles NE
E	(Control)	8.74 miles N
L		2.12 miles NE
P		2.08 miles ENE
W		16.9 miles S

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2008

Location	Location Description	Distance & Direction from PBAPS Vents
I. Food Products – monthly when available		
1Q		0.79 miles NW
2B		0.73 miles SSE
55	(Control)	9.9 miles NE
J. Environmental Dosimetry - TLD		
Site Boundary		
1L	Peach Bottom Unit 3 Intake	0.24 miles NE
1P	Tower B & C Fence	0.40 miles ESE
1A	Weather Station #1	0.26 miles SE
1Q	Tower D & E Fence	0.62 miles SE
1D	140° Sector	0.67 miles SE
2	Peach Bottom 130° Sector Hill	0.88 miles SE
1M	Discharge	1.03 miles SE
1R	Transmission Line Hill	0.53 miles SSE
1I	Peach Bottom South Substation	0.54 miles SSE
1C	Peach Bottom South Substation	0.85 miles SSE
1J	Peach Bottom 180° Sector Hill	0.71 miles S
1K	Peach Bottom Site Area	0.87 miles SW
1F	Peach Bottom 200° Sector Hill	0.51 miles SSW
40	Peach Bottom Site Area	1.46 miles SW
1NN	Peach Bottom Site	0.48 miles WSW
1H	Peach Bottom 270° Sector Hill	0.59 miles W
1G	Peach Bottom North Substation	0.60 miles WNW
1B	Weather Station #2	0.49 miles NW
1E	Peach Bottom 350° Sector Hill	0.59 miles NNW
Intermediate Distance		
2B	Burk Property	0.71 miles SSE
5	Wakefield, PA	4.64 miles E
15	Silver Spring Rd	3.68 miles N
22	Eagle Road	2.39 miles NNE
44	Goshen Mill Rd	5.07 miles NE
32	Slate Hill Rd	2.75 miles ENE
45	PB-Keeney Line	3.38 miles ENE
14	Peters Creek	1.97 miles E
17	Riverview Rd	4.07 miles ESE
31A	Eckman Rd	4.57 miles SE
4K	Conowingo Dam Power House Roof	8.61 miles SE
23	Peach Bottom 150° Sector Hill	1.01 miles SSE
27	N. Cooper Road	2.68 miles S
48	Macton Substation	4.99 miles SSW
3A	Delta, PA Substation	3.62 miles SW
49	PB-Conastone Line	4.05 miles WSW
50	TRANSCO Pumping Station	4.99 miles W
51	Fin Substation	3.98 miles WNW
26	Slab Road	4.23 miles NW
6B	Holtwood Dam Power House Roof	5.78 miles NW
42	Muddy Run Environ. Laboratory	4.13 miles NNW
43	Drumore Township School	5.00 miles NNE
46	Broad Creek	4.48 miles SSE
47	Broad Creek Scout Camp	4.26 miles S

TABLE B-1 Radiological Environmental Monitoring Program – Sampling Locations, Distance and Direction from Reactor Buildings, Peach Bottom Atomic Power Station, 2008

Location	Location Description	Distance & Direction from PBAPS Vents
J. Environmental Dosimetry - TLD		
Control		
16	Nottingham, PA Substation (Control)	12.72 miles E
24	Harrisville, MD Substation (Control)	10.91 miles ESE
18	Fawn Grove, PA (Control)	9.86 miles W
19	Red Lion, PA (Control)	20.21 miles WNW

TABLE B-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2008

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)
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	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
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

TABLE B-2 Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Peach Bottom Atomic Power Station, 2008

Sample Medium	Analysis	Sampling Method	Collection Procedure Number	Sample Size	Analytical Procedure Number
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 anion 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	Global Dosimetry

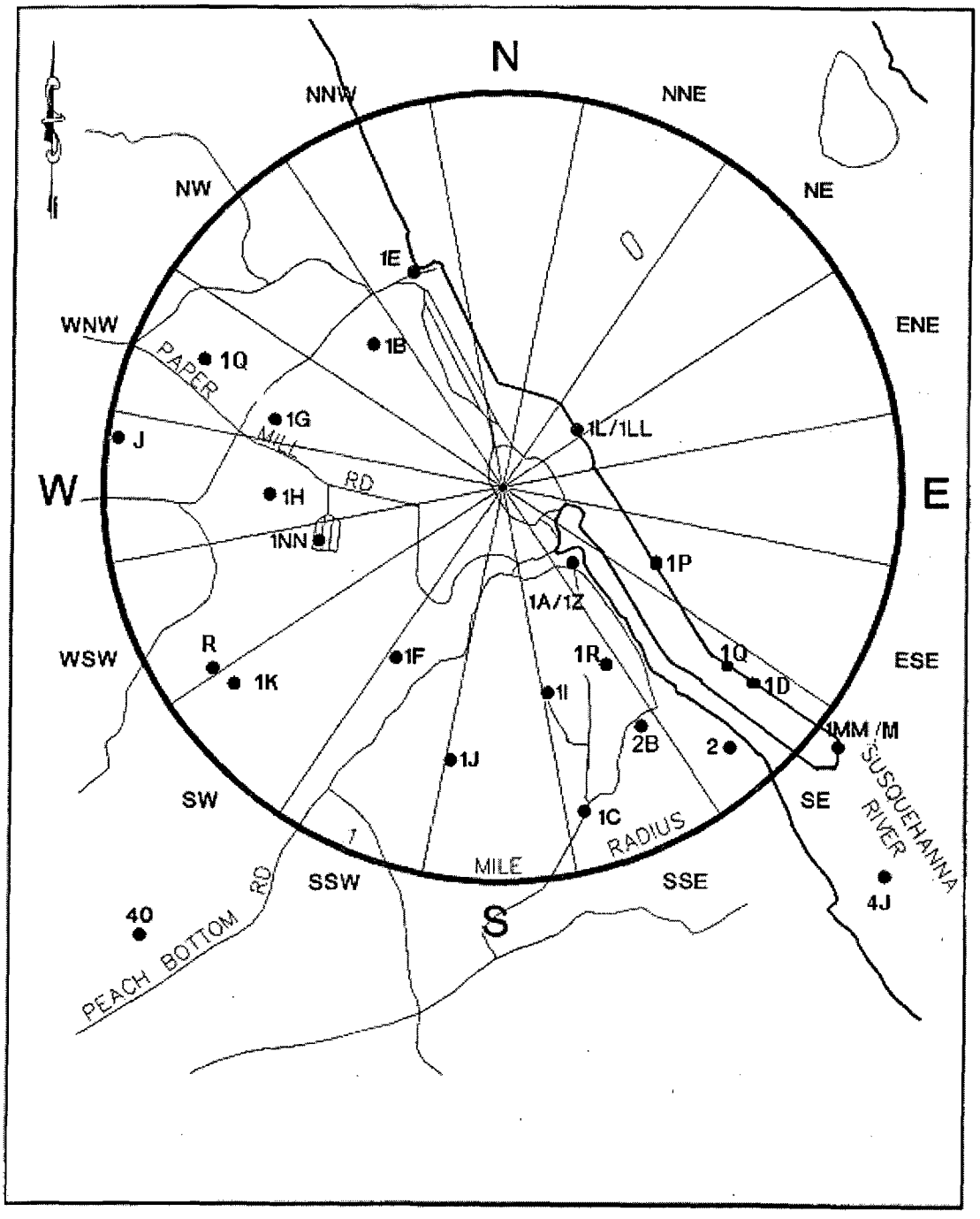

Figure B-1
Environmental Sampling Locations Between Within One Mile of the Peach Bottom Atomic Power Station, 2008

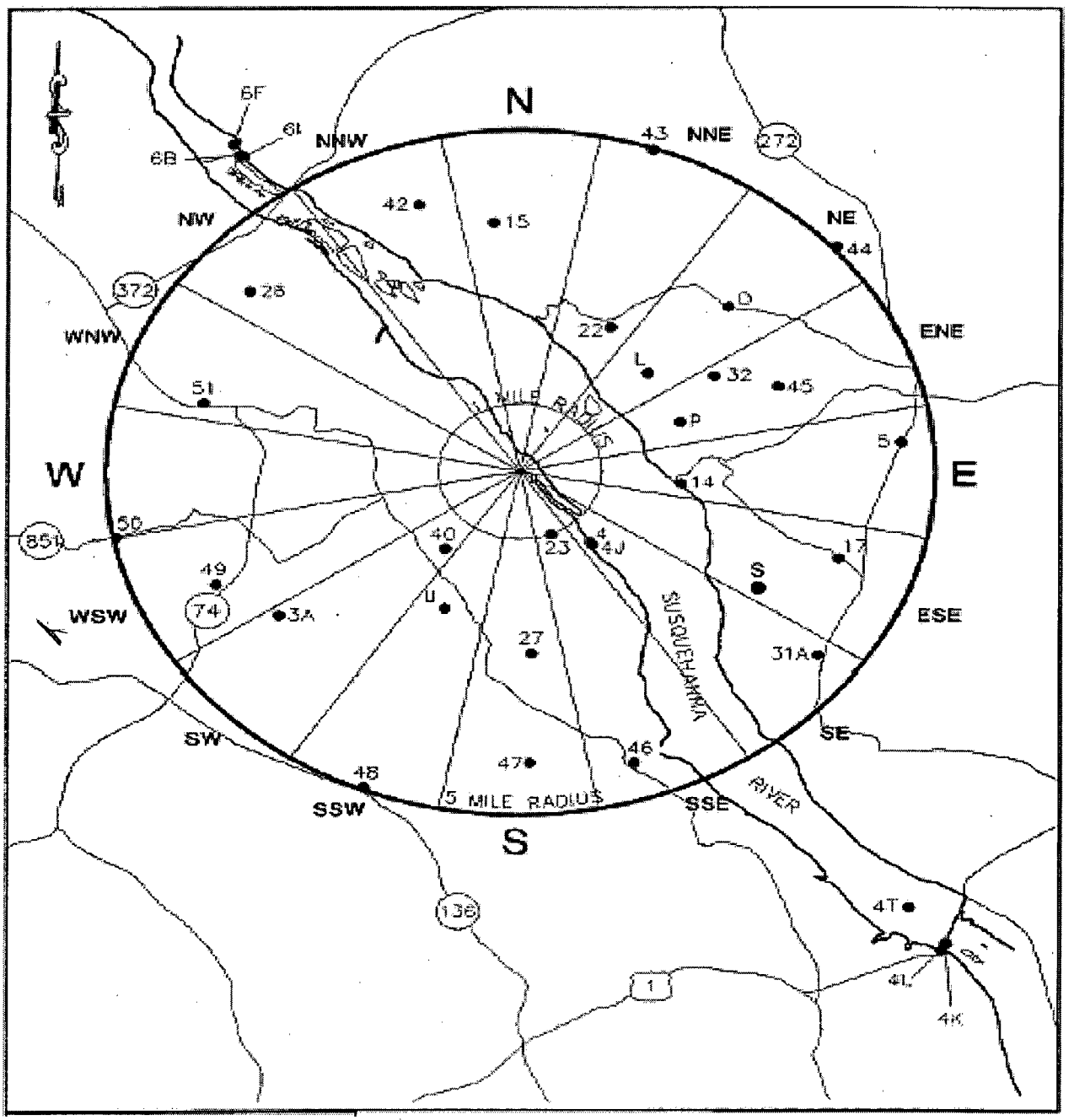

Figure B-2
Environmental Sampling Locations Between One and Approximately Five Miles of the Peach Bottom Atomic Power Station, 2008

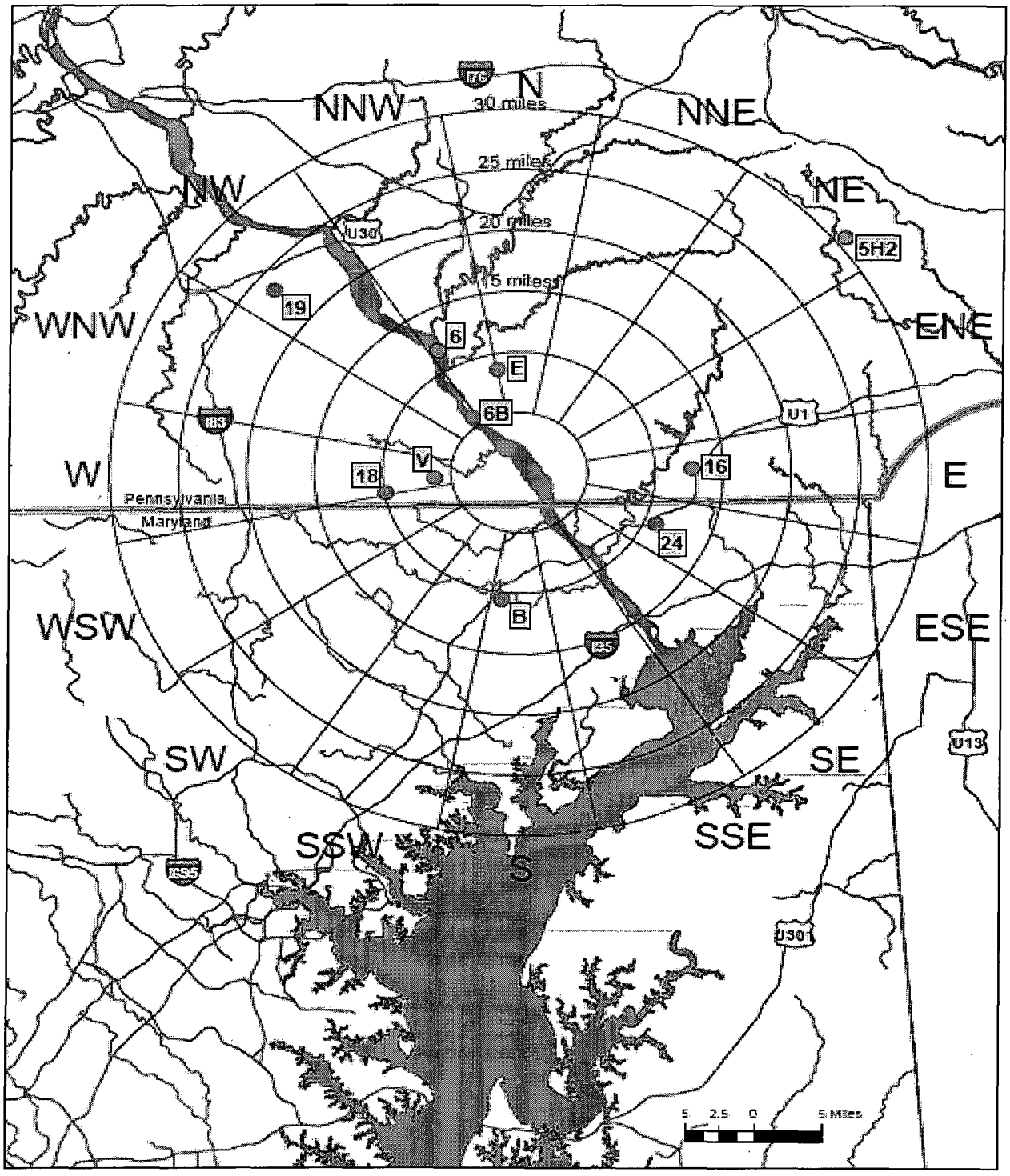

Figure B-3
Environmental Sampling Locations Greater Than
Five Miles from the Peach Bottom Atomic Power Station, 2008

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, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	1LL	1MM
01/02/08 - 04/02/08	< 174	< 172
04/02/08 - 07/02/08	< 180	< 181
07/02/08 - 10/01/08	< 150	< 154
10/01/08 - 12/31/08	< 193	< 195
MEAN	-	-

TABLE V-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	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	01/02/08 - 01/30/08	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 6	< 2	< 2	< 13	< 4
	01/30/08 - 02/27/08	< 4	< 4	< 7	< 4	< 8	< 4	< 7	< 8	< 3	< 4	< 20	< 6
	02/27/08 - 04/02/08	< 3	< 3	< 6	< 3	< 5	< 4	< 6	< 5	< 3	< 3	< 15	< 5
	04/02/08 - 04/30/08	< 5	< 4	< 8	< 4	< 9	< 4	< 7	< 8	< 4	< 4	< 21	< 8
	04/30/08 - 05/28/08	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 3	< 1	< 1	< 8	< 2
	05/28/08 - 07/02/08	< 6	< 6	< 13	< 5	< 13	< 6	< 10	< 9	< 5	< 7	< 27	< 11
	07/02/08 - 07/30/08	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 16	< 5
	07/30/08 - 08/27/08	< 1	< 1	< 3	< 1	< 3	< 1	< 2	< 12	< 1	< 1	< 18	< 5
	08/27/08 - 10/01/08	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 16	< 4
	10/01/08 - 10/29/08	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 14	< 1	< 1	< 15	< 4
	10/29/08 - 11/26/08	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 15	< 7
	11/26/08 - 12/31/08	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 9	< 1	< 1	< 15	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
1MM	01/02/08 - 01/30/08	< 3	< 3	< 6	< 3	< 6	< 3	< 5	< 7	< 3	< 3	< 18	< 6
	01/30/08 - 02/27/08	< 5	< 5	< 11	< 5	< 9	< 5	< 8	< 10	< 4	< 5	< 25	< 9
	02/27/08 - 04/02/08	< 4	< 5	< 9	< 5	< 8	< 5	< 9	< 8	< 4	< 5	< 22	< 6
	04/02/08 - 04/30/08	< 5	< 5	< 11	< 5	< 9	< 5	< 10	< 9	< 4	< 5	< 28	< 9
	04/30/08 - 05/28/08	< 5	< 5	< 11	< 5	< 11	< 5	< 8	< 12	< 4	< 5	< 29	< 10
	05/28/08 - 07/02/08	< 5	< 6	< 11	< 6	< 11	< 6	< 10	< 10	< 5	< 6	< 27	< 10
	07/02/08 - 07/30/08	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 18	< 5
	07/30/08 - 08/27/08	< 1	< 1	< 3	< 2	< 2	< 1	< 2	< 10	< 1	< 1	< 15	< 6
	08/27/08 - 10/01/08	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 16	< 5
	10/01/08 - 10/29/08	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 15	< 1	< 1	< 18	< 6
	10/29/08 - 11/26/08	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 19	< 6
	11/26/08 - 12/31/08	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 11	< 2	< 2	< 19	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.1 **CONCENTRATIONS OF GROSS BETA IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L	6I
01/02/08 - 01/31/08	2.4 ± 1.4	2.4 ± 1.4
01/31/08 - 02/28/08	2.3 ± 1.4	2.4 ± 1.4
02/28/08 - 04/03/08	< 2.1	3.7 ± 1.6
04/03/08 - 05/01/08	2.4 ± 1.2	2.0 ± 1.1
05/01/08 - 05/29/08	3.1 ± 2.1	4.1 ± 2.2
05/29/08 - 07/03/08	3.7 ± 1.6	3.2 ± 1.6
07/03/08 - 07/31/08	5.1 ± 1.8	3.4 ± 1.7
07/31/08 - 08/28/08	3.8 ± 1.7	3.4 ± 1.7
08/28/08 - 10/02/08	4.4 ± 1.6	2.9 ± 1.5
10/02/08 - 10/30/08	5.0 ± 1.6	5.0 ± 1.6
10/30/08 - 11/26/08	4.6 ± 1.7	3.5 ± 1.6
11/26/08 - 01/02/09	3.2 ± 1.5	2.3 ± 1.4
MEAN*	3.6 ± 2.1	3.2 ± 1.7

TABLE C-II.2 **CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L	6I
01/02/08 - 04/03/08	< 168	< 169
04/03/08 - 07/03/08	< 181	< 183
07/03/08 - 10/02/08	< 157	< 157
10/02/08 - 01/02/09	< 195	< 194
MEAN	-	-

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

TABLE C-II.3 **CONCENTRATIONS OF GAMMA EMITTER IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	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
4L	01/02/08 - 01/31/08	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 5	< 2	< 2	< 11	< 4
	01/31/08 - 02/28/08	< 4	< 4	< 9	< 4	< 10	< 5	< 7	< 8	< 4	< 4	< 23	< 7
	02/28/08 - 04/03/08	< 5	< 6	< 10	< 6	< 11	< 6	< 10	< 10	< 5	< 6	< 24	< 6
	04/03/08 - 05/01/08	< 6	< 5	< 11	< 6	< 13	< 7	< 10	< 10	< 5	< 6	< 32	< 10
	05/01/08 - 05/29/08	< 3	< 3	< 9	< 4	< 8	< 4	< 6	< 9	< 3	< 4	< 21	< 8
	05/29/08 - 07/03/08	< 6	< 5	< 12	< 6	< 14	< 6	< 10	< 11	< 7	< 6	< 27	< 10
	07/03/08 - 07/31/08	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 12	< 1	< 1	< 14	< 4
	07/31/08 - 08/28/08	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 19	< 6
	08/28/08 - 10/02/08	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 15	< 1	< 1	< 19	< 5
	10/02/08 - 10/30/08	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 16	< 5
	10/30/08 - 11/26/08	< 1	< 2	< 4	< 1	< 3	< 2	< 2	< 12	< 1	< 2	< 23	< 6
	11/26/08 - 01/02/09	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
6I	01/02/08 - 01/31/08	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 5	< 2	< 2	< 12	< 4
	01/31/08 - 02/28/08	< 6	< 6	< 14	< 8	< 15	< 7	< 10	< 10	< 5	< 6	< 29	< 11
	02/28/08 - 04/03/08	< 6	< 6	< 13	< 6	< 16	< 6	< 10	< 8	< 6	< 8	< 29	< 9
	04/03/08 - 05/01/08	< 9	< 9	< 19	< 8	< 18	< 10	< 15	< 14	< 9	< 9	< 41	< 14
	05/01/08 - 05/29/08	< 5	< 4	< 9	< 4	< 9	< 5	< 8	< 9	< 3	< 5	< 24	< 6
	05/29/08 - 07/03/08	< 5	< 5	< 11	< 5	< 10	< 5	< 7	< 10	< 5	< 6	< 24	< 7
	07/03/08 - 07/31/08	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 13	< 1	< 1	< 15	< 4
	07/31/08 - 08/28/08	< 1	< 2	< 3	< 1	< 3	< 1	< 3	< 11	< 1	< 1	< 16	< 6
	08/28/08 - 10/02/08	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 14	< 1	< 1	< 16	< 5
	10/02/08 - 10/30/08	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 12	< 1	< 1	< 14	< 4
	10/30/08 - 11/26/08	< 1	< 1	< 3	< 2	< 3	< 1	< 2	< 11	< 1	< 1	< 21	< 7
	11/26/08 - 01/02/09	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 20	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1 **CONCENTRATIONS OF TRITIUM IN PRECIPITATION SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	1A	1B	4M
01/02/08 - 01/31/08	< 162	< 166	< 158
01/31/08 - 02/28/08	180 ± 113	< 170	< 170
02/28/08 - 04/03/08	< 167	< 167	< 166
04/03/08 - 05/01/08	< 188	< 189	< 182
05/01/08 - 05/29/08	< 173	< 173	< 174
05/29/08 - 07/03/08	< 164	< 166	< 165
07/03/08 - 07/31/08	< 169	< 162	< 168
07/31/08 - 08/28/08	140 ± 89	132 ± 88	< 135
08/28/08 - 10/02/08	< 157	< 161	< 160
10/02/08 - 10/30/08	< 163	< 168	< 171
10/30/08 - 11/26/08	< 178	< 175	< 174
11/26/08 - 01/02/09	< 191	< 190	< 194
MEAN*	160 ± 57	132 ± 0	-

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

TABLE C-IV.1

CONCENTRATIONS OF GAMMA EMITTERS IN PREDATOR & BOTTOM FEEDER (FISH) SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PC/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Cs-134	Cs-137	H-3
4	PREDATOR									
	06/12/08	3570 ± 678	< 39	< 43	< 119	< 40	< 82	< 40	< 43	-
	10/01/08	3910 ± 708	< 37	< 55	< 121	< 42	< 94	< 43	< 47	-
	MEAN*	3740 ± 481	-	-	-	-	-	-	-	-
	BOTTOM FEEDER									
	06/12/08	2170 ± 455	< 29	< 44	< 106	< 26	< 71	< 32	< 31	-
	09/24/08	2740 ± 650	< 40	< 37	< 111	< 40	< 75	< 33	< 35	-
	MEAN*	2455 ± 806	-	-	-	-	-	-	-	-
6	PREDATOR									
	06/10/08	3270 ± 700	< 65	< 81	< 190	< 69	< 161	< 70	< 65	-
	10/01/08	3890 ± 685	< 41	< 49	< 111	< 44	< 95	< 38	< 37	-
	MEAN*	3580 ± 876.8	-	-	-	-	-	-	-	-
	BOTTOM FEEDER									
	06/10/08	2680 ± 520	< 32	< 57	< 158	< 34	< 93	< 31	< 34	-
	09/25/08	2850 ± 622	< 38	< 45	< 114	< 28	< 70	< 32	< 35	-
	MEAN*	2765 ± 240	-	-	-	-	-	-	-	-
ROCK RUN CREEK	PREDATOR									
	12/05/08	-	-	-	-	-	-	-	-	< 1.E-03

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

TABLE C-V.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

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	06/24/08	12200 ± 1070	< 48	< 49	< 58	< 47	168 ± 56
	11/12/08	15200 ± 1170	< 47	< 47	< 70	< 38	< 53
	MEAN*	13700 ± 4243	-	-	-	-	168 ± 0
4T	06/24/08	17800 ± 1730	< 64	< 74	< 78	< 64	157 ± 102
	11/12/08	19800 ± 1710	< 84	< 97	< 84	< 70	213 ± 94
	MEAN*	18800 ± 2828	-	-	-	-	185 ± 79
6F	06/24/08	14000 ± 1170	< 57	< 55	< 54	< 51	161 ± 86
	11/12/08	11900 ± 1390	< 65	< 73	< 51	< 60	65 ± 58
	MEAN*	12950 ± 2970	-	-	-	-	113 ± 135

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

TABLE C-VI.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

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

COLLECTION	GROUP I			GROUP II	GROUP III
PERIOD	1B	1C	1Z	3A	5H2
12/31/07 - 01/07/08					31 ± 6
01/02/08 - 01/10/08	24 ± 5	23 ± 5	25 ± 5 (1)	24 ± 5	
01/07/08 - 01/14/08					12 ± 5
01/10/08 - 01/17/08	14 ± 5	13 ± 5	20 ± 6	14 ± 5	
01/14/08 - 01/22/08					16 ± 5
01/17/08 - 01/24/08	19 ± 5	22 ± 5	20 ± 5	23 ± 6	
01/22/08 - 01/28/08					23 ± 6
01/24/08 - 02/01/08	30 ± 5	30 ± 5	28 ± 5	31 ± 5	
01/28/08 - 02/04/08					30 ± 6
02/01/08 - 02/07/08	22 ± 6	15 ± 5	21 ± 6	24 ± 6	
02/04/08 - 02/11/08					18 ± 5
02/07/08 - 02/14/08	21 ± 6	21 ± 5	28 ± 6	21 ± 6	
02/11/08 - 02/19/08					19 ± 5
02/14/08 - 02/21/08	20 ± 5	23 ± 5	22 ± 5	21 ± 5	
02/19/08 - 02/25/08					15 ± 6
02/21/08 - 02/28/08	16 ± 5	15 ± 5	18 ± 5	17 ± 5	
02/25/08 - 03/03/08					17 ± 5
02/28/08 - 03/06/08	16 ± 5	15 ± 5	17 ± 5	14 ± 5	
03/03/08 - 03/10/08					15 ± 5
03/06/08 - 03/13/08	18 ± 6	22 ± 6	26 ± 6	20 ± 5	
03/10/08 - 03/17/08					18 ± 5
03/13/08 - 03/20/08	20 ± 5	18 ± 5	15 ± 5	17 ± 5	
03/17/08 - 03/24/08					13 ± 5
03/20/08 - 03/27/08	15 ± 5	14 ± 5	21 ± 6	13 ± 5	
03/24/08 - 03/31/08					19 ± 5
03/27/08 - 04/03/08	14 ± 5	13 ± 5	15 ± 5	19 ± 5	
03/31/08 - 04/07/08					12 ± 5
04/03/08 - 04/10/08	< 7	< 7	< 7	< 7	
04/07/08 - 04/14/08					< 7
04/10/08 - 04/17/08	17 ± 6	11 ± 5	11 ± 5	< 8	
04/14/08 - 04/21/08					23 ± 6
04/17/08 - 04/24/08	17 ± 5	19 ± 6	27 ± 6	21 ± 6	
04/21/08 - 04/28/08					18 ± 5
04/24/08 - 05/01/08	16 ± 5	21 ± 5	28 ± 6	19 ± 5	
04/28/08 - 05/05/08					11 ± 5
05/01/08 - 05/08/08	23 ± 5	21 ± 5	23 ± 6	22 ± 5	
05/05/08 - 05/12/08					16 ± 5
05/08/08 - 05/15/08	10 ± 5	8 ± 5	9 ± 5	7 ± 5	
05/12/08 - 05/20/08					9 ± 4
05/15/08 - 05/22/08	14 ± 5	11 ± 5	12 ± 5	11 ± 5	
05/20/08 - 05/27/08					11 ± 5
05/22/08 - 05/29/08	12 ± 5	13 ± 5	13 ± 5	13 ± 5	
05/27/08 - 06/02/08					8 ± 5
05/29/08 - 06/05/08	15 ± 5	12 ± 5	15 ± 5	20 ± 5	
06/02/08 - 06/09/08					15 ± 5
06/05/08 - 06/12/08	12 ± 5	15 ± 5	16 ± 5	21 ± 6	
06/09/08 - 06/16/08					19 ± 5
06/12/08 - 06/19/08	19 ± 5	15 ± 5	19 ± 5	13 ± 5	
06/16/08 - 06/23/08					15 ± 5
06/19/08 - 06/26/08	11 ± 4	10 ± 4	16 ± 5	18 ± 5	
06/23/08 - 06/30/08					8 ± 4
06/26/08 - 07/03/08	16 ± 5	14 ± 5	17 ± 5	19 ± 5	

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

TABLE C-VI.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

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

COLLECTION	GROUP I			GROUP II	GROUP III
PERIOD	1B	1C	1Z	3A	5H2
06/30/08 - 07/07/08					10 ± 5
07/03/08 - 07/10/08	18 ± 5	15 ± 5	14 ± 5	18 ± 5	
07/07/08 - 07/14/08					14 ± 5
07/10/08 - 07/17/08	16 ± 5	17 ± 5	19 ± 5	13 ± 5	
07/14/08 - 07/21/08					20 ± 5
07/17/08 - 07/24/08	25 ± 6	21 ± 5	23 ± 5	21 ± 5	
07/21/08 - 07/28/08					6 ± 4
07/24/08 - 07/31/08	23 ± 5	21 ± 5	22 ± 5	21 ± 5	
07/28/08 - 08/04/08					25 ± 5
07/31/08 - 08/07/08	19 ± 5	22 ± 5	24 ± 5	21 ± 5	
08/04/08 - 08/11/08					18 ± 5
08/07/08 - 08/14/08	14 ± 5	9 ± 5	14 ± 5	11 ± 5	
08/11/08 - 08/18/08					15 ± 5
08/14/08 - 08/21/08	20 ± 5	17 ± 5	18 ± 5	14 ± 5	
08/18/08 - 08/25/08					18 ± 5
08/21/08 - 08/28/08	15 ± 5	18 ± 5	15 ± 5	17 ± 5	
08/25/08 - 09/01/08					14 ± 5
08/28/08 - 09/05/08	26 ± 5	22 ± 5	23 ± 5	24 ± 5	
09/01/08 - 09/09/08					23 ± 5
09/05/08 - 09/11/08	13 ± 5	11 ± 5	15 ± 6	13 ± 6	
09/09/08 - 09/15/08					8 ± 5
09/11/08 - 09/18/08	11 ± 5	13 ± 5	15 ± 5	10 ± 4	
09/15/08 - 09/22/08					12 ± 4
09/18/08 - 09/25/08	21 ± 5	22 ± 5	21 ± 5	15 ± 5	
09/22/08 - 09/29/08					12 ± 4
09/25/08 - 10/02/08	14 ± 4	13 ± 4	10 ± 4	11 ± 4	
09/29/08 - 10/07/08					16 ± 4
10/02/08 - 10/09/08	12 ± 5	11 ± 5	13 ± 5	13 ± 5	
10/07/08 - 10/13/08					18 ± 5
10/09/08 - 10/16/08	26 ± 5	28 ± 5	30 ± 6	34 ± 6	
10/13/08 - 10/20/08					26 ± 5
10/16/08 - 10/23/08	13 ± 4	13 ± 4	13 ± 5	10 ± 4	
10/20/08 - 10/27/08					12 ± 4
10/23/08 - 10/30/08	15 ± 5	10 ± 4	12 ± 4	14 ± 4	
10/27/08 - 11/04/08					17 ± 4
10/30/08 - 11/06/08	24 ± 5	29 ± 5	21 ± 5	27 ± 5	
11/04/08 - 11/10/08					13 ± 5
11/06/08 - 11/13/08	11 ± 4	9 ± 4	16 ± 5	11 ± 4	
11/10/08 - 11/17/08					10 ± 4
11/13/08 - 11/20/08	7 ± 4	7 ± 4	8 ± 4	8 ± 4	
11/17/08 - 11/24/08					12 ± 5
11/20/08 - 11/26/08	15 ± 5	13 ± 5	16 ± 5	12 ± 5	
11/24/08 - 12/01/08					17 ± 5
11/26/08 - 12/04/08	20 ± 4	16 ± 4	22 ± 5	19 ± 4	
12/01/08 - 12/08/08					21 ± 5
12/04/08 - 12/11/08	16 ± 5	16 ± 5	16 ± 5	12 ± 5	
12/08/08 - 12/15/08					13 ± 4
12/11/08 - 12/19/08	14 ± 4	20 ± 5	13 ± 4	17 ± 4	
12/15/08 - 12/22/08					16 ± 5
12/19/08 - 12/26/08	22 ± 5	26 ± 5	20 ± 5	29 ± 6	
12/22/08 - 12/29/08					30 ± 6
12/26/08 - 01/02/09	23 ± 5	28 ± 5	22 ± 5	24 ± 5	
MEAN	17 ± 10	17 ± 12	18 ± 11	18 ± 12	16 ± 11

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

TABLE C-VI.2 **MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

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
01/02/08 - 02/01/08	13	30	22 ± 11	01/02/08 - 02/01/08	14	31	23 ± 13	12/31/07 - 01/28/08	12	31	20 ± 17
02/01/08 - 02/28/08	15	28	20 ± 7.5	02/01/08 - 02/28/08	17	24	21 ± 5.6	01/28/08 - 02/25/08	15	30	21 ± 13
02/28/08 - 04/03/08	13	26	17 ± 7.4	02/28/08 - 04/03/08	13	20	17 ± 6.2	02/25/08 - 03/31/08	13	19	16 ± 5.2
04/03/08 - 05/01/08	< 7	28	19 ± 12	04/03/08 - 05/01/08	< 7	21	20 ± 3.7	03/31/08 - 04/28/08	< 7	23	17 ± 11
05/01/08 - 06/05/08	8.0	23	14 ± 9.4	05/01/08 - 06/05/08	7	22	14 ± 12	04/28/08 - 06/02/08	8	16	11 ± 6.0
06/05/08 - 07/03/08	10	19	15 ± 5.5	06/05/08 - 07/03/08	13	21	18 ± 6.9	06/02/08 - 06/30/08	8	19	14 ± 8.8
07/03/08 - 07/31/08	14	25	20 ± 7.1	07/03/08 - 07/31/08	13	21	18 ± 6.9	06/30/08 - 07/28/08	6	20	13 ± 12
07/31/08 - 09/05/08	9	26	18 ± 9.2	07/31/08 - 09/05/08	11	24	17 ± 11	07/28/08 - 09/01/08	14	25	18 ± 8.3
09/05/08 - 10/02/08	10	22	15 ± 8.2	09/05/08 - 10/02/08	10	15	12 ± 4.7	09/01/08 - 09/29/08	8	23	14 ± 13
10/02/08 - 11/06/08	10	30	18 ± 15	10/02/08 - 11/06/08	10	34	20 ± 20	09/29/08 - 11/04/08	12	26	18 ± 10
11/06/08 - 12/04/08	7	22	13 ± 10	11/06/08 - 12/04/08	8	19	12 ± 10	11/04/08 - 12/01/08	10	17	13 ± 6.4
12/04/08 - 01/02/09	13	28	19 ± 10	12/04/08 - 01/02/09	12	29	21 ± 15	12/01/08 - 12/29/08	13	30	20 ± 15
01/02/08 - 01/02/09	< 7	30	17 ± 11	01/02/08 - 01/02/09	< 7	34	18 ± 12	12/31/07 - 12/29/08	< 7	31	16 ± 11

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

TABLE C-VI.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

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

STC	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	Cs-134	Cs-137
1B	01/02/08 - 04/03/08	65 ± 33	< 2	< 4	< 3	< 3	< 3
	04/03/08 - 07/03/08	94 ± 26	< 2	< 3	< 3	< 3	< 3
	07/03/08 - 10/02/08	78 ± 23	< 3	< 3	< 2	< 4	< 3
	10/02/08 - 01/02/09	55 ± 30	< 3	< 3	< 2	< 3	< 3
	MEAN*	73 ± 34	-	-	-	-	-
1C	01/02/08 - 04/03/08	70 ± 35	< 3	< 3	< 2	< 3	< 2
	04/03/08 - 07/03/08	72 ± 24	< 2	< 2	< 2	< 2	< 2
	07/03/08 - 10/02/08	82 ± 30	< 3	< 4	< 3	< 5	< 3
	10/02/08 - 01/02/09	81 ± 19	< 3	< 2	< 2	< 2	< 2
	MEAN*	76 ± 12	-	-	-	-	-
1Z	01/02/08 - 04/03/08	65 ± 22	< 3	< 3	< 3	< 2	< 2
	04/03/08 - 07/03/08	93 ± 34	< 4	< 5	< 3	< 4	< 4
	07/03/08 - 10/02/08	93 ± 29	< 3	< 3	< 3	< 4	< 3
	10/02/08 - 01/02/09	92 ± 33	< 3	< 3	< 4	< 3	< 3
	MEAN*	86 ± 28	-	-	-	-	-
3A	01/02/08 - 04/03/08	65 ± 35	< 3	< 4	< 3	< 3	< 3
	04/03/08 - 07/03/08	78 ± 27	< 3	< 3	< 3	< 3	< 2
	07/03/08 - 10/02/08	55 ± 26	< 3	< 4	< 3	< 5	< 3
	10/02/08 - 01/02/09	62 ± 20	< 3	< 3	< 3	< 2	< 2
	MEAN*	65 ± 19	-	-	-	-	-
5H2	12/31/07 - 03/31/08	65 ± 35	< 4	< 3	< 4	< 2	< 4
	03/31/08 - 06/30/08	92 ± 26	< 3	< 3	< 2	< 3	< 3
	06/30/08 - 09/29/08	83 ± 30	< 3	< 5	< 3	< 6	< 4
	09/29/08 - 12/29/08	57 ± 23	< 3	< 2	< 2	< 3	< 3
	MEAN*	74 ± 32	-	-	-	-	-

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

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

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

COLLECTION PERIOD	GROUP I			GROUP II	GROUP III
	1B	1C	1Z	3A	5H2
12/31/07 - 01/07/08					< 16
01/02/08 - 01/10/08	< 25	< 25	(1)	< 25	
01/07/08 - 01/14/08					< 22
01/10/08 - 01/17/08	< 28	< 28	< 29	< 28	
01/14/08 - 01/22/08					< 13
01/17/08 - 01/24/08	< 24	< 24	< 24	< 24	
01/22/08 - 01/28/08					< 28
01/24/08 - 02/01/08	< 32	< 21	< 32	< 32	
01/28/08 - 02/04/08					< 15
02/01/08 - 02/07/08	< 41	< 41	< 42	< 41	
02/04/08 - 02/11/08					< 27
02/07/08 - 02/14/08	< 43	< 43	< 44	< 44	
02/11/08 - 02/19/08					< 19
02/14/08 - 02/21/08	< 29	< 29	< 29	< 29	
02/19/08 - 02/25/08					< 17
02/21/08 - 02/28/08	< 32	< 32	< 33	< 32	
02/25/08 - 03/03/08					< 16
02/28/08 - 03/06/08	< 37	< 36	< 37	< 37	
03/03/08 - 03/10/08					< 19
03/06/08 - 03/13/08	< 40	< 40	< 40	< 36	
03/10/08 - 03/17/08					< 25
03/13/08 - 03/20/08	< 48	< 48	< 49	< 48	
03/17/08 - 03/24/08					< 26
03/20/08 - 03/27/08	< 35	< 35	< 35	< 35	
03/24/08 - 03/31/08					< 13
03/27/08 - 04/03/08	< 41	< 41	< 42	< 41	
03/31/08 - 04/07/08					< 12
04/03/08 - 04/10/08	< 45	< 45	< 46	< 44	
04/07/08 - 04/14/08					< 18
04/10/08 - 04/17/08	< 52	< 52	< 52	< 54	
04/14/08 - 04/21/08					< 34
04/17/08 - 04/24/08	< 49	< 49	< 50	< 48	
04/21/08 - 04/28/08					< 19
04/24/08 - 05/01/08	< 35	< 35	< 35	< 35	
04/28/08 - 05/05/08					< 19
05/01/08 - 05/08/08	< 40	< 40	< 40	< 40	
05/05/08 - 05/12/08					< 29
05/08/08 - 05/15/08	< 70	< 69	< 35	< 69	
05/12/08 - 05/20/08					< 18
05/15/08 - 05/22/08	< 35	< 35	< 36	< 35	
05/20/08 - 05/27/08					< 22
05/22/08 - 05/29/08	< 30	< 30	< 30	< 30	
05/27/08 - 06/02/08					< 36
05/29/08 - 06/05/08	< 67	< 67	< 67	< 67	
06/02/08 - 06/09/08					< 26
06/05/08 - 06/12/08	< 13	< 13	< 13	< 13	
06/09/08 - 06/16/08					< 18
06/12/08 - 06/19/08	< 67	< 67	< 68	< 67	
06/16/08 - 06/23/08					< 25
06/19/08 - 06/26/08	< 43	< 42	< 44	< 42	
06/23/08 - 06/30/08					< 26
06/26/08 - 07/03/08	< 56	< 57	< 57	< 57	

(1) SEE SAMPLE EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

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

COLLECTION	GROUP I			GROUP II	GROUP III
PERIOD	1B	1C	1Z	3A	5H2
06/30/08 - 07/07/08					< 33
07/03/08 - 07/10/08	< 64	< 64	< 65	< 62	
07/07/08 - 07/14/08					< 23
07/10/08 - 07/17/08	< 60	< 61	< 62	< 61	
07/14/08 - 07/21/08					< 20
07/17/08 - 07/24/08	< 14	< 14	< 14	< 14	
07/21/08 - 07/28/08					< 25
07/24/08 - 07/31/08	< 28	< 28	< 29	< 28	
07/28/08 - 08/04/08					< 28
07/31/08 - 08/07/08	< 50	< 50	< 50	< 49	
08/04/08 - 08/11/08					< 23
08/07/08 - 08/14/08	< 59	< 60	< 61	< 60	
08/11/08 - 08/18/08					< 22
08/14/08 - 08/21/08	< 49	< 50	< 50	< 49	
08/18/08 - 08/25/08					< 5
08/21/08 - 08/28/08	< 57	< 57	< 58	< 58	
08/25/08 - 09/01/08					< 35
08/28/08 - 09/05/08	< 33	< 33	< 34	< 33	
09/01/08 - 09/09/08					< 16
09/05/08 - 09/11/08	< 67	< 70	< 69	< 69	
09/09/08 - 09/15/08					< 23
09/11/08 - 09/18/08	< 39	< 39	< 39	< 38	
09/15/08 - 09/22/08					< 34
09/18/08 - 09/25/08	< 33	< 33	< 33	< 32	
09/22/08 - 09/29/08					< 32
09/25/08 - 10/02/08	< 43	< 44	< 44	< 44	
09/29/08 - 10/07/08					< 54
10/02/08 - 10/09/08	< 62	< 62	< 63	< 61	
10/07/08 - 10/13/08					< 29
10/09/08 - 10/16/08	< 67	< 67	< 68	< 68	
10/13/08 - 10/20/08					< 21
10/16/08 - 10/23/08	< 59	< 59	< 59	< 25	
10/20/08 - 10/27/08					< 24
10/23/08 - 10/30/08	< 40	< 40	< 41	< 40	
10/27/08 - 11/04/08					< 27
10/30/08 - 11/06/08	< 52	< 53	< 53	< 52	
11/04/08 - 11/10/08					< 59
11/06/08 - 11/13/08	< 51	< 52	< 52	< 52	
11/10/08 - 11/17/08					< 41
11/13/08 - 11/20/08	< 42	< 42	< 43	< 42	
11/17/08 - 11/24/08					< 14
11/20/08 - 11/26/08	< 55	< 54	< 55	< 55	
11/24/08 - 12/01/08					< 18
11/26/08 - 12/04/08	< 51	< 52	< 52	< 50	
12/01/08 - 12/08/08					< 20
12/04/08 - 12/11/08	< 59	< 60	< 60	< 60	
12/08/08 - 12/15/08					< 36
12/11/08 - 12/19/08	< 53	< 54	< 55	< 54	
12/15/08 - 12/22/08					< 24
12/19/08 - 12/26/08	< 61	< 62	< 63	< 61	
12/22/08 - 12/29/08					< 6
12/26/08 - 01/02/09	< 43	< 44	< 44	< 44	
MEAN	-	-	-	-	-

TABLE C-VIII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

	INDICATOR FARMS							CONTROL FARMS			
COLLECTION PERIOD	J	R	U	S	D	L	P	C	E	T	W
01/14/08	< 0.7	< 0.6	< 0.8	< 0.7						< 0.6	
02/11/08	< 0.5	< 0.6	< 0.7	< 0.6	< 0.5	< 0.6	< 0.6	< 0.6	< 0.5	< 0.6	
03/10/08	< 0.5	< 0.8	< 0.7	< 0.7						< 0.9	
04/07/08	< 0.8	< 0.8	< 0.8	< 0.9						< 0.7	
04/21/08	< 0.9	< 0.9	< 0.8	< 0.8						< 0.8	
05/06/08	< 0.5	< 0.5	< 0.5	< 0.7	< 0.7	< 0.6	< 0.8	< 0.6	< 0.6	< 0.4	< 0.6 (1)
05/19/08	< 0.7	< 0.7	< 0.7	< 0.6						< 1.0	
06/02/08	< 0.7	< 0.9	< 0.9	< 0.7						< 0.9	
06/16/08	< 0.6	< 0.7	< 0.7	< 0.8						< 0.7	
06/30/08	< 0.7	< 0.9	< 0.7	< 0.9						< 0.8	
07/14/08	< 0.6	< 0.6	< 0.6	< 0.5						< 0.5	
07/28/08	< 0.6	< 0.9	< 0.9	< 0.8						< 0.7	
08/11/08	< 0.6	< 0.7	< 0.7	< 0.6	< 0.7	< 0.7	< 0.8	< 0.8	< 0.7	< 0.6	< 0.5
08/25/08	< 0.6	< 0.6	< 0.7	< 0.7						< 0.7	
09/08/08	< 0.8	< 0.8	< 0.9	< 0.8						< 0.8	
09/22/08	< 0.9	< 0.8	< 0.7	< 0.8						< 0.8	
10/06/08	< 0.8	< 0.8	< 0.9	< 0.7						< 0.7	
10/20/08	< 0.7	< 0.7	< 0.7	< 0.6						< 0.7	
11/03/08	< 0.8	< 0.8	< 0.8	< 0.7	< 0.9	< 0.9	< 0.9	< 0.9	< 0.7	< 0.9	< 0.7
11/17/08	< 0.8	< 0.7	< 0.7	< 0.6						< 0.7	
12/15/08	< 0.8	< 0.7	< 0.7	< 0.7						< 0.6	
MEAN	-	-	-	-	-	-	-	-	-	-	-

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-VIII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
J	01/14/08	1290 ± 170	< 6	< 7	< 29	< 9
	02/11/08	1320 ± 126	< 4	< 5	< 18	< 5
	03/10/08	1270 ± 141	< 5	< 7	< 38	< 9
	04/07/08	1250 ± 138	< 5	< 6	< 23	< 6
	04/21/08	1220 ± 131	< 5	< 6	< 28	< 7
	05/05/08	1230 ± 154	< 6	< 8	< 28	< 10
	05/19/08	1250 ± 122	< 5	< 6	< 38	< 11
	06/02/08	1250 ± 154	< 6	< 6	< 37	< 13
	06/16/08	1430 ± 167	< 6	< 6	< 51	< 7
	06/30/08	1310 ± 163	< 7	< 8	< 32	< 8
	07/14/08	1340 ± 142	< 5	< 6	< 36	< 11
	07/28/08	1310 ± 135	< 6	< 6	< 47	< 11
	08/11/08	1240 ± 125	< 6	< 6	< 43	< 14
	08/25/08	1220 ± 136	< 4	< 5	< 23	< 6
	09/08/08	1300 ± 145	< 6	< 7	< 59	< 14
	09/22/08	1210 ± 71	< 3	< 3	< 24	< 7
	10/06/08	1330 ± 35	< 1	< 1	< 26	< 8
	10/20/08	1320 ± 126	< 6	< 6	< 37	< 13
	11/03/08	1200 ± 43	< 1	< 1	< 51	< 11
	11/17/08	1480 ± 35	< 1	< 1	< 46	< 12
	12/15/08	1200 ± 154	< 6	< 6	< 31	< 6
	MEAN*	1284 ± 145	-	-	-	-
R	01/14/08	1190 ± 161	< 6	< 7	< 28	< 8
	02/11/08	1310 ± 131	< 5	< 6	< 20	< 8
	03/10/08	1290 ± 144	< 5	< 7	< 29	< 7
	04/07/08	1320 ± 148	< 6	< 9	< 26	< 8
	04/21/08	1220 ± 125	< 7	< 7	< 37	< 10
	05/05/08	1290 ± 142	< 9	< 9	< 41	< 12
	05/19/08	1240 ± 134	< 6	< 7	< 47	< 11
	06/02/08	1310 ± 166	< 8	< 8	< 46	< 14
	06/16/08	1200 ± 128	< 4	< 6	< 40	< 11
	06/30/08	1270 ± 161	< 6	< 7	< 31	< 13
	07/14/08	1360 ± 120	< 4	< 5	< 38	< 10
	07/28/08	1320 ± 150	< 5	< 6	< 45	< 14
	08/11/08	1320 ± 116	< 5	< 5	< 36	< 12
	08/25/08	1340 ± 148	< 4	< 6	< 29	< 8
	09/08/08	1220 ± 161	< 6	< 6	< 54	< 14
	09/22/08	1270 ± 91	< 4	< 4	< 34	< 9
	10/06/08	1280 ± 46	< 2	< 2	< 31	< 9
	10/20/08	1270 ± 130	< 6	< 7	< 42	< 15
	11/03/08	1240 ± 56	< 1	< 1	< 50	< 13
	11/17/08	1290 ± 37	< 1	< 1	< 47	< 13
	12/15/08	1250 ± 150	< 6	< 7	< 37	< 7
	MEAN*	1276 ± 92	-	-	-	-

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

TABLE C-VIII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
S	01/14/08	1150 ± 166	< 7	< 8	< 39	< 14
	02/11/08	1260 ± 137	< 5	< 6	< 23	< 7
	03/10/08	1300 ± 166	< 8	< 10	< 37	< 12
	04/07/08	1210 ± 149	< 7	< 7	< 28	< 7
	04/21/08	1180 ± 119	< 7	< 7	< 36	< 12
	05/05/08	1390 ± 166	< 8	< 10	< 41	< 10
	05/19/08	1290 ± 106	< 4	< 4	< 32	< 9
	06/02/08	1120 ± 143	< 5	< 6	< 30	< 11
	06/16/08	1200 ± 118	< 5	< 5	< 40	< 13
	06/30/08	1240 ± 143	< 6	< 8	< 44	< 9
	07/14/08	1070 ± 114	< 5	< 6	< 42	< 11
	07/28/08	1300 ± 119	< 5	< 6	< 33	< 12
	08/11/08	1390 ± 144	< 4	< 6	< 46	< 12
	08/25/08	1440 ± 143	< 6	< 6	< 28	< 9
	09/08/08	1220 ± 128	< 5	< 6	< 42	< 14
	09/22/08	1290 ± 113	< 4	< 5	< 39	< 9
	10/06/08	1170 ± 35	< 1	< 1	< 26	< 7
	10/20/08	1340 ± 126	< 5	< 6	< 41	< 13
	11/03/08	1300 ± 53	< 1	< 1	< 52	< 14
	11/17/08	1320 ± 35	< 1	< 1	< 47	< 12
	12/15/08	1240 ± 147	< 7	< 6	< 37	< 8
	MEAN*	1258 ± 186	-	-	-	-
T	01/14/08	1300 ± 148	< 7	< 6	< 33	< 7
	02/11/08	1360 ± 130	< 5	< 6	< 23	< 7
	03/10/08	1380 ± 173	< 7	< 10	< 45	< 10
	04/07/08	1200 ± 156	< 6	< 7	< 29	< 10
	04/21/08	1120 ± 143	< 5	< 6	< 30	< 10
	05/05/08	1350 ± 167	< 11	< 10	< 40	< 15
	05/19/08	1140 ± 131	< 5	< 6	< 34	< 12
	06/02/08	1330 ± 182	< 6	< 8	< 43	< 10
	06/16/08	1120 ± 122	< 4	< 5	< 38	< 10
	06/30/08	1330 ± 168	< 7	< 8	< 30	< 11
	07/14/08	1270 ± 155	< 6	< 7	< 46	< 15
	07/28/08	1340 ± 136	< 6	< 7	< 48	< 15
	08/11/08	1190 ± 124	< 5	< 6	< 44	< 12
	08/25/08	1260 ± 153	< 6	< 7	< 35	< 8
	09/08/08	1280 ± 139	< 5	< 7	< 44	< 15
	09/22/08	1300 ± 79	< 3	< 3	< 25	< 7
	10/06/08	1310 ± 43	< 2	< 2	< 33	< 9
	10/20/08	1330 ± 135	< 5	< 6	< 40	< 11
	11/03/08	1340 ± 50	< 1	< 1	< 41	< 10
	11/17/08	1210 ± 28	< 1	< 1	< 41	< 12
	12/15/08	1480 ± 151	< 6	< 8	< 37	< 10
	MEAN*	1283 ± 183	-	-	-	-

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

TABLE C-VIII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	Cs-134	Cs-137	Ba-140	La-140
U	01/14/08	1250 ± 151	< 6	< 8	< 36	< 11
	02/11/08	1250 ± 102	< 5	< 5	< 20	< 5
	03/10/08	1230 ± 125	< 5	< 5	< 25	< 6
	04/07/08	1220 ± 112	< 4	< 4	< 17	< 5
	04/21/08	1350 ± 150	< 5	< 8	< 32	< 8
	05/05/08	1220 ± 156	< 11	< 9	< 40	< 12
	05/19/08	1110 ± 115	< 4	< 5	< 32	< 7
	06/02/08	947 ± 126	< 5	< 6	< 33	< 11
	06/16/08	1320 ± 145	< 5	< 6	< 41	< 14
	06/30/08	1330 ± 163	< 8	< 10	< 39	< 13
	07/14/08	1240 ± 142	< 6	< 5	< 46	< 12
	07/28/08	1400 ± 162	< 7	< 6	< 51	< 15
	08/11/08	1320 ± 148	< 6	< 6	< 52	< 14
	08/25/08	1150 ± 158	< 5	< 7	< 32	< 11
	09/08/08	1300 ± 159	< 7	< 6	< 59	< 12
	09/22/08	1390 ± 125	< 5	< 7	< 49	< 13
	10/06/08	1210 ± 42	< 2	< 2	< 30	< 9
	10/20/08	1220 ± 129	< 6	< 7	< 41	< 12
	11/03/08	1210 ± 52	< 1	< 1	< 44	< 14
	11/17/08	1230 ± 36	< 1	< 1	< 43	< 13
	12/15/08	1320 ± 153	< 6	< 7	< 29	< 6
	MEAN*	1248 ± 202	-	-	-	-

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

TABLE C-IX.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/KG ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	I-131	Cs-134	Cs-137
1Q								
Cabbage & Leaves	05/31/08	152 ± 68	< 10	< 10	< 9	< 26	< 9	< 10
Polk Leaves	05/31/08	216 ± 63	< 8	< 8	< 9	< 19	< 7	< 8
Cabbage & Leaves	06/27/08	119 ± 71	< 9	< 10	< 10	< 19	< 7	< 9
Lettuce Leaves	06/27/08	201 ± 91	< 14	< 17	< 12	< 40	< 14	< 15
Polk Leaves	06/27/08	211 ± 122	< 14	< 14	< 16	< 35	< 13	< 14
Cabbage & Leaves	07/28/08	167 ± 105	< 15	< 17	< 19	< 41	< 16	< 20
Lettuce Leaves	07/28/08	371 ± 127	< 13	< 15	< 12	< 38	< 12	< 13
Turnip Greens	07/28/08	565 ± 119	< 13	< 14	< 16	< 40	< 12	< 12
Cabbage	09/02/08	111 ± 104	< 8	< 8	< 9	< 37	< 9	< 8
Polk Leaves	09/02/08	417 ± 207	< 12	< 12	< 13	< 56	< 9	< 11
Sweet Corn Leaves	09/02/08	1550 ± 255	< 11	< 11	< 11	< 47	< 9	< 9
Grape Leaves	10/06/08	1630 ± 124	< 4	< 4	< 3	< 52	< 3	< 4
Polk Leaves	10/06/08	884 ± 81	< 4	< 5	< 4	< 50	< 3	< 4
	MEAN*	507 ± 1055	-	-	-	-	-	-
2B								
Cabbage & Leaves	06/27/08	< 150	< 17	< 20	< 20	< 40	< 14	< 17
Squash Leaves	06/27/08	302 ± 149	< 16	< 15	< 14	< 45	< 14	< 16
Cabbage & Leaves	07/28/08	< 102	< 10	< 11	< 12	< 34	< 11	< 11
Squash Leaves	07/28/08	1640 ± 188	< 17	< 15	< 17	< 52	< 14	< 16
Zucchini Leaves	07/28/08	981 ± 197	< 14	< 18	< 14	< 58	< 14	< 15
Cabbage	09/02/08	< 27	< 3	< 3	< 3	< 20	< 3	< 3
Pepper Leaves	09/02/08	1710 ± 117	< 8	< 9	< 8	< 55	< 7	< 8
Red Cabbage	09/02/08	< 39	< 4	< 4	< 4	< 27	< 4	< 4
Pepper Leaves	10/06/08	2000 ± 139	< 4	< 5	< 4	< 58	< 4	< 5
Red Beet Leaves	10/06/08	< 52	< 4	< 4	< 4	< 49	< 4	< 4
Red Cabbage	10/06/08	793 ± 127	< 4	< 5	< 3	< 59	< 4	< 4
	MEAN*	1238 ± 1298	-	-	-	-	-	-

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

TABLE C-IX.1 **CONCENTRATIONS OF GAMMA EMITTERS IN FOOD PRODUCT SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/KG ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	I-131	Cs-134	Cs-137
55								
Lettuce	05/31/08	114 ± 40	< 5	< 5	< 5	< 11	< 4	< 5
Rhubarb Leaves	05/31/08	370 ± 59	< 10	< 10	< 9	< 26	< 10	< 10
Broccoli Leaves	06/27/08	< 177	< 16	< 17	< 19	< 44	< 15	< 16
Cabbage Leaves	06/27/08	< 207	< 17	< 18	< 20	< 49	< 16	< 17
Rhubarb Leaves	06/27/08	< 123	< 14	< 14	< 14	< 32	< 12	< 14
Cauliflower Leaves	07/28/08	< 143	< 15	< 15	< 17	< 42	< 14	< 16
Red Beet Greens	07/28/08	426 ± 175	< 18	< 18	< 20	< 48	< 16	< 17
Turnip Greens	07/28/08	551 ± 116	< 13	< 13	< 14	< 44	< 12	< 14
Cauliflower Leaves	09/02/08	275 ± 52	< 5	< 6	< 6	< 36	< 5	< 5
Rhubarb Leaves	09/02/08	421 ± 76	< 6	< 7	< 6	< 42	< 5	< 6
Zucchini Leaves	09/02/08	643 ± 56	< 5	< 6	< 5	< 34	< 4	< 5
Bean Leaves	10/06/08	1480 ± 82	< 3	< 4	< 3	< 56	< 3	< 4
Pumpkin Leaves	10/06/08	2320 ± 83	< 3	< 4	< 3	< 59	< 3	< 4
Rhubarb Leaves	10/06/08	566 ± 81	< 4	< 5	< 4	< 50	< 4	< 4
	MEAN*	717 ± 1343	-	-	-	-	-	-

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

TABLE C-X.1 QUARTERLY TLD RESULTS FOR PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF MILLI-ROETGEN/STD. QUARTER ± STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
2	5.9 ± 1.3	6.5 ± 0.5	5.9 ± 0.3	6.3 ± 0.6	5.0 ± 0.5
5	5.7 ± 1.1	6.1 ± 0.3	5.3 ± 0.3	6.1 ± 0.3	5.1 ± 0.8
14	5.9 ± 0.9	6.2 ± 0.5	5.5 ± 0.5	6.3 ± 0.5	5.4 ± 0.6
15	6.6 ± 0.8	7.0 ± 0.3	6.7 ± 0.5	6.7 ± 0.6	6.0 ± 0.9
16	6.1 ± 0.9	6.6 ± 0.5	5.6 ± 0.3	6.4 ± 1.1	5.9 ± 0.7
17	7.1 ± 0.9	7.5 ± 0.6	6.7 ± 1.1	7.4 ± 0.6	6.6 ± 0.7
18	6.2 ± 1.1	7.0 ± 0.4	5.8 ± 0.3	6.1 ± 0.3	5.9 ± 0.5
19	5.5 ± 0.6	5.9 ± 0.6	5.5 ± 0.8	5.2 ± 0.5	5.4 ± 0.4
22	6.5 ± 0.9	7.0 ± 0.4	6.4 ± 0.7	6.7 ± 0.7	6.0 ± 0.5
23	6.5 ± 1.0	6.9 ± 0.7	5.8 ± 0.5	6.8 ± 0.5	6.4 ± 0.8
24	4.9 ± 0.6	5.2 ± 0.4	4.6 ± 0.4	5.0 ± 1.4	4.7 ± 0.5
26	7.1 ± 1.3	7.7 ± 0.5	6.5 ± 0.4	7.6 ± 0.6	6.5 ± 0.9
27	6.4 ± 1.5	7.1 ± 1.2	5.6 ± 0.6	7.0 ± 0.7	6.0 ± 0.6
32	6.9 ± 1.7	7.1 ± 0.7	6.0 ± 0.4	7.9 ± 2.1	6.4 ± 0.8
40	7.4 ± 0.7	7.5 ± 0.5	7.2 ± 0.8	7.9 ± 0.6	7.1 ± 0.3
42	5.3 ± 1.2	5.9 ± 0.5	5.0 ± 0.6	5.6 ± 0.6	4.6 ± 0.4
43	7.0 ± 1.6	7.7 ± 1.1	6.2 ± 0.6	7.6 ± 0.8	6.4 ± 0.9
44	6.0 ± 0.8	6.5 ± 1.0	6.0 ± 0.6	6.1 ± 0.6	5.5 ± 0.4
45	6.7 ± 1.6	7.7 ± 1.1	6.0 ± 0.5	6.9 ± 0.4	6.0 ± 0.5
46	5.5 ± 0.8	6.0 ± 0.5	5.2 ± 0.4	5.5 ± 0.7	5.2 ± 0.6
47	6.7 ± 0.6	7.1 ± 0.4	6.5 ± 0.4	6.4 ± 0.7	6.8 ± 1.2
48	6.3 ± 1.2	7.0 ± 0.7	5.7 ± 0.6	6.5 ± 0.4	5.9 ± 0.5
49	6.0 ± 1.4	6.9 ± 0.7	5.6 ± 0.6	6.3 ± 0.6	5.3 ± 0.6
50	7.7 ± 2.2	9.2 ± 1.2	7.4 ± 0.6	7.6 ± 0.6	6.6 ± 0.4
51	6.4 ± 1.5	7.3 ± 0.6	5.8 ± 0.5	6.7 ± 0.7	5.7 ± 0.9
1A	6.0 ± 1.0	6.5 ± 0.4	6.2 ± 0.8	5.8 ± 0.4	5.4 ± 0.7
1B	5.3 ± 1.2	5.8 ± 0.4	5.1 ± 0.5	5.6 ± 0.3	4.5 ± 0.6
1C	6.6 ± 0.7	6.8 ± 1.1	6.4 ± 0.6	6.9 ± 0.6	6.1 ± 0.5
1D	6.1 ± 0.9	6.7 ± 0.5	5.9 ± 0.5	6.1 ± 1.6	5.7 ± 0.4
1E	5.9 ± 0.8	6.2 ± 0.4	5.8 ± 0.3	6.3 ± 0.4	5.4 ± 0.7
1F	7.4 ± 1.1	7.9 ± 0.9	7.2 ± 0.8	7.8 ± 0.5	6.7 ± 0.7
1G	4.6 ± 0.9	5.0 ± 0.4	4.6 ± 0.3	4.8 ± 0.3	4.0 ± 0.2
1H	6.5 ± 0.6	6.6 ± 0.4	6.3 ± 0.5	6.9 ± 0.5	6.2 ± 0.5
1I	4.9 ± 1.2	5.6 ± 0.6	4.9 ± 0.3	5.0 ± 0.7	4.1 ± 0.4
1J	7.3 ± 1.4	7.8 ± 1.0	6.9 ± 0.7	7.9 ± 0.4	6.5 ± 0.6
1K	6.8 ± 1.3	7.3 ± 0.8	6.6 ± 1.6	7.3 ± 0.7	5.9 ± 0.8
1L	5.2 ± 1.2	5.9 ± 1.0	5.2 ± 0.4	5.0 ± 0.3	4.5 ± 0.4
1M	3.6 ± 0.7	3.9 ± 0.6	3.4 ± 0.4	3.8 ± 0.4	3.2 ± 0.1
1NN	6.8 ± 0.8	7.1 ± 0.3	6.9 ± 0.4	7.0 ± 0.2	6.2 ± 0.5
1P	4.1 ± 0.7	4.5 ± 0.4	4.1 ± 0.5	4.1 ± 0.4	3.6 ± 0.2
1Q	4.7 ± 1.1	5.5 ± 0.6	4.6 ± 0.6	4.6 ± 0.3	4.2 ± 0.7
1R	7.8 ± 1.3	8.4 ± 0.4	7.8 ± 0.3	8.1 ± 0.2	6.9 ± 0.9
2B	5.7 ± 0.6	6.0 ± 0.5	5.5 ± 0.6	6.0 ± 0.7	5.4 ± 0.6
31A	5.2 ± 1.1	5.7 ± 0.5	4.7 ± 0.6	5.5 ± 0.9	4.7 ± 0.6
3A	4.4 ± 0.8	4.8 ± 0.4	4.2 ± 0.4	4.7 ± 0.5	3.9 ± 0.3
4K	3.8 ± 1.3	4.6 ± 0.2	3.3 ± 0.4	4.1 ± 0.5	3.3 ± 0.6
6B	5.1 ± 1.1	5.6 ± 0.5	4.6 ± 0.5	5.4 ± 0.6	4.6 ± 0.6

TABLE C-X.2 **MEAN QUARTERLY TLD RESULTS FOR THE SITE BOUNDARY, INTERMEDIATE AND CONTROL LOCATIONS FOR PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF MILLI-ROENTGENS/MONTH ± 2 STANDARD DEVIATIONS OF THE STATION DATA

COLLECTION PERIOD	SITE BOUNDARY ± 2 S.D.	INTERMEDIATE	CONTROL
JAN-MAR	6.4 ± 2.3	6.7 ± 2.0	6.2 ± 1.6
APR-JUN	5.8 ± 2.3	5.7 ± 1.8	5.4 ± 1.1
JUL-SEP	6.2 ± 2.6	6.4 ± 1.9	5.7 ± 1.4
OCT-DEC	5.3 ± 2.3	5.6 ± 1.8	5.5 ± 1.1

TABLE C-X.3 **SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MONTH

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
SITE BOUNDARY	80	3.2	8.4	5.9 ± 2.5
INTERMEDIATE	92	3.3	9.2	6.1 ± 2.1
CONTROL	16	4.6	7.0	5.7 ± 1.3

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

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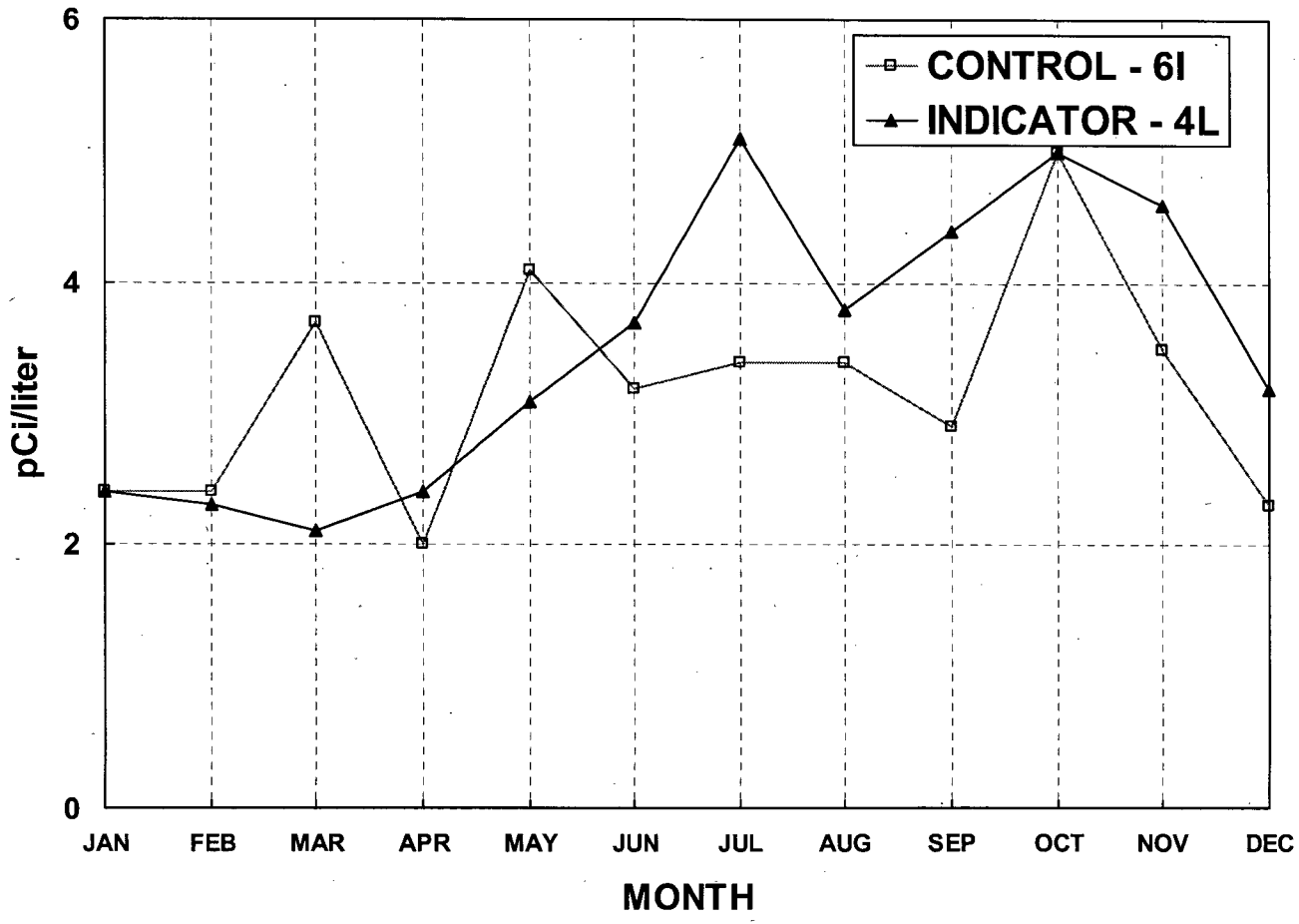
FIGURE C-1
MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 2008



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 – 2008

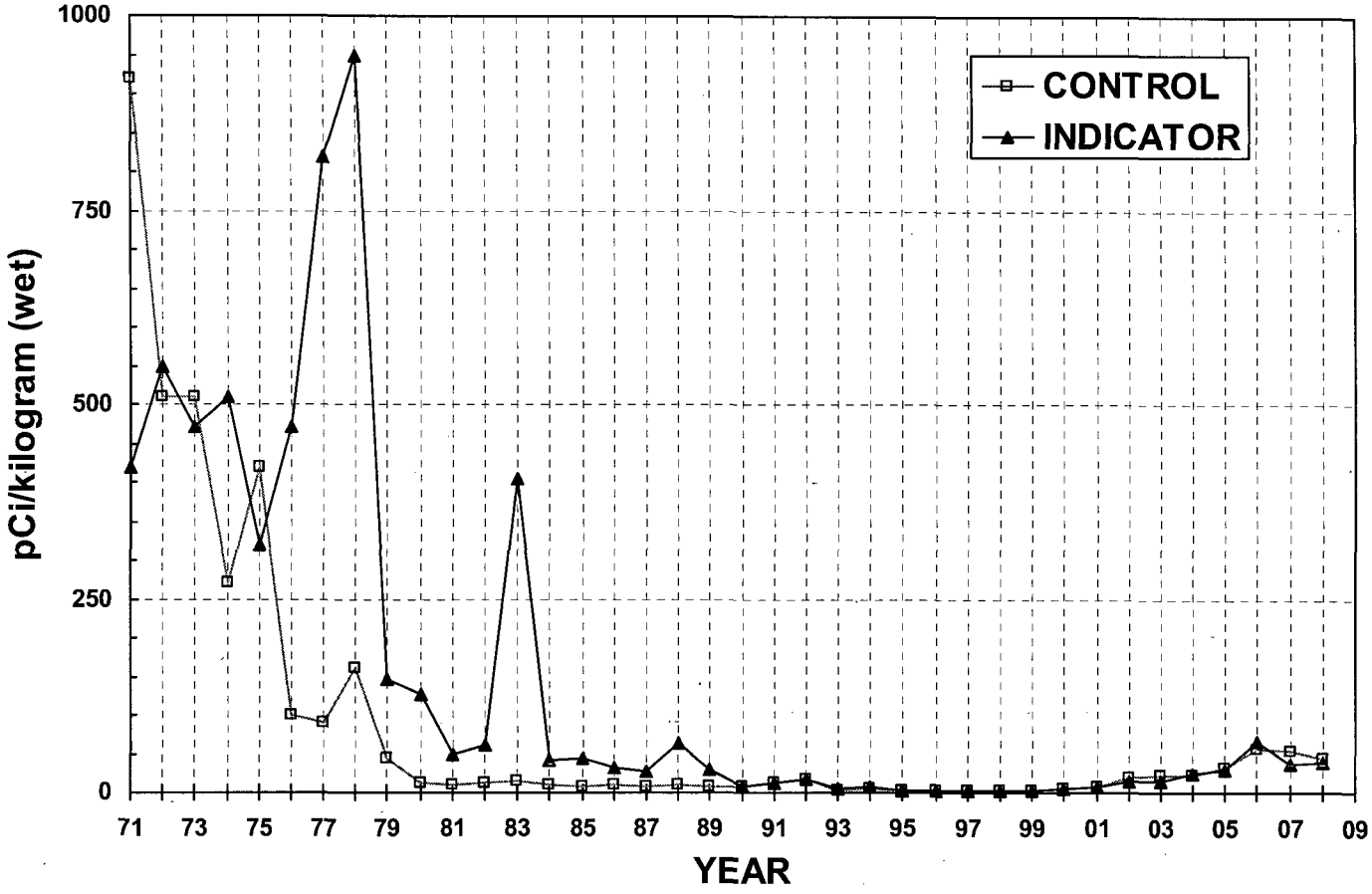
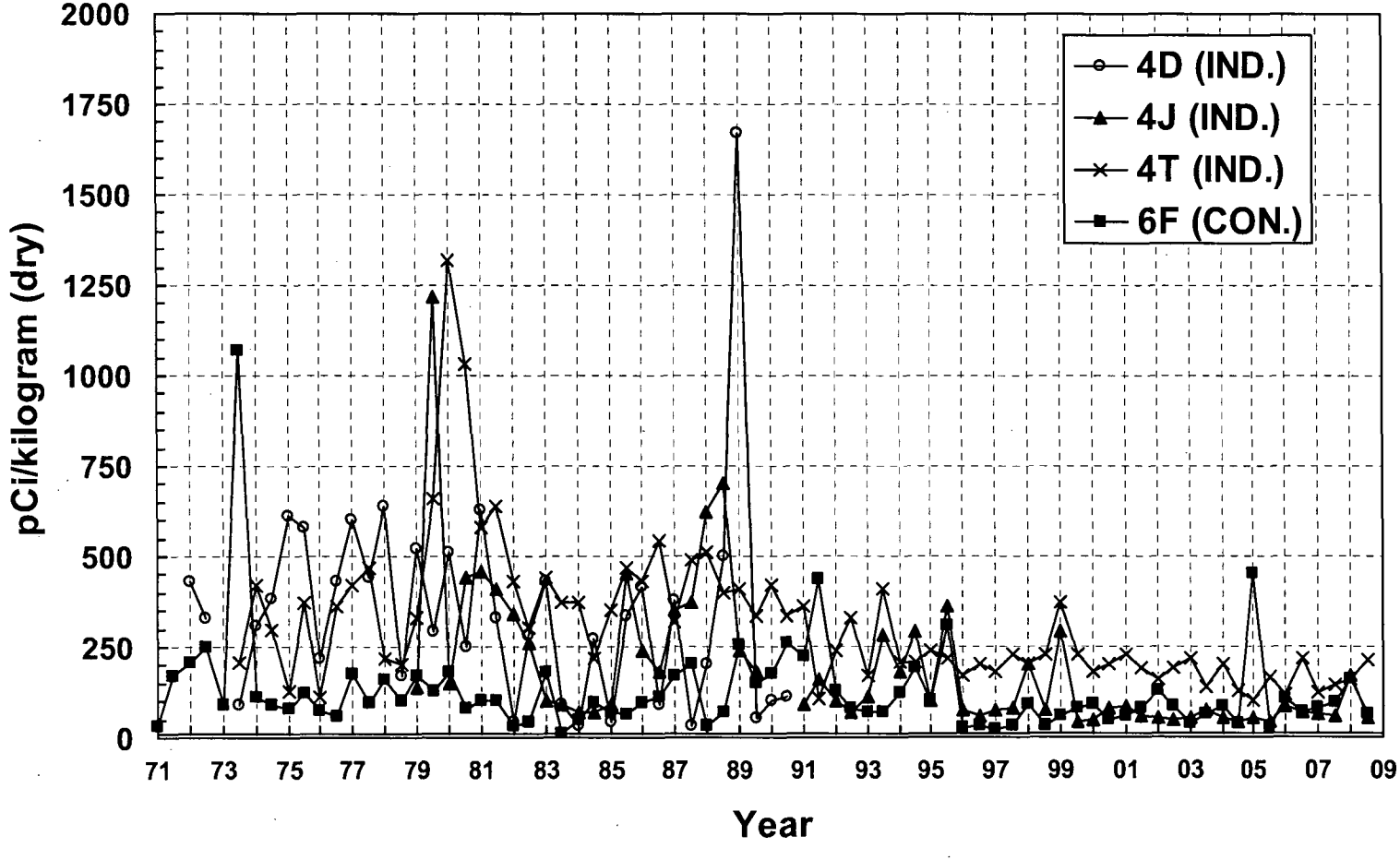


FIGURE C-3
CONCENTRATIONS OF CS-137 IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 – 2008



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, 2008

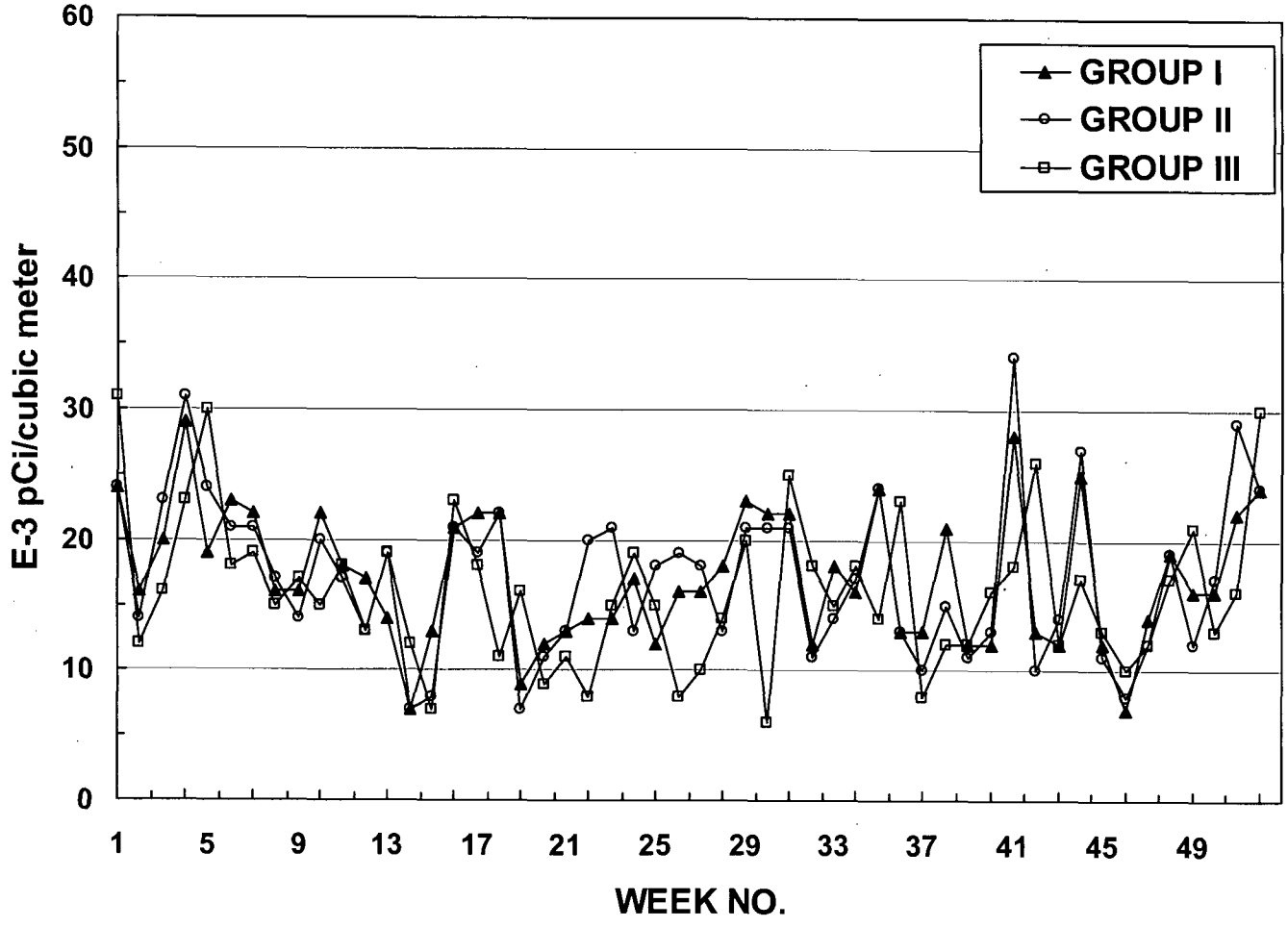


FIGURE C-5
MEAN MONTHLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE
SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1970 – 2008

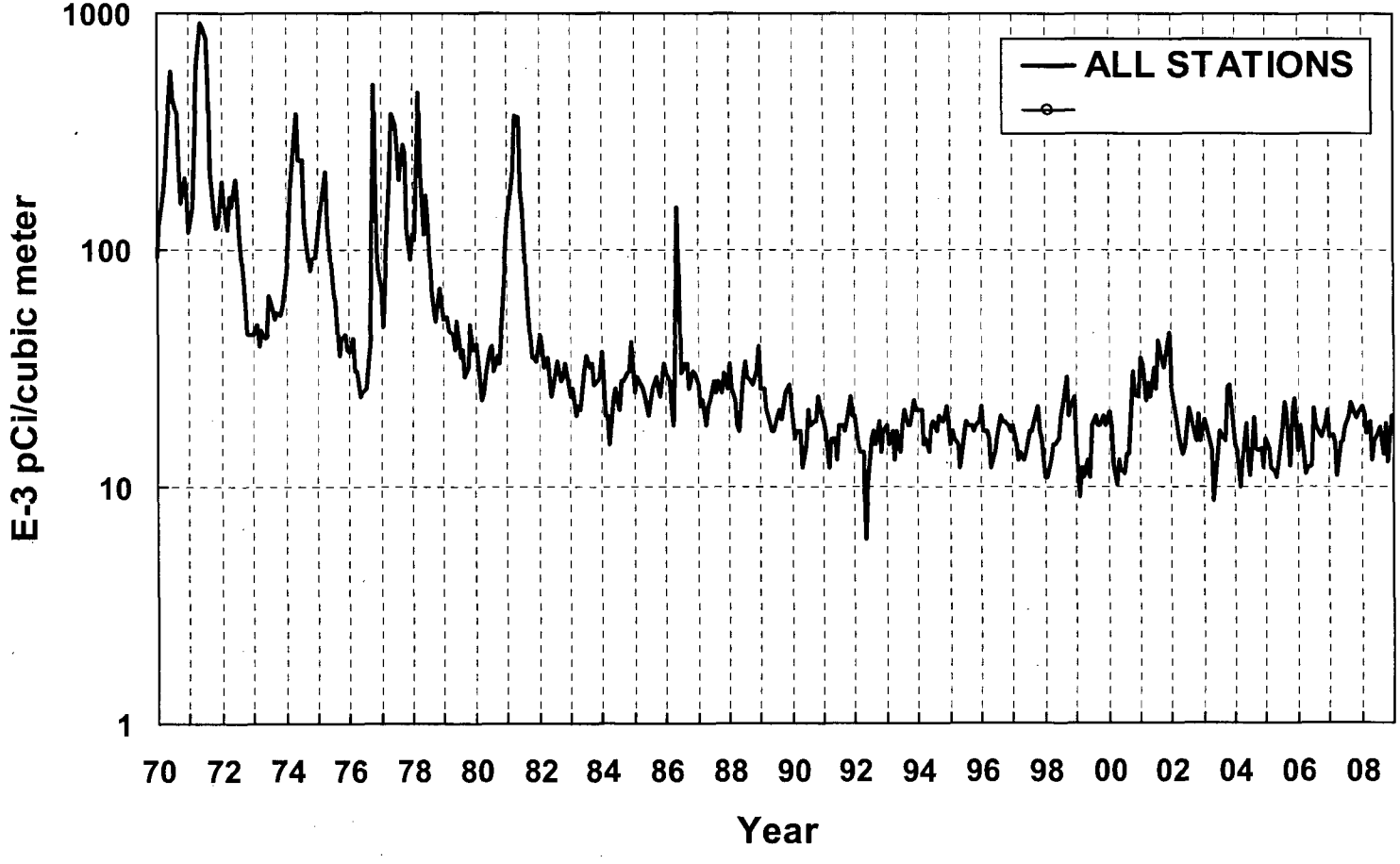
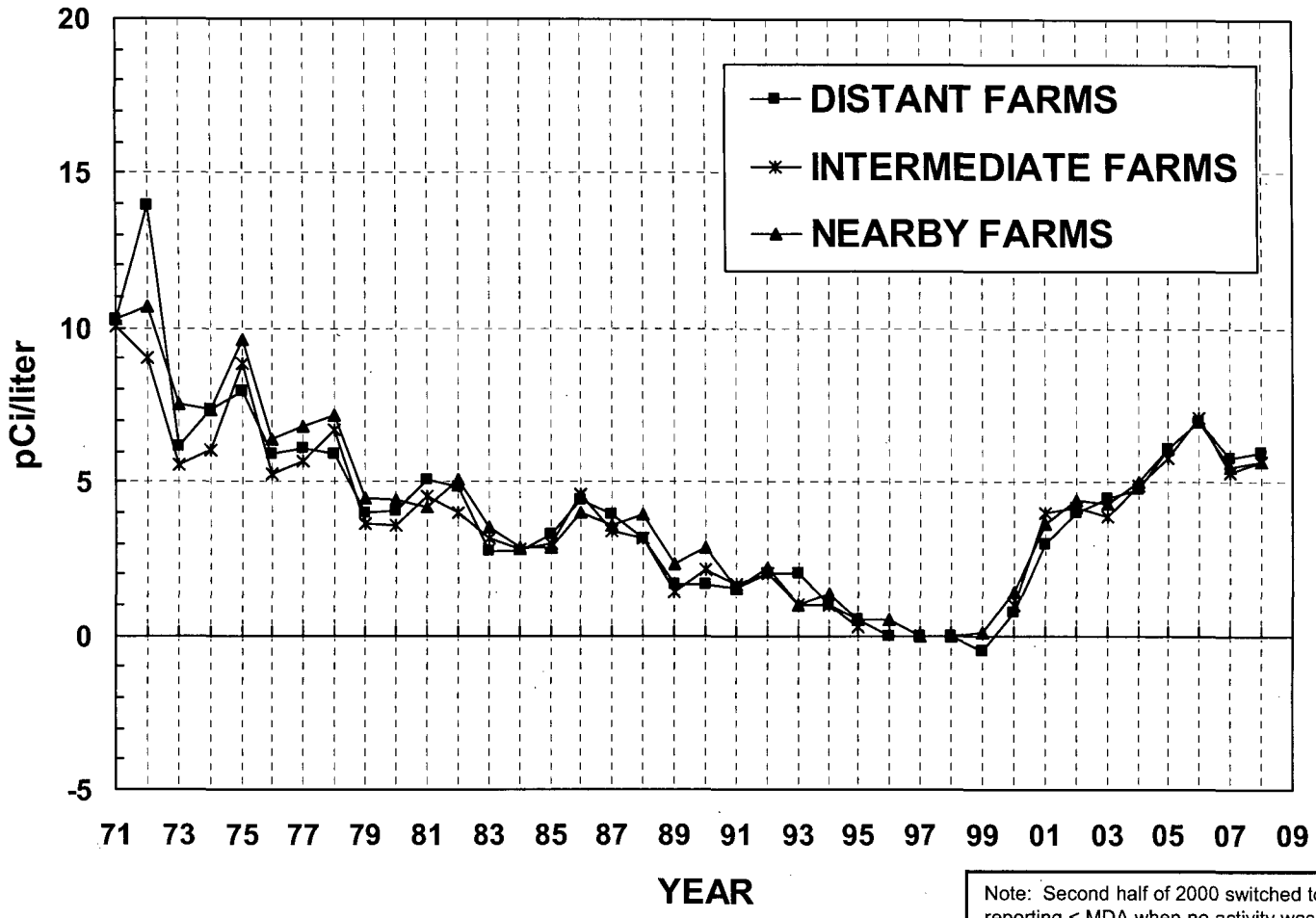


FIGURE C-6
MEAN ANNUAL CS-137 CONCENTRATIONS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PBAPS, 1971 - 2008



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 – 2008

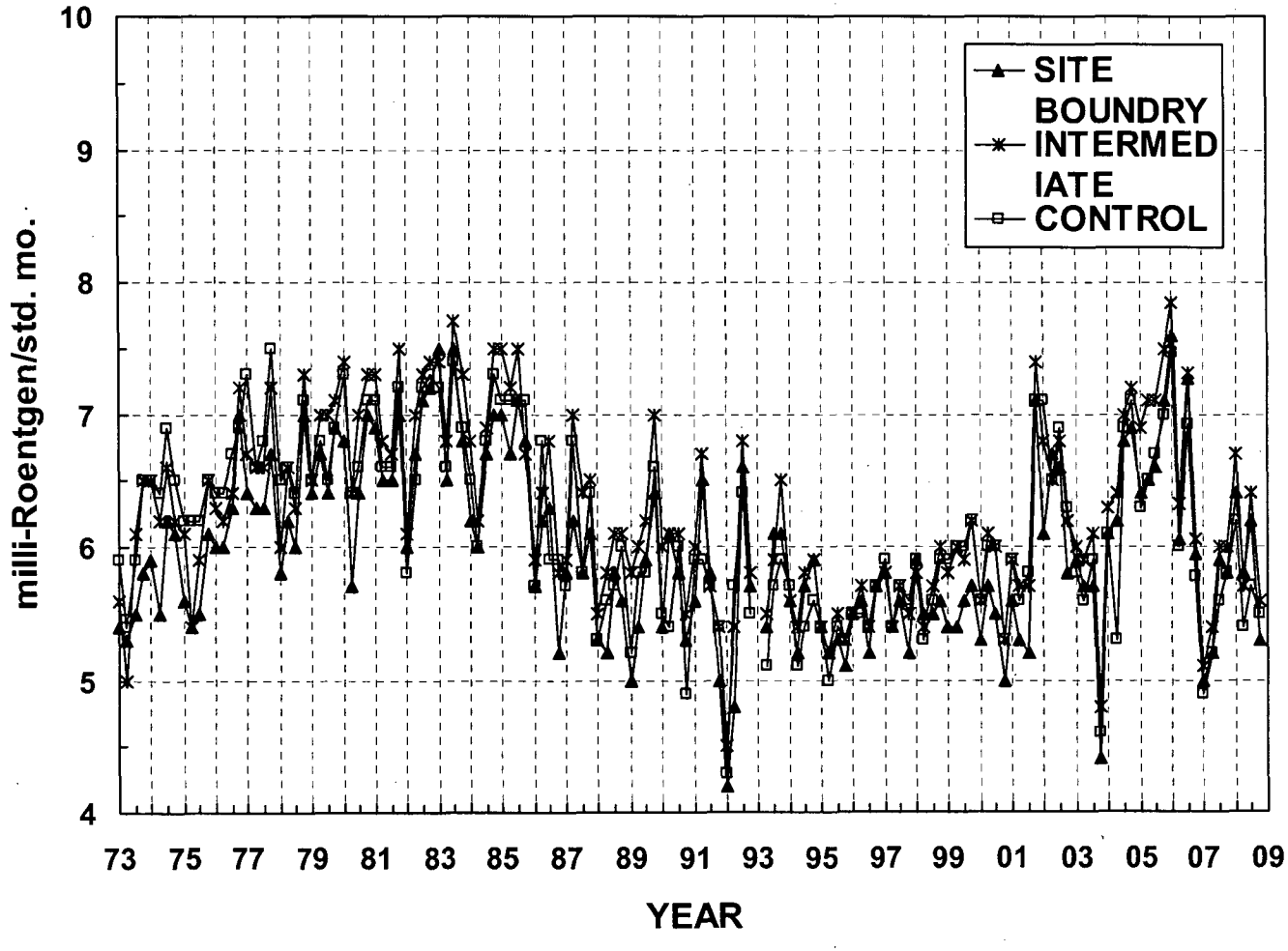
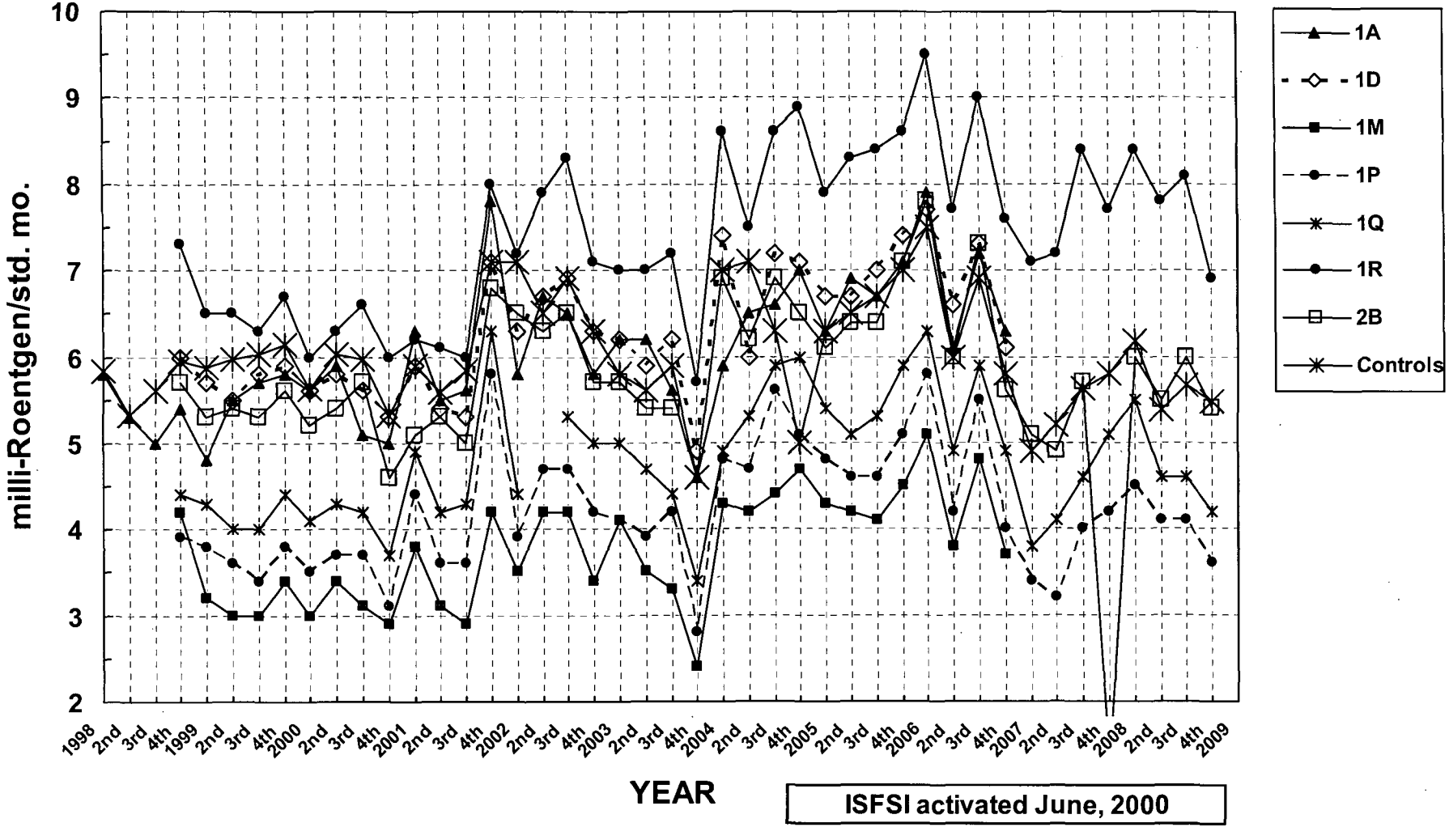


FIGURE C-8
QUARTERLY AMBIENT GAMMA RADIATION LEVELS (TLD) NEAR THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION LOCATED AT PBAPS, 1998 – 2008



APPENDIX D

DATA TABLES AND FIGURES
COMPARISON LABORATORY

The following section contains data and figures illustrating the analyses performed by the QC laboratory, Environmental, Inc. Duplicate samples were obtained from several locations and media and split between the primary laboratory, Teledyne Brown Engineering (TBE) and the QC laboratory. Comparison of the results for most media were within expected ranges.

The QC laboratory results for gross beta insoluble and soluble in drinking water samples were very similar to those reported by the Primary laboratory. All results between the laboratories were within 4 pCi/l of each other. The data reported were well within the historical range.

TABLE D-I.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	< 1.5
FEB	< 1.5
MAR	< 1.9
APR	< 1.5
MAY	< 2.1
JUN	< 2.0
JUL	< 2.1
AUG	< 1.9
SEP	< 2.1
OCT	< 1.9
NOV	< 2.0
DEC	< 2.1
MEAN	-

TABLE D-I.2 CONCENTRATIONS OF GROSS BETA SOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN	1.9 ± 1.0
FEB	< 1.6
MAR	< 2.0
APR	< 0.8
MAY	2.6 ± 1.0
JUN	< 1.9
JUL	2.4 ± 1.1
AUG	1.1 ± 0.6
SEP	2.5 + 1.0
OCT	2.9 ± 1.1
NOV	2.2 < 1.8
DEC	2.4 ± 1.0
MEAN	2.3 ± 1.1

TABLE D-I.3 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	4L
JAN-MAR	< 166
APR-JUN	< 169
JUL-SEP	< 167
OCT-DEC	< 168

TABLE D-I.4 CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
4L	JAN	< 3	< 2	< 7	< 3	< 6	< 5	< 3	< 3	< 3	< 10	< 2
	FEB	< 2	< 3	< 2	< 3	< 5	< 4	< 5	< 3	< 4	< 16	< 2
	MAR	< 4	< 3	< 4	< 2	< 5	< 5.4	< 3	< 2	< 2	< 15	< 4
	APR	< 5	< 6	< 8	< 3	< 10	< 12	< 6	< 4	< 7	< 20	< 6
	MAY	< 2	< 3	< 7	< 3	< 7	< 4.5	< 3	< 3	< 3	< 17	< 5
	JUN	6 ± 3.2	< 3	< 10	< 5	< 4	< 9.1	< 4	< 5	< 5	< 20	< 3
	JUL	< 3	< 3	< 5	< 3	< 5	< 7	< 3	< 4	< 3	< 10	< 4
	AUG	< 3	< 4	< 12	< 4	< 6	< 8	< 3	< 5	< 4	< 23	< 4
	SEP	<	<	<	<	<	<	<	<	<	<	<
	OCT	< 2	< 2	< 6	< 3	< 5	< 3.2	< 4	< 3	< 3	< 22	< 3
	NOV	< 2	< 1	< 6	< 2	< 2	< 3	< 2	< 1	< 2	< 12	< 4
	DEC	< 4	< 4	< 5	< 3	< 4	< 5.1	< 3	< 3	< 4	< 15	< 2
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE D-II.1 CONCENTRATIONS OF TRITIUM IN WELL WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	WW-PB-2	WW-PB-4	WW-PB-12
JAN	<	<	<
FEB	<	<	<
MAR	<	<	<
APR	<	<	<
MAY	< 151	< 151	<
JUN	<	< 172	< 172
JUL	<	<	<
AUG	<	<	<
SEP	<	<	<
OCT	< 139	< 139	<
NOV	<	<	<
DEC	<	<	<
MEAN	-	-	

TABLE D-II.2 CONCENTRATIONS OF STRONIUM IN WELL WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	WW-PB-2	WW-PB-4
JAN	<	<
FEB	<	<
MAR	<	<
APR	<	<
MAY	<	<
JUN	<	<
JUL	<	<
AUG	<	<
SEP	<	<
OCT	< 0.6	< 0.5
NOV	<	<
DEC	<	<
MEAN	-	-

TABLE D-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN WELL WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
WW-PB-2	JAN	<	<	<	<	<	<	<	<	<	<	<
	FEB	<	<	<	<	<	<	<	<	<	<	<
	MAR	<	<	<	<	<	<	<	<	<	<	<
	APR	<	<	<	<	<	<	<	<	<	<	<
	MAY	<	<	<	<	<	<	<	<	<	<	<
	JUN	<	<	<	<	<	<	<	<	<	<	<
	JUL	<	<	<	<	<	<	<	<	<	<	<
	AUG	<	<	<	<	<	<	<	<	<	<	<
	SEP	<	<	<	<	<	<	<	<	<	<	<
	OCT	< 2	< 2	< 5	< 3	< 4	< 4.1	< 2	< 3	< 3	< 11	< 2
	NOV	<	<	<	<	<	<	<	<	<	<	<
	DEC	<	<	<	<	<	<	<	<	<	<	<
	MEAN	-	-	-	-	-	-	-	-	-	-	-
WW-PB-4	JAN	<	<	<	<	<	<	<	<	<	<	<
	FEB	<	<	<	<	<	<	<	<	<	<	<
	MAR	<	<	<	<	<	<	<	<	<	<	<
	APR	<	<	<	<	<	<	<	<	<	<	<
	MAY	<	<	<	<	<	<	<	<	<	<	<
	JUN	<	<	<	<	<	<	<	<	<	<	<
	JUL	<	<	<	<	<	<	<	<	<	<	<
	AUG	<	<	<	<	<	<	<	<	<	<	<
	SEP	<	<	<	<	<	<	<	<	<	<	<
	OCT	< 3	< 2	< 8	< 3	< 7	< 4	< 2	< 3	< 3	< 23	< 2
	NOV	<	<	<	<	<	<	<	<	<	<	<
	DEC	<	<	<	<	<	<	<	<	<	<	<
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE D-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN WELL WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Zr-95	Nb-95	Cs-134	Cs-137	Ba-140	La-140
PB-12	JAN	<	<	<	<	<	<	<	<	<	<	<
	FEB	<	<	<	<	<	<	<	<	<	<	<
	MAR	<	<	<	<	<	<	<	<	<	<	<
	APR	<	<	<	<	<	<	<	<	<	<	<
	MAY	<	<	<	<	<	<	<	<	<	<	<
	JUN	<	<	<	<	<	<	<	<	<	<	<
	JUL	<	<	<	<	<	<	<	<	<	<	<
	AUG	<	<	<	<	<	<	<	<	<	<	<
	SEP	<	<	<	<	<	<	<	<	<	<	<
	OCT	<	<	<	<	<	<	<	<	<	<	<
	NOV	<	<	<	<	<	<	<	<	<	<	<
	DEC	<	<	<	<	<	<	<	<	<	<	<
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE D-III.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

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

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

TABLE D-III.2 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

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

STC	COLLECTION PERIOD	Be-7	Mn-54	Co-58	Co-60	Cs-134	Cs-137
1A	01/02/08 - 04/03/08	79 ± 13	< 0.7	< 0.6	< 0.9	< 0.6	< 0.6
	04/03/08 - 07/02/08	102 ± 15	< 0.8	< 0.7	< 0.9	< 0.3	< 0.3
	07/02/08 - 10/02/08	87 ± 15	< 0.7	< 0.5	< 0.5	< 0.8	< 0.7
	10/02/08 - 01/02/09	67 ± 14	< 0.6	< 0.5	< 0.7	< 0.6	< 0.7
	MEAN*	84 ± 23	-	-	-	-	-

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

TABLE D-IV.1 **CONCENTRATIONS OF I-131 BY CHEMICAL SEPARATION AND GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	I-131	K-40	Cs-134	Cs-137	Ba-140	La-140
J	02/11/08	< 4.5	1291 ± 135	< 4	< 4	< 17	< 3
	05/05/08	< 5.6	1320 ± 111	< 3	< 3	< 21	< 3
	08/11/08	< 3.7	1366 ± 103	< 3	< 4	< 14	< 3
	11/03/08	< 4.3	1408 ± 115	< 4	< 3	< 9	< 4
	MEAN	-	1346 ± 103				
S	02/11/08	< 6.3	1264 ± 112	< 3	< 4	< 20	< 2
	05/05/08	< 7.0	1307 ± 105	< 4	< 4	< 20	< 3
	08/11/08	< 3.2	1241 ± 95	< 3	< 2	< 10	< 2
	11/03/08	< 5.2	1294 ± 123	< 5	< 3	< 26	< 5
	MEAN	-	1277 ± 60				
T	02/11/08	< 4.7	1396 ± 103	< 3	< 2	< 18	< 2
	05/05/08	< 9.3	1318 ± 119	< 3	< 4	< 13	< 2
	08/11/08	< 2.8	1303 ± 104	< 4	< 3	< 13	< 3
	11/03/08	< 6.6	1433 ± 123	< 5	< 3	< 22	< 2
	MEAN	-	1362 ± 124				

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

TABLE D-V.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

DRINKING WATER (GROSS BETA & GAMMA SPECTROSCOPY)

COLLECTION PERIOD	4L
JAN	01/02/08 - 01/31/08
FEB	01/31/08 - 02/28/08
MAR	02/28/08 - 04/03/08
APR	04/03/08 - 05/01/08
MAY	05/01/08 - 05/29/08
JUN	05/29/08 - 07/03/08
JUL	07/03/08 - 07/31/08
AUG	07/31/08 - 08/28/08
SEP	08/28/08 - 10/02/08
OCT	10/02/08 - 10/30/08
NOV	10/30/08 - 11/26/08
DEC	11/26/08 - 01/02/09

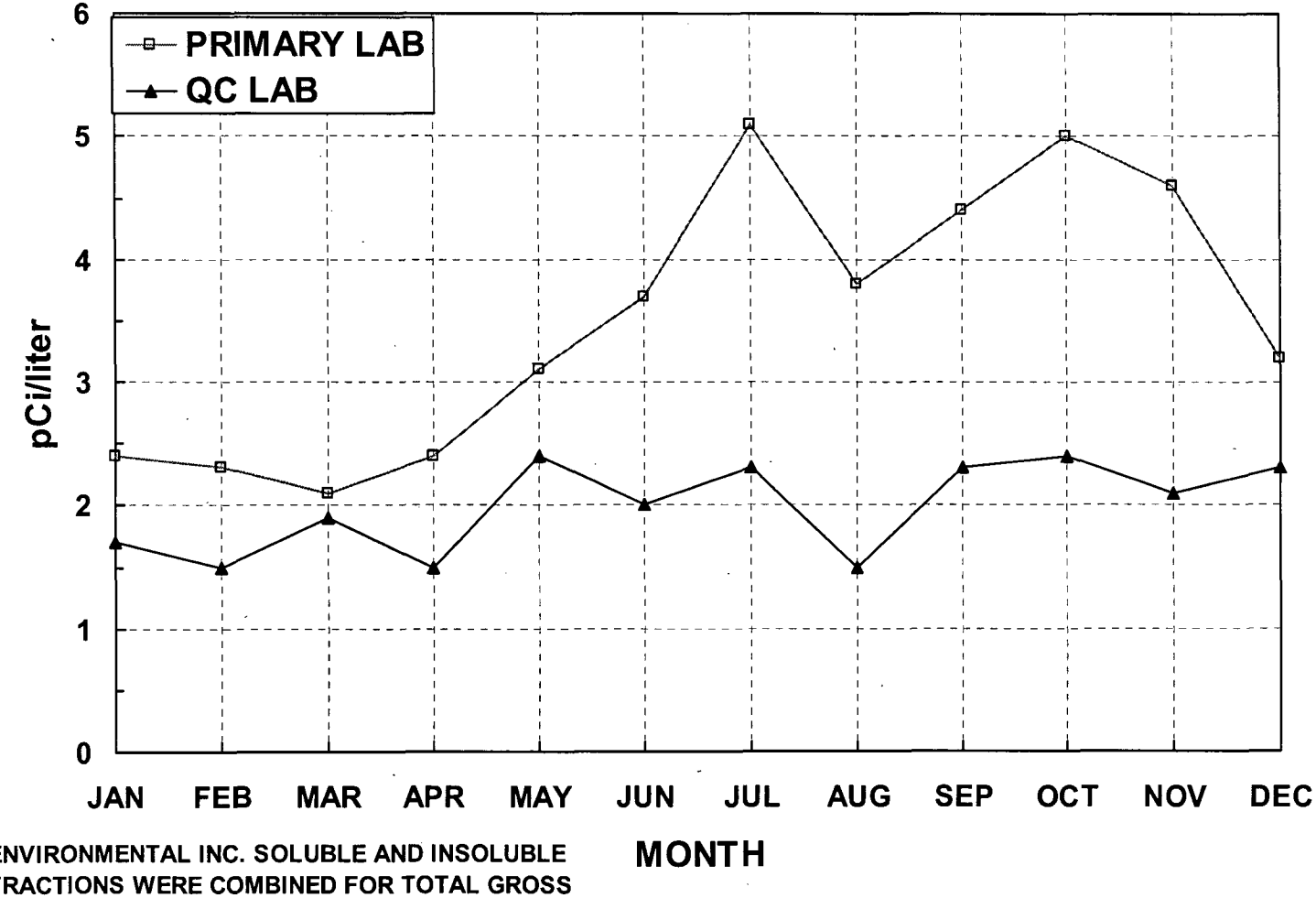
AIR PARTICULATE (GAMMA SPECTROSCOPY)

COLLECTION PERIOD	1A
JAN-MAR	01/02/08 - 04/03/08
APR-JUN	04/03/08 - 07/02/08
JUL-SEP	07/02/08 - 10/02/08
OCT-DEC	10/02/08 - 01/02/09

AIR PARTICULATE (GROSS BETA)

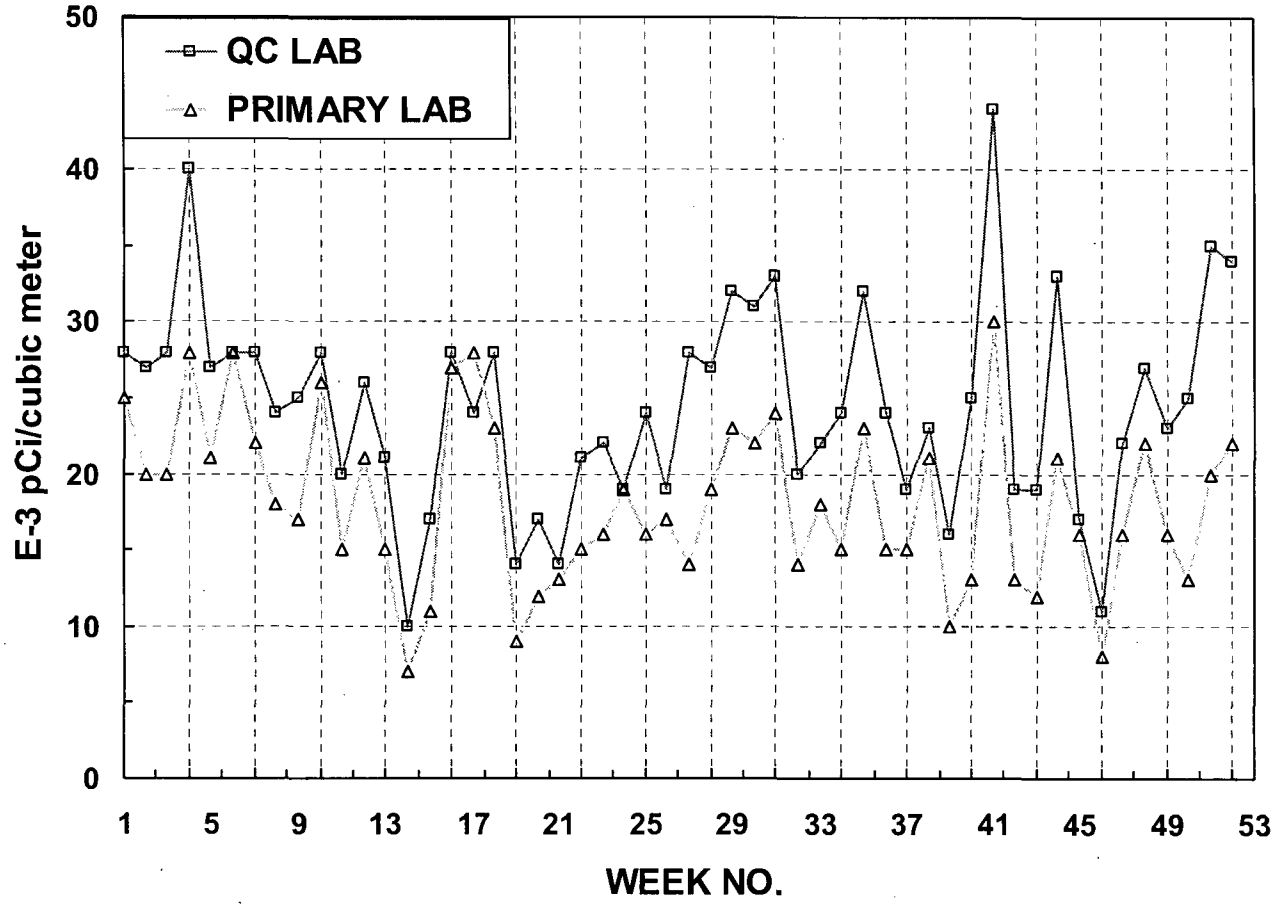
COLLECTION PERIOD	1A	COLLECTION PERIOD	1A
1	01/02/08 - 01/10/08	27	07/03/08 - 07/10/08
2	01/10/08 - 01/17/08	28	07/10/08 - 07/17/08
3	01/17/08 - 01/24/08	29	07/17/08 - 07/24/08
4	01/24/08 - 02/01/08	30	07/24/08 - 07/31/08
5	02/01/08 - 02/07/08	31	07/31/08 - 08/07/08
6	02/07/08 - 02/14/08	32	08/07/08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

FIGURE D-1
COMPARISON OF MONTHLY TOTAL GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES SPLIT BETWEEN THE PRIMARY AND QC LABORATORIES, 2008



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, 2008



APPENDIX E

INTER-LABORATORY COMPARISON PROGRAM

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TABLE E-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2008	E5847-396	Milk	Sr-89	pCi/L	83.5	95.8	0.87	A
			Sr-90	pCi/L	13.9	12.9	1.08	A
	E5848-396	Milk	I-131	pCi/L	57.3	60.0	0.96	A
			Ce-141	pCi/L	229	249	0.92	A
			Cr-51	pCi/L	336	359	0.94	A
			Cs-134	pCi/L	106	125	0.85	A
			Cs-137	pCi/L	141	146	0.97	A
			Co-58	pCi/L	71.8	70.8	1.01	A
			Mn-54	pCi/L	98.1	94.2	1.04	A
			Fe-59	pCi/L	102	102	1.00	A
			Zn-65	pCi/L	135	137	0.99	A
			Co-60	pCi/L	230	236	0.97	A
	E5850A-396	AP	Ce-141	pCi	163	157	1.04	A
			Cr-51	pCi	233	227	1.03	A
			Cs-134	pCi	72.6	79.0	0.92	A
			Cs-137	pCi	98.3	92.0	1.07	A
			Co-58	pCi	46.7	44.7	1.04	A
			Mn-54	pCi	69.8	59.4	1.18	A
			Fe-59	pCi	72.2	64.5	1.12	A
			Zn-65	pCi	106	86.4	1.23	W
			Co-60	pCi	156	149	1.05	A
	E5849-396	Charcoal	I-131	pCi	65.5	60.1	1.09	A
June 2008	E5971-396	Milk	Sr-89	pCi/L	83.9	85.0	0.99	A
			Sr-90	pCi/L	14.4	15.8	0.91	A
	E5972-396	Milk	I-131	pCi/L	70.9	71.4	0.99	A
			Ce-141	pCi/L	157	174	0.90	A
			Cr-51	pCi/L	159	138	1.15	A
			Cs-134	pCi/L	69.7	76.7	0.91	A
			Cs-137	pCi/L	115	116	0.99	A
			Co-58	pCi/L	59.1	61.9	0.95	A
			Mn-54	pCi/L	139	135	1.03	A
			Fe-59	pCi/L	98.4	91.7	1.07	A
			Zn-65	pCi/L	129	127	1.02	A
			Co-60	pCi/L	101	104	0.97	A
	E5974-396	AP	Ce-141	pCi	206	207	1.00	A
			Cr-51	pCi	173	164	1.05	A
			Cs-134	pCi	95.9	91.0	1.05	A
			Cs-137	pCi	142.0	138.0	1.03	A
			Co-58	pCi	72.0	73.4	0.98	A
			Mn-54	pCi	180	160.0	1.13	A
			Fe-59	pCi	108.0	109.0	0.99	A
			Zn-65	pCi	159	150	1.06	A
			Co-60	pCi	129	124	1.04	A

TABLE E-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2008	E5973-396	Charcoal	I-131	pCi	73.8	84.1	0.88	A
September 2008	E6284-396	Milk	Sr-89	pCi/L	76.2	73.9	1.03	A
			Sr-90	pCi/L	12.3	11.0	1.12	A
	E6285-396	Milk	I-131	pCi/L	65.7	67.9	0.97	A
			Ce-141	pCi/L	145	161	0.90	A
			Cr-51	pCi/L	406	421	0.96	A
			Cs-134	pCi/L	196	232	0.84	A
			Cs-137	pCi/L	147	162	0.91	A
			Co-58	pCi/L	167	179	0.93	A
			Mn-54	pCi/L	165	166	0.99	A
			Fe-59	pCi/L	161	144	1.12	A
			Zn-65	pCi/L	305	319	0.96	A
			Co-60	pCi/L	218	234	0.93	A
	E6287-396	AP	Ce-141	pCi	79.5	76.3	1.04	A
			Cr-51	pCi	208	199	1.05	A
			Cs-134	pCi	106	110	0.96	A
			Cs-137	pCi	79.3	76.7	1.03	A
			Co-58	pCi	87.7	84.4	1.04	A
			Mn-54	pCi	90.3	78.6	1.15	A
			Fe-59	pCi	81.7	68.3	1.20	A
			Zn-65	pCi	144	151	0.95	A
			Co-60	pCi	111	111	1.00	A
	E6286-396	Charcoal	I-131	pCi	93.2	90.0	1.04	A
December 2008	E6415-396	Milk	Sr-89	pCi/L	98.4	91.9	1.07	A
			Sr-90	pCi/L	18.0	12.6	1.43	N (1)
	E6416-396	Milk	I-131	pCi/L	69.2	79.9	0.87	A
			Ce-141	pCi/L	177	191	0.93	A
			Cr-51	pCi/L	231	246	0.94	A
			Cs-134	pCi/L	117	134	0.87	A
			Cs-137	pCi/L	119	120	0.99	A
			Co-58	pCi/L	104	104	1.00	A
			Mn-54	pCi/L	153	152	1.01	A
			Fe-59	pCi/L	99.6	100	1.00	A
			Zn-65	pCi/L	177	183	0.97	A
			Co-60	pCi/L	133	133	1.00	A
	E6418-396	AP	Ce-141	pCi	148	146	1.01	A
			Cr-51	pCi	202	187	1.08	A
			Cs-134	pCi	103	102	1.01	A
			Cs-137	pCi	95.4	91.2	1.05	A
			Co-58	pCi	81.4	79.2	1.03	A
			Mn-54	pCi	113	116.0	0.97	A
			Fe-59	pCi	76.5	76.4	1.00	A
			Zn-65	pCi	122	139	0.88	A
			Co-60	pCi	108	101	1.07	A

TABLE E-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2008	E6417-396	Charcoal	I-131	pCi	65.8	74.1	0.89	A

(1) NCR 09-02 initiated to investigate the failure.

(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, 2008
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
January 2008	Quik[tm] Response	Water	Sr-89	pCi/L	37.33	19.0	11.8 - 25.2	N (1)
			Sr-90	pCi/L	40.40	42.7	31.5 - 49.0	A
			Ba-133	pCi/L	87.8	90.5	76.2 - 99.6	A
			Cs-134	pCi/L	80.67	88.9	72.9 - 97.8	A
			Cs-137	pCi/L	222.33	231	208 - 256	A
			Co-60	pCi/L	98.9	101.0	90.9 - 113	A
			Zn-65	pCi/L	352	350	315 - 408	A
			Gr-A	pCi/L	13.0	12.7	6.02 - 18.7	A
			Gr-B	pCi/L	32.7	36.2	23.8 - 43.8	A
			H-3	pCi/L	11100	11300	9840 - 12400	A
January 2008	RAD 72	Water	Sr-89	pCi/L	69.0	65.3	53.0 - 73.4	A
			Sr-90	pCi/L	35.6	41.4	30.5 - 47.6	A
			Ba-133	pCi/L	25.9	25.7	20.0 - 29.5	A
			Cs-134	pCi/L	86.5	92.6	76.0 - 102	A
			Cs-137	pCi/L	155	158	142 - 176	A
			Co-60	pCi/L	16.0	14.4	11.4 - 18.7	A
			Zn-65	pCi/L	214	204	184 - 240	A
			Gr-A	pCi/L	13.3	14.8	7.15 - 21.2	A
			Gr-B	pCi/L	21.2	22.5	13.7 - 30.6	A
			I-131	pCi/L	22.8	23.6	19.6 - 28.0	A
			H-3	pCi/L	3390	3540	3000 - 3910	A
April 2008	Rad 73	Water	Sr-89	pCi/L	65.47	60.4	48.6 - 68.2	A
			Sr-90	pCi/L	39.80	39.2	28.8 - 45.1	A
			Ba-133	pCi/L	59.63	58.3	48.3 - 64.3	A
			Cs-134	pCi/L	45.00	46.6	37.4 - 51.3	A
			Cs-137	pCi/L	97.97	102	91.8 - 115	A
			Co-60	pCi/L	75.47	76.6	68.9 - 86.7	A
			Zn-65	pCi/L	109	106	95.4 - 126	A
			Gr-A	pCi/L	41.03	50.8	26.5 - 63.7	A
			Gr-B	pCi/L	50.20	51.4	35.0 - 58.4	A
			I-131	pCi/L	26.67	28.7	23.9 - 33.6	A
			H-3	pCi/L	11633	12000	10400 - 13200	A

(1) Could find no cause for Sr-89 failure. Sample sent to outside lab for verification, but the outside laboratory was unable to confirm our numbers or ERA numbers. Studies bracketing these results, RAD 71 and RAD 72, had acceptable Sr-89 results. NCR 08-03

(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, 2008
(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
January 2008	07-MaW18	Water	Cs-134	Bq/L	-0.26		(1)	A
			Cs-137	Bq/L	0.029		(1)	A
			Co-57	Bq/L	21	22.8	16.0 - 29.6	A
			Co-60	Bq/L	8.2	8.40	5.88 - 10.92	A
			H-3	Bq/L	473	472	330 - 614	A
			Mn-54	Bq/L	12	12.1	8.5 - 15.7	A
			Sr-90	Bq/L	10.70	11.4	7.98- 14.82	A
			Zn-65	Bq/L	15.6	16.3	11.4 - 21.2	A
	07-GrW18	Water	Gr-A	Bq/L	1.4	1.399	>0.0 - 2.798	A
			Gr-B	Bq/L	3.06	2.43	1.22 - 3.65	A
	07-MaS18	Soil	Cs-134	Bq/kg	790	854.0	598 - 1110	A
			Cs-137	Bq/kg	568	545	382 - 709	A
			Co-57	Bq/kg	424	421	295 - 547	A
			Co-60	Bq/kg	2.307	2.9	(2)	A
			Mn-54	Bq/kg	611	570	399 - 741	A
			K-40	Bq/kg	6.09	571	400 - 742	A
			Sr-90	Bq/kg	454	493.0	345 - 641	A
			Zn-65	Bq/kg	0.162		(1)	A
	07-RdF18	AP	Cs-134	Bq/sample	2.73	2.5200	1.76 - 3.28	A
			Cs-137	Bq/sample	2.88	2.7	1.89 - 3.51	A
			Co-57	Bq/sample	3.493	3.55	2.49 - 4.62	A
			Co-60	Bq/sample	1.357	1.31	0.92 - 1.70	A
			Mn-54	Bq/sample	0.006		(1)	A
			Sr-90	Bq/sample	1.61	1.548	1.084 - 2.012	A
			Zn-65	Bq/sample	2.59	2.04	1.43 - 2.65	A
	07-GrF18	AP	Gr-A	Bq/sample	0.131	0.348	>0.0 - 0.696	A
			Gr-B	Bq/sample	0.261	0.286	0.143 - 0.429	A
January 2008	07-RdV18	Vegetation	Cs-134	Bq/sample	5.25	6.28	4.40 - 8.16	A
			Cs-137	Bq/sample	3.13	3.41	2.39 - 4.43	A
			Co-57	Bq/sample	6.837	6.89	4.82 - 8.96	A
			Co-60	Bq/sample	2.44	2.77	1.94 - 3.60	A
			Mn-54	Bq/sample	4.45	4.74	3.32 - 6.16	A
			K-40	Bq/sample	61.3		(1)	
			Sr-90	Bq/sample	1.33	1.273	0.891 - 1.655	A
			Zn-65	Bq/sample	0.085		(1)	A
August 2008	08-MaW19	Water	Cs-134	Bq/L	17.1	19.5	13.7 - 25.4	A
			Cs-137	Bq/L	21.4	23.6	16.5 - 30.7	A
			Co-57	Bq/L	-0.044		(1)	A
			Co-60	Bq/L	10.8	11.6	8.1 - 15.1	A
			H-3	Bq/L	334	341	239 - 443	A
			Mn-54	Bq/L	13.0	13.7	9.6 - 17.8	A
			Sr-90	Bq/L	6.55	6.45	4.52- 8.39	A
			Zn-65	Bq/L	16.5	17.1	12.0 - 22.2	A

TABLE E-3 **DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)**
TELEDYNE BROWN ENGINEERING, 2008
(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
August 2008	08-GrW19	Water	Gr-A	Bq/L	0.0612	<0.56	(3)	A
			Gr-B	Bq/L	0.222	<1.85	(3)	A
	08-MaS19	Soil	Cs-134	Bq/kg	546	581	407 - 755	A
			Cs-137	Bq/kg	2.52	2.8	(2)	A
			Co-57	Bq/kg	340	333	233 - 433	A
			Co-60	Bq/kg	157	145.0	102 - 189	A
			Mn-54	Bq/kg	460	415	291 - 540	A
			K-40	Bq/kg	650	571	399 - 741	A
			Sr-90	Bq/kg	1.40		(1)	A
			Zn-65	Bq/kg	-1.53		(1)	A
	08-RdF19	AP	Cs-134	Bq/sample	2.46	2.6300	1.84 - 3.42	A
			Cs-137	Bq/sample	0.0063		(1)	A
			Co-57	Bq/sample	1.36	1.50	1.05 - 1.95	A
			Co-60	Bq/sample	0.0143		(1)	A
			Mn-54	Bq/sample	2.70	2.64	1.85 - 3.43	A
			Sr-90	Bq/sample	1.42	1.12	0.78 - 1.46	W
			Zn-65	Bq/sample	0.975	0.94	0.66 - 1.22	A
	08-GrF19	AP	Gr-A	Bq/sample	-0.0037		(4)	A
			Gr-B	Bq/sample	0.540	0.525	0.263 - 0.788	A
	08-RdV19	Vegetation	Cs-134	Bq/sample	4.36	5.5	3.9 - 7.2	W
			Cs-137	Bq/sample	-0.03		(1)	A
			Co-57	Bq/sample	6.72	7.1	5.0 - 9.2	A
			Co-60	Bq/sample	4.04	4.70	3.3 - 6.1	A
			Mn-54	Bq/sample	5.22	5.8	4.1 - 7.5	A
			K-40	Bq/sample	64.4		(1)	
			Sr-90	Bq/sample	1.62	1.9	1.3 - 2.5	A
			Zn-65	Bq/sample	6.160	6.9	4.8 - 9.0	A

(1) Not evaluated by MAPEP.
(2) Reported a statistically zero result.
(3) Designed to test the Safe Drinking Water screening levels. Labs reporting values less than ref values were found to be acceptable.
(4) False positive test.
(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 ENVIRONMENTAL, INC., 2008**

Lab Code [b]	Date	Analysis	Concentration (pCi/L) Laboratory Result [c]	ERA Result [d]	Control Limits	Acceptance
STAP-1143	03/24/08	Co-60	650.72 ± 3.00	730.0	565.0 - 912.0	Pass
STAP-1143	03/24/08	Cs-134	467.50 ± 5.53	523.0	341.0 - 647.0	Pass
STAP-1143	03/24/08	Cs-137	1375.90 ± 25.41	1450.0	1090.0 - 1900.0	Pass
STAP-1143 [e]	03/24/08	Mn-54	0.00 ± 0.00	0.0	0.0 - 10.0	Pass
STAP-1143	03/24/08	Sr-90	157.60 ± 7.70	152.0	66.9 - 236.0	Pass
STAP-1143	03/24/08	Zn-65	889.90 ± 15.90	872.0	604.0 - 1210.0	Pass
STAP-1144	03/24/08	Gr. Beta	99.90 ± 3.09	92.2	56.80 - 135.0	Pass
STSO-1145	03/24/08	Ac-228	1269.02 ± 36.81	1180.0	757.0 - 1660.0	Pass
STSO-1145	03/24/08	Bi-212	1407.10 ± 56.64	1360.0	357.0 - 2030.0	Pass
STSO-1145	03/24/08	Co-60	5219.70 ± 90.30	5130.0	3730.0 - 6890.0	Pass
STSO-1145	03/24/08	Cs-134	5427.30 ± 102.94	5640.0	3630.0 - 6790.0	Pass
STSO-1145	03/24/08	Cs-137	6346.60 ± 201.80	6010.0	4600.0 - 7810.0	Pass
STSO-1145	03/24/08	K-40	11052.70 ± 181.80	11000.0	7980.0 - 14900.0	Pass
STSO-1145 [e]	03/24/08	Mn-54	0.00 ± 0.00	0.0	0.0 - 10.0	Pass
STSO-1145	03/24/08	Pb-212	1198.20 ± 96.58	1080.0	697.0 - 1520.0	Pass
STSO-1145	03/24/08	Pb-214	2253.30 ± 291.60	2020.0	1210.0 - 3010.0	Pass
STSO-1145	03/24/08	Sr-90	6407.00 ± 277.00	5360.0	1940.0 - 8750.0	Pass
STSO-1145	03/24/08	Th-234	2421.80 ± 321.00	2030.0	644.0 - 3870.0	Pass
STSO-1145	03/24/08	Zn-65	2936.20 ± 73.50	2660.0	2110.0 - 3570.0	Pass
STVE-1146	03/24/08	Co-60	912.41 ± 13.59	888.0	600.0 - 1280.0	Pass
STVE-1146	03/24/08	Cs-134	1547.70 ± 38.81	1540.0	882.0 - 2130.0	Pass
STVE-1146	03/24/08	Cs-137	1163.80 ± 20.62	1100.0	807.0 - 1530.0	Pass
STVE-1146	03/24/08	K-40	22186.00 ± 339.40	24600.0	17700.0 - 34800.0	Pass
STVE-1146 [e]	03/24/08	Mn-54	0.00 ± 0.00	0.0	0.0 - 10.0	Pass
STVE-1146	03/24/08	Sr-90	3825.90 ± 140.66	4130.0	2310.0 - 5480.0	Pass
STVE-1146	03/24/08	Zn-65	1676.80 ± 43.00	1430.0	1030.0 - 1960.0	Pass
STW-1147	03/24/08	Co-60	1430.00 ± 33.33	1420.0	1240.0 - 1680.0	Pass
STW-1147	03/24/08	Cs-134	730.18 ± 33.39	751.0	555.0 - 862.0	Pass
STW-1147	03/24/08	Cs-137	1947.80 ± 13.80	1990.0	1690.0 - 2380.0	Pass
STW-1147 [e]	03/24/08	Mn-54	0.00 ± 0.00	0.0	0.0 - 10.0	Pass
STW-1147	03/24/08	Sr-90	512.03 ± 43.37	512.0	325.0 - 684.0	Pass
STW-1147	03/24/08	Zn-65	708.90 ± 29.00	694.0	588.0 - 865.0	Pass
STW-1120	03/19/07	Zn-65	2009.00 ± 36.40	1910.0	1600.0 - 2410.0	Pass

[a] Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the crosscheck program for proficiency testing administered by Environmental Resources Associates, serving as a replacement for studies conducted previously by the Environmental Measurements Laboratory Quality Assessment Program (EML).

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

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

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

[e] Included in the testing series as a "false positive". No activity expected.

TABLE E-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)[a]
ENVIRONMENTAL, INC., 2008
(Page 1 of 2)

		Concentration [b]				
Lab Code[c]	Date	Analysis	Laboratory result	Known Activity	Control Limits [d]	Acceptance
STW-1137	01/01/08	Co-57	23.80 ± 0.60	22.80	16.00 - 29.60	Pass
STW-1137	01/01/08	Co-60	8.60 ± 0.50	8.40	5.88 - 10.92	Pass
STW-1137	01/01/08	Cs-134	-0.021 ± 0.10	0.00	-1.00 - 1.00	Pass
STW-1137	01/01/08	Cs-137	0.00 ± 0.10	0.00	-1.00 - 1.00	Pass
STW-1137	01/01/08	H-3	515.10 ± 12.70	472.00	330.00 - 614.00	Pass
STW-1137	01/01/08	Mn-54	12.90 ± 0.80	12.10	8.50 - 15.70	Pass
STW-1137	01/01/08	Sr-90	12.00 ± 1.50	11.40	7.98 - 14.82	Pass
STW-1137	01/01/08	Zn-65	16.90 ± 1.40	16.30	11.40 - 21.20	Pass
STW-1138	01/01/08	Gr. Beta	2.30 ± 0.15	2.43	1.22 - 3.65	Pass
STAP-1139	01/01/08	Co-57	3.90 ± 0.07	3.55	2.49 - 4.62	Pass
STAP-1139	01/01/08	Co-60	1.43 ± 0.07	1.31	0.92 - 1.70	Pass
STAP-1139	01/01/08	Cs-134	2.59 ± 0.16	2.52	1.76 - 3.28	Pass
STAP-1139	01/01/08	Cs-137	3.05 ± 0.12	2.70	1.89 - 3.51	Pass
STAP-1139	01/01/08	Mn-54	0.43 ± 0.58	0.00	0.00 - 1.00	Pass
STAP-1139	01/01/08	Sr-90	1.30 ± 0.27	1.55	1.08 - 2.01	Pass
STAP-1139	01/01/08	Zn-65	2.36 ± 0.18	2.04	1.43 - 2.65	Pass
STAP-1140	01/01/08	Gr. Beta	0.34 ± 0.04	0.29	0.14 - 0.43	Pass
STVE-1141	01/01/08	Co-57	8.30 ± 0.18	6.89	4.82 - 8.96	Pass
STVE-1141	01/01/08	Co-60	3.03 ± 0.13	2.77	1.94 - 3.60	Pass
STVE-1141	01/01/08	Cs-134	6.53 ± 0.29	6.28	4.40 - 8.16	Pass
STVE-1141	01/01/08	Cs-137	3.90 ± 0.19	3.41	2.39 - 4.43	Pass
STVE-1141	01/01/08	Mn-54	5.43 ± 0.21	4.74	3.32 - 6.16	Pass
STVE-1141	01/01/08	Zn-65	0.033 ± 0.10	0.00	0.00 - 1.00	Pass
STSO-1142	01/01/08	Co-57	483.00 ± 3.00	421.00	295.00 - 547.00	Pass
STSO-1142	01/01/08	Co-60	3.00 ± 0.80	2.90	0.00 - 5.00	Pass
STSO-1142	01/01/08	Cs-134	896.50 ± 7.40	854.00	598.00 - 1110.00	Pass
STSO-1142	01/01/08	Cs-137	624.40 ± 4.10	545.00	382.00 - 709.00	Pass
STSO-1142	01/01/08	Mn-54	667.20 ± 3.80	570.00	399.00 - 741.00	Pass
STSO-1142	01/01/08	Zn-65	0.093 ± 0.91	0.00	0.00 - 1.00	Pass
STSO-1158	08/01/08	Co-57	353.02 ± 2.01	333.00	233.00 - 433.00	Pass
STSO-1158	08/01/08	Co-60	151.99 ± 1.58	145.00	102.00 - 189.00	Pass
STSO-1158	08/01/08	Cs-134	499.72 ± 2.65	581.00	407.00 - 755.00	Pass
STSO-1158	08/01/08	Cs-137	2.54 ± 0.25	2.80	0.00 - 5.00	Pass
STSO-1158	08/01/08	K-40	643.94 ± 15.50	570.00	399.00 - 741.00	Pass
STSO-1158	08/01/08	Mn-54	452.14 ± 2.96	415.00	291.00 - 540.00	Pass
STSO-1158	08/01/08	Sr-90	1.95 ± 2.04	0.00	0.00 - 5.00	Pass
STSO-1158	08/01/08	Zn-65	0.10 ± 2.04	0.00	0.00 - 5.00	Pass

TABLE E-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)[a]
ENVIRONMENTAL, INC., 2008
(Page 2 of 2)

		Concentration [b]				
Lab Code[c]	Date	Analysis	Laboratory result	Known Activity	Control Limits [d]	Acceptance
STVE-1159	08/01/08	Co-57	8.52 ± 0.23	7.10	5.00 - 9.20	Pass
STVE-1159	08/01/08	Co-60	5.08 ± 0.19	4.70	3.30 - 6.10	Pass
STVE-1159	08/01/08	Cs-134	5.26 ± 0.18	5.50	3.90 - 7.20	Pass
STVE-1159	08/01/08	Cs-137	0.01 ± 0.14	0.00	0.00 - 1.00	Pass
STVE-1159	08/01/08	Mn-54	6.39 ± 0.28	5.80	4.10 - 7.50	Pass
STVE-1159	08/01/08	Zn-65	7.73 ± 0.45	6.90	4.80 - 9.00	Pass
STW-1162	08/01/08	Co-57	0.03 ± 0.16	0.00	0.00 - 5.00	Pass
STW-1162	08/01/08	Co-60	11.27 ± 0.23	11.60	8.10 - 15.10	Pass
STW-1162	08/01/08	Cs-134	17.93 ± 0.52	19.50	13.70 - 25.40	Pass
STW-1162	08/01/08	Cs-137	23.72 ± 0.43	23.60	16.50 - 30.70	Pass
STW-1162	08/01/08	H-3	385.15 ± 8.93	341.00	239.00 - 443.00	Pass
STW-1162	08/01/08	Mn-54	13.87 ± 0.37	13.70	9.60 - 17.80	Pass
STW-1162	08/01/08	Sr-90	6.49 ± 1.12	6.45	4.52 - 8.39	Pass
STW-1162	08/01/08	Zn-65	17:64 ± 0.61	17.10	12.00 - 22.20	Pass
STW-1163	08/01/08	Gr. Beta	0.12 ± 0.05	0.00	0.00 - 1.85	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.

APPENDIX F

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

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Docket No: 50-277
50-278

PEACH BOTTOM ATOMIC POWER STATION UNITS 2 and 3

Annual Radiological
Groundwater Protection Program Report

1 January 2008 Through 31 December 2008

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon SM
Nuclear

Peach Bottom Atomic Power Station
Delta, PA 17314

May 2009

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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 2008 through 31 December 2008. This evaluation involved numerous station personnel and contractor support personnel. At Peach Bottom Atomic Power Station, 14 permanent groundwater monitoring wells were installed in 2006. Of these new monitoring locations, none were assigned to the station's Radiological Environmental Monitoring Program (REMP). This is the second 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, both on and off station property in 2008. During that time period, 199 analyses were performed on 135 samples from 37 locations. Phase 1 of the monitoring was part of a comprehensive study initiated by Exelon to determine whether groundwater or surface water at and 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 on an Exelon web site http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm]. 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 it's laboratories achieve a lower limit of detection 10 times lower than that required by federal regulation.

Strontium-89/90 was not detected at a concentration greater than the LLD of 2.0 picoCuries per liter (pCi/L) in any of the groundwater, surface water, or seep water samples tested.

Tritium was not detected in any of the groundwater or surface water samples 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 five of 32 groundwater and seep water monitoring locations. The tritium concentrations ranged from 208 ± 111 pCi/L to 6,950 ± 754 pCi/L. Tritium was detected in some samples collected from bedrock wells, bedrock seeps and overburden wells. Based on the sample data, tritium is not migrating off the station property at detectable concentrations.

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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 2008.

A. Objective of the RGPP

The long-term objectives of the RGPP are as follows:

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment and potential drinking water sources.

2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.

3. Perform routine water sampling and radiological analysis of water from selected locations.

4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.

5. Regularly assess analytical results to identify adverse trends.

6. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

The objectives identified have been implemented at Peach Bottom Atomic Power Station as discussed below:

1. Exelon and its consultant identified locations as described in the Phase 1 study. Phase 1 studies were conducted by Conestoga Rovers and Associates (CRA) and the results and conclusions were made available to state and federal regulators as well as the public on an Exelon web site in station specific reports. Samples for Phase 2 were collected by Normandeau associates. http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm

2. The Peach Bottom Atomic Power Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.

3. Peach Bottom Atomic Power Station will continue to perform routine sampling and radiological analysis of water from selected locations.

4. Peach Bottom Atomic Power Station has implemented new procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.

5. Peach Bottom Atomic Power Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

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 following EPA

methods. 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 (3He). 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 2008.

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 and surface water.

3. Concentrations of tritium in groundwater and surface water.

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. <u>Laboratory Measurements Uncertainty</u>

   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 13 nuclides, Be-7, K-40, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, 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.

The pre-operational REMP (Units 2 and 3) analytical results from samples collected from surface water and drinking water wells indicate that tritium was detected in both surface water and drinking water samples. Tritium concentrations in surface water ranged from non-detect at the lower limit of detection (LLD) of 80 picoCuries per liter (pCi/L) to 1,300 pCi/L over the 3-year monitoring period (1970-1973). Tritium concentrations in drinking

water ranged from non-detect at the LLD of 80 pCi/L to 790 ± 90 pCi/L. Gross beta analytical results in surface water ranged from 1.2 ± 1.1 pCi/L to 9.6 ± 3.1 pCi/L. Gamma spectrometry analytical results in surface water and drinking water were found very sporadically and at concentrations nominally that exceed their respective LLD.

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 and off-site wells throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from 29 locations were analyzed for tritium activity (Table B–I.1, Appendix B). Tritium values ranged from the detection limit to 6,950 pCi/l. Within the station boundary, concentrations of tritium in shallow groundwater reached 6,950 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 2.0 pCi/liter was met. (Table B–I.1, Appendix B).

Gamma Emitters

No power-production gamma emitters were detected in any of the samples. Naturally occurring, berillyum-7 was detected in one of 32 samples at a concentration of 42 pCi/liter. Naturally occurring, potassium-40 was detected in five of 32 samples at a concentration of 160 pCi/liter. No other gamma emitting nuclides were detected. (Table B–I.2, Appendix B).

B. Surface Water Results

Surface Water

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

Tritium

Samples from eight locations were analyzed for tritium activity (Table B–I.1, Appendix B). Tritium values ranged from the detection limit to 278 pCi/l. (Table B–II.1, Appendix B).

Strontium

Strontium-90 was not detected in any of the samples and the required LLD of 2.0 pCi/liter was met. (Table B–II.1, Appendix B).

Gamma Emitters

No power-production gamma emitters were detected in any of the samples. Naturally occurring, potassium-40 was detected in one of three samples at a concentration of 47 pCi/liter. No other gamma emitting nuclides were detected. (Table B–II.2, Appendix B).

C. 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.

D. Summary of Results – Inter-Laboratory Comparison Program

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

E. Leaks, Spills, and Releases

Monitoring well MW-PB-4 had a tritium concentration of 4,620 pCi/L. This represents an increase in tritium concentration (+ 1,070 pCi/L) between this spring 2008 and fall 2008 sampling rounds. Routine sampling of this well has been performed since the spring 2008 sampling round. Since the routine monitoring began, the tritium concentrations have fluctuated between 6,950 pCi/L in August 2008 and 3,430 pCi/L in November 2008. The increase in tritium concentration at MW-PW-4 suggests there may be an active leak of Tritiated water near the Torus Dewatering Tank and the Emergency Cooling Tower. Additional monitoring will help to further evaluate whether there is an active leak or whether the detection is related to historic release.

F. Trends

There were no previously identified plumes.

G. Investigations

Rain water was sampled at sampling locations 1A, 1B and 4M to investigate the cause of the South plume. No significant activity has been observed during the sampling rounds for 2008.

Tritium Mass Flux Study
In August 2007, Conestoga Rovers Associates prepared a Mass Flux calculations to estimate the tritium that is migrating offsite from the groundwater to the Conowingo Reservoir and Rock Run Creek based on the data obtained, CRA calculated that a total of 0.018 Ci/yr (18millicuries/year) of tritium mass is flowing from groundwater off the station. The flow weighted average was also calculated in tritium concentrations in pCi/L and the following data was obtained:

Description Tritium Concentration (pCi/L)
Flow Weighted Average Tritium Concentration – Conowingo Reservoir (minus background and minus pumping) 4
Flow Weighted Average Tritium Concentration – Rock Run Creek (minus background and minus pumping) 0
Flow Weighted Average Tritium Concentration – Intake Canal (minus background and minus pumping) 2
Flow Weighted Average Tritium Concentration – Discharge Canal (minus background and minus pumping) 19
Total 25 pCi/l.

Based on the information above fish and drinking water dose calculations were calculated based on "U.S. Nuclear Regulatory Commission, Regulatory Guide 1.109, Calculation of Annual Doses to Man from Routine Releases of Reactor Effluent for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I", Revision 1, October, 1977:

Pathway	Dose (mRem/yr)	Limiting Receptor
Drinking Water:	2.59E-03	(Child)
Fish:	5.51E-05	(Adult)

Unit 1 Investigation
In 2006, CRA completed investigation activities related to the industry-wide groundwater protection initiative. As part of these activities, CRA installed several monitoring wells (MW-PB-8, 10, and 14) in the vicinity of Unit 1 reactor building. In October 2008, four monitoring wells (MW-PB-15 through MW-PB-18) were installed on the east side of the Unit 1 reactor building. The purpose of these wells was to provide additional horizontal and vertical delineation of groundwater quality with respect to tritium.

Monitoring wells MW-PB-15 through MW-PB-18 were installed in the presumed down gradient position of Unit 1 with respect to groundwater flow. The two overburden wells MW-PB-15 and MW-PB-18 were installed to depths of 19.0 and 20.5 feet bgs, respectively. The two bedrock wells, MW-PB-16 and MW-PB-17, were each installed to a depth of 105 feet bgs.

MW-PB-4 Investigation

In October 2008, four monitoring wells (MW-PB-19 through MW-PB-22) were installed to assess elevated groundwater tritium concentrations observed in overburden well MW-PB-4. One bedrock well (MW-PB-19) was installed to a depth of 50 feet bgs adjacent to the Turbine Building, down gradient of the Torus Dewatering Tank berm. The purpose of this well was to assess potential groundwater tritium concentrations in bedrock from a historic release at the Unit 3 CST. Three overburden wells (MW-PB-20 through MW-PB-22) were installed in the vicinity of MW-PB-4 in an attempt to delineate elevated tritium concentrations noted in MW-PB-4 and MWPB- 12 and locate a potential source. The three overburden wells were installed to depths ranging from 28 to 32 feet below ground surface. MW-PB-20 and MW-PB-22 are located up gradient of MW-PB-4 and MW-PB-21 is located side gradient to MW-PB-4. MW-PB-21 and MW-PB-22 are also located adjacent to subsurface conduits which may serve as a preferential pathway for groundwater flow.

H. Actions Taken

1. Compensatory Actions

There have been no station events requiring compensatory actions

2. Installation of Monitoring Wells

Eight new wells were installed in October 2008 and sampled during the fall 2008 sampling round. These wells were installed to ensure that adequate monitoring is in place for bedrock, potential releases from Unit 1, and to determine a potential source for the tritium concentration increase in MW-PB-4.

3. Actions to Recover/Reverse Plumes

No actions were required to recover or reverse groundwater plumes.

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.

APPENDIX A

SAMPLING LOCATIONS, DISTANCE AND DIRECTION

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TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Peach Bottom Atomic Power Station, 2008

Site	Site Type	Sector	Distance (ft.)
MW-PB-1	Groundwater Well	SW	1166.6
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	1146.1
MW-PB-6	Groundwater Well	NE	1072.4
MW-PB-7	Groundwater Well	SE	813.9
MW-PB-8	Groundwater Well	SE	1167.0
MW-PB-9	Groundwater Well	SE	2816.9
MW-PB-10	Groundwater Well	SSE	1125.1
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	1231.2
MW-PB-15	Groundwater Well	SE	1087.9
MW-PB-16	Groundwater Well	SE	1101.6
MW-PB-17	Groundwater Well	SE	1005.4
MW-PB-18	Groundwater Well	SE	1010.0
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
PB-HAZMAT STORAGE SHED	Domestic Well - Tap	NNW	2527.1
PB-NORTH SUBSTATION	Domestic Well - Tap	WNW	2553.3
PB-SALT WASHDOWN	Domestic Well - Tap	WSW	2618.2
PB-SOUTH SUBSTATION	Domestic Well - Tap	SSE	2594.3
PB-RIVER INTAKE	Surface Water	NE	1256.0
PB-1	Surface Water	NNW	2850.5
PB-2	Surface Water	ENE	1116.4
PB-3	Surface Water	SE	3242.6
PB-5	Surface Water	SE	1050.2
PB-6	Surface Water	SE	1305.9
SP-PB-1	Seep	S	514.2
SP-PB-2	Seep	WNW	311.6
SP-PB-3	Seep	NNW	1281.1
U/2-YARD DRAIN	Seep	SSE	498.7

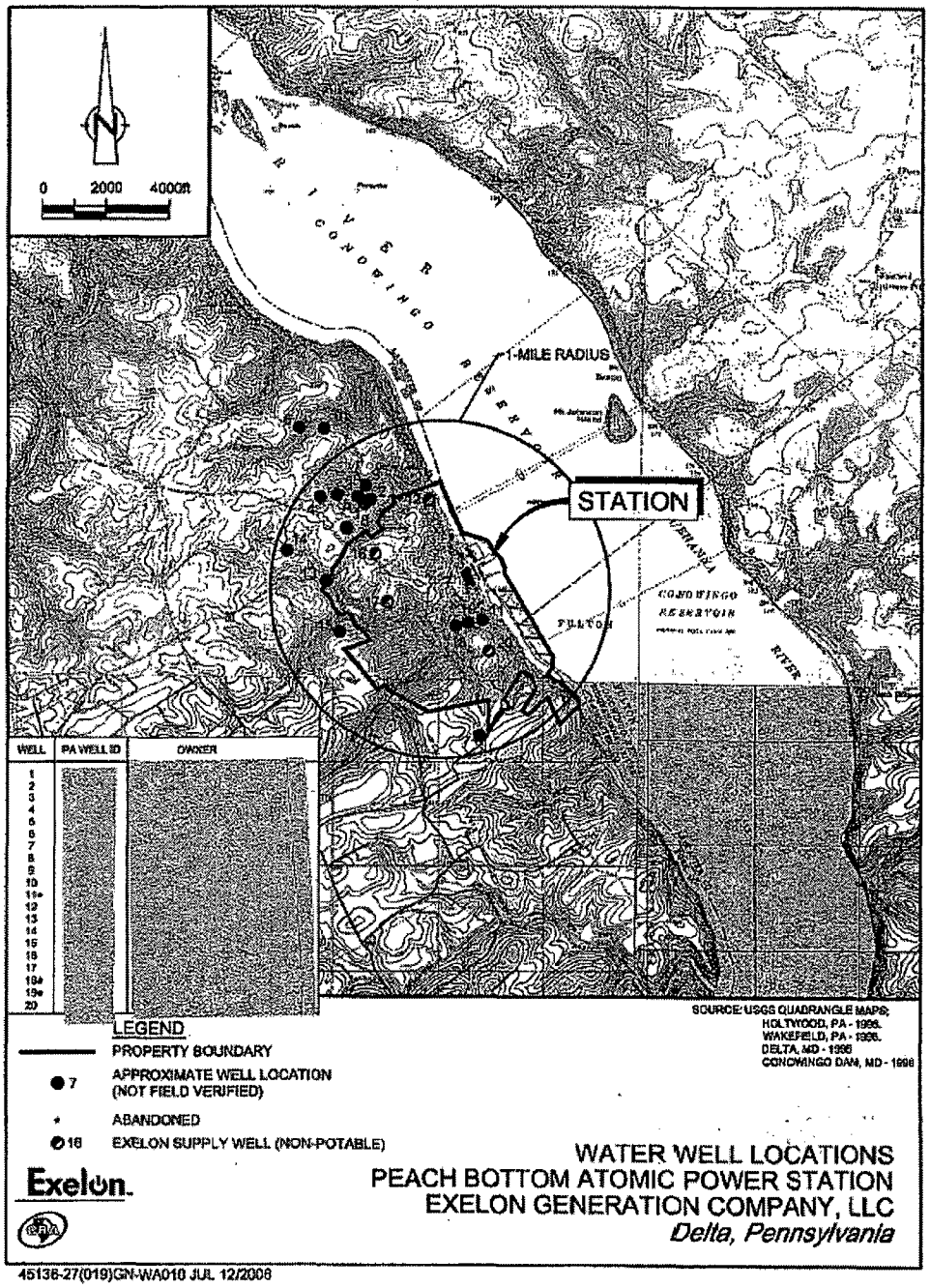

Figure A-1
Well Water Locations, Peach Bottom Atomic Power Station, 2008

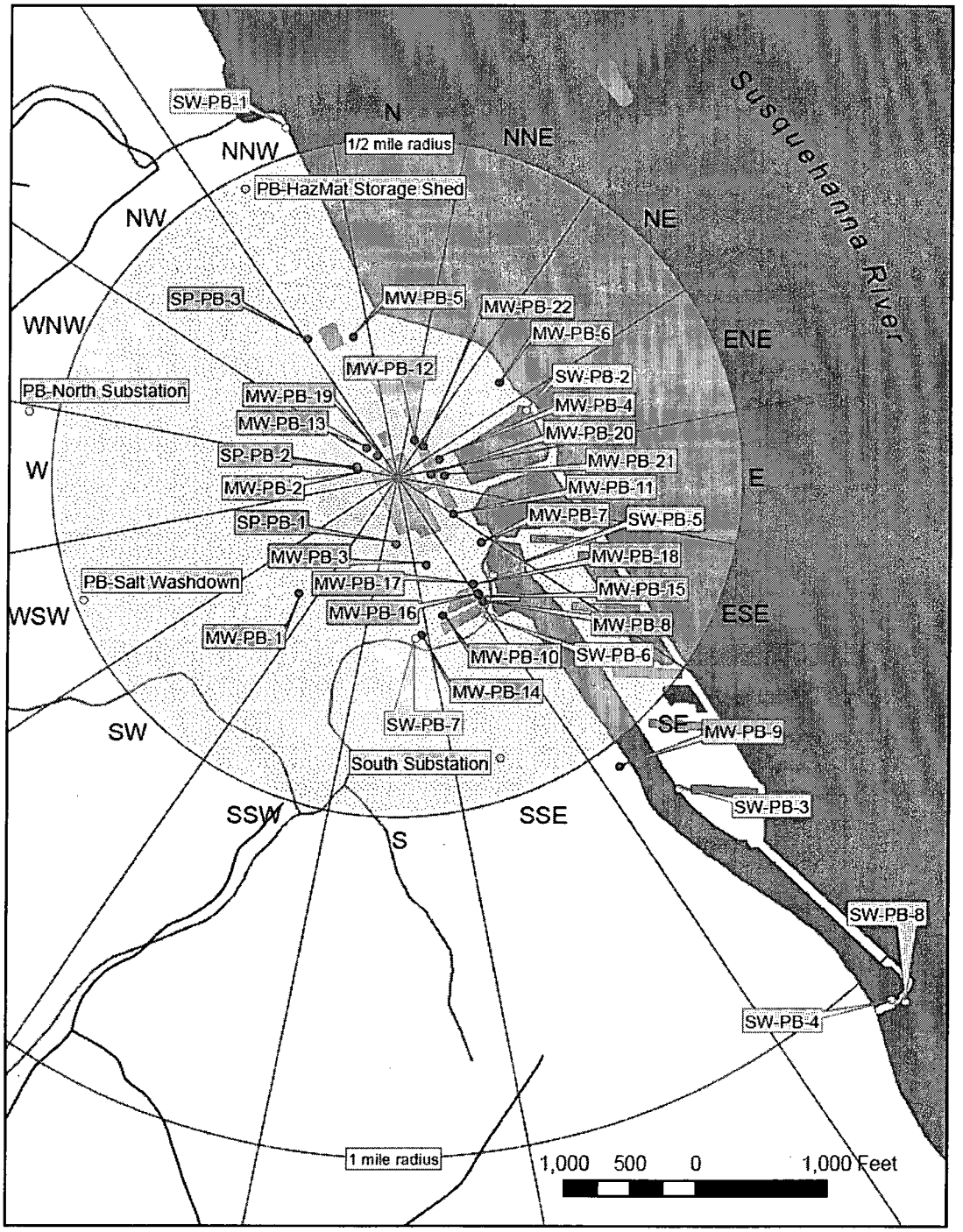

Figure A-2
RGPP Monitoring Locations, Peach Bottom Atomic Power Station, 2008

APPENDIX B

DATA TABLES

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TABLE B-I.1 **CONCENTRATIONS OF TRITIUM AND STRONTIUM IN GROUNDWATER AND SEEP SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
HAZMAT STORAGE SHED	05/22/08	< 168	
HAZMAT STORAGE SHED	10/15/08	< 169	< 1.3
PB-1	05/22/08	< 168	
PB-1	10/15/08	< 166	< 1.3
PB-10	05/21/08	< 171	
PB-10	10/14/08	< 159	< 1.6
PB-11	05/21/08	< 165	
PB-11	10/14/08	< 164	< 1.7
PB-12	05/21/08	323 ± 119	
PB-12	09/15/08	< 172	
PB-12	09/22/08	432 ± 131	
PB-12	10/07/08	310 ± 111	
PB-12	10/07/08	272 ± 112	
PB-12	10/14/08	294 ± 109	
PB-12	10/14/08	369 ± 110	
PB-12	10/14/08	345 ± 121	< 1.1
PB-12	10/14/08	-	< 1.3
PB-12	10/17/08	394 ± 123	
PB-12	10/20/08	159 ± 88	
PB-12	10/20/08	< 178	
PB-12	11/03/08	< 170	
PB-12	11/10/08	323 ± 115	
PB-12	11/17/08	529 ± 123	
PB-12	11/24/08	292 ± 104	
PB-12	12/01/08	411 ± 114	
PB-12	12/08/08	307 ± 116	
PB-12	12/15/08	623 ± 141	
PB-12	12/22/08	436 ± 114	
PB-12	12/29/08	261 ± 115	
PB-12 DUP	12/08/08	251 ± 121	
PB-13	05/21/08	< 166	
PB-13	10/14/08	< 164	< 1.6
PB-14	05/21/08	< 168	
PB-14	10/14/08	< 163	< 1.5
PB-15	10/27/08	< 171	< 1.1
PB-16	10/27/08	< 174	< 1.1
PB-17	10/27/08	< 175	< 0.9
PB-18	10/27/08	< 174	< 1.1
PB-19	11/03/08	< 179	
PB-19	11/03/08	-	< 0.7
PB-2	05/21/08	< 172	
PB-2	10/14/08	< 165	< 1.7
PB-2	10/14/08	< 169	< 1.0
PB-20	11/03/08	< 185	
PB-20	11/03/08	-	< 1.1
PB-21	11/03/08	< 187	
PB-21	11/03/08	-	< 1.7
PB-22	11/03/08	754 ± 152	
PB-22	11/03/08	801 ± 140	
PB-22	11/03/08	-	< 1.2

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM AND STRONTIUM IN GROUNDWATER AND SEEP SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
PB-22	11/24/08	991 ± 156	
PB-22	12/01/08	926 ± 146	
PB-22	12/08/08	744 ± 145	
PB-22	12/15/08	705 ± 138	
PB-22	12/22/08	1000 ± 146	
PB-22	12/29/08	836 ± 152	
PB-22 DUP	12/08/08	752 ± 148	
PB-3	05/21/08	< 167	
PB-3	10/14/08	172 ± 112	< 1.2
PB-4	03/20/08	1910 ± 257	
PB-4	03/20/08	2270 ± 291	
PB-4	04/16/08	1280 ± 202	
PB-4	04/16/08	1180 ± 201	
PB-4	06/06/08	3180 ± 388	
PB-4	06/06/08	3550 ± 427	
PB-4	06/06/08	281 ± 126	
PB-4	06/06/08	233 ± 121	
PB-4	07/01/08	4050 ± 459	
PB-4	07/01/08	4370 ± 510	
PB-4	07/28/08	4010 ± 460	
PB-4	07/28/08	4060 ± 459	
PB-4	08/25/08	6920 ± 747	
PB-4	08/25/08	6420 ± 690	
PB-4	09/08/08	6900 ± 739	
PB-4	09/15/08	4760 ± 532	
PB-4	09/15/08	4670 ± 519	
PB-4	09/22/08	5850 ± 633	
PB-4	09/29/08	6020 ± 649	
PB-4	09/29/08	167 ± 101	
PB-4	10/07/08	6950 ± 754	
PB-4	10/07/08	5760 ± 622	
PB-4	10/14/08	4550 ± 504	
PB-4	10/14/08	5110 ± 552	
PB-4	10/14/08	-	< 0.8
PB-4	10/14/08	4620 ± 513	< 1.9
PB-4	10/17/08	4960 ± 562	
PB-4	10/20/08	4290 ± 475	
PB-4	10/20/08	4500 ± 511	
PB-4	11/03/08	3430 ± 401	
PB-4	11/10/08	3670 ± 414	
PB-4	11/17/08	4260 ± 471	
PB-4	11/24/08	3320 ± 379	
PB-4	12/01/08	2440 ± 289	
PB-4	12/08/08	2880 ± 342	
PB-4	12/15/08	1190 ± 179	
PB-4	12/22/08	3150 ± 356	
PB-4	12/29/08	2560 ± 313	
PB-4 (BOTTOM)	12/22/08	3040 ± 345	
PB-4 (BOTTOM)	12/29/08	3120 ± 367	
PB-4 (MIDDLE)	12/29/08	1250 ± 189	

TABLE B-I.1 **CONCENTRATIONS OF TRITIUM AND STRONTIUM IN GROUNDWATER AND SEEP SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
PB-4 (SURFACE)	12/29/08	1190 ± 184	
PB-4 DUP	12/08/08	3410 ± 395	
PB-5	05/21/08	< 166	
PB-5	10/13/08	< 163	< 1.8
PB-6	05/21/08	< 166	
PB-6	10/14/08	< 163	< 1.6
PB-7	05/21/08	179 ± 111	
PB-7	10/14/08	184 ± 112	< 1.3
PB-8	05/21/08	< 171	
PB-8	10/14/08	< 164	< 1.6
PB-9	05/21/08	< 167	
PB-9	10/13/08	< 160	< 1.9
NORTH SUBSTATION	05/22/08	< 168	
NORTH SUBSTATION	10/15/08	< 166	< 1.5
PB-SALT WASHDOWN	05/22/08	< 168	
PB-SALT WASHDOWN	10/15/08	< 170	< 1.6
PB-SOUTH SUBSTATION	05/22/08	< 162	
PB-SOUTH SUBSTATION	10/15/08	< 146	< 1.2
SP-PB-1	05/21/08	288 ± 114	
SP-PB-1	10/14/08	208 ± 111	< 1.6
SP-PB-1	10/14/08	< 149	
SP-PB-1	10/16/08	224 ± 109	
SP-PB-2	05/21/08	< 164	
SP-PB-2	10/14/08	< 167	< 0.8
SP-PB-2	10/16/08	< 166	
SP-PB-3	05/22/08	< 159	
SP-PB-3	10/15/08	< 169	< 1.1
U/2-YARD DRAIN	10/29/08	278 ± 110	

TABLE B-I.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER AND SEEP WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
HAZMAT STORAGE SHED	10/15/08	< 29	< 48	< 2	< 3	< 7	< 2	< 5	< 3	< 5	< 2	< 2	< 49	< 13
PB-1	10/15/08	< 25	< 59	< 2	< 3	< 5	< 2	< 4	< 3	< 4	< 2	< 2	< 34	< 15
PB-10	10/14/08	< 23	< 17	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 2	< 2	< 42	< 14
PB-11	10/14/08	< 16	< 11	< 1	< 2	< 3	< 1	< 2	< 2	< 3	< 1	< 1	< 29	< 7
PB-12	10/14/08	< 22	< 38	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 2	< 2	< 43	< 13
PB-12	10/14/08	< 13	< 7	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 1	< 1	< 24	< 6
PB-13	10/14/08	< 16	< 11	< 1	< 1	< 3	< 1	< 2	< 2	< 3	< 1	< 1	< 29	< 8
PB-14	10/14/08	< 25	< 15	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 2	< 2	< 49	< 13
PB-15	10/27/08	< 11	63 ± 20	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 1	< 1	< 13	< 4
PB-16	10/27/08	< 11	< 24	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 1	< 1	< 13	< 3
PB-17	10/27/08	< 12	< 7	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 1	< 1	< 14	< 4
PB-18	10/27/08	< 21	< 19	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 2	< 2	< 27	< 10
PB-19	11/03/08	< 11	< 22	< 1	< 1	< 3	< 1	< 1	< 1	< 2	< 1	< 1	< 34	< 10
PB-2	10/14/08	< 22	48 ± 24	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 2	< 2	< 41	< 14
PB-2	10/14/08	< 21	< 18	< 2	< 2	< 5	< 3	< 4	< 2	< 4	< 2	< 2	< 31	< 10
PB-20	11/03/08	< 15	< 25	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 1	< 1	< 42	< 10
PB-21	11/03/08	< 13	< 7	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 1	< 1	< 40	< 10
PB-22	11/03/08	< 13	< 8	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 1	< 1	< 43	< 12
PB-3	10/14/08	< 27	< 69	< 2	< 2	< 7	< 1	< 5	< 3	< 5	< 2	< 3	< 35	< 12
PB-4	10/14/08	< 21	< 43	< 2	< 2	< 5	< 2	< 4	< 2	< 3	< 2	< 2	< 27	< 9
PB-4	10/14/08	< 21	97 ± 22	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 2	< 2	< 44	< 15
PB-5	10/13/08	< 24	< 17	< 2	< 3	< 6	< 2	< 4	< 3	< 5	< 2	< 2	< 33	< 11
PB-6	10/14/08	< 28	< 23	< 2	< 3	< 6	< 2	< 4	< 3	< 4	< 2	< 2	< 35	< 12
PB-7	10/14/08	< 22	< 17	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 2	< 2	< 39	< 9
PB-8	10/14/08	< 28	80 ± 53	< 3	< 4	< 8	< 3	< 7	< 3	< 6	< 2	< 2	< 48	< 6
PB-9	10/13/08	< 25	< 15	< 2	< 2	< 5	< 2	< 4	< 3	< 5	< 2	< 2	< 43	< 13
NORTH SUBSTATION	10/15/08	< 22	< 41	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 2	< 2	< 44	< 14
SALT WASHDOWN	10/15/08	< 29	< 20	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 2	< 2	< 46	< 12
SOUTH SUBSTATION	10/15/08	< 20	< 15	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 1	< 2	< 37	< 13
SP-PB-1	10/14/08	< 23	< 16	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 2	< 2	< 43	< 13
SP-PB-2	10/14/08	42 ± 20	160 ± 27	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 2	< 2	< 46	< 14
SP-PB-3	10/15/08	< 26	< 17	< 2	< 3	< 7	< 2	< 4	< 3	< 5	< 2	< 2	< 48	< 14

TABLE B-II.1 CONCENTRATIONS OF TRITIUM AND STRONTIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	SR-90
PB-RIVER INTAKE	10/14/08	< 161	
PB-1	05/20/08	< 167	
PB-1	10/13/08	< 168	< 1.0
PB-2	05/20/08	< 167	
PB-3	05/20/08	< 170	
PB-5	10/13/08	< 168	< 1.0
PB-6	10/13/08	< 168	< 1.1

TABLE B-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF PEACH BOTTOM ATOMIC POWER STATION, 2008**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
PB-1	10/13/08	< 26	47 ± 29	< 2	< 2	< 6	< 2	< 4	< 3	< 5	< 2	< 2	< 49	< 13
PB-5	10/13/08	< 23	< 14	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 2	< 2	< 45	< 13
PB-6	10/13/08	< 24	< 16	< 2	< 2	< 6	< 2	< 4	< 2	< 4	< 2	< 2	< 47	< 15