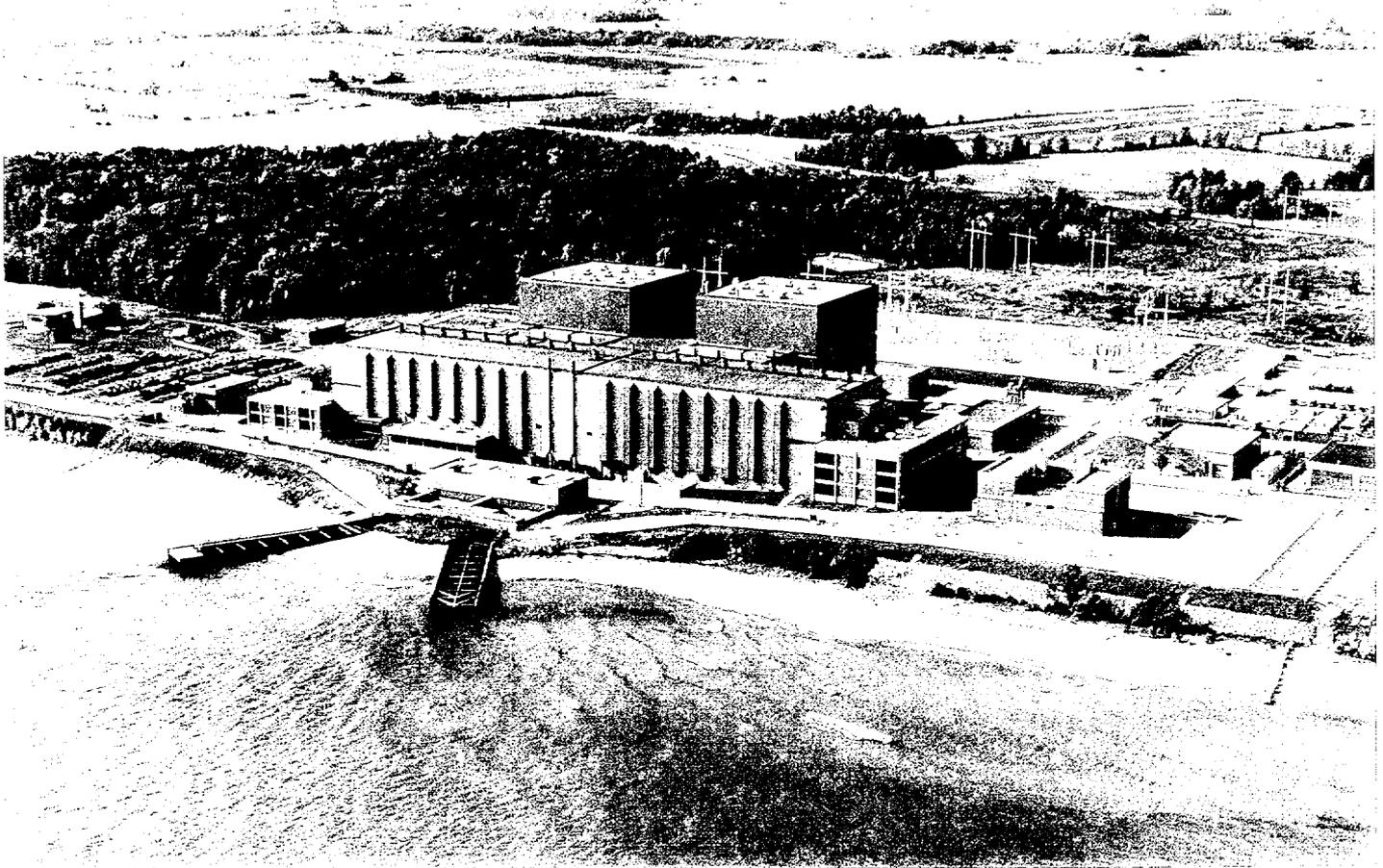


ANNUAL MONITORING REPORT

2000



NUCLEAR MANAGEMENT COMPANY, LLC POINT BEACH NUCLEAR PLANT

January 1, 2000, through December 31, 2000

April 2001

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EXECUTIVE SUMMARY

This Annual Monitoring Report for the period of January 1, 2000, through December 31, 2000, is submitted in accordance with Point Beach Nuclear Plant (PBNP) Units 1 and 2 Technical Specification 15.7.8.4 and filed under Dockets 50-266 and 50-301 for Facility Operating Licenses DPR-24 and DPR-27, respectively. The report presents the results of effluent and environmental monitoring programs, solid waste shipments, new fuel shipments, non-radioactive chemical releases, circulating water system operation, and leak testing of radioactive sources.

During 2000, the following amounts of radioactive material were released via the liquid and atmospheric pathways:

	<u>Liquid</u>	<u>Atmospheric</u>
Tritium (Ci)	804	88.1
Particulate (Ci)	0.34	0.0001
Noble Gas (Ci)	-	2.82

- Noble gases in the liquids are added to the atmospheric.

For the purpose of regulatory compliance with the effluent dose objectives of Appendix I to 10 CFR 50, doses from effluents are calculated for the hypothetical maximally exposed individual (MEI) for each age group and compared to the Appendix I limits. Doses less than or equal to the Appendix I values are considered to be evidence that PBNP releases are as low as reasonably achievable (ALARA). The maximum annual calculated doses are shown below and compared to the corresponding dose objectives of 10 CFR 50, Appendix I.

LIQUID RELEASES

<u>Dose Category</u>	<u>Calculated Dose</u>	<u>Appendix I Dose</u>
Whole body dose	0.008 millirem	6 millirem
Organ dose	0.009 millirem	20 millirem

ATMOSPHERIC RELEASES

<u>Dose Category</u>	<u>Calculated Dose</u>	<u>Appendix I Dose</u>
Organ dose	0.04 millirem	30 millirem
Noble gas dose to the skin	0.001 millirem	30 millirem
Noble gas dose to the whole body	0.0007 millirem	10 millirem
Noble gas beta air dose	0.0003 millirad	40 millirad
Noble gas gamma ray air dose	0.0007 millirad	20 millirad

The results show that during 2000, the doses from PBNP effluents were a small percentage (~ 0.15% at the most) of the Appendix I dose objectives and therefore continue to be ALARA.

In addition to collecting and analyzing environmental samples, a survey of land use with respect to the location of dairy cattle was made pursuant to Section 2.5 of the Environmental Manual. As in previous years, no dairy cattle were found to be grazing at the site boundary. Therefore, the assumption that cattle graze at the site boundary used in the evaluation of doses from PBNP effluents remains conservative.

The 2000 Radiological Environmental Monitoring Program (REMP) collected 470 samples for radiological analyses and 142 sets of thermoluminescent dosimeters (TLDs) to measure ambient radiation in the vicinity of PBNP and the independent spent fuel storage installation (ISFSI). Air monitoring from six different sites showed only background radioactivity from naturally occurring radionuclides. Terrestrial monitoring consisting of soil, vegetation, and milk found no influence from PBNP. Similarly, samples from the aquatic environment, lake and well water, fish, and algae, revealed no buildup of PBNP radionuclides released in liquid effluents. The data analysis shows no plant effect on its environs.

As of December 2000, the ISFSI contained a total of 12 ventilated storage casks (VSC-24). During 2000, 4 casks were transferred to the ISFSI. The subset of the PBNP REMP samples used to evaluate the environmental impact of the PBNP ISFSI showed no environmental impact from its operation.

The environmental monitoring conducted during 2000 confirms that the effluent control program at PBNP ensures that its operations minimally impacts the environs.

Part A

EFFLUENT MONITORING

1.0 INTRODUCTION

The PBNP effluent monitoring program is designed to comply with federal regulations for ensuring the safe operation of PBNP with respect to releases of radioactive material to the environment and its subsequent impact on the public. 10 CFR 50.34a states that operations should be conducted to keep the levels of radioactive material in effluents to unrestricted areas as low as reasonably achievable (ALARA). In 10 CFR 50, Appendix I, the Nuclear Regulatory Commission (NRC) provides the numerical values for what it considers to be the appropriate ALARA dose objectives to which the licensee's calculated effluent doses may be compared. These doses are a small fraction of the dose limits specified by 10 CFR 20.1301 and lower than the Environmental Protection Agency (EPA) limits specified in 40 CFR 190.

10 CFR 20.1302 directs PBNP to make the appropriate surveys of radioactive materials in effluents released to unrestricted and controlled areas. Liquid wastes are monitored by inline radiation monitors as well as by isotopic analyses of samples of the waste stream prior to discharge from PBNP. Airborne releases of radioactive wastes are monitored in a similar manner. Furthermore, for both liquid and atmospheric releases, the appropriate portions of the radwaste treatment systems are used as required to keep releases ALARA. Prior to release, results of isotopic analyses are used to adjust the release rate of discrete volumes of liquid and atmospheric wastes (from liquid waste holdup tanks and from gas decay tanks) such that the concentrations of radioactive material in the air and water beyond PBNP are below the PBNP Technical Specification concentration limits for liquid effluents and release rate limits for gaseous effluents.

Solid wastes are shipped offsite for disposal at NRC licensed facilities. The amount of radioactivity in the solid waste is determined prior to shipment in order to determine the proper shipping configuration as regulated by the Department of Transportation and the NRC.

Also operated at PBNP under the General License granted pursuant to 10 CFR 72.210 is an Independent Spent Fuel Storage Installation (ISFSI). The release of radioactive materials from the operation of the ISFSI must also comply with the limits of part 20 and the part 50 Appendix I dose objectives. Per 10 CFR 72.44(d)(3), the results of radiological effluent monitoring are to be reported annually.* The dose criteria for effluents and direct radiation specified by 10 CFR 72.104 states that during normal

* Holders of a Part 72 license are allowed to submit the report required by 72.44(d)(3) concurrent with the effluent report required by 10 CFR 50.36a (a)(2). (Reference: 64 FR 33178)

operations and anticipated occurrences, the annual dose equivalent to any real individual beyond the controlled area must not exceed 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ. The dose from naturally occurring radon and its decay products are exempt. Because the loading of the storage casks occurs within the primary auxiliary building of PBNP, the doses from effluents due to the loading process will be assessed and quantified as part of the PBNP Radiological Effluent Control Program (RECM). Leakage of radionuclides from the fuel storage containers at the ISFSI is not expected due to the design of the containers.

2.0 RADIOACTIVE LIQUID RELEASES

The release path to the environment contributing to radioactive liquid releases is circulating water discharge. A liquid waste treatment system in conjunction with administrative controls are used to minimize the impact on the environment and maintain doses to the public ALARA from the liquid releases.

2.1 Doses From Liquid Effluent

Doses from liquid effluent are calculated using the methodology of the Offsite Dose Calculation Manual (ODCM). These calculated doses use factors such as the amount of radioactive material released, the total volume of liquid, the total volume of dilution water, and usage factors (water and fish consumption, shoreline and swimming factors). These calculations produce a conservative estimation of the dose. For compliance with 10 CFR 50, Appendix I, the annual dose is calculated to the hypothetical maximally exposed individual (MEI). The MEI is assumed to reside at the site boundary in the highest χ/Q sector and is maximized with respect to occupancy, food consumption, and other uses of this area. As such, the MEI represents an individual with reasonable deviations from the average for the general population in the vicinity of PBNP. A comparison of the calculated doses to the 10 CFR 50, Appendix I dose objectives is presented in Table 2-1. The conservatively calculated dose to the MEI is a very small fraction of the Appendix I dose objective.

Table 2-1

**Comparison of 2000 Liquid Effluent Calculated Doses to
10 CFR 50 Appendix I Dose Objectives**

Annual Limit [mrem]	Highest Total Calculated Dose [mrem]	% of Dose Objective
6 (whole body)	0.008	0.15 %
20 (any organ)	0.009	0.05%

2.2 2000 Circulating Water Radionuclide Release Summary

Radioactive liquid releases via the circulating water discharge are summarized by individual source and total curies released on a monthly basis and presented in Table 2-2.

2.3 2000 Isotopic Composition of Circulating Water Discharges

The isotopic composition of circulating water discharges during the current reporting period is presented in Table 2-3.

2.4 Subsoil Drain System Releases Tritium Summary

The quarterly and annual results of monitoring the subsoil or "beach" drains is presented in Table 2-4. No tritium was observed in any of the drains during 2000.

Table 2-2

Summary of Circulating Water Discharge
January 1, 2000, through December 31, 2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals
Total Activity Released (Ci)													
Gamma Isotopic	4.16E-03	2.98E-03	3.28E-03	2.22E-04	2.89E-04	8.48E-03	2.24E-03	1.20E-03	2.53E-03	3.33E-02	1.06E-02	2.64E-02	9.56E-02
Gross Alpha	3.83E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.30E-07	0.00E+00	0.00E+00	4.12E-07	0.00E+00	0.00E+00	0.00E+00	5.07E-06
Tritium	5.36E+01	3.48E+01	1.09E+02	8.32E+01	1.03E+02	2.92E+01	7.80E+01	4.13E+01	1.04E+02	5.83E+01	7.46E+01	3.54E+01	8.04E+02
Sr-89 / Sr-90	2.87E-05	2.98E-05	0.00E+00	4.56E-05	5.26E-05	6.23E-05	2.59E-05	1.46E-05	1.59E-05	2.20E-06	2.65E-06	1.61E-05	2.96E-04
Total volume Released (gal)													
Processed Waste	4.77E+04	2.93E+04	1.23E+05	4.41E+04	5.66E+04	3.48E+04	5.22E+04	4.51E+04	1.09E+05	1.29E+05	1.19E+05	1.48E+05	9.37E+05
Retention Pond	8.42E+06	7.09E+06	8.26E+06	8.03E+06	9.15E+06	8.42E+06	3.50E+06	2.90E+06	2.53E+06	2.09E+06	1.72E+06	2.80E+06	6.49E+07
U1 SG Blowdown	3.37E+06	2.60E+06	2.98E+06	3.02E+06	3.52E+06	2.92E+06	2.55E+06	2.94E+06	2.55E+06	6.54E+05	3.51E+06	2.60E+06	3.32E+07
U2 SG Blowdown	2.66E+06	2.51E+06	2.67E+06	2.41E+06	2.72E+06	2.49E+06	2.56E+06	2.68E+06	2.43E+06	1.32E+06	0.00E+00	2.83E+06	2.73E+07
Total (gal)	1.45E+07	1.22E+07	1.40E+07	1.35E+07	1.54E+07	1.39E+07	8.66E+06	8.57E+06	7.62E+06	4.19E+06	5.34E+06	8.37E+06	1.26E+08
Total (cc)	5.49E+10	4.63E+10	5.31E+10	5.11E+10	5.85E+10	5.25E+10	3.28E+10	3.24E+10	2.88E+10	1.58E+10	2.02E+10	3.17E+10	4.78E+11
Dilution Water (cc)*													
	6.53E+13	5.76E+13	7.90E+13	1.11E+14	1.05E+14	1.11E+14	1.15E+14	1.15E+14	1.11E+14	7.94E+13	4.82E+13	6.54E+13	1.06E+15
Average Diluted Discharge Concentration (uCi/cc)													
Gamma Isotopic	6.37E-11	5.17E-11	4.15E-11	2.00E-12	2.75E-12	7.64E-11	1.94E-11	1.05E-11	2.28E-11	4.19E-10	2.20E-10	4.03E-10	
Gross Alpha	5.87E-14	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.48E-15	0.00E+00	0.00E+00	3.71E-15	0.00E+00	0.00E+00	0.00E+00	
Tritium	8.21E-07	6.04E-07	1.38E-06	7.50E-07	9.81E-07	2.63E-07	6.78E-07	3.59E-07	9.37E-07	7.35E-07	1.55E-06	5.41E-07	
Sr-89 / Sr-90	4.40E-13	5.17E-13	0.00E+00	4.11E-13	5.01E-13	5.61E-13	2.25E-13	1.27E-13	1.43E-13	2.77E-14	5.50E-14	2.46E-13	
Maximum Discharge Concentration (uCi/cc) (based on one unit of dilution)													
Tritium	2.83E-05	1.94E-05	2.88E-05	3.54E-05	5.02E-05	2.20E-05	2.88E-05	2.82E-05	3.71E-05	2.06E-05	3.38E-05	2.71E-05	
Gross Gamma	2.76E-09	1.96E-09	2.43E-09	2.10E-10	1.62E-10	3.61E-09	2.15E-09	4.25E-10	4.16E-10	2.93E-08	8.05E-09	2.80E-08	

*Dual Unit Circ Water Flow

Table 2-3

Isotopic Composition of Circulating Water Discharges (Curies)
January 1, 2000, through December 31, 2000

Nuclide	Jan	Feb	Mar	Apr	May	Jun	Semi-Annual	Jul	Aug	Sep	Oct	Nov	Dec	Total
							Total							
H-3	5.36E+01	3.48E+01	1.09E+02	8.32E+01	1.03E+02	2.92E+01	4.13E+02	7.80E+01	4.13E+01	1.04E+02	5.83E+01	7.46E+01	3.54E+01	8.04E+02
F-18			1.36E-04				1.36E-04				0.00E+00	0.00E+00	9.04E-05	2.26E-04
Cr-51	1.92E-04		4.08E-05			1.26E-04	3.59E-04				4.05E-03	8.52E-04	2.98E-03	8.24E-03
Mn-54	4.71E-06		6.14E-06	7.68E-06		1.53E-04	1.72E-04	3.91E-05	7.48E-06	1.07E-05	5.13E-05	7.96E-05	9.31E-05	4.53E-04
Fe-55	1.66E-04	0.00E+00	6.72E-04		1.67E-04	3.55E-03	4.56E-03	1.32E-03	8.40E-04	1.93E-03	1.42E-03	6.21E-04	4.98E-04	1.12E-02
Fe-59							0.00E+00				8.57E-05	0.00E+00	3.73E-05	1.23E-04
Co-57						1.61E-05	1.61E-05	2.76E-06			3.87E-05	1.30E-05	5.84E-05	1.29E-04
Co-58	3.86E-04	1.21E-04	5.72E-04	6.97E-05	2.69E-05	1.20E-03	2.38E-03	1.48E-04	4.97E-05	1.44E-04	2.60E-02	6.84E-03	2.00E-02	5.56E-02
Co-60	2.68E-04	3.14E-04	2.02E-04	1.19E-04	3.60E-05	2.66E-03	3.60E-03	6.01E-04	2.63E-04	2.57E-04	4.58E-04	1.47E-03	6.84E-04	7.33E-03
Zn-65							0.00E+00				8.01E-06	1.47E-05	1.21E-04	1.44E-04
Sr-89							0.00E+00						3.41E-06	3.41E-06
Sr-90	2.87E-05	2.98E-05		4.56E-05	5.26E-05	6.23E-05	2.19E-04	2.59E-05	1.46E-05	1.59E-05	2.20E-06	2.65E-06	1.27E-05	2.93E-04
Nb-95						1.07E-04	1.07E-04				2.50E-04	1.54E-04	5.61E-04	1.07E-03
Nb-97	4.47E-06		3.83E-06				8.30E-06			8.92E-06	1.23E-06	0.00E+00	1.08E-05	2.93E-05
Zr-95						5.93E-05	5.93E-05				1.11E-04	8.35E-05	2.56E-04	5.11E-04
Ag-110m	4.34E-04	3.01E-04	1.58E-04	1.66E-05	1.64E-05	4.68E-04	1.39E-03	1.06E-04	4.22E-05	3.90E-05	6.98E-04	2.94E-04	3.43E-04	2.92E-03
Sn-113	9.93E-06	1.62E-06	7.24E-06			4.35E-05	6.23E-05				2.25E-05	1.63E-05	1.93E-05	1.20E-04
Sn-117m	6.76E-05	1.71E-05	3.57E-05	1.01E-06	3.44E-05		1.56E-04	6.03E-06			3.03E-05	4.09E-05	1.14E-04	3.47E-04
Sb-122							0.00E+00				5.90E-06	0.00E+00	0.00E+00	5.90E-06
Sb-124							0.00E+00				3.75E-06	2.42E-05	1.75E-04	2.03E-04
Sb-125	2.32E-03	1.91E-03	1.22E-03	7.91E-06	6.29E-06	6.80E-05	5.53E-03	9.22E-06			1.50E-05	3.75E-05	1.10E-04	5.70E-03
Te-132							0.00E+00				9.39E-06	1.80E-05		2.73E-05
I-131							0.00E+00						1.65E-04	1.65E-04
I-133							0.00E+00						2.68E-06	2.68E-06
Cs-136							0.00E+00				1.73E-05	0.00E+00		1.73E-05
Cs-137	3.06E-04	3.16E-04	2.22E-04		2.12E-06	2.75E-05	8.74E-04	3.48E-06	1.68E-06			2.99E-05	6.21E-06	9.15E-04
Ba-139							0.00E+00		5.37E-07			0.00E+00		5.37E-07
La-140							0.00E+00			1.45E-04		0.00E+00		1.45E-04
alpha	3.83E-06					8.30E-07	4.66E-06			4.12E-07				5.07E-06

Note: The Dissolved noble gases detected in liquid effluents (e.g., Xe-133 and Xe-135) are included in airborne release totals.

Table 2-4

Subsoil System Drains - Tritium Summary
 January 1, 2000, through December 31, 2000

	S-1	S-3	S-7	S-8	S-9	S-10
First Quarter						
H-3 (Ci)	0.00E+00	0.00E+00	0.00E+00	(-)	0.00E+00	0.00E+00
Flow (gal)	7.66E+05	7.22E+04	5.70E+05	0.00E+00	4.84E+05	6.22E+05
Second Quarter						
H-3 (Ci)	0.00E+00	0.00E+00	0.00E+00	(-)	(-)	0.00E+00
Flow (gal)	4.24E+05	2.61E+05	3.13E+05	0.00E+00	0.00E+00	9.32E+05
Third Quarter						
H-3 (Ci)	0.00E+00	0.00E+00	0.00E+00	(-)	(-)	0.00E+00
Flow (gal)	3.97E+05	5.79E+05	6.57E+05	0.00E+00	0.00E+00	1.11E+06
Fourth Quarter						
H-3 (Ci)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Flow (gal)	8.35E+05	1.98E+05	8.93E+04	4.46E+05	8.37E+05	6.41E+05
Annual Totals						
H-3 (Ci)	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Flow (gal)	2.42E+06	1.11E+06	1.63E+06	4.46E+05	1.32E+06	3.31E+06

(-) Indicates no sample to analyze because of zero flow.

2.5 Land Application of Sewage Sludge

The Wisconsin Department of Natural Resources has approved the disposal of PBNP sewage by land application on various Wisconsin Electric Power Company properties surrounding PBNP. This sewage sludge, which may contain trace amounts of radionuclides, are applied in accordance with methodologies approved by the NRC on January 13, 1988, pursuant to 10 CFR 20.302(a). The approved methodology required analyses prior to every disposal. Based upon an investigation of the source of the radionuclides, a combination of engineering modifications and administrative controls have eliminated radiological inputs to the sewage system for all but naturally occurring radionuclides. This was verified by sludge analyses, using the environmental lower level of detection (LLD) criteria, which found no byproduct radionuclides in the sludge after the controls and modifications were completed. Sludge is routinely monitored and no radionuclides attributable to PBNP have been found. There was no disposal of sewage by land application during 2000. All disposals were done at Green Bay Metropolitan Sewage Treatment Plant.

3.0 RADIOACTIVE AIRBORNE RELEASES

The release paths to the environment contributing to radioactive airborne release totals during this reporting period were the auxiliary building vent stack, drumming area vent stack, Unit 1 containment purge stack, and Unit 2 containment purge stack. A gaseous radioactive effluent treatment system in conjunction with administrative controls are used to minimize the impact on the environment from the airborne releases and maintain doses to the public ALARA.

3.1 Doses From Airborne Effluent

Doses from airborne effluent are calculated for the maximum exposed individual (MEI) following the methodology contained in the PBNP ODCM. These calculated doses use factors such as the amount of radioactive material released, the concentration at and beyond the site boundary, the average site weather conditions, the locations of the exposure pathways (cow milk, vegetable gardens and residences), and usage factors (inhalation, food consumption). In addition to the MEI doses, the energy deposited by beta particles and gamma rays in air is calculated and compared to the corresponding Appendix I dose objectives. A comparison of the annual Appendix I dose limits for atmospheric effluents to the highest organ dose and the noble gas doses calculated using ODCM methodology is listed in Table 3-1. The doses demonstrate that releases from PBNP to the atmosphere continue to be ALARA.

3.2 Radioactive Airborne Release Summary

Radioactivity released in airborne effluents for 2000 are summarized in Table 3-2.

3.3 Isotopic Airborne Releases

The monthly isotopic airborne releases for 2000 from which the airborne doses were calculated are presented in Table 3-3.

3.4 Corrections to the 1999 Airborne Effluents

During a review of the 1999 airborne effluent data a calculation mistake was identified for the Unit 1 containment purge data for October and November. This mistake resulted in a 12% over-estimation of the tritium release. The tritium release for October 1999 was 7.51 Ci (as opposed to 10.6 Ci reported for 1999) and for November 1999, the tritium release was 14.5 Ci (as opposed to 29.8 Ci reported for 1999). The total airborne tritium release for 1999 was 91.1 Ci (110 Ci had been previously reported). Tritium is generally the driver for the gaseous organ dose. Due to the decrease in the estimated release, a decrease in the calculated organ dose from 4.33E-02 mrem to 3.59E-2 mrem is obtained.

Table 3-1

Comparison of 2000 Airborne Effluent Calculated Doses to 10 CFR 50 Appendix I Dose Objectives

Category	Annual Appendix I Dose Objective	January-December Calculated Dose	Percent of Appendix I Dose Objective
Particulate	30 mrem/organ	3.52E-02	0.12 %
Noble Gas	40 mrad (beta air)	3.39E-04	0.0008 %
Noble Gas	20 mrad (gamma air)	7.36E-04	0.004 %
Noble Gas	30 mrem (skin)	1.07E-03	0.004 %
Noble Gas	10 mrem (whole body)	6.99E-04	0.007 %

Table 3-2

Radioactive Airborne Effluent Release Summary

January 1, 2000, through December 31, 2000

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Total Noble Gases¹ (Ci)	5.81E-01	4.68E-01	9.02E-02	1.86E-01	1.23E-01	1.58E-01	2.98E-01	2.59E-01	1.80E-01	1.72E-01	1.61E-01	1.36E-01	2.82E+00
Total Radioiodines (Ci)	0.00E+00	4.36E-06	2.81E-05	3.25E-05									
Total Particulates²(Ci)	2.91E-05	4.34E-06	2.06E-06	0.00E+00	0.00E+00	1.10E-08	0.00E+00	0.00E+00	6.35E-11	2.33E-05	8.67E-06	6.38E-11	6.68E-05
Alpha (Ci)	0.00E+00	0.00E+00	2.04E-06	0.00E+00	9.94E-07								
Strontium (Ci)	0.00E+00												
Gamma Emitters (Ci)	2.91E-05	4.34E-06	1.99E-08	0.00E+00	0.00E+00	1.10E-08	0.00E+00	0.00E+00	6.35E-11	2.33E-05	8.67E-06	6.38E-11	6.58E-05
Total Tritium (Ci)	7.97E+00	1.32E+01	6.34E+00	6.76E+00	4.89E+00	4.63E+00	5.73E+00	6.87E+00	4.19E+00	9.47E+00	9.25E+00	8.83E+00	8.81E+01
Max Hourly Release (Ci/sec)	2.05E-06	2.06E-06	1.43E-06	6.59E-06	1.40E-07	1.43E-07	2.88E-07	2.28E-07	3.01E-07	1.82E-07	1.66E-07	1.62E-06	

¹ Includes noble gas contribution from liquid releases.

² Total is the sum of alpha, strontium, and others.

TABLE 3-3

Isotopic Composition of Airborne Releases
January 1, 2000 through December 31, 2000

Nuclide	Jan (Ci)	Feb (Ci)	Mar (Ci)	Apr (Ci)	May (Ci)	Jun (Ci)	Semi- Annual	Jul (Ci)	Aug (Ci)	Sep (Ci)	Oct (Ci)	Nov (Ci)	Dec (Ci)	Total (Ci)
H-3	7.97E+00	1.32E+01	6.34E+00	6.76E+00	4.89E+00	4.63E+00	4.38E+01	5.73E+00	6.87E+00	4.19E+00	9.47E+00	9.25E+00	8.83E+00	8.81E+01
Ar-41	1.72E-01	7.92E-02	7.71E-02	1.20E-01	9.68E-02	1.21E-01	6.66E-01	1.87E-01	1.87E-01	1.23E-01	8.84E-02	4.23E-02	6.00E-02	1.35E+00
Kr-85m	1.26E-02	1.41E-09	1.03E-04	1.20E-03	1.10E-04		1.40E-02			7.17E-04		9.62E-06		1.47E-02
Kr-87	2.97E-02	3.28E-09	2.58E-04	3.08E-03	3.31E-04		3.34E-02			1.67E-03				3.51E-02
Kr-88	3.02E-02	3.28E-09	2.58E-04	2.81E-03	2.76E-04		3.35E-02			1.67E-03				3.52E-02
Xe-133	6.82E-02	3.88E-01	1.02E-02	3.36E-02	1.78E-02	3.04E-02	5.48E-01	9.81E-02	5.55E-02	3.48E-02	7.53E-02	1.05E-01	6.87E-02	9.86E-01
Xe-133m						2.89E-03	2.89E-03							2.89E-03
Xe-135	9.45E-02	9.57E-04	1.03E-03	7.73E-03	5.82E-03	3.88E-03	1.14E-01	1.33E-02	1.65E-02	8.18E-03	8.58E-03	1.39E-02	1.09E-03	1.75E-01
Xe-135m	4.68E-02	6.10E-09	8.76E-04	4.82E-03	7.16E-04		5.32E-02			2.63E-03			4.85E-03	6.07E-02
Xe-138	1.28E-01	1.36E-08	4.12E-04	1.24E-02	1.43E-03		1.42E-01			6.93E-03			1.60E-03	1.50E-01
I-131							0.00E+00						1.12E-05	1.12E-05
I-133							0.00E+00					4.36E-06	1.69E-05	2.13E-05
F-18		4.76E-09	4.89E-09				9.65E-09							9.65E-09
Co-57						1.10E-08	1.10E-08			6.10E-09				1.71E-08
Co-58	2.24E-05	4.33E-06	1.50E-08				2.67E-05			2.33E-05	8.67E-06			5.87E-05
Co-60	6.72E-06	2.72E-10					6.73E-06							6.73E-06
Nb-95		5.14E-11					5.14E-11							5.14E-11
Cs-137							0.00E+00			6.35E-11			6.38E-11	1.27E-10
Alpha			9.94E-07				9.94E-07							9.94E-07

4.0 RADIOACTIVE SOLID WASTE SHIPMENTS

4.1 Types, Volumes, and Activity of Shipped Solid Waste

The following types, volumes, and activity of solid waste were shipped from PBNP for offsite disposal or burial during 2000. No irradiated fuel was shipped offsite. The volume, activity, and type of waste are listed in Table 4-1.

Table 4-1

Quantities and Types of Waste Shipped from PBNP		
<u>Type of Waste</u>	<u>Quantity</u>	<u>Activity</u>
A. Spent resins, filter sludge, evaporator bottoms, etc.	36.9282 m ³ 1304.1 ft ³	249.55 Ci
B. Dry compressible waste, contaminated equipment, etc	462.077 m ³ 16318 ft ³	0.92 Ci
C. Irradiated components, control rods, etc.	N/A m ³ N/A ft ³	N/A Ci
D. Other (describe)	N/A m ³ N/A ft ³	N/A Ci

4.2 Major Nuclide Composition (by Type of Waste)

The major radionuclide content of the solid waste was determined by gamma isotopic analysis and by scaling to certain indicator radionuclides based on the measured isotopic content of representative waste stream samples. The estimated isotopic content is presented in Table 4-2 in decreasing order of activity.

Table 4-2

Estimated Solid Waste Major Radionuclide Composition

TYPE A		TYPE B		TYPE C	
	Percent		Percent		Percent
Nuclide	Abundance	Nuclide	Abundance	Nuclide	Abundance
Fe-55	30.19%	Co-58	43.41%	N/A	N/A
Co-58	17.40%	Co-60	29.13%	N/A	N/A
Ni-63	16.50%	Ni-63	13.44%	N/A	N/A
Co-60	14.12%	Fe-55	5.84%	N/A	N/A
H-3	8.90%	Fe-59	1.95%	N/A	N/A
Sb-125	5.27%	Cs-137 D	1.87%	N/A	N/A
Mn-54	3.33%	Mn-54	1.65%	N/A	N/A
Ag-110m	1.18%	Ce-144 D	0.86%	N/A	N/A
Cs-137 D	0.70%	Sb-125	0.69%	N/A	N/A
Nb-95	0.55%	Ni-59	0.48%	N/A	N/A
Ce-144 D	0.40%	Co-57	0.45%	N/A	N/A
Cr-51	0.30%	Sr-90 D	0.06%	N/A	N/A
Zr-95	0.23%	Sb-124	0.05%	N/A	N/A
Sn-113	0.22%	Zn-65	0.04%	N/A	N/A
C-14	0.14%	Ag-110m	0.03%	N/A	N/A
Co-57	0.13%	Pu-241	0.02%	N/A	N/A
Ni-59	0.12%	Cr-51	0.01%	N/A	N/A
Zn-65	0.11%	C-14	0.01%	N/A	N/A
Pu-241	0.10%	Am-241	0.001%	N/A	N/A
Sb-124	0.06%	Pu-238	0.001%	N/A	N/A
Sr-90 D	0.02%	Cm-243	0.001%	N/A	N/A
Cs-134	0.01%	Pu-239	0.001%	N/A	N/A
Cm-242	0.004%			N/A	N/A
Ru-103	0.004%			N/A	N/A
Cm-243	0.004%			N/A	N/A
I-131	0.003%			N/A	N/A
Am-241	0.002%			N/A	N/A
Pu-238	0.002%			N/A	N/A
Pu-239	0.001%			N/A	N/A

4.4 Solid Waste Disposition

There were 20 solid waste solid waste shipments from PBNP during 2000. The dates and destinations were:

Table 4-3

PBNP Radioactive Waste Shipments

<u>Date</u>	<u>Destination</u>	<u>Date</u>	<u>Destination</u>
02/11/00	Oak Ridge, TN	08/01/00	Oak Ridge, TN
02/17/00	Oak Ridge, TN	08/02/00	Oak Ridge, TN
02/22/01	Oak Ridge, TN	09/28/00	Oak Ridge, TN
02/29/00	Oak Ridge, TN	10/04/00	Oak Ridge, TN
04/27/00	Erwin, TN	11/01/00	Oak Ridge, TN
04/18/00	Erwin, TN	11/24/00	Oak Ridge, TN
05/03/00	Oak Ridge, TN	12/06/00	Oak Ridge, TN
05/05/00	Oak Ridge, TN	12/14/00	Oak Ridge, TN
06/21/00	Erwin, TN	12/28/00	Oak Ridge, TN
07/21/00	Oak Ridge, TN	12/28/00	Oak Ridge, TN

5.0 NONRADIOACTIVE CHEMICAL RELEASES

5.1 Scheduled Chemical Waste Releases

Scheduled chemical waste releases to the circulating water system from January 1, 2000, to June 30, 2000, included $4.24\text{E}+05$ gallons of neutralized wastewater. The wastewater contained $2.95\text{E}+01$ pounds of suspended solids and $4.02\text{E}+04$ pounds of dissolved solids.

Scheduled chemical waste releases to the circulating water system from July 1, 2000, to December 31, 2000, included $5.76\text{E}+05$ gallons of neutralized wastewater. The wastewater contained $2.52\text{E}+01$ pounds of suspended solids and $9.01\text{E}+03$ pounds of dissolved solids.

Scheduled chemical waste releases are based on the average analytical results obtained from sampling a representative number of neutralizing tanks.

5.2 Miscellaneous Chemical Waste Releases

Miscellaneous chemical waste releases from the retention pond (based on effluent analyses) to the circulating water for January 1, 2000, to June 30, 2000, included $4.94\text{E}+07$ gallons of clarified wastewater. The wastewater contained $4.32\text{E}+03$ pounds of suspended solids.

Miscellaneous chemical waste releases from the retention pond (based on effluent analyses) to the circulating water for July 1, 2000, to December 31, 2000, included $1.55\text{E}+07$ gallons of clarified wastewater. The wastewater contained $1.00\text{E}+03$ pounds of suspended solids.

Miscellaneous chemical waste released directly to the circulating water, based on amount of chemicals used from January 1, 2000, to June 30, 2000, included $1.35\text{E}+05$ pounds of sodium bisulfite and $3.70\text{E}+04$ pounds of sodium hypochlorite.

Miscellaneous chemical waste released directly to the circulating water, based on amount of chemicals used from July 1, 2000, to December 31, 2000, included $1.27\text{E}+05$ pounds of sodium bisulfite and $3.60\text{E}+04$ pounds of sodium hypochlorite.

6.0 CIRCULATING WATER SYSTEM OPERATION

The circulating water system operation during this reporting period for periods of plant operation is described in Table 6-1.

Table 6-1

Circulating Water System Operation for 2000

	UNIT	JAN	FEB	MAR	APR	MAY	JUN
Average Volume Cooling	1	274.2	278.5	311.0	489.6	475.2	489.6
Water Discharge [million gal/day]**	2	282.7	284.4	363.2	489.6	449.9	489.6
Average Cooling Water	1	39	42*	41	43	47	51
Intake Temperature [°F]	2	39	41	41	43	47	51
Average Cooling Water	1	68	66*	66	62	67	70
Discharge Temperature [°F]	2	73	76	69	65	66	71
Average Ambient Lake Temperature [°F]		34	34	40	42	46	48

*Unit 1 shutdown from February 25, 2000, to February 28, 2000.

** For days with cooling water discharge flow.

Table 6-1(continued)

Circulating Water System Operation for 2000

	UNIT	JUL	AUG	SEP	OCT	NOV	DEC
Average Volume Cooling	1	489.6	489.6	489.6	454.7	424.1	282.6
Water Discharge [million gal/day]**	2	489.6	489.6	489.6	428.6*	105.8	275.4
Average Cooling Water	1	59	66	58	50	44	44
Intake Temperature [°F]	2	59	66	58	48*	40*	44
Average Cooling Water	1	78	86	78	70	67	77
Discharge Temperature [°F]	2	80	88	79	65*	40*	56
Average Ambient Lake Temperature [°F]		57	65	56	49	43	35

*Unit 2 shutdown from October 16, 2000, to November 28, 2000.

** For days with cooling water discharge flow.

Part B

Miscellaneous Reporting Requirements

7.0 NEW AND SPENT FUEL SHIPMENTS AND RECEIPTS

During 2000, 40 Westinghouse 14x14 assemblies were received all for the Unit 2 Fall refueling. There were no spent fuel shipments from PBNP during the reporting period.

8.0 LEAK TESTING OF RADIOACTIVE SOURCES

During 2000, all applicable sealed radioactive sources were leak tested in accordance with Technical Specification 15.4.12. As in the previous year, the leak test results were all $<0.005 \mu\text{Ci}$.

9.0 ADDITIONAL REPORTING REQUIREMENTS

9.1 Revisions to the PBNP Radiological Effluent and Materials Control and Accountability Program (REMCAP)

Changes were subsequently made to the EM (Revision 15), RECM (Revision 2) and ODCM (Revision 13) during 2000. One complete copy of each revised manual is supplied with the submittal of this Annual Monitoring Report.

9.2 Interlaboratory Comparison Program

Environmental, Inc, Midwest Laboratory, the analytical laboratory contracted to perform the radioanalyses of the PBNP environmental samples, participated in the interlaboratory comparison studies administered by Environmental Resources Associates during 2000.

9.3 Special Circumstances

No special circumstances report regarding operation of the explosive gas monitor for the waste gas holdup system was needed during 2000.

Part C

RADIOLOGICAL ENVIRONMENTAL MONITORING

10.0 INTRODUCTION

The objective of the PBNP Radiological Environmental Monitoring Program (REMP) is to measure ambient radiation levels and to collect and analyze air, water, vegetation, fish, and soil samples for their radionuclide content in order to determine whether the operation of PBNP or the ISFSI has radiologically impacted the surrounding environment. These measurements also serve as a check of the efficacy of PBNP effluent controls. The REMP fulfills the requirements of 10 CFR 20.1302, PBNP General Design Criterion (GDC) 17, GDC 64 of Appendix A to 10 CFR 50, and Sections IV.B.2 and IV.B.3 of Appendix I to 10 CFR 50 for the operation of the plant. Therefore, the REMP collects samples from various environmental media in order to provide data on measurable levels of radiation and radioactive materials in the principal pathways of environmental exposure.

A subset of the PBNP REMP, consisting air, soil and vegetation samples also fulfills 10 CFR 72.44(d)(2) for operation of the ISFSI. Additionally, thermoluminescent dosimeters (TLDs) provide the means to measure changes in the ambient environmental radiation levels at sites near the ISFSI and at the PBNP site boundary to ensure that radiation levels from the ISFSI are maintained within the dose limits of 10 CFR 72.104. Because the ISFSI is within the PBNP site boundary, radiation doses from PBNP and the ISFSI, combined, must be used to assess compliance with 10 CFR 72.122 and 40 CFR 190. Therefore, radiological environmental monitoring for the ISFSI is provided by selected sampling sites, which are part of the PBNP REMP.

For the aquatic environment, the samples include water as well as the biological integrators, such as fish and filamentous algae. Because of their migratory behavior, fish are wide area integrators. In contrast, the filamentous algae periphyton are attached to shoreline rocks and concentrate nuclides from the water flowing by their point of attachment. Grab samples of lake water provide a snapshot of radionuclide concentrations at the time the sample is taken, where as analysis of fish and filamentous algae yield concentrations over time.

The air-grass-cow-milk exposure pathway unites the terrestrial and atmospheric environments. This pathway is important because of the many dairy farms around PBNP. Therefore, the REMP includes samples of air, general grasses, and milk from the PBNP environs. An annual land use survey is made to determine whether the assumptions on the location of dairy cattle remain conservative with respect to dose calculations for

PBNP effluents. The dose calculations assume that the dairy cattle are located at the south site boundary, the highest depositional sector. In addition, soil samples are collected and analyzed in order to monitor the potential for long-term buildup of radionuclides in the vicinity of PBNP.

For the measurement of ambient environmental radiation levels that may be affected by direct radiation from PBNP or by noble gas effluents, the REMP employs a series of TLDs situated around PBNP and the ISFSI.

11.0 PROGRAM DESCRIPTION

11.1 Results Reporting Convention

The PBNP REMP results in this report are reported directly as measured, whether positive, negative, or zero, by a detector which can meet the required lower level of detection (LLD) as specified in Table 2-2 of the Environmental Manual.

The lower limit of detection (LLD) is an *a priori* concentration value that specifies the performance capability of the counting system used in the analyses of the REMP samples. The parameters for the *a priori* LLD are chosen such that only a five percent chance exists of falsely concluding a specific radionuclide is present when it is not present at the specified LLD. Based on detector efficiency and average background activity, the time needed to count the sample in order to achieve the desired LLD depends upon the sample size. Hence, the desired LLD may be achieved by adjusting various parameters. When a suite of radionuclides are required to be quantified in an environmental sample such as lake water, the count time used is that required to achieve the LLD for the radionuclide with the longest counting time. Therefore, in fulfilling the requirement for the most difficult to achieve radionuclide LLD, the probability of detecting the other radionuclides is increased because the counting time used is longer than that required to achieve the remaining radionuclide LLDs.

When the radionuclide of interest is not present in the sample, the statistical nature of radioactive decay will produce negative and positive results centered about zero. Excluding validly measured concentrations, whether negative or as small positive values below the LLD, artificially inflates the calculated average value. Therefore, all generated data are used to calculate the statistical parameters (i.e., average, standard deviation) presented in this report.

In interpreting the data, effects due to the plant must be distinguished from those due to other sources. A major interpretive aid in assessment of these effects is the design of the PBNP REMP is based upon the indicator-control concept. Most types of samples are collected at both indicator locations (e.g., nearby, downwind, or down stream) and at control locations (distant, upwind, or upstream). A plant effect would be indicated if the radiation level at an indicator locations was

significantly larger than that at the control location. The difference would have to be greater than could be accounted for by typical fluctuation in radiation levels arising from other sources.

11.2 Sampling Parameters

Samples are collected and analyzed at the frequency indicated in Table 11-1 from the locations described in Table 11-2 and shown in Figures 11-1, 11-2, and 11-3. (The latter two figures show sampling locations not shown in preceding figures due to space limitations. The PBNP REMP sampling site used to determine environmental impact around the ISFSI are found in Table 11-3. The minimum acceptable sample size is found in Table 11-4. In addition, Table 11-1 indicates the collection and analysis frequency of the ISFSI fence TLDs.

11.3 Deviations from Required Collection Frequency

Deviations from the collection frequency given in Table 11-1 are allowed because of hazardous conditions, automatic sampler malfunction, seasonal unavailability, and other legitimate reasons (Section 2.2.6 of the Environmental Manual). Table 11-7 list deviations from the scheduled sampling and frequency which occurred during 2000.

11.4 Assistance to the State of Wisconsin

The Radiation Protection Unit of the Wisconsin Department of Health and Family Services maintains a radiological environmental monitoring program in order to confirm the results from the Kewaunee Nuclear Power Plant and PBNP REMPs. As a courtesy and a convenience to the State of Wisconsin, PBNP personnel also collect certain environmental samples (Table 11-4) for the State from sites which are near PBNP sampling sites or are co-located. The results of the State monitoring program are available from the Radiation Protection Unit of the WI Department of Health and Family Services.

11.5 Program Modifications

There were no changes or additions made to the sampling locations in 2000.

Table 11-1

PBNP REMP Sample Analysis and Frequency

<u>Sample Type</u>	<u>Sample Codes</u>	<u>Analyses</u>	<u>Frequency</u>
Environmental Radiation Exposure	E-01, -02, -03, -04, -05 -06, -07, -08, -09, -12 -14, -15, -16, -17, -18, -20, -22, -23, -24, -25, -26, -27, -28, -29, -30, -31, -32, -34, -35, -36, -38, -39, -TC	TLD	Quarterly
Vegetation	E-01, -02, -03, -04, -06, -08, -09, -20, -37	Gross Beta Gamma Isotopic Analysis	3x/yr as available
Algae	E-05, -12	Gross Beta Gamma Isotopic Analysis	3x/yr as available
Fish	E-13	Gross Beta Gamma Isotopic Analysis (Analysis of edible portions only)	3x/yr as available
Well Water	E-10	Gross Beta, H-3 Sr-89, 90, I-131 Gamma Isotopic Analysis (on total solids)	Quarterly
Lake Water	E-01, -05, -06, -33	Gross Beta H-3, Sr-89, 90 I-131 Gamma Isotopic Analysis (on total solids)	Monthly Quarterly composite of monthly collections Monthly Monthly
Milk	E-11, -19, -21	Sr-89, 90 I-131 Gamma Isotopic Analysis	Monthly
Air Filters	E-01, -02, -03, -04, -08, -20	Gross Beta I-131 Gamma Isotopic Analysis	Weekly (particulate) Weekly (charcoal) Quarterly (on composite particulate filters)
Soil	E-01, -02, -03, -04, -06, -08, -09, -20, -37	Gross Beta Gamma Isotopic Analysis	2x/yr
Shoreline Sediment	E-01, -05, -06, -12, -33,	Gross Beta Gamma Isotopic Analysis	2x/yr
ISFSI Ambient Radiation Exposure	North, East, South, West Fence Sections	TLD	Quarterly

Table 11-2

PBNP REMP Sampling Locations

<u>Location Code</u>	<u>Location Description</u>
E-01	Meteorological Tower
E-02	Site Boundary Control Center - East Side of Building
E-03	Tapawingo Road, about 0.4 Miles West of Lakeshore Road
E-04	North Boundary
E-05	Two Creeks Park
E-06	Point Beach State Park - Coast Guard Station
E-07	WPSC Substation on County V, about 0.5 Miles West of Hwy 42
E-08	Southeast Corner of the Intersection of Hwy 163 and Zander Road
E-09	Nature Conservancy
E-10	PBNP Site Well
E-11	Dairy Farm about 3.75 Miles West of Site
E-12	Discharge Flume/Pier
E-13	Pumphouse
E-14	South Boundary, about 0.2 miles East of Site Boundary Control Center
E-15	Southwest Corner of Site
E-16	WSW, Hwy 42, a residence about 0.25 miles North of Nuclear Road
E-17	North of Mishicot, Hwy 163 and Assman Road, Northeast Corner of Intersection
E-18	Northwest of Two Creeks at Zander and Tannery Roads
E-19	Local Dairy Farm, about 0.2 miles West of Hwy 42 on the North Side of Two Creeks Road
E-20	Reference Location, 17 miles Southwest, at Silver Lake College
E-21	Local Dairy Farm just South of Site on Lakeshore and Irish Roads
E-22	West Side of Hwy 42, about 0.25 miles North of Johaneck Road
E-23	Greenfield Lane, about 4.5 Miles South of Site, 0.5 Miles East of Hwy 42
E-24	North Side of County Rt. V, near intersection of Saxonburg Road
E-25	South Side of County Rt. BB, about 0.5 miles West of Norman Road
E-26	804 Tapawingo Road, about 0.4 miles East of Hwy 163, North Side of Road
E-27	Intersection of Saxonburg and Nuclear Roads, Southwest Corner, about 4 Miles WSW
E-28	Nature Trail sign in parking lot on West side of EIC.
E-29	On tree on bluff overlooking Lake Michigan NE of Microwave Tower and due East of Met Tower.
E-30	NE corner at Intersection of Tapawingo and Lakeshore Roads.
E-31	On utility pole North side of Tapawingo Road closest to the gate at the West property line.
E-32	On a tree located at the junction of property lines, as indicated by trees and shrubs, about 1000 feet east of the west gate on Tapawingo Road and about 1200 feet south of Tapawingo Road. The location is almost under the power lines between the blue and gray transmission towers.
E-33	Lake Michigan shoreline accessed from the SE corner of KNPP parking lot. Sample S of creek.
E-34	On a tree at the start of the former Nature Trail
E-35	Former Nature Trail, on tree on W side of trail, near "Fossil Fuels" sign
E-36	Former Nature Trail, on tree on W side of trail, near "Earth Home Building" sign
E-37	Former Nature Trail, in clearing on NE side of trail, near "Brush Piles" sign
E-38	Retention Pond fence, W side
E-39	Retention Pond fence, E side
E-TC	Transportation Control; Reserved for TLDs

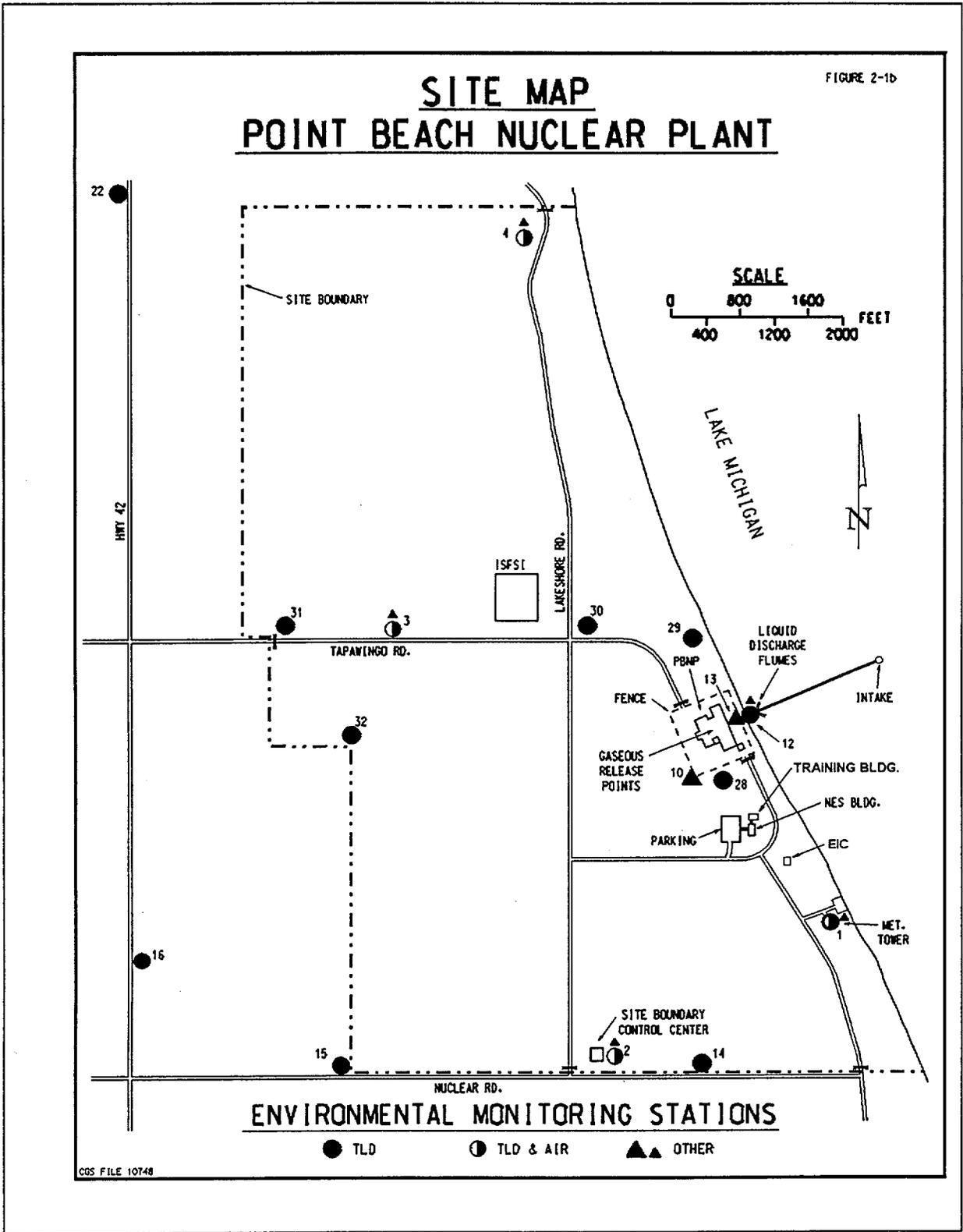


Figure 11-2

Map of REMP Sampling Sites Located Around PBNP

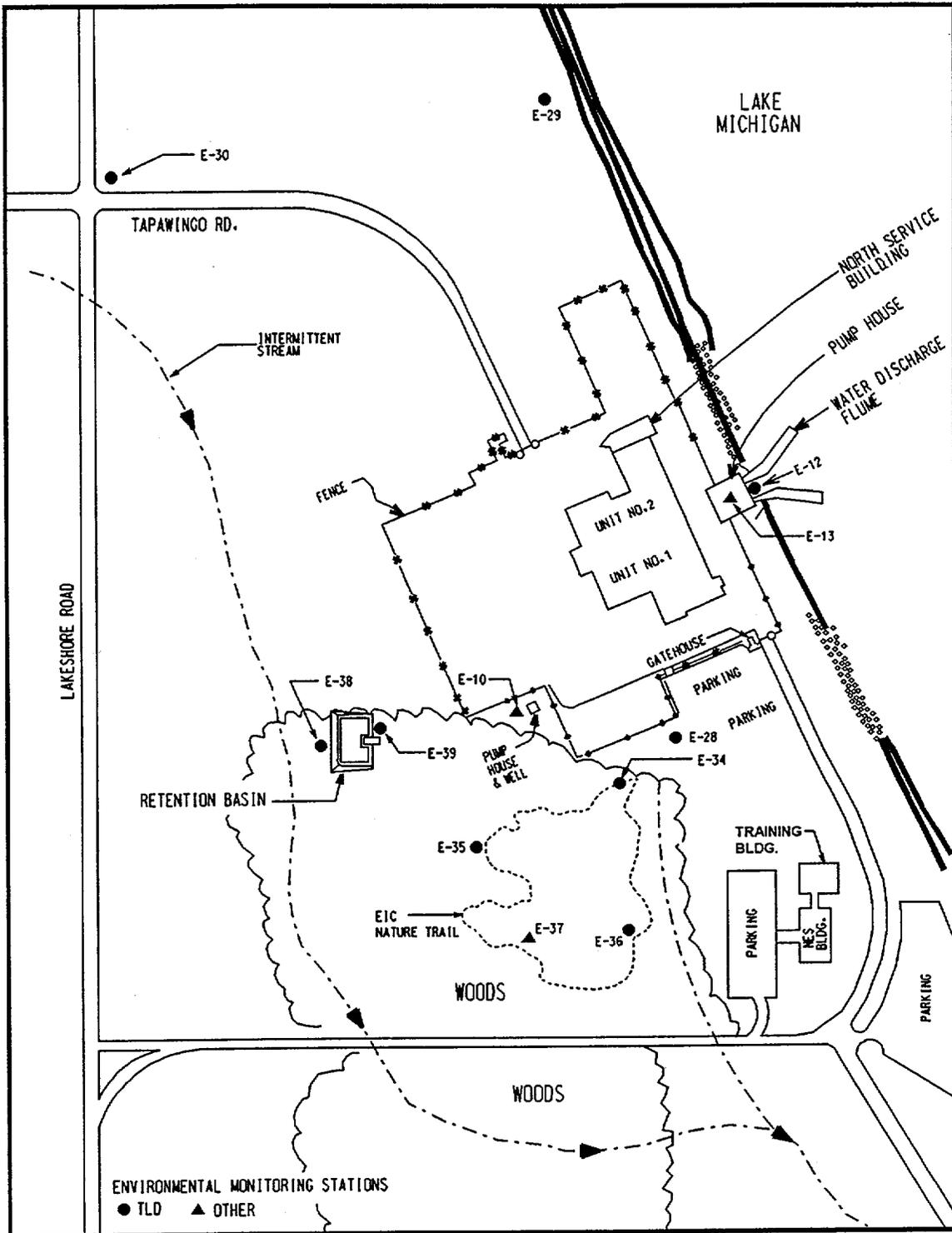


Figure 11-3

Enhanced Map Showing REMP Sampling Sites Closest to PBNP

Table 11-3

ISFSI Sampling Sites

<u>Ambient Radiation Monitoring (TLD)</u>	<u>Soil, Vegetation, and Airborne Monitoring</u>
E-03	E-02
E-28	E-03
E-30	E-04
E-31	
E-32	

Table 11-4

Minimum Acceptable Sample Size

<u>Sample Type</u>	<u>Size</u>
Vegetation	100-1000 grams
Lake Water	8 liters
Air Filters	250 m ³ (volume of air)
Well Water	8 liters
Milk	8 liters
Algae	100-1000 grams
Fish (edible portions)	1000 grams
Soil	500-1000 grams
Shoreline Sediment	500-1000 grams

Table 11-5

Deviations from Scheduled Sampling and Frequency

<u>Sample Type</u>	<u>Location</u>	<u>Collection Date or Period</u>	<u>Reason for not conducting REMP as required</u>	<u>Plans for Preventing Recurrence</u>
LW	E-06	1/13/2000	Presence of ice.	Winter condition, no action necessary.
LW	E-33	1/13/2000	Presence of ice.	Winter condition, no action necessary.
TLD	E-02	4/5/2000	Missing in the field. The sign that the TLD was located on was removed.	The sign removal was done by an outside contractor who was not briefed about the TLD. Group responsible for sign was not aware that a TLD was fixed to this sign. No other TLDs are posted on signs; no further action.
AP/AI	E-04	8/1/2000	Air sampler had no power.	Wisconsin Public Service returned power (WPS supplies power to this sampler).
AP/AI	E-04	8/8/2000	Unknown volume due to breaker trip.	Wisconsin Public Service returned power (WPS supplies power to this sampler).
AP/AI	E-03	8/15/2000	Sampler pump failure.	No prior deterioration was evident, continue to monitor.
AP/AI	E-03	11/1/2000	GFI breaker tripped. Sampler found not running.	Reset breaker.
AP/AI	E-03	11/9/2000	GFI breaker tripped. Sampler found not running.	GFI was replaced.
AP/AI	E-03	11/14/2000	Sampler found off.	No prior deterioration was evident, continue to monitor.
TLD	E-32	4th Qtr 2000	TLD lost in field.	No prior problems reported, continue to monitor.

Table 11-6

Sample Collections for State of Wisconsin

<u>Sample Type</u>	<u>Location</u>	<u>Frequency</u>
Lake Water	E-01	Weekly, Composited Monthly
Air Filters	E-07 E-08	Weekly
Fish	E-13	Quarterly, As Available
Precipitation	E-04 E-08	Twice a month, As Available
Milk	E-11 E-19	Monthly

11.5 Analytical Parameters

The types of analyses and their frequencies are given in Table 11-5. The LLDs for the various analyses are found in the Section 12 (Table 12-1) with the summary of the REMP results. All environmental LLDs listed in Table 2-2 of the Environmental Manual (also in Table 12-1) were achieved during 2000.

11.6 Brief Description of Analytical Parameters in Table 11-5

11.6.1 Gamma isotopic analysis

Gamma isotopic analysis consists of a computerized scan of the gamma ray spectrum from 80 KeV to 2048 KeV. Specifically included in the scan are Mn-54, Fe-59, Co-58, Co-60, Zr-95, Nb-95, Ru-103, Ru-106, I-131, Ba-La-140, Cs-134, Cs-137, Ce-141, and Ce-144. However, any other nuclear power plant produced radionuclides, which are detected, also are noted. Naturally occurring radionuclides such as Ra-226, Bi-214, Pb-212, Tl-208, Ac-228, Be-7, and K-40 are frequently detected in soil, sediment, and vegetation but are not normally reported. All radionuclides detected by gamma isotopic analysis are decay corrected to the time of collection.

11.6.2 Gross Beta Analysis

Gross beta analysis is a non-specific analysis that consists of measuring the total beta activity of the sample. No individual radionuclides are identifiable by this method. Gross beta analysis is a quick method of surveying samples for the presence of elevated activity that may require additional, immediate analyses.

11.6.3 Water Samples

Water samples include both Lake Michigan and well water. The Lake Michigan samples are collected along the shoreline at four locations north and south of PBNP. The well water is sampled from the on-site PBNP well. Gross beta and gamma isotopic analytical results for water are obtained by measurements on the solids remaining after evaporation of the unfiltered sample to dryness. Hence, the results are indicated as "on total solids" in Table 11-5.

11.6.4 Air Samples

Particulate air filters are allowed to decay at least 72 hours before gross beta measurements are made in order for naturally occurring radionuclides to become negligible part of the total activity. Gross beta measurements serve as a quick check for any unexpected activity that may require

immediate investigation. The particulate air filters are composited quarterly for analyses of long-lived radionuclides such as Cs-134 and Cs-137. Charcoal filters are counted as soon as possible so the I-131 will undergo only minimal decay prior to analyses.

In order to ensure that the air sampling pumps are operating satisfactorily, a gross leak check is performed weekly. On a quarterly frequency, a reference flow meter is connected across the face of the sampling pump with the particulate and charcoal filter in place. As necessary, the pump's flow rate is adjusted to correspond to that of the flow meter. The pumps are changed out annually for calibration and maintenance beyond what can be accomplished in the field.

11.6.5 Vegetation

Vegetation samples consist predominantly of green, growing plant material (grasses and weeds most likely to be eaten by cattle if they were present at the sampling site). Care is taken not to include any dirt associated with roots by cutting the vegetation off above the soil line.

11.6.6 Environmental Radiation Exposure

Environmental radiation exposure measurements are made with thermoluminescent dosimeters (TLDs). Each TLD used in the PBNP REMP consists of three lithium fluoride chips sealed in black plastic. The TLDs absorb the energy deposited in them by gamma rays. The gamma rays may originate from PBNP produced radionuclides or from naturally occurring radionuclides. The TLDs remain at the monitoring site for roughly three months prior to analyses and the results are reported as mrem per 7 days. Because the TLDs are constantly bombarded by naturally occurring gamma radiation, even during shipment to and from PBNP, the amount of exposure during transportation is measured using transportation controls with each shipment of TLDs to and from the laboratory. The doses recorded on the transportation controls are subtracted from the monitoring TLDs in order to obtain the net *in situ* dose.

11.6.7 ISFSI Ambient Radiation Exposure

Although the ISFSI fence TLDs are not considered part of the REMP because of their location directly on site, their results can be used indirectly to determine whether the operation of the ISFSI is having an impact on the ambient environmental radiation beyond the site boundary. Impacts are determined by comparison of fence TLD results to the results of the monitoring at PBNP site boundary and other selected locations.

12.0 RESULTS

Summary of 2000 REMP Results

Radiological environmental monitoring conducted at PBNP from January 1, 2000, through December 31, 2000, consisted of analysis of air filters, milk, lake water, well water, soil, fish, shoreline sediments, algae, and vegetation as well as TLDs. The results are summarized in Table 12-1.

Table 12-1 contains the following information:

Sample:	Type of the sample medium
Description:	Type of measurement
LLD:	<i>a priori</i> lower limit of detection
N:	Number of samples analyzed
Average:	Average value \pm the standard deviation of N samples
High:	Highest measured value \pm its associated 2 sigma counting error
Units:	Units of measurement

Table 12-2 contains the ISFSI fence TLD results.

For certain analyses, an LLD which is lower than that required by REMP is used because the lower value derives from the counting time required to obtain the LLDs for radionuclides that are more difficult to detect. For these analyses, both LLDs are listed with the REMP LLD given in parentheses. The results are discussed in the narrative portion of this report (Section 13). Blank values have not been subtracted from the results presented in Table 12-1. A complete listing of all the individual results obtained from the contracted analytical laboratory and the laboratory's radioanalytical quality assurance results and Interlaboratory Crosscheck Program results are presented in the Appendix.

Table 12-1

Summary of Radiological Environmental Monitoring Results for 2000

Sample	Description	N	LLD (a)	Average ± Standard Deviation	High ± 2 sigma	Units
<i>TLD</i>	Environmental Radiation	122	1 mrem	0.91 ± 0.15	1.22 ± 0.04	mR/7days
	Control (E-20)	4	1 mrem	0.90 ± 0.04	0.95 ± 0.04	mR/7days
<i>Air</i>	Gross beta	259	0.01	0.022 ± 0.008	0.053 ± 0.005	pCi/m3
	Control (E-20) Gross beta	53	0.01	0.022 ± 0.008	0.046 ± 0.004	pCi/m3
	I-131	259	0.030 (0.07)	0 (b)	-	pCi/m3
	Cs-134	20	0.05	0 (b)	-	pCi/m3
	Cs-137	20	0.06	0 (b)	-	pCi/m3
	Other gamma emitters	20	0.1	0 (b)	-	pCi/m3
<i>Milk</i>	Sr-89	36	5	0 (b)	-	pCi/L
	Sr-90	36	1	1.2 ± 0.6	3.3 ± 0.5	pCi/L
	I-131	36	0.5	0 (b)	-	pCi/L
	Cs-134	36	5 (15)	0 (b)	-	pCi/L
	Cs-137	36	5 (15)	0 (b)	-	pCi/L
	Ba-La-140	36	5 (15)	0 (b)	-	pCi/L
	Other gamma emitters	36	15	0 (b)	-	pCi/L
<i>Well</i>	Gross beta	4	4	3.8 ± 4.5	10.4 ± 3.5	pCi/L
<i>Water</i>	H-3	4	500 (3000)	0 (b)	-	pCi/L
	Sr-89	4	10	0 (b)	-	pCi/L
	Sr-90	4	1 (2)	0 (b)	-	pCi/L
	I-131	4	0.5 (2)	0 (b)	-	pCi/L
	Mn-54	4	10 (15)	0 (b)	-	pCi/L
	Fe-59	4	30	0 (b)	-	pCi/L
	Co-58	4	15	0 (b)	-	pCi/L
	Co-60	4	15	0 (b)	-	pCi/L
	Zn-65	4	30	0 (b)	-	pCi/L
	Zr-Nb-95	4	15	0 (b)	-	pCi/L
	Cs-134	4	15	0 (b)	-	pCi/L
	Cs-137	4	18	0 (b)	-	pCi/L
	Ba-La-140	4	15	0 (b)	-	pCi/L
	Other gamma emitters	4	30	0 (b)	-	pCi/L
<i>Algae</i>	Gross beta	6	0.25	3.75 ± 1.58	6.5 ± 0.57	pCi/g
	Co-58	6	0.25	0 (b)	-	pCi/g
	Co-60	6	0.25	0 (b)	-	pCi/g
	Cs-134	6	0.25	0 (b)	-	pCi/g
	Cs-137	6	0.25	0.027 ± 0.020	0.056 ± 0.028	pCi/g

(a) The required LLD per the PBNP REMP is enclosed in the parentheses.

(b) The analyses show that the results are not statistically different from zero.

Table12-1 (continued)

Summary of Radiological Environmental Monitoring Results for 2000

Sample	Description	N	LLD (a)	Average \pm Standard Deviation	High \pm 2 sigma	Units
<i>Lake Water</i>	Gross beta	46	4	2.6 \pm 0.6	4.3 \pm 0.7	pCi/L
	I-131	46	0.5 (2)	0 (b)	-	pCi/L
	Mn-54	46	10 (15)	0 (b)	-	pCi/L
	Fe-59	46	30	0 (b)	-	pCi/L
	Co-58	46	15	0 (b)	-	pCi/L
	Co-60	46	15	0 (b)	-	pCi/L
	Zn-65	46	30	0 (b)	-	pCi/L
	Zr-Nb-95	46	15	0 (b)	-	pCi/L
	Cs-134	46	10 (15)	0 (b)	-	pCi/L
	Cs-137	46	10 (18)	0 (b)	-	pCi/L
	Ba-La-140	46	15	0 (b)	-	pCi/L
	Other gamma emitters	46	30	0 (b)	-	pCi/L
	Sr-89	16	5	0 (b)	-	pCi/L
	Sr-90	16	1 (2)	0.8 \pm 0.5	1.98 \pm 0.41	pCi/L
	H-3	16	500 (3000)	284 \pm 321	1228 \pm 132	pCi/L
<i>Fish</i>	Gross beta	11	0.5	3.3 \pm 0.95	5.01 \pm 0.13	pCi/g
	Mn-54	11	0.13	0 (b)	-	pCi/g
	Fe-59	11	0.26	0 (b)	-	pCi/g
	Co-58	11	0.13	0 (b)	-	pCi/g
	Co-60	11	0.13	0 (b)	-	pCi/g
	Zn-65	11	0.26	0 (b)	-	pCi/g
	Cs-134	11	0.13	0 (b)	-	pCi/g
	Cs-137	11	0.15	0 (b)	-	pCi/g
	Other gamma emitters	11	0.5	0 (b)	-	pCi/g
<i>Shoreline</i>	Gross beta	10	2	7.91 \pm 2.61	11.34 \pm 1.65	pCi/g
<i>Sediment</i>	Cs-137	10	0.15	0 (b)	-	pCi/g
<i>Soil</i>	Gross beta	18	2	22.06 \pm 5.04	28.62 \pm 1.4	pCi/g
	Cs-137	18	0.15	0.26 \pm 0.27	0.35 \pm 0.02	pCi/g
<i>Vegetation</i>	Gross beta	36	0.25	5.93 \pm 0.91	7.81 \pm 0.23	pCi/g
	I-131	36	0.06	0 (b)	-	pCi/g
	Cs-134	36	0.06	0 (b)	-	pCi/g
	Cs-137	36	0.08	0 (b)	0.529 \pm 0.045	pCi/g

(a) The required LLD per the PBNP REMP is enclosed in the parentheses.

(b) The analyses show that the results are not statistically different from zero.

Table 12-2

ISFSI Fence TLD Results for 2000

Fence Location	Average ± Standard Deviation
North	2.72 ± 0.13 mR/7 days
East	2.28 ± 0.32 mR/7 days
South	1.25 ± 0.11 mR/7 days
West	5.05 ± 0.92 mR/7 days

13.0 DISCUSSION

13.1 TLDs

The ambient radiation was measured in the general area of the site boundary, at an outer ring 4 – 5 miles from the plant, at special interest areas, and at one control location, roughly 17 miles Southwest of the plant. The average of these TLD results is 0.91 mR/7 days (indicator TLDs, all sites but the control) and 0.90 mR/7 days at the control location. These results are not significantly different from each other nor from those observed from 1993 through 1999 (tabulated below in Table 13-1). Therefore, the operation of the plant has had no effect on the ambient gamma radiation.

Table 13-1

Average Indicator TLD Results from 1993 – 2000

Year	TLD Average	Units
1993	0.82	mR/7 days
1994	0.90	mR/7 days
1995	0.87	mR/7 days
1996	0.85	mR/7 days
1997	0.87	mR/7 days
1998	0.79	mR/7 days
1999	0.79	mR/7 days
2000	0.91	mR/7 days

The annual ISFSI fence TLD results listed in Table 13-3 show the anticipated slow trend upward due to the cask additions each year (four added in 2000). The North and West fence TLDs continue to record higher doses than the S and E fence TLDs corresponding to the location of the storage units at the NW corner of the site (see Table 12-3). Although there is a slight increase at the fence of the

ISFSI, the indicator sites for the ISFSI (Table 13-2) show no increase since the placement of the first cask in 1996. No impact on the ambient gamma radiation at or beyond the site boundary due to the operation of the ISFSI is indicated.

Table 13-2

Average TLD Results Surrounding the ISFSI (mR/7 days)

	Sampling Site					
	E-03	E-28	E-30	E-31	E-32	E-20
Pre-Operation*	0.93	0.87	0.81	0.93	0.98	0.88
1996	0.87	0.78	0.79	0.93	1.00	0.78
1997	0.91	0.89	0.84	0.89	0.97	0.79
1998	0.82	0.68	0.82	0.91	0.85	0.77
1999	0.88	0.83	0.80	0.90	0.99	0.78

*Pre-Operation data is the averages of the years 2/92 through 3/95.

Table 13-3

Average ISFSI Fence TLD Results (mR/7 days)

	Sampling Site			
	North	East	South	West
1995	1.29	1.28	1.10	1.26
1996	2.12	1.39	1.10	1.68
1997	2.05	1.28	1.00	1.66
1998	2.08	1.37	1.02	1.86
1999	2.57	1.84	1.11	3.26
2000	2.72	2.28	1.25	5.05

13.2 Milk

Radionuclide concentrations in milk continue to be indistinguishable from zero except for Sr-90 and Cs-137, which have results that are statistically above zero. Only one sample of milk indicated a positive result for Cs-137 (2.2 ± 1.5 pCi/L); however, the average of the collected sample results show that Cs-137 is not statistically significant from zero. These two radionuclides, which are still cycling through the environment, can be attributable to the large-scale atmospheric weapons tests of the 1960s, to the less frequent testing in the 70s and 80s, as well as the Chernobyl accident. These results are common throughout the Great Lakes region and North America. The PBNP 2000 average Sr-90 of 1.2 ± 0.6 pCi/L compares favorably with the 1999 average of 1.0 ± 0.3 pCi/L and with

the 1997 and 1998 averages, 1.2 ± 0.5 pCi/L and 1.1 ± 0.5 pCi/L, respectively, indicating little change. The milk data for 2000 show no radiological effects of the plant operation.

13.3 Air

The average annual gross beta concentrations in weekly airborne particulates were identical at both indicator and control locations (0.022 pCi/m³) and are similar to levels observed from 1993 through 1999. The results are tabulated below.

Table 13-4
Average Gross Beta Measurements in Air

Year	Average (pCi/m ³)
1993	0.022
1994	0.022
1995	0.021
1996	0.021
1997	0.021
1998	0.022
1999	0.024
2000	0.022

No detectable amounts of I-131, that are statistically different from zero were found.

Gamma spectroscopic analysis of quarterly composites of air particulate filters yielded similar results for indicator and control locations. Neither the indicator nor control locations show results, which on average, are significantly different than zero. Be-7, a naturally occurring radionuclide, was measured in quarterly composites of all samples with an average of 0.060 pCi/m³. This is comparable to the average of 0.065 pCi/m³ at the control site. Naturally occurring radionuclides are not required to be measured by the PBNP REMP, however, quantification of such nuclides serve as a means to monitor the internal consistency of the vendor's analytical program.

In summary, the air data for 2000 show that the operation of PBNP did not have an impact.

13.4 Lake Water

For the suite of REMP-specified gamma emitting radionuclides, measured concentrations continue to occur as small negative and positive values scattered around zero, indicating no radiological impact from the operation of PBNP. Sr-90 still persists from radioactive fallout. Tritium, in addition to being produced by water-cooled reactors such as PBNP, also is a naturally occurring radionuclide. The lake water samples collected and analyzed in 2000 for H-3 range from 12 to 1228 pCi/l. The maximum concentration (1228 pCi/l) occurred at E-01, the primary meteorological tower, located approximately one-half mile downstream of the plant discharge. A review of the liquid batch discharges for 2000 show that a controlled release March was well underway the same day the sample was collected. Elevated H-3 concentrations typically occur when sampling occurs during a discharge. By comparison, the result at location E-06 (approximately six miles downstream from the discharge) is within the range results usually obtained and is considerably less than the E-01 result. In conclusion, the operation of PBNP had only a transitory impact on the tritium levels found in the lake in the vicinity of the plant.

13.5 Algae

Filamentous algae attached to rocks along the Lake Michigan shoreline are known to concentrate radionuclides from the water with concentration factor over a thousand for certain radionuclides. The only fission product observed was Cs-137 with an average of 0.027 ± 0.020 pCi/g. This value is well within the range of averages from the past several years (0.034, 0.050, 0.030, 0.027, and 0.031, 1995 through 1999 respectively). The occurrence of Cs-137 in the environment can also be attributed to the fallout of events from the past such as weapons testing and nuclear accidents. Massive resuspension events due to wind stress redistributes Cs-137 throughout Lake Michigan and makes the Cs-137 more available to the algae. These events are visible on satellite photographs of the Lake. In 1976 after a Chinese weapons test, Cs-137 concentrations in algae reached 1.2 pCi/g. The concentrations of the naturally occurring radionuclides K-40 and Be-7 in the algae continue to be about 100 times higher than the Cs-137. The algae data indicate no plant effects during 2000.

13.6 Fish

The only specified fission/corrosion radionuclide statistically different from zero in fish is Cs-137. Cs-137 was identified at the low levels given in Table 12-1 in the edible portions of all seven fish. The highest value of 0.045 pCi/g is considerably less than the high of 2.8 pCi/g as seen in PBNP samples obtained in the mid-1970s during the Chinese weapons tests. The concentration of naturally

occurring K-40 is about 50-100 times higher than the highest Cs-137 concentration. There is no indication of a plant effect.

13.7 Well Water

All of the isotopic well water results are small positive and negative values indistinguishable from zero. This indicates that no PBNP effluents are getting into the aquifer supplying drinking water to PBNP.

13.8 Soil

Cs-137 from weapons testing and the Chernobyl accident fallout continue to be present in soil samples at about 1% of the levels of naturally occurring K-40. As seen in the following table the average gross beta result is not significantly different from those values observed in the past. There is no indication of a plant effect.

Table 13-5

Average Gross Beta Concentrations in Soil

Year	Activity (pCi/g)
1993	23.6
1994	19.4
1995	18.0
1996	19.4
1997	22.8
1998	20.0
1999	23.1
2000	22.1

13.9 Shoreline Sediment

Shoreline sediment consists of beach sand and other sediments washed up on the Lake Michigan shore. As in soil samples, the only non-naturally occurring radionuclide found in these samples is Cs-137 and its concentration (pCi/g) is at 1% or less of the naturally occurring concentrations of K-40. The Cs-137 concentrations of the shoreline sediment are about one-tenth of that found in soils. The shoreline sediment data indicate no radiological effects of the plant operation.

13.10 Vegetation

Although the naturally occurring radionuclides Be-7 and K-40 are found in all of the vegetation samples, the only programmatically specified radionuclide found in 4 of 27 samples is Cs-137. The Be-7 and K-40 concentrations are about 100 times higher than the Cs-137 concentrations. Again, as in previous years, most of the positive Cs-137 results are from samples obtained at the campground area of Point Beach State Park, sampling site E-06. Fallout Cs-137 from the 1960s which had been incorporated in the trees growing at that time period now is being recycled as the trees are being used in campfires and the ashes are scattered on the ground. The occurrence of Cs-137 in wood ash has been reported in Wisconsin and other states. The sampling data gives no indication of a plant effect.

13.11 Land Use Census

In accordance with the requirements of Section 2.5 of the Environmental Manual, a visual verification of animals grazing in the vicinity of the Point Beach Nuclear Plant site boundary was completed on July 24, 2000, to ensure that the milk sampling locations remain as conservative as practicable. No significant change in the use of pasture lands was noted. Therefore, the existing milk sampling program continues to be acceptable.

14.0 **REMP CONCLUSION**

Based on the analytical results from the 470 environmental samples and from 142 sets of TLDs that comprised the PBNP REMP for 2000, PBNP effluents had no discernable, permanent effect on the surrounding environs. Only transitory elevated H-3 concentrations in the immediate vicinity of the plant were observed. These results demonstrate that PBNP continues to have good controls on fuel integrity and the waste processing, and the control of effluents from PBNP continues to be acceptable pursuant to the ALARA criteria of 10 CFR 50.34a.

APPENDIX

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FINAL REPORT
TO
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MILWAUKEE, WISCONSIN

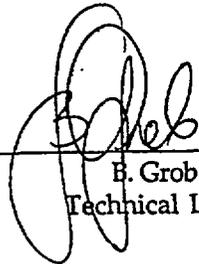
RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)
FOR
THE POINT BEACH NUCLEAR PLANT
TWO RIVERS, WISCONSIN

PREPARED AND SUBMITTED
BY
ENVIRONMENTAL, INC., MIDWEST LABORATORY

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POINT BEACH NUCLEAR PLANT

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POINT BEACH NUCLEAR PLANT

1.0 INTRODUCTION

The following constitutes the current Monthly Progress Report for the Environmental Radiological Monitoring Program conducted at the Point Beach Nuclear Plant, Two Rivers, Wisconsin. Results of completed analyses are presented in the attached tables. Missing entries indicate analyses that are not completed. These results will appear in subsequent reports. Data tables reflect sample analysis results for both Technical Specification requirements and Special Interest locations and samples are randomly selected within the Program monitoring area to provide additional data for cross-comparisons.

Data obtained in the program are well within the ranges previously encountered in the program and to be expected in the environmental media sampled. None of the media sampled during the current month contained radioactivity attributable to the operation of Point Beach Nuclear Plant.

For all gamma isotopic analyses, the spectrum is computer scanned from 80 to 2048 KeV. Specifically included are Mn-54, Fe-59, Co-58, Co-60, Zn-65, Zr-95, Nb-95, Ru-103, Ru-106, I-131, Ba-La-140, Cs-134, Cs-137, Ce-141, and Ce-144. Naturally occurring gamma-emitters, such as K-40 and Ra daughters, are frequently detected in soil and sediment samples. Specific isotopes listed are K-40, Tl-208, Pb-212, Bi-214, Ra-226 and Ac-228. Unless noted otherwise, the results reported under "Other Gammas" are for Co-60 and may be higher or lower for other radionuclides.

All concentrations, except gross beta, are decay corrected to the time of collection.

All samples were collected within the scheduled period unless noted otherwise in the Listing of Missed Samples.

POINT BEACH NUCLEAR PLANT

2.0 LISTING OF MISSED SAMPLES

Sample Type	Location	Expected Collection Date	Reason
LW	E-06, 33	January, 2000	Unsafe conditions for sampling.
TLD	E-2	4/5/00	TLD lost in field.
AP/AI	E-04	8/1/00	Sampler pump failure.
AP/AI	E-04	8/8/00	Sampler pump failure.
AP/AI	E-03	8/15/00	Sampler pump failure.
AP/AI	E-03	11/1/00	GFI breaker tripped. Sampler found not running.
AP/AI	E-03	11/09/00	Circuit breaker tripped.
AP/AI	E-03	11/14/00	Sampler found off.
TLD	E-32	01-05-01	TLD lost in field.

NOTE: Page 3 is intentionally left out.

POINT BEACH NUCLEAR PLANT

Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: E-01, Meteorological Tower

Units: pCi/m³

Collection: Continuous, weekly exchange.

Date Collected	Vol. (m ³)	Gross Beta	I-131	Date Collected	Vol. (m ³)	Gross Beta	I-131
<u>Required LLD</u>		<u>0.010</u>	<u>0.030</u>			<u>0.010</u>	<u>0.030</u>
01-05-00	343	0.021 ± 0.003	0.004 ± 0.008	07-05-00	360	0.016 ± 0.003	0.001 ± 0.005
01-14-00	478	0.036 ± 0.003	0.001 ± 0.004	07-11-00	266	0.015 ± 0.003	-0.002 ± 0.005
01-19-00	268	0.028 ± 0.004	-0.002 ± 0.006	07-18-00	313	0.015 ± 0.003	0.007 ± 0.005
01-26-00	369	0.044 ± 0.004	-0.001 ± 0.004	07-25-00	312	0.011 ± 0.003	-0.003 ± 0.006
02-02-00	360	0.025 ± 0.003	-0.003 ± 0.004	08-01-00	312	0.027 ± 0.003	0.010 ± 0.006
02-08-00	248	0.028 ± 0.004	0.005 ± 0.007	08-08-00	314	0.014 ± 0.003	0.008 ± 0.006
02-15-00	293	0.030 ± 0.004	-0.003 ± 0.006	08-15-00	314	0.018 ± 0.003	-0.008 ± 0.006
02-23-00	336	0.040 ± 0.004	-0.004 ± 0.004	08-22-00	317	0.016 ± 0.003	0.016 ± 0.004
03-01-00	296	0.025 ± 0.004	-0.009 ± 0.005	08-29-00	307	0.039 ± 0.004	-0.001 ± 0.009
03-07-00	250	0.023 ± 0.004	0.007 ± 0.006	09-05-00	313	0.019 ± 0.003	-0.001 ± 0.008
03-16-00	377	0.019 ± 0.003	0.003 ± 0.004	09-12-00	318	0.021 ± 0.003	-0.005 ± 0.007
03-21-00	220	0.018 ± 0.004	-0.019 ± 0.008	09-19-00	309	0.023 ± 0.003	-0.001 ± 0.004
03-28-00	313	0.017 ± 0.003	0.004 ± 0.007	09-27-00	357	0.015 ± 0.003	-0.006 ± 0.004
				10-03-00	267	0.030 ± 0.004	0.012 ± 0.006
<u>1st Quarter</u>				<u>3rd Quarter</u>			
Mean± s.d.		0.027 ± 0.008	-0.001 ± 0.007	Mean± s.d.		0.020 ± 0.008	0.002 ± 0.007
04-04-00	313	0.015 ± 0.003	-0.001 ± 0.005	10-10-00	316	0.018 ± 0.003	-0.003 ± 0.006
04-11-00	313	0.021 ± 0.003	0.004 ± 0.005	10-18-00	354	0.035 ± 0.003	-0.001 ± 0.004
04-18-00	292	0.019 ± 0.003	0.004 ± 0.009	10-24-00	382	0.028 ± 0.003	-0.010 ± 0.008
04-25-00	315	0.029 ± 0.003	0.010 ± 0.007	11-01-00	381	0.027 ± 0.003	-0.003 ± 0.006
05-02-00	327	0.023 ± 0.003	0.003 ± 0.006	11-09-00	398	0.023 ± 0.003	0.004 ± 0.005
05-09-00	312	0.022 ± 0.004	0.007 ± 0.007	11-14-00	217	0.008 ± 0.004	-0.006 ± 0.009
05-17-00	358	0.014 ± 0.003	0.006 ± 0.004	11-21-00	298	0.028 ± 0.004	0.006 ± 0.006
05-23-00	269	0.018 ± 0.004	-0.006 ± 0.006	11-29-00	360	0.036 ± 0.004	-0.003 ± 0.006
05-30-00	317	0.010 ± 0.003	-0.001 ± 0.004	12-06-00	315	0.015 ± 0.003	-0.009 ± 0.009
06-06-00	314	0.010 ± 0.003	0.001 ± 0.007	12-12-00	248	0.026 ± 0.004	0.010 ± 0.008
06-13-00	322	0.022 ± 0.003	-0.006 ± 0.006	12-20-00	349	0.031 ± 0.004	-0.001 ± 0.005
06-20-00	323	0.012 ± 0.003	-0.010 ± 0.007	12-27-00	296	0.021 ± 0.003	0.001 ± 0.006
06-27-00	304	0.018 ± 0.003	0.000 ± 0.006	01-03-01	313	0.017 ± 0.003	0.004 ± 0.008
<u>2nd Quarter</u>				<u>4th Quarter</u>			
Mean± s.d.		0.018 ± 0.006	0.001 ± 0.006	Mean± s.d.		0.024 ± 0.008	-0.001 ± 0.006
<u>Cumulative Average</u>						0.022 ± 0.008	0.000 ± 0.006

POINT BEACH NUCLEAR PLANT

Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: E-02, Site Boundary Control Center

Units: pCi/m³

Collection: Continuous, weekly exchange.

Date Collected	Vol. (m ³)	Gross Beta	I-131	Date Collected	Vol. (m ³)	Gross Beta	I-131
<u>Required LLD</u>		<u>0.010</u>	<u>0.030</u>			<u>0.010</u>	<u>0.030</u>
01-05-00	300	0.025 ± 0.004	0.007 ± 0.008	07-05-00	337	0.019 ± 0.003	0.003 ± 0.006
01-13-00	356	0.041 ± 0.004	-0.002 ± 0.005	07-11-00	291	0.013 ± 0.003	0.002 ± 0.005
01-19-00	251	0.034 ± 0.004	-0.003 ± 0.007	07-18-00	343	0.016 ± 0.003	0.000 ± 0.005
01-26-00	300	0.047 ± 0.005	0.001 ± 0.005	07-25-00	341	0.011 ± 0.002	0.000 ± 0.005
02-02-00	305	0.029 ± 0.004	0.000 ± 0.005	08-01-00	312	0.026 ± 0.003	0.006 ± 0.006
02-08-00	257	0.033 ± 0.004	0.006 ± 0.006	08-08-00	305	0.016 ± 0.003	-0.001 ± 0.006
02-15-00	302	0.034 ± 0.004	-0.003 ± 0.006	08-15-00	315	0.020 ± 0.003	-0.011 ± 0.006
02-23-00	345	0.039 ± 0.004	-0.001 ± 0.005	08-22-00	311	0.014 ± 0.003	-0.002 ± 0.005
03-01-00	305	0.024 ± 0.003	0.001 ± 0.005	08-29-00	314	0.037 ± 0.004	0.008 ± 0.009
03-07-00	258	0.027 ± 0.004	-0.009 ± 0.008	09-05-00	312	0.018 ± 0.003	-0.005 ± 0.007
03-16-00	388	0.021 ± 0.003	0.000 ± 0.005	09-13-00	402	0.019 ± 0.003	0.003 ± 0.004
03-21-00	216	0.018 ± 0.004	0.004 ± 0.008	09-19-00	284	0.023 ± 0.004	-0.005 ± 0.005
03-28-00	303	0.018 ± 0.003	0.003 ± 0.007	09-27-00	390	0.018 ± 0.003	0.002 ± 0.002
				10-03-00	291	0.028 ± 0.004	0.004 ± 0.006
<u>1st Quarter</u>				<u>3rd Quarter</u>			
Mean± s.d.		0.030 ± 0.009	0.000 ± 0.004	Mean± s.d.		0.020 ± 0.007	0.000 ± 0.005
04-04-00	304	0.016 ± 0.003	0.007 ± 0.006	10-10-00	345	0.017 ± 0.003	0.005 ± 0.005
04-11-00	302	0.023 ± 0.003	-0.002 ± 0.005	10-18-00	387	0.032 ± 0.003	-0.008 ± 0.004
04-18-00	292 ^a	0.018 ± 0.003	0.009 ± 0.005	10-24-00	295	0.039 ± 0.004	-0.003 ± 0.010
04-25-00	265	0.027 ± 0.004	0.010 ± 0.007	11-01-00	394	0.025 ± 0.003	0.007 ± 0.005
05-02-00	301	0.023 ± 0.003	-0.010 ± 0.007				
05-09-00	302	0.017 ± 0.003	0.004 ± 0.007	11-09-00	401	0.023 ± 0.003	0.001 ± 0.004
05-17-00	347	0.014 ± 0.003	0.001 ± 0.005	11-14-00	221	0.006 ± 0.004	0.007 ± 0.008
05-23-00	260	0.021 ± 0.004	0.001 ± 0.005	11-21-00	296	0.029 ± 0.003	0.013 ± 0.006
05-30-00	306	0.007 ± 0.003	0.006 ± 0.004	11-29-00	348	0.032 ± 0.004	0.001 ± 0.006
06-06-00	299	0.008 ± 0.003	0.001 ± 0.006	12-06-00	310	0.013 ± 0.003	-0.002 ± 0.007
06-13-00	301	0.021 ± 0.003	-0.003 ± 0.006	12-12-00	253	0.021 ± 0.004	0.009 ± 0.007
06-20-00	310	0.011 ± 0.003	-0.007 ± 0.007	12-20-00	344	0.029 ± 0.003	0.000 ± 0.004
06-27-00	287	0.020 ± 0.003	0.004 ± 0.005	12-27-00	301	0.021 ± 0.003	-0.001 ± 0.007
				01-03-01	311	0.020 ± 0.003	0.008 ± 0.006
<u>2nd Quarter</u>				<u>4th Quarter</u>			
Mean± s.d.		0.017 ± 0.006	0.002 ± 0.006	Mean± s.d.		0.024 ± 0.009	0.003 ± 0.006
				<u>Cumulative Average</u>		<u>0.023 ± 0.009</u>	<u>0.001 ± 0.005</u>

^a Volume is estimated.

POINT BEACH NUCLEAR PLANT

Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: E-03, West Boundary

Units: pCi/m³

Collection: Continuous, weekly exchange.

Date Collected	Vol. (m ³)	Gross Beta	I-131	Date Collected	Vol. (m ³)	Gross Beta	I-131
<u>Required LLD</u>		<u>0.010</u>	<u>0.030</u>			<u>0.010</u>	<u>0.030</u>
01-05-00	325	0.022 ± 0.003	-0.003 ± 0.008	07-05-00	333	0.018 ± 0.003	-0.004 ± 0.005
01-13-00	385	0.038 ± 0.003	-0.007 ± 0.005	07-11-00	279	0.016 ± 0.003	-0.006 ± 0.006
01-19-00	274	0.029 ± 0.004	-0.009 ± 0.007	07-18-00	329	0.017 ± 0.003	0.005 ± 0.005
01-26-00	325	0.039 ± 0.004	0.004 ± 0.005	07-25-00	336	0.011 ± 0.002	-0.009 ± 0.006
02-02-00	331	0.024 ± 0.003	-0.001 ± 0.005	08-01-00	318	0.027 ± 0.003	0.001 ± 0.006
02-08-00	255	0.029 ± 0.004	-0.002 ± 0.007	08-08-00	340	0.013 ± 0.003	0.001 ± 0.005
02-15-00	299	0.035 ± 0.004	-0.002 ± 0.006	08-15-00		ND ^a	-
02-23-00	343	0.041 ± 0.004	0.004 ± 0.004	08-22-00	293	0.017 ± 0.003	0.004 ± 0.005
03-01-00	302	0.024 ± 0.003	0.005 ± 0.006	08-29-00	312	0.039 ± 0.004	-0.014 ± 0.009
03-07-00	257	0.025 ± 0.004	-0.008 ± 0.007	09-05-00	302	0.023 ± 0.003	0.003 ± 0.007
03-16-00	385	0.016 ± 0.003	0.005 ± 0.004	09-13-00	470	0.022 ± 0.003	0.008 ± 0.004
03-21-00	221	0.022 ± 0.004	-0.003 ± 0.008	09-19-00	428	0.019 ± 0.003	-0.002 ± 0.003
03-28-00	310	0.016 ± 0.003	0.012 ± 0.008	09-26-00	319	0.014 ± 0.003	-0.003 ± 0.003
1st Quarter				10-03-00	347	0.028 ± 0.004	0.008 ± 0.006
Mean± s.d.		<u>0.028 ± 0.008</u>	<u>0.000 ± 0.006</u>	3rd Quarter			
				Mean± s.d.		<u>0.020 ± 0.008</u>	<u>-0.001 ± 0.007</u>
04-04-00	301	0.017 ± 0.003	-0.001 ± 0.005	10-10-00	410	0.016 ± 0.002	-0.004 ± 0.005
04-11-00	300	0.021 ± 0.003	0.003 ± 0.005	10-18-00	454	0.028 ± 0.003	-0.002 ± 0.004
04-18-00	298	0.021 ± 0.003	0.015 ± 0.009	10-24-00	367	0.037 ± 0.004	-0.007 ± 0.008
04-25-00	302	0.027 ± 0.003	0.000 ± 0.006	11-01-00		ND ^b	-
05-02-00	298	0.022 ± 0.003	-0.006 ± 0.007	11-09-00		ND ^b	-
05-09-00	300	0.018 ± 0.004	0.008 ± 0.007	11-14-00		ND ^c	-
05-17-00	344	0.013 ± 0.003	0.007 ± 0.004	11-21-00	296	0.029 ± 0.003	-0.013 ± 0.007
05-23-00	242	0.019 ± 0.004	-0.007 ± 0.006	11-29-00	360	0.033 ± 0.004	0.005 ± 0.005
05-30-00	304	0.008 ± 0.003	0.008 ± 0.004	12-06-00	310	0.015 ± 0.003	-0.004 ± 0.009
06-06-00	279	0.010 ± 0.003	-0.004 ± 0.007	12-12-00	254	0.020 ± 0.003	0.007 ± 0.007
06-13-00	270	0.020 ± 0.004	0.001 ± 0.008	12-20-00	344	0.025 ± 0.003	-0.001 ± 0.005
06-20-00	278	0.011 ± 0.003	-0.006 ± 0.007	12-27-00	303	0.024 ± 0.004	0.005 ± 0.006
06-27-00	292	0.016 ± 0.003	-0.002 ± 0.006	01-03-01	309	0.016 ± 0.003	-0.006 ± 0.007
2nd Quarter				4th Quarter			
Mean± s.d.		<u>0.017 ± 0.005</u>	<u>0.001 ± 0.007</u>	Mean± s.d.		<u>0.024 ± 0.008</u>	<u>-0.002 ± 0.006</u>
		<u>Cumulative Average</u>				<u>0.022 ± 0.008</u>	<u>0.000 ± 0.006</u>

^aND=No Data; Sampler pump failure.

^bND=No Data; GFI breaker tripped. Sampler found not running. ^c Sampler found off.

POINT BEACH NUCLEAR PLANT

Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: E-04, North Boundary

Units: pCi/m³

Collection: Continuous, weekly exchange.

Date Collected	Vol. (m ³)	Gross Beta	I-131	Date Collected	Vol. (m ³)	Gross Beta	I-131
<u>Required LLD</u>		<u>0.010</u>	<u>0.030</u>			<u>0.010</u>	<u>0.030</u>
01-05-00	320	0.020 ± 0.003	0.008 ± 0.008	07-05-00	347	0.016 ± 0.003	-0.003 ± 0.004
01-13-00	436	0.036 ± 0.003	0.003 ± 0.004	07-11-00	257	0.006 ± 0.003	0.007 ± 0.007
01-19-00	269	0.031 ± 0.004	-0.007 ± 0.007	07-18-00	302	0.019 ± 0.003	0.005 ± 0.005
01-26-00	321	0.053 ± 0.005	0.003 ± 0.005	07-25-00	320	0.010 ± 0.002	0.007 ± 0.005
02-02-00	320	0.024 ± 0.003	0.002 ± 0.004	08-01-00		ND ^a	-
02-08-00	262	0.028 ± 0.004	-0.002 ± 0.006	08-08-00		ND ^a	-
02-15-00	302	0.030 ± 0.004	0.003 ± 0.006	08-15-00	317	0.015 ± 0.003	-0.006 ± 0.005
02-23-00	345	0.035 ± 0.004	-0.006 ± 0.005	08-22-00	321	0.013 ± 0.003	-0.002 ± 0.005
03-01-00	303	0.022 ± 0.003	0.005 ± 0.006	08-29-00	327	0.032 ± 0.003	-0.002 ± 0.007
03-07-00	260	0.026 ± 0.004	-0.006 ± 0.007	09-05-00	327	0.013 ± 0.003	-0.004 ± 0.007
03-16-00	388	0.018 ± 0.003	-0.002 ± 0.005	09-13-00	387	0.016 ± 0.003	0.001 ± 0.005
03-21-00	217	0.017 ± 0.004	-0.012 ± 0.008	09-19-00	298	0.023 ± 0.004	0.003 ± 0.005
03-28-00	302	0.018 ± 0.003	0.006 ± 0.008	09-26-00	357	0.013 ± 0.003	0.002 ± 0.005
				10-03-00	342	0.033 ± 0.004	-0.003 ± 0.006
1st Quarter				3rd Quarter			
Mean± s.d.		0.028 ± 0.010	0.000 ± 0.006	Mean± s.d.		0.017 ± 0.008	0.000 ± 0.004
04-04-00	304	0.013 ± 0.003	0.001 ± 0.006	10-10-00	384	0.022 ± 0.003	-0.003 ± 0.005
04-11-00	302	0.018 ± 0.003	0.000 ± 0.005	10-18-00	455	0.028 ± 0.003	-0.001 ± 0.004
04-18-00	301	0.020 ± 0.003	0.006 ± 0.005	10-24-00	346	0.035 ± 0.004	-0.015 ± 0.009
04-25-00	294	0.028 ± 0.004	0.002 ± 0.006	11-01-00	468	0.025 ± 0.002	-0.001 ± 0.004
05-02-00	301	0.020 ± 0.003	0.002 ± 0.007				
05-09-00	302	0.017 ± 0.003	0.004 ± 0.007	11-09-00	387	0.023 ± 0.003	-0.003 ± 0.005
05-17-00	347	0.010 ± 0.002	0.004 ± 0.005	11-14-00	220	0.005 ± 0.004	0.004 ± 0.009
05-23-00	260	0.017 ± 0.004	0.007 ± 0.006	11-21-00	288	0.025 ± 0.003	-0.013 ± 0.006
05-30-00	306	0.006 ± 0.003	-0.001 ± 0.004	11-29-00	337	0.029 ± 0.004	0.008 ± 0.007
06-06-00	300	0.006 ± 0.003	0.001 ± 0.006	12-06-00	295	0.016 ± 0.003	0.006 ± 0.008
06-13-00	300	0.020 ± 0.003	-0.003 ± 0.007	12-12-00	251	0.019 ± 0.003	-0.007 ± 0.007
06-20-00	308	0.010 ± 0.003	-0.010 ± 0.005	12-20-00	334	0.025 ± 0.003	0.003 ± 0.005
06-27-00	298	0.016 ± 0.003	0.001 ± 0.006	12-27-00	321	0.020 ± 0.003	0.008 ± 0.006
				01-03-01	299	0.019 ± 0.003	0.000 ± 0.007
2nd Quarter				4th Quarter			
Mean± s.d.		0.015 ± 0.006	0.001 ± 0.004	Mean± s.d.		0.022 ± 0.007	-0.001 ± 0.007
Cumulative Average						0.021 ± 0.009	0.000 ± 0.006

^aND=No Data; Sampler pump failure.

POINT BEACH NUCLEAR PLANT

Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: E-08, G.J. Francar Residence

Units: pCi/m³

Collection: Continuous, weekly exchange.

Date Collected	Vol. (m ³)	Gross Beta	I-131	Date Collected	Vol. (m ³)	Gross Beta	I-131
<u>Required LLD</u>		<u>0.010</u>	<u>0.030</u>			<u>0.010</u>	<u>0.030</u>
01-05-00	334	0.016 ± 0.003	-0.004 ± 0.007	07-05-00	352	0.018 ± 0.003	0.007 ± 0.008
01-13-00	436	0.027 ± 0.003	0.002 ± 0.004	07-11-00	263	0.017 ± 0.003	0.000 ± 0.007
01-19-00	317	0.026 ± 0.003	0.001 ± 0.006	07-18-00	312	0.017 ± 0.003	0.008 ± 0.005
01-26-00	372	0.035 ± 0.004	-0.001 ± 0.004	07-25-00	300	0.013 ± 0.003	-0.010 ± 0.006
02-02-00	349	0.021 ± 0.003	0.001 ± 0.005	08-01-00	307	0.027 ± 0.003	0.008 ± 0.006
02-08-00	260	0.024 ± 0.004	-0.003 ± 0.007	08-08-00	309	0.015 ± 0.003	0.003 ± 0.006
02-15-00	299	0.029 ± 0.004	0.003 ± 0.006	08-15-00	308	0.019 ± 0.003	-0.002 ± 0.006
02-23-00	341	0.030 ± 0.003	0.001 ± 0.004	08-22-00	305	0.014 ± 0.003	0.011 ± 0.005
03-01-00	300	0.020 ± 0.003	0.004 ± 0.006	08-29-00	320	0.035 ± 0.004	-0.006 ± 0.008
03-07-00	259	0.021 ± 0.004	-0.002 ± 0.007	09-05-00	321	0.015 ± 0.003	-0.004 ± 0.007
03-16-00	384	0.015 ± 0.003	-0.003 ± 0.005	09-13-00	366	0.021 ± 0.003	-0.004 ± 0.005
03-21-00	208	0.017 ± 0.004	0.001 ± 0.008	09-19-00	285	0.021 ± 0.004	-0.001 ± 0.005
03-28-00	281	0.016 ± 0.004	0.005 ± 0.007	09-26-00	317	0.013 ± 0.003	-0.006 ± 0.005
				10-03-00	314	0.028 ± 0.004	-0.003 ± 0.006
<u>1st Quarter</u>				<u>3rd Quarter</u>			
Mean± s.d.		0.023 ± 0.006	0.000 ± 0.003	Mean± s.d.		0.020 ± 0.006	0.000 ± 0.006
04-04-00	282	0.015 ± 0.003	-0.007 ± 0.006	10-10-00	335	0.018 ± 0.003	-0.001 ± 0.006
04-11-00	281	0.021 ± 0.003	-0.011 ± 0.006	10-18-00	380	0.032 ± 0.003	0.001 ± 0.005
04-18-00	280	0.022 ± 0.004	-0.007 ± 0.005	10-24-00	250	0.047 ± 0.005	0.003 ± 0.010
04-25-00	286	0.024 ± 0.003	0.001 ± 0.007	11-01-00	319	0.031 ± 0.003	-0.007 ± 0.006
05-02-00	310	0.013 ± 0.003	0.011 ± 0.006				
05-09-00	321	0.017 ± 0.003	0.002 ± 0.007	11-09-00	394	0.020 ± 0.003	0.002 ± 0.004
05-17-00	370	0.013 ± 0.002	0.003 ± 0.005	11-14-00	218	0.011 ± 0.004	-0.001 ± 0.007
05-23-00	274	0.019 ± 0.004	0.005 ± 0.006	11-21-00	300	0.025 ± 0.003	0.021 ± 0.005
05-30-00	325	0.009 ± 0.003	0.004 ± 0.004	11-29-00	356	0.033 ± 0.004	0.001 ± 0.007
06-06-00	327	0.009 ± 0.003	0.002 ± 0.006	12-06-00	305	0.015 ± 0.003	0.000 ± 0.008
06-13-00	323	0.022 ± 0.003	-0.002 ± 0.006	12-12-00	260	0.015 ± 0.003	-0.014 ± 0.007
06-20-00	313	0.012 ± 0.003	-0.001 ± 0.006	12-20-00	343	0.022 ± 0.003	-0.003 ± 0.005
06-27-00	267	0.018 ± 0.003	0.000 ± 0.006	12-27-00	305	0.025 ± 0.004	-0.006 ± 0.006
				01-03-01	304	0.021 ± 0.003	-0.001 ± 0.007
<u>2nd Quarter</u>				<u>4th Quarter</u>			
Mean± s.d.		0.016 ± 0.005	0.000 ± 0.006	Mean± s.d.		0.024 ± 0.010	0.000 ± 0.008
<u>Cumulative Average</u>						<u>0.021 ± 0.007</u>	<u>0.000 ± 0.006</u>

POINT BEACH NUCLEAR PLANT

Airborne particulates and charcoal canisters, analyses for gross beta and iodine-131.

Location: E-20, Silver Lake

Units: pCi/m³

Collection: Continuous, weekly exchange.

Date Collected	Vol. (m ³)	Gross Beta	I-131	Date Collected	Vol. (m ³)	Gross Beta	I-131
<u>Required LLD</u>		<u>0.010</u>	<u>0.030</u>			<u>0.010</u>	<u>0.030</u>
01-05-00	340	0.022 ± 0.003	0.003 ± 0.007	07-05-00	345	0.017 ± 0.003	-0.012 ± 0.006
01-13-00	394	0.043 ± 0.003	0.005 ± 0.004	07-11-00	261	0.014 ± 0.003	0.006 ± 0.008
01-19-00	294	0.029 ± 0.003	0.002 ± 0.006	07-18-00	302	0.013 ± 0.003	0.005 ± 0.005
01-26-00	341	0.046 ± 0.004	0.001 ± 0.004	07-25-00	303	0.012 ± 0.003	0.017 ± 0.006
02-02-00	340	0.028 ± 0.003	0.005 ± 0.004	08-01-00	301	0.023 ± 0.003	-0.003 ± 0.006
02-08-00	263	0.027 ± 0.004	0.002 ± 0.006	08-08-00	306	0.018 ± 0.003	-0.001 ± 0.006
02-15-00	302	0.034 ± 0.004	-0.007 ± 0.006	08-15-00	300	0.019 ± 0.003	0.008 ± 0.005
02-23-00	344	0.034 ± 0.004	0.002 ± 0.005	08-22-00	306	0.014 ± 0.003	-0.005 ± 0.005
03-01-00	306	0.021 ± 0.003	0.009 ± 0.005	08-29-00	300	0.032 ± 0.004	0.003 ± 0.008
03-07-00	259	0.025 ± 0.004	-0.001 ± 0.006	09-05-00	297	0.018 ± 0.003	0.001 ± 0.008
03-16-00	385	0.020 ± 0.003	-0.008 ± 0.004	09-13-00	346	0.018 ± 0.003	-0.006 ± 0.005
03-21-00	214	0.016 ± 0.004	-0.007 ± 0.008	09-19-00	266	0.027 ± 0.004	0.001 ± 0.005
03-28-00	301	0.019 ± 0.004	-0.005 ± 0.007	09-26-00	299	0.014 ± 0.003	0.003 ± 0.004
				10-03-00	302	0.026 ± 0.004	0.002 ± 0.007
1st Quarter				3rd Quarter			
Mean± s.d.		0.028 ± 0.009	0.000 ± 0.005	Mean± s.d.		0.019 ± 0.006	0.001 ± 0.007
04-04-00	306	0.016 ± 0.003	0.002 ± 0.006	10-10-00	307	0.018 ± 0.003	0.007 ± 0.006
04-11-00	301	0.023 ± 0.003	-0.003 ± 0.005	10-18-00	321	0.022 ± 0.003	-0.002 ± 0.005
04-18-00	300	0.024 ± 0.003	-0.003 ± 0.005	10-24-00	252	0.039 ± 0.005	-0.002 ± 0.009
04-25-00	306	0.029 ± 0.004	0.008 ± 0.006	11-01-00	352	0.024 ± 0.003	0.002 ± 0.005
05-02-00	297	0.021 ± 0.003	0.013 ± 0.006				
05-09-00	302	0.022 ± 0.004	0.001 ± 0.003	11-09-00	379	0.018 ± 0.003	0.005 ± 0.005
05-17-00	349	0.013 ± 0.003	0.001 ± 0.005	11-14-00	226	0.012 ± 0.004	-0.008 ± 0.008
05-23-00	263	0.017 ± 0.004	0.001 ± 0.005	11-21-00	331	0.025 ± 0.003	-0.006 ± 0.005
05-30-00	301	0.008 ± 0.003	0.000 ± 0.004	11-29-00	367	0.030 ± 0.003	-0.001 ± 0.006
06-06-00	301	0.010 ± 0.003	0.004 ± 0.006				
06-13-00	300	0.022 ± 0.003	0.002 ± 0.005	12-06-00	316	0.015 ± 0.003	-0.007 ± 0.008
06-20-00	301	0.013 ± 0.003	-0.014 ± 0.007	12-12-00	264	0.026 ± 0.004	0.007 ± 0.007
06-27-00	306	0.015 ± 0.003	0.002 ± 0.005	12-20-00	353	0.026 ± 0.003	0.003 ± 0.005
				12-27-00	308	0.026 ± 0.004	-0.002 ± 0.006
				01-03-01	322	0.019 ± 0.003	-0.001 ± 0.007
2nd Quarter				4th Quarter			
Mean± s.d.		0.018 ± 0.006	0.001 ± 0.006	Mean± s.d.		0.023 ± 0.007	0.000 ± 0.005
Cumulative Average						0.022 ± 0.008	0.001 ± 0.006

POINT BEACH NUCLEAR PLANT
 GAMMA EMITTERS IN QUARTERLY COMPOSITES OF
 AIR PARTICULATE FILTERS
 (Concentration pCi/m³)

Locati	Lab Code Req. LLD	Be-7 -	Cs-134 (0.05)	Cs-137 (0.06)	Other Gammas ^a V (0.10)
<u>1st Quarter</u>					
E-01	EAP- 2140	0.070 ± 0.011	0.0001 ± 0.0004	0.0002 ± 0.0003	0.0003 ± 0.0003
E-02	- 2141	0.072 ± 0.014	-0.0001 ± 0.0006	0.0001 ± 0.0005	0.0000 ± 0.0006
E-03	- 2142	0.068 ± 0.010	0.0000 ± 0.0004	0.0001 ± 0.0004	0.0000 ± 0.0005
E-04	- 2143	0.064 ± 0.011	0.0000 ± 0.0003	-0.0002 ± 0.0003	0.0002 ± 0.0004
E-08	- 2144	0.058 ± 0.010	-0.0004 ± 0.0004	-0.0001 ± 0.0004	-0.0004 ± 0.0006
E-20	- 2145	0.067 ± 0.011	0.0000 ± 0.0003	0.0000 ± 0.0004	0.0003 ± 0.0005
<u>2nd Quarter</u>					
E-01	-4737	0.061 ± 0.012	0.0003 ± 0.0004	-0.0001 ± 0.0004	-0.0004 ± 0.0006
E-02	-4738	0.055 ± 0.015	0.0002 ± 0.0007	-0.0001 ± 0.0004	-0.0004 ± 0.0007
E-03	-4739	0.057 ± 0.012	-0.0001 ± 0.0004	-0.0001 ± 0.0004	-0.0002 ± 0.0004
E-04	-4740	0.069 ± 0.016	-0.0001 ± 0.0006	0.0003 ± 0.0006	0.0002 ± 0.0004
E-08	-4741	0.058 ± 0.014	-0.0002 ± 0.0006	0.0001 ± 0.0006	0.0003 ± 0.0006
E-20	-4742	0.072 ± 0.010	0.0002 ± 0.0003	0.0000 ± 0.0003	-0.0003 ± 0.0003
<u>3rd Quarter</u>					
E-01	-7663	0.063 ± 0.010	0.0001 ± 0.0001	0.0001 ± 0.0001	0.0001 ± 0.0001
E-02	-7664	0.060 ± 0.010	-0.0001 ± 0.0003	0.0004 ± 0.0004	-0.0005 ± 0.0005
E-03	-7665	0.070 ± 0.011	0.0004 ± 0.0005	0.0003 ± 0.0004	-0.0001 ± 0.0005
E-04	-7667	0.065 ± 0.014	-0.0003 ± 0.0005	0.0002 ± 0.0004	0.0003 ± 0.0004
E-08	-7668	0.065 ± 0.012	0.0002 ± 0.0004	-0.0001 ± 0.0004	0.0001 ± 0.0005
E-20	-7669	0.062 ± 0.011	-0.0003 ± 0.0005	0.0003 ± 0.0005	0.0005 ± 0.0005
<u>4th Quarter</u>					
E-01	-10797	0.048 ± 0.013	-0.0001 ± 0.0005	0.0008 ± 0.0006	0.0003 ± 0.0008
E-02	-10798	0.053 ± 0.011	0.0007 ± 0.0005	0.0011 ± 0.0007	0.0001 ± 0.0007
E-03	-10799	0.043 ± 0.014	0.0003 ± 0.0008	-0.0003 ± 0.0007	0.0001 ± 0.0009
E-04	-10800	0.054 ± 0.012	0.0002 ± 0.0006	0.0004 ± 0.0005	0.0003 ± 0.0006
E-08	-10801	0.043 ± 0.016	-0.0005 ± 0.0008	0.0007 ± 0.0007	0.0009 ± 0.0005
E-20	-10802	0.057 ± 0.014	-0.0005 ± 0.0005	0.0003 ± 0.0006	-0.0007 ± 0.0008

^a See Introduction

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN MILK SAMPLES

(Monthly Collections)

Sample Description and Concentration (pCi/L)

<u>E-11 Funk Dairy Farm</u>				
Collection Date	01-12-00	02-09-00	03-08-00	Required LLD
Lab Code	EMI-275	EMI-709	EMI-1266	
Sr-89	-0.7 ± 1.3	0.0 ± 0.7	0.0 ± 0.6	5.0
Sr-90	1.5 ± 0.6	0.9 ± 0.4	0.9 ± 0.3	1.0
I-131	-0.03 ± 0.17	0.12 ± 0.17	-0.04 ± 0.20	0.5
K-40	1238 ± 156	1438 ± 112	1346 ± 114	
Cs-134	-3.2 ± 3.9	0.9 ± 2.4	-2.1 ± 2.7	5.0
Cs-137	-1.0 ± 3.6	1.0 ± 2.3	0.8 ± 2.4	5.0
Ba-La-140	-6.0 ± 3.8	-1.2 ± 1.7	0.0 ± 2.9	5.0
Other Gammas ^a	0.4 ± 4.0	0.1 ± 1.9	1.5 ± 2.6	15.0
Collection Date	04-12-00	05-03-00	06-07-00	Required LLD
Lab Code	EMI-2267	EMI-2911	EMI-3803	
Sr-89	0.0 ± 0.7	-1.4 ± 0.9	-0.3 ± 0.8	5.0
Sr-90	1.2 ± 0.4	1.6 ± 0.4	1.3 ± 0.4	1.0
I-131	0.11 ± 0.17	0.11 ± 0.16	0.11 ± 0.15	0.5
K-40	1366 ± 125	1453 ± 105	1222 ± 159	
Cs-134	0.3 ± 2.6	-0.5 ± 1.9	-1.6 ± 4.0	5.0
Cs-137	-0.9 ± 2.6	0.0 ± 1.5	-1.0 ± 3.7	5.0
Ba-La-140	0.9 ± 1.9	0.3 ± 1.7	-0.3 ± 3.9	5.0
Other Gammas ^a	-0.4 ± 2.9	0.9 ± 1.9	0.4 ± 3.5	15.0

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN MILK SAMPLES

(Monthly Collections)

Sample Description and Concentration (pCi/L)				
<u>E-11 Funk Dairy Farm</u>				
Collection Date	07-12-00	08-09-00	09-06-00	Required LLD
Lab Code	EMI-4880	EMI-5747	EMI-6408	
Sr-89	-1.4 ± 0.8	0.7 ± 1.4	0.5 ± 0.8	5.0
Sr-90	1.5 ± 0.4	1.7 ± 0.4	1.0 ± 0.3	1.0
I-131	0.08 ± 0.18	0.03 ± 0.15	-0.15 ± 0.19	0.5
K-40	1327 ± 106	1554 ± 118	1337 ± 99	
Cs-134	-1.2 ± 2.0	0.1 ± 2.1	-0.2 ± 1.9	5.0
Cs-137	-0.2 ± 2.1	-0.3 ± 1.7	0.4 ± 1.4	5.0
Ba-La-140	-0.7 ± 1.9	-0.2 ± 1.4	1.7 ± 1.3	5.0
Other Gammas ^a	-1.2 ± 2.4	1.9 ± 2.1	1.8 ± 1.9	15.0
Collection Date	10-11-00	11-08-00	12-06-00	
Lab Code	EMI-7613	EMI-8802,3	EMI-9516	
Sr-89	-0.5 ± 1.1	0.4 ± 0.9	-0.5 ± 1.1	5.0
Sr-90	1.0 ± 0.4	1.0 ± 0.3	2.0 ± 0.6	1.0
I-131	0.07 ± 0.20	-0.24 ± 0.18	0.12 ± 0.16	0.5
K-40	1347 ± 108	1397 ± 76	1349 ± 100	
Cs-134	-1.3 ± 1.8	-0.9 ± 2.1	-0.1 ± 2.3	5.0
Cs-137	1.7 ± 2.2	-1.3 ± 1.9	0.2 ± 1.9	5.0
Ba-La-140	1.8 ± 1.7	1.3 ± 1.6	0.1 ± 1.1	5.0
Other Gammas ^a	1.7 ± 1.8	-2.2 ± 2.5	0.5 ± 2.3	15.0

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN MILK SAMPLES

(Monthly Collections)

Sample Description and Concentration (pCi/L)				
<u>E-19 Engelbrecht Dairy</u>				
Collection Date	01-12-00	02-09-00	03-08-00	Required LLD
Lab Code	EMI-276	EMI-710	EMI-1267	
Sr-89	-1.2 ± 1.3	-0.1 ± 0.7	-0.2 ± 0.6	5.0
Sr-90	1.9 ± 0.6	1.2 ± 0.4	1.2 ± 0.4	1.0
I-131	0.04 ± 0.19	0.14 ± 0.15	-0.06 ± 0.21	0.5
K-40	1581 ± 196	1324 ± 119	1302 ± 145	
Cs-134	1.0 ± 4.9	1.3 ± 2.9	0.4 ± 3.3	5.0
Cs-137	4.6 ± 3.8	1.7 ± 2.4	-4.8 ± 3.2	5.0
Ba-La-140	3.6 ± 3.7	-2.8 ± 2.5	-1.0 ± 3.4	5.0
Other Gammas ^a	-0.4 ± 4.7	-1.0 ± 2.9	1.2 ± 4.2	15.0
Collection Date	04-12-00	05-03-00	06-07-00	Required LLD
Lab Code	EMI-2268	EMI-2912	EMI-3804	
Sr-89	-0.1 ± 0.6	0.7 ± 0.8	0.0 ± 0.8	5.0
Sr-90	1.3 ± 0.4	1.1 ± 0.3	1.3 ± 0.4	1.0
I-131	-0.02 ± 0.17	0.03 ± 0.17	0.18 ± 0.22	0.5
K-40	1318 ± 109	1433 ± 112	1329 ± 123	
Cs-134	0.5 ± 2.5	-0.5 ± 1.9	1.6 ± 2.2	5.0
Cs-137	1.5 ± 2.0	0.1 ± 1.7	0.1 ± 2.3	5.0
Ba-La-140	-0.3 ± 2.2	0.4 ± 2.0	-0.7 ± 2.6	5.0
Other Gammas ^a	-1.4 ± 2.9	1.3 ± 1.9	-1.2 ± 2.9	15.0

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN MILK SAMPLES

(Monthly Collections)

Sample Description and Concentration (pCi/L)				
<u>E-19 Engelbrecht Dairy</u>				
Collection Date	07-12-00	08-09-00	09-06-00	Required LLD
Lab Code	EMI-4881, 2	EMI-5748	EMI-6409, 10	
Sr-89	0.6 ± 0.9	-1.9 ± 1.4	-0.5 ± 0.8	5.0
Sr-90	1.2 ± 0.3	2.1 ± 0.5	1.0 ± 0.2	1.0
I-131	-0.33 ± 0.32	-0.01 ± 0.16	0.08 ± 0.17	0.5
K-40	1488 ± 81	1454 ± 116	1368 ± 77	
Cs-134	1.1 ± 2.1	0.7 ± 2.2	-0.2 ± 2.0	5.0
Cs-137	0.8 ± 1.6	0.2 ± 2.2	-0.9 ± 2.1	5.0
Ba-La-140	-2.5 ± 1.6	-0.2 ± 1.8	-1.3 ± 1.6	5.0
Other Gammas ^a	-0.2 ± 1.8	-0.8 ± 2.4	-0.8 ± 1.9	15.0
Collection Date	10-11-00	11-08-00	12-06-00	
Lab Code	EMI-7614	EMI-8804	EMI-9517	
Sr-89	0.4 ± 1.4	-0.6 ± 1.4	-1.5 ± 1.2	5.0
Sr-90	1.2 ± 0.4	1.6 ± 0.4	3.3 ± 0.5	1.0
I-131	-0.18 ± 0.19	-0.19 ± 0.25	0.03 ± 0.21	0.5
K-40	1551 ± 126	1539 ± 113	1508 ± 112	
Cs-134	1.1 ± 2.4	0.2 ± 2.1	1.9 ± 2.1	5.0
Cs-137	-0.1 ± 1.6	-1.6 ± 1.7	-0.5 ± 2.0	5.0
Ba-La-140	1.6 ± 1.8	-1.6 ± 1.7	1.2 ± 1.8	5.0
Other Gammas ^a	0.2 ± 1.7	1.2 ± 2.1	0.2 ± 2.3	15.0

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN MILK SAMPLES

(Monthly Collections)

Sample Description and Concentration (pCi/L)				
<u>E-21 Strutz Dairy Farm</u>				
Collection Date	01-12-00	02-09-00	03-08-00	Required LLD
Lab Code	EMI-277, 8	EMI-711	EMI-1268	
Sr-89	0.3 ± 0.9	0.4 ± 0.6	0.3 ± 0.7	5.0
Sr-90	0.6 ± 0.3	0.6 ± 0.3	0.6 ± 0.5	1.0
I-131	-0.04 ± 0.19	0.13 ± 0.17	-0.03 ± 0.19	0.5
K-40	1548 ± 72	1498 ± 82	1434 ± 129	
Cs-134	0.0 ± 2.2	-0.3 ± 1.7	-1.0 ± 3.3	5.0
Cs-137	-0.4 ± 3.6	-0.3 ± 1.6	-0.6 ± 3.0	5.0
Ba-La-140	1.4 ± 1.8	-1.6 ± 1.2	-1.2 ± 2.2	5.0
Other Gammas ^a	0.3 ± 1.8	-0.8 ± 1.6	-0.4 ± 3.1	15.0
Collection Date	04-12-00	05-03-00	06-07-00	Required LLD
Lab Code	EMI-2269	EMI-2913	EMI-3805	
Sr-89	-0.2 ± 0.5	-0.9 ± 0.8	0.1 ± 0.6	5.0
Sr-90	0.6 ± 0.3	0.7 ± 0.3	0.6 ± 0.3	1.0
I-131	-0.05 ± 0.16	0.03 ± 0.18	0.01 ± 0.14	0.5
K-40	1453 ± 120	1502 ± 103	1392 ± 120	
Cs-134	-0.2 ± 2.4	0.1 ± 1.9	0.0 ± 1.7	5.0
Cs-137	0.8 ± 2.5	-0.7 ± 1.4	0.3 ± 1.4	5.0
Ba-La-140	-3.3 ± 2.6	-0.1 ± 1.4	0.7 ± 2.2	5.0
Other Gammas ^a	-1.6 ± 3.0	2.0 ± 1.5	0.5 ± 2.2	15.0

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN MILK SAMPLES

(Monthly Collections)

Sample Description and Concentration (pCi/L)				
<u>E-21 Strutz Dairy Farm</u>				
Collection Date	07-12-00	08-09-00	09-06-00	Required LLD
Lab Code	EMI-4883	EMI-5749	EMI-6411	
Sr-89	-0.3 ± 0.8	0.5 ± 1.1	-0.2 ± 0.7	5.0
Sr-90	0.9 ± 0.3	0.8 ± 0.3	1.0 ± 0.3	1.0
I-131	0.01 ± 0.20	-0.03 ± 0.16	0.00 ± 0.16	0.5
K-40	1417 ± 116	1557 ± 97	1525 ± 97	
Cs-134	-0.7 ± 2.1	0.6 ± 1.7	0.7 ± 2.1	5.0
Cs-137	0.2 ± 1.9	-0.2 ± 1.4	2.2 ± 1.5	5.0
Ba-La-140	-2.7 ± 2.1	-1.9 ± 1.7	0.2 ± 1.5	5.0
Other Gammas ^a	0.7 ± 2.2	-0.2 ± 1.7	0.2 ± 1.5	15.0
Collection Date	10-11-00	11-08-00	12-06-00	
Lab Code	EMI-7615	EMI-8805	EMI-9518	
Sr-89	0.2 ± 1.0	-0.1 ± 1.0	-0.2 ± 1.3	5.0
Sr-90	0.4 ± 0.3	0.7 ± 0.3	< 1.0	1.0
I-131	0.15 ± 0.22	-0.09 ± 0.23	0.10 ± 0.23	0.5
K-40	1341 ± 119	1398 ± 99	1433 ± 101	
Cs-134	-2.0 ± 2.8	-1.4 ± 1.9	-0.5 ± 2.1	5.0
Cs-137	1.6 ± 2.2	-1.3 ± 1.8	0.6 ± 1.6	5.0
Ba-La-140	-0.3 ± 2.5	1.1 ± 1.7	1.1 ± 1.7	5.0
Other Gammas ^a	0.4 ± 2.5	-0.4 ± 1.9	0.6 ± 1.9	15.0

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN WELL WATER SAMPLES, E-10

(Quarterly Collections)

	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	Req. LLD
Collection Date	01-14-00	04-13-00	07-12-00	10-11-00	
Lab Code	EWV-321	EWV-2298	EWV-4968	EWV-7715	
Gross Beta	1.0 ± 1.4	2.0 ± 1.8	10.4 ± 3.5 ^b	1.6 ± 1.6	4.0
H-3	-66.4 ± 88.3	44.0 ± 90.4	-35.7 ± 74.7	78.9 ± 92.1	500
Sr-89	-0.3 ± 0.5	0.2 ± 0.3	0.4 ± 0.5	0.3 ± 0.8	5.0
Sr-90	0.2 ± 0.3	0.0 ± 0.2	-0.1 ± 0.2	0.3 ± 0.2	1.0
I-131	-0.20 ± 0.20	-0.06 ± 0.13	-0.09 ± 0.19	-0.01 ± 0.19	0.5
Mn-54	0.9 ± 1.5	-0.3 ± 1.8	-1.6 ± 3.1	3.9 ± 3.1	10
Fe-59	1.9 ± 2.8	-3.6 ± 5.0	1.2 ± 6.0	-2.2 ± 5.6	30
Co-58	1.1 ± 1.4	-1.4 ± 2.7	1.5 ± 2.9	1.2 ± 3.5	10
Co-60	-1.0 ± 1.5	2.8 ± 3.5	2.6 ± 2.2	-7.2 ± 3.8	10
Zn-65	-2.6 ± 3.0	1.7 ± 5.9	3.0 ± 5.4	-6.0 ± 6.7	30
Zr-Nb-95	-1.6 ± 1.9	2.7 ± 3.2	-1.3 ± 2.9	1.5 ± 3.1	15
Cs-134	2.2 ± 1.7	0.9 ± 2.9	1.7 ± 3.0	-1.7 ± 3.4	10
Cs-137	0.5 ± 1.6	1.1 ± 2.1	0.6 ± 2.9	0.6 ± 3.2	10
Ba-La-140	0.2 ± 1.5	1.2 ± 2.6	2.5 ± 2.9	-0.1 ± 4.1	15
Other Gammas ^a	-1.2 ± 1.6	-1.2 ± 2.2	0.4 ± 2.6	-1.6 ± 3.1	30

^a Ru-103

^b Result of reanalysis.

POINT BEACH

Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.

Location: E-01 (Meteorological Tower)

Collection: Monthly composites

Units: pCi/L

Lab Code	ELW-319	ELW-712	ELW-1269, 70	ELW-2294	
Date Collected	1/14/00	2/8/00	3/8/00	4/11/00	Req. LLD
Gross beta	2.6 ± 0.4	2.7 ± 0.7	2.6 ± 0.4	1.9 ± 0.6	4.0
I-131	0.10 ± 0.17	-0.01 ± 0.15	0.09 ± 0.23	-0.05 ± 0.17	0.5
Be-7	10.1 ± 22.7	1.2 ± 9.9	11.3 ± 18.9	-1.5 ± 12.5	
Mn-54	-1.3 ± 2.3	0.4 ± 1.3	-0.2 ± 2.4	-0.2 ± 1.3	10
Fe-59	0.6 ± 4.9	-2.5 ± 2.1	-2.0 ± 3.8	0.3 ± 2.7	30
Co-58	-2.0 ± 2.4	0.1 ± 1.1	-1.1 ± 2.1	-1.1 ± 1.3	10
Co-60	1.3 ± 3.1	0.6 ± 1.1	-0.3 ± 2.3	0.2 ± 1.2	10
Zn-65	-4.6 ± 5.9	0.4 ± 2.6	-3.1 ± 4.5	-1.0 ± 2.2	30
Zr-Nb-95	-3.4 ± 2.9	0.9 ± 1.2	1.4 ± 2.2	-1.3 ± 1.2	15
Ru-103	-2.4 ± 2.6	-0.6 ± 1.1	-1.4 ± 2.3	-0.6 ± 1.3	15
Cs-134	3.5 ± 2.8	0.0 ± 1.4	1.3 ± 2.5	-0.2 ± 1.4	10
Cs-137	3.4 ± 2.8	0.1 ± 1.2	-1.2 ± 2.7	-0.9 ± 1.4	10
Ba-La-140	5.9 ± 3.2	1.3 ± 1.2	-4.0 ± 2.6	1.7 ± 1.9	15
Lab Code	ELW-3333	ELW-3996	ELW-4964	ELW-5782	
Date Collected	5/10/00	6/14/00	7/12/00	8/8/00	Req. LLD
Gross beta	2.4 ± 0.6	2.2 ± 0.6	2.1 ± 0.4	2.2 ± 0.6	4.0
I-131	0.01 ± 0.15	0.02 ± 0.17	0.05 ± 0.23	-0.03 ± 0.20	0.5
Be-7	-2.6 ± 4.6	-30.2 ± 24.1	-0.7 ± 12.0	7.5 ± 17.3	
Mn-54	0.5 ± 0.5	0.1 ± 3.0	1.7 ± 1.4	0.5 ± 2.1	10
Fe-59	-0.2 ± 1.0	3.0 ± 6.2	0.4 ± 2.8	-4.8 ± 4.7	30
Co-58	0.3 ± 0.6	-2.2 ± 1.3	0.7 ± 1.2	-0.7 ± 2.4	10
Co-60	0.5 ± 0.6	2.2 ± 3.4	0.7 ± 1.6	0.6 ± 2.2	10
Zn-65	-1.3 ± 1.2	2.4 ± 5.7	-1.9 ± 3.0	-2.6 ± 6.0	30
Zr-Nb-95	0.7 ± 0.6	4.2 ± 2.3	-1.2 ± 1.5	0.4 ± 2.7	15
Ru-103	-0.6 ± 0.5	-1.7 ± 3.0	-0.5 ± 1.3	-1.5 ± 2.0	15
Cs-134	0.2 ± 0.6	0.4 ± 3.4	1.1 ± 1.6	-1.3 ± 2.6	10
Cs-137	0.3 ± 0.5	1.1 ± 3.1	0.4 ± 1.3	-0.3 ± 2.4	10
Ba-La-140	-6.1 ± 1.0	-4.6 ± 3.0	0.4 ± 1.5	-7.9 ± 2.8	15
Lab Code	ELW-6706	ELW-7711	ELW-8822	ELW-9889	
Date Collected	9/12/00	10/8/00	11/8/00	12/12/00	Req. LLD
Gross beta	2.2 ± 0.6	2.3 ± 0.5	2.5 ± 0.6	2.8 ± 0.6	4.0
I-131	-0.10 ± 0.17	0.07 ± 0.20	0.00 ± 0.20	0.17 ± 0.24	0.5
Be-7	-4.5 ± 12.1	-9.6 ± 28.4	-18.4 ± 27.3	-6.5 ± 18.1	
Mn-54	0.7 ± 1.6	-1.8 ± 3.0	0.9 ± 3.3	-0.9 ± 1.8	10
Fe-59	-1.8 ± 3.0	-11.4 ± 6.5	-6.7 ± 6.3	0.2 ± 3.8	30
Co-58	0.3 ± 1.6	0.9 ± 3.2	-1.5 ± 3.0	0.1 ± 1.8	10
Co-60	0.2 ± 1.6	6.3 ± 3.7	-1.4 ± 3.4	0.5 ± 3.4	10
Zn-65	-10.2 ± 4.2	-5.8 ± 6.5	-4.7 ± 7.5	1.5 ± 3.5	30
Zr-Nb-95	-3.3 ± 1.8	0.1 ± 3.3	-0.1 ± 3.3	-0.2 ± 2.1	15
Ru-103	0.5 ± 1.3	-4.4 ± 2.7	1.5 ± 2.8	0.9 ± 1.9	15
Cs-134	0.4 ± 1.5	-1.7 ± 3.7	-2.3 ± 3.7	0.9 ± 1.9	10
Cs-137	1.4 ± 1.8	2.6 ± 3.0	-2.2 ± 3.0	-0.2 ± 1.8	10
Ba-La-140	1.5 ± 1.9	-6.4 ± 4.4	-0.4 ± 3.0	4.1 ± 1.6	15

POINT BEACH

Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.

Location: E-05 (Two Creeks Park)

Collection: Monthly composites

Units: pCi/L

Lab Code	ELW-320	ELW-713	ELW-1271	ELW-2295	
Date Collected	1/13/00	2/8/00	3/8/00	4/12/00	Req. LLD
Gross beta	3.5 ± 0.4	2.1 ± 0.6	3.8 ± 0.7	2.5 ± 0.6	4.0
I-131	0.04 ± 0.19	0.04 ± 0.16	0.03 ± 0.17	0.00 ± 0.16	0.5
Be-7	-4.6 ± 27.0	-9.4 ± 25.7	0.6 ± 13.5	-0.9 ± 13.0	
Mn-54	-0.8 ± 2.4	0.2 ± 2.7	1.6 ± 1.6	0.9 ± 1.4	10
Fe-59	-0.8 ± 4.9	2.2 ± 5.3	-0.7 ± 3.0	-2.6 ± 2.3	30
Co-58	1.1 ± 2.7	1.6 ± 2.5	-0.2 ± 1.6	0.7 ± 1.5	10
Co-60	1.0 ± 3.1	0.6 ± 2.8	-1.2 ± 1.9	0.6 ± 1.0	10
Zn-65	-2.0 ± 6.4	-6.0 ± 6.4	-0.6 ± 3.7	0.3 ± 2.9	30
Zr-Nb-95	0.3 ± 2.9	1.0 ± 2.1	-1.0 ± 1.6	-0.5 ± 1.2	15
Ru-103	0.1 ± 2.5	-1.6 ± 2.6	-0.2 ± 1.8	-1.1 ± 1.3	15
Cs-134	0.7 ± 3.2	0.9 ± 3.1	-1.5 ± 2.0	-0.2 ± 1.4	10
Cs-137	2.0 ± 3.0	3.2 ± 2.3	-0.5 ± 1.7	1.2 ± 1.3	10
Ba-La-140	2.4 ± 3.3	0.2 ± 3.7	-0.9 ± 1.5	4.9 ± 1.4	15
Lab Code	ELW-3334	ELW-3997	ELW-4965	ELW-5783	
Date Collected	5/10/00	6/14/00	7/12/00	8/8/00	Req. LLD
Gross beta	2.0 ± 0.6	2.7 ± 0.6	2.3 ± 0.4	3.2 ± 0.6	4.0
I-131	-0.04 ± 0.15	0.13 ± 0.19	0.16 ± 0.22	-0.01 ± 0.18	0.5
Be-7	-0.8 ± 8.1	-22.2 ± 27.8	2.8 ± 12.6	-3.2 ± 11.1	
Mn-54	0.0 ± 1.0	-2.8 ± 3.5	1.3 ± 1.5	0.9 ± 1.4	10
Fe-59	-4.2 ± 1.9	7.6 ± 6.0	-2.6 ± 3.1	-0.8 ± 2.8	30
Co-58	-0.2 ± 0.9	0.8 ± 3.0	-0.3 ± 1.5	0.6 ± 1.1	10
Co-60	-0.1 ± 1.1	-4.7 ± 3.5	0.8 ± 2.0	-0.7 ± 1.3	10
Zn-65	1.6 ± 1.8	-2.5 ± 5.4	-0.8 ± 3.3	2.1 ± 3.2	30
Zr-Nb-95	-1.4 ± 0.9	1.4 ± 3.3	-0.6 ± 1.6	-0.6 ± 1.4	15
Ru-103	-1.3 ± 1.0	0.2 ± 2.9	-1.2 ± 1.5	-0.3 ± 1.3	15
Cs-134	-1.4 ± 1.1	-3.4 ± 3.6	-0.5 ± 1.8	-0.9 ± 1.5	10
Cs-137	0.8 ± 0.9	3.0 ± 3.4	2.3 ± 1.6	-0.7 ± 1.3	10
Ba-La-140	0.4 ± 1.1	1.7 ± 3.5	0.5 ± 1.8	-0.4 ± 1.8	15
Lab Code	ELW-6707	ELW-7712	ELW-8823,4	ELW-9890	
Date Collected	9/12/00	10/8/00	11/8/00	12/12/00	Req. LLD
Gross beta	2.7 ± 0.7	2.5 ± 0.6	1.9 ± 0.4	2.4 ± 0.5	4.0
I-131	-0.08 ± 0.18	0.15 ± 0.22	-0.10 ± 0.20	-0.03 ± 0.21	0.5
Be-7	12.5 ± 23.2	-1.2 ± 1.4	-18.1 ± 32.1	5.8 ± 17.4	
Mn-54	1.3 ± 2.7	-1.0 ± 1.7	0.9 ± 4.4	0.2 ± 2.2	10
Fe-59	3.8 ± 5.1	-0.7 ± 3.6	-8.4 ± 8.4	0.7 ± 4.2	30
Co-58	0.9 ± 2.7	-0.3 ± 1.8	-2.6 ± 4.7	-0.1 ± 2.3	10
Co-60	3.2 ± 2.6	1.3 ± 2.1	4.3 ± 5.9	2.2 ± 2.4	10
Zn-65	8.9 ± 6.3	0.5 ± 4.4	4.5 ± 8.7	1.3 ± 4.6	30
Zr-Nb-95	-0.1 ± 3.0	-2.7 ± 1.8	2.8 ± 3.7	-1.0 ± 2.4	15
Ru-103	-0.8 ± 2.5	0.5 ± 1.6	-2.0 ± 4.2	0.4 ± 2.0	15
Cs-134	-1.8 ± 2.8	1.7 ± 1.8	1.9 ± 5.2	-1.5 ± 2.3	10
Cs-137	-0.6 ± 2.6	0.6 ± 1.7	-2.3 ± 4.5	0.9 ± 2.0	10
Ba-La-140	1.5 ± 2.9	0.2 ± 1.9	4.9 ± 6.5	-1.8 ± 2.7	15

POINT BEACH

Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.

Location: E-06 (Coast Guard Station)

Collection: Monthly composites

Units: pCi/L

Lab Code	NS ^a	ELW-714	ELW-1272	ELW-2296	Req. LLD
Date Collected	1/14/00	2/8/00	3/8/00	4/11/00	
Gross beta	-	2.2 ± 0.6	3.2 ± 0.6	2.1 ± 0.6	4.0
I-131	-	-0.04 ± 0.17	0.02 ± 0.16	-0.09 ± 0.17	0.5
Be-7	-	9.1 ± 13.0	-7.1 ± 13.4	4.3 ± 19.4	
Mn-54	-	-0.9 ± 1.2	-0.3 ± 1.4	2.3 ± 2.2	10
Fe-59	-	-0.4 ± 2.5	2.3 ± 2.8	1.0 ± 4.8	30
Co-58	-	0.2 ± 1.3	-0.5 ± 1.4	-1.4 ± 2.7	10
Co-60	-	0.7 ± 1.4	0.3 ± 1.5	-0.2 ± 3.4	10
Zn-65	-	-6.9 ± 3.5	-14.1 ± 3.9	6.6 ± 5.5	30
Zr-Nb-95	-	0.1 ± 1.4	-1.1 ± 1.6	-0.7 ± 2.4	15
Ru-103	-	0.4 ± 1.5	-0.3 ± 1.5	-0.3 ± 2.2	15
Cs-134	-	-0.4 ± 1.5	0.6 ± 1.4	1.8 ± 2.9	10
Cs-137	-	0.4 ± 1.5	-0.3 ± 1.5	-1.3 ± 2.5	10
Ba-La-140	-	-1.6 ± 1.7	0.4 ± 1.3	-0.5 ± 3.0	15

Lab Code	ELW-3335	ELW-3998	ELW-4966	ELW-5784	Req. LLD
Date Collected	5/10/00	6/14/00	7/12/00	8/8/00	
Gross beta	3.1 ± 0.6	1.8 ± 0.5	2.4 ± 0.4	3.1 ± 0.7	4.0
I-131	-0.01 ± 0.16	0.05 ± 0.18	0.01 ± 0.23	-0.05 ± 0.17	0.5
Be-7	7.5 ± 14.5	9.2 ± 26.1	5.1 ± 12.8	-4.5 ± 12.4	
Mn-54	-0.3 ± 1.8	-2.8 ± 2.7	0.4 ± 1.6	0.0 ± 1.6	10
Fe-59	3.5 ± 3.9	1.5 ± 5.8	-5.9 ± 3.3	-1.0 ± 2.5	30
Co-58	-0.1 ± 1.3	-3.2 ± 3.0	0.7 ± 1.3	-0.1 ± 1.6	10
Co-60	-0.2 ± 1.7	1.0 ± 3.0	1.8 ± 2.0	0.3 ± 1.0	10
Zn-65	1.6 ± 4.8	1.6 ± 6.0	-1.1 ± 3.0	-3.3 ± 3.1	30
Zr-Nb-95	-1.6 ± 1.9	2.4 ± 2.8	-1.6 ± 1.5	-1.5 ± 1.7	15
Ru-103	-3.1 ± 1.8	-0.9 ± 2.4	-1.8 ± 1.4	0.3 ± 1.5	15
Cs-134	0.4 ± 1.7	1.4 ± 3.3	0.1 ± 1.5	-1.0 ± 1.5	10
Cs-137	0.2 ± 1.9	-1.3 ± 3.1	0.7 ± 1.7	0.7 ± 1.2	10
Ba-La-140	2.7 ± 1.3	3.0 ± 3.5	0.6 ± 1.9	3.0 ± 1.9	15

Lab Code	ELW-6708	ELW-7713	ELW-8825	ELW-9891	Req. LLD
Date Collected	9/12/00	10/8/00	11/8/00	12/12/00	
Gross beta	4.2 ± 0.7	2.3 ± 0.5	2.7 ± 0.6	2.2 ± 0.5	4.0
I-131	0.29 ± 0.20	0.24 ± 0.25	0.05 ± 0.22	0.10 ± 0.19	0.5
Be-7	0.8 ± 20.0	1.6 ± 12.0	-17.7 ± 24.3	31.9 ± 27.9	
Mn-54	-2.0 ± 2.8	0.2 ± 1.6	-3.5 ± 3.3	-0.8 ± 3.3	10
Fe-59	-3.9 ± 4.0	-0.9 ± 2.8	-8.5 ± 6.5	2.8 ± 4.0	30
Co-58	3.7 ± 2.4	0.3 ± 1.4	0.2 ± 3.4	0.6 ± 3.4	10
Co-60	2.0 ± 3.2	-0.7 ± 1.6	0.9 ± 3.7	-2.1 ± 3.9	10
Zn-65	6.1 ± 5.5	0.6 ± 2.8	-3.5 ± 8.0	-5.7 ± 7.6	30
Zr-Nb-95	-1.1 ± 2.3	-1.4 ± 1.5	-0.3 ± 3.3	2.2 ± 3.0	15
Ru-103	0.4 ± 2.5	0.5 ± 1.3	0.6 ± 2.8	-0.4 ± 3.0	15
Cs-134	0.9 ± 2.6	-0.1 ± 1.7	0.4 ± 3.5	4.5 ± 3.4	10
Cs-137	0.9 ± 2.3	1.8 ± 1.4	2.0 ± 3.2	-2.4 ± 2.9	10
Ba-La-140	1.5 ± 2.1	0.2 ± 1.4	-1.2 ± 4.6	7.4 ± 3.7	15

^aUnsafe conditions prevented collection.

POINT BEACH

Lake water, analyses for gross beta, iodine-131 and gamma emitting isotopes.

Location: E-33 (Nature Conservancy)

Collection: Monthly composites

Units: pCi/L

Lab Code	NS ^a	ELW-715	ELW-1273	ELW-2297	Req. LLD
Date Collected	1/14/00	2/8/00	3/8/00	4/12/00	
Gross beta	-	2.1 ± 0.6	3.0 ± 0.6	1.9 ± 0.6	4.0
I-131	-	0.11 ± 0.14	-0.04 ± 0.16	0.05 ± 0.14	0.5
Be-7	-	4.3 ± 13.7	17.7 ± 19.9	6.1 ± 13.5	
Mn-54	-	-0.5 ± 1.7	0.6 ± 2.5	0.3 ± 1.9	10
Fe-59	-	-2.0 ± 2.4	-3.7 ± 5.1	-0.4 ± 3.8	30
Co-58	-	-2.0 ± 2.4	-0.3 ± 2.6	-0.3 ± 1.5	10
Co-60	-	0.9 ± 1.3	-2.1 ± 2.6	-0.6 ± 2.0	10
Zn-65	-	1.3 ± 2.9	-1.8 ± 5.0	-1.0 ± 4.3	30
Zr-Nb-95	-	0.1 ± 1.9	0.2 ± 2.6	-1.6 ± 1.7	15
Ru-103	-	-1.4 ± 1.5	0.3 ± 2.9	-0.7 ± 1.7	15
Cs-134	-	-0.1 ± 1.8	-1.8 ± 2.6	0.6 ± 2.2	10
Cs-137	-	-0.9 ± 1.7	1.3 ± 2.6	-0.2 ± 2.1	10
Ba-La-140	-	-2.5 ± 6.2	-1.5 ± 3.2	-0.7 ± 1.8	15

Lab Code	ELW-3336	ELW-3999	ELW-4967	ELW-5785	Req. LLD
Date Collected	5/10/00	6/14/00	7/12/00	8/8/00	
Gross beta	3.0 ± 0.7	2.6 ± 0.6	2.0 ± 0.4	2.1 ± 0.6	4.0
I-131	0.09 ± 0.15	0.07 ± 0.17	0.00 ± 0.22	-0.07 ± 0.16	0.5
Be-7	-1.0 ± 5.2	-11.6 ± 21.8	0.3 ± 22.5	-4.5 ± 12.5	
Mn-54	-0.1 ± 0.7	1.8 ± 2.6	-0.4 ± 2.9	1.1 ± 1.8	10
Fe-59	0.5 ± 1.2	1.5 ± 5.5	1.2 ± 4.5	-0.1 ± 2.9	30
Co-58	-0.2 ± 0.6	0.6 ± 2.4	0.6 ± 2.4	0.1 ± 1.3	10
Co-60	0.2 ± 0.6	0.2 ± 2.6	0.3 ± 2.9	1.9 ± 1.4	10
Zn-65	-1.6 ± 1.5	-4.4 ± 6.5	0.9 ± 5.6	3.2 ± 2.9	30
Zr-Nb-95	-0.4 ± 0.6	-0.5 ± 3.1	0.4 ± 2.8	-1.3 ± 1.5	15
Ru-103	-1.3 ± 0.6	-0.9 ± 2.4	0.4 ± 2.3	0.2 ± 1.3	15
Cs-134	0.4 ± 0.7	0.3 ± 2.7	-1.3 ± 3.0	0.4 ± 1.6	10
Cs-137	0.3 ± 0.7	-0.1 ± 2.1	0.8 ± 3.0	-0.2 ± 1.4	10
Ba-La-140	-9.6 ± 0.7	-1.8 ± 2.9	2.0 ± 2.4	-0.3 ± 1.6	15

Lab Code	ELW-6709	ELW-7714	ELW-8826	ELW-9892	Req. LLD
Date Collected	9/12/00	10/8/00	11/8/00	12/12/00	
Gross beta	4.3 ± 0.7	3.8 ± 0.6	2.0 ± 0.6	2.2 ± 0.5	4.0
I-131	-0.09 ± 0.19	0.00 ± 0.23	-0.03 ± 0.20	0.16 ± 0.16	0.5
Be-7	8.7 ± 11.7	-2.3 ± 11.5	-7.6 ± 13.5	-3.5 ± 13.4	
Mn-54	-0.3 ± 1.3	-0.5 ± 1.2	1.1 ± 1.6	0.6 ± 2.2	10
Fe-59	-1.3 ± 2.7	0.4 ± 1.9	-4.0 ± 3.1	-0.7 ± 3.7	30
Co-58	-0.2 ± 1.3	-0.6 ± 1.2	-0.2 ± 1.5	-0.3 ± 2.1	10
Co-60	0.7 ± 1.7	-2.1 ± 1.4	0.1 ± 1.8	1.8 ± 2.6	10
Zn-65	2.5 ± 2.6	-0.9 ± 2.6	0.9 ± 3.2	0.6 ± 4.3	30
Zr-Nb-95	-1.0 ± 1.6	-1.9 ± 1.7	0.1 ± 1.4	0.0 ± 2.0	15
Ru-103	-1.3 ± 1.3	-0.1 ± 1.2	0.5 ± 1.5	-1.0 ± 1.6	15
Cs-134	1.4 ± 1.6	0.8 ± 1.5	-1.1 ± 1.9	-0.4 ± 2.4	10
Cs-137	-0.7 ± 1.4	-0.8 ± 1.2	-0.8 ± 1.7	0.9 ± 2.1	10
Ba-La-140	-0.2 ± 2.0	-3.3 ± 1.5	-2.4 ± 1.6	-2.7 ± 3.3	15

^aUnsafe conditions prevented collection.

POINT BEACH

Lake water, analyses for tritium, strontium-89 and strontium-90.

Collection: Quarterly composites of weekly grab samples

Units: pCi/L

Location		E-01 (Meteorological Tower)			
Period	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	
Lab Code	ELW-2476	ELW-4243	ELW-6821	ELW-10365	
H-3	1228 ± 132 ^a	12 ± 90	467 ± 107	108 ± 94	
Sr-89	0.53 ± 1.14	0.91 ± 1.33	-0.74 ± 0.55	0.43 ± 0.69	
Sr-90	0.22 ± 0.32	1.69 ± 0.56	0.83 ± 0.34	0.69 ± 0.39	

Location		E-05 (Two Creeks Park)			
Period	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	
Lab Code	ELW-2477	ELW-4244	ELW-6822	ELW-10366	
H-3	279 ± 100	87 ± 93	271 ± 100	82 ± 93	
Sr-89	-0.24 ± 0.92	-0.52 ± 1.05	0.07 ± 0.52	-0.16 ± 0.70	
Sr-90	0.35 ± 0.27	0.52 ± 0.43	0.55 ± 0.30	0.89 ± 0.40	

Location		E-06 (Coast Guard Station)			
Period	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	
Lab Code	ELW-2478	ELW-4245	ELW-6823	ELW-10367	
H-3	324 ± 102	60 ± 92	301 ± 101	114 ± 94	
Sr-89	-0.38 ± 0.99	0.53 ± 0.97	-0.01 ± 0.79	0.73 ± 0.93	
Sr-90	0.54 ± 0.29	1.98 ± 0.41	1.16 ± 0.39	0.76 ± 0.50	

Location		E-33 (Nature Conservancy)			
Period	1st Qtr.	2nd Qtr.	3rd Qtr.	4th Qtr.	
Lab Code	ELW-2479	ELW-4246	ELW-6824	ELW-10368	
H-3	820 ± 120 ^a	185 ± 97	121 ± 94	86 ± 93	
Sr-89	0.21 ± 0.93	0.40 ± 0.81	-0.90 ± 0.53	0.03 ± 0.81	
Sr-90	0.41 ± 0.26	0.46 ± 0.36	0.72 ± 0.33	1.07 ± 0.47	

^a Analyses were repeated; Results of reanalysis: ELW-2476, 958 ± 122 pCi/L.
ELW-2479, 777 ± 117 pCi/L.

Note: pages 23 and 24 are intentionally left out.

POINT BEACH NUCLEAR PLANT

Fish, analyses for gross beta and gamma emitting isotopes.

Location: E-13

Collection: 3x / year

Units: pCi/g wet

Sample Description and Concentration				Required LLD	
Collection Date	03-08-00	03-08-00	03-08-00		
Lab Code	EF-1293	EF-1294	EF-1295		
Type	Sucker	Brown Trout	Rainbow Trout		
Ratio (wet/dry wt.)	6.01	3.33	4.05		
Gross Beta	5.01 ± 0.13	3.47 ± 0.12	3.82 ± 0.12	0.5	
K-40	2.57 ± 0.470	2.77 ± 0.350	2.97 ± 0.460		
Mn-54	-0.006 ± 0.010	0.002 ± 0.008	-0.007 ± 0.010	0.13	
Fe-59	-0.069 ± 0.026	-0.008 ± 0.015	-0.016 ± 0.016	0.26	
Co-58	-0.001 ± 0.008	0.000 ± 0.006	0.003 ± 0.009	0.13	
Co-60	0.008 ± 0.015	0.000 ± 0.009	0.005 ± 0.013	0.13	
Zn-65	-0.024 ± 0.023	0.007 ± 0.018	0.013 ± 0.025	0.26	
Ru-103	-0.003 ± 0.010	0.008 ± 0.006	-0.005 ± 0.007	0.5	
Cs-134	0.001 ± 0.012	0.002 ± 0.009	-0.008 ± 0.009	0.13	
Cs-137	0.022 ± 0.011	0.046 ± 0.018	0.042 ± 0.023	0.15	
Collection Date	08-09-00	08-09-00	08-09-00	08-09-00	
Lab Code	EF-5750	EF-5751	EF-5752	EF-5753	
Type	Rainbow Trout	Chinook Salmon	Sucker	Sheepshead	
Ratio (wet/dry wt.)	4.56	3.00	5.88	5.65	
Gross Beta	4.27 ± 0.14	3.37 ± 0.16	3.04 ± 0.10	2.75 ± 0.10	0.5
K-40	3.49 ± 0.52	2.70 ± 0.42	2.10 ± 0.32	2.44 ± 0.46	
Mn-54	-0.004 ± 0.011	-0.002 ± 0.009	0.000 ± 0.008	0.002 ± 0.009	0.13
Fe-59	-0.009 ± 0.022	0.005 ± 0.017	-0.005 ± 0.015	-0.009 ± 0.022	0.26
Co-58	0.009 ± 0.012	0.000 ± 0.008	0.008 ± 0.008	-0.002 ± 0.010	0.13
Co-60	-0.003 ± 0.012	-0.005 ± 0.009	0.006 ± 0.010	0.008 ± 0.012	0.13
Zn-65	0.015 ± 0.023	-0.011 ± 0.021	-0.006 ± 0.017	-0.005 ± 0.026	0.26
Ru-103	-0.003 ± 0.010	0.001 ± 0.001	-0.003 ± 0.007	-0.011 ± 0.009	0.5
Cs-134	-0.005 ± 0.012	0.008 ± 0.009	0.004 ± 0.010	0.002 ± 0.011	0.13
Cs-137	0.024 ± 0.012	0.045 ± 0.017	0.019 ± 0.008	0.008 ± 0.012	0.15

POINT BEACH NUCLEAR PLANT

Fish, analyses for gross beta and gamma emitting isotopes.

Location: E-13

Collection: 3x / year

Units: pCi/L

	Sample Description and Concentration (pCi/g wet)				Required
					LLD
Collection Date	12-13-00	12-13-00	12-13-00	12-13-00	
Lab Code	EF-9838	EF-9839	EF-9840	EF-9841	
Type	Whitefish ^a	Lawyerfish ^a	Trout ^a	Salmon ^a	
Ratio (wet/dry wt.)	3.74	3.82	4.98	3.63	
Gross Beta	2.50 ± 0.08	3.22 ± 0.10	3.50 ± 0.09	1.36 ± 0.05	0.5
K-40	3.05 ± 0.40	3.09 ± 0.27	3.31 ± 0.43	1.11 ± 0.21	
Mn-54	-0.004 ± 0.008	-0.002 ± 0.005	0.003 ± 0.008	-0.001 ± 0.006	0.13
Fe-59	-0.012 ± 0.018	0.006 ± 0.011	0.010 ± 0.017	0.008 ± 0.010	0.26
Co-58	-0.002 ± 0.006	-0.008 ± 0.005	0.016 ± 0.009	0.002 ± 0.006	0.13
Co-60	0.006 ± 0.009	-0.002 ± 0.006	-0.005 ± 0.011	-0.003 ± 0.008	0.13
Zn-65	0.024 ± 0.021	0.003 ± 0.013	0.004 ± 0.019	0.001 ± 0.013	0.26
Ru-103	-0.017 ± 0.008	0.000 ± 0.001	-0.016 ± 0.006	-0.004 ± 0.005	0.5
Cs-134	-0.006 ± 0.009	0.001 ± 0.006	0.008 ± 0.009	0.001 ± 0.007	0.13
Cs-137	0.018 ± 0.009	0.018 ± 0.007	0.029 ± 0.017	0.007 ± 0.006	0.15

^a Collected at location E-12.

Note: Page 27 is intentionally left out.

POINT BEACH NUCLEAR PLANT
 RADIOACTIVITY IN SHORELINE SEDIMENT SAMPLES
 (Semiannual Collections)

Sample Description and Concentration (pCi/g dry)

Collection Date	04-12-00	04-12-00	04-12-00	Required
Lab Code	ESS-2299	ESS-2300	ESS-2301	LLD
Location	E-01	E-05	E-06	
Gross Beta	6.33 ± 1.31	6.90 ± 1.45	11.34 ± 1.65	2.0
Be-7	0.024 ± 0.062	0.27 ± 0.15	0.042 ± 0.058	
K-40	6.39 ± 0.52	4.93 ± 0.35	8.74 ± 0.47	-
Cs-137	0.042 ± 0.016	0.016 ± 0.008	0.037 ± 0.015	0.15
Tl-208	0.065 ± 0.022	0.040 ± 0.014	0.042 ± 0.010	-
Pb-212	0.15 ± 0.03	0.11 ± 0.02	0.15 ± 0.02	-
Bi-214	0.14 ± 0.04	0.076 ± 0.025	0.087 ± 0.028	-
Ra-226	0.38 ± 0.15	0.46 ± 0.15	0.44 ± 0.16	-
Ac-228	0.18 ± 0.06	0.12 ± 0.05	0.15 ± 0.05	-
Collection Date	04-12-00	04-12-00		
Lab Code	ESS-2302	ESS-2303		
Location	E-12	E-33		
Gross Beta	4.90 ± 1.18	9.52 ± 1.57		2.0
Be-7	0.075 ± 0.050	0.13 ± 0.05		
K-40	4.87 ± 0.35	8.78 ± 0.49		-
Cs-137	0.026 ± 0.012	0.030 ± 0.014		0.15
Tl-208	0.068 ± 0.022	0.069 ± 0.035		-
Pb-212	0.20 ± 0.03	0.12 ± 0.02		-
Bi-214	0.25 ± 0.04	0.13 ± 0.03		-
Ra-226	0.56 ± 0.17	0.43 ± 0.16		-
Ac-228	0.27 ± 0.05	0.12 ± 0.07		-

POINT BEACH NUCLEAR PLANT
 RADIOACTIVITY IN SHORELINE SEDIMENT SAMPLES
 (Semiannual Collections)

Sample Description and Concentration (pCi/g dry)

Collection Date	10-08-00	10-08-00	10-08-00	Required
Lab Code	ESS-7954	ESS-7955	ESS-7956	LLD
Location	E-01	E-05	E-06	
Gross Beta	6.73 ± 1.26	6.13 ± 1.17	10.91 ± 1.36	2.0
Be-7	0.017 ± 0.046	0.058 ± 0.051	-0.004 ± 0.054	
K-40	6.12 ± 0.50	5.47 ± 0.40	8.67 ± 0.51	-
Cs-137	0.022 ± 0.013	0.015 ± 0.008	0.040 ± 0.016	0.15
Tl-208	0.051 ± 0.017	0.041 ± 0.012	0.043 ± 0.018	-
Pb-212	0.08 ± 0.017	0.11 ± 0.024	0.11 ± 0.022	-
Bi-214	0.11 ± 0.023	0.17 ± 0.034	0.15 ± 0.032	-
Ra-226	0.16 ± 0.10	0.39 ± 0.16	0.47 ± 0.20	-
Ac-228	0.17 ± 0.053	0.17 ± 0.041	0.15 ± 0.053	-
Collection Date	10-08-00	10-08-00		
Lab Code	ESS-7957	ESS-7958		
Location	E-12	E-33		
Gross Beta	4.93 ± 1.09	11.39 ± 1.41		2.0
Be-7	0.15 ± 0.057	0.045 ± 0.059		
K-40	3.95 ± 0.33	9.89 ± 0.52		-
Cs-137	0.030 ± 0.013	0.032 ± 0.017		0.15
Tl-208	0.080 ± 0.016	0.037 ± 0.014		-
Pb-212	0.19 ± 0.023	0.14 ± 0.061		-
Bi-214	0.17 ± 0.027	0.15 ± 0.032		-
Ra-226	0.44 ± 0.17	0.42 ± 0.20		-
Ac-228	0.26 ± 0.044	0.15 ± 0.064		-

POINT BEACH NUCLEAR PLANT
 RADIOACTIVITY IN SOIL SAMPLES
 (Semiannual Collections)

Sample Description and Concentration (pCi/g dry)

Collection Date	05-24-00	05-24-00	05-24-00	Required
Lab Code	ESO-3626	ESO-3627	ESO-3628	LLD
Location	E-01	E-02	E-03	
Gross Beta	23.30 ± 2.88	26.02 ± 2.90	26.19 ± 2.88	2.0
Be-7	0.04 ± 0.10	0.30 ± 0.12	0.23 ± 0.09	
K-40	15.98 ± 0.96	19.98 ± 1.22	19.92 ± 0.86	-
Cs-137	0.12 ± 0.04	0.19 ± 0.05	0.17 ± 0.02	0.15
Tl-208	0.18 ± 0.05	0.21 ± 0.04	0.18 ± 0.04	-
Pb-212	0.38 ± 0.04	0.19 ± 0.04	0.46 ± 0.03	-
Bi-214	0.33 ± 0.06	0.34 ± 0.07	0.45 ± 0.06	-
Ra-226	0.74 ± 0.28	0.54 ± 0.30	0.87 ± 0.25	-
Ac-228	0.56 ± 0.12	0.75 ± 0.13	0.63 ± 0.11	-
Collection Date	05-24-00	05-24-00	05-24-00	
Lab Code	ESO-3629, 30	ESO-3631	ESO-3632	
Location	E-04	E-06	E-08	
Gross Beta	19.82 ± 1.96	9.08 ± 1.94	18.79 ± 2.69	2.0
Be-7	0.04 ± 0.07	0.02 ± 0.05	0.02 ± 0.06	
K-40	12.64 ± 0.42	7.60 ± 0.37	16.56 ± 0.60	-
Cs-137	0.22 ± 0.02	0.32 ± 0.02	0.00 ± 0.01	0.15
Tl-208	0.15 ± 0.02	0.07 ± 0.02	0.15 ± 0.02	-
Pb-212	0.40 ± 0.03	0.16 ± 0.02	0.39 ± 0.03	-
Bi-214	0.37 ± 0.05	0.19 ± 0.03	0.34 ± 0.04	-
Ra-226	0.98 ± 0.22	0.27 ± 0.14	0.74 ± 0.20	-
Ac-228	0.45 ± 0.07	0.23 ± 0.05	0.45 ± 0.06	-
Collection Date	05-24-00	05-24-00	05-24-00	
Lab Code	ESO-3633	ESO-3634	ESO-3635	
Location	E-09	E-20	E-37	
Gross Beta	27.91 ± 2.77	20.58 ± 2.44	24.61 ± 2.58	2.0
Be-7	0.00 ± 0.09	0.21 ± 0.10	0.05 ± 0.09	
K-40	21.05 ± 0.82	16.42 ± 0.89	17.61 ± 0.81	-
Cs-137	0.20 ± 0.03	0.24 ± 0.04	0.29 ± 0.02	0.15
Tl-208	0.23 ± 0.03	0.15 ± 0.03	0.09 ± 0.02	-
Pb-212	0.67 ± 0.04	0.19 ± 0.03	0.13 ± 0.03	-
Bi-214	0.46 ± 0.05	0.43 ± 0.08	0.14 ± 0.05	-
Ra-226	1.46 ± 0.27	0.44 ± 0.22	0.52 ± 0.20	-
Ac-228	0.61 ± 0.10	0.53 ± 0.09	0.58 ± 0.11	-

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN SOIL SAMPLES
(Semiannual Collections)

Sample Description and Concentration (pCi/g dry)				
Collection Date	10-08-00	10-08-00	10-08-00	Required
Lab Code	ESO-7944	ESO-7945	ESO-7946	LLD
Location	E-01	E-02	E-03	
Gross Beta	23.51 ± 1.88	24.33 ± 1.90	27.11 ± 1.95	2.0
Be-7	0.05 ± 0.08	0.07 ± 0.08	0.16 ± 0.09	
K-40	15.58 ± 0.75	18.84 ± 0.81	21.18 ± 0.86	-
Cs-137	0.21 ± 0.03	0.13 ± 0.03	0.20 ± 0.03	0.15
Tl-208	0.16 ± 0.03	0.18 ± 0.03	0.17 ± 0.03	-
Pb-212	0.41 ± 0.04	0.69 ± 0.10	0.49 ± 0.05	-
Bi-214	0.40 ± 0.05	0.42 ± 0.05	0.44 ± 0.06	-
Ra-226	0.80 ± 0.26	1.08 ± 0.28	0.94 ± 0.29	-
Ac-228	0.60 ± 0.09	0.68 ± 0.10	0.66 ± 0.09	-
Collection Date	10-08-00	10-08-00	10-08-00	
Lab Code	ESO-7947	ESO-7948	ESO-7949	
Location	E-04	E-06	E-08	
Gross Beta	24.33 ± 1.85	14.56 ± 1.50	16.52 ± 1.57	2.0
Be-7	-0.07 ± 0.08	-0.08 ± 0.07	-0.01 ± 0.07	
K-40	16.33 ± 0.76	12.41 ± 0.63	15.42 ± 0.69	-
Cs-137	0.17 ± 0.03	0.32 ± 0.03	0.19 ± 0.03	0.15
Tl-208	0.14 ± 0.03	0.06 ± 0.02	0.10 ± 0.02	-
Pb-212	0.37 ± 0.03	0.21 ± 0.07	0.37 ± 0.08	-
Bi-214	0.33 ± 0.05	0.15 ± 0.04	0.26 ± 0.04	-
Ra-226	0.96 ± 0.25	0.37 ± 0.22	0.62 ± 0.22	-
Ac-228	0.44 ± 0.08	0.24 ± 0.07	0.42 ± 0.10	-
Collection Date	10-08-00	10-08-00	10-08-00	
Lab Code	ESO-7950,1	ESO-7952	ESO-7953	
Location	E-09	E-20	E-37	
Gross Beta	28.62 ± 1.40	21.68 ± 1.82	20.06 ± 1.73	2.0
Be-7	0.07 ± 0.09	0.08 ± 0.08	0.34 ± 0.22	
K-40	21.57 ± 0.65	15.26 ± 0.74	11.49 ± 1.15	-
Cs-137	0.20 ± 0.16	0.27 ± 0.03	1.29 ± 0.10	0.15
Tl-208	0.23 ± 0.02	0.17 ± 0.03	0.13 ± 0.06	-
Pb-212	0.82 ± 0.09	0.49 ± 0.03	0.28 ± 0.05	-
Bi-214	0.49 ± 0.05	0.38 ± 0.05	0.24 ± 0.08	-
Ra-226	1.26 ± 0.22	1.06 ± 0.30	0.83 ± 0.44	-
Ac-228	0.72 ± 0.07	0.54 ± 0.07	0.31 ± 0.13	-

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN VEGETATION SAMPLES
(Tri-Annual Collections)

Sample Description and Concentration (pCi/g wet)				
Location	E-01	E-02	E-03	
Collection Date	05-24-00	05-24-00	05-24-00	
Lab Code	EG-3617	EG-3618	EG-3619	Req. LLD
Ratio (wet/dry)	3.86	4.37	4.64	-
Gross Beta	5.88 ± 0.20	6.03 ± 0.19	5.99 ± 0.19	0.25
Be-7	0.86 ± 0.32	0.87 ± 0.23	0.82 ± 0.25	0.25
K-40	5.54 ± 0.69	5.97 ± 0.72	5.88 ± 0.65	0.25
I-131	0.006 ± 0.012	0.007 ± 0.014	0.004 ± 0.013	0.060
Cs-134	0.015 ± 0.014	0.012 ± 0.017	0.010 ± 0.016	0.060
Cs-137	0.002 ± 0.015	0.005 ± 0.014	-0.011 ± 0.013	0.080
Other Gammas ^a	0.002 ± 0.019	-0.007 ± 0.015	-0.008 ± 0.020	0.060
Location	E-04	E-06	E-08	
Collection Date	05-24-00	05-24-00	05-24-00	
Lab Code	EG-3620	EG-3621	EG-3622	Req. LLD
Ratio (wet/dry)	4.54	4.35	3.39	-
Gross Beta	6.03 ± 0.20	5.95 ± 0.18	6.93 ± 0.22	0.25
Be-7	0.66 ± 0.25	0.19 ± 0.10	0.97 ± 0.26	0.25
K-40	6.08 ± 0.67	5.54 ± 0.51	6.34 ± 0.69	0.25
I-131	-0.002 ± 0.011	-0.012 ± 0.009	0.015 ± 0.011	0.060
Cs-134	0.007 ± 0.015	0.007 ± 0.011	-0.003 ± 0.014	0.060
Cs-137	0.011 ± 0.012	0.000 ± 0.010	0.016 ± 0.013	0.080
Other Gammas ^a	-0.005 ± 0.015	0.007 ± 0.010	0.018 ± 0.017	0.060
Location	E-09	E-20	E-37	
Collection Date	05-24-00	05-24-00	05-24-00	
Lab Code	EG-3623	EG-3624	EG-3625	Req. LLD
Ratio (wet/dry)	3.23	4.48	4.62	-
Gross Beta	6.44 ± 0.23	6.67 ± 0.23	5.97 ± 0.18	0.25
Be-7	0.68 ± 0.10	0.58 ± 0.30	0.52 ± 0.19	0.25
K-40	4.67 ± 0.38	6.84 ± 0.75	3.41 ± 0.41	0.25
I-131	0.003 ± 0.007	-0.001 ± 0.012	0.001 ± 0.008	0.060
Cs-134	0.006 ± 0.007	0.002 ± 0.015	0.002 ± 0.010	0.060
Cs-137	0.005 ± 0.007	-0.011 ± 0.013	0.001 ± 0.008	0.080
Other Gammas ^a	0.001 ± 0.007	-0.008 ± 0.019	-0.15 ± 0.024	0.060

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN VEGETATION SAMPLES
(Tri-Annual Collections)

Sample Description and Concentration (pCi/g wet)				
Location	E-01	E-02	E-03	
Collection Date	07-25-00	07-25-00	07-25-00	
Lab Code	EG-5388, 9	EG-5390	EG-5391	Req. LLD
Ratio (wet/dry)	3.17	4.17	2.78	-
Gross Beta	5.73 ± 0.11	5.89 ± 0.15	5.90 ± 0.17	0.25
Be-7	1.58 ± 0.13	1.54 ± 0.21	1.06 ± 0.15	0.25
K-40	5.51 ± 0.33	7.10 ± 0.56	5.40 ± 0.37	0.25
I-131	-0.005 ± 0.008	-0.002 ± 0.010	0.008 ± 0.006	0.060
Cs-134	0.008 ± 0.010	0.004 ± 0.012	-0.006 ± 0.007	0.060
Cs-137	-0.003 ± 0.009	0.010 ± 0.010	0.004 ± 0.006	0.080
Other Gammas ^a	0.004 ± 0.009	0.009 ± 0.011	0.006 ± 0.006	0.060
Location	E-04	E-06	E-08	
Collection Date	07-25-00	07-25-00	07-25-00	
Lab Code	EG-5392	EG-5393	EG-5394	Req. LLD
Ratio (wet/dry)	2.60	2.91	2.60	-
Gross Beta	5.48 ± 0.17	4.90 ± 0.13	5.74 ± 0.15	0.25
Be-7	1.92 ± 0.26	0.62 ± 0.11	0.75 ± 0.11	0.25
K-40	5.87 ± 0.60	3.85 ± 0.36	3.74 ± 0.23	0.25
I-131	-0.026 ± 0.010	0.000 ± 0.005	0.006 ± 0.005	0.060
Cs-134	0.005 ± 0.013	0.001 ± 0.008	-0.002 ± 0.006	0.060
Cs-137	0.013 ± 0.011	0.020 ± 0.009	0.006 ± 0.005	0.080
Other Gammas ^a	-0.006 ± 0.011	-0.003 ± 0.007	0.002 ± 0.005	0.060
Location	E-09	E-20	E-37	
Collection Date	07-25-00	07-25-00	07-25-00	
Lab Code	EG-5395	EG-5396	EG-5397	Req. LLD
Ratio (wet/dry)	2.48	2.64	3.65	-
Gross Beta	7.07 ± 0.20	7.81 ± 0.23	6.14 ± 0.16	0.25
Be-7	1.23 ± 0.09	2.01 ± 0.15	0.99 ± 0.12	0.25
K-40	6.67 ± 0.30	6.45 ± 0.28	6.21 ± 0.26	0.25
I-131	0.003 ± 0.004	0.001 ± 0.005	-0.002 ± 0.004	0.060
Cs-134	-0.002 ± 0.006	-0.003 ± 0.006	0.003 ± 0.005	0.060
Cs-137	0.003 ± 0.005	0.000 ± 0.005	-0.003 ± 0.004	0.080
Other Gammas ^a	0.003 ± 0.005	0.003 ± 0.007	-0.003 ± 0.005	0.060

^a See Introduction.

POINT BEACH NUCLEAR PLANT
RADIOACTIVITY IN VEGETATION SAMPLES
(Tri-Annual Collections)

Sample Description and Concentration (pCi/g wet)				
Location	E-01	E-02	E-03	
Collection Date	10-08-00	10-08-00	10-08-00	
Lab Code	EG-7626	EG-7627	EG-7628	Req. LLD
Ratio (wet/dry)	2.99	3.37	4.63	-
Gross Beta	5.30 ± 0.15	5.69 ± 0.12	3.77 ± 0.10	0.25
Be-7	2.72 ± 0.25	2.33 ± 0.23	1.35 ± 0.27	0.25
K-40	5.14 ± 0.45	5.98 ± 0.43	6.73 ± 0.75	0.25
I-131	0.003 ± 0.009	-0.007 ± 0.008	-0.007 ± 0.010	0.060
Cs-134	0.012 ± 0.010	-0.005 ± 0.008	0.000 ± 0.014	0.060
Cs-137	0.003 ± 0.008	0.009 ± 0.007	0.004 ± 0.012	0.080
Other Gammas ^a	0.010 ± 0.011	0.004 ± 0.009	0.019 ± 0.018	0.060
Location	E-04	E-06	E-08	
Collection Date	10-08-00	10-08-00	10-08-00	
Lab Code	EG-7629	EG-7630	EG-7631	Req. LLD
Ratio (wet/dry)	3.46	2.91	3.00	-
Gross Beta	4.78 ± 0.12	6.25 ± 0.13	6.45 ± 0.15	0.25
Be-7	3.10 ± 0.27	4.70 ± 0.46	3.84 ± 0.14	0.25
K-40	4.70 ± 0.47	2.50 ± 0.41	4.57 ± 0.72	0.25
I-131	0.006 ± 0.008	0.040 ± 0.014	-0.011 ± 0.016	0.060
Cs-134	0.015 ± 0.009	0.006 ± 0.013	-0.014 ± 0.019	0.060
Cs-137	0.001 ± 0.008	0.529 ± 0.045 ^b	0.001 ± 0.017	0.080
Other Gammas ^a	0.013 ± 0.011	0.001 ± 0.012	0.021 ± 0.024	0.060
Location	E-09	E-20	E-37	
Collection Date	10-08-00	10-08-00	10-08-00	
Lab Code	EG-7632	EG-7633	EG-7634	Req. LLD
Ratio (wet/dry)	2.58	3.46	4.13	-
Gross Beta	6.96 ± 0.17	6.78 ± 0.17	3.70 ± 0.09	0.25
Be-7	4.24 ± 0.14	2.15 ± 0.17	2.39 ± 0.19	0.25
K-40	6.41 ± 0.21	5.61 ± 0.22	3.65 ± 0.32	0.25
I-131	0.004 ± 0.003	0.012 ± 0.005	0.005 ± 0.006	0.060
Cs-134	0.002 ± 0.004	0.003 ± 0.005	0.002 ± 0.007	0.060
Cs-137	0.004 ± 0.003	0.006 ± 0.005	0.012 ± 0.008	0.080
Other Gammas ^a	0.006 ± 0.004	0.005 ± 0.005	0.002 ± 0.006	0.060

^a See Introduction.

^b Recount result = 0.610±0.053 pCi/gram wet

POINT BEACH NUCLEAR PLANT

Aquatic Vegetation, analyses for gross beta and gamma emitting isotopes.

Collection: Semiannual

Units: pCi/g wet

Sample Description and Concentration			
Collection Date	06-08-00	06-08-00	Required
Lab Code	ESL-3886	ESL-3887	LLD
Location	E-05	E-12	
Ratio (wet wt./dry wt.)	3.85	4.17	
Gross Beta	4.44 ± 0.44	1.93 ± 0.25	0.25
Be-7	1.35 ± 0.14	1.14 ± 0.13	-
K-40	1.48 ± 0.26	1.54 ± 0.20	-
Co-58	0.001 ± 0.006	0.019 ± 0.007	0.25
Co-60	0.005 ± 0.007	0.020 ± 0.008	0.25
Cs-134	0.003 ± 0.007	0.004 ± 0.007	0.25
Cs-137	0.037 ± 0.009	0.027 ± 0.011	0.25
Collection Date	08-01-00	08-01-00	
Lab Code	ESL-5577	ESL-5578	
Location	E-05	E-12	
Ratio (wet wt./dry wt.)	3.49	2.98	
Gross Beta	3.67 ± 0.50	3.08 ± 0.49	0.25
Be-7	1.56 ± 0.43	1.23 ± 0.70	-
K-40	2.60 ± 0.53	2.30 ± 0.82	-
Co-58	0.000 ± 0.016	0.006 ± 0.030	0.25
Co-60	0.027 ± 0.018	0.016 ± 0.045	0.25
Cs-134	0.019 ± 0.021	0.025 ± 0.035	0.25
Cs-137	0.056 ± 0.028	0.030 ± 0.038	0.25
Collection Date	10-03-00	10-03-00	
Lab Code	ESL-7304,5	ESL-7306	
Location	E-05	E-12	
Ratio (wet wt./dry wt.)	5.96	2.73	
Gross Beta	2.90 ± 0.70	6.50 ± 0.67	0.25
Be-7	0.20 ± 0.16	0.34 ± 0.13	-
K-40	1.44 ± 0.34	1.09 ± 0.46	-
Co-58	-0.005 ± 0.017	-0.006 ± 0.014	0.25
Co-60	-0.001 ± 0.017	0.008 ± 0.015	0.25
Cs-134	-0.008 ± 0.015	0.002 ± 0.017	0.25
Cs-137	0.005 ± 0.020	0.004 ± 0.016	0.25

POINT BEACH NUCLEAR PLANT
AMBIENT GAMMA RADIATION (TLD)
1st. Quarter, 2000

Location	Days in Field	Total mR	Net mR	Net mR per 7 days
Date Annealed:		12-29-99	Days in the field	91
Date Placed:		01-05-00	Days from Annealing	
Date Removed:		04-05-00	to Readout:	115
Date Read:		04-22-00		
<u>Indicator</u>				
E-1	91	13.7 ± 0.3	11.4 ± 0.4	0.88 ± 0.03
E-2	-	ND ^a	ND ^a	ND ^a
E-3	91	15.1 ± 0.3	12.8 ± 0.4	0.98 ± 0.03
E-4	91	13.7 ± 0.5	11.4 ± 0.5	0.88 ± 0.04
E-5	91	15.9 ± 0.5	13.6 ± 0.5	1.05 ± 0.04
E-6	91	13.4 ± 0.2	11.1 ± 0.3	0.85 ± 0.02
E-7	91	12.3 ± 0.4	10.0 ± 0.4	0.77 ± 0.03
E-8	91	13.4 ± 0.3	11.1 ± 0.4	0.85 ± 0.03
E-9	91	15.6 ± 0.5	13.3 ± 0.5	1.02 ± 0.04
E-12	91	16.5 ± 0.6	14.2 ± 0.6	1.09 ± 0.05
E-14	91	16.4 ± 1.1	14.1 ± 1.1	1.08 ± 0.09
E-15	91	16.5 ± 0.6	14.2 ± 0.6	1.09 ± 0.05
E-16	91	17.5 ± 0.9	15.2 ± 0.9	1.17 ± 0.07
E-17	91	13.1 ± 0.5	10.8 ± 0.5	0.83 ± 0.04
E-18	91	14.1 ± 0.7	11.8 ± 0.7	0.91 ± 0.06
E-22	91	14.6 ± 0.2	12.3 ± 0.3	0.95 ± 0.02
E-23	91	15.3 ± 0.7	13.0 ± 0.7	1.00 ± 0.06
E-24	91	16.5 ± 0.7	14.2 ± 0.7	1.09 ± 0.06
E-25	91	14.8 ± 0.4	12.5 ± 0.4	0.96 ± 0.03
E-26	91	15.1 ± 0.4	12.8 ± 0.4	0.98 ± 0.03
E-27	91	12.7 ± 0.5	10.4 ± 0.5	0.80 ± 0.04
E-28	91	11.7 ± 0.2	9.4 ± 0.3	0.72 ± 0.02
E-29	91	13.1 ± 0.4	10.8 ± 0.4	0.83 ± 0.03
E-30	91	15.1 ± 0.4	12.8 ± 0.4	0.98 ± 0.03
E-31	91	14.4 ± 0.6	12.1 ± 0.6	0.93 ± 0.05
E-32	91	15.2 ± 0.5	12.9 ± 0.5	0.99 ± 0.04
E-34	91	8.9 ± 0.3	6.6 ± 0.4	0.51 ± 0.03
E-35	91	9.8 ± 0.2	7.5 ± 0.3	0.58 ± 0.02
E-36	91	9.4 ± 0.3	7.1 ± 0.4	0.55 ± 0.03
E-38	91	12.5 ± 0.6	10.2 ± 0.6	0.78 ± 0.05
E-39	91	10.6 ± 0.3	8.3 ± 0.4	0.64 ± 0.03
<u>Control</u>				
E-20	91	14.2 ± 0.7	11.9 ± 0.7	0.91 ± 0.06
Mean±s.d.		13.9 ± 2.2	11.6 ± 2.2	0.89 ± 0.17
<u>In-Transit Exposure</u>				
Date Annealed		12-29-99	03-30-00	
Date Read		01-22-00	04-22-00	
<u>Total mR</u>				
ITC-1		2.3 ± 0.1	2.3 ± 0.1	
ITC-2		2.4 ± 0.1	2.3 ± 0.1	

← includes control location

^aTLD lost in field.

POINT BEACH NUCLEAR PLANT
 AMBIENT GAMMA RADIATION (TLD)
 2nd Quarter, 2000

Date Annealed:	03-30-00	Days in the field	92
Date Placed:	04-05-00	Days from Annealing	
Date Removed:	07-06-00	to Readout:	114
Date Read:	07-22-00		

Location	Days in Field	Total mR	Net mR	Net mR per 7 days
<u>Indicator</u>				
E-1	92	13.9 ± 0.5	11.6 ± 0.6	0.88 ± 0.05
E-2	92	16.9 ± 0.5	14.6 ± 0.6	1.11 ± 0.04
E-3	92	15.3 ± 0.3	13.0 ± 0.4	0.99 ± 0.03
E-4	92	14.2 ± 0.8	11.9 ± 0.8	0.90 ± 0.06
E-5	92	14.9 ± 0.5	12.6 ± 0.5	0.96 ± 0.04
E-6	92	12.3 ± 0.5	10.0 ± 0.6	0.76 ± 0.05
E-7	92	13.6 ± 0.4	11.3 ± 0.5	0.86 ± 0.03
E-8	92	12.0 ± 0.3	9.7 ± 0.4	0.74 ± 0.03
E-9	92	13.8 ± 0.5	11.5 ± 0.6	0.87 ± 0.05
E-12	92	13.9 ± 0.6	11.6 ± 0.7	0.88 ± 0.05
E-14	92	16.6 ± 0.8	14.3 ± 0.9	1.09 ± 0.07
E-15	92	18.3 ± 0.5	16.0 ± 0.6	1.22 ± 0.04
E-16	92	15.3 ± 0.3	13.0 ± 0.4	0.99 ± 0.03
E-17	92	13.4 ± 0.3	11.1 ± 0.4	0.85 ± 0.03
E-18	92	15.5 ± 0.3	13.2 ± 0.4	1.00 ± 0.03
E-22	92	15.4 ± 0.4	13.1 ± 0.5	0.99 ± 0.04
E-23	92	15.5 ± 0.5	13.2 ± 0.6	1.00 ± 0.04
E-24	92	15.4 ± 0.4	13.1 ± 0.5	1.00 ± 0.04
E-25	92	15.1 ± 0.3	12.8 ± 0.4	0.98 ± 0.03
E-26	92	13.9 ± 0.4	11.5 ± 0.5	0.88 ± 0.04
E-27	92	14.1 ± 1.0	11.8 ± 1.0	0.90 ± 0.08
E-28	92	13.7 ± 0.2	11.4 ± 0.4	0.87 ± 0.03
E-29	92	15.0 ± 0.3	12.7 ± 0.4	0.97 ± 0.03
E-30	92	15.2 ± 0.5	12.9 ± 0.6	0.98 ± 0.04
E-31	92	15.3 ± 0.4	13.0 ± 0.5	0.99 ± 0.04
E-32	92	18.1 ± 0.6	15.8 ± 0.7	1.20 ± 0.05
E-34	92	10.5 ± 0.4	8.2 ± 0.5	0.62 ± 0.03
E-35	92	10.5 ± 0.4	8.2 ± 0.5	0.62 ± 0.04
E-36	92	10.2 ± 0.2	7.9 ± 0.4	0.60 ± 0.03
E-38	92	13.7 ± 0.4	11.4 ± 0.5	0.87 ± 0.04
E-39	92	10.5 ± 0.3	8.2 ± 0.4	0.63 ± 0.03
<u>Control</u>				
E-20	92	13.7 ± 0.3	11.4 ± 0.4	0.87 ± 0.03
Mean±s.d.		14.2 ± 2.0	11.9 ± 2.0	0.91 ± 0.15
<u>In-Transit Exposure</u>				
Date Annealed		03-30-00	06-29-00	
Date Read		04-22-00	07-22-00	
<u>Total mR</u>				
ITC-1		2.3 ± 0.1	2.4 ± 0.2	
ITC-2		2.3 ± 0.1	2.2 ± 0.2	

POINT BEACH NUCLEAR PLANT
 AMBIENT GAMMA RADIATION (TLD)
 3rd Quarter, 2000

Date Annealed:	06-29-00	Days in the field	95	
Date Placed:	07-06-00	Days from Annealing		
Date Removed:	10-09-00	to Readout:	110	
Date Read:	10-17-00			
Location	Days in Field	Total mR	Net mR	Net mR per 7 days
<u>Indicator</u>				
E-1	95	14.4 ± 0.6	12.0 ± 0.7	0.89 ± 0.05
E-2	95	17.4 ± 0.4	14.9 ± 0.5	1.10 ± 0.04
E-3	95	16.0 ± 0.4	13.6 ± 0.5	1.00 ± 0.04
E-4	95	15.5 ± 0.2	13.1 ± 0.4	0.96 ± 0.03
E-5	95	15.9 ± 0.4	13.5 ± 0.5	1.00 ± 0.04
E-6	95	14.4 ± 0.6	12.0 ± 0.7	0.88 ± 0.05
E-7	95	14.2 ± 0.4	11.8 ± 0.5	0.87 ± 0.04
E-8	95	12.6 ± 0.2	10.2 ± 0.4	0.75 ± 0.03
E-9	95	15.8 ± 0.2	13.4 ± 0.4	0.99 ± 0.03
E-12	95	14.2 ± 0.2	11.8 ± 0.4	0.87 ± 0.03
E-14	95	16.8 ± 0.7	14.4 ± 0.8	1.06 ± 0.06
E-15	95	17.9 ± 0.5	15.5 ± 0.6	1.14 ± 0.04
E-16	95	16.2 ± 0.5	13.7 ± 0.6	1.01 ± 0.04
E-17	95	14.3 ± 0.2	11.8 ± 0.4	0.87 ± 0.03
E-18	95	18.5 ± 0.6	16.0 ± 0.7	1.18 ± 0.05
E-22	95	15.7 ± 0.7	13.3 ± 0.8	0.98 ± 0.06
E-23	95	17.4 ± 0.5	14.9 ± 0.6	1.10 ± 0.04
E-24	95	16.0 ± 0.4	13.6 ± 0.5	1.00 ± 0.04
E-25	95	16.4 ± 1.1	14.0 ± 1.1	1.03 ± 0.08
E-26	95	12.7 ± 0.5	10.3 ± 0.6	0.76 ± 0.04
E-27	95	15.8 ± 0.4	13.4 ± 0.5	0.99 ± 0.04
E-28	95	16.0 ± 0.4	13.6 ± 0.5	1.00 ± 0.04
E-29	95	15.7 ± 0.2	13.3 ± 0.4	0.98 ± 0.03
E-30	95	16.0 ± 0.5	13.6 ± 0.6	1.00 ± 0.04
E-31	95	16.2 ± 0.7	13.8 ± 0.8	1.01 ± 0.06
E-32	95	15.8 ± 0.2	13.4 ± 0.4	0.99 ± 0.03
E-34	95	10.5 ± 0.4	8.1 ± 0.5	0.60 ± 0.04
E-35	95	10.7 ± 0.4	8.3 ± 0.5	0.61 ± 0.04
E-36	95	10.9 ± 0.4	8.5 ± 0.5	0.62 ± 0.04
E-38	95	14.4 ± 0.5	12.0 ± 0.6	0.88 ± 0.04
E-39	95	10.9 ± 0.2	8.5 ± 0.4	0.62 ± 0.03
<u>Control</u>				
E-20	95	14.1 ± 0.5	11.7 ± 0.6	0.86 ± 0.04
Mean±s.d.		15.0 ± 2.1	12.6 ± 2.1	0.93 ± 0.16
<u>In-Transit Exposure</u>				
Date Annealed		06-29-00	09-29-00	
Date Read		07-22-00	10-17-00	
<u>Total mR</u>				
ITC-1		2.4 ± 0.2	2.5 ± 0.2	
ITC-2		2.2 ± 0.2	2.6 ± 0.1	

POINT BEACH NUCLEAR PLANT
 AMBIENT GAMMA RADIATION (TLD)
 4th Quarter, 2000

Date Annealed:	09-29-00	Days in the field	88
Date Placed:	10-09-00	Days from Annealing	
Date Removed:	01-05-01	to Readout:	114
Date Read:	01-21-01		

Location	Days in Field	Total mR	Net mR	Net mR per 7 days
<u>Indicator</u>				
E-1	88	14.4 ± 1.0	11.3 ± 1.1	0.90 ± 0.09
E-2	88	16.8 ± 0.5	13.7 ± 0.7	1.09 ± 0.05
E-3	88	15.0 ± 0.4	11.9 ± 0.6	0.95 ± 0.05
E-4	88	14.2 ± 0.8	11.1 ± 0.9	0.88 ± 0.07
E-5	88	15.1 ± 0.3	12.0 ± 0.5	0.95 ± 0.04
E-6	88	13.6 ± 0.7	10.5 ± 0.8	0.84 ± 0.07
E-7	88	14.7 ± 0.5	11.6 ± 0.7	0.92 ± 0.05
E-8	88	13.7 ± 0.5	10.6 ± 0.7	0.84 ± 0.05
E-9	88	15.1 ± 0.4	12.0 ± 0.6	0.95 ± 0.05
E-12	88	15.0 ± 0.3	11.9 ± 0.5	0.95 ± 0.04
E-14	88	16.2 ± 0.9	13.1 ± 1.0	1.04 ± 0.08
E-15	88	17.7 ± 0.8	14.6 ± 0.9	1.16 ± 0.07
E-16	88	15.0 ± 0.4	11.9 ± 0.6	0.95 ± 0.05
E-17	88	13.5 ± 0.4	10.4 ± 0.6	0.83 ± 0.05
E-18	88	18.0 ± 0.5	14.9 ± 0.7	1.19 ± 0.05
E-22	88	15.3 ± 0.8	12.2 ± 0.9	0.97 ± 0.07
E-23	88	16.3 ± 0.4	13.2 ± 0.6	1.05 ± 0.05
E-24	88	15.1 ± 0.3	12.0 ± 0.5	0.95 ± 0.04
E-25	88	15.5 ± 1.2	12.4 ± 1.3	0.99 ± 0.10
E-26	88	13.4 ± 0.4	10.3 ± 0.6	0.82 ± 0.05
E-27	88	15.3 ± 0.4	12.2 ± 0.6	0.97 ± 0.05
E-28	88	14.9 ± 0.5	11.8 ± 0.7	0.94 ± 0.05
E-29	88	14.6 ± 0.9	11.5 ± 1.0	0.91 ± 0.08
E-30	88	15.6 ± 1.0	12.5 ± 1.1	0.99 ± 0.09
E-31	88	15.4 ± 1.2	12.3 ± 1.3	0.98 ± 0.10
E-32	-	N.D. ^a	N.D. ^a	N.D. ^a
E-34	88	10.2 ± 0.3	7.1 ± 0.5	0.56 ± 0.04
E-35	88	10.2 ± 0.2	7.1 ± 0.5	0.56 ± 0.04
E-36	88	11.8 ± 0.1	8.7 ± 0.4	0.69 ± 0.03
E-38	88	14.0 ± 0.8	10.9 ± 0.9	0.87 ± 0.07
E-39	88	14.3 ± 1.1	11.2 ± 1.2	0.89 ± 0.09
<u>Control</u>				
E-20	88	15.0 ± 0.2	11.9 ± 0.5	0.95 ± 0.04
Mean±s.d.		14.7 ± 1.7	11.6 ± 1.7	0.92 ± 0.14
<u>In-Transit Exposure</u>				
Date Annealed		09-29-00	12-28-00	
Date Read		10-17-00	01-10-01	
<u>Total mR</u>				
ITC-1		2.5 ± 0.2	3.6 ± 0.3	
ITC-2		2.6 ± 0.1	3.7 ± 0.2	

^aTLD lost in field.



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APPENDIX A

INTERLABORATORY COMPARISON PROGRAM RESULTS

NOTE: Environmental, Inc., Midwest Laboratory participates in intercomparison studies administered by Environmental Resources Associates, and serves as a replacement for studies conducted previously by the U.S. EPA Environmental Monitoring Systems Laboratory, Las Vegas, Nevada. Results are reported in Appendix A. TLD Intercomparison results, in-house spikes, blanks, duplicates and mixed analyte performance evaluation program results are also reported. Appendix A is updated four times a year; the complete Appendix is included in March, June, September and December monthly progress reports only.

January, 2000 through December, 2000

Appendix A

Interlaboratory Comparison Program Results

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

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

The results in Table A-1 were obtained through participation in the environmental sample crosscheck program for milk, water and air filters during the past twelve months. Data for previous years is available upon request.

This program was conducted by the U.S. Environmental Protection Agency Office of Research and Development National Exposure Research Laboratory Characterization Research Division-Las Vegas, Nevada.

The results in Table A-2 were obtained for Thermoluminescent Dosimeters (TLDs), via various International Intercomparisons of Environmental Dosimeters under the sponsorships listed in Table A-2. Results of crosscheck testing with Teledyne Brown Engineering are also listed.

Table A-3 lists results of the analyses on in-house "spiked" samples for the past twelve months. All samples are prepared using NIST traceable sources. Data for previous years available upon request.

Table A-4 lists results of the analyses on in-house "blank" samples for the past twelve months. Data for previous years available upon request.

Table A-5 list results of the in-house "duplicate" program for the past twelve months. Acceptance is based on the difference of the results being less than the sum of the errors. Data for previous years available upon request.

The results in Table A-6 were obtained through participation in the Mixed Analyte Performance Evaluation Program.

The results in Table A-7 were obtained through participation in the Environmental Measurement Laboratory Quality Assessment Program.

Attachment A lists acceptance criteria for "spiked" samples.

Out-of-limit results are explained directly below the result.

12-31-00

ATTACHMENT A

ACCEPTANCE CRITERIA FOR "SPIKED" SAMPLES

LABORATORY PRECISION: ONE STANDARD DEVIATION VALUES FOR VARIOUS ANALYSES^a

Analysis	Level	One Standard Deviation for single determinations
Gamma Emitters	5 to 100 pCi/liter or kg >100 pCi/liter or kg	5.0 pCi/liter 5% of known value
Strontium-89 ^b	5 to 50 pCi/liter or kg >50 pCi/liter or kg	5.0 pCi/liter 10% of known value
Strontium-90 ^b	2 to 30 pCi/liter or kg >30 pCi/liter or kg	5.0 pCi/liter 10% of known value
Potassium-40	>0.1 g/liter or kg	5% of known value
Gross alpha	≤20 pCi/liter >20 pCi/liter	5.0 pCi/liter 25% of known value
Gross beta	≤100 pCi/liter >100 pCi/liter	5.0 pCi/liter 5% of known value
Tritium	≤4,000 pCi/liter >4,000 pCi/liter	1s = (pCi/liter) = 169.85 x (known) ^{0.0933} 10% of known value
Radium-226,-228	<0.1 pCi/liter	15% of known value
Plutonium	0.1 pCi/liter, gram, or sample	10% of known value
Iodine-131, Iodine-129 ^b	≤55 pCi/liter >55 pCi/liter	6.0 pCi/liter 10% of known value
Uranium-238, Nickel-63 ^b Technetium-99 ^b	≤35 pCi/liter >35 pCi/liter	6.0 pCi/liter 15% of known value
Iron-55 ^b	50 to 100 pCi/liter >100 pCi/liter	10 pCi/liter 10% of known value
Others ^b	-	20% of known value

^a From EPA publication, "Environmental Radioactivity Laboratory Intercomparison Studies Program, Fiscal Year, 1981-1982, EPA-600/4-81-004.

^b Laboratory limit.

Table A-1. Interlaboratory Comparison Crosscheck program, Environmental Resource Associates (ERA)³.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L ^b		
				Laboratory results ±2 Sigma ^c	ERA Result ^d 1s, N=1	Control Limits
STW-863	WATER	Jan, 2000	Gr. Alpha	39.3 ± 5.2	25.4 ± 6.4	14.5 - 36.3
The analysis was repeated and recalculated with Am-241 efficiency; result of reanalysis 29.32 ± 5.79 pCi/L. Internal spike program results do not indicate a problem.						
STW-863	WATER	Jan, 2000	Gr. Beta	40.7 ± 1.2	42.1 ± 4.2	33.4 - 50.8
STW-866	WATER	Jan, 2000	Sr-89	17.1 ± 2.2	22.5 ± 5.0	13.8 - 31.2
STW-866	WATER	Jan, 2000	Sr-90	8.1 ± 0.6	9.6 ± 5.0	0.9 - 18.3
STW-868	WATER	Feb, 2000	Ra-226	7.6 ± 0.5	8.3 ± 1.2	6.1 - 10.4
STW-868	WATER	Feb, 2000	Ra-228	5.6 ± 1.0	2.3 ± 0.6	1.3 - 3.2
Result of reanalysis: 6.34 ± 0.94. Activity confirmed by gamma spectroscopy (6.00 ± 1.42 pCi/L).						
STW-868	WATER	Feb, 2000	Uranium	5.4 ± 0.2	6.1 ± 3.0	0.9 - 11.3
STW-869	WATER	Mar, 2000	H-3	23,500.0 ± 306.0	23,800.0 ± 2,380.0	19,800.0 - 27,800.0
STW-867	WATER	Mar, 2000	Gr. Alpha	83.6 ± 5.8	58.4 ± 5.8	33.3 - 83.5
Results were recalculated with Am-241 efficiency; 57.80 ± 5.73 pCi/L. Refer to STW-863.						
STW-867	WATER	Mar, 2000	Gr. Beta	15.4 ± 0.9	16.8 ± 1.7	8.1 - 25.5
STW-876	WATER	Mar, 2000	I-131	18.7 ± 0.6	19.9 ± 2.0	18.1 - 28.5
STW-877	WATER	Apr, 2000	Gr. Alpha	52.3 ± 2.3	54.0 ± 13.5	30.8 - 77.2
STW-877	WATER	Apr, 2000	Ra-226	17.5 ± 1.1	18.6 ± 2.8	13.8 - 23.4
STW-877	WATER	Apr, 2000	Ra-228	3.7 ± 0.4	3.6 ± 0.9	2.0 - 5.1
STW-878	WATER	Apr, 2000	Co-60	19.2 ± 0.6	16.9 ± 5.0	8.2 - 25.6
STW-878	WATER	Apr, 2000	Cs-134	81.0 ± 1.3	86.4 ± 5.0	77.7 - 95.1
STW-878	WATER	Apr, 2000	Cs-137	119.0 ± 2.6	123.0 ± 6.2	112.0 - 134.0
STW-878	WATER	Apr, 2000	Gr. Beta	276.0 ± 9.6	289.0 ± 43.4	214.0 - 364.0
STW-878	WATER	Apr, 2000	Sr-89	32.3 ± 3.3	50.7 ± 5.0	42.0 - 59.4
STW-878	WATER	Apr, 2000	Sr-90	11.3 ± 1.0	32.8 ± 5.0	24.1 - 41.5
An error was found in calculation. Result of recalculation: Sr-89, 55.5 ± 7.2 pCi/L / Sr-90, 30.7 ± 3.0 pCi/L. Results of reanalysis: Sr-89, 47.4 ± 14.5 pCi/L / Sr-90, 33.0 ± 1.35 pCi/L. Both results are within limits.						
STW-879	WATER	Jun, 2000	Ba-133	22.4 ± 2.1	25.5 ± 5.0	16.8 - 34.2
STW-879	WATER	Jun, 2000	Co-60	69.9 ± 3.7	65.6 ± 5.0	56.9 - 74.3
STW-879	WATER	Jun, 2000	Cs-134	13.5 ± 0.8	13.8 ± 5.0	5.1 - 22.5
STW-879	WATER	Jun, 2000	Cs-137	232.0 ± 7.8	238.0 ± 11.9	217.0 - 259.0
STW-879	WATER	Jun, 2000	Zn-65	50.9 ± 3.8	54.6 ± 5.5	45.3 - 63.9
STW-880	WATER	Jun, 2000	Ra-226	2.8 ± 0.2	3.0 ± 0.5	2.2 - 3.8
STW-880	WATER	Jun, 2000	Ra-228	10.0 ± 0.9	13.0 ± 3.3	7.4 - 18.6
STW-880	WATER	Jun, 2000	Uranium	57.0 ± 4.4	63.4 ± 6.3	52.6 - 74.2
STW-883	WATER	Jul, 2000	Gr. Alpha	6.9 ± 1.1	7.2 ± 5.0	0.0 - 15.9
STW-883	WATER	Jul, 2000	Gr. Beta	88.8 ± 9.8	87.5 ± 10.0	70.2 - 105.0
STW-884	WATER	Aug, 2000	H-3	8,740.0 ± 174.0	8,320.0 ± 832.0	6,910.0 - 9,730.0
STW-891	WATER	Sep, 2000	Ra-226	17.9 ± 1.3	18.9 ± 2.8	14.0 - 23.8
STW-891	WATER	Sep, 2000	Ra-228	5.7 ± 0.5	6.2 ± 1.6	3.5 - 8.8

Table A-1. Interlaboratory Comparison Crosscheck program, Environmental Resource Associates (ERA)^a.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L ^b		
				Laboratory results ±2 Sigma ^c	ERA Result ^d 1s, N=1	Control Limits
STW-891	WATER	Sep, 2000	Uranium	10.3 ± 0.1	11.9 ± 3.0	6.7 - 17.1
STW-892	WATER	Oct, 2000	I-131	16.9 ± 0.3	15.9 ± 1.6	10.7 - 21.1
STW-892	WATER	Oct, 2000	I-131(g)	17.1 ± 5.4	15.9 ± 1.6	10.7 - 21.1
STW-893	WATER	Oct, 2000	Gr. Alpha	66.3 ± 5.3	74.4 ± 18.6	42.2 - 107.0
STW-893	WATER	Oct, 2000	Ra-226	10.1 ± 1.0	10.5 ± 1.6	7.8 - 13.2
STW-893	WATER	Oct, 2000	Ra-228	21.2 ± 0.5	19.4 ± 4.9	11.0 - 27.8
STW-893	WATER	Oct, 2000	Uranium	41.4 ± 1.9	44.5 ± 4.5	36.8 - 52.2
STW-894	WATER	Oct, 2000	Co-60	93.4 ± 1.6	91.1 ± 5.0	82.4 - 99.8
STW-894	WATER	Oct, 2000	Cs-134	54.8 ± 0.3	59.8 ± 5.0	51.1 - 68.5
STW-894	WATER	Oct, 2000	Cs-137	45.5 ± 2.3	45.0 ± 5.0	36.3 - 53.7
STW-894	WATER	Oct, 2000	Cs-137	45.5 ± 2.3	45.0 ± 5.0	36.3 - 53.7
STW-894	WATER	Oct, 2000	Gr. Beta	209.0 ± 7.9	256.0 ± 38.4	189.0 - 323.0
STW-894	WATER	Oct, 2000	Sr-89	32.8 ± 3.0	41.3 ± 5.0	32.6 - 50.0
STW-894	WATER	Oct, 2000	Sr-90	16.0 ± 2.4	18.0 ± 5.0	9.3 - 26.7
STW-895	WATER	Nov, 2000	Gr. Alpha	50.3 ± 2.6	60.3 ± 15.1	34.4 - 86.2
STW-895	WATER	Nov, 2000	Gr. Beta	28.6 ± 1.3	25.5 ± 5.0	16.8 - 34.2
STW-896	WATER	Nov, 2000	Ba-133	78.0 ± 2.0	82.2 ± 8.2	68.0 - 96.4
STW-896	WATER	Nov, 2000	Co-60	30.8 ± 1.7	27.8 ± 5.0	19.1 - 36.5
STW-896	WATER	Nov, 2000	Cs-134	67.2 ± 3.3	76.0 ± 5.0	67.3 - 84.7
<p>The mean value for Cs-134 of all participating laboratories was 70.7 pCi/L. Other gamma emitters are within limits, the counting efficiency is not suspect. Library values were reviewed and found to be correct.</p>						
STW-896	WATER	Nov, 2000	Cs-137	109.0 ± 1.0	106.0 ± 5.3	96.8 - 115.0
STW-896	WATER	Nov, 2000	Zn-65	81.5 ± 7.4	79.0 ± 7.9	65.3 - 92.7

^a Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the environmental samples crosscheck program operated by Environmental Resources Associates (ERA).

^b All results are in pCi/L, except for elemental potassium (K) data in milk, which are in mg/L; air filter samples, which are in pCi/Filter.

^c Unless otherwise indicated, the laboratory results are given as the mean ± 2 standard deviations 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.

Table A-2. Crosscheck program results; Thermoluminescent Dosimeters. (TLDs).

Lab Code	TLD Type	Date	Measurement	mR		
				Laboratory results ± 2 Sigma	Known Value	Average ± 2 Sigma (All Participants)
<u>Environmental, Inc.</u>						
1999-1	LiF-100 Chips	Mar, 1999	Reader 1, #1	14.5 ± 0.5	15.4	-
1999-1	LiF-100 Chips	Mar, 1999	Reader 1, #2	29.3 ± 1.0	31.8	-
1999-1	LiF-100 Chips	Mar, 1999	Reader 1, #3	60.0 ± 0.2	59.1	-
<u>Environmental, Inc.</u>						
1999-2	CaSO ₄ : Dy Cards	Mar, 1999	Reader 1, #1	18.3 ± 0.5	15.4	-
1999-2	CaSO ₄ : Dy Cards	Mar, 1999	Reader 1, #2	35.9 ± 1.3	31.8	-
1999-2	CaSO ₄ : Dy Cards	Mar, 1999	Reader 1, #3	66.5 ± 4.4	59.1	-
Chips and Cards were irradiated by Teledyne Brown Engineering, Westwood, New Jersey, in March, 1999.						
<u>Environmental, Inc.</u>						
2000-1	LiF-100 Chips	Mar, 2000	Reader 1, #1	14.4 ± 0.2	17.8	-
2000-1	LiF-100 Chips	Mar, 2000	Reader 1, #2	32.4 ± 0.1	35.5	-
2000-1	LiF-100 Chips	Mar, 2000	Reader 1, #3	61.8 ± 0.9	62.2	-
<u>Environmental, Inc.</u>						
2000-2	CaSO ₄ : Dy Cards	Mar, 2000	Reader 1, #1	21.3 ± 0.3	17.8	-
2000-2	CaSO ₄ : Dy Cards	Mar, 2000	Reader 1, #2	40.1 ± 1.9	35.5	-
2000-2	CaSO ₄ : Dy Cards	Mar, 2000	Reader 1, #3	69.9 ± 3.5	62.2	-

Chips and Cards were irradiated by Teledyne Brown Engineering, Westwood, New Jersey, in March, 2000.

Table A-3. In-house "spike" samples.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L ^a		
				Laboratory results 2s, n=1 ^b	Known Activity	Control ^c Limits
SPW-271	WATER	Jan, 2000	Ra-226	14.81 ± 0.44	13.76	9.63 - 17.89
SPW-271	WATER	Jan, 2000	Ra-228	16.97 ± 2.12	14.68	10.28 - 19.08
SPW-272	WATER	Jan, 2000	Gr. Alpha	44.35 ± 1.95	41.14	20.57 - 61.71
SPW-272	WATER	Jan, 2000	Gr. Beta	31.19 ± 5.02	29.50	19.50 - 39.50
SPW-756	WATER	Jan, 2000	H-3	56339.00 ± 666.00	57667.00	46133.60 - 69200.40
SPW-480	WATER	Jan, 2000	Co-60	32.33 ± 2.87	28.36	18.36 - 38.36
SPW-480	WATER	Jan, 2000	Cs-137	35.58 ± 4.20	36.83	26.83 - 46.83
SPMI-482	MILK	Jan, 2000	Sr-90	16.93 ± 1.07	14.10	4.10 - 24.10
SPAP-484	AIR FILTER	Jan, 2000	Cs-137	1.84 ± 0.01	1.72	1.03 - 2.41
SPW-917	WATER	Feb, 2000	Gr. Alpha	16.59 ± 1.90	41.10	20.55 - 61.65
An insufficient amount of Am-241 spike was available for an accurate test.						
SPW-917	WATER	Feb, 2000	Gr. Beta	32.61 ± 2.06	29.43	19.43 - 39.43
SPW-918	WATER	Feb, 2000	Ra-226	21.15 ± 0.49	20.68	14.48 - 26.88
SPW-918	WATER	Feb, 2000	Ra-228	14.24 ± 1.64	14.51	10.16 - 18.86
SPVE-1262	VEGETATION	Mar, 2000	I-131(g)	1.17 ± 0.07	1.12	0.67 - 1.57
SPCH-1264	CHARCOAL CANISTER	Mar, 2000	I-131(g)	0.56 ± 0.02	0.53	0.32 - 0.74
SPMI-1274	MILK	Mar, 2000	I-131	47.02 ± 3.36	48.00	36.00 - 60.00
SPW-1301	WATER	Mar, 2000	I-131	66.03 ± 1.06	76.84	61.47 - 92.21
SPW-1301	WATER	Mar, 2000	I-131(g)	80.31 ± 6.28	76.84	66.84 - 86.84
SPW-1477	WATER	Mar, 2000	Gr. Alpha	32.09 ± 1.82	41.13	20.57 - 61.70
SPW-1477	WATER	Mar, 2000	Gr. Beta	29.20 ± 1.56	29.38	19.38 - 39.38
SPW-1478	WATER	Mar, 2000	Ra-226	21.78 ± 0.47	20.69	14.48 - 26.90
SPW-1478	WATER	Mar, 2000	Ra-228	14.41 ± 1.70	14.39	10.07 - 18.71
SPMI-2275	MILK	Apr, 2000	Cs-134	33.53 ± 2.82	32.12	22.12 - 42.12
SPMI-2275	MILK	Apr, 2000	Cs-137	36.38 ± 4.94	36.66	26.66 - 46.66
SPMI-2275	MILK	Apr, 2000	I-131	46.06 ± 0.82	55.50	44.40 - 66.60
SPW-2277	WATER	Apr, 2000	Ra-226	20.51 ± 0.44	20.68	14.48 - 26.88
SPW-2278	WATER	Apr, 2000	Gr. Alpha	40.22 ± 2.50	38.44	19.22 - 57.66
SPW-2278	WATER	Apr, 2000	Gr. Beta	32.63 ± 1.81	29.30	19.30 - 39.30
SPW-2278	WATER	Apr, 2000	Ra-228	14.91 ± 1.70	14.25	9.98 - 18.53
SPW-2279	WATER	Apr, 2000	Co-60	37.12 ± 3.86	34.54	24.54 - 44.54
SPW-2279	WATER	Apr, 2000	Cs-134	34.70 ± 3.32	32.12	22.12 - 42.12
SPW-2279	WATER	Apr, 2000	Cs-137	39.60 ± 5.12	36.66	26.66 - 46.66
SPW-2279	WATER	Apr, 2000	I-131	49.92 ± 0.67	55.50	44.40 - 66.60
SPW-2279	WATER	Apr, 2000	I-131(g)	60.63 ± 6.58	55.50	45.50 - 65.50
SPW-2281	WATER	Apr, 2000	H-3	58829.00 ± 682.00	56996.00	45596.80 - 68395.20
SPAP-3097	AIR FILTER	Apr, 2000	Cs-137	1.81 ± 0.02	1.71	1.03 - 2.39
SPW-3093	WATER	May, 2000	I-131	83.39 ± 1.06	85.38	68.30 - 102.46
SPW-3094	WATER	May, 2000	Ra-226	20.86 ± 0.42	20.68	14.48 - 26.88
SPW-3094	WATER	May, 2000	Ra-228	14.17 ± 1.59	14.12	9.88 - 18.36
SPW-3095	WATER	May, 2000	Gr. Alpha	38.99 ± 2.09	38.44	19.22 - 57.66

Table A-3. In-house "spike" samples.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L ^a		
				Laboratory results 2s, n=1 ^b	Known Activity	Control ^c Limits
SPW-3095	WATER	May, 2000	Gr. Beta	30.65 ± 1.53	29.30	19.30 - 39.30
SPAP-274	AIR FILTER	May, 2000	Gr. Beta	5.08 ± 0.03	5.97	-4.03 - 15.97
SPMI-3138	MILK	May, 2000	I-131	85.08 ± 1.05	85.38	68.30 - 102.46
SPF-3180	FISH	May, 2000	Cs-134	0.52 ± 0.02	0.50	0.30 - 0.70
SPF-3180	FISH	May, 2000	Cs-137	0.65 ± 0.04	0.59	0.35 - 0.82
SPAP-3902	AIR FILTER	Jun, 2000	Gr. Beta	5.81 ± 0.03	5.35	-4.65 - 15.35
SPF-5182	FISH	Jun, 2000	Cs-134	0.60 ± 0.04	0.59	0.35 - 0.83
SPF-5182	FISH	Jun, 2000	Cs-137	0.60 ± 0.05	0.58	0.35 - 0.81
SPW-3911	WATER	Jun, 2000	Ra-226	23.73 ± 0.85	20.68	14.48 - 26.88
SPW-3911	WATER	Jun, 2000	Ra-228	20.43 ± 1.77	20.75	14.53 - 26.98
SPW-3910	WATER	Jun, 2000	Gr. Alpha	38.28 ± 2.12	38.44	19.22 - 57.66
SPW-3910	WATER	Jun, 2000	Gr. Beta	35.14 ± 1.74	29.22	19.22 - 39.22
SPW-4342	WATER	Jun, 2000	Sr-89	73.70 ± 4.77	81.00	64.80 - 97.20
SPW-4342	WATER	Jun, 2000	Sr-90	58.13 ± 2.17	55.90	44.72 - 67.08
SPW-4687	WATER	Jul, 2000	Ra-226	21.07 ± 0.56	20.68	14.48 - 26.88
SPW-4687	WATER	Jul, 2000	Ra-228	16.35 ± 1.70	20.75	14.53 - 26.98
SPW-4688	WATER	Jul, 2000	H-3	56205.00 ± 663.00	56228.00	44982.40 - 67473.60
SPAP-4807	AIR FILTER	Jul, 2000	Gr. Beta	6.07 ± 0.02	5.96	-4.04 - 15.96
SPAP-4809	AIR FILTER	Jul, 2000	Cs-137	1.82 ± 0.02	1.71	1.03 - 2.39
SPMI-4856	MILK	Jul, 2000	Cs-134	33.24 ± 3.74	29.56	19.56 - 39.56
SPMI-4856	MILK	Jul, 2000	Cs-137	39.80 ± 6.77	36.45	26.45 - 46.45
SPMI-4856	MILK	Jul, 2000	Sr-89	46.35 ± 5.10	56.34	45.07 - 67.61
SPMI-4856	MILK	Jul, 2000	Sr-90	70.47 ± 2.06	69.73	55.78 - 83.68
SPW-5372	WATER	Jul, 2000	Co-60	33.31 ± 4.61	33.24	23.24 - 43.24
SPW-5372	WATER	Jul, 2000	Cs-134	59.70 ± 4.57	58.26	48.26 - 68.26
SPW-5372	WATER	Jul, 2000	Cs-137	40.00 ± 5.58	36.42	26.42 - 46.42
SPW-4686	WATER	Aug, 2000	Gr. Alpha	34.12 ± 1.71	38.43	19.22 - 57.65
SPW-4686	WATER	Aug, 2000	Gr. Beta	35.42 ± 1.51	29.21	19.21 - 39.21
SPW-5564	WATER	Aug, 2000	Sr-89	62.97 ± 4.73	67.61	54.09 - 81.13
SPW-5564	WATER	Aug, 2000	Sr-90	65.40 ± 2.47	55.70	44.56 - 66.84
SPW-5792	WATER	Aug, 2000	Ra-226	12.82 ± 0.30	13.79	9.65 - 17.93
SPW-5792	WATER	Aug, 2000	Ra-228	15.00 ± 1.21	13.69	9.58 - 17.80
SPW-6631	WATER	Sep, 2000	Ra-228	22.20 ± 2.20	20.32	14.22 - 26.42
SPW-6632	WATER	Sep, 2000	Ra-226	13.58 ± 0.29	13.79	9.65 - 17.93
SPW-6632	WATER	Sep, 2000	Ra-228	18.84 ± 2.59	20.32	14.22 - 26.42
SPW-6633	WATER	Sep, 2000	Fe-55	1757.00 ± 674.00	1852.00	1481.60 - 2222.40
SPW-5791	WATER	Sep, 2000	Gr. Alpha	52.28 ± 9.41	69.00	34.50 - 103.50
SPW-5791	WATER	Sep, 2000	Gr. Beta	34.60 ± 4.71	29.10	19.10 - 39.10
SPW-6630	WATER	Sep, 2000	Gr. Alpha	71.54 ± 7.15	69.14	34.57 - 103.71
SPW-6630	WATER	Sep, 2000	Gr. Beta	37.78 ± 1.62	29.04	19.04 - 39.04
SPW-7744	WATER	Oct, 2000	Ra-226	12.36 ± 0.25	13.79	9.65 - 17.93

Table A-3. In-house "spike" samples.

Lab Code	Sample Type	Date Collected	Analysis	Concentration in pCi/L ^a		
				Laboratory results 2s, n=1 ^b	Known Activity	Control ^c Limits
SPW-7744	WATER	Oct, 2000	Ra-228	10.37 ± 1.15	13.40	9.38 - 17.42
SPW-7745	WATER	Oct, 2000	H-3	54650.00 ± 643.00	55391.00	44312.80 - 66469.20
SPAP-7764	AIR FILTER	Oct, 2000	Gr. Beta	6.14 ± 0.03	5.91	-4.09 - 15.91
SPAP-7766	AIR FILTER	Oct, 2000	Cs-137	1.84 ± 0.01	1.69	1.01 - 2.37
SPMI-8347	MILK	Oct, 2000	Cs-134	29.18 ± 6.51	26.83	16.83 - 36.83
SPMI-8347	MILK	Oct, 2000	Cs-134	29.37 ± 3.63	26.83	16.83 - 36.83
SPMI-8347	MILK	Oct, 2000	Cs-137	39.04 ± 8.76	36.20	26.20 - 46.20
SPMI-8347	MILK	Oct, 2000	Cs-137	34.89 ± 5.71	36.20	26.20 - 46.20
SPF-8349	FISH	Oct, 2000	Cs-134	0.56 ± 0.02	0.54	0.32 - 0.75
SPF-8349	FISH	Oct, 2000	Cs-137	0.92 ± 0.04	0.87	0.52 - 1.22
SPW-8369	WATER	Oct, 2000	Co-60	32.49 ± 1.86	32.19	22.19 - 42.19
SPW-8369	WATER	Oct, 2000	Cs-134	55.87 ± 1.71	53.66	43.66 - 63.66
SPW-8369	WATER	Oct, 2000	Cs-137	36.46 ± 2.73	36.21	26.21 - 46.21
SPW-7743	WATER	Oct, 2000	Gr. Alpha	51.28 ± 2.28	69.10	34.55 - 103.65
SPW-7743	WATER	Oct, 2000	Gr. Beta	36.86 ± 1.66	29.00	19.00 - 39.00
SPW-9101	WATER	Nov, 2000	Ra-226	14.35 ± 0.24	13.79	9.65 - 17.93
SPW-9101	WATER	Nov, 2000	Ra-228	22.14 ± 1.56	20.09	14.06 - 26.12
SPW-9102	WATER	Dec, 2000	Gr. Alpha	77.76 ± 3.02	69.14	34.57 - 103.71
SPW-9102	WATER	Dec, 2000	Gr. Beta	36.71 ± 1.65	28.99	18.99 - 38.99
SPW-9726	WATER	Dec, 2000	Gr. Alpha	43.03 ± 2.18	69.14	34.57 - 103.71
SPW-9726	WATER	Dec, 2000	Gr. Beta	32.17 ± 1.55	28.89	18.89 - 38.89
SPW-9727	WATER	Dec, 2000	Ra-226	13.35 ± 0.29	13.79	9.65 - 17.93
SPW-9727	WATER	Dec, 2000	Ra-228	15.44 ± 1.23	19.75	13.83 - 25.68
SPCH-10228	CHARCOAL CANISTER	Dec, 2000	Ba-133	1.80 ± 0.05	2.11	1.26 - 2.95

^a All results are in pCi/L, except for elemental potassium (K) in milk, which are in mg/L.; air filter samples, which are in pCi/Filter; and food products, which are in mg/kg.

^b All samples are the results of single determinations.

^c Control limits are based on Attachment A, page A2 of this report.

NOTE: For fish, Jello is used for the spike matrix. For vegetation, Sawdust is used for the spike matrix.

Table A-4. In-house "blank" samples.

Lab Code	Sample Type	Sample Date	Analysis	Concentration pCi/L ^a .		
				Laboratory results (4.66 Sigma)		Acceptance Criteria (4.66 Sigma)
				LLD	Activity ^b	
SPW-270	WATER	Jan 2000	Gr. Alpha	< 0.50	0.52 ± 0.41	< 1.0
SPW-270	WATER	Jan 2000	Gr. Beta	< 1.50	-0.34 ± 1.11	< 3.2
SPW-270	WATER	Jan 2000	Ra-226		0.06 ± 0.01	< 1.0
SPW-270	WATER	Jan 2000	Ra-228	< 0.94	0.14 ± 0.45	< 2.0
SPW-447	WATER	Jan 2000	H-3	< 184.00	-54.70 ± 88.60	< 200.0
SPW-481	WATER	Jan 2000	Co-60	< 2.42		< 10.0
SPW-481	WATER	Jan 2000	Cs-134	< 3.99		< 10.0
SPW-481	WATER	Jan 2000	Cs-137	< 2.90		< 10.0
SPMI-483	MILK	Jan 2000	Cs-137	< 2.73		< 10.0
SPMI-483	MILK	Jan 2000	Sr-90		1.03 ± 0.40	< 1.0
Low level of Sr-90 concentration in milk (1-5 pCi/L) is not unusual.						
SPAP-485	AIR FILTER	Jan 2000	Cs-137	< 1.64		< 100.0
SPW-919	WATER	Feb 2000	Gr. Alpha	< 0.80	0.56 ± 0.61	< 1.0
SPW-919	WATER	Feb 2000	Gr. Beta	< 1.65	0.11 ± 1.16	< 3.2
SPW-919	WATER	Feb 2000	Ra-226	< 0.02	0.02 ± 0.01	< 1.0
SPW-919	WATER	Feb 2000	Ra-228	< 0.60	0.02 ± 0.01	< 2.0
SPVE-1263	VEGETATION	Mar 2000	Cs-134	< 11.48		< 100.0
SPVE-1263	VEGETATION	Mar 2000	Cs-137	< 24.82		< 100.0
SPCH-1265	CHARCOAL CANISTER	Mar 2000	I-131(g)	< 7.00		< 9.6
SPMI-1292	MILK	Mar 2000	I-131	< 0.32	0.05 ± 0.18	< 0.5
SPMI-1292	MILK	Mar 2000	I-131(g)	< 4.60		< 20.0
SPW-1302	WATER	Mar 2000	I-131	< 0.30	0.01 ± 0.14	< 0.5
SPW-1479	WATER	Mar 2000	Gr. Alpha	< 0.84	-0.32 ± 0.53	< 1.0
SPW-1479	WATER	Mar 2000	Gr. Beta	< 1.86	-1.39 ± 1.19	< 3.2
SPW-1479	WATER	Mar 2000	Ra-226	< 0.01	0.06 ± 0.01	< 1.0
SPW-1479	WATER	Mar 2000	Ra-228	< 1.00	1.17 ± 0.60	< 2.0
SPMI-2276	MILK	Apr 2000	Cs-134	< 4.20		< 10.0
SPMI-2276	MILK	Apr 2000	Cs-137	< 3.33		< 10.0
SPMI-2276	MILK	Apr 2000	I-131	< 0.50	0.32 ± 0.30	< 0.5
SPW-2280	WATER	Apr 2000	Co-60	< 2.78		< 10.0
SPW-2280	WATER	Apr 2000	Cs-134	< 3.56		< 10.0

Table A-4. In-house "blank" samples.

Lab Code	Sample Type	Sample Date	Analysis	Concentration pCi/L ^a		
				Laboratory results (4.66 Sigma)		Acceptance Criteria (4.66 Sigma)
				LLD	Activity ^b	
SPW-2280	WATER	Apr 2000	Cs-137	< 2.81		<10.0
SPW-2280	WATER	Apr 2000	Gr. Alpha	< 0.60	0.55 ± 0.45	<1.0
SPW-2280	WATER	Apr 2000	Gr. Beta	< 1.66	0.62 ± 1.11	<3.2
SPW-2280	WATER	Apr 2000	I-131	< 0.29	-0.16 ± 0.19	<0.5
SPW-2280	WATER	Apr 2000	I-131(g)	< 3.42		<20.0
SPW-2280	WATER	Apr 2000	Ra-226		0.03 ± 0.01	<1.0
SPW-2280	WATER	Apr 2000	Ra-228	< 0.87	0.65 ± 0.47	<2.0
SPW-2282	WATER	Apr 2000	H-3	< 151.60	-5.40 ± 74.90	<200.0
SPAP-3098	AIR FILTER	Apr 2000	Cs-137	< 1.37		<100.0
SPW-3096	WATER	May 2000	Gr. Alpha	< 0.68		<1.0
SPW-3096	WATER	May 2000	Gr. Beta	< 1.62		<3.2
SPW-3096	WATER	May 2000	Ra-226		0.05 ± 0.01	<1.0
SPW-3096	WATER	May 2000	Ra-228	< 0.90	0.05 ± 0.01	<2.0
SPAP-273	AIR FILTER	May 2000	Gr. Beta	< 0.54	0.90 ± 0.32	<3.2
SPMI-3139	MILK	May 2000	I-131	< 0.33		<0.5
SPF-3181	FISH	May 2000	Cs-134	< 3.02		<100.0
SPF-3181	FISH	May 2000	Cs-137	< 4.99		<100.0
SPAP-3903	AIR FILTER	Jun 2000	Gr. Beta	< 0.48		<3.2
SPW-3912	WATER	Jun 2000	Gr. Alpha	< 0.35	0.28 ± 0.28	<1.0
SPW-3912	WATER	Jun 2000	Gr. Beta	< 1.22	0.54 ± 0.86	<3.2
SPW-3912	WATER	Jun 2000	Ra-226		0.04 ± 0.02	<1.0
SPW-3912	WATER	Jun 2000	Ra-228	< 0.65		<2.0
SPMI-4343	MILK	Jun 2000	Sr-89	< 0.73		<5.0
SPMI-4343	MILK	Jun 2000	Sr-90	< 0.56		<1.0
SPW-4689	WATER	Jul 2000	Ra-226		0.03 ± 0.01	<1.0
SPW-4689	WATER	Jul 2000	Ra-228	< 0.93	1.11 ± 0.55	<2.0
SPW-4690	WATER	Jul 2000	H-3	< 178.00	18.57 ± 89.13	<200.0
SPW-4808	WATER	Jul 2000	Gr. Alpha	< 0.45		<1.0
SPAP-4810	AIR FILTER	Jul 2000	Cs-137	< 2.18		<100.0
SPMI-4857	MILK	Jul 2000	Cs-137	< 6.13		<10.0
SPMI-4857	MILK	Jul 2000	I-131(g)	< 7.19		<20.0

Table A-4. In-house "blank" samples.

Lab Code	Sample Type	Sample Date	Analysis	Concentration pCi/L ^a .		
				Laboratory results (4.66 Sigma)		Acceptance Criteria (4.66 Sigma)
				LLD	Activity ^b	
SPMI-4857	MILK	Jul 2000	Sr-89	< 0.66		< 5.0
SPMI-4857	MILK	Jul 2000	Sr-90		1.15 ± 0.32	< 1.0
Low level of Sr-90 concentration in milk (1-5 pCi/L) is not unusual.						
SPF-5183	FISH	Jul 2000	Cs-134	< 17.71		< 100.0
SPF-5183	FISH	Jul 2000	Cs-137	< 12.81		< 100.0
SPW-4689	WATER	Jul 2000	Gr. Alpha	< 0.50		< 1.0
SPW-4689	WATER	Jul 2000	Gr. Beta	< 1.20		< 3.2
SPW-5373	WATER	Jul 2000	Co-60	< 5.20		< 10.0
SPW-5373	WATER	Jul 2000	Cs-134	< 4.80		< 10.0
SPW-5373	WATER	Jul 2000	Cs-137	< 4.00		< 10.0
SPW-5565	WATER	Aug 2000	Sr-89	< 1.56	-0.64 ± 1.11	< 5.0
SPW-5565	WATER	Aug 2000	Sr-90	< 0.59	0.17 ± 0.30	< 1.0
SPW-5793	WATER	Aug 2000	Gr. Alpha	< 0.51	0.02 ± 0.36	< 1.0
SPW-5793	WATER	Aug 2000	Ra-226		0.05 ± 0.02	< 1.0
SPW-5793	WATER	Aug 2000	Ra-228	< 0.95	0.26 ± 0.47	< 2.0
SPW-5793	WATER	Aug 2000	Gr. Beta	< 1.40	-0.13 ± 1.01	< 3.2
SPW-6634	WATER	Sep 2000	Fe-55	< 617.00	-105.90 ± 453.40	< 1000.0
SPW-6634	WATER	Sep 2000	Ra-226	< 0.01	0.03 ± 0.01	< 1.0
SPW-6634	WATER	Sep 2000	Ra-228	< 0.99	0.36 ± 0.51	< 2.0
SPW-6634	WATER	Sep 2000	Gr. Alpha	< 0.67	-0.22 ± 0.45	< 1.0
SPW-6634	WATER	Sep 2000	Gr. Beta	< 1.60	-0.20 ± 1.12	< 3.2
SPSO-10595	SOIL	Oct 2000	Cs-134	< 16.87		< 100.0
SPSO-10595	SOIL	Oct 2000	Cs-137	< 9.40		< 100.0
SPW-7746	WATER	Oct 2000	Ra-226	< 0.03	0.04 ± 0.02	< 1.0
SPW-7746	WATER	Oct 2000	Ra-228	< 1.08	0.00 ± 0.87	< 2.0
SPW-7747	WATER	Oct 2000	H-3	< 158.00	-38.00 ± 77.00	< 200.0
SPAP-7765	AIR FILTER	Oct 2000	Gr. Beta	< 0.64	0.00 ± 0.00	< 3.2
SPAP-7767	AIR FILTER	Oct 2000	Co-60	< 0.19		< 100.0
SPAP-7767	AIR FILTER	Oct 2000	Cs-134	< 0.32		< 100.0
SPAP-7767	AIR FILTER	Oct 2000	Cs-137	< 2.32		< 100.0
SPMI-8348	MILK	Oct 2000	Cs-134	< 3.35		< 10.0
SPMI-8348	MILK	Oct 2000	Cs-137	< 3.07		< 10.0

Table A-4. In-house "blank" samples.

Lab Code	Sample Type	Sample Date	Analysis	Concentration pCi/L ^a		
				Laboratory results (4.66 Sigma)		Acceptance Criteria (4.66 Sigma)
				LLD	Activity ^b	
SPF-8350	FISH	Oct 2000	Cs-134	< 10.26		< 100.0
SPF-8350	FISH	Oct 2000	Cs-137	< 10.51		< 100.0
SPW-8370	WATER	Oct 2000	Co-60	< 4.67		< 10.0
SPW-8370	WATER	Oct 2000	Cs-134	< 5.28		< 10.0
SPW-8370	WATER	Oct 2000	Cs-137	< 4.93		< 10.0
SPW-7746	WATER	Oct 2000	Gr. Alpha	< 0.46	0.06 ± 0.33	< 1.0
SPW-7746	WATER	Oct 2000	Gr. Beta	< 1.24	0.00 ± 0.87	< 3.2
SPW-9103	WATER	Nov 2000	Ra-226	< 0.01	0.02 ± 0.01	< 1.0
SPW-9103	WATER	Nov 2000	Ra-228	< 1.00	0.14 ± 0.48	< 2.0
SPW-9729	WATER	Dec 2000	Gr. Alpha	< 0.46	0.23 ± 0.36	< 1.0
SPW-9729	WATER	Dec 2000	Gr. Beta	< 1.33	-0.46 ± 0.98	< 3.2
SPW-9729	WATER	Dec 2000	Ra-226	< 0.02	0.05 ± 0.01	< 1.0
SPW-9729	WATER	Dec 2000	Ra-228	< 0.70	0.22 ± 0.35	< 2.0
SPW-9103	WATER	Dec 2000	Gr. Alpha	< 0.51	-0.11 ± 0.37	< 1.0
SPW-9103	WATER	Dec 2000	Gr. Beta	< 1.21	0.55 ± 0.91	< 3.2
SPCH-10583	CHARCOAL CANISTER	Dec 2000	I-131(g)	< 1.49		< 9.6

^a Liquid sample results are reported in pCi/Liter, air filter sample results are in pCi/filter, charcoal sample results are in pCi/charcoal, and solid sample results are in pCi/kilogram.

^b The activity reported is the net activity result.

Table A-5. In-house "duplicate" samples.

Lab Codes	Sample Date	Analysis	Concentration in pCi/L ^a		
			First Result	Second Result	Averaged Result
CF-23, 24	Jan, 2000	Gr. Beta	13.05 ± 0.39	12.46 ± 0.36	12.75 ± 0.26
CF-23, 24	Jan, 2000	K-40	13.00 ± 0.90	11.73 ± 0.79	12.36 ± 0.60
CF-23, 24	Jan, 2000	Sr-90	0.01 ± 0.00	0.01 ± 0.00	0.01 ± 0.00
WW-65, 66	Jan, 2000	Co-60	-0.53 ± 1.62	0.44 ± 2.11	-0.04 ± 1.33
WW-65, 66	Jan, 2000	Cs-137	-2.13 ± 1.70	0.41 ± 2.35	-0.86 ± 1.45
WW-65, 66	Jan, 2000	H-3	131.62 ± 84.13	182.81 ± 86.33	157.22 ± 60.27
WW-686, 687	Jan, 2000	Gr. Beta	4.76 ± 1.22	4.59 ± 1.27	4.67 ± 0.88
AP-1204, 1205	Jan, 2000	Be-7	0.19 ± 0.09	0.10 ± 0.07	0.14 ± 0.06
SW-68, 69	Jan, 2000	K-40 (FP)	1.30 ± 0.13	1.30 ± 0.13	1.30 ± 0.09
MI-277, 278	Jan, 2000	I-131	-0.08 ± 0.27	-0.00 ± 0.26	-0.04 ± 0.19
MI-277, 278	Jan, 2000	K-40	1,664.70 ± 113.20	1,431.30 ± 90.30	1,548.00 ± 72.40
MI-277, 278	Jan, 2000	Sr-90	0.63 ± 0.42	0.51 ± 0.40	0.57 ± 0.29
SW-728, 729	Jan, 2000	Co-60	0.39 ± 1.79	1.04 ± 1.53	0.72 ± 1.18
SW-728, 729	Jan, 2000	Cs-137	-0.67 ± 1.86	1.22 ± 1.38	0.27 ± 1.16
SW-403, 404	Jan, 2000	H-3	795.21 ± 109.04	857.22 ± 111.09	826.22 ± 77.83
SWT-437, 438	Jan, 2000	Gr. Beta	1.73 ± 0.57	2.60 ± 0.58	2.16 ± 0.41
PW-637, 638	Jan, 2000	Co-60	4.90 ± 2.92	-2.56 ± 2.80	1.17 ± 2.02
PW-637, 638	Jan, 2000	Cs-137	2.73 ± 2.51	-1.68 ± 2.71	0.53 ± 1.85
PW-637, 638	Jan, 2000	Gr. Beta	1.67 ± 1.31	4.00 ± 1.59	2.83 ± 1.03
SW-587, 588	Jan, 2000	Co-60	-1.24 ± 1.86	-0.27 ± 1.79	-0.76 ± 1.29
SW-587, 588	Jan, 2000	Cs-137	1.35 ± 1.94	0.23 ± 1.80	0.79 ± 1.32
SW-587, 588	Jan, 2000	Gr. Beta	3.80 ± 1.56	6.76 ± 1.75	5.28 ± 1.17
SW-611, 612	Jan, 2000	H-3	2,229.26 ± 158.61	2,115.19 ± 155.80	2,172.23 ± 111.16
SW-459, 460	Feb, 2000	Gr. Beta	2.15 ± 0.94	2.79 ± 0.94	2.47 ± 0.66
WW-774, 775	Feb, 2000	Co-60	4.26 ± 3.48	1.61 ± 4.46	2.93 ± 2.83
WW-774, 775	Feb, 2000	Cs-137	-1.19 ± 3.78	2.37 ± 4.65	0.59 ± 2.99
WW-774, 775	Feb, 2000	H-3	2,841.35 ± 174.48	2,566.76 ± 168.19	2,704.05 ± 121.17
SW-707, 708	Feb, 2000	Gr. Alpha	2.20 ± 1.73	0.16 ± 1.29	1.18 ± 1.08
SW-707, 708	Feb, 2000	Gr. Beta	7.90 ± 1.70	7.70 ± 1.70	7.80 ± 1.20
SW-707, 708	Feb, 2000	H-3	117.00 ± 92.00	69.00 ± 90.00	93.00 ± 64.35
CW-854, 855	Feb, 2000	Gr. Beta	2.13 ± 1.36	1.34 ± 1.25	1.74 ± 0.93
SW-881, 882	Feb, 2000	H-3	1,794.91 ± 145.81	1,762.31 ± 144.95	1,778.61 ± 102.80
SW-959, 960	Feb, 2000	Gr. Alpha	1.04 ± 1.00	0.92 ± 0.67	0.98 ± 0.60
SW-959, 960	Feb, 2000	Gr. Beta	1.24 ± 0.89	1.79 ± 0.90	1.51 ± 0.63
PW-1055, 1056	Feb, 2000	Co-60	-0.72 ± 3.18	1.73 ± 1.89	0.51 ± 1.85
PW-1055, 1056	Feb, 2000	Cs-137	0.55 ± 2.81	0.90 ± 1.86	0.72 ± 1.69
PW-1055, 1056	Feb, 2000	Gr. Beta	2.40 ± 1.52	2.20 ± 1.50	2.30 ± 1.07

Table A-5. In-house "duplicate" samples.

Lab Codes	Sample Date	Analysis	Concentration in pCi/L ^a		
			First Result	Second Result	Averaged Result
MI-1079, 1080	Mar, 2000	Calcium	0.79 ± 0.08	0.78 ± 0.08	0.79 ± 0.06
MI-1079, 1080	Mar, 2000	K-40	1,229.00 ± 138.00	1,387.00 ± 162.00	1,308.00 ± 106.40
MI-1079, 1080	Mar, 2000	Sr-90	0.90 ± 0.40	1.70 ± 0.50	1.30 ± 0.32
CW-1156, 1157	Mar, 2000	H-3	1,994.51 ± 143.09	2,012.54 ± 143.55	2,003.53 ± 101.34
SW-1967, 1968	Mar, 2000	Gr. Beta	11.96 ± 1.31	12.57 ± 1.31	12.27 ± 0.93
SW-2468, 2469	Mar, 2000	Sr-90	0.93 ± 0.45	0.50 ± 0.29	0.72 ± 0.27
WW-1402, 1403	Mar, 2000	H-3	93.34 ± 97.05	60.63 ± 95.75	76.98 ± 68.17
LW-1269, 1270	Mar, 2000	Gr. Beta	1.97 ± 0.57	3.22 ± 0.69	2.60 ± 0.45
AP-,	Mar, 2000	Be-7	0.06 ± 0.01	0.07 ± 0.01	0.07 ± 0.01
MI-1541, 1542	Mar, 2000	K-40	1,380.00 ± 122.00	1,476.00 ± 158.00	1,428.00 ± 99.81
CW-1571, 1572	Mar, 2000	Gr. Beta	2.29 ± 1.48	1.35 ± 1.27	1.82 ± 0.98
CW-1693, 1694	Mar, 2000	Gr. Beta	0.56 ± 1.18	1.91 ± 1.49	1.24 ± 0.95
SWT-,	Mar, 2000	Gr. Beta	2.36 ± 0.65	2.01 ± 0.57	2.19 ± 0.43
WW-1916, 1917	Mar, 2000	H-3	25.37 ± 90.21	3.90 ± 89.27	14.63 ± 63.46
AP-2155, 2156	Mar, 2000	Be-7	0.07 ± 0.01	0.07 ± 0.01	0.07 ± 0.01
SWU-2547, 2548	Mar, 2000	Sr-90	0.57 ± 0.24	0.55 ± 0.24	0.56 ± 0.17
CW-1798, 1799	Mar, 2000	Gr. Beta	2.73 ± 1.85	0.76 ± 1.71	1.75 ± 1.26
AP-2176, 2177	Mar, 2000	Be-7	0.06 ± 0.01	0.08 ± 0.02	0.07 ± 0.01
WW-2046, 2047	Mar, 2000	H-3	221.85 ± 101.64	185.19 ± 100.24	203.52 ± 71.38
SW-1967, 1968	Apr, 2000	K-40	9.20 ± 0.90	9.10 ± 0.90	9.15 ± 0.64
SW-2241, 2242	Apr, 2000	Gr. Alpha	2.49 ± 1.44	3.15 ± 1.53	2.82 ± 1.05
SW-2241, 2242	Apr, 2000	Gr. Beta	8.37 ± 1.36	7.20 ± 1.29	7.79 ± 0.94
WW-,	Apr, 2000	Gr. Beta	4.20 ± 0.64	4.68 ± 0.73	4.44 ± 0.49
WW-2711, 2712	Apr, 2000	Cs-137	-0.76 ± 2.19	1.43 ± 3.63	0.34 ± 2.12
WW-2711, 2712	Apr, 2000	H-3	3,877.05 ± 192.54	3,951.88 ± 193.99	3,914.46 ± 136.66
WW-2511, 2512	Apr, 2000	H-3	108.10 ± 79.80	127.80 ± 80.70	117.95 ± 56.75
SO-2435, 2436	Apr, 2000	K-40	4.73 ± 0.38	4.83 ± 0.53	4.78 ± 0.33
SS-2669, 2670	Apr, 2000	K-40	8.60 ± 0.55	9.18 ± 0.45	8.89 ± 0.36
SWU-2732, 2733	Apr, 2000	Gr. Beta	3.33 ± 0.68	3.19 ± 0.69	3.26 ± 0.48
PW-2605, 2606	Apr, 2000	Co-60	0.36 ± 1.10	1.05 ± 2.03	0.71 ± 1.16
PW-2605, 2606	Apr, 2000	Cs-137	-0.07 ± 0.93	-0.98 ± 2.37	-0.53 ± 1.27
PW-2605, 2606	Apr, 2000	Gr. Beta	1.51 ± 1.31	2.91 ± 1.39	2.21 ± 0.96
WW-2711, 2712	Apr, 2000	H-3	3,877.00 ± 192.50	3,951.90 ± 194.00	3,914.45 ± 136.65
WW-2711, 2712	Apr, 2000	Co-60	0.97 ± 1.93	0.82 ± 3.64	0.90 ± 2.06
BS-3212, 3213	Apr, 2000	Gr. Beta	7.90 ± 1.97	7.57 ± 1.88	7.74 ± 1.36
SW-,	May, 2000	K-40	1.30 ± 0.13	1.20 ± 0.12	1.25 ± 0.09
MI-2810, 2811	May, 2000	K-40	1,285.00 ± 111.00	1,338.00 ± 127.00	1,311.50 ± 84.34

Table A-5. In-house "duplicate" samples.

Lab Codes	Sample Date	Analysis	Concentration in pCi/L ^a		
			First Result	Second Result	Averaged Result
SW-3003, 3004	May, 2000	Gr. Beta	5.06 ± 0.73	5.27 ± 0.73	5.17 ± 0.52
F-2831, 2832	May, 2000	Co-60	0.01 ± 0.01	0.00 ± 0.01	0.01 ± 0.01
F-2831, 2832	May, 2000	Cs-137	-0.00 ± 0.01	0.00 ± 0.01	0.00 ± 0.01
WW-3128, 3129	May, 2000	Gr. Beta	5.41 ± 1.35	4.43 ± 1.22	4.92 ± 0.91
BS-3411, 3412	May, 2000	Co-60	-0.00 ± 0.01	0.01 ± 0.01	0.00 ± 0.01
BS-3411, 3412	May, 2000	Cs-137	0.01 ± 0.01	0.00 ± 0.01	0.00 ± 0.00
F-3436, 3437	May, 2000	Co-60	0.01 ± 0.01	0.00 ± 0.01	0.01 ± 0.00
F-3436, 3437	May, 2000	Cs-137	0.00 ± 0.01	-0.00 ± 0.00	-0.00 ± 0.00
F-2978, 2979	May, 2000	K-40	2.72 ± 0.26	2.14 ± 0.30	2.43 ± 0.20
SS-3482, 3483	May, 2000	Cs-137	0.11 ± 0.03	0.12 ± 0.03	0.12 ± 0.02
SS-3482, 3483	May, 2000	K-40	11.26 ± 0.57	11.37 ± 0.54	11.32 ± 0.39
BS-3458, 3459	May, 2000	Co-60	0.01 ± 0.01	0.02 ± 0.01	0.01 ± 0.01
BS-3458, 3459	May, 2000	Cs-137	0.04 ± 0.01	0.03 ± 0.02	0.03 ± 0.01
MI-3510, 3511	May, 2000	Co-60	0.48 ± 3.05	-0.80 ± 2.74	-0.16 ± 2.05
MI-3510, 3511	May, 2000	Cs-137	1.17 ± 2.96	0.38 ± 2.60	0.77 ± 1.97
MI-3510, 3511	May, 2000	I-131	-0.06 ± 0.25	-0.04 ± 0.24	-0.05 ± 0.17
SO-3629, 3630	May, 2000	Cs-137	0.23 ± 0.03	0.20 ± 0.03	0.22 ± 0.02
SO-3629, 3630	May, 2000	Gr. Beta	20.49 ± 2.82	19.14 ± 2.73	19.82 ± 1.96
SO-3629, 3630	May, 2000	K-40	13.03 ± 0.61	12.25 ± 0.57	12.64 ± 0.42
SW-3904, 3905	May, 2000	Gr. Beta	6.27 ± 1.83	7.02 ± 1.90	6.65 ± 1.32
SW-3904, 3905	May, 2000	Co-60	-0.65 ± 1.54	1.32 ± 1.77	0.33 ± 1.17
SW-3904, 3905	May, 2000	Cs-137	0.19 ± 1.22	-0.16 ± 1.15	0.01 ± 0.84
SW-3904, 3905	May, 2000	Gr. Beta	6.27 ± 1.83	7.02 ± 1.90	6.64 ± 1.32
SP-3833, 3834	May, 2000	Gr. Alpha	4.19 ± 1.34	3.22 ± 1.20	3.71 ± 0.90
MI-3105, 3106	May, 2000	K-40	1,460.00 ± 173.00	1,452.00 ± 110.00	1,456.00 ± 102.50
VE-3191, 3192	May, 2000	Be-7	0.42 ± 0.23	0.39 ± 0.16	0.40 ± 0.14
VE-3191, 3192	May, 2000	Gr. Alpha	0.15 ± 0.06	0.28 ± 0.07	0.22 ± 0.05
VE-3191, 3192	May, 2000	Gr. Beta	3.76 ± 0.13	3.88 ± 0.14	3.82 ± 0.10
VE-3191, 3192	May, 2000	K-40	3.58 ± 0.43	3.47 ± 0.72	3.53 ± 0.42
MI-3718, 3719	May, 2000	K-40	1,447.00 ± 165.00	1,444.00 ± 177.00	1,445.50 ± 120.99
DW-3770, 3771	May, 2000	Gr. Beta	5.92 ± 1.32	4.54 ± 1.10	5.23 ± 0.86
MI-3653, 3654	Jun, 2000	K-40	1,407.00 ± 170.00	1,388.00 ± 102.00	1,397.50 ± 99.13
SW-4614, 4615	Jun, 2000	Sr-90	0.50 ± 0.27	0.55 ± 0.27	0.53 ± 0.19
WW-3883, 3884	Jun, 2000	H-3	4,401.80 ± 204.60	4,298.00 ± 202.70	4,349.90 ± 144.00
WW-3883, 3884	Jun, 2000	Co-60	0.91 ± 3.01	-0.28 ± 1.52	0.32 ± 1.69
WW-3883, 3884	Jun, 2000	Cs-137	0.49 ± 2.16	0.66 ± 1.82	0.57 ± 1.41
WW-3883, 3884	Jun, 2000	H-3	4,401.78 ± 204.63	4,297.96 ± 202.67	4,349.87 ± 144.00

Table A-5. In-house "duplicate" samples.

Lab Codes	Sample Date	Analysis	Concentration in pCi/L ^a		
			First Result	Second Result	Averaged Result
BS-3980, 3981	Jun, 2000	Cs-137	0.07 ± 0.02	0.08 ± 0.02	0.08 ± 0.01
BS-3980, 3981	Jun, 2000	Cs-137	0.06 ± 0.02	0.07 ± 0.02	0.07 ± 0.01
BS-3980, 3981	Jun, 2000	K-40	1,458.60 ± 69.40	1,421.90 ± 52.20	1,440.25 ± 43.42
VE-4065, 4066	Jun, 2000	K-40	6.37 ± 0.54	6.34 ± 0.51	6.36 ± 0.37
WW-4252, 4253	Jun, 2000	H-3	705.40 ± 114.10	718.90 ± 114.60	712.15 ± 80.86
TSWU-4283, 4284	Jun, 2000	Gr. Beta	3.24 ± 0.63	3.11 ± 0.62	3.18 ± 0.44
F-4438, 4439	Jun, 2000	Gr. Beta	2.25 ± 0.06	2.13 ± 0.06	2.19 ± 0.04
SW-4459, 4460	Jun, 2000	H-3	532.20 ± 108.10	670.50 ± 112.90	601.35 ± 78.15
WW-4480, 4481	Jun, 2000	H-3	601.50 ± 99.50	573.10 ± 108.50	587.30 ± 73.61
SW-4375, 4376	Jun, 2000	Gr. Beta	4.53 ± 1.59	4.43 ± 1.54	4.48 ± 1.11
SW-4375, 4376	Jun, 2000	Cs-137	-0.09 ± 1.61	-0.43 ± 1.39	-0.26 ± 1.06
AP-,	Jun, 2000	Be-7	0.06 ± 0.02	0.07 ± 0.01	0.07 ± 0.01
AP-4712, 4713	Jun, 2000	Be-7	0.07 ± 0.02	0.09 ± 0.02	0.08 ± 0.01
SW-4537, 4538	Jun, 2000	H-3	584.10 ± 108.80	599.20 ± 109.30	591.65 ± 77.11
SL-4636, 4637	Jul, 2000	Be-7	0.93 ± 0.18	0.56 ± 0.12	0.75 ± 0.11
SL-4636, 4637	Jul, 2000	Gr. Beta	2.41 ± 0.32	2.69 ± 0.32	2.55 ± 0.23
SL-4636, 4637	Jul, 2000	K-40	1.25 ± 0.24	1.13 ± 0.30	1.19 ± 0.19
SL-4636, 4637	Jul, 2000	Sr-90	0.04 ± 0.02	0.05 ± 0.03	0.05 ± 0.02
G-4667, 4668	Jul, 2000	Be-7	0.93 ± 0.20	0.98 ± 0.31	0.96 ± 0.18
G-4667, 4668	Jul, 2000	Gr. Beta	6.16 ± 0.13	6.68 ± 0.14	6.42 ± 0.10
G-4667, 4668	Jul, 2000	K-40	7.72 ± 0.51	8.43 ± 0.83	8.08 ± 0.49
WW-4818, 4819	Jul, 2000	H-3	13.30 ± 77.10	29.70 ± 77.90	21.50 ± 54.80
MI-4839, 4840	Jul, 2000	K-40	1,313.00 ± 173.00	1,398.00 ± 161.00	1,355.50 ± 118.16
MI-4949, 4950	Jul, 2000	K-40	1,307.00 ± 56.00	1,346.00 ± 58.00	1,326.50 ± 40.31
LW-4991, 4992	Jul, 2000	Gr. Beta	2.78 ± 0.66	2.22 ± 0.55	2.50 ± 0.43
MI-4903, 4904	Jul, 2000	K-40	1,383.10 ± 193.20	1,328.00 ± 153.10	1,355.55 ± 123.25
MI-4881, 4882	Jul, 2000	K-40	1,538.40 ± 103.00	1,438.00 ± 125.30	1,488.20 ± 81.10
MI-4881, 4882	Jul, 2000	Sr-90	1.01 ± 0.37	1.38 ± 0.42	1.19 ± 0.28
G-5388, 5389	Jul, 2000	Be-7	1.64 ± 0.16	1.52 ± 0.21	1.58 ± 0.13
G-5388, 5389	Jul, 2000	K-40	5.51 ± 0.33	5.86 ± 0.49	5.69 ± 0.30
G-5388, 5389	Jul, 2000	Gr. Beta	5.64 ± 0.15	5.81 ± 0.15	5.73 ± 0.11
SWU-5473, 5474	Jul, 2000	Gr. Beta	3.50 ± 0.67	3.17 ± 0.61	3.34 ± 0.45
SW-5410, 5411	Jul, 2000	Gr. Beta	1.95 ± 0.81	1.89 ± 1.04	1.92 ± 0.66
PW-5550, 5551	Jul, 2000	Gr. Beta	0.71 ± 1.15	2.50 ± 1.49	1.61 ± 0.94
WW-5623, 5624	Jul, 2000	H-3	22,713.90 ± 429.00	22,265.50 ± 424.90	22,489.70 ± 301.90
MI-5529, 5530	Aug, 2000	K-40	1,396.80 ± 103.80	1,278.20 ± 117.50	1,337.50 ± 78.39
VE-,	Aug, 2000	K-40	1.66 ± 0.32	1.93 ± 0.33	1.80 ± 0.23

Table A-5. In-house "duplicate" samples.

Lab Codes	Sample Date	Analysis	Concentration in pCi/L ^a		
			First Result	Second Result	Averaged Result
MI-5808, 5809	Aug, 2000	K-40	1,261.90 ± 124.40	1,234.40 ± 152.80	1,248.15 ± 98.52
CW-6514, 6515	Aug, 2000	Gr. Beta	1.42 ± 0.37	1.44 ± 0.41	1.43 ± 0.28
MI-5933, 5934	Aug, 2000	Calcium	0.88 ± 0.09	0.89 ± 0.09	0.89 ± 0.06
MI-5933, 5934	Aug, 2000	Sr-90	3.29 ± 0.51	1.72 ± 0.47	2.51 ± 0.35
VE-6002, 6003	Aug, 2000	Sr-90	0.00 ± 0.00	0.00 ± 0.00	0.00 ± 0.00
VE-6002, 6003	Aug, 2000	K-40	1.44 ± 0.23	1.78 ± 0.18	1.61 ± 0.14
PW-6209, 6210	Aug, 2000	H-3	528.20 ± 112.70	578.50 ± 114.50	553.35 ± 80.33
SW-6291, 6292	Aug, 2000	Gr. Beta	4.14 ± 1.58	1.95 ± 1.32	3.05 ± 1.03
WW-6312, 6313	Aug, 2000	H-3	7,804.20 ± 262.70	7,221.70 ± 253.80	7,512.95 ± 182.64
WW-5981, 5982	Aug, 2000	Gr. Beta	4.85 ± 0.78	5.87 ± 0.79	5.36 ± 0.56
PW-6341, 6342	Aug, 2000	Gr. Beta	2.45 ± 1.42	2.63 ± 1.37	2.54 ± 0.99
CW-6514, 6515	Aug, 2000	H-3	5,600.10 ± 226.80	5,434.30 ± 223.90	5,517.20 ± 159.35
MI-6409, 6410	Sep, 2000	I-131	-0.04 ± 0.23	0.19 ± 0.24	0.08 ± 0.17
MI-6409, 6410	Sep, 2000	K-40	1,367.80 ± 111.40	1,368.60 ± 107.50	1,368.20 ± 77.41
MI-6409, 6410	Sep, 2000	Sr-90	1.19 ± 0.35	0.80 ± 0.30	1.00 ± 0.23
MI-6542, 6543	Sep, 2000	K-40	1,298.00 ± 140.10	1,470.60 ± 139.70	1,384.30 ± 98.92
MI-6450, 6451	Sep, 2000	K-40	1,237.20 ± 102.10	1,328.10 ± 108.30	1,282.65 ± 74.42
MI-7102, 7103	Sep, 2000	I-131	-0.11 ± 0.23	-0.02 ± 0.25	-0.07 ± 0.17
MI-7102, 7103	Sep, 2000	K-40	1,473.10 ± 101.40	1,400.70 ± 168.60	1,436.90 ± 98.37
SWT-7262, 7263	Sep, 2000	Gr. Beta	3.45 ± 0.66	2.32 ± 0.57	2.89 ± 0.44
SWU-7283, 7284	Sep, 2000	Gr. Beta	2.75 ± 0.55	2.87 ± 0.56	2.81 ± 0.39
SWU-7283, 7284	Sep, 2000	H-3	197.76 ± 94.07	172.31 ± 93.00	185.04 ± 66.14
SW-7081, 7082	Sep, 2000	H-3	89.32 ± 92.99	42.38 ± 90.37	65.85 ± 64.83
AP-7685, 7686	Sep, 2000	Be-7	0.07 ± 0.01	0.07 ± 0.01	0.07 ± 0.01
AP-7706, 7707	Sep, 2000	Be-7	0.06 ± 0.01	0.05 ± 0.01	0.05 ± 0.01
SW-7482, 7483	Sep, 2000	Gr. Beta	5.31 ± 1.75	6.70 ± 1.85	6.01 ± 1.27
SP-7347, 7348	Sep, 2000	Gr. Alpha	6.12 ± 1.54	5.68 ± 1.49	5.90 ± 1.07
SW-7436, 7437	Sep, 2000	H-3	40.60 ± 79.90	72.00 ± 81.40	56.30 ± 57.03
CW-7748, 7749	Sep, 2000	Gr. Alpha	0.47 ± 0.28	0.65 ± 0.36	0.56 ± 0.23
CW-7748, 7749	Sep, 2000	Gr. Beta	2.35 ± 0.39	2.02 ± 0.38	2.19 ± 0.27
SL-7304, 7305	Oct, 2000	Gr. Beta	2.94 ± 0.23	2.90 ± 0.23	2.92 ± 0.17
SL-7304, 7305	Oct, 2000	K-40	1.14 ± 0.36	1.73 ± 0.58	1.44 ± 0.34
BS-7369, 7370	Oct, 2000	Cs-137	10.79 ± 4.96	20.04 ± 9.40	15.41 ± 5.31
SO-7950, 7951	Oct, 2000	Ac-228	0.66 ± 0.10	0.77 ± 0.10	0.72 ± 0.07
SO-7950, 7951	Oct, 2000	Bi-214	0.42 ± 0.06	0.57 ± 0.07	0.49 ± 0.05
SO-7950, 7951	Oct, 2000	Cs-137	0.20 ± 0.31	0.21 ± 0.04	0.20 ± 0.16
SO-7950, 7951	Oct, 2000	Gr. Beta	29.22 ± 1.98	28.02 ± 1.98	28.62 ± 1.40

Table A-5. In-house "duplicate" samples.

Lab Codes	Sample Date	Analysis	Concentration in pCi/L ^a		
			First Result	Second Result	Averaged Result
SO-7950, 7951	Oct, 2000	K-40	21.36 ± 0.93	21.77 ± 0.89	21.56 ± 0.64
SO-7950, 7951	Oct, 2000	Pb-212	0.72 ± 0.12	0.92 ± 0.12	0.82 ± 0.09
SO-7950, 7951	Oct, 2000	Ra-226	1.21 ± 0.33	1.30 ± 0.31	1.26 ± 0.22
SO-7950, 7951	Oct, 2000	Tl-208	0.21 ± 0.04	0.25 ± 0.03	0.23 ± 0.02
VE-7554, 7555	Oct, 2000	Gr. Beta	0.73 ± 0.02	0.74 ± 0.02	0.74 ± 0.01
MI-7622, 7623	Oct, 2000	K-40	1,505.90 ± 142.70	1,453.60 ± 172.00	1,479.75 ± 111.74
F-8219, 8220	Oct, 2000	K-40	2.94 ± 0.22	3.39 ± 0.38	3.16 ± 0.22
WW-7844, 7845	Oct, 2000	H-3	-68.13 ± 74.09	84.23 ± 81.38	8.05 ± 55.03
WW-8240, 8241	Oct, 2000	Gr. Beta	0.35 ± 1.89	1.61 ± 2.28	0.98 ± 1.48
WW-8240, 8241	Oct, 2000	H-3	72.46 ± 92.95	38.87 ± 91.51	55.66 ± 65.22
BS-8170, 8171	Oct, 2000	Gr. Beta	11.96 ± 2.55	11.30 ± 2.39	11.63 ± 1.75
BS-8170, 8171	Oct, 2000	K-40	8.36 ± 0.46	8.76 ± 0.47	8.56 ± 0.33
MI-8085, 8086	Oct, 2000	Calcium	0.94	0.94	0.94
MI-8085, 8086	Oct, 2000	Sr-90	1.04 ± 0.35	0.75 ± 0.31	0.90 ± 0.24
MI-8149, 8150	Oct, 2000	K-40	1,358.10 ± 95.81	1,341.80 ± 178.00	1,349.95 ± 101.07
SO-8967, 8968	Oct, 2000	Be-7	1.25 ± 0.37	1.27 ± 0.35	1.26 ± 0.26
SO-8967, 8968	Oct, 2000	Cs-137	0.05 ± 0.02	0.05 ± 0.02	0.05 ± 0.02
SO-8967, 8968	Oct, 2000	K-40	4.53 ± 0.66	4.46 ± 0.58	4.50 ± 0.44
MI-8522, 8523	Oct, 2000	I-131	-0.05 ± 0.23	0.18 ± 0.25	0.07 ± 0.17
SWU-8894, 8895	Oct, 2000	Gr. Beta	3.63 ± 0.62	2.45 ± 0.61	3.04 ± 0.43
MI-8802, 8803	Nov, 2000	I-131	-0.22 ± 0.24	-0.25 ± 0.26	-0.24 ± 0.18
MI-8802, 8803	Nov, 2000	K-40	1,340.50 ± 113.80	1,453.50 ± 100.50	1,397.00 ± 75.91
MI-8802, 8803	Nov, 2000	Sr-89	0.19 ± 1.31	0.61 ± 1.34	0.40 ± 0.94
MI-8802, 8803	Nov, 2000	Sr-90	1.10 ± 0.39	0.90 ± 0.38	1.00 ± 0.27
LW-8823, 8824	Nov, 2000	Gr. Beta	2.13 ± 0.55	1.59 ± 0.52	1.86 ± 0.38
VE-9014, 9015	Nov, 2000	Gr. Alpha	0.10 ± 0.06	0.15 ± 0.07	0.12 ± 0.05
VE-9014, 9015	Nov, 2000	Gr. Beta	5.59 ± 0.17	5.90 ± 0.19	5.74 ± 0.13
PW-9991, 9992	Nov, 2000	Gr. Beta	2.50 ± 0.01	3.49 ± 1.18	3.00 ± 0.59
SW-9991, 9992	Nov, 2000	Co-60	1.16 ± 1.70	-2.94 ± 3.39	-0.89 ± 1.89
SW-9991, 9992	Nov, 2000	Cs-134	-0.07 ± 1.85	2.27 ± 3.73	1.10 ± 2.08
SW-9991, 9992	Nov, 2000	Cs-137	-0.88 ± 1.67	3.84 ± 3.45	1.48 ± 1.92
DW-9682, 9683	Dec, 2000	Gr. Beta	1.61 ± 1.02	2.10 ± 0.94	1.86 ± 0.69
MI-9749, 9750	Dec, 2000	K-40	1,562.40 ± 118.70	1,495.90 ± 168.30	1,529.15 ± 102.97
AP-10782, 10783	Dec, 2000	Be-7	0.21 ± 0.10	0.31 ± 0.14	0.26 ± 0.09
AP-10824, 10825	Dec, 2000	Be-7	0.06 ± 0.02	0.07 ± 0.01	0.06 ± 0.01
WW-10424, 10425	Dec, 2000	H-3	1,690.87 ± 137.81	1,551.48 ± 1,339.42	1,621.18 ± 673.25

Table A-6. Department of Energy's Mixed Analyte Performance Evaluation Program (MAPEP)^a.

Lab Code	Sample Type	Date Collected	Analysis	Concentration ^b		
				Laboratory result ^c	MAPEP Result ^d 1s, N=1	Control Limits
STSO-882	SOIL	Jan, 2000	Am-241	64.90 ± 6.49	61.10	42.77 - 79.43
STSO-882	SOIL	Jan, 2000	Co-57	721.10 ± 83.80	949.00	664.30 - 1,233.70
The MAPEP soil sample (STSO-882), as received, did not closely match a standard gamma geometry. The results for gamma-emitting isotopes are reanalyses, with a reduced sample size.						
STSO-882	SOIL	Jan, 2000	Co-60	1,264.40 ± 78.60	1,180.00	826.00 - 1,534.00
STSO-882	SOIL	Jan, 2000	Cs-134	969.30 ± 76.90	1,047.00	732.90 - 1,361.10
STSO-882	SOIL	Jan, 2000	Cs-137	944.00 ± 92.00	930.00	651.00 - 1,209.00
STSO-882	SOIL	Jan, 2000	K-40	811.70 ± 79.90	652.00	456.40 - 847.60
STSO-882	SOIL	Jan, 2000	Mn-54	1,103.30 ± 64.20	1,023.00	716.10 - 1,329.90
STSO-882	SOIL	Jan, 2000	Ni-63	711.00 ± 71.10	960.00	672.00 - 1,248.00
STSO-882	SOIL	Jan, 2000	Pu-239/40	67.90 ± 6.79	74.40	52.08 - 96.72
STSO-882	SOIL	Jan, 2000	Sr-90	345.00 ± 34.50	304.00	212.80 - 395.20
STSO-882	SOIL	Jan, 2000	U-233/4	62.90 ± 6.29	90.00	63.00 - 117.00
Incomplete dissolution of the sample is suspected. Results of reanalysis: U-233/234 67.3 ± 3.3 pCi/g, U-238 68.1 ± 8.9 pCi/g.						
STSO-882	SOIL	Jan, 2000	U-238	63.20 ± 6.32	93.00	65.10 - 120.90
STSO-882	SOIL	Jan, 2000	Zn-65	1,544.30 ± 61.50	1,540.00	1,078.00 - 2,002.00

^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 All results are in Bq/kg or Bq/L as requested by the Department of Energy.

^c Unless otherwise indicated, laboratory results are given as the mean ± 1 standard deviations for three determinations.

^d Results are presented as the known values, expected laboratory precision (1 sigma, 1 determination), and control limits as defined by the MAPEP.

Table A-7. Environmental Measurements Laboratory Quality Assessment Program (EML)^a.

Lab Code	Sample Type	Date Collected	Analysis	Concentration ^b		Control Limits ^e
				Laboratory result ^c	EML Result ^d	
STSO-870	SOIL	Mar, 2000	Ac-228	98.300 ± 7.100	97.600	0.79 - 1.75
STSO-870	SOIL	Mar, 2000	Bi-212	98.500 ± 15.100	106.000	0.42 - 1.22
STSO-870	SOIL	Mar, 2000	Bi-214	88.000 ± 3.800	86.700	0.75 - 1.42
STSO-870	SOIL	Mar, 2000	Cs-137	324.000 ± 5.000	339.000	0.83 - 1.32
STSO-870	SOIL	Mar, 2000	K-40	872.000 ± 34.000	811.000	0.78 - 1.53
STSO-870	SOIL	Mar, 2000	Pb-212	93.700 ± 2.700	97.300	0.74 - 1.33
STSO-870	SOIL	Mar, 2000	Pb-214	100.100 ± 3.700	86.500	0.65 - 1.45
STSO-870	SOIL	Mar, 2000	Pu-238	19.800 ± 3.000	18.600	0.52 - 2.84
STSO-870	SOIL	Mar, 2000	Pu-239/40	8.100 ± 1.700	7.000	0.69 - 1.74
STSO-870	SOIL	Mar, 2000	Sr-90	13.600 ± 3.100	20.200	0.60 - 3.66
STVE-871	VEGETATION	Mar, 2000	Am-241	9.800 ± 0.900	10.400	0.68 - 2.70
STVE-871	VEGETATION	Mar, 2000	Co-60	46.500 ± 2.100	52.800	0.69 - 1.46
STVE-871	VEGETATION	Mar, 2000	Cs-137	1,872.000 ± 46.000	1,380.000	0.80 - 1.40
STVE-871	VEGETATION	Mar, 2000	K-40	506.400 ± 28.000	521.000	0.79 - 1.42
STVE-871	VEGETATION	Mar, 2000	Pu-239/40	14.300 ± 1.500	15.500	0.68 - 1.59
STVE-871	VEGETATION	Mar, 2000	Sr-90	1,198.000 ± 85.000	1,780.000	0.50 - 1.33
STAP-872	AIR FILTER	Mar, 2000	Co-57	5.900 ± 0.100	5.310	0.65 - 1.39
STAP-872	AIR FILTER	Mar, 2000	Co-60	5.900 ± 0.100	5.320	0.75 - 1.32
STAP-872	AIR FILTER	Mar, 2000	Cs-137	7.500 ± 0.100	6.100	0.73 - 1.37
STAP-872	AIR FILTER	Mar, 2000	Gr. Alpha	3.300 ± 0.100	3.020	0.50 - 1.55
STAP-872	AIR FILTER	Mar, 2000	Gr. Beta	2.700 ± 0.100	2.420	0.72 - 1.67
STAP-872	AIR FILTER	Mar, 2000	Mn-54	31.800 ± 0.300	27.200	0.76 - 1.33
STAP-872	AIR FILTER	Mar, 2000	Pu-238	0.060 ± 0.030	0.080	0.74 - 1.40
STAP-872	AIR FILTER	Mar, 2000	Pu-239/40	0.090 ± 0.010	0.089	0.76 - 1.44
STAP-872	AIR FILTER	Mar, 2000	Ru-106	3.500 ± 1.000	2.010	0.59 - 1.30
Result within activity ± error margin.						
STAP-872	AIR FILTER	Mar, 2000	Sr-90	0.310 ± 0.160	0.242	0.61 - 1.93
STAP-872	AIR FILTER	Mar, 2000	Uranium	0.120 ± 0.010	0.126	0.80 - 3.35
STW-874	WATER	Mar, 2000	Am-241	1.700 ± 0.220	1.950	0.75 - 1.49
STW-874	WATER	Mar, 2000	Co-60	51.000 ± 1.200	48.900	0.80 - 1.20

Table A-7. Environmental Measurements Laboratory Quality Assessment Program (EML)^a.

Lab Code	Sample Type	Date Collected	Analysis	Concentration ^b		Control Limits ^e
				Laboratory result ^c	EML Result ^d	
STW-874	WATER	Mar, 2000	Cs-137	108.600 ± 1.800	103.000	0.80 - 1.26
STW-874	WATER	Mar, 2000	Fe-55	33.000 ± 1.200	33.100	0.44 - 1.53
STW-874	WATER	Mar, 2000	Gr. Alpha	1,217.000 ± 35.000	1,700.000	0.61 - 1.32
STW-874	WATER	Mar, 2000	Gr. Beta	792.000 ± 25.000	690.000	0.55 - 1.54
STW-874	WATER	Mar, 2000	H-3	147.000 ± 26.000	79.400	0.71 - 1.79
Analysis was repeated; result of reanalysis; 97.5 ± 11.6 Bq/l.						
STW-874	WATER	Mar, 2000	Ni-63	101.000 ± 6.000	112.000	0.25 - 1.75
STW-874	WATER	Mar, 2000	Pu-238	0.750 ± 0.170	0.944	0.78 - 1.25
STW-874	WATER	Mar, 2000	Pu-239/40	0.990 ± 0.090	0.918	0.80 - 1.39
STW-874	WATER	Mar, 2000	Sr-90	4.460 ± 0.990	3.390	0.75 - 1.50
STW-874	WATER	Mar, 2000	Uranium	0.270 ± 0.020	0.995	0.67 - 1.42
Result reported was for U-234. Result for U (total); 0.58 ± 0.02 pCi/L.						
STSO-885	SOIL	Sep, 2000	Ac-228	78.000 ± 1.500	80.200	0.80 - 1.50
STSO-885	SOIL	Sep, 2000	Bi-212	73.000 ± 3.300	80.500	0.45 - 1.23
STSO-885	SOIL	Sep, 2000	Bi-214	91.000 ± 4.000	83.300	0.78 - 1.50
STSO-885	SOIL	Sep, 2000	Cs-137	925.700 ± 14.200	1,020.000	0.80 - 1.29
STSO-885	SOIL	Sep, 2000	K-40	713.600 ± 7.100	713.000	0.80 - 1.37
STSO-885	SOIL	Sep, 2000	Pb-212	66.100 ± 4.300	79.300	0.74 - 1.36
STSO-885	SOIL	Sep, 2000	Pb-214	100.100 ± 3.700	86.300	0.76 - 1.53
STSO-885	SOIL	Sep, 2000	Pu-239/40	18.400 ± 0.400	16.800	0.71 - 1.33
STSO-885	SOIL	Sep, 2000	Sr-90	39.900 ± 5.300	50.400	0.61 - 3.91
STSO-885	SOIL	Sep, 2000	Th-234	154.700 ± 9.300	148.000	0.68 - 2.36
STSO-885	SOIL	Sep, 2000	Uranium	254.300 ± 13.000	327.000	0.62 - 1.35
STW-886	WATER	Sep, 2000	Am-241	1.300 ± 0.200	1.190	0.76 - 1.48
STW-886	WATER	Sep, 2000	Co-60	71.900 ± 7.200	73.700	0.80 - 1.20
STW-886	WATER	Sep, 2000	Cs-137	62.700 ± 6.300	67.000	0.80 - 1.24
STW-886	WATER	Sep, 2000	H-3	92.300 ± 8.900	91.300	0.74 - 2.29
STW-886	WATER	Sep, 2000	Pu-238	0.700 ± 0.100	0.786	0.74 - 1.22
STW-886	WATER	Sep, 2000	Pu-239/40	0.600 ± 0.100	0.591	0.75 - 1.26
STW-886	WATER	Sep, 2000	Sr-90	4.600 ± 0.400	4.530	0.64 - 1.50

Table A-7. Environmental Measurements Laboratory Quality Assessment Program (EML)^a.

Lab Code	Sample Type	Date Collected	Analysis	Concentration ^b		Control Limits ^e
				Laboratory result ^c	EML Result ^d	
STW-886	WATER	Sep, 2000	Uranium	0.800 ± 0.100	0.916	0.73 - 1.37
STW-887	WATER	Sep, 2000	Gr. Alpha	1,113.700 ± 17.900	1,070.000	0.58 - 1.26
STW-887	WATER	Sep, 2000	Gr. Beta	1,129.400 ± 16.700	950.000	0.56 - 1.50
STAP-888	AIR FILTER	Sep, 2000	Am-241	0.060 ± 0.010	0.032	0.69 - 2.40
STAP-888	AIR FILTER	Sep, 2000	Co-57	16.500 ± 0.600	14.500	0.69 - 1.37
STAP-888	AIR FILTER	Sep, 2000	Co-60	9.200 ± 0.400	8.430	0.79 - 1.30
STAP-888	AIR FILTER	Sep, 2000	Cs-137	8.800 ± 0.500	7.410	0.78 - 1.35
STAP-888	AIR FILTER	Sep, 2000	Mn-54	50.200 ± 2.300	43.200	0.80 - 1.36
STAP-888	AIR FILTER	Sep, 2000	Pu-238	0.033 ± 0.010	0.045	0.66 - 1.35
STAP-888	AIR FILTER	Sep, 2000	Pu-239/40	0.080 ± 0.010	0.074	0.69 - 1.29
STAP-888	AIR FILTER	Sep, 2000	Sr-90	3.300 ± 0.100	1.640	0.55 - 2.05
STAP-888	AIR FILTER	Sep, 2000	U-233/4	0.034 ± 0.001	0.040	0.80 - 1.92
STAP-888	AIR FILTER	Sep, 2000	U-238	0.032 ± 0.010	0.041	0.80 - 1.59
Result within activity ± error margin.						
STAP-888	AIR FILTER	Sep, 2000	Uranium	0.070 ± 0.010	0.083	0.80 - 2.54
STAP-889	AIR FILTER	Sep, 2000	Gr. Alpha	2.840 ± 0.010	2.350	0.57 - 1.47
STAP-889	AIR FILTER	Sep, 2000	Gr. Beta	2.080 ± 0.020	1.520	0.76 - 1.52
STVE-890	VEGETATION	Sep, 2000	Am-241	5.900 ± 1.200	5.600	0.72 - 2.34
STVE-890	VEGETATION	Sep, 2000	Cm-244	3.200 ± 0.100	3.600	0.61 - 1.61
STVE-890	VEGETATION	Sep, 2000	Co-60	29.400 ± 0.400	32.800	0.75 - 1.51
STVE-890	VEGETATION	Sep, 2000	Cs-137	739.300 ± 23.000	867.000	0.80 - 1.37
STVE-890	VEGETATION	Sep, 2000	K-40	597.500 ± 49.300	639.000	0.78 - 1.43
STVE-890	VEGETATION	Sep, 2000	Pu-239/40	4.500 ± 0.200	9.600	0.67 - 1.49
No reason for deviation was found with original result. The result of reanalysis; 12.1 ± 1.1 Bq/kg.						
STVE-890	VEGETATION	Sep, 2000	Sr-90	1,201.500 ± 117.300	1,150.000	0.52 - 1.23

Table A-7. Environmental Measurements Laboratory Quality Assessment Program (EML)^a.

Lab Code	Sample Type	Date Collected	Analysis	Concentration ^b		Control Limits ^e
				Laboratory result ^c	EML Result ^d	

^a The Environmental Measurements Laboratory provides the following nuclear species : Air Filters, Soil, Vegetation and Water.

^b Results are reported in Bq/L with the following exceptions: Air Filter results are reported in Bq/Filter, Soil results are reported in Bq/Kg, Vegetation results are reported in Bq/Kg.

^c Laboratory results are reported as the mean of three determinations \pm standard deviation.

^d The EML result listed is the mean of replicate determinations for each nuclide \pm the standard error of the mean.

^e The control limits are reported by EML as the ratio of Reported Value / EML value.

APPENDIX B

DATA REPORTING CONVENTIONS

Data Reporting Conventions

1.0. All activities, except gross alpha and gross beta, are decay corrected to collection time or the end of the collection period.

2.0. Single Measurements

Each single measurement is reported as follows: $x \pm s$

where: x = value of the measurement;

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

In cases where the activity is less than the lower limit of detection L , it is reported as: $<L$, where L = the lower limit of detection based on $4.66s$ uncertainty for a background sample.

3.0. Duplicate analyses

3.1 Individual results: For two analysis results; $x_1 \pm s_1$ and $x_2 \pm s_2$

Reported result: $x \pm s$; where $x = (1/2)(x_1 + x_2)$ and $s = (1/2)\sqrt{s_1^2 + s_2^2}$

3.2. Individual results: $<L_1, <L_2$ Reported result: $<L$, where L = lower of L_1 and L_2

3.3. Individual results: $x \pm s, <L$ Reported result: $x \pm s$ if $x \geq L$; $<L$ otherwise.

4.0. Computation of Averages and Standard Deviations

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

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

4.2 Values below the highest lower limit of detection are not included in the average.

4.3 If all values in the averaging group are less than the highest LLD, the highest LLD is reported.

4.4 If all but one of the values are less than the highest LLD, the single value x and associated two sigma error is reported.

4.5 In rounding off, the following rules are followed:

4.5.1. If the figure following those to be retained is less than 5, the figure is dropped, and the retained figures are kept unchanged. As an example, 11.443 is rounded off to 11.44.

4.5.2. If the figure following those to be retained is equal to or greater than 5, the figure is dropped and the last retained figure is raised by 1. As an example, 11.445 is rounded off to 11.45.

POINT BEACH NUCLEAR PLANT

APPENDIX C

Sampling Program and Locations

POINT BEACH NUCLEAR PLANT

Sample Type	Locations		Collection Type (and Frequency) ^b	Analysis (and Frequency) ^b
	No.	Codes (and Type) ^a		
Airborne Filters	6	E-1-4, 8, 20	Weekly	GB, GS, on QC for each location
Airborne Iodine	6	E-1-4, 8, 20	Weekly	I-131
Ambient Radiation (TLD's)	22	E-1-9, 12, 14-18, 20, 22-32, 34-36, 38,39	Quarterly	Ambient Gamma
Lake Water	5	E-1, 5, 6, 33	Monthly	GB, BS, I-131 on MC H-3, Sr-89-90 on QC
Well Water	1	E-10	Quarterly	GB, GS, H-3, Sr-89-90, I-131
Vegetation	8	E-1-4, 6, 9, 20	3x / year as available	GB, GS
Shoreline Silt	5	E-1, 5, 6, 8, 9, 12	2x / year	GB, GS
Soil	8	E-1-4, 6, 8, 9, 20	2x / year	GB, GS
Milk	3	E-11, 19, 21	Monthly	GS, I-131, Sr-89-90
Algae	2	E-5, 12	3x / year as available	GB, GS
Fish	1	E-13	3x / year as available	GB, GS (in edible portions)

SPECIAL COLLECTIONS AND ANALYSES

Airborne Filters	4 per month	Sr-89, Sr-90
	1 per quarter	Sr-89, Sr-90 (comp.)
Liquid	1 per month	GA, Sr-89, Sr-90
Subsoil Water	4 per quarter	GA, GB, H-3, GS
Miscellaneous Water Samples	4-5 per year	Sr-89, Sr-90

^a Locations codes are defined in Table 2. Control Stations are indicated by (C). All other stations are indicators.

^b Analysis type is coded as follows: GB = gross beta, GA = gross alpha, GS = gamma spectroscopy, H-3 = tritium, Sr-89 = strontium-89, Sr-90 = strontium-90, I-131 = iodine-131. Analysis frequency is coded as follows:
MC = monthly composite, QC = quarterly composite.