

S T A T E O F W I S C O N S I N

1 9 8 0

Point Beach Environmental Radioactivity Survey

T A B L E O F C O N T E N T S

	Page No.
Introduction	1
Sampling Techniques	1
Analytical Procedures	2
Conclusions	4
TABLES	
Quarterly Radiation Dose Measurements in the Vicinity of Point Beach Nuclear Power Plant from TLD Readings (mrem)	6
Air Particulates - Gross Beta, pCi/M^3	7
Air Iodine - I-131 pCi/M^3	11
Monthly Composite Gamma Analysis	15
Effluent Samples	20
Milk Samples	25
Fish Samples	29
Vegetation Samples	30

State of Wisconsin
1980
Point Beach Environmental Radioactivity Survey

INTRODUCTION

This report is prepared under U. S. Nuclear Regulatory Commission Contract NRC-05-80-275 by the State of Wisconsin, Department of Health and Social Services, Section of Radiation Protection. This report covers the calendar year 1980. Results of environmental radioactivity monitoring are listed in tabular form. The data presented consists of duplicative sample analysis such as air and TLD data and split sample analysis conducted by the state radiation protection laboratory or subcontractor and the licensee. A brief description of sample collection techniques and analytical procedures conducted by the state laboratory are also given.

SAMPLING TECHNIQUES

Direct Radiation - Thermoluminescent Dosimeters (TLD's)

Continuous monitoring of direct radiation is performed quarterly using thermoluminescent dosimeters. The dosimeters are placed at five locations in the area of the Point Beach nuclear power facility.

Air Samples

Continuous air samples are collected weekly from two stations. Air particulate samples are collected on 47 mm. plastic filters. Air iodine samples are collected using charcoal absorbers mounted in tandem with the air particulate filters. The sampling rate is one cubic foot of air per minute.

Liquid Effluent

A split sample consisting of 3.5 liters of liquid effluent is collected quarterly at a point close to the discharge of the Point Beach effluent channel. This sample is a grab sample and is collected while the plant is discharging liquid to the channel.

Milk

A one gallon sample of raw milk is collected monthly from the Funk Farm in Two Rivers. A raw milk sample is also collected monthly from the Lehrmann Farm located 2.5 miles northwest of the nuclear power facility.

Fish

Both migratory and non-migratory fish are collected periodically from locations in Lake Michigan near the Point Beach-Kewaunee area.

Algae

Algae growing on rocks which are a part of the boat launching ramp at Two Creeks Park is harvested periodically for determination of gross beta activity.

Vegetation

Vegetation in the form of grass is collected from several locations in the area of Point Beach and Kewaunee.

ANALYTICAL PROCEDURES

The procedures given are abstracted to present only the basic steps.

Air Particulate Samples - Beta Gamma

Place the 47 mm. plastic filter on a 2 inch stainless steel planchet. Beta count in a Widebeta I external gas flow proportional counter. Calculate activity correcting for counter efficiency.

Air Particulate Samples - Gamma

Place all of the 47 mm. plastic filters for a month on the 4" x 4" NaI crystal detector. Determine the gamma spectrum using 256 channels of an ND130A 512 channel gamma spectrometer set at 0.01 MeV per channel. Calculate activity correcting for counter efficiency.

Rain Water - Beta Gamma

Evaporate a 500 ml. aliquot on a weighed 2 inch stainless steel planchet. Beta count in a Widebeta I external gas flow proportional counter. Calculate activity correcting for counter efficiency.

Lake Water - Alpha, Beta Gamma

Filter 500 ml. aliquot of sample. Evaporate filtrate in a 2 inch stainless steel planchet. Beta and alpha count in a Widebeta I external gas flow proportional counter. Place filter paper in 2 inch stainless steel planchet and dry at 103°C. Beta and alpha count in a Widebeta I external gas flow proportional counter. Calculate activity correcting for counter efficiency.

Lake Water - Cesium 137

Place 3.5 liter sample in Marinelli beaker on 4" x 4" NaI crystal detector. Count for 100 minutes on ND130A gamma spectrometer using 256 channels set at 0.01 MeV per channel. Calculate activity correcting for counter efficiency.

Vegetation - Alpha, Beta and Gamma Isotopic

Dry samples at 110°C, grind, weigh into stainless steel planchet. Beta and alpha count in a Widebeta I external gas flow proportional counter. Calculate activity correcting for self-absorption and counter efficiency.

Prepare a similar sample of 6 grams and place into a 4½ oz. graduated plastic container. Count for 100 minutes on a GeLi detector. Determine the gamma spectrum using 4096 channels of the 4096 channel gamma spectrometer set at 0.5 Kev per channel. Calculate the activity correcting for counter efficiency.

Milk - Cesium 137, Iodine 131 Gamma Scan

Procedure same as for Lake Water - Cesium 137.

Milk - Iodine 131 - Chemical Extraction

A stable iodine carrier is added to a 2 liter sample of raw milk. The sample is passed through an anion exchange column and the iodine is removed from the resin by batch extraction using NaOCl. After reduction to I₂ by hydroxylamine hydrochloride, the iodine is extracted into CCl₄, reduced with bisulfite, and back extracted into water. The iodine is precipitated as palladous iodide with the chemical yield determined gravimetrically and counted in a Widebeta I counter correcting for counter efficiency and decay.

Milk - Strontium 90

Strontium and yttrium carriers are added to milk which has been aged two to four weeks. A one liter sample is passed successively through cation and anion exchange columns. The yttrium is eluted from the anion resin with hydrochloric acid and precipitated as yttrium oxalate, filtered and weighed to determine yield and beta counted in a Widebeta I counter correcting for counter efficiency and decay.

Fish - Beta Gamma, Gamma Isotopic

Whole fish are put through a meat grinder and the ground fish well mixed. A representative fish sample of five grams is weighed into a stainless steel planchet. The sample is dried at 110°C and then ashed by slowly bringing the temperature to 550-600°C. Beta count in a Widebeta I external gas flow proportional counter. Calculate activity correcting for counter efficiency.

A 50 gram sample is ashed in a similar manner. Place the sample on a GeLi detector and count for 100 minutes. Determine the gamma spectrum using 4096 channels of the 4096 channel gamma spectrometer set at 0.5 Kev per channel. Calculate the activity correcting for counter efficiency.

Algae - Beta Gamma

Five to seven grams of wet algae are weighed into a two inch stainless steel planchet. The sample is dried at 110°C and ashed at 550-600°C. Beta count in a Widebeta I external gas flow proportional counter. Calculate activity correcting for counter efficiency.

Direct Radiation

Thermoluminescent are supplied under a subcontract by the Eberline Corporation, Santa Fe, New Mexico. The dosimeters are read by Eberline and the data is reported to the State Radiation Protection Section.

CONCLUSIONS

The air particulate filters showed a small increase in gross beta activity during the months of November and December. The increases in activity were two or three times the normal levels of previous years. Increases in beta activity were also noted at other monitoring stations around the state and these increases are probably attributable to radioactive fallout from an atmospheric weapons test conducted by the Chinese on October 6, 1980. Analysis for air radioiodine and gamma isotopic analysis on composite air particulate filters detected no unusual activity above the levels seen in previous years.

Analysis of environmental samples such as surface water, milk and fish detected no unusual activities. Radioactivity levels were consistent with prior years' data.

Necessary Wisconsin data that is missing is due to problems associated with the laboratory that the State of Wisconsin contracted with for the analysis of the environmental samples. The contracting laboratory did not perform the required analyses due to difficulty in obtaining qualified personnel and has experienced difficulty with timely reporting of the required analyses causing this report to be late.

Missing data from 1979 has not been received from the contracting laboratory and much of the data is lost due to the aging of samples which contained isotopes of very short half lives, i.e., Iodine 131. Milk analysis for Iodine 131 during 1980 has not been reported to the required lower limit of detection since the chemical procedure was not performed on the samples.

1 9 8 0

QUARTERLY RADIATION DOSE MEASUREMENTS IN THE VICINITY OF
POINT BEACH NUCLEAR POWER PLANT FROM TLD READINGS (mrem)

Location	1st Quarter 1/15/80-5/15/80		2nd Quarter 5/15/80-7/14/80		3rd Quarter 7/14/80-10/20/80		4th Quarter 10/20/80-1/20/81	
	Wisconsin	Point Beach	Wisconsin	Point Beach	Wisconsin	Point Beach	Wisconsin	Point Beach
North Boundary (E-04)	---	16.1 \pm 3.0	---	13.9 \pm 1.0	---	12.6 \pm 1.6	---	15.8 \pm 3.8
2566-2 P. Ihlenfeldt Farm	24.6 \pm 1.3	---	12.1 \pm 2.2	---	20.0 \pm 5.1	---	24.8 \pm 1.7	---
2566-3 West Boundary Co. Hwy. V (E-07)	22.4 \pm 4.9	10.9 \pm 1.9	11.4 \pm 2.4	7.5 \pm 1.5	17.9 \pm 3.5	8.9 \pm 1.3	19.8 \pm 3.5	12.9 \pm 1.9
2566-4 Meterological Tower (E-01)	23.4 \pm 4.7	16.7 \pm 4.3	11.6 \pm 2.0	10.8 \pm 1.7	16.4 \pm 2.5	11.9 \pm 1.6	23.4 \pm 3.7	16.9 \pm 2.7
2566-5 Southwest Corner of Property Line Point Beach (E-02)	25.8 \pm 10.1	17.6 \pm 4.6	10.3 \pm 1.7	10.9 \pm 0.9	17.8 \pm 7.0	12.4 \pm 0.8	26.4 \pm 3.5	17.0 \pm 0.8
2566-0 Control (E-20)	24.8 \pm 5.1	15.0 \pm 2.7	8.1 \pm 0.6	12.4 \pm 1.5	15.0 \pm 4.1	10.6 \pm 2.0	23.9 \pm 3.8	15.2 \pm 1.7

*Point Beach data are net results after
subtraction of in-transit dose.

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

January, February, March, 1980

Point Beach

AIR PARTICULATES - GROSS BETA, pCi/M³

Date	(1.5 mi. N) Residence North Property Line		(5.5 mi. NWN) Hamacek Residence		(15.9 mi. NNE) Green Bay Pumping Station
	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>
<u>January</u>					
1st wk.	0.011 ± 0.003	0.04 ± 0.01	0.008 ± 0.002	0.04 ± 0.01	Two Weeks
2nd wk.	0.009 ± 0.002	0.04 ± 0.01	0.016 ± 0.002	0.04 ± 0.01	0.018 ± 0.001
3rd wk.	0.013 ± 0.002	0.06 ± 0.01	0.014 ± 0.002	0.07 ± 0.01	0.018 ± 0.002
4th wk.	0.012 ± 0.002	0.04 ± 0.01	0.009 ± 0.001	0.06 ± 0.01	0.015 ± 0.002
5th wk.	0.008 ± 0.004				
<u>February</u>					
1st wk.	0.009 ± 0.003	0.01 ± 0.01	0.011 ± 0.002	0.03 ± 0.01	0.020 ± 0.003
2nd wk.	0.012 ± 0.003	0.01 ± 0.01	0.006 ± 0.002	0.02 ± 0.01	0.011 ± 0.002
3rd wk.	0.011 ± 0.002	0.03 ± 0.01	0.015 ± 0.002	0.04 ± 0.01	0.0003 ± 0.001
4th wk.	0.017 ± 0.004	0.03 ± 0.01	0.015 ± 0.002	0.04 ± 0.01	0.026 ± 0.003
5th wk.					
<u>March</u>					
1st wk.	0.010 ± 0.003	0.02 ± 0.01	0.011 ± 0.002	0.03 ± 0.01	0.019 ± 0.003
2nd wk.	0.009 ± 0.003	0.03 ± 0.01	0.014 ± 0.003	0.03 ± 0.01	0.023 ± 0.003
3rd wk.	0.007 ± 0.004	0.02 ± 0.01	0.014 ± 0.003	0.02 ± 0.01	0.018 ± 0.002
4th wk.	0.005 ± 0.003	0.02 ± 0.01	0.010 ± 0.003	0.03 ± 0.01	0.018 ± 0.002
5th wk.	0.010 ± 0.003		0.003 ± 0.002		0.013 ± 0.002

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

April, May, June, 1980Point BeachAIR PARTICULATES - GROSS BETA, PCI/M^3

Date	(1.5 mi. N) Residence North Property Line		(5.5 mi. NWN) Hamacek Residence		(15.9 mi. NNE) Green Bay Pumping Station
	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>
<u>April</u>					
1st wk.	0.007 \pm 0.003	0.02 \pm 0.01	0.013 \pm 0.004	0.02 \pm 0.01	0.015 \pm 0.002
2nd wk.	0.007 \pm 0.003	0.03 \pm 0.01	0.003 \pm 0.002	0.03 \pm 0.01	0.009 \pm 0.002
3rd wk.	0.005 \pm 0.003	0.01 \pm 0.01	0.011 \pm 0.003	0.01 \pm 0.01	0.015 \pm 0.002
4th wk.	(-0.001) \pm 0.003	0.02 \pm 0.01	0.009 \pm 0.003	0.03 \pm 0.01	0.008 \pm 0.002
5th wk.		0.01 \pm 0.01		0.01 \pm 0.01	
<u>May</u>					
1st wk.	0.008 \pm 0.004	0.02 \pm 0.01	0.009 \pm 0.002	0.02 \pm 0.01	Two Weeks
2nd wk.	0.005 \pm 0.004	0.01 \pm 0.01	0.004 \pm 0.002	0.01 \pm 0.01	0.010 \pm 0.001
3rd wk.	0.007 \pm 0.003	0.01 \pm 0.01	0.003 \pm 0.002	0.01 \pm 0.01	0.007 \pm 0.002
4th wk.	0.010 \pm 0.005	0.03 \pm 0.01	0.008 \pm 0.003	0.03 \pm 0.01	0.017 \pm 0.002
5th wk.		0.03 \pm 0.001	0.007 \pm 0.002	0.03 \pm 0.01	0.012 \pm 0.002
<u>June</u>					
1st wk.	0.002 \pm 0.003	0.02 \pm 0.01	0.003 \pm 0.002	0.02 \pm 0.01	0.006 \pm 0.002
2nd wk.	0.012 \pm 0.004	0.01 \pm 0.01	0.005 \pm 0.003	0.01 \pm 0.01	0.032 \pm 0.003
3rd wk.	0.006 \pm 0.003	0.03 \pm 0.01	0.011 \pm 0.003	0.02 \pm 0.01	0.017 \pm 0.002
4th wk.	0.007 \pm 0.005	0.02 \pm 0.01	0.007 \pm 0.003	0.01 \pm 0.01	0.015 \pm 0.002
5th wk.	0.004 \pm 0.003	0.02 \pm 0.01		0.02 \pm 0.01	

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

July, August, September, 1980

Point BeachAIR PARTICULATES - GROSS BETA, pCi/M³

Date	(1.5 mi. N) Residence North Property Line		(5.5 mi. NWN) Hamacek Residence		(15.9 mi. NNE) Green Bay Pumping Station
	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>
<u>July</u>					
1st wk.	0.009 ± 0.004	0.01 ± 0.01	0.005 ± 0.003	0.01 ± 0.01	0.011 ± 0.002
2nd wk.	0.009 ± 0.004	0.02 ± 0.01	0.011 ± 0.004	0.02 ± 0.01	0.013 ± 0.003
3rd wk.	0.029 ± 0.007	0.02 ± 0.01	0.005 ± 0.003	0.003	0.040 ± 0.003
4th wk.	0.026 ± 0.008	0.01 ± 0.01	0.009 ± 0.004	0.01 ± 0.01	0.052 ± 0.004
5th wk.					
<u>August</u>					
1st wk.	0.030 ± 0.005	0.02 ± 0.01	0.011 ± 0.004	0.02 ± 0.01	Three Weeks
2nd wk.	0.008 ± 0.004	0.02 ± 0.01	0.004 ± 0.004	0.02 ± 0.01	
3rd wk.	0.006 ± 0.005	0.02 ± 0.01	0.002 ± 0.004	0.02 ± 0.01	0.014 ± 0.001
4th wk.	0.042 ± 0.008	0.01 ± 0.01	0.007 ± 0.002	0.01 ± 0.01	0.031 ± 0.003
5th wk.	0.008 ± 0.003		0.007 ± 0.002		0.011 ± 0.002
<u>September</u>					
1st wk.	0.049 ± 0.007	0.04 ± 0.01	0.008 ± 0.002	0.04 ± 0.01	Two Weeks
2nd wk.	0.016 ± 0.005	0.02 ± 0.01	0.007 ± 0.003	0.02 ± 0.01	0.012 ± 0.001
3rd wk.	0.030 ± 0.007	0.02 ± 0.01	0.005 ± 0.004	0.02 ± 0.01	0.017 ± 0.003
4th wk.	0.025 ± 0.006	0.01 ± 0.01	0.005 ± 0.009	0.01 ± 0.01	0.024 ± 0.003
5th wk.		0.01 ± 0.01		0.01 ± 0.01	

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

October, November, December, 1980

Point BeachAIR PARTICULATES - GROSS BETA, pCi/M³

Date	(1.5 mi. N) Residence North Property Line		(5.5 mi. NWN) Hamacek Residence		(15.9 mi. NNE) Green Bay Pumping Station
	Wisconsin	Point Beach	Wisconsin	Point Beach	Wisconsin
<u>October</u>					
1st wk.	0.019 ± 0.009	0.02 ± 0.01	Three Weeks	0.02 ± 0.01	0.062 ± 0.005
2nd wk.	0.006 ± 0.004	0.01 ± 0.01		0.01 ± 0.01	0.015 ± 0.003
3rd wk.	0.008 ± 0.005	0.01 ± 0.01	0.010 ± 0.001	0.02 ± 0.01	0.013 ± 0.003
4th wk.	0.022 ± 0.008	0.01 ± 0.01	0.010 ± 0.003	0.01 ± 0.01	0.012 ± 0.003
5th wk.			0.034 ± 0.004		
<u>November</u>					
1st wk.	Filter missing	0.03 ± 0.01	0.028 ± 0.004	0.03 ± 0.01	0.125 ± 0.007
2nd wk.	0.249 ± 0.018	0.04 ± 0.01	0.020 ± 0.004	0.01 ± 0.01	0.085 ± 0.006
3rd wk.	0.048 ± 0.009	0.03 ± 0.01	0.023 ± 0.004	0.03 ± 0.01	0.050 ± 0.005
4th wk.	0.007 ± 0.025	0.06 ± 0.01	0.021 ± 0.003	0.06 ± 0.01	Three Weeks
5th wk.	0.040 ± 0.011				
<u>December</u>					
1st wk.	0.061 ± 0.009	0.07 ± 0.01	0.019 ± 0.006	0.06 ± 0.01	0.040 ± 0.002
2nd wk.	0.015 ± 0.003	0.07 ± 0.001	0.034 ± 0.005	0.07 ± 0.01	0.140 ± 0.007
3rd wk.	0.013 ± 0.003	0.08 ± 0.01	0.018 ± 0.004	0.08 ± 0.01	0.112 ± 0.007
4th wk.	0.018 ± 0.003	0.06 ± 0.01	0.026 ± 0.006	0.06 ± 0.01	Two Weeks
5th wk.		0.10 ± 0.01		0.24 ± 0.01	0.059 ± 0.003

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

January, February, March, 1980

Point Beach

AIR IODINE - I-131 pCi/M³

Date	(1.5 mi. N) Residence North Property Line		(15.9 mi. NNE) Green Bay Pumping Station
	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>
<u>January</u>			
1st wk.	(-0.06) \pm 0.06	< 0.03	Two Weeks
2nd wk.	0.017 \pm 0.02	< 0.03	0.006 \pm 0.003
3rd wk.	(-0.022) \pm 0.02	< 0.3	0.012 \pm 0.004
4th wk.	0.002 \pm 0.009	< 0.3	(-0.001) \pm 0.001
5th wk.	0.027 \pm 0.011	< 0.3	
<u>February</u>			
1st wk.	(-0.024) \pm 0.05	< 0.3	0.004 \pm 0.03
2nd wk.	(-0.002) \pm 0.05	< 0.3	(-0.005) \pm 0.03
3rd wk.	(-0.02) \pm 0.07	< 0.3	(-0.002) \pm 0.03
4th wk.	(-0.025) \pm 0.05	< 0.3	(-0.005) \pm 0.03
5th wk.			
<u>March</u>			
1st wk.	0.019 \pm 0.04	< 0.3	0.017 \pm 0.03
2nd wk.	(-0.007) \pm 0.06	< 0.3	0.027 \pm 0.03
3rd wk.	0.013 \pm 0.06	< 0.3	(-0.006) \pm 0.03
4th wk.	0.013 \pm 0.04	< 0.3	0.015 \pm 0.03
5th wk.	(-0.011) \pm 0.04	< 0.3	0.006 \pm 0.03

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

April, May, June, 1980Point BeachAIR IODINE - I-131 pCi/M³

Date	(1.5 mi. N) Residence North Property Line		(15.9 mi. NNE) Green Bay Pumping Station
	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>
<u>April</u>			
1st wk.	0.003 \pm 0.04	< 0.03	(-0.013) \pm 0.019
2nd wk.	(-0.004) \pm 0.05	< 0.03	-0.009 \pm 0.019
3rd wk.	(-0.015) \pm 0.04	< 0.03	0.001 \pm 0.018
4th wk.	(-0.002) \pm 0.06	< 0.03	0.005 \pm 0.018
5th wk.			
<u>May</u>			
1st wk.	(-0.012) \pm 0.06	< 0.03	Two Weeks
2nd wk.	0.009 \pm 0.04	< 0.03	0.002 \pm 0.12
3rd wk.	0.047 \pm 0.06	< 0.03	(-0.008) \pm 0.018
4th wk.	(-0.029) \pm 0.05	< 0.03	0.010 \pm 0.02
<u>June</u>			
1st wk.	(-0.009) \pm 0.05	< 0.03	(-0.009) \pm 0.017
2nd wk.	(-0.004) \pm 0.05	< 0.03	0.011 \pm 0.017
3rd wk.	0.038 \pm 0.05	< 0.03	0.026 \pm 0.017
4th wk.	0.006 \pm 0.06	< 0.03	0.012 \pm 0.019
5th wk.	0.069 \pm 0.06	< 0.03	

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

July, August, September, 1980

Point Beach

AIR IODINE - I-131 pCi/M³

Date	(1.5 mi. N)		(15.9 mi. NNE)
	Residence North Property Line	Green Bay Pumping Station	
	<u>Wisconsin</u>	<u>Point Beach</u>	<u>Wisconsin</u>
<u>July</u>			
1st wk.	$(-0.035) \pm 0.04$	< 0.03	$(0.001) \pm 0.017$
2nd wk.	0.04 ± 0.06	< 0.03	0.015 ± 0.03
3rd wk.	$(-0.024) \pm 0.06$	< 0.03	0.0002 ± 0.017
4th wk.	$(-0.010) \pm 0.04$	< 0.03	0.004 ± 0.015
5th wk.			
<u>August</u>			
1st wk.	0.01 ± 0.04	< 0.03	Three Weeks
2nd wk.	$(-0.03) \pm 0.05$	< 0.03	
3rd wk.	$(-0.004) \pm 0.06$	< 0.03	$(-0.001) \pm 0.10$
4th wk.	$(-0.013) \pm 0.05$	< 0.03	0.000 ± 0.016
5th wk.	$(-0.025) \pm 0.05$	< 0.03	0.004 ± 0.019
<u>September</u>			
1st wk.	$(-0.046) \pm 0.00$	< 0.03	Two Weeks
2nd wk.	0.007 ± 0.05	< 0.03	$(-0.008) \pm 0.014$
3rd wk.	0.004 ± 0.06	< 0.03	0.002 ± 0.02
4th wk.	$(-0.010) \pm 0.05$	< 0.03	0.008 ± 0.02
5th wk.			

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

October, November, December, 1980Point BeachAIR IODINE - I-131 pCi/M³

(1.5 mi. N)

(15.9 mi. NNE)

Date Residence North Property Line Green Bay Pumping Station

WisconsinPoint BeachWisconsinOctober

1st wk.	(-0.005) ± 0.06	< 0.03	(-0.002) ± 0.03
2nd wk.	0.03 ± 0.05	< 0.03	(-0.004) ± 0.02
3rd wk.	0.02 ± 0.07	< 0.03	0.019 ± 0.02
4th wk.	(-0.04) ± 0.08	< 0.03	0.012 ± 0.02
5th wk.			

November

1st wk.	(-0.09) ± 0.07	< 0.03	(-0.003) ± 0.02
2nd wk.	(-0.008) ± 0.06	< 0.03	(-0.007) ± 0.02
3rd wk.	(-0.04) ± 0.06	< 0.03	0.007 ± 0.02
4th wk.	0.05 ± 0.03	< 0.03	Three Weeks
5th wk.	(-0.005) ± 0.12	< 0.03	

December

1st wk.	0.04 ± 0.06	< 0.03	0.000 ± 0.013
2nd wk.	0.002 ± 0.03	< 0.03	0.000 ± 0.02
3rd wk.	0.02 ± 0.04	< 0.03	0.018 ± 0.02
4th wk.	0.003 ± 0.02	< 0.03	Two Weeks
5th wk.		< 0.03	(-0.001) ± 0.014

AIR PARTICULATES

Monthly Composite Gamma Analysis (Measurements in Units of pCi/m³)

Point Beach (Wisconsin Data)

Location	¹⁴⁴ Ce	¹³⁷ Cs	⁹⁵ Zr- ⁹⁵ Nb	⁷ Be	¹⁰⁶ Ru
<u>January, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	0.010 ± 0.015	(-0.003) ± 0.003	(-0.002) ± 0.003	0.03 ± 0.04	0.012 ± 0.013
North Property Line (1.5 mi. N)	0.03 ± 0.02	0.004 ± 0.004	0.002 ± 0.004	0.03 ± 0.05	0.005 ± 0.017
Green Bay Pumping Station (15.9 mi. NNE)	0.011 ± 0.015	0.001 ± 0.003	(-0.001) ± 0.004	0.06 ± 0.04	0.018 ± 0.014
<u>February, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	(-0.001) ± 0.017	(-0.001) ± 0.003	(-0.002) ± 0.007	0.06 ± 0.08	0.007 ± 0.015
North Property Line (1.5 mi. N)	0.03 ± 0.03	0.006 ± 0.006	0.006 ± 0.011	0.04 ± 0.15	0.002 ± 0.03
Green Bay Pumping Station (15.9 mi. NNE)	(-0.013) ± 0.017	(-0.001) ± 0.003	(-0.002) ± 0.007	0.07 ± 0.08	0.014 ± 0.016
<u>March, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	0.002 ± 0.02	(-0.002) ± 0.004	(-0.003) ± 0.010	0.07 ± 0.12	0.013 ± 0.02
North Property Line (1.5 mi. N)	0.04 ± 0.03	0.003 ± 0.006	0.013 ± 0.013	0.08 ± 0.18	0.015 ± 0.03
Green Bay Pumping Station (15.9 mi. NNE)	(-0.003) ± 0.014	0.000 ± 0.002	0.000 ± 0.006	0.04 ± 0.08	0.007 ± 0.013

AIR PARTICULATES

Monthly Composite Gamma Analysis (Measurements in Units of pCi/m³)

Point Beach (Wisconsin Data)

Location	¹⁴⁴ Ce	¹³⁷ Cs	⁹⁵ Zr- ⁹⁵ Nb	⁷ Be	¹⁰⁶ Ru
<u>April, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	0.010 ± 0.017	(-0.002) ± 0.003	(-0.003) ± 0.005	0.03 ± 0.05	0.008 ± 0.016
North Property Line (1.5 mi. N)	0.004 ± 0.03	0.000 ± 0.005	(-0.002) ± 0.007	0.015 ± 0.08	0.013 ± 0.03
Green Bay Pumping Station (15.9 mi. NNE)	(-0.017) ± 0.015	0.000 ± 0.003	(-0.002) ± 0.004	0.04 ± 0.04	0.013 ± 0.014
<u>May, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	0.007 ± 0.017	0.000 ± 0.003	(-0.003) ± 0.004	0.06 ± 0.04	0.015 ± 0.016
North Property Line (1.5 mi. N)	0.012 ± 0.03	0.000 ± 0.006	0.001 ± 0.006	0.05 ± 0.07	0.012 ± 0.03
Green Bay Pumping Station (15.9 mi. NNE)	0.000 ± 0.014	(-0.001) ± 0.003	(-0.002) ± 0.003	0.08 ± 0.04	0.028 ± 0.013
<u>June, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	0.013 ± 0.017	(-0.002) ± 0.003	0.000 ± 0.004	0.06 ± 0.05	0.019 ± 0.016
North Property Line (1.5 mi. N)	0.05 ± 0.04	(-0.010) ± 0.008	0.011 ± 0.008	0.04 ± 0.09	0.019 ± 0.03
Green Bay Pumping Station (15.9 mi. NNE)	0.011 ± 0.012	0.001 ± 0.002	0.000 ± 0.003	0.09 ± 0.03	0.028 ± 0.011

AIR PARTICULATES

Monthly Composite Gamma Analysis (Measurements in Units of pCi/m³)

Point Beach (Wisconsin Data)

Location	¹⁴⁴ Ce	¹³⁷ Cs	⁹⁵ Zr- ⁹⁵ Nb	⁷ Be	¹⁰⁶ Ru
<u>July, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	0.002 ± 0.03	0.003 ± 0.006	0.003 ± 0.007	0.07 ± 0.08	0.012 ± 0.03
North Property Line (1.5 mi. N)	(-0.003) ± 0.03	0.005 ± 0.006	0.002 ± 0.005	0.08 ± 0.05	0.02 ± 0.03
Green Bay Pumping Station (15.9 mi. NNE)	0.013 ± 0.016	0.001 ± 0.003	0.001 ± 0.004	0.08 ± 0.04	0.026 ± 0.015
<u>August, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	(-0.006) ± 0.03	0.003 ± 0.006	0.000 ± 0.007	(-0.005) ± 0.08	0.001 ± 0.03
North Property Line (1.5 mi. N)	0.013 ± 0.04	0.001 ± 0.008	(-0.001) ± 0.007	0.07 ± 0.07	0.02 ± 0.04
Green Bay Pumping Station (15.9 mi. NNE)	0.002 ± 0.014	0.002 ± 0.003	(-0.002) ± 0.003	0.07 ± 0.04	0.021 ± 0.013
<u>September, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	(-0.006) ± 0.02	(-0.001) ± 0.004	(-0.001) ± 0.005	(-0.015) ± 0.06	(-0.005) ± 0.02
North Property Line (1.5 mi. N)	0.03 ± 0.03	0.002 ± 0.007	(-0.002) ± 0.006	0.08 ± 0.07	0.03 ± 0.03
Green Bay Pumping Station (15.9 mi. NNE)	0.009 ± 0.012	0.001 ± 0.002	0.001 ± 0.003	0.04 ± 0.03	0.011 ± 0.011

AIR PARTICULATES

Monthly Composite Gamma Analysis (Measurements in Units of pCi/m^3)

Point Beach (Wisconsin Data)

Location	^{144}Ce	^{137}Cs	$^{95}\text{Zr}-^{95}\text{Nb}$	^7Be	^{106}Ru
<u>October, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	$(-0.008) \pm 0.017$	0.0 ± 0.003	0.00 ± 0.004	0.04 ± 0.05	0.012 ± 0.016
North Property Line (1.5 mi. N)	$(-0.010) \pm 0.03$	0.004 ± 0.006	0.001 ± 0.005	0.02 ± 0.06	0.006 ± 0.03
Green Bay Pumping Station (15.0 mi. NNE)	$(-0.011) \pm 0.014$	0.000 ± 0.003	0.000 ± 0.003	0.07 ± 0.04	0.016 ± 0.013
<u>November, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	0.00 ± 0.02	$(-0.001) \pm 0.004$	0.003 ± 0.005	0.06 ± 0.06	0.015 ± 0.018
North Property Line (1.5 mi. N)	$(-0.035) \pm 0.08$	0.003 ± 0.016	0.001 ± 0.014	0.27 ± 0.15	0.04 ± 0.07
Green Bay Pumping Station	0.008 ± 0.02	0.003 ± 0.004	0.003 ± 0.005	0.12 ± 0.06	0.031 ± 0.019
<u>December, 1980</u>					
Paul Hamacek Residence (5.5 mi. NNW)	$(-0.003) \pm 0.019$	0.004 ± 0.004	0.006 ± 0.005	0.11 ± 0.05	0.024 ± 0.018
North Property Line (1.5 mi. N)	0.008 ± 0.016	0.003 ± 0.003	0.003 ± 0.003	0.09 ± 0.03	0.027 ± 0.015
Green Bay Pumping Station	0.012 ± 0.013	0.002 ± 0.002	0.008 ± 0.003	0.09 ± 0.04	0.028 ± 0.012

AIR PARTICULATES

Monthly Composite Gamma Analysis (Measurements in Units of $\mu\text{Ci}/\text{m}^3$)

Point Beach (Point Beach Data)

Location	¹⁴⁴ Ce	¹³⁷ Cs	⁹⁵ Zr- ⁹⁵ Nb	⁷ Be	¹⁰⁶ Ru
<u>1st Quarter</u>					
Paul Hamacek (E-08)					
Residence (5.5 mi. NNW)		<	0.01 for all of the above listed isotopes.		
North Property Line (E-04)					
(1.5 mi. N)		<	0.01 for all of the above listed isotopes.		
<u>2nd Quarter</u>					
Paul Hamacek (E-08)					
Residence (5.5 mi. NNW)		<	0.01 for all of the above listed isotopes.		
North Property Line (E-04)					
(1.5 mi. N)		<	0.01 for all of the above listed isotopes.		
<u>3rd Quarter</u>					
Paul Hamacek (E-08)					
Residence (5.5 mi. NNW)		<	0.01 for all of the above listed isotopes.		
North Property Line (E-04)					
(1.5 mi. N)		<	0.01 for all of the above listed isotopes.		
<u>4th Quarter</u>					
Paul Hamacek (E-08)					
Residence (5.5 mi. NNW)		<	0.01 for all of the above listed isotopes.		
North Property Line (E-04)					
(1.5 mi. N)		<	0.01 for all of the above listed isotopes.		

*Naturally-occurring nuclides not reported.

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach

Effluent Sample

1st Quarter - collected 3/27/80

<u>Analyzed for</u>	<u>Result - $\mu\text{Ci/ml}$</u>	
	<u>Wisconsin</u>	<u>Point Beach</u>
Gross Beta	$3 \pm 3 \times 10^{-9}$	$(2.0 \pm 0.7) \times 10^{-9}$
Tritium		$< 5 \times 10^{-7}$
Sr 89	Negative No.	$< 5 \times 10^{-9}$
Sr 90	1.7×10^{-9}	$< 10^{-9}$

Gamma Isotopic

Co 58	$< 10^{-8}$
Co 60	$< 10^{-8}$
I 131	$< 10^{-8}$
Cs 137	$< 10^{-8}$
Cs 134	$< 10^{-8}$

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach

Effluent Sample

2nd Quarter - collected 6/25/80

Analyzed for	Result - $\mu\text{Ci/ml}$	
	<u>Wisconsin</u>	<u>Point Beach</u>
Gross Beta	Soluble $(1.7 \pm 1.2) \times 10^{-9}$	$(3.4 \pm 0.8) \times 10^{-9}$
	Insoluble -0.5×10^{-9}	
Tritium		$< 5 \times 10^{-7}$
Sr 89	Negative No.	$< 5 \times 10^{-9}$
Sr 90	$(0.9 \pm 0.4) \times 10^{-9}$	$< 10^{-9}$

Gamma Isotopic

Co 58	$(-1.5 \pm 4) \times 10^{-9}$	$< 10^{-8}$
Co 60	$(-1.7 \pm 4) \times 10^{-9}$	$< 10^{-8}$
I 131	$(3.2 \pm 5) \times 10^{-9}$	$< 10^{-8}$
Cs 137	$(0.2 \pm 5) \times 10^{-9}$	$< 10^{-8}$
Cs 134	$(-1.5 \pm 4) \times 10^{-9}$	$< 10^{-8}$

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach

Effluent Sample

3rd Quarter - collected 9/24/80

Analyzed for	Result - $\mu\text{Ci/ml}$	
	<u>Wisconsin</u>	<u>Point Beach</u>
Gross Beta		$(2.2 \pm 0.8) \times 10^{-9}$
Tritium		$< 5 \times 10^{-7}$
Sr 89	< 0	$< 5 \times 10^{-9}$
Sr 90	$(1.0 \pm 0.5) \times 10^{-9}$	$< 10^{-9}$

Gamma Isotopic

Co 58	$(0.8 \pm 4) \times 10^{-9}$	$< 10^{-8}$
Co 60	$(-0.6 \pm 4) \times 10^{-9}$	$< 10^{-8}$
I 131	$(0.2 \pm 5) \times 10^{-9}$	$< 10^{-8}$
Cs 137	$(-0.2 \pm 5) \times 10^{-9}$	$< 10^{-8}$
Cs 134	$(0.8 \pm 4) \times 10^{-9}$	$< 10^{-8}$

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach

Effluent Sample

4th Quarter - collected 10/29/80

<u>Analyzed for</u>		<u>Result - $\mu\text{Ci/ml}$</u>	
	<u>Wisconsin</u>	<u>Point Beach</u>	
Gross Beta		$(2.5 \pm 0.6) \times 10^{-9}$	
Tritium		$(2.8 \pm 0.8) \times 10^{-7}$	
Sr 89	< 0	$< 1.8 \times 10^{-9}$	
Sr 90	$(1.0 \pm 0.4) \times 10^{-9}$	$(1.32 \pm 0.7) \times 10^{-9}$	

Gamma Isotopic

Co 58	$(-1.0 \pm 4) \times 10^{-9}$	$< 10^{-8}$
Co 60	$(-2.4 \pm 4) \times 10^{-9}$	$< 10^{-8}$
I 131	$(-12 \pm 24) \times 10^{-9}$	$< 10^{-8}$
Cs 137	$(-2.6 \pm 5) \times 10^{-9}$	$< 10^{-8}$
Cs 134	$(-1.0 \pm 4) \times 10^{-9}$	$< 10^{-8}$

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach

Effluent Sample

4th Quarter - collected 12/04/80

Analyzed for

Result - $\mu\text{Ci/ml}$

	<u>Wisconsin</u>	<u>Point Beach</u>
Gross Beta	Soluble $(3.4 \pm 1.1) \times 10^{-9}$ Insoluble $(0.3 \pm 1.0) \times 10^{-9}$	No data reported.

Tritium

Sr 89 < 0

Sr 90 $(0.9 \pm 0.5) \times 10^{-9}$

Gamma Isotopic

Co 58 $(-0.2 \pm 4) \times 10^{-9}$

Co 60 $(-2.3 \pm 4) \times 10^{-9}$

I 131 $(-6 \pm 12) \times 10^{-9}$

Cs 137 $(-2.7 \pm 5) \times 10^{-9}$

Cs 134 $(-0.2 \pm 4) \times 10^{-9}$

RESULTS OF THE ANALYSES OF P-SITE SAMPLES

Point Beach - 1980Wisconsin DataMILK - pCi/liter

Date	Sample Identification	Sr 89	Sr 90	I 131*	Cs 137*	K 40*
1/29/80	Funk Farm		No Data	(-1.9)	(-0.4)	1290 \pm 70
2/20/80	" "		No Data	0.8	1.5	1200 \pm 70
3/26/80	" "		6.7	0.5	(-0.7)	1360 \pm 70
4/30/80	Funk Farm		5.1	4.7	2.5	1340 \pm 70
5/29/80	" "		No Data	1.2	(-4.7)	1320 \pm 70
6/25/80	" "		7.7	1.5	0.4	1270 \pm 70
7/23/80	Funk Farm		4.8	7.7	0.3	1410 \pm 70
8/26/80	" "		4.4	(-1.7)	(-3.6)	1290 \pm 70
9/24/80	" "		No Data	6.0	(-1.2)	1360 \pm 70
10/29/80	Funk Farm		2.9	(-0.2)	(-6.6)	1340 \pm 70
11/19/80	" "		6.4	2.2	(-4.0)	1300 \pm 70
12/30/80	" "		3.0	1.4	0.2	1260 \pm 70

*From gamma spectroscopy.

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach - 1980Wisconsin DataMILK - pCi/liter

Date	Sample Identification	Sr 89	Sr 90	I 131*	Cs 137*	K 40*
1/29/80	Lehrmann Farm		No Data	2.4	(-5.4)	1370 \pm 70
2/20/80	" "		9.5	3.7	(-3.2)	1390 \pm 70
3/26/80	" "		3.0	2.3	(-2.3)	1370 \pm 70
4/30/80	Lehrmann Farm		No Data	3.9	(-1.3)	1390 \pm 70
5/29/80	" "		8.7	0.5	(-11.3)	1320 \pm 70
6/25/80	" "		3.2	4.8	(-1.9)	1370 \pm 70
7/23/80	Lehrmann Farm		2.8	14.3	9.1	1430 \pm 70
8/26/80	" "		No Data	2.2	(-10.5)	1290 \pm 70
9/29/80	" "		4.3	4.1	0.8	1260 \pm 70
10/29/80	Lehrmann Farm		7.5	1.6	(-6.5)	1240 \pm 70
11/19/80	" "		2.8	0.2	(-5.0)	1240 \pm 70
12/30/80	" "		4.0	0.2	(-6.5)	1280 \pm 70

*From gamma spectroscopy.

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach - 1980Point Beach DataMILK - pCi/liter

Date	Sample Identification	Sr 89	Sr 90	I 131*	Cs 137*	K 40*
1/29/80	Funk Farm	< 5	2 \pm 1	< 0.5	< 5	Not Reported
2/20/80	" "	< 5.0	2.3 \pm 0.7	< 0.5	< 5	
3/26/80	" "	< 5.0	2.7 \pm 0.7	< 0.5	< 5	
4/30/80	Funk Farm	< 5.0	2.4 \pm 0.6	< 0.5	< 5	
5/29/80	" "	< 5.0	1.5 \pm 0.5	< 0.5	< 5	
6/25/80	Funk Farm	< 5.0	1.6 \pm 0.6	< 0.5	< 5	
7/23/80	" "	< 5.0	1.9 \pm 1.3	< 0.5	< 5	
8/26/80	" "	< 5.0	1.7 \pm 0.7	< 0.5	< 5	
9/23/80	Funk Farm	< 5.0	2.0 \pm 0.8	< 0.5	< 5	
10/29/80	" "	< 5.0	2.1 \pm 0.8	< 0.5	< 5	
11/19/80	" "	< 5.0	2.2 \pm 0.7	< 0.5	< 5	
12/30/80	Funk Farm	< 5.0	2.1 \pm 0.8	< 0.5	< 5	

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach - 1980Point Beach DataMILK - pCi/liter

Date	Sample Identification	Sr 89	Sr 90	I 131*	Cs 137*	K 40*
1/29/80	Lehrmann Farm	< 5	2 \pm 1	< 0.5	< 5	Not Reported
2/20/80	" "	< 5.0	2.2 \pm 0.6	< 0.5	< 5	
3/26/80	" "	< 5.0	2.4 \pm 0.5	< 0.5	< 5	
4/30/80	Lehrmann Farm	< 5.0	2.4 \pm 0.6	< 0.5	< 5	
5/29/80	" "	< 5.0	1.3 \pm 0.6	< 0.5	< 5	
6/25/80	" "	< 5.0	1.3 \pm 0.5	< 0.5	< 5	
7/23/80	Lehrmann Farm	< 5.0	1.4 \pm 1.3	< 0.5	< 5	
8/26/80	" "	< 5.0	1.6 \pm 0.8	< 0.5	< 5	
9/23/80	" "	< 5.0	2.1 \pm 0.6	< 0.5	< 5	
10/29/80	Lehrmann Farm	< 5.0	1.6 \pm 0.7	< 0.5	< 5	
11/19/80	" "	< 5.0	2.2 \pm 0.7	< 0.5	< 5	
12/30/80	" "	< 5.0	2.3 \pm 0.7	< 0.5	< 5	

RESULTS OF THE ANALYSES OF OFF-SITE SAMPLES

Point Beach						
Fish - pCi/gram (wet)			Wisconsin Data - 1980			
Date Sample	7/01/80 Lake Trout	7/01/80 Lake Trout	9/11/80 Brown Trout	9/10/80 Lake Trout	12/80 Brown Trout	12/80 Brown Trout
<u>Isotope</u>						
Co-58	0.02 ± 0.04	0.012 ± 0.02	0.003 ± 0.006	0.004 ± 0.009	0.015 ± 0.016	(-0.004) ± 0.014
Co-60	(-0.002) ± 0.005	0.009 ± 0.007	0.004 ± 0.006	0.005 ± 0.009	(-0.003) ± 0.008	(-0.001) ± 0.009
I-131						
Cs-134	(-0.006) ± 0.005	0.005 ± 0.006	0.002 ± 0.005	0.002 ± 0.005	0.004 ± 0.008	0.003 ± 0.008
Cs-137	0.072 ± 0.010	0.128 ± 0.013	0.104 ± 0.012	0.160 ± 0.018	0.098 ± 0.016	0.116 ± 0.018
⁴⁰ K	0.83 ± 0.15	1.28 ± 0.18	1.35 ± 0.18	2.1 ± 0.3	1.6 ± 0.3	1.2 ± 0.2

		Fish - pCi/gram (wet)		Point Beach Data - 1980	
Date Sample	4/23/80 Trout, Gas	8/20/80 Trout	10/10/80 Lake Trout	10/16/80 Rainbow Trout	
<u>Isotope</u>					
Co-58	< 1	< 1	< 1	< 1	
Co-60	< 1	< 1	< 1	< 1	
I-131	< 1	< 1	< 1	< 1	
Cs-134	< 1	< 1	< 1	< 1	
Cs-137	< 1	< 1	< 1	< 1	
Gross Beta	10.4 ± 0.4	7.1 ± 0.3	11.2 ± 0.4	7.6 ± 0.3	
All other gamma emitters	< 1	< 1	< 1	< 1	

GAMMA ISOTOPIC AND GROSS BETA ACTIVITY

Vegetation

(Activities in pCi/gm Dry Weight)

Point Beach - 1980

Wisconsin Data

Isotope	North Property Line - Residence	Paul Hamacek Residence	North Property Line - Residence	Paul Hamacek Residence
	(6/17/80)	(6/17/80)	(11/24/80)	(11/24/80)
Cs-137	0.03 \pm 0.7	(-0.07) \pm 0.7	(-0.5) \pm 0.6	0.2 \pm 0.7
Cs-134	< 2.0	< 2.0	< 2.0	< 2.0
Co-58	< 2.0	< 2.0	< 2.0	< 2.0
Co-60	< 2.0	< 2.0	< 2.0	< 2.0
K-40	27 \pm 15	17 \pm 13	18 \pm 14	15 \pm 14
Zr-95	(-0.2) \pm 1.5	0.3 \pm 15	(-1.2) \pm 2	(-1.2) \pm 3
Ce-144	(-0.15) \pm 4	(-1.1) \pm 4	(-3) \pm 5	(-5) \pm 5
Be-7	(-1.2) \pm 8	0.6 \pm 7	4 \pm 14	(-2) \pm 15
Gross Beta	No Data	No Data	No Data	No Data

Point Beach - 1980

Point Beach Data

	4/2/80		7/7/80		10/2/80	
	E-04	E-05	E-04	E-05	E-04	E-05
Cs-137	All gammas	< 1.	All gammas	< 1.	All gammas	< 1.
Cs-134	"	"	"	"	"	"
Co-58	"	"	"	"	"	"
Co-60	All gammas	< 1.	All gammas	< 1.	All gammas	< 1.
K-40	"	"	"	"	"	"
Zr-95	"	"	"	"	"	"
Ce-144	All gammas	< 1.	All gammas	< 1.	All gammas	< 1.
Be-7	"	"	"	"	"	"
Gross Beta	6.4 \pm 0.4	12.1 \pm 0.5	17.4 \pm 0.7	23.9 \pm 0.9	17.6 \pm 0.8	25.2 \pm 1.0

E-04 - North Property Line Residence

E-05 - Paul Hamacek Residence