State of Wisconsin

2012

Point Beach - Kewaunee

Environmental Radioactivity Survey

Wisconsin Department of Health Services
Division of Public Health
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P-00442 (12/2012)

State of Wisconsin, Department of Health Services

2012

Point Beach – Kewaunee Environmental Monitoring Survey

Executive Summary

Wisconsin Public Health Statutes 254.41 mandates the State of Wisconsin, Department of Health Services to conduct environmental radiation monitoring around the nuclear power facilities that impact Wisconsin. This environmental monitoring report is for the Point Beach and Kewaunee nuclear generating plants for the calendar year January - December 2012 and provides a description and results of this environmental monitoring program.

The Wisconsin Department of Health Services' environmental monitoring program consists of the collection of various types of samples from the air, water and terrestrial exposure pathways, sample analysis and interpretation of the data. The sampling program included samples of air, precipitation, ambient gamma radiation, surface water, fish, shoreline sediment, soil, milk, well water and vegetation that are collected from selected locations at planned sampling intervals.

Program Summary

For 2012, all sample results from the Point Beach – Kewaunee environmental monitoring area were less than state and federal standards or guidelines.

The Wisconsin Department of Health Services' environmental monitoring programs provide an ongoing baseline of radioactivity measurements to access any Wisconsin health concerns from the operation of nuclear power generating facilities in or near Wisconsin or other radiological incidents that may occur within Wisconsin or worldwide. These monitoring programs show the following:

- Environmental radioactivity levels have been trending downward in the time period since the 1950's-1960's atmospheric nuclear testing and such radiological incidents as the Chernobyl nuclear reactor incident.
- There were no incidents during 2012, such as the 2011 Japan Fukushima Daiichi incident, that required additional environmental monitoring.
- There is no radioactive problem in types of food consumed in Wisconsin or a health problem for Wisconsin citizens.

The ongoing environmental monitoring programs will continue to provide assurances to the citizens of Wisconsin that the environment surrounding the Point Beach – Kewaunee nuclear power facilities and other monitoring areas will continue to be evaluated.

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Introduction

Wisconsin Public Health Statutes 254.41 mandates the Wisconsin (WI) Department of Health Services (DHS) to conduct environmental radiation monitoring around the nuclear power facilities that impact Wisconsin. This environmental monitoring report is for the Point Beach and Kewaunee nuclear generating plants for the calendar year January - December 2012 and provides a description and results of this environmental monitoring program.

WI DHS Point Beach - Kewaunee Environmental Monitoring Sampling Program

The WI DHS environmental monitoring program consists of the collection of various types of samples from the air, water and terrestrial exposure pathways. The sampling program included samples of air, precipitation, ambient gamma radiation as measured by thermoluminescent dosimeters (TLD), surface water, fish, shoreline sediment, soil, milk, well water and vegetation that are collected from selected locations at planned sampling intervals.

Table 1 provides a listing of types of samples collected, collection frequency, sites where samples are collected, the number of samples collected, number of samples that were missed or had sample or analysis deviations and a listing of the required analyses. Table 2 is a listing of sampling sites and includes a description, direction and distance from the monitored power plants. Table 3 provides an explanation of missing samples or non-routine sample analyses. Figure 1 is a map showing the location of environmental sampling sites in relation to the Kewaunee plant and Figure 2 is a map showing the location of environmental sampling sites in relation to the Point Beach plant.

Program Modifications

There were no program modifications for 2012.

Laboratory Services and Quality Assurance

The analysis of the samples is performed under contract with the Wisconsin State Laboratory of Hygiene (WSLH). WSLH maintains a quality assurance program. Analytical procedures provide for routine replicate analyses to verify methods and instrument operation. Traceable sources are used to regularly calibrate the counters and daily performance checks are made between calibrations. In addition, quality control charts are maintained on the counters.

WSLH participates in the Environmental Resource Associates' Proficiency Testing program and has performed satisfactorily over the report period. Proficiency testing results are available from the Wisconsin State Laboratory of Hygiene.

Detection Limits

Detection limits, required by WI DHS, will be expressed as a lower limit of detection (LLD). The required WI DHS LLD as indicated in Table 4 under the heading “LLD” is an "a priori" estimate of the capability for detecting an activity concentration by a given measurement system, procedure, and type of sample. Counting statistics of the appropriate instrument background are used to compute the LLD for each specific analysis. Using 4.66 times the standard deviation (s_b) of the instrument background, the LLD for each specific analysis is defined at the 95% Confidence Level.

The LLD for each radioisotope listed in Table 4 has been calculated from the following equation:

$$LLD = \frac{4.66\ s_b}{E * V * 2.22 * Y * S * \exp(-dt)}$$

Where:

LLD	is the "a priori" lower limit of detection as defined above, as picocuries per unit mass or volume,
s_b	is the standard deviation of the background counting rate or of the counting rate of blank sample as appropriate, as counts per minute,
E	is the counting efficiency, as counts per disintegration,
V	is the sample size in units of mass or volume,
2.22	is the number of disintegrations per minute per picocurie,
Y	is the fractional radiochemical yield, when applicable,
S	is the self-absorption correction factor,
d	is the radioactive decay constant for the particular radionuclide, and
t	for environmental samples is the elapsed time between sample collection, or end of the sample collection period, and time of counting.

Typical values for E, V, Y and dt have been used to calculate the LLD.

Reporting of Sample Analysis Results

Results for specific analyses will be reported as either a “less than” (<) value or an actual activity value. The reporting of results in Table 4 under the heading “Range” and in Tables 5-15 are “a posteriori” calculations based on the actual analysis performed using the actual sample values for E, V, Y and dt. Typically the reported “less than” (<) results are lower than the required WI DHS LLD indicating that the required WI DHS LLD has been met.

An actual activity value will be accompanied by an uncertainty term for that analysis. The uncertainty term is a plus or minus counting uncertainty term at the 2 sigma (95%) confidence interval and is printed as (+- or $\pm$). Examples and explanations of data reporting are:

Example	Nuclide	Activity reported
1	^{137}Cs	< 10 pCi/liter
2	^{137}Cs	15 $\pm$ 3 pCi/liter

In example 1 we can be 95% confident that the sample activity, if any, is less than the LLD of 10 pCi/liter. In example 2 we can be 95% confident that the actual sample activity is greater than the LLD for that analysis and is between 12 and 18 pCi/liter.

Table 1. Sample collection summary and required analyses for 2012.

Sample Type	Collection and Frequency	Site locations	Number of Samples Collected	Number of Sample Deviations	Required Analyses
air particulate	C/W	1, 4, 7, 8, 17, 18	311	10	GA, GB, GI
air iodine	C/W	4, 17, 18	155	9	GI
precipitation	C/BW	1, 4	12	0	GB, H
TLD	G/Q	T1 – T31	122	2	ambient gamma
surface water	G/M	9, 12a, 17	36	0	GA, GB, GI, Sr, H, I
surface water	G/SA	5, 25	2	2	GA, GB, GI, Sr, H
fish	G/SA	10a	8	0	GI
shoreline sediment	G/A	5, 10a, 12a, 12b, 12c, 25, 26	7	0	GA, GB, GI
vegetation	G/SA	1, 2, 3, 4, 5, 7, 8, 14, 17, 25	18	2	GA, GB, GI
soil	G/SA	1, 2, 3, 4, 5, 7, 8, 14, 17, 25	18	2	GA, GB, GI
well water	G/SA	3, 10b, 11, 12d (2 sites)	10	0	GA, GB, H
milk	G/M	24, 27, 28	36	1	GI, I, Sr

Collection type: C/ = continuous; G/ = grab

Frequency: /W = weekly; /M = monthly; /Q = quarterly; /A = annually; /BW = bi-weekly; /SA = semi-annually

Required analyses: GA = gross alpha; GB = gross beta; GI = gamma isotopic; Sr = strontium; I = iodine; H = tritium

Table 2. WI DHS Point Beach - Kewaunee environmental monitoring sampling sites.

Sample site	Distance and direction (miles)		Location description
	Kewaunee	Point Beach	
PBK-1	5.7 WSW	5.7 WNW	Francar residence
PBK-2	4.9 S	0.7 SSW	Southwest corner property line - Point Beach
PBK-3	4.3 SSW	1.5 W	Two Creeks Town Hall
PBK-4	3.1 S	1.2 NNW	Residence north property line - Point Beach
PBK-5	2.6 S	1.7 NNW	Two Creeks Park; NW corner of property
PBK-6	9.2 S	5.1 SSE	Coast Guard station (discontinued August, 2002)
PBK-7	7.3 SSW	3.3 SSW	WPSC substation, Cty V
PBK-8	0.8 WNW	4.9 N	P Ihlenfeldt farm
PBK-9	4.7 S	0.5 SSE	Point Beach, meteorological tower
PBK-10a	4.2 S	0.1 E	Point Beach, effluent channel
PBK-10b	4.2 S	0.1 E	Point Beach, entrance
PBK-11	3.1 SSW	2.0 NW	Two Creeks International Harvester
PBK-12a	0.1 E	4.2 N	Kewaunee, effluent channel
PBK-12b	0.1 E	4.2 N	Kewaunee, effluent channel, 500 feet N
PBK-12c	0.1 E	4.2 N	Kewaunee, effluent channel, 500 feet S
PBK-12d	0.1 W	4.2 N	Kewaunee, well sites
PBK-14	0.8 W	4.3 N	Nuclear Road – field east of parking lot

Table 2. WI DHS Point Beach - Kewaunee environmental monitoring sampling sites, continued.

Sample site	Distance and direction (miles)		Location description
	Kewaunee	Point Beach	
PBK-15	1.7 SW	3.5 NNW	Jct of Cty BB and Woodside Road (discontinued July, 1996)
PBK-16	3.9 W	6.0 NW	Bruechert residence (discontinued July, 1996)
PBK-17	11.4 NNE	15.6 N	Green Bay Pumping Station - Rostok
PBK-18	0.1 S	4.1 N	Kewaunee, meteorological tower
PBK-19	6.2 SW	3.8 W	W. Funk farm (discontinued in January 2009)
PBK-20	3.2 SSW	2.2 NW	L. Engelbrecht farm (discontinued in September, 2003)
PBK-21	3.0 N	7.3 N	D. Stangel farm (left the dairy business in October, 1999)
PBK-22	10.4 SSW	6.7 SW	Bertler's food stand (discontinued in July, 1998)
PBK-23	4.0 WNW	6.4 NW	Jansky farm (discontinued in July, 1998)
PBK-24	2.6 N	6.9 N	L. Struck farm
PBK-25	7.4 S	3.2 SSE	Manitowoc Public School District Property
PBK-26	8.3 NNE	12.6 N	Kewaunee
PBK-27	3.5 SSW	1.7 NW	R. Barta farm
PBK-28	6.0 S	1.8 SSE	Strutz Farms Inc
PBK-(T1-T8)	4.0 S	0.6 NW	Point Beach ISFSI on outside of perimeter fence
PBK-T9	3.2 S	1.2 NNW	Point Beach north property line, Lakeshore Road
PBK-T10	5.1 S	0.8 SSE	Nuclear Road, 0.6 mile E of Lakeshore Road
PBK-T11	5.1 S	0.9 SSW	Nuclear Road, 0.1 mile E of Lakeshore Road
PBK-T12	5.0 SSW	1.4 WSW	Highway 42, 0.6 mile N of Nuclear Road
PBK-T13	4.0 SSW	1.4 WNW	Highway 42, 0.3 mile N of Tapawingo Road
PBK-T14	3.1 SSW	1.9 NW	Two Creeks Road, 0.1 mile E of Highway 42
PBK-T15	7.6 S	3.3 S	Junction of Lakeshore Road and Ravine Drive
PBK-T16	7.3 SSW	3.3 SW	Cty V, 0.5 mile W of Hwy 42
PBK-T17	5.6 SW	3.8 W	Junction of Saxonbury Road and Tapawingo Road
PBK-T18	3.2 SW	3.3 NW	Zander Road, 0.1 mile W on Tannery Road
PBK-T19	0.7 N	5.0 N	Junction of Sandy Bay Road and Lakeview Road
PBK-T20	1.4 SW	3.4 NNW	Junction of Cty BB and Ratajcsak Lane
PBK-T21	1.3 W	4.5 NNW	Junction of Nuclear Road and Woodside Road
PBK-T22	1.2 NW	5.3 N	Sandy Bay Road, 0.4 mile W of Hwy 42
PBK-T23	4.9 WSW	5.5 NW	Cty B, S of Tisch Mills
PBK-T24	3.8 NW	7.0 NNW	Jct of Norman Road and Cty G
PBK-T25	3.1 NNW	7.2 N	Woodside Road, 0.2 miles S of Old Settlers Road
PBK-T26	3.0 N	7.3 N	Old Settlers Road, 0.1 mile W of Cemetery Road
PBK-T27	17.4 NNE	21.6 NNE	Algoma, S on Hwy 42
PBK-T28	7.2 NNE	11.4 N	Kewaunee, S on Hwy 42
PBK-T29	12.4 S	8.1 SSW	Two Rivers, junction of Hwy 42 and 34th Avenue
PBK-T30	16.0 SSW	11.9 SSW	Manitowoc, Hwy 42, Two Rivers Chamber of Commerce
PBK-T31	8.6 SW	5.6 WSW	Mishicot, Cty V, in front of house #653

Table 3. Missing sample or sample deviation report for 2012.

Sample type	Date	Site	Explanation
Air particulate	05/09/12	4	Due to an electrical problem, the air site was not operational for approximately 6 days and 7 hours at the end of the collection period.
Air particulate	05/29/12	4	Due to an electrical problem, the air site was not operational for approximately 2 days and 4 hours at the end of the collection period.
Air particulate	08/08/12	4	The air site was not operational for approximately 2 days and 12 hours during the collection period.
Air particulate	12/17/12	4	Due to an electrical problem, the air site was off for approximately 1 day and 20 hours at the end of the collection period.
Air particulate	03/07/12	17	No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.
Air particulate	05/18/12	17	No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.
Air particulate	06/08/12	17	No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.
Air particulate	06/29/12	17	No gross beta result is available due to improper filter placement resulting in air flow past the filter.
Air particulate	03/26/12	18	The air site was not operating for approximately 8 hours at the end of the indicated sampling period.
Air particulate	04/02/12	18	The air site was not operating for approximately 23 hours at the beginning of the indicated sampling period.
Air iodine	05/09/12	4	Due to an electrical problem, the air site was not operational for approximately 6 days and 7 hours at the end of the collection period.
Air iodine	05/29/12	4	Due to an electrical problem, the air site was not operational for approximately 2 days and 4 hours at the end of the collection period.
Air iodine	08/08/12	4	The air site was not operational for approximately 2 days and 12 hours during the collection period.
Air iodine	12/17/12	4	Due to an electrical problem, the air site was off for approximately 1 day and 20 hours at the end of the collection period.
Air iodine	03/07/12	17	No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.
Air iodine	05/18/12	17	No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.
Air iodine	06/08/12	17	No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.
Air iodine	03/26/12	18	The air site was not operating for approximately 8 hours at the end of the indicated sampling period.
Air iodine	04/02/12	18	The air site was not operating for approximately 23 hours at the beginning of the indicated sampling period.
Surface water	05/30/12	25	No sample, the sample site was not accessible.
Surface water	08/28/12	25	No sample, the sample site was not accessible.
Vegetation	05/30/12	PBK-25	No sample, the sample site was not accessible.
Vegetation	08/28/12	PBK-25	No sample, the sample site was not accessible.
Soil	05/30/12	PBK-25	No sample, the sample site was not accessible.
Soil	08/28/12	PBK-25	No sample, the sample site was not accessible.

Table 3. Missing sample or sample deviation report for 2012, continued.

Sample type	Date	Site	Explanation
Milk	08/08/12	PBK-24	Milk sample for 08/08/12 arrived at WSLH spoiled. Unable to perform an analysis for Sr-90.
TLD	3rd quarter	TLD-25	No data, the TLD was lost in the field.
TLD	4th quarter	TLD-17	No data, the TLD was lost in the field.

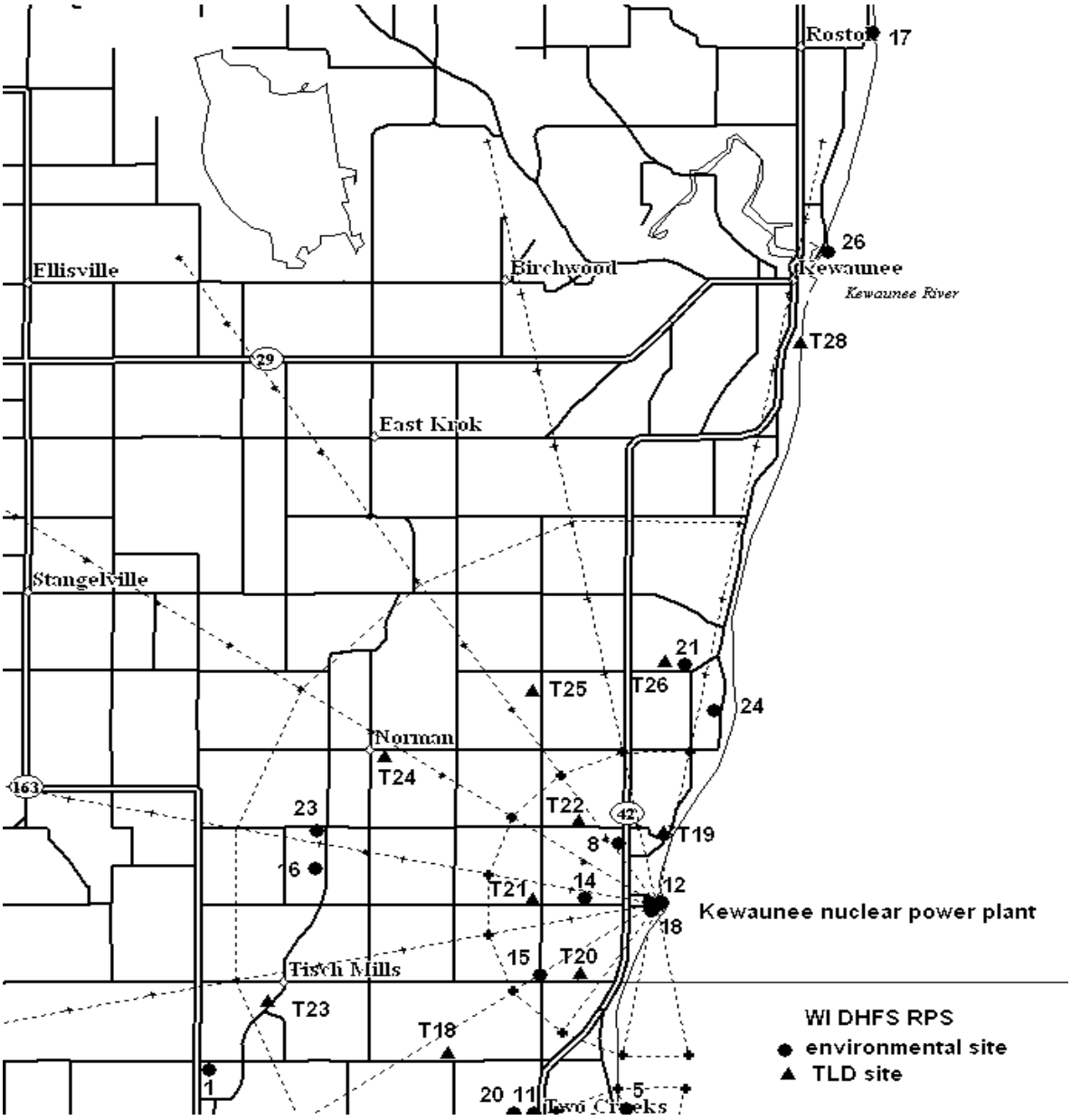

Figure 1. Point Beach - Kewaunee environmental monitoring sampling sites in relation to the Kewaunee plant.

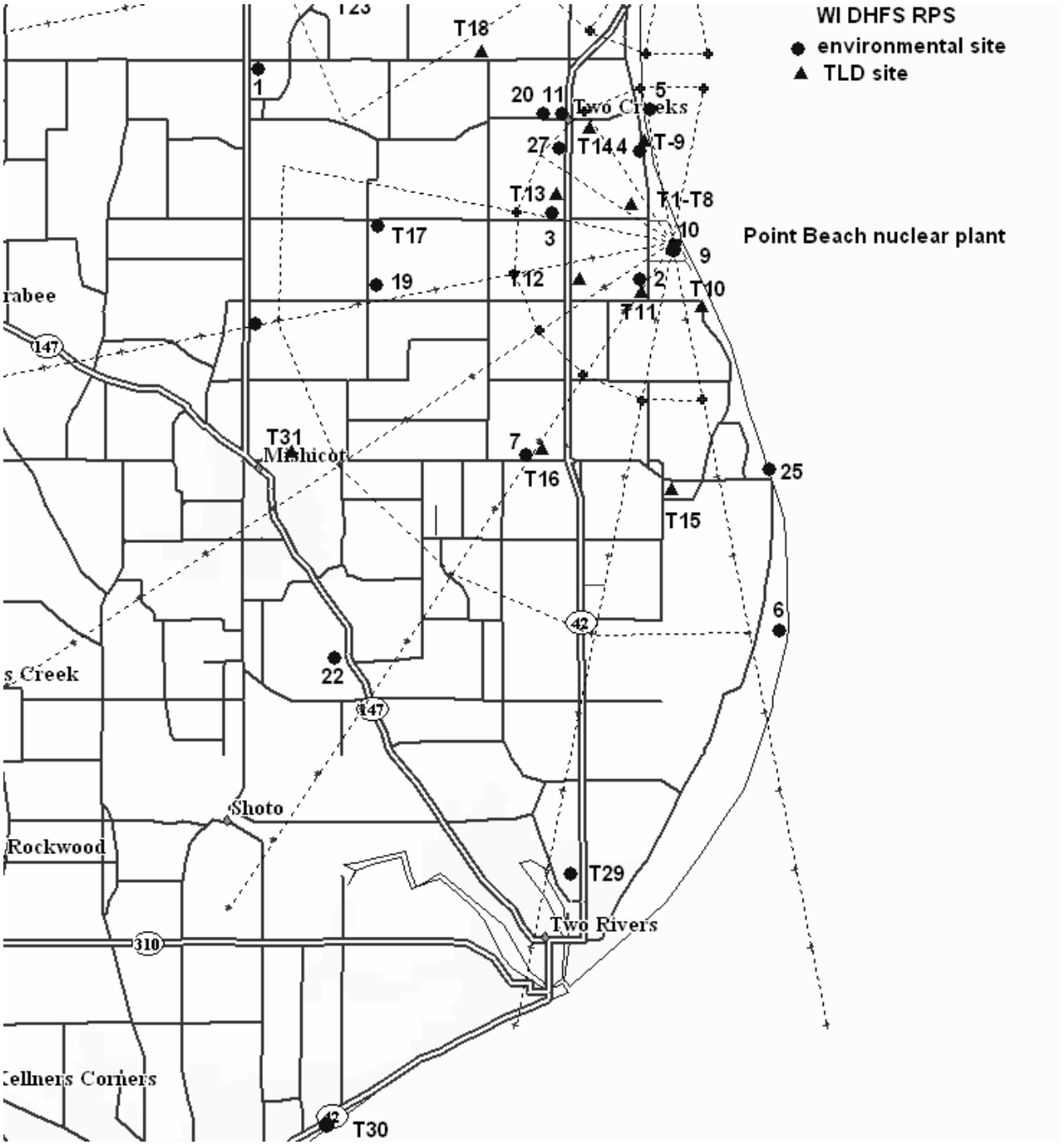

Figure 2. Point Beach - Kewaunee environmental monitoring sampling sites in relation to the Point Beach plant.

Results and Discussion for the Point Beach – Kewaunee Environmental Monitoring program

Air Particulate

A summary of reported activities by WI DHS for air particulate samples is included in Table 4. Results from the individual sample analyses are listed in Tables 5-6.

From the gross beta activities listed in Table 5, it may be noted that there are no significant differences due to distance from either the Kewaunee or the Point Beach facility. With no significant differences due to distance, an increase in gross beta activity attributable to the Kewaunee or the Point Beach facilities is not evident.

The gamma isotopic analysis of the quarterly air particulate filter composites detected only small amounts of the radioisotopes listed in Table 4. All other radioisotopes were below their respective LLD. Beryllium-7 (^{7}Be), detected in all composites, is a naturally occurring radioisotope that is constantly produced through nuclear reactions between cosmic rays and nuclei in the atmosphere and is detected in air composites from other areas of the state.

Air Iodine

A summary of reported activities by WI DHS for air iodine samples is included in Table 4. Results from the individual sample analyses are listed in Table 5.

Air iodine measurements were all below the LLD of 0.07 pCi/m^{3}. Influence by the Kewaunee or the Point Beach nuclear generating facilities on air quality is not evident from air iodine analysis.

Ambient Gamma Radiation – Thermoluminescent dosimeters (TLD)

A summary of reported activities by WI DHS for ambient gamma radiation is included in Table 4. Results from the individual sample analyses are listed in Table 7.

Significant differences in exposure were not noticed at different distances from either the Kewaunee or the Point Beach nuclear facilities for sites PBK-T9 through PBK-T31. Excluding the sites around the perimeter of the Point Beach ISFSI (T1 – T8), the average quarterly exposure from the remaining 23 sites was 14.3 $\pm$ 1.7 milliroentgens. The average quarterly exposure for 2012 is at background levels and is comparable to other areas within Wisconsin. Influence by the Kewaunee or the Point Beach nuclear generating facilities on air quality is not evident from ambient gamma radiation analysis.

Precipitation

A summary of reported activities by WI DHS for precipitation samples is included in Table 4. Results from the individual sample analyses are listed in Table 8.

The gross beta activity in precipitation was all within the normal range of activity when compared to previous year's data. Influence by the Kewaunee or the Point Beach nuclear generating facilities on air quality is not evident from precipitation sample analysis.

Fish

A summary of reported activities by WI DHS for fish samples is included in Table 4. Results from the individual sample analyses are listed in Table 9.

The fish samples showed no unusual activities. The reported activities for cesium-137 (^{137}Cs) were also detected in previous years and are probably attributable to residual fallout from previous

atmospheric nuclear weapons testing. Influence by the Kewaunee or the Point Beach nuclear generating facilities is not evident from fish sample analysis.

Shoreline Sediment

A summary of reported activities by WI DHS for shoreline sediment samples is included in Table 4. Results from the individual sample analyses are listed in Table 10.

Analysis of the shoreline samples showed no unusual activities. Naturally occurring potassium-40 (^{40}K) was detected in all samples. The reported activities for cesium-137 (^{137}Cs) were also detected in previous years and are probably attributable to residual fallout from previous atmospheric nuclear weapons testing. Naturally occurring radioisotopes from the uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported. Influence by the Kewaunee or the Point Beach nuclear generating facilities is not evident from shoreline sediment sample analysis.

Surface Water

A summary of reported activities by WI DHS for surface water samples is included in Table 4. Results from the individual sample analyses are listed in Table 11.

From the gamma isotopic analysis all radioisotopes were below their respective LLD. All reported activities for gross beta; gross alpha and tritium (^{3}H) are at background levels and are comparable to data from previous years. The surface water samples uniformly show activities well below state or federal standards. Influence by the Kewaunee or the Point Beach nuclear generating facilities is not evident from surface water sample analysis.

Well Water

A summary of reported activities by WI DHS for well water samples is included in Table 4. Results from the individual sample analyses are listed in Table 12.

The well water samples showed no unusual gross alpha and gross beta activities and all activities for tritium (^{3}H) were less than its LLD. The measured activities are all below state and federal standards. Influence by the Kewaunee or the Point Beach nuclear generating facilities is not evident from well water sample analysis.

Milk

A summary of reported activities by WI DHS for milk samples is included in Table 4. Results from the individual sample analyses are listed in Table 13.

The analysis of milk samples detected no unusual activities. Naturally occurring potassium-40 (^{40}K) was detected in all samples. The detected activities for strontium-90 (^{90}Sr), attributable to residual fallout from previous atmospheric nuclear weapons testing, were also detected in previous years at similar activity levels. Influence by the Kewaunee or the Point Beach nuclear generating facilities is not evident from milk sample analysis.

Vegetation

A summary of reported activities by WI DHS for vegetation samples is included in Table 4. Results from the individual sample analyses are listed in Table 14.

Analysis of the vegetation samples showed no unusual activities. The gamma isotopic analysis detected only small amounts of naturally occurring potassium-40 (^{40}K) and beryllium-7 (^{7}Be) listed in

Table 4. Influence by the Kewaunee or the Point Beach nuclear generating facilities is not evident from vegetation sample analysis.

Soil

A summary of reported activities by WI DHS for soil samples is included in Table 4. Results from the individual sample analyses are listed in Table 15.

Analysis of the soil samples showed no unusual activities. Naturally occurring potassium-40 (^{40}K) was detected in all samples. The reported activities for cesium-137 (^{137}Cs) were also detected in previous years and are probably attributable to residual fallout from previous atmospheric nuclear weapons testing. Naturally occurring radioisotopes from the uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Point Beach ISFSI

A summary of reported activities by WI DHS for ambient gamma radiation monitored in the vicinity of the Point Beach Independent Spent Fuel Storage Installation (ISFSI) is included in Table 7.

Ambient gamma exposure levels greater than background, as measured by thermoluminescent dosimeters (TLDs), are apparent at all sites (T1 – T8) that are on the Point Beach ISFSI perimeter fence closest to the ventilated storage casks. An increase in ambient gamma exposure levels at sites T9 - T14 (0.8 – 1.9 miles from the Point Beach ISFSI) or at sites T15 – T31 (greater than 2 miles from the Point Beach ISFSI) was not evident and the ambient gamma exposure levels are consistent with previous years data. The average standard quarterly ambient gamma exposure for 2012 for sites T9 – T31 was 14.3 $\pm$ 1.7 milliroentgens and for sites T1 – T8 varied from 17.2 – 65.3 milliroentgens per standard quarter depending on the distance from the storage casks.

Dose to an Average Individual

Federal regulations 10 CFR 20, 10 CFR 50 Appendix I and 40 CFR 190 restrict the annual exposure of the population from all parts of the nuclear fuel cycle, including nuclear power plants. Doses resulting from gaseous and liquid effluent releases from the Point Beach or the Kewaunee nuclear generating facilities are less than the limits as stated in these Federal regulations.

The WI DHS limit for permissible levels of radiation exposure from external sources in unrestricted areas is defined in the Wis. Adm. Code section DHS 157.23. Doses resulting from gaseous and liquid effluent releases from the Point Beach or Kewaunee nuclear generating facilities are less than the limits as stated in Wis. Adm. Code section DHS 157.23.

References

State of Wisconsin, Wisconsin Administrative Code, DHS 157.23

State of Wisconsin, “FINAL ENVIRONMENTAL IMPACT STATEMENT, Point Beach Nuclear Power Plant Plant Projects Proposed by Wisconsin Electric Power Company, Temporary Storage of Spent Nuclear Fuel in Dry Casks, PSC Docket 6630-CE-197, Unit 2 Steam Generator Replacement, PSC Docket 6630-CE-209, AUGUST 1994.”

U.S. Environmental Protection Agency, Environmental Radiation Requirements for Normal Operations of Activities in the Uranium Fuel Cycle, EPA 520/4-76-016, 40 CFR Part 190, November 1976.

U.S. Nuclear Regulatory Commission, Title 10, Part 20.

U.S. Nuclear Regulatory Commission, Title 10, Part 50, Appendix I.

Table 4. Sample activity summary for the Point Beach - Kewaunee environmental monitoring program.

Sample type (units)	LLD	Number of samples [a]	Analysis	Range
Air particulate (pCi/m^3)	0.005	311 / 311	gross beta	0.008 - 0.047
			gamma isotopic	
	0.020	24 / 24	Be-7	0.043 – 0.093
	0.002	24 / 0	Mn-54	< 0.0005
	0.002	24 / 0	Co-58	< 0.0005
	0.005	24 / 0	Fe-59	< 0.0011
	0.002	24 / 0	Co-60	< 0.0008
	0.005	24 / 0	Zn-65	< 0.0011
	0.002	24 / 0	Nb-95	< 0.0006
	0.005	24 / 0	Zr-95	< 0.0010
	0.002	24 / 0	Ru-103	< 0.0006
	0.015	24 / 0	Ru-106	< 0.0045
	0.020	24 / 3	I-131	< 0.0021
	0.002	24 / 2	Cs-134	< 0.0006
	0.002	24 / 4	Cs-137	< 0.0007
	0.030	24 / 0	Ba-140	< 0.0040
	0.020	24 / 0	La-140	< 0.0018
	0.002	24 / 0	Ce-141	< 0.0010
	0.005	24 / 0	Ce-144	< 0.0030
Air iodine (pCi/m^3)	0.07	145 / 0	I-131	< 0.064
Surface water	3.0	38 / 21	gross beta (sol)	< 1.9 – 5.0
(pCi/liter)	3.0	38 / 1	gross beta (insol)	< 2.5 – 1.4
	3.0	38 / 8	gross alpha (sol)	< 2.3 – 3.7
	3.0	38 / 3	gross alpha (insol)	< 2.5 – 1.6
	300	14 / 3	H-3	< 203 – 707
	1.5	18 / 0	I-131	< 0.7
	2.0	14 / 0	Sr-89	< 4.7
	1.0	14 / 0	Sr-90	< 1.3
			gamma isotopic	
	15	38 / 0	Mn-54	< 10
	15	38 / 0	Co-58	< 10
	30	38 / 0	Fe-59	< 17
	15	38 / 0	Co-60	< 13
	30	38 / 0	Zn-65	< 22
	15	38 / 0	Nb-95	< 10
	30	38 / 0	Zr-95	< 17
	15	38 / 0	I-131	< 15
	15	38 / 0	Cs-134	< 12
	15	38 / 0	Cs-137	< 13
	60	38 / 0	Ba-140	< 41
	15	38 / 0	La-140	< 15

Table 4. Sample activity summary for the Point Beach - Kewaunee environmental monitoring program, cont.

Sample type (units)	LLD	Number of samples [a]	Analysis	Range
Fish			gamma isotopic	
(pCi/kg wet)	800	8 / 8	K-40	2400 – 3320
	50	8 / 0	Mn-54	< 10
	60	8 / 0	Co-58	< 12
	130	8 / 0	Fe-59	< 24
	70	8 / 0	Co-60	< 13
	130	8 / 0	Zn-65	< 28
	50	8 / 0	Nb-95	< 15
	100	8 / 0	Zr-95	< 20
	50	8 / 0	Cs-134	< 13
	60	8 / 5	Cs-137	< 14 - 31
Shoreline sediment	6000	7 / 7	gross beta	2680 – 8380
(pCi/kg dry)	15000	7 / 0	gross alpha	< 9380
			gamma isotopic	
	800	7 / 7	K-40	5180 – 10200
	60	7 / 0	Mn-54	< 14
	90	7 / 0	Co-58	< 15
	600	7 / 0	Fe-59	< 38
	90	7 / 0	Co-60	< 20
	300	7 / 0	Zn-65	< 39
	100	7 / 0	Nb-95	< 20
	200	7 / 0	Zr-95	< 28
	80	7 / 0	Cs-134	< 13
	80	7 / 3	Cs-137	< 22 – 26
Vegetation	6000	18 / 0	gross alpha	< 3900
(pCi/kg wet)	4000	18 / 18	gross beta	2500 - 9000
			gamma isotopic	
	600	18 / 18	Be-7	310 – 3270
	2000	18 / 18	K-40	3490 – 6130
	90	18 / 0	Mn-54	< 40
	100	18 / 0	Co-58	< 31
	200	18 / 0	Fe-59	< 82
	100	18 / 0	Co-60	< 50
	250	18 / 0	Zn-65	< 84
	100	18 / 0	Nb-95	< 33
	200	18 / 0	Zr-95	< 63
	80	18 / 0	I-131	< 51
	80	18 / 0	Cs-134	< 37
	90	18 / 0	Cs-137	< 46
	350	18 / 0	Ba-140	< 170
	100	18 / 0	La-140	< 59

Table 4. Sample activity summary for the Point Beach - Kewaunee environmental monitoring program, continued.

Sample type (units)	LLD	Number of samples [a]	Analysis	Range
Soil	6000	18 / 18	gross beta	13800 – 34300
(pCi/kg dry)	13000	18 / 10	gross alpha	< 9200 – 18400
			gamma isotopic	
	800	18 / 18	K-40	12200 – 22900
	60	18 / 0	Mn-54	< 28
	90	18 / 0	Co-58	< 28
	600	18 / 0	Fe-59	< 70
	90	18 / 0	Co-60	< 32
	300	18 / 0	Zn-65	< 67
	100	18 / 0	Nb-95	< 30
	250	18 / 0	Zr-95	< 56
	80	18 / 0	Cs-134	< 23
	80	18 / 18	Cs-137	100 - 360
Milk	1.0	35 / 12	Sr-90	< 0.6 – 0.6
(pCi/liter)	1.5	16 / 0	I-131	< 0.8
			gamma isotopic	
	500	36 / 36	K-40	1040 – 1530
	15	36 / 0	Mn-54	< 14
	15	36 / 0	Co-58	< 13
	40	36 / 0	Fe-59	< 27
	15	36 / 0	Co-60	< 15
	40	36 / 0	Zn-65	< 30
	15	36 / 0	Nb-95	< 15
	40	36 / 0	Zr-95	< 21
	15	36 / 0	I-131	< 14
	15	36 / 0	Cs-134	< 13
	15	36 / 0	Cs-137	< 14
	60	36 / 0	Ba-140	< 46
	15	36 / 0	La-140	< 15
Well water	3.0	10 / 4	gross beta	< 2.2 – 4.7
(pCi/liter)	5.0	10 / 4	gross alpha	< 3.6 – 9.3
	300 [b]	10 / 0	H-3	< 202
Precipitation	1.5 [b]	12 / 11	gross beta	< 0.22 – 0.37
(nCi/m^2)	300 [b]	12 / 0	H-3	< 35.2
ambient radiation	1.0 [c]	122 / 122	exposure	9.5 – 65.3
(mR/Std Qtr)				

a - Number of analyses / number of analyses detected above the WI DHS LLD.

b - LLD activities expressed in units of pCi/liter.

c - mR/TLD

Table 5. WI DHS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m^3

Site: PBK-1

Collection date	Volume m^3	Air Particulate	Collection date	Volume m^3	Air Particulate
01/04/12	532	0.020 +- 0.002	07/05/12	593	0.021 +- 0.002
01/11/12	546	0.023 +- 0.003	07/11/12	454	0.015 +- 0.003
01/18/12	532	0.018 +- 0.002	07/18/12	519	0.026 +- 0.003
01/25/12	536	0.023 +- 0.003	07/25/12	422	0.020 +- 0.002
02/01/12	542	0.021 +- 0.002	08/01/12	508	0.014 +- 0.002
02/09/12	627	0.019 +- 0.002	08/09/12	589	0.016 +- 0.002
02/16/12	549	0.019 +- 0.002	08/16/12	518	0.015 +- 0.002
02/22/12	681	0.014 +- 0.002	08/22/12	447	0.009 +- 0.002
03/01/12	631	0.021 +- 0.002	08/29/12	508	0.028 +- 0.003
03/07/12	458	0.017 +- 0.003	09/05/12	515	0.020 +- 0.002
03/14/12	536	0.021 +- 0.002	09/12/12	529	0.017 +- 0.002
03/21/12	522	0.022 +- 0.003	09/19/12	522	0.018 +- 0.002
03/28/12	529	0.019 +- 0.002	09/26/12	536	0.011 +- 0.002
1st Qtr			3rd Qtr		
mean +- s.d.		0.020 +- 0.003	mean +- s.d.		0.018 +- 0.005
04/04/12	522	0.010 +- 0.002	10/03/12	536	0.016 +- 0.002
04/11/12	529	0.015 +- 0.002	10/10/12	542	0.015 +- 0.002
04/18/12	532	0.017 +- 0.002	10/18/12	614	0.018 +- 0.002
04/25/12	532	0.014 +- 0.002	10/24/12	447	0.016 +- 0.002
05/02/12	532	0.020 +- 0.002	10/31/12	536	0.016 +- 0.002
05/09/12	532	0.012 +- 0.002	11/07/12	542	0.014 +- 0.002
05/16/12	522	0.014 +- 0.002	11/14/12	539	0.025 +- 0.002
05/23/12	529	0.018 +- 0.002	11/22/12	603	0.042 +- 0.003
05/30/12	519	0.017 +- 0.002	11/27/12	376	0.022 +- 0.003
06/06/12	525	0.009 +- 0.002	12/05/12	600	0.038 +- 0.003
06/13/12	529	0.014 +- 0.002	12/12/12	512	0.019 +- 0.002
06/19/12	434	0.019 +- 0.003	12/19/12	522	0.032 +- 0.003
06/27/12	600	0.011 +- 0.002	12/26/12	505	0.019 +- 0.002
2nd Qtr			4th Qtr		
mean +- s.d.		0.015 +- 0.003	mean +- s.d.		0.022 +- 0.009

Table 5. WI DHS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/m^3

Site: PBK-4

Collection date	Volume m^3	Air particulate	Air iodine	Collection date	Volume m^3	Air particulate	Air iodine
01/03/12	563	0.020 +- 0.002	< 0.012				
01/11/12	661	0.023 +- 0.002	< 0.008	07/11/12	689	0.018 +- 0.002	< 0.015
01/17/12	497	0.021 +- 0.003	< 0.006	07/16/12	422	0.030 +- 0.003	< 0.012
01/23/12	473	0.022 +- 0.003	< 0.009	07/23/12	564	0.020 +- 0.002	< 0.013
01/30/12	567	0.024 +- 0.002	< 0.010	07/30/12	595	0.013 +- 0.002	< 0.008
02/08/12	766	0.022 +- 0.002	< 0.004	08/08/12 *c	614	0.017 +- 0.002	< 0.006
02/13/12	388	0.018 +- 0.003	< 0.064	08/13/12	412	0.011 +- 0.002	< 0.012
02/20/12	549	0.021 +- 0.002	< 0.016	08/20/12	585	0.012 +- 0.002	< 0.009
02/27/12	568	0.023 +- 0.002	< 0.013	08/27/12	581	0.030 +- 0.002	< 0.009
03/05/12	579	0.013 +- 0.002	< 0.007	09/04/12	665	0.017 +- 0.002	< 0.012
03/14/12	762	0.019 +- 0.002	< 0.009	09/12/12	667	0.015 +- 0.002	< 0.011
03/19/12	439	0.019 +- 0.003	< 0.012	09/17/12	409	0.019 +- 0.003	< 0.011
03/26/12	580	0.017 +- 0.002	< 0.007	09/24/12	584	0.011 +- 0.002	< 0.009
04/02/12	583	0.013 +- 0.002	< 0.012	10/01/12	569	0.013 +- 0.002	< 0.009
1st Qtr				3rd Qtr			
mean +- s.d.		0.020 +- 0.003	< 0.012	mean +- s.d.		0.017 +- 0.006	< 0.010
04/11/12	749	0.014 +- 0.002	< 0.007	10/10/12	734	0.018 +- 0.002	< 0.006
04/16/12	420	0.018 +- 0.003	< 0.010	10/15/12	403	0.011 +- 0.003	< 0.013
04/23/12	595	0.014 +- 0.002	< 0.008	10/22/12	574	0.018 +- 0.002	< 0.007
04/30/12	602	0.022 +- 0.002	< 0.012	10/29/12	557	0.021 +- 0.002	< 0.013
05/09/12 *a	205	0.016 +- 0.005	< 0.025	11/05/12	585	0.013 +- 0.002	< 0.015
05/14/12	420	0.013 +- 0.003	< 0.010	11/14/12	751	0.023 +- 0.002	< 0.012
05/21/12	588	0.020 +- 0.002	< 0.009	11/20/12	502	0.041 +- 0.003	< 0.015
05/29/12 *b	478	0.014 +- 0.002	< 0.021	11/26/12	484	0.031 +- 0.003	< 0.016
06/04/12	500	0.013 +- 0.002	< 0.017	12/03/12	563	0.037 +- 0.003	< 0.021
06/13/12	753	0.013 +- 0.002	< 0.010	12/12/12	733	0.020 +- 0.002	< 0.006
06/18/12	412	0.018 +- 0.003	< 0.012	12/17/12 *d	251	0.036 +- 0.005	< 0.016
06/25/12	591	0.013 +- 0.002	< 0.010	12/26/12	716	0.019 +- 0.002	< 0.008
07/03/12	669	0.020 +- 0.002	< 0.007	12/31/12	389	0.028 +- 0.003	< 0.022
2nd Qtr				4th Qtr			
mean +- s.d.		0.016 +- 0.003	< 0.012	mean +- s.d.		0.024 +- 0.009	< 0.013

a - Due to an electrical problem, the air site was not operational for approximately 6 days and 7 hours at the end of the collection period.

b - Due to an electrical problem, the air site was not operational for approximately 2 days and 4 hours at the end of the collection period.

c - The air site was not operational for approximately 2 days and 12 hours during the collection period.

d - Due to an electrical problem, the air site was off for approximately 1 day and 20 hours at the end of the collection period.

Table 5. WI DHS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/m^3

Site: PBK-7

Collection date	Volume m^3	Air particulate	Collection date	Volume m^3	Air particulate
01/04/12	482	0.021 +- 0.003	07/05/12	443	0.027 +- 0.003
01/11/12	468	0.023 +- 0.003	07/11/12	331	0.017 +- 0.003
01/18/12	477	0.019 +- 0.003	07/18/12	379	0.030 +- 0.004
01/25/12	479	0.023 +- 0.003	07/25/12	382	0.024 +- 0.003
02/01/12	460	0.022 +- 0.003	08/01/12	381	0.016 +- 0.003
02/09/12	530	0.020 +- 0.002	08/09/12	446	0.017 +- 0.002
02/16/12	474	0.019 +- 0.003	08/16/12	384	0.019 +- 0.003
02/22/12	398	0.020 +- 0.003	08/22/12	333	0.011 +- 0.003
03/01/12	533	0.024 +- 0.003	08/29/12	375	0.035 +- 0.003
03/07/12	393	0.019 +- 0.003	09/05/12	381	0.020 +- 0.003
03/14/12	457	0.022 +- 0.003	09/12/12	384	0.017 +- 0.003
03/21/12	446	0.018 +- 0.003	09/19/12	381	0.022 +- 0.003
03/28/12	446	0.018 +- 0.003	09/26/12	387	0.011 +- 0.003
1st Qtr mean +- s.d.		0.021 +- 0.002	3rd Qtr mean +- s.d.		0.020 +- 0.007
04/04/12	446	0.011 +- 0.002	10/03/12	387	0.018 +- 0.003
04/11/12	443	0.015 +- 0.003	10/10/12	384	0.017 +- 0.003
04/18/12	437	0.017 +- 0.003	10/18/12	443	0.020 +- 0.003
04/25/12	435	0.017 +- 0.003	10/24/12	336	0.023 +- 0.003
05/02/12	432	0.022 +- 0.003	10/31/12	384	0.018 +- 0.003
05/09/12	418	0.013 +- 0.003	11/07/12	435	0.015 +- 0.003
05/16/12	418	0.016 +- 0.003	11/14/12	431	0.027 +- 0.003
05/23/12	418	0.021 +- 0.003	11/22/12	479	0.041 +- 0.003
05/30/12	412	0.019 +- 0.003	11/27/12	318	0.022 +- 0.003
06/06/12	409	0.012 +- 0.003	12/05/12	488	0.037 +- 0.003
06/13/12	409	0.017 +- 0.003	12/12/12	425	0.023 +- 0.003
06/19/12	342	0.024 +- 0.004	12/19/12	422	0.033 +- 0.003
06/27/12	457	0.013 +- 0.002	12/26/12	428	0.020 +- 0.003
2nd Qtr mean +- s.d.		0.017 +- 0.004	4th Qtr mean +- s.d.		0.024 +- 0.008

Table 5. WI DHS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/m^3

Site: PBK-8

Collection date	Volume m^3	Air particulate	Collection date	Volume m^3	Air particulate
01/03/12	579	0.020 +- 0.002	07/03/12	508	0.019 +- 0.003
01/10/12	590	0.022 +- 0.002	07/10/12	508	0.020 +- 0.003
01/17/12	562	0.024 +- 0.003	07/17/12	506	0.028 +- 0.003
01/24/12	582	0.024 +- 0.002	07/24/12	511	0.021 +- 0.002
01/31/12	570	0.024 +- 0.002	07/31/12	508	0.017 +- 0.002
02/06/12	489	0.025 +- 0.003	08/07/12	511	0.019 +- 0.002
02/13/12	579	0.020 +- 0.002	08/14/12	511	0.013 +- 0.002
02/21/12	652	0.023 +- 0.002	08/21/12	528	0.014 +- 0.002
02/27/12	486	0.025 +- 0.003	08/28/12	497	0.033 +- 0.003
03/06/12	646	0.018 +- 0.002	09/04/12	500	0.024 +- 0.002
03/13/12	556	0.023 +- 0.002	09/11/12	517	0.017 +- 0.002
03/20/12	545	0.021 +- 0.002	09/18/12	517	0.024 +- 0.002
03/27/12	548	0.021 +- 0.002	09/25/12	528	0.013 +- 0.002
1st Qtr			3rd Qtr		
mean +- s.d.		0.022 +- 0.002	mean +- s.d.		0.020 +- 0.006
04/03/12	562	0.012 +- 0.002	10/02/12	528	0.015 +- 0.002
04/09/12	452	0.016 +- 0.003	10/09/12	534	0.019 +- 0.002
04/16/12	559	0.017 +- 0.002	10/16/12	545	0.014 +- 0.002
04/23/12	525	0.014 +- 0.002	10/23/12	514	0.023 +- 0.003
04/30/12	545	0.022 +- 0.002	10/30/12	528	0.023 +- 0.002
05/07/12	537	0.015 +- 0.002	11/06/12	609	0.012 +- 0.002
05/15/12	587	0.014 +- 0.002	11/13/12	571	0.028 +- 0.002
05/22/12	531	0.021 +- 0.002	11/20/12	577	0.037 +- 0.003
05/29/12	531	0.018 +- 0.002	11/27/12	593	0.030 +- 0.002
06/04/12	444	0.014 +- 0.003	12/04/12	580	0.041 +- 0.003
06/11/12	520	0.016 +- 0.002	12/11/12	587	0.018 +- 0.002
06/19/12	593	0.016 +- 0.002	12/18/12	561	0.034 +- 0.003
06/26/12	517	0.014 +- 0.002	12/26/12	657	0.019 +- 0.002
2nd Qtr			4th Qtr		
mean +- s.d.		0.016 +- 0.002	mean +- s.d.		0.025 +- 0.009

Table 5. WI DHS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/m^3

Site: PBK-17

Collection date	Volume m^3	Air particulate	Air iodine	Collection date	Volume m^3	Air particulate	Air iodine
01/06/12	642	0.024 +- 0.002	< 0.012	07/06/12	521	0.021 +- 0.003	< 0.015
01/13/12	536	0.021 +- 0.003	< 0.015	07/13/12	518	0.012 +- 0.002	< 0.019
01/18/12	483	0.016 +- 0.003	< 0.015	07/20/12	519	0.025 +- 0.003	< 0.010
01/27/12	632	0.027 +- 0.002	< 0.010	07/27/12	523	0.019 +- 0.002	< 0.014
02/03/12	529	0.017 +- 0.002	< 0.017	08/03/12	529	0.017 +- 0.002	< 0.012
02/10/12	550	0.021 +- 0.002	< 0.045	08/10/12	525	0.011 +- 0.002	< 0.017
02/17/12	543	0.015 +- 0.002	< 0.011	08/17/12	524	0.014 +- 0.002	< 0.027
02/24/12	546	0.018 +- 0.002	< 0.007	08/24/12	529	0.015 +- 0.002	< 0.015
03/02/12	545	0.019 +- 0.002	< 0.015	08/31/12	522	0.029 +- 0.003	< 0.019
03/07/12 *a	91			09/07/12	519	0.015 +- 0.002	< 0.014
03/14/12	463	0.022 +- 0.003	< 0.013	09/14/12	525	0.015 +- 0.002	< 0.014
03/21/12	542	0.018 +- 0.002	< 0.010	09/20/12	461	0.017 +- 0.002	< 0.014
03/30/12	615	0.014 +- 0.002	< 0.009	09/28/12	615	0.008 +- 0.002	< 0.011
1st Qtr				3rd Qtr			
mean +- s.d.		0.019 +- 0.004	< 0.015	mean +- s.d.		0.017 +- 0.006	< 0.015
04/05/12	461	0.012 +- 0.002	< 0.016	10/07/12	468	0.019 +- 0.003	< 0.006
04/13/12	611	0.015 +- 0.002	< 0.010	10/11/12	556	0.013 +- 0.002	< 0.019
04/20/12	549	0.014 +- 0.002	< 0.013	10/19/12	610	0.016 +- 0.002	< 0.010
04/27/12	532	0.018 +- 0.002	< 0.012	10/26/12	542	0.019 +- 0.002	< 0.010
05/04/12	466	0.020 +- 0.003	< 0.015	11/02/12	549	0.014 +- 0.002	< 0.010
05/11/12	528	0.012 +- 0.002	< 0.009	11/09/12	552	0.015 +- 0.002	< 0.009
05/18/12 *b	80			11/16/12	562	0.027 +- 0.002	< 0.010
05/25/12	523	0.020 +- 0.002	< 0.024	11/21/12	380	0.047 +- 0.004	< 0.035
06/01/12	525	0.011 +- 0.002	< 0.020	11/30/12	727	0.031 +- 0.002	< 0.008
06/08/12 *c	95			12/07/12	547	0.032 +- 0.003	< 0.014
06/14/12	524	0.014 +- 0.002	< 0.017	12/14/12	558	0.023 +- 0.002	< 0.011
06/22/12	524	0.017 +- 0.002	< 0.013	12/19/12	406	0.027 +- 0.003	< 0.017
06/29/12 *d	525		< 0.014	12/28/12	727	0.015 +- 0.002	< 0.013
2nd Qtr				4th Qtr			
mean +- s.d.		0.015 +- 0.003	< 0.015	mean +- s.d.		0.023 +- 0.010	< 0.013

a - No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.

b - No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.

c - No gross beta or air iodine results are available due to improper filter / cartridge holder assembly connection.

d - No gross beta result is available due to improper filter placement resulting in air flow past the filter.

Table 5. WI DHS air particulate gross beta and air iodine (I-131) analysis results from the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/m3

Site: PBK-18

Collection date	Volume m^3	Air particulate	Air iodine	Collection date	Volume m^3	Air particulate	Air iodine
01/03/12	635	0.019 +- 0.002	< 0.007				
01/11/12	734	0.023 +- 0.002	< 0.008	07/11/12	715	0.016 +- 0.002	< 0.012
01/17/12	560	0.021 +- 0.002	< 0.011	07/16/12	433	0.026 +- 0.003	< 0.014
01/23/12	563	0.022 +- 0.002	< 0.009	07/23/12	604	0.021 +- 0.002	< 0.012
01/30/12	644	0.022 +- 0.002	< 0.011	07/30/12	621	0.013 +- 0.002	< 0.010
02/08/12	810	0.019 +- 0.002	< 0.007	08/08/12	789	0.016 +- 0.002	< 0.006
02/13/12	390	0.017 +- 0.003	< 0.013	08/13/12	441	0.011 +- 0.002	< 0.014
02/20/12	654	0.021 +- 0.002	< 0.020	08/20/12	623	0.014 +- 0.002	< 0.008
02/27/12	633	0.024 +- 0.002	< 0.008	08/27/12	618	0.029 +- 0.002	< 0.007
03/05/12	640	0.012 +- 0.002	< 0.006	09/04/12	697	0.016 +- 0.002	< 0.011
03/14/12	808	0.020 +- 0.002	< 0.012	09/12/12	873	0.015 +- 0.002	< 0.010
03/19/12	467	0.019 +- 0.003	< 0.010	09/17/12	439	0.019 +- 0.003	< 0.012
03/26/12 *a	590	0.017 +- 0.002	< 0.006	09/24/12	640	0.009 +- 0.002	< 0.010
04/02/12 *b	545	0.011 +- 0.002	< 0.012	10/01/12	618	0.013 +- 0.002	< 0.009
1st Qtr				3rd Qtr			
mean +- s.d.		0.019 +- 0.004	< 0.010	mean +- s.d.		0.017 +- 0.006	< 0.010
04/11/12	813	0.014 +- 0.002	< 0.007	10/10/12	821	0.017 +- 0.002	< 0.008
04/16/12	453	0.017 +- 0.003	< 0.013	10/15/12	453	0.011 +- 0.002	< 0.011
04/23/12	653	0.013 +- 0.002	< 0.009	10/22/12	633	0.019 +- 0.002	< 0.011
04/30/12	635	0.020 +- 0.002	< 0.007	10/29/12	628	0.018 +- 0.002	< 0.013
05/09/12	810	0.013 +- 0.002	< 0.009	11/05/12	651	0.012 +- 0.002	< 0.006
05/14/12	452	0.013 +- 0.002	< 0.009	11/14/12	830	0.024 +- 0.002	< 0.008
05/21/12	634	0.019 +- 0.002	< 0.009	11/20/12	549	0.039 +- 0.003	< 0.017
05/29/12	709	0.016 +- 0.002	< 0.008	11/26/12	551	0.032 +- 0.003	< 0.020
06/04/12	538	0.011 +- 0.002	< 0.017	12/03/12	632	0.043 +- 0.003	< 0.011
06/13/12	798	0.013 +- 0.002	< 0.011	12/12/12	831	0.019 +- 0.002	< 0.006
06/18/12	438	0.017 +- 0.003	< 0.014	12/17/12	457	0.032 +- 0.003	< 0.015
06/25/12	629	0.013 +- 0.002	< 0.010	12/26/12	823	0.019 +- 0.002	< 0.005
07/03/12	701	0.017 +- 0.002	< 0.007	12/31/12	444	0.029 +- 0.003	< 0.021
2nd Qtr				4th Qtr			
mean +- s.d.		0.015 +- 0.003	< 0.010	mean +- s.d.		0.024 +- 0.010	< 0.012

a - The air site was not operating for approximately 8 hours at the end of the indicated sampling period.

b - The air site was not operating for approximately 23 hours at the beginning of the indicated sampling period.

Table 6. WI DHS gamma isotopic analysis results from the quarterly composites of air particulate filters collected from the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/m^3

Site: PBK-1	1st quarter	2nd quarter	3rd quarter	4th quarter
Be-7	0.053 +- 0.007	0.081 +- 0.009	0.067 +- 0.008	0.043 +- 0.006
Mn-54	< 0.0004	< 0.0004	< 0.0004	< 0.0005
Co-58	< 0.0003	< 0.0004	< 0.0005	< 0.0004
Fe-59	< 0.0009	< 0.0011	< 0.0010	< 0.0008
Co-60	< 0.0008	< 0.0007	< 0.0007	< 0.0007
Zn-65	< 0.0009	< 0.0009	< 0.0008	< 0.0009
Nb-95	< 0.0005	< 0.0006	< 0.0005	< 0.0006
Zr-95	< 0.0008	< 0.0007	< 0.0009	< 0.0010
Ru-103	< 0.0005	< 0.0005	< 0.0006	< 0.0005
Ru-106	< 0.0036	< 0.0041	< 0.0039	< 0.0035
I-131	< 0.0007	< 0.0013	< 0.0018	< 0.0020
Cs-134	< 0.0004	< 0.0004	< 0.0006	< 0.0005
Cs-137	< 0.0005	< 0.0006	< 0.0005	< 0.0005
Ba-140	< 0.0021	< 0.0034	< 0.0037	< 0.0040
La-140	< 0.0009	< 0.0011	< 0.0014	< 0.0014
Ce-141	< 0.0007	< 0.0009	< 0.0010	< 0.0009
Ce-144	< 0.0023	< 0.0027	< 0.0026	< 0.0027
Site: PBK-4				
Be-7	0.057 +- 0.006	0.093 +- 0.009	0.068 +- 0.007	0.052 +- 0.007
Mn-54	< 0.0003	< 0.0005	< 0.0002	< 0.0003
Co-58	< 0.0002	< 0.0004	< 0.0004	< 0.0003
Fe-59	< 0.0006	< 0.0011	< 0.0006	< 0.0010
Co-60	< 0.0003	< 0.0006	< 0.0003	< 0.0006
Zn-65	< 0.0005	< 0.0010	< 0.0007	< 0.0007
Nb-95	< 0.0003	< 0.0006	< 0.0004	< 0.0005
Zr-95	< 0.0005	< 0.0009	< 0.0005	< 0.0009
Ru-103	< 0.0002	< 0.0006	< 0.0003	< 0.0006
Ru-106	< 0.0023	< 0.0043	< 0.0024	< 0.0039
I-131	< 0.0006	< 0.0018	< 0.0010	< 0.0014
Cs-134	< 0.0003	< 0.0006	< 0.0003	< 0.0004
Cs-137	< 0.0002	< 0.0006	< 0.0003	< 0.0005
Ba-140	< 0.0014	< 0.0038	< 0.0021	< 0.0033
La-140	< 0.0006	< 0.0014	< 0.0009	< 0.0011
Ce-141	< 0.0004	< 0.0009	< 0.0005	< 0.0008
Ce-144	< 0.0012	< 0.0025	< 0.0014	< 0.0026
Site: PBK-7				
Be-7	0.057 +- 0.008	0.081 +- 0.010	0.091 +- 0.009	0.047 +- 0.007
Mn-54	< 0.0004	< 0.0003	< 0.0004	< 0.0005
Co-58	< 0.0004	< 0.0005	< 0.0004	< 0.0005
Fe-59	< 0.0007	< 0.0009	< 0.0009	< 0.0010
Co-60	< 0.0006	< 0.0004	< 0.0007	< 0.0007
Zn-65	< 0.0009	< 0.0011	< 0.0008	< 0.0008
Nb-95	< 0.0004	< 0.0006	< 0.0005	< 0.0006
Zr-95	< 0.0006	< 0.0009	< 0.0009	< 0.0009
Ru-103	< 0.0003	< 0.0004	< 0.0005	< 0.0005
Ru-106	< 0.0033	< 0.0036	< 0.0038	< 0.0034
I-131	< 0.0008	< 0.0010	< 0.0018	< 0.0020
Cs-134	< 0.0004	< 0.0004	< 0.0005	< 0.0004
Cs-137	< 0.0004	< 0.0004	< 0.0006	< 0.0006
Ba-140	< 0.0019	< 0.0022	< 0.0038	< 0.0039
La-140	< 0.0007	< 0.0004	< 0.0015	< 0.0015
Ce-141	< 0.0004	< 0.0004	< 0.0010	< 0.0009
Ce-144	< 0.0013	< 0.0014	< 0.0029	< 0.0027

Radioisotopes other than those reported were not detected.

Table 6. WI DHS gamma isotopic analysis results from the quarterly composites of air particulate filters collected from the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/m^3

Site: PBK-8	1st quarter	2nd quarter	3rd quarter	4th quarter
Be-7	0.071 +- 0.008	0.082 +- 0.008	0.074 +- 0.008	0.050 +- 0.007
Mn-54	< 0.0005	< 0.0003	< 0.0004	< 0.0004
Co-58	< 0.0004	< 0.0004	< 0.0003	< 0.0005
Fe-59	< 0.0008	< 0.0006	< 0.0008	< 0.0008
Co-60	< 0.0006	< 0.0003	< 0.0004	< 0.0007
Zn-65	< 0.0008	< 0.0006	< 0.0008	< 0.0006
Nb-95	< 0.0004	< 0.0004	< 0.0004	< 0.0005
Zr-95	< 0.0006	< 0.0006	< 0.0005	< 0.0009
Ru-103	< 0.0004	< 0.0003	< 0.0004	< 0.0004
Ru-106	< 0.0037	< 0.0018	< 0.0025	< 0.0034
I-131	< 0.0009	< 0.0010	< 0.0013	< 0.0014
Cs-134	< 0.0005	< 0.0003	< 0.0003	< 0.0005
Cs-137	< 0.0005	< 0.0004	< 0.0003	< 0.0005
Ba-140	< 0.0025	< 0.0018	< 0.0023	< 0.0032
La-140	< 0.0008	< 0.0009	< 0.0011	< 0.0012
Ce-141	< 0.0008	< 0.0004	< 0.0005	< 0.0008
Ce-144	< 0.0025	< 0.0015	< 0.0015	< 0.0026
Site: PBK-17				
Be-7	0.055 +- 0.007	0.089 +- 0.009	0.066 +- 0.007	0.047 +- 0.007
Mn-54	< 0.0003	< 0.0005	< 0.0003	< 0.0005
Co-58	< 0.0003	< 0.0004	< 0.0004	< 0.0005
Fe-59	< 0.0006	< 0.0011	< 0.0008	< 0.0009
Co-60	< 0.0004	< 0.0007	< 0.0004	< 0.0007
Zn-65	< 0.0007	< 0.0011	< 0.0008	< 0.0010
Nb-95	< 0.0003	< 0.0006	< 0.0003	< 0.0006
Zr-95	< 0.0005	< 0.0009	< 0.0006	< 0.0008
Ru-103	< 0.0002	< 0.0006	< 0.0004	< 0.0006
Ru-106	< 0.0023	< 0.0045	< 0.0028	< 0.0038
I-131	< 0.0005	< 0.0015	< 0.0009	< 0.0021
Cs-134	< 0.0003	< 0.0005	< 0.0003	< 0.0005
Cs-137	< 0.0003	< 0.0007	< 0.0003	< 0.0006
Ba-140	< 0.0016	< 0.0034	< 0.0022	< 0.0039
La-140	< 0.0004	< 0.0018	< 0.0009	< 0.0017
Ce-141	< 0.0004	< 0.0010	< 0.0004	< 0.0009
Ce-144	< 0.0014	< 0.0030	< 0.0014	< 0.0027
Site: PBK-18				
Be-7	0.055 +- 0.007	0.077 +- 0.008	0.076 +- 0.008	0.047 +- 0.007
Mn-54	< 0.0004	< 0.0003	< 0.0004	< 0.0004
Co-58	< 0.0002	< 0.0003	< 0.0004	< 0.0004
Fe-59	< 0.0008	< 0.0005	< 0.0010	< 0.0007
Co-60	< 0.0003	< 0.0002	< 0.0006	< 0.0006
Zn-65	< 0.0007	< 0.0004	< 0.0008	< 0.0008
Nb-95	< 0.0004	< 0.0004	< 0.0005	< 0.0005
Zr-95	< 0.0004	< 0.0005	< 0.0008	< 0.0007
Ru-103	< 0.0002	< 0.0003	< 0.0005	< 0.0004
Ru-106	< 0.0027	< 0.0027	< 0.0036	< 0.0033
I-131	< 0.0006	< 0.0009	< 0.0015	< 0.0013
Cs-134	< 0.0003	< 0.0003	< 0.0004	< 0.0004
Cs-137	< 0.0003	< 0.0003	< 0.0005	< 0.0005
Ba-140	< 0.0010	< 0.0015	< 0.0036	< 0.0026
La-140	< 0.0002	< 0.0010	< 0.0015	< 0.0010
Ce-141	< 0.0003	< 0.0004	< 0.0008	< 0.0007
Ce-144	< 0.0010	< 0.0011	< 0.0023	< 0.0023

Radioisotopes other than those reported were not detected.

Table 7. WI DHS TLD network for the Point Beach – Kewaunee environmental monitoring program.

Date Placed:	01/04/12	04/03/12	07/03/12	10/02/12
Date Removed:	04/03/12	07/03/12	10/02/12	01/04/13
Days in the Field:	90	91	91	94

Individual quarterly date is reported as: mR / Standard Quarter + 2 sigma counting error.

TLD sites located at the Point Beach ISFSI.

1	29.8 +- 1.8	25.6 +- 1.0	25.7 +- 1.4	27.1 +- 2.0
2	62.3 +- 3.7	53.1 +- 2.6	57.7 +- 2.3	56.8 +- 3.2
3	23.6 +- 1.5	19.4 +- 1.2	22.3 +- 1.7	24.6 +- 2.1
4	22.2 +- 1.0	19.0 +- 0.5	20.0 +- 1.9	21.2 +- 0.7
5	20.4 +- 0.5	17.2 +- 0.9	18.1 +- 0.7	20.1 +- 1.0
6	40.0 +- 0.5	35.5 +- 1.9	35.6 +- 0.4	39.0 +- 1.9
7	65.3 +- 1.1	57.0 +- 1.4	57.4 +- 2.0	58.9 +- 1.4
8	29.9 +- 1.2	24.4 +- 1.1	26.1 +- 1.1	26.3 +- 1.4
Quarterly average +- s.d.	36.7 +- 17.8	31.4 +- 15.7	32.9 +- 16.1	34.3 +- 15.7

TLD sites, excluding sites 1-8, that are located 0 – 2 miles from either the Point Beach or the Kewaunee facility.

9	15.1 +- 0.7	12.0 +- 0.6	13.1 +- 0.8	13.6 +- 0.8
10	16.5 +- 1.1	14.7 +- 0.8	13.9 +- 0.6	16.3 +- 0.8
11	15.5 +- 0.7	13.3 +- 0.7	13.8 +- 0.6	14.7 +- 0.7
12	15.2 +- 0.5	12.8 +- 0.9	13.3 +- 0.7	14.3 +- 1.2
13	15.7 +- 0.8	13.8 +- 0.6	13.7 +- 1.2	15.0 +- 0.7
14	15.5 +- 0.6	13.5 +- 0.7	13.6 +- 0.5	14.9 +- 0.7
19	16.0 +- 0.7	13.1 +- 0.5	14.2 +- 0.8	15.5 +- 1.1
20	15.6 +- 1.0	13.7 +- 0.8	13.4 +- 0.7	14.2 +- 1.0
21	15.6 +- 0.8	14.9 +- 0.6	14.9 +- 0.7	16.3 +- 0.8
22	18.2 +- 0.8	17.0 +- 0.6	17.1 +- 0.7	18.5 +- 0.6
Quarterly average +- s.d.	15.9 +- 0.9	13.9 +- 1.4	14.1 +- 1.2	15.3 +- 1.4

TLD sites that are located 2 – 5 miles from either the Point Beach or the Kewaunee facility.

15	16.6 +- 0.9	13.4 +- 1.1	15.0 +- 0.6	15.3 +- 0.7
16	13.5 +- 1.1	11.1 +- 0.3	11.7 +- 0.8	13.5 +- 0.9
17	16.4 +- 0.8	13.1 +- 0.6	14.7 +- 0.7	ND
18	17.7 +- 0.5	16.6 +- 0.5	16.4 +- 0.6	17.5 +- 1.2
23	17.6 +- 0.9	14.3 +- 0.8	16.1 +- 0.5	15.7 +- 0.7
24	13.5 +- 1.0	11.5 +- 0.3	12.3 +- 0.7	13.0 +- 0.5
25	18.5 +- 0.6	14.5 +- 0.6	ND	15.5 +- 0.7
26	15.2 +- 0.7	13.6 +- 0.9	13.7 +- 0.6	14.9 +- 1.0
Quarterly average +- s.d.	16.1 +- 1.9	13.5 +- 1.7	14.3 +- 1.8	15.1 +- 1.5

TLD sites that are located greater than 5 miles from either the Point Beach or the Kewaunee facility.

27	12.3 +- 0.4	9.7 +- 0.9	10.6 +- 0.5	11.1 +- 1.0
28	14.9 +- 0.8	11.6 +- 0.6	13.6 +- 0.8	12.9 +- 0.7
29	12.8 +- 0.3	10.5 +- 0.6	11.6 +- 0.5	11.7 +- 0.8
30	15.1 +- 0.6	13.5 +- 0.6	13.3 +- 0.5	18.6 +- 1.7
31	13.3 +- 0.8	9.5 +- 0.5	11.4 +- 0.5	12.2 +- 0.8
Quarterly average +- s.d.	13.7 +- 1.3	11.0 +- 1.6	12.1 +- 1.3	13.3 +- 3.0

ND - No data; the TLD was lost in the field.

Table 8. WI DHS analysis results for precipitation samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of nCi/m2

monthly composite sample

Collection	Inches	Gross beta	Tritium
01/18/12	0.70	0.37 +- 0.03	< 3.2
02/22/12	1.04	0.25 +- 0.05	< 4.7
03/21/12	1.62	0.15 +- 0.05	< 7.4
04/18/12	1.84	0.09 +- 0.05	< 8.4
05/30/12	7.65	0.31 +- 0.16	< 35.2
06/19/12	3.02	0.21 +- 0.06	< 13.8
07/18/12	2.82	0.12 +- 0.06	< 12.8
08/22/12	6.62	< 0.22	< 34.0
09/19/12	0.69	0.07 +- 0.01	< 3.5
10/24/12	4.10	0.20 +- 0.06	< 20.8
11/22/12	0.93	0.03 +- 0.02	< 4.7
12/19/12	0.97	0.30 +- 0.05	< 4.9

Table 9. WI DHS analysis results for fish samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (wet)

Collection date:	01/23/12	01/23/12	03/26/12	05/31/12	07/25/12	10/08/12
Type	catfish	lake trout	carp	3 species	lake trout	lake trout
gamma isotopic						
K-40	2500 +- 440	2410 +- 423	2460 +- 460	2450 +- 450	2890 +- 570	2510 +- 450
Mn-54	< 7	< 8	< 10	< 9	< 10	< 8
Co-58	< 9	< 9	< 10	< 11	< 12	< 9
Fe-59	< 21	< 23	< 21	< 22	< 24	< 24
Co-60	< 10	< 8	< 13	< 10	< 10	< 12
Zn-65	< 13	< 16	< 21	< 23	< 28	< 22
Nb-95	< 9	< 15	< 10	< 11	< 13	< 11
Zr-95	< 14	< 17	< 18	< 15	< 20	< 16
Cs-134	< 7	< 6	< 9	< 13	< 11	< 10
Cs-137	18 +- 9	18 +- 7	< 14	< 14	17 +- 12	31 +- 10

Collection date:	10/19/12	10/20/12
Type	whitefish	lake trout
gamma isotopic		
K-40	3320 +- 560	2400 +- 410
Mn-54	< 9	< 5
Co-58	< 9	< 6
Fe-59	< 19	< 13
Co-60	< 13	< 6
Zn-65	< 20	< 15
Nb-95	< 10	< 5
Zr-95	< 15	< 9
Cs-134	< 9	< 6
Cs-137	< 13	26 +- 9

Radioisotopes other than those reported were not detected.

Table 10. WI DHS analysis results for shoreline sediment samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (dry)

Collection date:	08/28/12	08/28/12	08/28/12
Site:	PBK-5	PBK-10a	PBK-25
gross alpha	< 7100	< 9400	< 7000
gross beta	5100 +- 1600	2700 +- 1600	8400 +- 1600
K-40	7730 +- 1280	5180 +- 900	10200 +- 1670
Mn-54	< 12	< 14	< 13
Co-58	< 12	< 14	< 13
Fe-59	< 29	< 28	< 38
Co-60	< 13	< 15	< 20
Zn-65	< 27	< 37	< 39
Nb-95	< 14	< 16	< 20
Zr-95	< 23	< 23	< 28
Cs-134	< 10	< 12	< 13
Cs-137	< 15	14 +- 9	< 22

Collection date:	08/27/12	08/27/12	08/27/12	08/27/12
Site:	PBK-12a	PBK-12b	PBK-12c	PBK-26
gross alpha	< 7100	< 7800	< 5800	< 7500
gross beta	4100 +- 1600	6800 +- 1700	3100 +- 1400	3500 +- 1600
K-40	7040 +- 1150	8280 +- 1360	6530 +- 1100	7450 +- 1220
Mn-54	< 11	< 12	< 14	< 11
Co-58	< 12	< 11	< 15	< 11
Fe-59	< 30	< 31	< 32	< 26
Co-60	< 13	< 15	< 10	< 14
Zn-65	< 27	< 31	< 28	< 27
Nb-95	< 12	< 14	< 16	< 13
Zr-95	< 17	< 21	< 26	< 20
Cs-134	< 10	< 11	< 11	< 11
Cs-137	< 22	26 +- 12	< 16	20 +- 9

Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Radioisotopes other than those reported were not detected.

Table 11. WI DHS analysis results for surface water samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

PBK-9; Point Beach meteorological tower

Collection date:	01/12/12	02/15/12	03/14/12	04/12/12	05/16/12	06/13/12
gross alpha-sol	< 1.3	< 2.3	3.7 +- 1.4	< 1.9	< 1.2	< 2.0
gross beta-sol	1.8 +- 0.5	< 1.9	2.9 +- 0.7	< 1.2	< 1.0	2.1 +- 1.2
gross alpha-insol	< 0.9	< 2.5	< 1.4	< 0.7	< 0.8	< 2.4
gross beta-insol	1.4 +- 0.7	< 2.3	< 1.5	< 0.9	< 1.1	< 2.4
I-131		< 0.1	< 0.2		< 0.1	
H-3 *a			< 182			< 182
Sr-89 *a			< 1.7			< 1.1
Sr-90 *a			< 0.3			< 0.4
gamma isotopic						
Mn-54	< 5	< 3	< 3	< 8	< 6	< 7
Co-58	< 5	< 3	< 3	< 8	< 5	< 7
Fe-59	< 8	< 5	< 5	< 15	< 10	< 12
Co-60	< 6	< 3	< 3	< 11	< 6	< 11
Zn-65	< 10	< 5	< 5	< 15	< 11	< 14
Nb-95	< 5	< 3	< 3	< 7	< 5	< 7
Zr-95	< 8	< 5	< 4	< 14	< 7	< 15
I-131	< 5	< 3	< 4	< 8	< 7	< 13
Cs-134	< 6	< 3	< 3	< 9	< 5	< 8
Cs-137	< 5	< 3	< 3	< 11	< 5	< 10
Ba-140	< 18	< 11	< 12	< 30	< 20	< 33
La-140	< 7	< 4	< 5	< 9	< 8	< 11

Collection date:	07/12/12	08/16/12	09/11/12	10/16/12	11/14/12	12/04/12
gross alpha-sol	< 2.3	< 1.8	1.9 +- 0.9	1.3 +- 0.9	< 1.5	1.8 +- 1.1
gross beta-sol	< 1.4	< 1.4	2.3 +- 0.6	2.0 +- 0.7	2.6 +- 0.6	< 1.6
gross alpha-insol	< 0.9	< 1.4	< 0.7	< 0.7	< 1.2	< 1.5
gross beta-insol	< 1.3	< 1.7	< 0.8	< 1.0	< 1.3	< 2.5
I-131	< 0.2		< 0.3		< 0.3	
H-3 *a			< 203			< 203
Sr-89 *a			< 2.1			< 2.0
Sr-90 *a			< 0.4			< 0.9
gamma isotopic						
Mn-54	< 9	< 7	< 5	< 10	< 10	< 10
Co-58	< 8	< 5	< 5	< 10	< 9	< 7
Fe-59	< 16	< 12	< 7	< 17	< 17	< 17
Co-60	< 11	< 7	< 7	< 12	< 13	< 13
Zn-65	< 22	< 12	< 12	< 17	< 16	< 18
Nb-95	< 7	< 6	< 5	< 10	< 9	< 9
Zr-95	< 13	< 9	< 8	< 14	< 14	< 16
I-131	< 10	< 7	< 6	< 11	< 13	< 12
Cs-134	< 10	< 7	< 5	< 9	< 10	< 10
Cs-137	< 8	< 6	< 5	< 10	< 13	< 13
Ba-140	< 33	< 22	< 22	< 23	< 36	< 37
La-140	< 15	< 9	< 9	< 10	< 11	< 10

*a - Analysis is performed on a quarterly composite.

Radioisotopes other than those reported were not detected.

Table 11. WI DHS analysis results for surface water samples collected for the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/liter

PBK-12a; Kewaunee effluent channel

Collection date:	01/03/12	02/01/12	03/01/12	04/02/12	05/01/12	06/04/12
gross alpha-sol	< 1.9	< 1.1	2.6 +- 1.5	< 2.3	< 1.8	2.1 +- 1.2
gross beta-sol	2.2 +- 0.9	1.8 +- 0.5	1.8 +- 1.2	< 1.5	< 1.1	2.5 +- 1.0
gross alpha-insol	1.6 +- 0.8	< 0.7	< 1.4	< 1.3	< 0.9	< 1.9
gross beta-insol	< 1.0	< 1.0	< 2.1	< 1.6	< 1.1	< 2.2
I-131		< 0.5	< 0.7		< 0.4	
H-3 *			340 +- 110			710 +- 120
Sr-89 *			< 1.7			< 1.4
Sr-90 *			< 0.3			< 0.4
gamma isotopic						
Mn-54	< 8	< 7	< 1	< 4	< 6	< 8
Co-58	< 6	< 6	< 1	< 5	< 5	< 9
Fe-59	< 15	< 13	< 2	< 8	< 10	< 13
Co-60	< 9	< 7	< 1	< 5	< 6	< 9
Zn-65	< 13	< 15	< 2	< 11	< 13	< 21
Nb-95	< 7	< 8	< 1	< 5	< 5	< 8
Zr-95	< 12	< 11	< 2	< 8	< 8	< 14
I-131	< 12	< 11	< 2	< 7	< 7	< 11
Cs-134	< 7	< 7	< 1	< 5	< 5	< 11
Cs-137	< 7	< 7	< 1	< 4	< 5	< 9
Ba-140	< 32	< 28	< 6	< 17	< 17	< 41
La-140	< 12	< 11	< 2	< 7	< 7	< 14

Collection date:	07/05/12	08/01/12	09/04/12	10/01/12	11/05/12	12/03/12
gross alpha-sol	< 1.8	< 1.7	1.5 +- 0.8	< 1.3	< 2.0	< 1.6
gross beta-sol	< 1.3	< 1.3	1.5 +- 0.6	1.3 +- 0.6	< 1.2	5.0 +- 1.2
gross alpha-insol	< 0.7	< 1.6	< 0.5	< 0.7	1.1 +- 0.8	1.6 +- 1.0
gross beta-insol	< 1.4	< 1.9	< 0.7	< 0.8	< 1.2	< 2.1
I-131	< 0.3		< 0.6		< 0.2	
H-3 *			228 +- 125			< 143
Sr-89 *			< 2.6			< 1.6
Sr-90 *			< 0.5			< 0.6
gamma isotopic						
Mn-54	< 6	< 4	< 5	< 7	< 9	< 7
Co-58	< 6	< 5	< 5	< 6	< 8	< 6
Fe-59	< 11	< 10	< 12	< 14	< 15	< 11
Co-60	< 7	< 6	< 6	< 9	< 11	< 9
Zn-65	< 12	< 12	< 12	< 15	< 15	< 12
Nb-95	< 6	< 4	< 5	< 7	< 10	< 6
Zr-95	< 11	< 8	< 7	< 11	< 14	< 11
I-131	< 8	< 8	< 9	< 7	< 11	< 9
Cs-134	< 6	< 4	< 5	< 7	< 8	< 6
Cs-137	< 7	< 4	< 5	< 7	< 11	< 8
Ba-140	< 27	< 17	< 25	< 26	< 35	< 27
La-140	< 8	< 7	< 10	< 8	< 11	< 9

* - Analysis is performed on a quarterly composite.

Radioisotopes other than those reported were not detected.

Table 11. WI DHS analysis results for surface water samples collected for the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/liter

PBK-17; Green Bay Water Utility - Rostok

Collection date:	01/09/12	02/06/12	03/05/12	04/02/12	05/07/12	06/04/12
gross alpha-sol	< 1.7	< 1.1	< 2.0	2.1 +- 1.7	< 1.4	< 1.6
gross beta-sol	< 1.2	0.9 +- 0.5	2.0 +- 1.2	1.8 +- 1.1	1.6 +- 0.7	< 1.8
gross alpha-insol	< 1.0	< 1.0	< 1.8	< 1.2	< 0.8	< 1.9
gross beta-insol	< 0.9	< 1.1	< 2.2	< 1.4	< 1.0	< 1.9
I-131		< 0.3	< 0.5		< 0.2	
H-3 *			< 179			< 182
Sr-89 *			< 1.5			< 0.8
Sr-90 *			< 0.3			< 0.2
gamma isotopic						
Mn-54	< 6	< 6	< 8	< 6	< 9	< 8
Co-58	< 6	< 5	< 8	< 5	< 10	< 8
Fe-59	< 11	< 10	< 13	< 9	< 12	< 16
Co-60	< 7	< 7	< 7	< 5	< 8	< 9
Zn-65	< 12	< 14	< 12	< 12	< 13	< 17
Nb-95	< 6	< 6	< 7	< 5	< 7	< 8
Zr-95	< 10	< 6	< 12	< 9	< 17	< 13
I-131	< 7	< 7	< 7	< 6	< 9	< 11
Cs-134	< 6	< 7	< 7	< 6	< 9	< 12
Cs-137	< 6	< 6	< 8	< 5	< 9	< 10
Ba-140	< 22	< 22	< 27	< 19	< 28	< 29
La-140	< 7	< 8	< 9	< 7	< 15	< 15

Collection date:	07/02/12	08/06/12	09/10/12	10/01/12	11/01/12	12/03/12
gross alpha-sol	< 1.3	< 2.0	< 1.3	< 1.4	< 1.5	< 1.4
gross beta-sol	< 1.3	2.5 +- 1.0	1.7 +- 0.6	2.2 +- 0.8	1.4 +- 0.8	< 1.7
gross alpha-insol	< 1.1	< 1.1	< 0.6	< 0.8	< 0.9	< 1.3
gross beta-insol	< 1.5	< 1.7	< 0.7	< 1.0	< 1.0	< 2.1
I-131	< 0.5		< 0.4		< 0.4	
H-3 *			< 203			< 202
Sr-89 *			< 2.6			< 2.3
Sr-90 *			< 0.5			< 0.9
gamma isotopic						
Mn-54	< 1	< 4	< 8	< 3	< 9	< 10
Co-58	< 1	< 4	< 6	< 3	< 8	< 9
Fe-59	< 2	< 6	< 13	< 5	< 16	< 13
Co-60	< 1	< 3	< 11	< 3	< 13	< 7
Zn-65	< 1	< 8	< 13	< 5	< 17	< 17
Nb-95	< 2	< 3	< 8	< 3	< 9	< 6
Zr-95	< 1	< 6	< 14	< 5	< 14	< 12
I-131	< 15	< 4	< 8	< 3	< 14	< 8
Cs-134	< 1	< 4	< 8	< 3	< 9	< 7
Cs-137	< 1	< 4	< 9	< 3	< 10	< 7
Ba-140	< 22	< 13	< 31	< 9	< 41	< 29
La-140	< 7	< 5	< 11	< 4	< 13	< 9

* - Analysis is performed on a quarterly composite.

Radioisotopes other than those reported were not detected.

Table 11. WI DHS analysis results for surface water samples collected for the Point Beach – Kewaunee environmental monitoring program, continued.

Measurements in units of pCi/liter

	PBK-5	PBK-25	PBK-5	PBK-25
Collection date:	05/30/12	NS	08/28/12	NS
gross alpha-sol	< 1.8		< 1.7	
gross beta-sol	< 1.1		< 1.4	
gross alpha-insol	< 1.1		< 1.4	
gross beta-insol	< 1.1		< 1.9	
H-3	< 180		< 202	
Sr-89	< 0.5		< 4.7	
Sr-90	< 0.3		< 1.3	
gamma isotopic				
Mn-54	< 9		< 9	
Co-58	< 9		< 10	
Fe-59	< 17		< 17	
Co-60	< 12		< 9	
Zn-65	< 17		< 13	
Nb-95	< 9		< 8	
Zr-95	< 16		< 12	
I-131	< 15		< 11	
Cs-134	< 9		< 9	
Cs-137	< 13		< 9	
Ba-140	< 36		< 27	
La-140	< 14		< 11	

NS - No sample, the sample site was not accessible.

Radioisotopes other than those reported were not detected.

Table 12. WI DHS analysis results for well water samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

	PBK-3	PBK-10	PBK-11	PBK-12d N	PBK-12d S
Collection date:	05/29/12	04/12/12	05/30/12	05/29/12	05/29/12
gross alpha	< 2.3	< 3.6	< 2.4	9.3 +- 3.3	7.4 +- 2.9
gross beta	< 2.2	2.1 +- 0.7	< 2.1	1.9 +- 0.7	4.7 +- 0.7
H-3	< 180	< 182	< 180	< 180	< 180

	PBK-3	PBK-10	PBK-11	PBK-12d N	PBK-12d S
Collection date:	08/27/12	10/16/12	08/28/12	08/27/12	08/27/12
gross alpha	< 1.6	< 2.6	< 2.4	7.4 +- 2.5	7.1 +- 1.8
gross beta	< 1.7	< 1.4	< 1.7	1.7 +- 0.7	< 2.1
H-3	< 202	< 199	< 202	< 202	< 202

Table 13. WI DHS analysis results for milk samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/liter

PBK-28; Strutz farm

Collection date:	01/11/12	02/08/12	03/14/12	04/11/12	05/09/12	06/13/12
I-131		< 0.5	< 0.5		< 0.8	
Sr-90	< 0.3	0.4 +- 0.1	< 0.3	< 0.3	< 0.3	< 0.3
gamma isotopic						
K-40	1140 +- 290	1370 +- 210	1420 +- 300	1440 +- 310	1280 +- 290	1190 +- 260
Mn-54	< 11	< 1	< 7	< 7	< 9	< 9
Co-58	< 12	< 1	< 7	< 9	< 8	< 8
Fe-59	< 22	< 2	< 18	< 19	< 19	< 15
Co-60	< 13	< 1	< 10	< 9	< 10	< 11
Zn-65	< 27	< 2	< 21	< 15	< 19	< 19
Nb-95	< 12	< 2	< 7	< 10	< 11	< 8
Zr-95	< 17	< 2	< 15	< 12	< 12	< 14
I-131	< 10	< 7	< 7	< 11	< 12	< 14
Cs-134	< 11	< 1	< 7	< 11	< 7	< 8
Cs-137	< 12	< 1	< 8	< 11	< 8	< 10
Ba-140	< 39	< 14	< 24	< 41	< 36	< 41
La-140	< 15	< 4	< 8	< 14	< 14	< 13

Collection date:	07/11/12	08/08/12	09/12/12	10/10/12	11/14/12	12/12/12
I-131		< 0.6		< 0.3		< 0.3
Sr-90	< 0.3	< 0.4	< 0.4	< 0.3	< 0.6	< 0.4
gamma isotopic						
K-40	1370 +- 280	1130 +- 290	1180 +- 270	1360 +- 310	1530 +- 330	1480 +- 300
Mn-54	< 9	< 11	< 10	< 13	< 10	< 10
Co-58	< 8	< 11	< 11	< 8	< 9	< 8
Fe-59	< 14	< 17	< 24	< 17	< 22	< 18
Co-60	< 8	< 13	< 14	< 15	< 10	< 14
Zn-65	< 20	< 22	< 20	< 20	< 26	< 20
Nb-95	< 9	< 15	< 11	< 9	< 8	< 9
Zr-95	< 14	< 19	< 18	< 15	< 15	< 15
I-131	< 12	< 13	< 12	< 12	< 11	< 10
Cs-134	< 9	< 13	< 9	< 12	< 11	< 8
Cs-137	< 7	< 13	< 13	< 14	< 9	< 12
Ba-140	< 34	< 38	< 40	< 38	< 26	< 36
La-140	< 15	< 12	< 10	< 13	< 14	< 5

Radioisotopes other than those reported were not detected.

Table 13. WI DHS analysis results for milk samples collected for the Point Beach – Kewaunee environmental monitoring Program, continued.

Measurements in units of pCi/liter

PBK-24; Struck farm

Collection date:	01/11/12	02/08/12	03/14/12	04/11/12	05/09/12	06/13/12
I-131		< 0.4	< 0.5		< 0.6	
Sr-90	< 0.4	0.4 +- 0.2	0.6 +- 0.2	0.6 +- 0.2	0.4 +- 0.2	0.6 +- 0.3
gamma isotopic						
K-40	1460 +- 320	1320 +- 300	1450 +- 300	1520 +- 310	1400 +- 290	1270 +- 260
Mn-54	< 10	< 7	< 10	< 8	< 6	< 8
Co-58	< 7	< 7	< 8	< 8	< 8	< 9
Fe-59	< 19	< 17	< 21	< 17	< 14	< 16
Co-60	< 9	< 11	< 14	< 9	< 10	< 12
Zn-65	< 21	< 20	< 20	< 22	< 20	< 19
Nb-95	< 7	< 8	< 8	< 11	< 5	< 8
Zr-95	< 12	< 12	< 16	< 15	< 12	< 16
I-131	< 7	< 8	< 11	< 7	< 11	< 14
Cs-134	< 8	< 8	< 10	< 11	< 6	< 8
Cs-137	< 8	< 9	< 13	< 10	< 7	< 12
Ba-140	< 28	< 29	< 38	< 33	< 35	< 38
La-140	< 11	< 10	< 14	< 7	< 14	< 14

Collection date:	07/11/12	08/08/12	09/12/12	10/10/12	11/14/12	12/12/12
I-131				< 0.4		< 0.3
Sr-90	< 0.3	NA	0.6 +- 0.2	< 0.3	0.6 +- 0.3	< 0.4
gamma isotopic						
K-40	1330 +- 310	1090 +- 320	1140 +- 290	1370 +- 320	1260 +- 280	1310 +- 320
Mn-54	< 6	< 13	< 10	< 11	< 9	< 13
Co-58	< 7	< 13	< 9	< 11	< 9	< 11
Fe-59	< 27	< 22	< 21	< 20	< 20	< 6
Co-60	< 15	< 15	< 14	< 13	< 14	< 14
Zn-65	< 24	< 23	< 25	< 30	< 19	< 28
Nb-95	< 9	< 13	< 10	< 9	< 9	< 12
Zr-95	< 16	< 18	< 20	< 14	< 14	< 16
I-131	< 13	< 8	< 14	< 13	< 11	< 9
Cs-134	< 10	< 12	< 11	< 11	< 9	< 10
Cs-137	< 8	< 13	< 14	< 10	< 12	< 11
Ba-140	< 35	< 46	< 43	< 33	< 37	< 34
La-140	< 14	< 12	< 11	< 15	< 12	< 14

NA – Milk sample for 08/08/12 arrived at WSLH spoiled. Unable to perform an analysis for Sr-90.

Radioisotopes other than those reported were not detected.

Table 13. WI DHS analysis results for milk samples collected for the Point Beach – Kewaunee environmental monitoring Program, continued.

Measurements in units of pCi/liter

PBK-27; R. Barta farm

Collection date:	01/11/12	02/08/12	03/14/12	04/11/12	05/09/12	06/13/12
I-131		< 0.6	< 0.4		< 0.6	
Sr-90	< 0.3	0.3 +- 0.2	< 0.3	< 0.3	0.4 +- 0.2	< 0.3
gamma isotopic						
K-40	1220 +- 270	1340 +- 300	1500 +- 310	1210 +- 280	1380 +- 300	1290 +- 270
Mn-54	< 7	< 11	< 10	< 8	< 9	< 9
Co-58	< 7	< 8	< 8	< 8	< 9	< 8
Fe-59	< 17	< 17	< 15	< 18	< 19	< 17
Co-60	< 9	< 11	< 9	< 9	< 10	< 12
Zn-65	< 19	< 23	< 14	< 21	< 18	< 16
Nb-95	< 7	< 7	< 9	< 11	< 8	< 9
Zr-95	< 12	< 15	< 16	< 13	< 14	< 13
I-131	< 9	< 7	< 10	< 10	< 11	< 13
Cs-134	< 10	< 8	< 11	< 11	< 8	< 8
Cs-137	< 8	< 5	< 10	< 10	< 9	< 10
Ba-140	< 32	< 25	< 30	< 32	< 34	< 39
La-140	< 11	< 11	< 9	< 9	< 8	< 13

Collection date:	07/11/12	08/08/12	09/12/12	10/10/12	11/14/12	12/12/12
I-131		< 0.6				< 0.3
Sr-90	< 0.3	0.5 +- 0.2	0.5 +- 0.2	< 0.3	< 0.5	< 0.4
gamma isotopic						
K-40	1480 +- 300	1290 +- 340	1250 +- 260	1040 +- 260	1160 +- 310	1340 +- 280
Mn-54	< 11	< 12	< 8	< 10	< 14	< 10
Co-58	< 10	< 7	< 9	< 11	< 10	< 8
Fe-59	< 20	< 24	< 15	< 23	< 23	< 15
Co-60	< 13	< 15	< 9	< 14	< 11	< 12
Zn-65	< 20	< 22	< 18	< 20	< 28	< 23
Nb-95	< 10	< 10	< 7	< 10	< 11	< 8
Zr-95	< 16	< 18	< 15	< 19	< 21	< 15
I-131	< 14	< 10	< 8	< 9	< 11	< 11
Cs-134	< 10	< 9	< 6	< 9	< 10	< 10
Cs-137	< 14	< 9	< 8	< 12	< 10	< 12
Ba-140	< 42	< 45	< 28	< 38	< 39	< 34
La-140	< 13	< 15	< 13	< 12	< 11	< 12

Radioisotopes other than those reported were not detected.

Table 14. WI DHS analysis results for vegetation samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (wet)

Site:	**PBK-1**	**PBK-2**	**PBK-3**	**PBK-4**	**PBK-5**
Collection date:	05/29/12	05/20/12	05/19/12	05/30/12	05/30/12
gross alpha	< 1700	< 1600	< 1800	< 1400	< 1600
gross beta	7300 +- 1100	7200 +- 1100	5100 +- 900	6300 +- 900	6600 +- 700
gamma isotopic					
Be-7	1700 +- 270	770 +- 160	700 +- 140	680 +- 160	700 +- 160
K-40	5900 +- 1100	5700 +- 1100	3900 +- 710	4140 +- 780	5050 +- 910
Mn-54	< 18	< 20	< 13	< 17	< 18
Co-58	< 17	< 14	< 11	< 18	< 17
Fe-59	< 53	< 39	< 24	< 30	< 35
Co-60	< 23	< 25	< 14	< 19	< 27
Zn-65	< 47	< 45	< 23	< 31	< 43
Nb-95	< 16	< 21	< 13	< 18	< 18
Zr-95	< 26	< 31	< 15	< 22	< 27
I-131	< 27	< 28	< 14	< 24	< 26
Cs-134	< 16	< 17	< 13	< 17	< 17
Cs-137	< 18	< 21	< 9	< 25	< 23
Ba-140	< 72	< 66	< 46	< 68	< 79
La-140	< 21	< 29	< 15	< 25	< 27

Site:	**PBK-7**	**PBK-8**	**PBK-14**	**PBK-17**	**PBK-25**
Collection date:	05/29/12	05/30/12	05/29/12	05/30/12	NS
gross alpha	< 2600	< 1800	< 2700	< 2200	
gross beta	7800 +- 1200	6700 +- 800	9000 +- 1200	7000 +- 900	
gamma isotopic					
Be-7	1210 +- 270	340 +- 110	530 +- 140	310 +- 90	
K-40	6100 +- 1100	5000 +- 860	5480 +- 930	3490 +- 610	
Mn-54	< 25	< 11	< 12	< 9	
Co-58	< 25	< 11	< 11	< 9	
Fe-59	< 51	< 26	< 23	< 17	
Co-60	< 33	< 15	< 14	< 10	
Zn-65	< 56	< 26	< 29	< 21	
Nb-95	< 22	< 11	< 8	< 11	
Zr-95	< 37	< 17	< 16	< 14	
I-131	< 38	< 14	< 18	< 10	
Cs-134	< 26	< 12	< 13	< 10	
Cs-137	< 32	< 11	< 14	< 10	
Ba-140	< 99	< 48	< 49	< 38	
La-140	< 29	< 18	< 19	< 11	

NS - No sample; the sample site was not accessible.

Radioisotopes other than those reported were not detected.

Table 14. WI DHS analysis results for vegetation samples collected for the Point Beach – Kewaunee environmental monitoring Program, continued.

Measurements in units of pCi/kilogram (wet)

Site:	**PBK-1**	**PBK-2**	**PBK-3**	**PBK-4**	**PBK-5**
Collection date:	08/27/12	08/28/12	08/27/12	08/28/12	08/28/12
gross alpha	< 3800	< 3000	< 2000	< 2400	< 2500
gross beta	6100 +- 870	2470 +- 630	6660 +- 750	6650 +- 620	7520 +- 660
gamma isotopic					
Be-7	3040 +- 440	1450 +- 300	1370 +- 390	1010 +- 220	990 +- 210
K-40	6100 +- 1200	4120 +- 890	5400 +- 1200	6000 +- 1100	6000 +- 1100
Mn-54	< 28	< 25	< 40	< 17	< 15
Co-58	< 30	< 19	< 31	< 16	< 18
Fe-59	< 45	< 54	< 82	< 45	< 40
Co-60	< 36	< 35	< 50	< 22	< 22
Zn-65	< 71	< 60	< 84	< 44	< 44
Nb-95	< 27	< 24	< 25	< 16	< 16
Zr-95	< 40	< 40	< 63	< 34	< 18
I-131	< 31	< 27	< 48	< 17	< 17
Cs-134	< 19	< 25	< 37	< 19	< 18
Cs-137	< 26	< 35	< 46	< 17	< 18
Ba-140	< 66	< 101	< 166	< 65	< 58
La-140	< 27	< 30	< 37	< 27	< 20

Site:	**PBK-7**	**PBK-8**	**PBK-14**	**PBK-17**	**PBK-25**
Collection date:	08/27/12	08/28/12	08/27/12	08/28/12	NS
gross alpha	< 3000	< 2600	< 2200	< 3900	
gross beta	5100 +- 700	8050 +- 640	4250 +- 580	6660 +- 960	
gamma isotopic					
Be-7	3270 +- 420	1830 +- 310	1960 +- 440	1120 +- 270	
K-40	5100 +- 1000	5000 +- 1000	5100 +- 1100	4800 +- 1000	
Mn-54	< 25	< 24	< 26	< 23	
Co-58	< 22	< 25	< 27	< 31	
Fe-59	< 52	< 53	< 60	< 56	
Co-60	< 22	< 29	< 27	< 24	
Zn-65	< 53	< 48	< 56	< 72	
Nb-95	< 19	< 25	< 33	< 29	
Zr-95	< 31	< 38	< 43	< 36	
I-131	< 25	< 38	< 51	< 34	
Cs-134	< 20	< 21	< 25	< 29	
Cs-137	< 26	< 25	< 31	< 31	
Ba-140	< 100	< 123	< 128	< 82	
La-140	< 34	< 22	< 59	< 13	

NS - No sample; the sample site was not accessible.

Radioisotopes other than those reported were not detected.

Table 15. WI DHS analysis results for soil samples collected for the Point Beach – Kewaunee environmental monitoring program.

Measurements in units of pCi/kilogram (dry)

Site:	**PBK-1**	**PBK-2**	**PBK-3**	**PBK-4**	**PBK-5**
Collection date:	05/29/12	05/19/12	05/29/12	05/30/12	05/30/12
gross alpha	< 5900	11100 +- 4700	13200 +- 4800	13700 +- 4900	10700 +- 4600
gross beta	23900 +- 2400	25900 +- 2400	30800 +- 2500	27300 +- 2400	27700 +- 2400
gamma isotopic					
K-40	13000 +- 2100	17400 +- 2800	18500 +- 2900	16800 +- 2700	17400 +- 2700
Mn-54	< 12	< 15	< 15	< 14	< 13
Co-58	< 11	< 12	< 13	< 13	< 12
Fe-59	< 26	< 29	< 32	< 30	< 29
Co-60	< 12	< 14	< 15	< 15	< 17
Zn-65	< 33	< 32	< 32	< 32	< 33
Nb-95	< 14	< 16	< 16	< 14	< 16
Zr-95	< 19	< 25	< 26	< 24	< 26
Cs-134	< 13	< 13	< 15	< 14	< 16
Cs-137	170 +- 20	130 +- 20	100 +- 20	120 +- 20	130 +- 20

Site:	**PBK-7**	**PBK-8**	**PBK-14**	**PBK-17**	**PBK-25**
Collection date:	05/29/12	05/30/12	05/29/12	05/30/12	NS
gross alpha	15000 +- 5000	12800 +- 4800	18400 +- 5300	16900 +- 5100	
gross beta	34300 +- 2600	29100 +- 2500	30300 +- 2500	23800 +- 2400	
gamma isotopic					
K-40	18600 +- 2900	17600 +- 2800	16800 +- 2600	12200 +- 1900	
Mn-54	< 15	< 14	< 17	< 16	
Co-58	< 15	< 12	< 12	< 11	
Fe-59	< 32	< 31	< 35	< 29	
Co-60	< 16	< 16	< 11	< 15	
Zn-65	< 34	< 32	< 34	< 29	
Nb-95	< 15	< 15	< 16	< 14	
Zr-95	< 25	< 22	< 26	< 22	
Cs-134	< 15	< 15	< 15	< 14	
Cs-137	110 +- 20	160 +- 20	150 +- 20	360 +- 30	

NS - No sample; the sample site was not accessible.

Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Radioisotopes other than those reported were not detected.

Table 15. WI DHS analysis results for soil samples collected for the Point Beach – Kewaunee environmental monitoring Program, continued.

Measurements in units of pCi/kilogram (dry)

Site:	**PBK-1**	**PBK-2**	**PBK-3**	**PBK-4**	**PBK-5**
Collection date:	08/27/12	08/28/12	08/27/12	08/28/12	08/28/12
gross alpha	< 7900	9400 +- 5000	< 9200	< 7100	< 7800
gross beta	15700 +- 1900	19000 +- 1900	22400 +- 2200	18800 +- 2000	18900 +- 2000
gamma isotopic					
K-40	14200 +- 2300	19700 +- 3100	22900 +- 3700	16200 +- 2600	16600 +- 2700
Mn-54	< 19	< 22	< 25	< 19	< 26
Co-58	< 20	< 18	< 21	< 18	< 23
Fe-59	< 48	< 46	< 60	< 46	< 61
Co-60	< 24	< 21	< 28	< 20	< 26
Zn-65	< 41	< 54	< 62	< 50	< 58
Nb-95	< 19	< 18	< 27	< 17	< 25
Zr-95	< 35	< 32	< 41	< 31	< 56
Cs-134	< 19	< 16	< 22	< 16	< 21
Cs-137	180 +- 30	210 +- 40	100 +- 30	130 +- 30	150 +- 30

Site:	**PBK-7**	**PBK-8**	**PBK-14**	**PBK-17**	**PBK-25**
Collection date:	08/27/12	08/28/12	08/27/12	08/28/12	NS
gross alpha	< 5700	7200 +- 4900	< 7700	< 6400	
gross beta	17800 +- 1900	16900 +- 1800	18500 +- 2000	13800 +- 1900	
gamma isotopic					
K-40	18300 +- 3000	17600 +- 2900	18600 +- 3000	13000 +- 2200	
Mn-54	< 27	< 28	< 25	< 23	
Co-58	< 27	< 28	< 22	< 19	
Fe-59	< 66	< 70	< 61	< 44	
Co-60	< 32	< 32	< 27	< 28	
Zn-65	< 65	< 67	< 48	< 52	
Nb-95	< 27	< 30	< 25	< 27	
Zr-95	< 45	< 55	< 42	< 47	
Cs-134	< 22	< 22	< 21	< 23	
Cs-137	130 +- 40	200 +- 40	140 +- 30	210 +- 40	

NS - No sample; the sample site was not accessible.

Naturally occurring radioisotopes such as radium-226 (^{226}Ra), bismuth-214 (^{214}Bi), lead-214 (^{214}Pb), actinium-228 (^{228}Ac), bismuth-212 (^{212}Bi), lead-212 (^{212}Pb) from the naturally occurring uranium-238 (^{238}U) and thorium-232 (^{232}Th) decay series are commonly detected but have not been quantified or reported.

Radioisotopes other than those reported were not detected.