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U.S. Nuclear Regulatory Commission
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Braidwood Station, Units 1 and 2
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Subject: 2012 Annual Radiological Environmental Operating Report

Attached is the 2012 Annual Radiological Environmental Operating Report for Braidwood Station. This report is being submitted in accordance with Technical Specification 5.6.2, "Annual Radiological Environmental Operating Report." This report contains information associated with the station's radiological environmental and meteorological monitoring programs. This information is consistent with the objectives described in the Offsite Dose Calculation Manual and 10 CFR 50, Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion 'As Low as is Reasonably Achievable' for Radioactive Material In Light-Water-Cooled Nuclear Power Reactor Effluents," Sections IV.B.2, and IV.B.3. Technical Specification 5.6.2 requires the Annual Radiological Environmental Operating Report to be submitted by May 15 of each year.

If you have any questions regarding this information, please contact Chris VanDenburgh, Regulatory Assurance Manager, at (815) 417-2800.

Respectfully,

Patrick J Boyle for

Daniel J. Enright
Site Vice President
Braidwood Station

cc: US NRC Regional Administrator, Region III
US NRC Senior Resident Inspector - Braidwood Station
NRR Project Manager - Braidwood Station
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LIRR

Docket No: 50-456
50-457

BRAIDWOOD STATION
UNITS 1 and 2

Annual Radiological
Environmental Operating Report

1 January through 31 December 2012

Prepared By

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program (REMP) conducted for Exelon's Braidwood Station covers the period January 1, 2012 through December 31, 2012. During that time period 1,602 analyses were performed on 1,368 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of Braidwood Station had no adverse radiological impact on the environment.

Surface, public, and ground/well water samples were analyzed for concentrations of tritium and gamma emitting nuclides. Surface water and public water samples were also analyzed for concentrations of gross beta. No fission or activation products were detected. Gross beta and tritium activities detected were consistent with those detected in previous years.

Fish (commercially and/or recreationally important species) and sediment samples were analyzed for concentrations of gamma emitting nuclides. No fission or activation products were detected in fish. Two sediment samples had Cs-137. The concentration was consistent with levels observed during the preoperational years. No plant produced fission or activation products were found in sediment.

Air particulate samples were analyzed for concentrations of gross beta and gamma emitting nuclides. No fission or activation products were detected.

High sensitivity I-131 analyses were performed on weekly air samples. All results were less than the minimum detectable concentration for I-131.

Cow milk samples were analyzed for concentrations of I-131 and gamma emitting nuclides. Iodine-131 was not detected in any milk samples. Concentrations of naturally occurring K-40 were also detected. No fission or activation products were found and all required LLDs (Lower Limit of Detection) were met.

Food Product samples were analyzed for concentrations of gamma emitting nuclides. No plant produced fission or activation products were detected.

Environmental gamma radiation measurements were performed quarterly using Optically Stimulated Luminescence Dosimeters (OSLD). Beginning in 2012, Exelon changed the type of dosimetry used for the Radiological Environmental Monitoring Program (REMP). Optically Stimulated Luminescent Dosimetry were deployed and Thermo-luminescent Dosimetry (TLD) were discontinued. This change may result in a step change in readings, up or down, depending on site characteristics. The relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct radiation).

II. Introduction

The Braidwood Station, consisting of two 3,587 MWt pressurized water reactors owned and operated by Exelon Corporation is located in Will County, Illinois. Unit No. 1 went critical on May 29, 1987. Unit No. 2 went critical on March 08, 1988. The site is located in northeastern Illinois, 15 miles south-southwest of Joliet, Illinois, 60 miles southwest of Chicago and southwest of the Kankakee River.

This report covers those analyses performed by Teledyne Brown Engineering (TBE), Landauer Technologies and Environmental Inc. (Midwest Labs) on samples collected during the period January 1, 2012 through December 31, 2012.

A. Objective of the REMP

The objectives of the REMP are to:

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

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

B. Implementation of the Objectives

The implementation of the objectives is accomplished by:

1. Identifying significant exposure pathways.

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

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

III. Program Description

A. Sample Collection

Samples for the Braidwood Station REMP were collected for Exelon Nuclear by Environmental Inc. (Midwest Labs). This section describes the

general collection methods used by Environmental Inc. (Midwest Labs) to obtain environmental samples for the Braidwood Station REMP in 2012. Sample locations and descriptions can be found in Table B–1 and Figures B–1 through B–3, Appendix B. The sampling methods used by Environmental Inc. are listed in Table B-2.

Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, public water, well water, fish, and sediment. Two gallon water samples were collected weekly from six surface water locations (BD-10, BD-25 [control], BD-38, BD-40, BD-55 and BD-56), and two weekly composite samples of public drinking water at location (BD-22) and ground/well water samples collected quarterly from nine locations (BD-13, BD-34, BD-35, BD-36, BD-37, BD-50, BD-51 and BD-54). All samples were collected in new unused plastic bottles, which were rinsed with source water prior to collection. Fish samples comprising the flesh of largemouth bass, golden redhorse, channel catfish, quillback and common carp were collected semiannually at three locations, BD-25 (control), BD-28 and BD-41. Sediment samples composed of recently deposited substrate were collected at two locations semiannually, BD-10 and BD-57.

Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulate and airborne iodine. Air particulate samples were collected and analyzed weekly at eight locations (BD-02, BD-03, BD-04, BD-05, BD-06, BD-19, BD-20 and BD-21). The control location was BD-03. Airborne iodine and particulate samples were obtained at each location, using a vacuum pump with charcoal and glass fiber filters attached. The pumps were run continuously and sampled air at the rate of approximately one cubic foot per minute. The air filters and air iodine samples were replaced weekly and sent to the laboratory for analysis.

Terrestrial Environment

The terrestrial environment was evaluated by performing radiological analyses on milk and food product samples. Milk samples were collected biweekly at two locations (BD-17 and BD-18) from May through October and monthly from November through April. The control location was BD-18. All samples were collected in new unused two gallon plastic bottles from the bulk tank at each location, preserved with sodium bisulfite and shipped promptly to the laboratory. Food products were collected

annually in September at five locations (BD-Control, BD-Quad 1, BD-Quad 2, BD-Quad 3 and BD-Quad 4). The control location was BD-Control. Various types of samples were collected and placed in new unused plastic bags and sent to the laboratory for analysis.

Ambient Gamma Radiation

Beginning in 2012, Exelon changed the type of dosimetry used for the Radiological Environmental Monitoring Program (REMP). Optically Stimulated Luminescent Dosimetry were deployed and Thermoluminescent Dosimetry (TLD) were discontinued. This change may result in a step change in readings, up or down, depending on site characteristics. The relative comparison to control locations remains valid. OSLD technology is different than that used in a TLD but has the same purpose (to measure direct radiation).

Each location consisted of 2 OSLDs. The OSLDs were exchanged quarterly and sent to Landauer for analysis. The OSLDs were placed at locations on and around the Braidwood Station site as follows:

An inner ring consisting of 16 locations (BD-101, BD-102, BD-103, BD-104, BD-105, BD-106, BD-107, BD-108, BD-109, BD-110, BD-111a, BD-112, BD-113a, BD-114, BD-115 and BD-116) at or near the site boundary.

An outer ring consisting of 16 locations (BD-201, BD-202, BD-203, BD-204, BD-205, BD-206, BD-207, BD-208, BD-209, BD-210, BD-211, BD-212, BD-213, BD-214, BD-215 and BD-216) extending to approximately 5 miles from the site.

An additional (other) set consisting of seven locations (BD-02, BD-04, BD-05, BD-06, BD-19, BD-20 and BD-21).

The balance of one location (BD-03) represents the control area.

The specific OSLD locations were determined by the following criteria:

1. The presence of relatively dense population;

2. Site meteorological data taking into account distance and elevation for each of the sixteen–22 1/2 degree sectors around the site where estimated annual dose from Braidwood Station, if any, would be most significant.

B. Sample Analysis

This section describes the general analytical methodologies used by TBE and Environmental Inc. (Midwest Labs) to analyze the environmental samples for radioactivity for the Braidwood Station REMP in 2012. The analytical procedures used by the laboratories are listed in Table B-2.

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

1. Concentrations of beta emitters in public and surface water and air particulates.

2. Concentrations of gamma emitters in public, ground/well and surface water, air particulates, milk, fish, sediment and food products.

3. Concentrations of tritium in public, ground/well and surface water.

4. Concentrations of I-131 in air, milk and public water.

5. Ambient gamma radiation levels at various site environs.

C. Data Interpretation

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

1. <u>Lower Limit of Detection and Minimum Detectable Concentration</u>

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

The MDC is the smallest concentration of radioactive material in a sample that will yield a net count, above system background, that will be detected with 95% probability with only 5% probability of falsely concluding that a blank observation represents a "real" signal. The MDC an *a postori* determination.

2. Net Activity Calculation and Reporting of Results

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

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

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

For public water, sediment, air particulate, milk and vegetation 11 nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, Cs-134, Cs-137, Ba-140 and La-140 were reported.

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

D. Program Exceptions

For 2012 the Braidwood Station REMP had a sample recovery rate in excess of 98.4%. Sample anomalies and missed samples are listed in the tables below:

Table D-1 LISTING OF SAMPLE ANOMALIES

Sample Type	Location Code	Collection Date	Reason
WW	BD-34, 35, 36, 37, 50	01/12/12	Samples were not collected due to bad road/weather conditions. The samples will be collected on 01/19/12.
A/1	BD-05	01/26/12	No apparent reason for the low reading of 165.1 hours.
A/I	BD-06	01/26/12	No apparent reason for the low reading of 165.1 hours.
A/I	BD-05	02/09/12	Estimated reading of 167.0 hours; the collector replaced timer.
A/I	BD-06	04/12/12	No apparent reason for the low reading of 165.6 hours.
OSLD	BD-202-2	06/07/12	OSLD was found on the ground. The OSLD was replaced on the pole.
OSLD	BD-207-2	06/07/12	OSLD was found on the ground. The OSLD was replaced on pole.
A/I	BD-19	08/09/12	Low reading of 52.3 hours due to pump malfunction. Collector replaced pump; flowrate estimated @ 60 cfh.
A/I	BD-02, 19, 20, 21	10/11/12	Heavier than usual particulate matter on APs due to preparation for painting.

Table D-1 LISTING OF SAMPLE ANOMALIES (continued)

Sample Type	Location Code	Collection Date	Reason
DW	BD-22	03/23/12	Vendor tritium results for a weekly water sample taken at Wilmington's water plant yielded 453 pCi/L. The vendor analyzed a second sample and got consistent results. This value is less than the ODCMs REMP reporting level of 2,000 pCi/L and much less than the ODCMs REMP reporting level of 20,000 pCi/l. Therefore, no immediate additional actions are required. It is not unanticipated as it is due to liquid effluents. It is less than the investigation level found in CY-AA-170-1000. This tritium level is slightly less than the anticipated value estimated during the analysis of the river diffuser and ultra low flow modification. The actual value was slightly lower than the estimated 600 pCi/l weekly monitoring period.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
AP	BD-05	01/19/12	The filter was caught in the wind, with the ground conditions unsafe to pursue the filter was deemed lost.
SW	BD-56	01/19/12	No sample, water was frozen.
OSLD	BD-101-4	03/31/12	First quarter missing in field at quarterly exchange.
OSLD	OSGSF-6	03/31/12	First Quarter missing in field at quarterly exchange.

OSLD	BD-305-2	06/27/12	Second quarter missing in field at quarterly exchange.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
OSLD	BD-106-1	06/27/12	Second quarter OSLD was lost at the Landauer facility.
OSLD	BD-214-1	09/27/12	Third quarter missing in field at quarterly exchange.

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

The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

E. Program Changes

No program changes in 2012.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken weekly and composited monthly at six locations (BD-10, BD-25, BD-38, BD-40, BD-55 and BD-56). Of these locations, only BD-10 could be affected by Braidwood Station's effluent releases as it is downstream of the NPDES permitted outfall. The following analyses were performed.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta (Table C–I.1, Appendix C). Gross beta was detected in

70 of 72 samples. The values ranged from 2.9 to 12.1 pCi/L. Concentrations detected were consistent with those detected in previous years (Figures C–1 through C-3, Appendix C).

Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C–I.2, Appendix C). Tritium activity was detected in two samples. The values ranged from 526 to 1,150 pCi/l (Figures C–4 through C-6, Appendix C).

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C–I.3, Appendix C). No nuclides were detected and all required LLDs were met.

2. Public Water

Monthly composites of weekly samples were made at one location (BD-22). This location could be affected by Braidwood Station's effluent releases. The following analyses were performed:

Gross Beta

Samples from the location were analyzed for concentrations of gross beta (Tables C–II.1, Appendix C). Gross beta was detected in 10 of 12 samples. The values ranged from 2.8 to 7.4 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C–7, Appendix C).

Tritium

Monthly composites of weekly samples from BD-22 were analyzed for tritium activity (Table C–II.2, Appendix C). Tritium was detected in 9 of 12 samples. The concentration ranged from 198 to 3,370 pCi/L. Concentrations detected were consistent with those detected in previous years (Figure C–8, Appendix C).

Iodine

Monthly composites of weekly samples from the location were analyzed for I-131 (Table C-II.3, Appendix C). Iodine was not detected in any samples and the required LLD was met.

Gamma Spectrometry

Samples from the location were analyzed for gamma emitting nuclides (Table C–II.4, Appendix C). No nuclides were detected and all required LLDs were met.

3. Ground/Well Water

Quarterly samples were collected at eight locations (BD-13, BD-34, BD-35, BD-36, BD-37, BD-50, BD-51and BD-54). The following analyses were performed:

Tritium

Quarterly grab samples from the locations were analyzed for tritium activity (Table C–III.1, Appendix C). Tritium was not detected in any sample and the required LLD was met. (Figures C–9 through C–13, Appendix C).

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C–III.2, Appendix C). No nuclides were detected and all required LLDs were met.

4. Fish

Fish samples comprised of largemouth bass, golden redhorse, quillback and common carp were collected at three locations (BD-25, BD-28, and BD-41) semiannually. Location BD-28 could be affected by Braidwood Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from all three locations was analyzed for gamma emitting nuclides (Table C–IV.1, Appendix C). No fission or activation products were found. No nuclides were detected and all required LLDs were met.

5. Sediment

Aquatic sediment samples were collected at two locations (BD-10 and BD-57) semiannually. The locations at the Braidwood Station

outfall to the Kanakakee River and downstream of the outfall, could be affected by Braidwood Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

Sediment samples from the location were analyzed for gamma emitting nuclides (Table C–V.1, Appendix C). Concentrations of the fission product Cs-137 were found at locations BD-10 and BD-57. The concentration ranged from 122 to 205 pCi/kg dry. The activity detected was consistent with those detected in previous years (29 pCi/kg to 260 pCi/kg from 1995 to 2006). No other Braidwood fission or activation products were found and all required LLDs were met.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from eight locations on a weekly basis. The eight locations were separated into three groups: Near field samplers (BD-06, BD-19, BD-20 and BD-21), far field samplers within 10 km of the site (BD-02, BD-04 and BD-05) and the Control sampler between 10 and 30 km from the site (BD-03). The following analyses were performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C–VI.1 and C-VI.2, Appendix C). Detectable gross beta activity was observed at all locations. Comparison of results among the three groups aid in determining the effects, if any, resulting from the operation of Braidwood Station. The results from the near field (Group I) ranged from 6 to 48 E–3 pCi/m^3 with a mean of 21 E–3 pCi/m^3. The results from the far field (Group II) ranged from 7 to 48 E–3 pCi/m^3 with a mean of 21 E–3 pCi/m^3. The results from the Control location (Group III) ranged from 9 to 42 E–3 pCi/m^3 with a mean of 22 E–3 pCi/m^3. Comparison of the 2012 air particulate data with previous years data indicate no effects from the operation of Braidwood Station. In addition a comparison of the weekly mean values for

2012 indicate no notable differences among the three groups (Figures C–14 through C-18, Appendix C).

Gamma Spectrometry

Weekly samples were composited quarterly and analyzed for gamma emitting nuclides (Table C–VI.3, Appendix C). No nuclides were detected and all required LLDs were met.

b. Airborne Iodine

Continuous air samples were collected from eight locations (BD-02, BD-03, BD-04, BD-05, BD-06, BD-19, BD-20 and BD-21) and analyzed weekly for I-131 (Table C–VII.1, Appendix C). All results were less than the minimum detectable concentration for I-131.

C. Terrestrial Environment

1. Milk

Samples were collected from two locations (BD-17 and BD-18). Sampling frequencies were increased to biweekly in May and continued through October and monthly sampling was performed November through April. The following analyses were performed:

Iodine-131

Milk samples from both locations were analyzed for concentrations of I-131 (Table C–VIII.1, Appendix C). Iodine-131 was not detected in any samples. All required LLDs were met.

Gamma Spectrometry

Each milk sample was analyzed for concentrations of gamma emitting nuclides (Table C–VIII.2, Appendix C). No nuclides were detected and all required LLDs were met.

2. Food Products

Food product samples were collected at five locations (BD-Control, BD-Quad 1, BD-Quad 2, BD-Quad 3 and BD-Quad

4) when available. Four locations, (located downstream, BD-Quad 1, BD-Quad 2, BD-Quad 3 and BD-Quad 4) could be affected by Braidwood Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C–IX.1, Appendix C). No nuclides were detected and all required LLDs were met.

D. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Optically Stimulated Luminescence Dosimeter (OSLD). Eighty OSLD locations were established around the site. Results of OSLD measurements are listed in Tables C–X.1 to C–X.3, Appendix C.

Most OSLD measurements were below 30 mR/quarter, with a range of 14.2 to 28.3 mR/quarter. A comparison of the Inner Ring, Outer Ring and Other data to the Control Location data, indicate that the ambient gamma radiation levels from all locations were similar.

E. Land Use Survey

A Land Use Survey conducted during August 2012 around the Braidwood Station was performed by Environmental Inc. (Midwest Labs) for Exelon Nuclear to comply with section 12.5.2 of the Braidwood Station's Offsite Dose Calculation Manual. The purpose of the survey was to document the nearest resident, milk producing animal and garden of greater than 500 ft^2 in each of the sixteen 22 ½ degree sectors around the site. For dose calculation, a garden is assumed at the nearest residence. There were no changes required to the Braidwood Station REMP, as a result of this survey. The results of this survey are summarized below.

Distance in Miles from the Braidwood Station Reactor Buildings			
Sector	Residence Miles	Livestock Miles	Milk Farm Miles
(A) N	0.5	2.6	-
(B) NNE	0.9	-	-
(C) NE	0.7	0.9	-
(D) ENE	0.8	3.3	-
(E) E	1.5	2.3	-
(F) ESE	2.2	2.3	-
(G) SE	2.7	2.7	11.2
(H) SSE	4.5	-	-
(J) S	4.2	4.8	-
(K) SSW	1.3	5.3	5.5
(L) SW	0.4	1.2	-
(M) WSW	0.5	-	-
(N) W	0.4	1.6	8.7
(P) WNW	0.4	-	-
(Q) NW	0.4	-	-
(R) NNW	0.4	-	-

F. Errata Data

The footnote for the Annual Summary (Appendix A) in the 2010 AREOR incorrectly stated "The mean and 2 standard deviation values are calculated using both the MDAs and the positive values". The annual summary displays the mean and two standard deviations based on the positive values only.

G. Summary of Results – Inter-Laboratory Comparison Program

The primary and secondary laboratories analyzed Performance Evaluation (PE) samples of air particulate, air iodine, milk, soil, vegetation and water matrices (Appendix D). The PE samples supplied by Analytics Inc., Environmental Resource Associates (ERA) and DOE's Mixed Analyte Performance Evaluation Program (MAPEP) were evaluated against the following pre-set acceptance criteria:

1. Analytics Evaluation Criteria

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

QC requirements, which are based on the DOE MAPEP criteria.

2. ERA Evaluation Criteria

   ERA's evaluation report provides an acceptance range for control and warning limits with associated flag values. ERA's acceptance limits are established per the USEPA, NELAC, State Specific PT program requirements or ERA's SOP for the Generation of Performance Acceptance Limits, as applicable. The acceptance limits are either determined by a regression equation specific to each analyte or a fixed percentage limit promulgated under the appropriate regulatory document.

3. DOE Evaluation Criteria

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

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

For the TBE laboratory, 12 out of 18 analytes met the specified acceptance criteria. Six analytes (Co-60, Gross Alpha, Gross Beta, Sr-89, Sr-90 and Zn-65) did not meet the specified acceptance criteria for the following reason:

1. Teledyne Brown Engineering's MAPEP March 2012 Co-60 in soil result of 7.61 Bq/kg was higher than the known value of 1.56 Bq/kg, resulting in a found to known ratio of 4.88 on a sensitivity evaluation. NCR 12-08 was initiated to investigate this failure. No cause could be found for the failure. TBE is monitoring the Co-60 in soil analyses on a case-to-case basis.

2. Teledyne Brown Engineering's MAPEP March 2012 Zn-65 in AP result of 4.19 Bq/sample was higher than the known value of 2.99 Bq/sample, exceeding the upper control limit of 3.89 Bq/sample. NCR 12-08 was initiated to investigate this failure. No cause could

be found for the failure and is considered an anomaly specific to the MAPEP sample. The first and second quarter 2012 Analytics AP Zn-65 analyses were acceptable.

3. Teledyne Brown Engineering's MAPEP September 2012 Sr-90 in water result of 19.6 pCi/L was higher than the known value of 12.2 pCi/L, exceeding the upper control limit of 15.9 pCi/L. NCR 12-11 was initiated to investigate this failure. An incorrect aliquot was entered into LIMS. Using the correct aliquot, the result would have fallen within the acceptance range.

4. Teledyne Brown Engineering's ERA May 2012 Gross Alpha in water result of 82.4 pCi/L was higher than the known value of 62.9 pCi/L, which exceeded the upper control limit of 78.0 pCi/L. NCR 12-05 was initiated to investigate this failure. The G-1 detector is slightly biased high for Th-230 based measurements. The G-1 detector is used only for ERA samples. The detector was recalibrated.

5. Teledyne Brown Engineering's ERA November 2012 Gross Beta in water result of 59.3 pCi/L was higher than the known value of 39.2 pCi/L, which exceeded the upper control limit of 46.7 pCi/L. NCR 12-13 was initiated to investigate this failure. The rerun result of 44.8 fell within the control limits. It appears an incorrect aliquot was entered into LIMS.

6. Teledyne Brown Engineering's ERA November 2012 Sr-89 in water result of 46.5 pCi/L was higher than the known value of 39.1 pCi/L, which exceeded the upper control limit of 46.1 pCi/L. NCR 12-13 was initiated to investigate this failure. The found to known ratio was 1.19, which TBE considers acceptable with warning.

For the EIML laboratory, 12 out of 14 analytes met the specified acceptance criteria. Two analytes (Gross Beta and Co-57) did not meet the specified acceptance criteria for the following reason:

1. Environmental Inc., Midwest Laboratory's ERA April 2012 Gross Beta in water result of 76.2 pCi/L was higher than the known value of 44.2 pCi/L, exceeding the upper control limit of 51.5 pCi/L. The rerun result of 38.3 fell within the control limits. A sample dilution problem is suspected.

2. Environmental Inc., Midwest Laboratory's MAPEP August 2012 Co-57 in vegetation result of 7.44 pCi/L was higher than the known value of 5.66 pCi/L, exceeding the upper control limit of 7.36 pCi/L.

The recount result of 6.74 fell within the control limits. The sample was recounted using a geometry more closely matched to the MAPEP sample size.

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

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APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT ANNUAL SUMMARY

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TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR BRAIDWOOD STATION, 2012

Name of Facility: BRAIDWOOD **DOCKET NUMBER: 50-456 & 50-457 2012**
Location of Facility: BRACEVILLE; IL **REPORTING PERIOD: 2012**

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GR-B	72	4	5.6 (58/60) (1.7/12.1)	8.6 (12/12) (3.0/10.8)	10.5 (12/12) (8.3/12.1)	BD-40 INDICATOR BRAIDWOOD STATION COOLING LAKE ONSITE	0
	H-3	24	200	838 (2/20) (526/1150)	<LLD	838 (2/4) (526/1150)	BD-10 INDICATOR KANKAKEE RIVER DOWNSTREAM 5.4 MILES NE OF SITE	0
	GAMMA	72						
	MN-54		15	<LLD	<LLD	-		0
	CO-58		15	<LLD	<LLD	-		0
	FE-59		30	<LLD	<LLD	-		0
	CO-60		15	<LLD	<LLD	-		0
	ZN-65		30	<LLD	<LLD	-		0
	NB-95		15	<LLD	<LLD	-		0

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FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95		30	<LLD	<LLD	-		0
	I-131		15	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0
	LA-140		15	<LLD	<LLD	-		0
PUBLIC WATER (PCI/LITER)	GR-B	12	4	4.2 (10/12) (2.8/7.4)	NA	4.2 (10/12) (2.8/7.4)	BD-22 INDICATOR WILMINGTON 6.0 MILES NE OF SITE	0
	H-3	12	200	995 (9/12) (198/3370)	NA	995 (9/12) (198/3370)	BD-22 INDICATOR WILMINGTON 6.0 MILES NE OF SITE	0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR *LOCATIONS* MEAN (M) (F) RANGE	CONTROL *LOCATION* MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
PUBLIC WATER (PCI/LITER)	I-131	12	1	<LLD	NA	-		0
	GAMMA	12						
	MN-54		15	<LLD	NA	-		0
	CO-58		15	<LLD	NA	-		0
	FE-59		30	<LLD	NA	-		0
	CO-60		15	<LLD	NA	-		0
	ZN-65		30	<LLD	NA	-		0
	NB-95		15	<LLD	NA	-		0
	ZR-95		30	<LLD	NA	-		0

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PUBLIC WATER (PCI/LITER)	CS-134		15	<LLD	NA	-		0
	CS-137		18	<LLD	NA	-		0
	BA-140		60	<LLD	NA	-		0
	LA-140		15	<LLD	NA	-		0
GROUND WATER (PCI/LITER)	H-3	32	200	<LLD	NA	-		0
	GAMMA	32						
	MN-54		15	<LLD	NA	-		0
	CO-58		15	<LLD	NA	-		0
	FE-59		30	<LLD	NA	-		0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CO-60		15	<LLD	NA	-		0
	ZN-65		30	<LLD	NA	-		0
	NB-95		15	<LLD	NA	-		0
	ZR-95		30	<LLD	NA	-		0
	I-131		15	<LLD	NA	-		0
	CS-134		15	<LLD	NA	-		0
	CS-137		18	<LLD	NA	-		0
	BA-140		60	<LLD	NA	-		0

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GROUND WATER (PCI/LITER)	LA-140		15	<LLD	NA	-		0
FISH (PCI/KG WET)	GAMMA	12						
	MN-54		130	<LLD	<LLD	-		0
	CO-58		130	<LLD	<LLD	-		0
	FE-59		260	<LLD	<LLD	-		0
	CO-60		130	<LLD	<LLD	-		0
	ZN-65		260	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0

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FISH (PCI/KG WET)	I-131		NA	<LLD	<LLD	-		0
	CS-134		130	<LLD	<LLD	-		0
	CS-137		150	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
SEDIMENT (PCI/KG DRY)	GAMMA	4						
	MN-54		NA	<LLD	NA	-		0
	CO-58		NA	<LLD	NA	-		0
	FE-59		NA	<LLD	NA	-		0

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SEDIMENT (PCI/KG DRY)	CO-60		NA	<LLD	NA	-		0
	ZN-65		NA	<LLD	NA	-		0
	NB-95		NA	<LLD	NA	-		0
	ZR-95		NA	<LLD	NA	-		0
	CS-134		150	<LLD	NA	-		0
	CS-137		180	163 (2/4) (122/205)	NA	205 (1/2)	BD-10 INDICATOR KANKAKEE RIVER DOWNSTREAM 5.4 MILES NE OF SITE	0
	BA-140		NA	<LLD	NA	-		0
	LA-140		NA	<LLD	NA	-		0

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AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	423	10	21 (370/370) (6/48)	21 (53/53) (9/42)	22 (52/52) (10/45)	BD-05 INDICATOR GARDNER 5.5 MILES SW OF SITE	0
	GAMMA	32						
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0

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AIR PARTICULATE (E-3 PCI/CU.METER)	CS-134		50	<LLD	<LLD	-		0
	CS-137		60	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	424	70	<LLD	<LLD	-		0
MILK (PCI/LITER)	I-131	38	1	<LLD	<LLD	-		0
	GAMMA MN-54	38	NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0

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MILK (PCI/LITER)	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0
	CS-134		15	<LLD	<LLD	-		0
	CS-137		18	<LLD	<LLD	-		0
	BA-140		60	<LLD	<LLD	-		0

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MILK (PCI/LITER)	LA-140		15	<LLD	<LLD	-		0
VEGETATION (PCI/KG WET)	GAMMA	10						
	MN-54		NA	<LLD	<LLD	-		0
	CO-58		NA	<LLD	<LLD	-		0
	FE-59		NA	<LLD	<LLD	-		0
	CO-60		NA	<LLD	<LLD	-		0
	ZN-65		NA	<LLD	<LLD	-		0
	NB-95		NA	<LLD	<LLD	-		0
	ZR-95		NA	<LLD	<LLD	-		0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (M) (F) RANGE	CONTROL LOCATION MEAN (M) (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN (M) MEAN (M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	CS-134		60	<LLD	<LLD	-		0
	CS-137		80	<LLD	<LLD	-		0
	BA-140		NA	<LLD	<LLD	-		0
	LA-140		NA	<LLD	<LLD	-		0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	OSLD-QUARTERLY	341	NA	19.6 (333/333) (14.2/27.4)	20.3 (8/8) (18.2/22.0)	25.2 (4/4) (23.5/26.5)	BD-105-4 INDICATOR 0.20 MILES SE	0

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

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APPENDIX B

LOCATION DESIGNATION, DISTANCE & DIRECTION, AND SAMPLE COLLECTION & ANALYTICAL METHODS

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TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Braidwood Station, 2012

Location	Location Description	Distance & Direction From Site
A. Surface Water		
BD-10	Kankakee River Downstream (indicator)	5.4 miles NE
BD-25	Kankakee River Upstream (control)	9.6 miles E
BD-38	Main Drainage Ditch (indicator)	1.5 miles SE
BD-40	Braidwood Station Cooling Lake (indicator)	Onsite
BD-55	North Pond Fatlan Site (Indicator)	0.6 miles NE
BD-56	South Pond Fatlan Site (indictor)	0.6 miles NE
B. Drinking (Potable) Water		
BD-22	Wilmington (indicator)	6.0 miles NE
C. Ground/Well Water		
BD-13	Braidwood City Hall Well (indicator)	1.7 miles NNE
BD-34	Gibson Well (indicator)	4.7 miles E
BD-35	Joly Well (indicator)	4.7 miles E
BD-36	Hutton Well (indicator)	4.7 miles E
BD-37	Nurczyk Well (indicator)	4.7 miles E
BD-50	Skole Well (indicator)	4.7 miles E
BD-51	Fatlan Well (indicator)	0.6 miles NE
BD-54	Cash Well (indicator)	0.9 miles NE
D. Milk - bi-weekly / monthly		
BD-17	Halpin's Dairy (indicator)	5.5 miles SSW
BD-18	Biros' Farm (control)	8.7 miles W
E. Air Particulates / Air Iodine		
BD-02	Custer Park (indicator)	5.0 miles E
BD-03	County Line Road (control)	6.2 miles ESE
BD-04	Essex (indicator)	4.8 miles SSE
BD-05	Gardner (indicator)	5.5 miles SW
BD-06	Godley (indicator)	0.5 miles WSW
BD-19	Nearsite NW (indicator)	0.3 miles NW
BD-20	Nearsite N (indicator)	0.6 miles N
BD-21	Nearsite NE (indicator)	0.5 miles NE
F. Fish		
BD-25	Kankakee River, Upstream (control)	9.6 miles E
BD-28	Kankakee River, Discharge (indicator)	5.4 miles E
BD-41	Cooling Lake (indicator)	1.0 mile E
G. Sediment		
BD-10	Kankakee River, Downstream (indicator)	5.4 miles NE
BD-57	Circulating Water Blowdown Discharge (indicator)	5.4 miles E

H. Food Products

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Braidwood Station, 2012

Location	Location Description	Distance & Direction From Site
Quadrant 1	Clark Farm	3.8 miles ENE
Quadrant 2	W.F. Soltwisch	4.5 miles SSE
Quadrant 3	Terri Schultz	4.8 miles SSW
Quadrant 4	Bruce Sinkular	1.9 miles NNW
Control	Gorman Farm	9.0 miles NE
I. Environmental Dosimetry - OSLD		
Site Boundary		
BD-101-3 and -4		0.5 miles N
BD-102-1 and -2		1.1 miles NNE
BD-103-1 and -2		1.0 mile NE
BD-104-1 and -2		0.7 miles ENE
BD-105-1 and -2		2.2 miles E
BD-106-1 and -2		2.5 miles ESE
BD-107-1 and -2		3.2 miles SE
BD-108-1 and -2		3.2 miles SSE
BD-109-1 and -2		3.8 miles S
BD-110-1 and -2		2.8 miles SSW
BD-111a-1 and -2		1.4 miles SW
BD-112-1 and -2		0.7 miles WSW
BD-113a-1 and -2		0.5 miles W
BD-114-1 and -2		0.4 miles WNW
BD-115-1 and -2		0.3 miles NW
BD-116-1		0.4 miles NNW
BD-116-2		0.5 miles NNW
Intermediate Distance		
BD-201-1 and -2		4.2 miles N
BD-202-1 and -2		4.8 miles NNE
BD-203-1 and -2		4.9 miles NE
BD-204-1 and -2		4.3 miles ENE
BD-205-1 and -2		4.0 miles E
BD-206-1 and -2		4.5 miles ESE
BD-207-1 and -2		4.5 miles SE
BD-208-1 and -2		4.5 miles SSE
BD-209-1 and -2		4.8 miles S
BD-210-1 and -2		5.3 miles SSW
BD-211-1 and -2		4.8 miles SW
BD-212-3 and -4		5.0 miles WSW
BD-213-3 and -4		4.8 miles W
BD-214-1 and -2		4.3 miles WNW
BD-215-1 and -2		4.5 miles NW
BD-216-1 and -2		4.0 miles NNW
Other		
BD-02-1 and -2	Custer Park (indicator)	5.0 miles E
BD-04-1 and -2	Essex (indicator)	4.8 miles SSE
BD-05-1 and -2	Gardner (indicator)	5.5 miles SW
BD-06-1 and -2	Godley (indicator)	0.5 miles WSW
BD-19-1 and -2	Nearsite NW (indicator)	0.3 miles NW
BD-20-1 and -2	Nearsite N (indicator)	0.6 miles N
BD-21-1 and -2	Nearsite NE (indicator)	0.5 miles NE

I. Environmental Dosimetry – OSLD (cont'd)

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Braidwood Station, 2012

Location	Location Description	Distance & Direction From Site
Control		
BD-03-1 and -2	13000 W. Road	6.2 miles ESE

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Braidwood Station, 2012

Sample Medium	Analysis	Sampling Method	Analytical Procedure Number
Surface Water	Gamma Spectroscopy	Monthly composite from weekly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Surface Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or Gross Beta activity in various matrices
Surface Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Drinking Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or Gross Beta activity in various matrices
Drinking Water	Gamma Spectroscopy	Monthly composite from weekly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Drinking Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Drinking Water	Iodine	Weekly grab and monthly composite from weekly grab	TBE, TBE-2031 Radioactive Iodine in drinking water
Ground/Well Water	Gamma Spectroscopy	Quarterly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
Ground/Well Water	Tritium	Quarterly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation
Fish	Gamma Spectroscopy	Samples collected twice annually via electro-shocking or other techniques	TBE-2007 Gamma emitting radioisotope analysis

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Braidwood Station, 2012

Sample Medium	Analysis	Sampling Method	Analytical Procedure Number
Air Particulates	Gross Beta	One-week composite of continuous air sampling through glass fiber filter paper	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma emitting radioisotope analysis
Air Iodine	Gamma Spectroscopy	Weekly composite of continuous air sampling through charcoal filter	TBE, TBE-2007 Gamma emitting radioisotope analysis
Milk	I-131	Bi-weekly grab sample May through October. Monthly all other times	TBE, TBE-2012 Radioiodine in various matrices
Milk	Gamma Spectroscopy	Bi-weekly grab sample May through October. Monthly all other times	TBE, TBE-2007 Gamma emitting radioisotope analysis
Food Products	Gamma Spectroscopy	Annual grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis
OSLD	Optically Stimulated Luminescence Dosimetry	Quarterly OSLDs comprised of two Al_2O_3:C Landauer Incorporated elements.	Landauer Incorporated

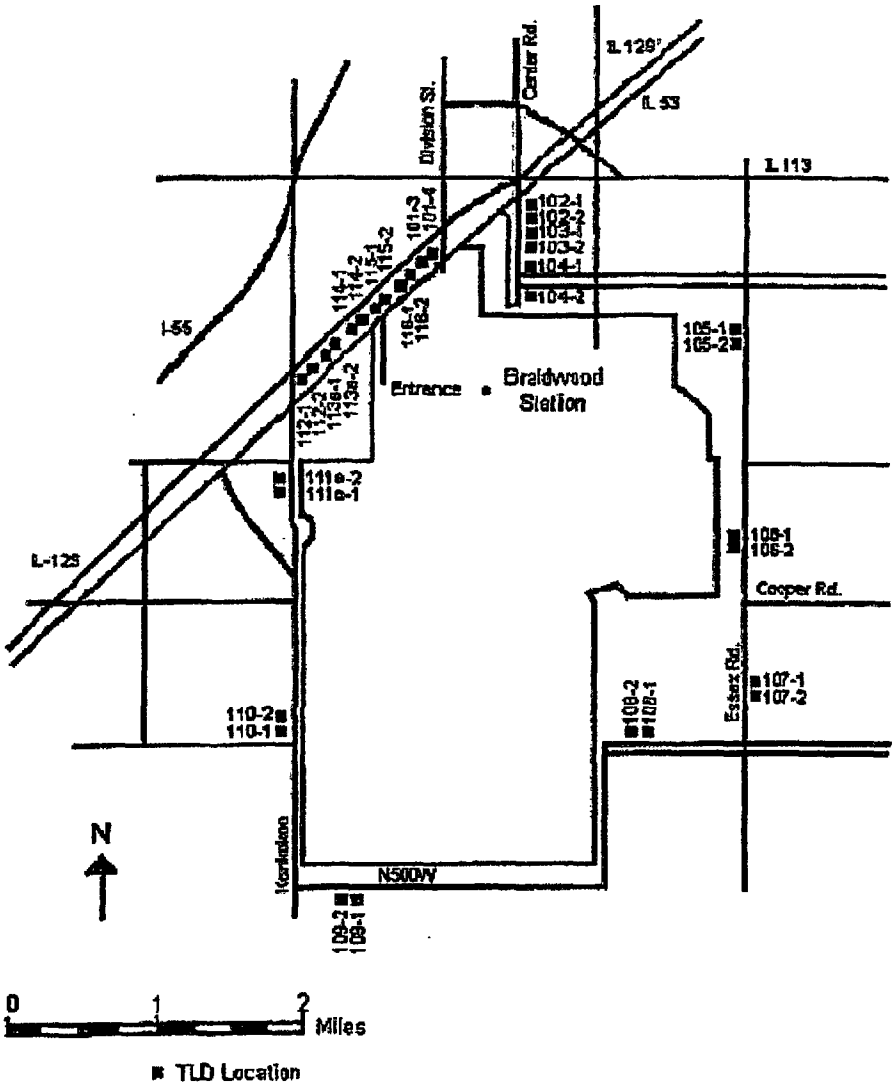

Figure B-1
Inner Ring OSLD Locations of the
Braidwood Station, 2012

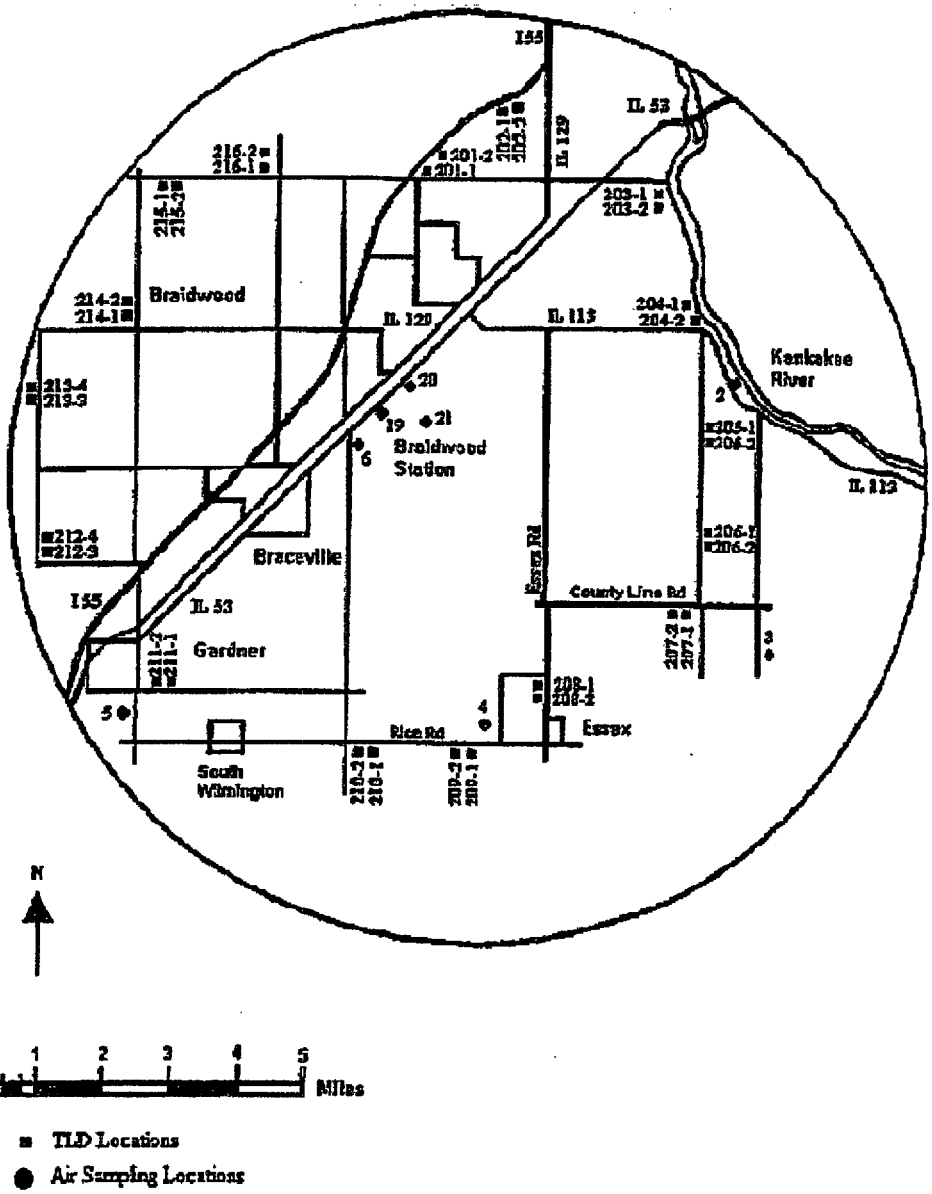

Figure B-2
Fixed Air Sampling and Outer Ring OSLD Locations
of the Braidwood Station, 2012

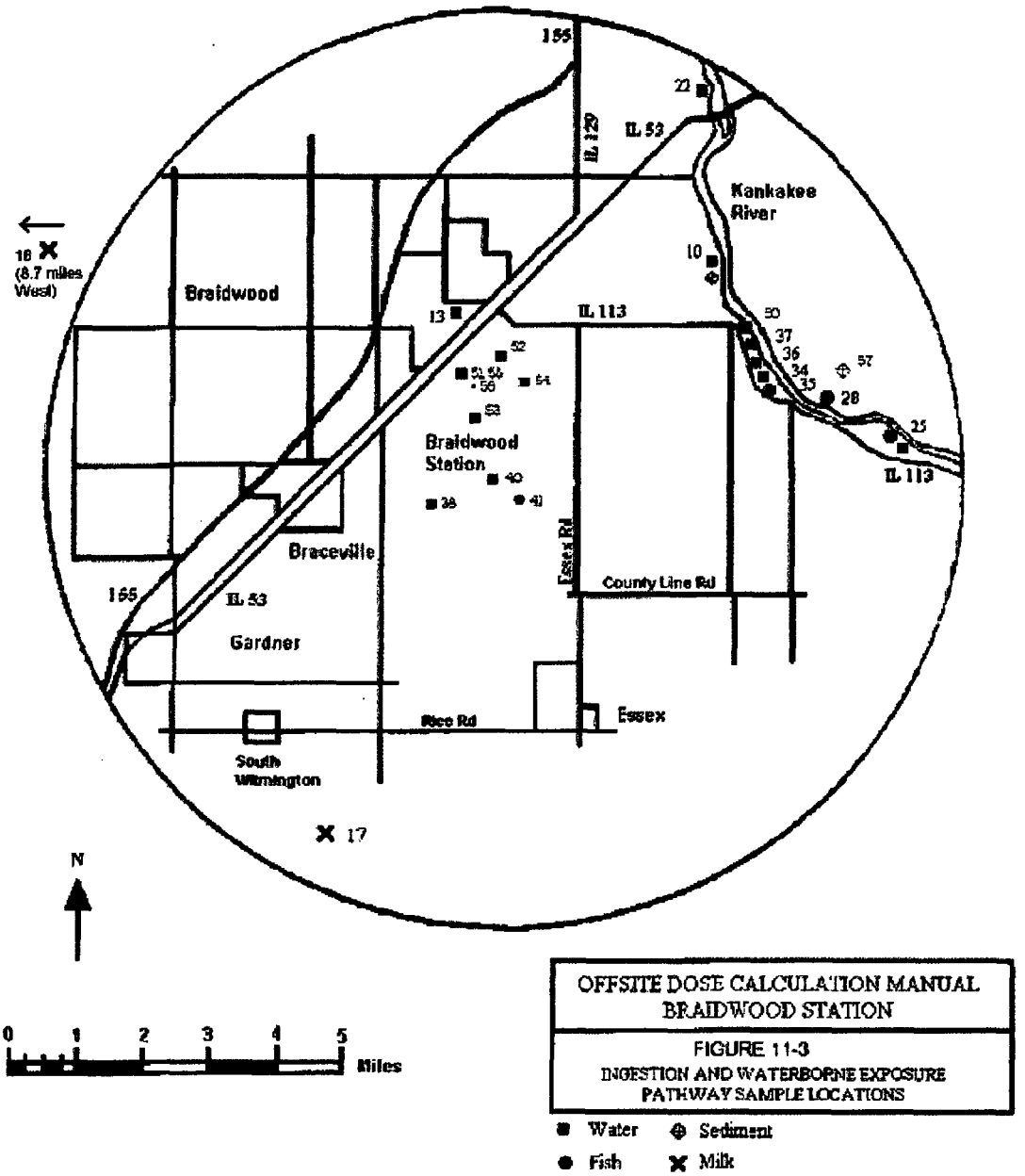

Figure B-3
Ingestion and Waterborne Exposure Pathway Sample Locations
of the Braidwood Station, 2012

APPENDIX C

DATA TABLES AND FIGURES
PRIMARY LABORATORY

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TABLE C-I.1 **CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-10	BD-25	BD-38	BD-40	BD-55	BD-56
01/05/12 - 01/26/12	2.9 ± 1.8	10.5 ± 2.4	5.3 ± 2.3	10.6 ± 2.4	2.9 ± 1.6	3.7 ± 1.8
02/02/12 - 02/23/12	3.1 ± 1.3	3.0 ± 1.6	4.4 ± 1.7	9.9 ± 1.9	3.1 ± 1.1	3.6 ± 1.3
03/01/12 - 03/29/12	3.6 ± 1.5	9.4 ± 1.9	4.6 ± 1.7	10.2 ± 1.9	2.9 ± 1.3	4.2 ± 1.6
04/05/12 - 04/26/12	3.9 ± 1.9	9.1 ± 2.2	7.9 ± 2.3	8.3 ± 2.1	2.8 ± 1.5	< 2.9
05/03/12 - 05/31/12	4.9 ± 1.5	9.0 ± 1.7	5.4 ± 1.7	10.8 ± 1.9	3.1 ± 1.2	3.4 ± 1.4
06/07/12 - 06/26/12	4.4 ± 1.4	9.8 ± 1.7	4.6 ± 1.7	9.7 ± 1.8	2.7 ± 1.2	4.7 ± 1.4
07/05/12 - 07/26/12	3.9 ± 1.3	8.4 ± 1.6	7.0 ± 2.0	9.8 ± 1.9	2.8 ± 1.1	4.3 ± 1.4
08/02/12 - 08/30/12	4.9 ± 1.4	8.8 ± 1.6	6.1 ± 1.8	12.1 ± 2.0	3.1 ± 1.2	3.3 ± 1.3
09/06/12 - 09/27/12	3.4 ± 1.5	10.3 ± 2.0	6.7 ± 2.3	10.9 ± 2.2	3.4 ± 1.5	< 2.4
10/04/12 - 10/25/12	5.2 ± 1.5	7.9 ± 1.7	6.3 ± 1.9	11.1 ± 2.0	2.8 ± 1.2	4.2 ± 1.4
11/01/12 - 11/29/12	4.0 ± 1.4	10.8 ± 1.8	7.1 ± 1.8	11.1 ± 2.0	1.7 ± 1.0	4.2 ± 1.4
12/06/12 - 12/27/12	6.3 ± 1.9	6.6 ± 1.9	7.7 ± 2.2	11.1 ± 2.3	2.6 ± 1.5	6.4 ± 1.9
MEAN*	4.2 ± 2.0	8.6 ± 4.2	6.1 ± 2.5	10.5 ± 1.9	2.8 ± 0.8	4.2 ± 1.8

TABLE C-I.2 **CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-10	BD-25	BD-38	BD-40	BD-55	BD-56
01/05/12 - 03/29/12	< 167	< 168	< 167	< 172	< 175	< 165
04/05/12 - 06/26/12	< 147	< 147	< 180	< 183	< 177	< 146
07/05/12 - 09/27/12	1150 ± 167	< 160	< 162	< 162	< 177	< 173
10/04/12 - 12/27/12	526 ± 153	< 181	< 186	< 170	< 183	< 188
MEAN*	838 ± 684	-	-	-	-	-

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

TABLE C-I.3

CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-10	01/05/12 - 01/26/12	< 2	< 2	< 6	< 3	< 4	< 3	< 5	< 13	< 2	< 2	< 22	< 9
	02/02/12 - 02/23/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 15	< 1	< 1	< 21	< 7
	03/01/12 - 03/29/12	< 1	< 1	< 3	< 1	< 2	< 2	< 3	< 7	< 1	< 1	< 13	< 4
	04/05/12 - 04/26/12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 3	< 1	< 1	< 8	< 3
	05/03/12 - 05/31/12	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 7	< 1	< 1	< 13	< 4
	06/07/12 - 06/26/12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 8	< 1	< 1	< 12	< 4
	07/05/12 - 07/26/12	< 3	< 3	< 8	< 4	< 8	< 4	< 7	< 10	< 4	< 3	< 22	< 8
	08/02/12 - 08/30/12	< 2	< 2	< 5	< 2	< 4	< 2	< 3	< 14	< 2	< 2	< 22	< 8
	09/06/12 - 09/27/12	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 8	< 1	< 2	< 14	< 5
	10/04/12 - 10/25/12	< 1	< 1	< 2	< 1	< 1	< 1	< 1	< 9	< 1	< 1	< 11	< 3
	11/01/12 - 11/29/12	< 4	< 5	< 9	< 5	< 10	< 5	< 8	< 11	< 5	< 5	< 30	< 12
	12/06/12 - 12/29/12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 7	< 1	< 1	< 12	< 3
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-25	01/05/12 - 01/26/12	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 13	< 2	< 2	< 24	< 8
	02/02/12 - 02/23/12	< 1	< 1	< 3	< 1	< 2	< 1	< 3	< 13	< 1	< 1	< 18	< 5
	03/01/12 - 03/29/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 17	< 6
	04/05/12 - 04/26/12	< 3	< 3	< 6	< 3	< 6	< 3	< 5	< 7	< 3	< 3	< 16	< 5
	05/03/12 - 05/31/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 18	< 6
	06/07/12 - 06/26/12	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 21	< 6
	07/05/12 - 07/26/12	< 4	< 4	< 11	< 5	< 11	< 5	< 9	< 12	< 4	< 5	< 28	< 9
	08/02/12 - 08/30/12	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 13	< 1	< 2	< 20	< 6
	09/06/12 - 09/27/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	10/04/12 - 10/25/12	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 12	< 1	< 1	< 15	< 4
	11/01/12 - 11/29/12	< 5	< 5	< 8	< 6	< 10	< 5	< 10	< 13	< 4	< 5	< 29	< 10
	12/06/12 - 12/29/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 7	< 1	< 2	< 13	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-38	1/5/2012 - 01/26/12	< 3	< 3	< 8	< 3	< 6	< 4	< 5	< 14	< 3	< 3	< 27	< 9
	2/2/2012 - 02/23/12	< 1	< 2	< 4	< 2	< 3	< 1	< 3	< 15	< 1	< 1	< 21	< 6
	3/1/2012 - 03/29/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 6
	04/05/12 - 04/26/12	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 8	< 3	< 3	< 19	< 6
	05/03/12 - 05/31/12	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 13	< 2	< 3	< 24	< 8
	06/07/12 - 06/26/12	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 20	< 6
	07/05/12 - 07/26/12	< 5	< 5	< 11	< 5	< 9	< 4	< 9	< 13	< 4	< 4	< 30	< 10
	08/02/12 - 08/30/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 10	< 1	< 1	< 16	< 5
	09/06/12 - 09/27/12	< 2	< 2	< 6	< 2	< 5	< 3	< 4	< 12	< 2	< 2	< 22	< 7
	10/04/12 - 10/25/12	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 12	< 1	< 1	< 14	< 4
	11/01/12 - 11/29/12	< 5	< 5	< 9	< 6	< 9	< 5	< 8	< 14	< 5	< 6	< 31	< 10
	12/06/12 - 12/27/12	< 2	< 3	< 6	< 2	< 5	< 3	< 5	< 14	< 3	< 3	< 24	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-40	1/5/2012 - 01/26/12	< 2	< 2	< 6	< 2	< 4	< 3	< 5	< 12	< 2	< 2	< 22	< 7
	2/2/2012 - 02/23/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 20	< 7
	3/1/2012 - 03/29/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 18	< 6
	04/05/12 - 04/26/12	< 3	< 3	< 5	< 3	< 5	< 3	< 5	< 7	< 3	< 3	< 16	< 5
	05/03/12 - 05/31/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	06/07/12 - 06/26/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 22	< 8
	07/05/12 - 07/26/12	< 5	< 5	< 11	< 6	< 12	< 6	< 9	< 14	< 4	< 5	< 30	< 11
	08/02/12 - 08/30/12	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 21	< 7
	09/06/12 - 09/27/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 6
	10/04/12 - 10/25/12	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 14	< 4
	11/01/12 - 11/29/12	< 5	< 5	< 10	< 5	< 10	< 6	< 9	< 13	< 5	< 5	< 33	< 10
	12/06/12 - 12/27/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 8	< 1	< 1	< 14	< 4
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-I.3 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-55	1/5/2012 - 01/26/12	< 2	< 3	< 5	< 2	< 4	< 3	< 5	< 15	< 2	< 2	< 24	< 7
	2/2/2012 - 02/23/12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 17	< 5
	3/1/2012 - 03/29/12	< 2	< 2	< 4	< 1	< 3	< 2	< 3	< 8	< 2	< 2	< 15	< 4
	4/5/2012 - 04/26/12	< 2	< 2	< 5	< 2	< 5	< 3	< 4	< 6	< 2	< 2	< 14	< 5
	5/3/2012 - 05/31/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 18	< 6
	06/07/12 - 06/26/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 13	< 2	< 2	< 21	< 7
	07/05/12 - 07/26/12	< 6	< 5	< 12	< 4	< 11	< 6	< 11	< 15	< 5	< 6	< 34	< 9
	08/02/12 - 08/30/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 12	< 1	< 2	< 19	< 6
	09/06/12 - 09/27/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 19	< 6
	10/04/12 - 10/25/12	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 15	< 4
	11/01/12 - 11/29/12	< 4	< 5	< 13	< 5	< 8	< 5	< 8	< 14	< 5	< 5	< 35	< 11
	12/06/12 - 12/27/12	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 2	< 2	< 17	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-56	01/05/12 - 01/26/12	< 3	< 3	< 8	< 3	< 6	< 3	< 5	< 14	< 2	< 3	< 27	< 10
	02/02/12 - 02/23/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 18	< 7
	3/1/2012 - 03/29/12	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 9	< 2	< 2	< 17	< 6
	4/5/2012 - 04/26/12	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 5	< 2	< 2	< 11	< 4
	5/3/2012 - 05/31/12	< 2	< 2	< 5	< 2	< 4	< 2	< 3	< 9	< 2	< 2	< 17	< 5
	06/07/12 - 06/26/12	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 10	< 1	< 2	< 18	< 5
	07/05/12 - 07/26/12	< 5	< 5	< 11	< 4	< 10	< 6	< 9	< 13	< 4	< 5	< 29	< 8
	08/02/12 - 08/30/12	< 1	< 2	< 4	< 1	< 3	< 2	< 3	< 13	< 1	< 1	< 20	< 6
	09/06/12 - 09/27/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 20	< 7
	10/04/12 - 10/25/12	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 15	< 4
	11/01/12 - 11/29/12	< 2	< 3	< 8	< 3	< 4	< 3	< 4	< 7	< 2	< 3	< 19	< 8
	12/06/12 - 12/27/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 10	< 2	< 2	< 17	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-II.1 **CONCENTRATIONS OF GROSS BETA IN PUBLIC WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-22
12/29/11 - 02/02/12	< 2.3
02/02/12 - 03/01/12	7.4 ± 1.7
03/01/12 - 03/29/12	< 3.1
03/29/12 - 05/03/12	2.9 ± 1.1
05/03/12 - 05/31/12	3.0 ± 1.5
05/31/12 - 07/05/12	3.2 ± 1.1
07/05/12 - 08/02/12	5.4 ± 2.1
08/02/12 - 08/30/12	4.0 ± 1.1
08/30/12 - 09/27/12	3.8 ± 1.3
09/27/12 - 11/01/12	5.9 ± 1.5
11/01/12 - 11/29/12	3.8 ± 1.2
11/29/12 - 01/03/13	2.8 ± 1.5
MEAN	4.2 ± 3.0

TABLE C-II.2 **CONCENTRATIONS OF TRITIUM IN PUBLIC WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-22
12/29/11 - 02/02/12	< 189
02/02/12 - 03/01/12	361 ± 131
03/01/12 - 03/29/12	606 ± 140
03/29/12 - 05/03/12	< 187
05/03/12 - 05/31/12	198 ± 116
05/31/12 - 07/05/12	< 184
07/05/12 - 08/02/12	451 ± 154
08/02/12 - 08/30/12	420 ± 147
08/30/12 - 09/27/12	1730 ± 232
09/27/12 - 11/01/12	3370 ± 387
11/01/12 - 11/29/12	1160 ± 177
11/29/12 - 01/03/13	655 ± 137
MEAN*	995 ± 2017

TABLE C-II.3 **CONCENTRATIONS OF I-131 IN PUBLIC WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-22
12/29/11 - 02/02/12	< 0.7
02/02/12 - 03/01/12	< 0.7
03/01/12 - 03/29/12	< 0.5
03/29/12 - 05/03/12	< 0.8
05/03/12 - 05/31/12	< 0.6
05/31/12 - 07/05/12	< 0.8
07/05/12 - 08/02/12	< 0.7
08/02/12 - 08/30/12	< 0.7
08/30/12 - 09/27/12	< 0.7
09/27/12 - 11/01/12	< 0.7
11/01/12 - 11/29/12	< 0.6
11/29/12 - 01/03/13	< 0.7
MEAN	-

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

TABLE C-II.4

CONCENTRATIONS OF GAMMA EMITTERS IN PUBLIC WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-22	12/29/11 - 02/02/12	< 4	< 4	< 7	< 3	< 9	< 5	< 7	< 13	< 4	< 4	< 25	< 9
	02/02/12 - 03/01/12	< 4	< 4	< 10	< 4	< 8	< 5	< 7	< 12	< 3	< 4	< 25	< 10
	03/01/12 - 03/29/12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 4	< 1	< 1	< 9	< 3
	03/29/12 - 05/03/12	< 2	< 2	< 4	< 2	< 4	< 2	< 3	< 6	< 2	< 2	< 14	< 4
	05/03/12 - 05/31/12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 14	< 4
	05/31/12 - 07/05/12	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 11	< 2	< 2	< 20	< 7
	07/05/12 - 08/02/12	< 2	< 2	< 5	< 2	< 4	< 2	< 3	< 5	< 2	< 2	< 12	< 4
	08/02/12 - 08/30/12	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 15	< 1	< 2	< 23	< 9
	08/30/12 - 09/27/12	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 18	< 6
	09/27/12 - 11/01/12	< 3	< 3	< 8	< 3	< 6	< 4	< 7	< 1	< 3	< 3	< 42	< 13
	11/01/12 - 11/29/12	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 1	< 2	< 16	< 5
	11/29/12 - 01/03/13	< 2	< 2	< 4	< 2	< 3	< 2	< 3	< 9	< 2	< 2	< 16	< 5
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.1 **CONCENTRATIONS OF TRITIUM IN GROUND/WELL WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	BD-13	BD-34	BD-35	BD-36	BD-37	BD-50	BD-51	BD-54
01/19/12 - 01/19/12	< 182	< 170	< 170	< 170	< 168	< 169	< 179	< 172
04/12/12 - 04/12/12	< 171	< 170	< 169	< 183	< 197	< 195	< 197	< 197
07/12/12 - 07/12/12	< 160	< 160	< 160	< 172	< 160	< 160	< 160	< 160
10/11/12 - 10/11/12	< 159	< 158	< 159	< 177	< 159	< 162	< 175	< 159
MEAN	-	-	-	-	-	-	-	-

TABLE C-III.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUND/WELL WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-13	01/13/12 - 01/13/12	< 4	< 5	< 9	< 4	< 11	< 5	< 9	< 11	< 5	< 4	< 28	< 10
	04/12/12 - 04/12/12	< 4	< 5	< 12	< 5	< 11	< 5	< 9	< 12	< 5	< 5	< 26	< 10
	07/12/12 - 07/12/12	< 4	< 4	< 9	< 4	< 9	< 4	< 8	< 10	< 4	< 4	< 22	< 8
	10/11/12 - 10/11/12	< 3	< 4	< 9	< 4	< 7	< 4	< 6	< 10	< 3	< 3	< 21	< 6
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-34	01/19/12 - 01/19/12	< 4	< 5	< 10	< 5	< 10	< 5	< 7	< 12	< 5	< 5	< 31	< 10
	04/12/12 - 04/12/12	< 5	< 5	< 10	< 5	< 9	< 5	< 9	< 12	< 4	< 5	< 27	< 8
	07/12/12 - 07/12/12	< 5	< 4	< 9	< 4	< 9	< 5	< 8	< 11	< 4	< 5	< 25	< 9
	10/11/12 - 10/11/12	< 5	< 5	< 11	< 5	< 9	< 6	< 10	< 14	< 4	< 4	< 36	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-35	01/19/12 - 01/19/12	< 4	< 5	< 11	< 5	< 10	< 6	< 9	< 12	< 4	< 5	< 33	< 8
	04/12/12 - 04/12/12	< 4	< 4	< 11	< 4	< 11	< 5	< 9	< 11	< 5	< 5	< 26	< 13
	07/12/12 - 07/12/12	< 4	< 5	< 9	< 4	< 9	< 5	< 8	< 9	< 4	< 5	< 23	< 9
	10/11/12 - 10/11/12	< 4	< 4	< 11	< 4	< 11	< 6	< 10	< 13	< 5	< 5	< 30	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-36	01/19/12 - 01/19/12	< 4	< 5	< 11	< 5	< 11	< 6	< 9	< 12	< 5	< 5	< 28	< 13
	04/12/12 - 04/12/12	< 5	< 5	< 8	< 6	< 10	< 5	< 9	< 12	< 4	< 5	< 31	< 11
	07/12/12 - 07/12/12	< 4	< 4	< 9	< 4	< 8	< 4	< 7	< 12	< 4	< 5	< 29	< 8
	10/11/12 - 10/11/12	< 4	< 4	< 10	< 5	< 9	< 5	< 9	< 12	< 4	< 5	< 29	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-37	01/19/12 - 01/19/12	< 4	< 4	< 7	< 4	< 8	< 5	< 7	< 12	< 4	< 4	< 27	< 6
	04/12/12 - 04/12/12	< 5	< 7	< 14	< 5	< 13	< 7	< 9	< 15	< 5	< 6	< 35	< 13
	07/12/12 - 07/12/12	< 4	< 4	< 7	< 4	< 6	< 5	< 6	< 8	< 3	< 4	< 21	< 8
	10/11/12 - 10/11/12	< 4	< 5	< 9	< 4	< 9	< 5	< 7	< 12	< 4	< 4	< 26	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-III.2

CONCENTRATIONS OF GAMMA EMITTERS IN GROUND/WELL WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-50	01/19/12 - 01/19/12	< 5	< 6	< 11	< 5	< 11	< 6	< 9	< 14	< 5	< 5	< 31	< 10
	04/12/12 - 04/12/12	< 5	< 5	< 10	< 5	< 9	< 5	< 9	< 12	< 5	< 5	< 34	< 9
	07/12/12 - 07/12/12	< 4	< 4	< 10	< 5	< 8	< 5	< 7	< 11	< 4	< 4	< 24	< 10
	10/11/12 - 10/11/12	< 4	< 4	< 11	< 4	< 7	< 5	< 8	< 10	< 4	< 4	< 26	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-51	01/13/12 - 01/13/12	< 5	< 5	< 11	< 4	< 10	< 5	< 8	< 10	< 5	< 5	< 30	< 9
	04/12/12 - 04/12/12	< 5	< 5	< 11	< 5	< 10	< 5	< 9	< 11	< 4	< 5	< 30	< 7
	07/12/12 - 07/12/12	< 5	< 5	< 10	< 4	< 9	< 4	< 9	< 10	< 3	< 5	< 26	< 7
	10/11/12 - 10/11/12	< 4	< 5	< 9	< 3	< 9	< 5	< 8	< 13	< 4	< 4	< 30	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-54	01/13/12 - 01/13/12	< 4	< 4	< 8	< 5	< 9	< 5	< 5	< 11	< 4	< 4	< 25	< 12
	04/12/12 - 04/12/12	< 5	< 5	< 10	< 6	< 13	< 6	< 7	< 12	< 6	< 5	< 30	< 11
	07/12/12 - 07/12/12	< 4	< 4	< 11	< 5	< 9	< 5	< 9	< 12	< 4	< 5	< 31	< 9
	10/11/12 - 10/11/12	< 4	< 5	< 9	< 4	< 10	< 5	< 8	< 11	< 4	< 4	< 26	< 7
	MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IV.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

	SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
BD-25	Channel Catfish	05/08/12	< 36	< 36	< 72	< 35	< 69	< 39	< 64	< 121	< 33	< 33	< 252	< 70
	Golden Redhorse	05/08/12	< 14	< 18	< 52	< 16	< 50	< 19	< 35	< 81	< 19	< 20	< 162	< 33
	Channel Catfish	10/02/12	< 47	< 56	< 97	< 65	< 107	< 52	< 112	< 209	< 45	< 54	< 506	< 151
	Golden Redhorse	10/02/12	< 65	< 54	< 137	< 56	< 146	< 73	< 113	< 372	< 62	< 48	< 603	< 181
		MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-28	Largemouth Bass	05/08/12	< 48	< 49	< 111	< 37	< 95	< 52	< 92	< 196	< 51	< 52	< 400	< 96
	Quillback	05/08/12	< 49	< 57	< 115	< 60	< 113	< 57	< 103	< 200	< 47	< 48	< 421	< 107
	Common Carp	10/02/12	< 61	< 63	< 131	< 52	< 110	< 81	< 125	< 303	< 50	< 62	< 605	< 128
	Golden Redhorse	10/02/12	< 54	< 52	< 167	< 69	< 130	< 82	< 139	< 291	< 61	< 61	< 658	< 142
		MEAN	-	-	-	-	-	-	-	-	-	-	-	-
BD-41	Common Carp	05/08/12	< 66	< 67	< 137	< 53	< 130	< 82	< 130	< 285	< 60	< 67	< 518	< 156
	Largemouth Bass	05/08/12	< 43	< 44	< 98	< 38	< 82	< 53	< 77	< 162	< 43	< 45	< 357	< 128
	Common Carp	10/02/12	< 102	< 93	< 180	< 78	< 193	< 98	< 178	< 509	< 80	< 92	< 936	< 163
	Largemouth Bass	10/02/12	< 68	< 76	< 187	< 88	< 126	< 80	< 120	< 408	< 71	< 83	< 730	< 246
		MEAN	-	-	-	-	-	-	-	-	-	-	-	-

TABLE C-V.1 **CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/KG DRY ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-10	05/10/12	< 58	< 58	< 133	< 73	< 145	< 70	< 117	< 60	205 ± 79	< 413	< 104
	10/04/12	< 85	< 88	< 209	< 100	< 210	< 114	< 190	< 67	< 112	< 730	< 281
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-57	05/10/12	< 58	< 68	< 133	< 76	< 152	< 72	< 118	< 61	122 ± 63	< 409	< 115
	10/05/12	< 76	< 81	< 218	< 84	< 165	< 111	< 155	< 70	< 92	< 1239	< 380
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VI.1 **CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

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

COLLECTION	GROUP I				GROUP II			GROUP III
PERIOD	BD-06	BD-19	BD-20	BD-21	BD-02	BD-04	BD-05	BD-03
12/29/11 - 01/05/12	19 ± 4	18 ± 4	18 ± 4	16 ± 4	15 ± 4	19 ± 4	14 ± 4	19 ± 4
01/05/12 - 01/12/12	24 ± 5	19 ± 5	21 ± 5	20 ± 5	24 ± 5	21 ± 5	21 ± 5	20 ± 5
01/12/12 - 01/19/12	23 ± 5	18 ± 4	24 ± 5	23 ± 5	16 ± 4	25 ± 5		(1) 23 ± 5
01/19/12 - 01/26/12	23 ± 4	24 ± 5	24 ± 5	22 ± 4	26 ± 5	28 ± 5	29 ± 5	29 ± 5
01/26/12 - 02/02/12	18 ± 4	15 ± 4	16 ± 4	13 ± 4	18 ± 4	15 ± 4	17 ± 4	16 ± 4
02/02/12 - 02/09/12	21 ± 5	19 ± 5	19 ± 5	17 ± 5	21 ± 5	20 ± 5	17 ± 5	23 ± 5
02/09/12 - 02/16/12	17 ± 4	17 ± 4	18 ± 4	17 ± 4	14 ± 4	18 ± 4	18 ± 4	19 ± 4
02/16/12 - 02/23/12	23 ± 4	19 ± 4	20 ± 4	18 ± 4	18 ± 4	19 ± 4	21 ± 4	16 ± 4
02/23/12 - 03/01/12	21 ± 5	21 ± 5	21 ± 5	19 ± 5	18 ± 5	24 ± 5	23 ± 5	20 ± 5
03/01/12 - 03/08/12	17 ± 4	18 ± 4	18 ± 4	18 ± 4	18 ± 4	18 ± 4	22 ± 5	16 ± 4
03/08/12 - 03/15/12	20 ± 4	22 ± 5	17 ± 4	22 ± 5	18 ± 4	20 ± 5	18 ± 4	20 ± 4
03/15/12 - 03/22/12	15 ± 4	20 ± 5	17 ± 4	15 ± 4	16 ± 4	12 ± 4	15 ± 4	17 ± 4
03/22/12 - 03/29/12	12 ± 4	14 ± 4	16 ± 4	13 ± 4	11 ± 4	17 ± 4	13 ± 4	12 ± 4
03/29/12 - 04/05/12	11 ± 4	11 ± 4	10 ± 4	12 ± 4	11 ± 4	13 ± 4	10 ± 4	9 ± 4
04/05/12 - 04/12/12	12 ± 4	9 ± 4	13 ± 4	16 ± 4	14 ± 4	12 ± 4	15 ± 4	13 ± 4
04/12/12 - 04/19/12	18 ± 4	18 ± 4	18 ± 4	16 ± 4	16 ± 4	14 ± 4	20 ± 4	18 ± 4
04/19/12 - 04/26/12	18 ± 4	18 ± 4	14 ± 4	17 ± 4	15 ± 4	16 ± 4	15 ± 4	14 ± 4
04/26/12 - 05/03/12	22 ± 5	14 ± 4	17 ± 5	18 ± 5	16 ± 5	16 ± 5	14 ± 4	18 ± 5
05/03/12 - 05/10/12	11 ± 4	11 ± 4	10 ± 4	6 ± 3	10 ± 4	7 ± 3	11 ± 4	13 ± 4
05/10/12 - 05/17/12	13 ± 4	13 ± 4	14 ± 4	11 ± 4	13 ± 4	12 ± 4	18 ± 4	13 ± 4
05/17/12 - 05/24/12	17 ± 4	20 ± 4	16 ± 4	16 ± 4	19 ± 4	17 ± 4	18 ± 4	19 ± 4
05/24/12 - 05/31/12	12 ± 4	13 ± 4	17 ± 4	16 ± 4	14 ± 4	14 ± 4	17 ± 4	14 ± 4
05/31/12 - 06/07/12	11 ± 4	11 ± 4	11 ± 4	11 ± 4	8 ± 4	13 ± 4	10 ± 4	13 ± 4
06/07/12 - 06/14/12	17 ± 4	12 ± 4	13 ± 4	10 ± 4	12 ± 4	16 ± 4	15 ± 4	16 ± 4
06/14/12 - 06/21/12	19 ± 4	14 ± 4	18 ± 4	17 ± 4	17 ± 4	17 ± 4	19 ± 4	12 ± 4
06/21/12 - 06/26/12	19 ± 6	23 ± 6	15 ± 6	15 ± 6	15 ± 6	19 ± 6	18 ± 6	21 ± 6
06/26/12 - 07/05/12	28 ± 4	26 ± 4	27 ± 4	30 ± 4	25 ± 4	28 ± 4	31 ± 4	31 ± 4
07/05/12 - 07/12/12	22 ± 4	20 ± 4	23 ± 4	20 ± 4	19 ± 4	20 ± 4	20 ± 4	19 ± 4
07/12/12 - 07/19/12	27 ± 5	18 ± 4	23 ± 5	25 ± 5	21 ± 5	25 ± 5	19 ± 4	25 ± 5
07/19/12 - 07/26/12	21 ± 4	25 ± 5	22 ± 4	19 ± 4	22 ± 4	22 ± 4	27 ± 5	20 ± 4
07/26/12 - 08/02/12	21 ± 4	20 ± 4	21 ± 4	18 ± 4	17 ± 4	23 ± 5	21 ± 4	19 ± 4
08/02/12 - 08/09/12	18 ± 4	33 ± 12	23 ± 5	22 ± 4	26 ± 5	25 ± 5	24 ± 5	21 ± 4
08/09/12 - 08/16/12	18 ± 4	20 ± 5	17 ± 4	21 ± 5	23 ± 5	22 ± 5	23 ± 5	22 ± 5
08/16/12 - 08/23/12	18 ± 4	15 ± 4	18 ± 4	17 ± 4	20 ± 4	25 ± 5	21 ± 5	18 ± 4
08/23/12 - 08/30/12	26 ± 5	25 ± 5	23 ± 5	26 ± 5	32 ± 5	30 ± 5	28 ± 5	27 ± 5
08/30/12 - 09/06/12	27 ± 5	23 ± 5	20 ± 5	21 ± 5	21 ± 5	21 ± 5	25 ± 5	17 ± 5
09/06/12 - 09/13/12	25 ± 5	21 ± 4	22 ± 4	26 ± 5	26 ± 5	26 ± 5	23 ± 5	23 ± 5
09/13/12 - 09/20/12	24 ± 5	17 ± 4	21 ± 4	23 ± 5	21 ± 4	23 ± 5	25 ± 5	20 ± 4
09/20/12 - 09/27/12	23 ± 4	20 ± 4	24 ± 4	24 ± 4	21 ± 4	23 ± 4	27 ± 5	25 ± 4
09/27/12 - 10/04/12	24 ± 5	24 ± 5	26 ± 5	19 ± 4	25 ± 5	31 ± 5	28 ± 5	27 ± 5
10/04/12 - 10/11/12	13 ± 4	14 ± 4	16 ± 4	21 ± 4	14 ± 4	17 ± 4	17 ± 4	18 ± 4
10/11/12 - 10/18/12	28 ± 5	27 ± 5	24 ± 5	29 ± 5	26 ± 5	28 ± 5	26 ± 5	29 ± 5
10/18/12 - 10/25/12	21 ± 5	19 ± 5	18 ± 4	21 ± 5	22 ± 5	18 ± 5	22 ± 5	21 ± 5
10/25/12 - 11/01/12	12 ± 4	16 ± 4	14 ± 4	16 ± 4	17 ± 4	15 ± 4	13 ± 4	15 ± 4
11/01/12 - 11/08/12	14 ± 4	14 ± 4	16 ± 4	16 ± 4	19 ± 5	20 ± 5	21 ± 5	18 ± 4
11/08/12 - 11/15/12	26 ± 4	26 ± 4	22 ± 4	31 ± 5	27 ± 4	31 ± 5	30 ± 5	27 ± 4
11/15/12 - 11/21/12	43 ± 6	42 ± 6	40 ± 6	40 ± 6	44 ± 7	44 ± 7	43 ± 6	36 ± 6
11/21/12 - 11/29/12	36 ± 5	39 ± 5	36 ± 5	41 ± 6	39 ± 5	33 ± 5	39 ± 5	41 ± 6
11/29/12 - 12/06/12	30 ± 5	33 ± 5	31 ± 5	33 ± 5	31 ± 5	29 ± 5	35 ± 5	33 ± 5
12/06/12 - 12/13/12	25 ± 5	29 ± 5	25 ± 5	26 ± 5	26 ± 5	27 ± 5	28 ± 5	25 ± 5
12/13/12 - 12/20/12	48 ± 6	35 ± 6	40 ± 6	38 ± 6	36 ± 6	43 ± 6	40 ± 6	39 ± 6
12/20/12 - 12/27/12	19 ± 5	22 ± 5	17 ± 4	16 ± 4	16 ± 4	22 ± 5	24 ± 5	18 ± 5
12/27/12 - 01/03/13	47 ± 6	47 ± 6	43 ± 6	45 ± 6	48 ± 6	43 ± 6	45 ± 6	42 ± 6
MEAN	21 ± 16	21 ± 16	20 ± 14	21 ± 16	21 ± 16	22 ± 16	22 ± 16	21 ± 15

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VI.2 **MONTHLY AND YEARLY VALUES OF GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

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

GROUP I - NEAR FIELD LOCATIONS				GROUP II - FAR FIELD LOCATIONS				GROUP III - CONTROL LOCATIONS			
COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD	COLLECTION PERIOD	MIN	MAX	MEAN ± 2SD
12/29/11 - 02/02/12	13	24	20 ± 7	12/29/11 - 02/02/12	14	29	20 ± 10	12/29/11 - 02/02/12	16	29	22 ± 10
02/02/12 - 03/01/12	17	23	19 ± 4	02/02/12 - 03/01/12	14	24	19 ± 6	02/02/12 - 03/01/12	16	23	20 ± 6
03/01/12 - 03/29/12	12	22	17 ± 6	03/01/12 - 03/29/12	11	22	16 ± 7	03/01/12 - 03/29/12	12	20	16 ± 7
03/29/12 - 05/03/12	9	22	15 ± 7	03/29/12 - 05/03/12	10	20	14 ± 5	03/29/12 - 05/03/12	9	18	14 ± 7
05/03/12 - 05/31/12	6	20	14 ± 7	05/03/12 - 05/31/12	7	19	14 ± 8	05/03/12 - 05/31/12	13	19	15 ± 5
05/31/12 - 07/05/12	10	30	17 ± 12	05/31/12 - 07/05/12	8	31	17 ± 13	05/31/12 - 07/05/12	12	31	19 ± 15
07/05/12 - 08/02/12	18	27	22 ± 5	07/05/12 - 08/02/12	17	27	21 ± 6	07/05/12 - 08/02/12	19	25	21 ± 6
08/02/12 - 08/30/12	15	33	21 ± 9	08/02/12 - 08/30/12	20	32	25 ± 7	08/02/12 - 08/30/12	18	27	22 ± 8
08/30/12 - 10/04/12	17	27	23 ± 5	08/30/12 - 10/04/12	21	31	24 ± 6	08/30/12 - 10/04/12	17	27	22 ± 8
10/04/12 - 11/01/12	12	29	19 ± 11	10/04/12 - 11/01/12	13	28	20 ± 11	10/04/12 - 11/01/12	15	29	21 ± 11
11/01/12 - 11/29/12	14	43	30 ± 22	11/01/12 - 11/29/12	19	44	32 ± 19	11/01/12 - 11/29/12	18	41	30 ± 21
11/29/12 - 01/03/13	16	48	32 ± 21	11/29/12 - 01/03/13	16	48	33 ± 19	11/29/12 - 01/03/13	18	42	32 ± 20
12/29/11 - 01/03/13	6	48	21 ± 15	12/29/11 - 01/03/13	7	48	21 ± 16	12/29/11 - 01/03/13	9	42	21 ± 15

TABLE C-VI.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

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

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-02	12/29/11 - 03/29/12	< 3	< 4	< 9	< 3	< 7	< 4	< 8	< 3	< 3	< 35	< 9
	03/29/12 - 07/05/12	< 3	< 4	< 6	< 3	< 9	< 4	< 5	< 4	< 2	< 34	< 12
	07/05/12 - 10/04/12	< 2	< 3	< 7	< 2	< 7	< 3	< 4	< 2	< 2	< 72	< 46
	10/04/12 - 01/03/13	< 2	< 3	< 5	< 3	< 6	< 4	< 7	< 3	< 3	< 36	< 15
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-03	12/29/11 - 03/29/12	< 1	< 3	< 4	< 2	< 4	< 2	< 3	< 2	< 2	< 19	< 10
	03/29/12 - 07/05/12	< 3	< 3	< 5	< 3	< 7	< 2	< 6	< 3	< 3	< 34	< 12
	07/05/12 - 10/04/12	< 2	< 3	< 14	< 3	< 7	< 3	< 6	< 3	< 3	< 81	< 49
	10/04/12 - 01/03/13	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 3	< 3	< 36	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-04	12/29/11 - 03/29/12	< 3	< 4	< 8	< 3	< 8	< 4	< 6	< 3	< 4	< 26	< 9
	03/29/12 - 07/05/12	< 2	< 3	< 7	< 2	< 8	< 3	< 6	< 3	< 2	< 32	< 12
	07/05/12 - 10/04/12	< 3	< 4	< 12	< 3	< 8	< 4	< 8	< 4	< 3	< 96	< 33
	10/04/12 - 01/03/13	< 2	< 3	< 8	< 3	< 6	< 3	< 5	< 3	< 2	< 31	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-05	12/29/11 - 03/29/12	< 2	< 2	< 5	< 2	< 3	< 3	< 4	< 2	< 2	< 23	< 4
	03/29/12 - 07/05/12	< 2	< 2	< 7	< 3	< 6	< 3	< 6	< 3	< 3	< 30	< 11
	07/05/12 - 10/04/12	< 2	< 3	< 8	< 3	< 10	< 4	< 6	< 4	< 3	< 87	< 36
	10/04/12 - 01/03/13	< 2	< 3	< 5	< 3	< 7	< 3	< 6	< 3	< 3	< 29	< 10
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-06	12/29/11 - 03/29/12	< 5	< 7	< 10	< 3	< 9	< 7	< 12	< 5	< 5	< 47	< 9
	03/29/12 - 07/05/12	< 4	< 3	< 8	< 3	< 8	< 4	< 5	< 4	< 3	< 40	< 19
	07/05/12 - 10/04/12	< 3	< 4	< 10	< 3	< 7	< 4	< 7	< 3	< 2	< 87	< 32
	10/04/12 - 01/03/13	< 2	< 2	< 4	< 2	< 4	< 3	< 4	< 2	< 1	< 27	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VI.3 **CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

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

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-19	12/29/11 - 03/29/12	< 2	< 2	< 5	< 2	< 6	< 3	< 5	< 2	< 2	< 17	< 7
	03/29/12 - 07/05/12	< 2	< 2	< 6	< 2	< 5	< 2	< 4	< 2	< 2	< 24	< 10
	07/05/12 - 10/04/12	< 3	< 5	< 11	< 3	< 8	< 5	< 9	< 3	< 2	< 117	< 32
	10/04/12 - 01/03/13	< 2	< 4	< 7	< 3	< 6	< 3	< 6	< 3	< 2	< 31	< 11
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-20	12/29/11 - 03/29/12	< 3	< 3	< 6	< 3	< 8	< 3	< 5	< 3	< 3	< 20	< 10
	03/29/12 - 07/05/12	< 3	< 4	< 7	< 3	< 7	< 4	< 6	< 4	< 3	< 43	< 13
	07/05/12 - 10/04/12	< 4	< 5	< 15	< 4	< 11	< 5	< 6	< 4	< 4	< 137	< 38
	10/04/12 - 01/03/13	< 2	< 3	< 7	< 3	< 5	< 3	< 4	< 3	< 2	< 32	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-
BD-21	12/29/11 - 03/29/12	< 3	< 3	< 7	< 3	< 6	< 4	< 5	< 3	< 2	< 19	< 6
	03/29/12 - 07/05/12	< 2	< 2	< 2	< 2	< 5	< 3	< 5	< 2	< 1	< 25	< 8
	07/05/12 - 10/04/12	< 3	< 3	< 7	< 2	< 6	< 3	< 6	< 3	< 2	< 61	< 30
	10/04/12 - 01/03/13	< 2	< 3	< 7	< 2	< 6	< 2	< 5	< 3	< 2	< 28	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

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

COLLECTION	GROUP I				GROUP II			GROUP III
PERIOD	BD-06	BD-19	BD-20	BD-21	BD-02	BD-04	BD-05	BD-03
12/29/11 - 01/05/12	< 42	< 22	< 42	< 42	< 47	< 45	< 47	< 47
01/05/12 - 01/12/12	< 36	< 36	< 36	< 36	< 44	< 44	< 44	< 44
01/12/12 - 01/19/12	< 57	< 57	< 31	< 57	< 44	< 43	< 57	< 44
01/19/12 - 01/26/12	< 44	< 44	< 44	< 44	< 39	< 39	< 39	< 39
01/26/12 - 02/02/12	< 30	< 30	< 30	< 16	< 48	< 48	< 48	< 48
02/02/12 - 02/09/12	< 48	< 48	< 48	< 48	< 59	< 59	< 59	< 59
02/09/12 - 02/16/12	< 62	< 39	< 40	< 40	< 26	< 62	< 62	< 62
02/16/12 - 02/23/12	< 24	< 24	< 24	< 24	< 28	< 28	< 29	< 28
02/23/12 - 03/01/12	< 55	< 44	< 44	< 44	< 55	< 55	< 55	< 21
03/01/12 - 03/08/12	< 39	< 39	< 39	< 39	< 37	< 37	< 37	< 37
03/08/12 - 03/15/12	< 38	< 41	< 41	< 41	< 38	< 16	< 38	< 38
03/15/12 - 03/22/12	< 25	< 25	< 25	< 26	< 35	< 36	< 36	< 35
03/22/12 - 03/29/12	< 27	< 27	< 27	< 27	< 29	< 29	< 12	< 29
03/29/12 - 04/05/12	< 46	< 46	< 46	< 46	< 48	< 50	< 50	< 50
04/05/12 - 04/12/12	< 28	< 12	< 28	< 28	< 45	< 45	< 45	< 45
04/12/12 - 04/19/12	< 55	< 55	< 55	< 55	< 60	< 60	< 62	< 60
04/19/12 - 04/26/12	< 42	< 42	< 22	< 43	< 64	< 64	< 64	< 64
04/26/12 - 05/03/12	< 52	< 52	< 52	< 52	< 50	< 50	< 50	< 50
05/03/12 - 05/10/12	< 27	< 27	< 27	< 11	< 37	< 37	< 37	< 37
05/10/12 - 05/17/12	< 44	< 44	< 44	< 45	< 37	< 37	< 37	< 37
05/17/12 - 05/24/12	< 28	< 45	< 45	< 46	< 15	< 28	< 28	< 28
05/24/12 - 05/31/12	< 51	< 51	< 51	< 51	< 65	< 65	< 65	< 65
05/31/12 - 06/07/12	< 45	< 34	< 34	< 34	< 45	< 45	< 45	< 15
06/07/12 - 06/14/12	< 65	< 66	< 66	< 66	< 53	< 53	< 53	< 53
06/14/12 - 06/21/12	< 47	< 47	< 47	< 47	< 31	< 17	< 31	< 31
06/21/12 - 06/26/12	< 48	< 47	< 48	< 48	< 69	< 69	< 69	< 70
06/26/12 - 07/05/12	< 19	< 22	< 22	< 22	< 19	< 19	< 7	< 19
07/05/12 - 07/12/12	< 62	< 62	< 62	< 62	< 63	< 63	< 64	< 63
07/12/12 - 07/19/12	< 49	< 21	< 49	< 49	< 59	< 58	< 58	< 58
07/19/12 - 07/26/12	< 56	< 56	< 56	< 56	< 66	< 66	< 66	< 66
07/26/12 - 08/02/12	< 70	< 70	< 28	< 70	< 62	< 62	< 62	< 62
08/02/12 - 08/09/12	< 32	< 60	< 32	< 32	< 24	< 25	< 25	< 25
08/09/12 - 08/16/12	< 46	< 46	< 46	< 18	< 35	< 35	< 35	< 35
08/16/12 - 08/23/12	< 34	< 34	< 35	< 35	< 30	< 30	< 30	< 30
08/23/12 - 08/30/12	< 25	< 25	< 25	< 25	< 14	< 34	< 34	< 34
08/30/12 - 09/06/12	< 53	< 53	< 53	< 53	< 45	< 44	< 45	< 45
09/06/12 - 09/13/12	< 52	< 52	< 52	< 52	< 64	< 68	< 68	< 28
09/13/12 - 09/20/12	< 36	< 36	< 36	< 36	< 42	< 42	< 42	< 42
09/20/12 - 09/27/12	< 38	< 38	< 38	< 38	< 55	< 23	< 56	< 55
09/27/12 - 10/04/12	< 60	< 60	< 60	< 60	< 44	< 44	< 44	< 44
10/04/12 - 10/11/12	< 55	< 47	< 47	< 47	< 54	< 51	< 21	< 54
10/11/12 - 10/18/12	< 35	< 35	< 36	< 36	< 39	< 40	< 40	< 40
10/18/12 - 10/25/12	< 14	< 36	< 36	< 36	< 38	< 38	< 38	< 38
10/25/12 - 11/01/12	< 33	< 33	< 33	< 33	< 39	< 39	< 39	< 39
11/01/12 - 11/08/12	< 43	< 17	< 43	< 43	< 50	< 51	< 51	< 50
11/08/12 - 11/15/12	< 68	< 68	< 68	< 68	< 38	< 38	< 38	< 38
11/15/12 - 11/21/12	< 60	< 60	< 25	< 60	< 46	< 46	< 46	< 47
11/21/12 - 11/29/12	< 28	< 28	< 28	< 28	< 21	< 21	< 21	< 21
11/29/12 - 12/06/12	< 40	< 40	< 40	< 17	< 31	< 31	< 31	< 31
12/06/12 - 12/13/12	< 38	< 38	< 38	< 38	< 35	< 35	< 35	< 35
12/13/12 - 12/20/12	< 32	< 32	< 32	< 32	< 14	< 24	< 24	< 24
12/20/12 - 12/27/12	< 44	< 44	< 44	< 44	< 47	< 48	< 48	< 48
12/27/12 - 01/03/13	< 55	< 55	< 55	< 55	< 29	< 69	< 69	< 69
MEAN	-	-	-	-	-	-	-	-

TABLE C-VIII.1 **CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	CONTROL FARM BD-18	INDICATOR FARM BD-17
01/05/12	< 0.6	< 0.7
02/02/12	< 0.6	< 0.6
03/01/12	< 0.5	< 0.6
04/05/12	< 0.4	< 0.4
05/03/12	< 0.5	< 0.5
05/17/12	< 0.5	< 0.4
05/31/12	< 0.5	< 0.5
06/14/12	< 0.8	< 0.7
06/26/12	< 0.5	< 0.5
07/12/12	< 0.7	< 0.6
07/26/12	< 0.8	< 0.8
08/09/12	< 0.7	< 0.5
08/23/12	< 0.7	< 0.6
09/06/12	< 0.8	< 0.7
09/20/12	< 0.6	< 0.6
10/04/12	< 0.8	< 0.8
10/18/12	< 0.7	< 0.6
11/01/12	< 0.7	< 0.6
12/07/12	< 0.5	< 0.6
MEAN	-	-

TABLE C-VIII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-17	01/05/12	< 8	< 8	< 16	< 10	< 25	< 7	< 13	< 7	< 8	< 39	< 11
	02/02/12	< 5	< 6	< 13	< 7	< 12	< 8	< 13	< 6	< 7	< 40	< 8
	03/01/12	< 4	< 4	< 9	< 4	< 10	< 5	< 8	< 4	< 4	< 26	< 7
	04/05/12	< 5	< 6	< 14	< 7	< 13	< 7	< 9	< 5	< 6	< 29	< 11
	05/03/12	< 8	< 8	< 19	< 9	< 21	< 8	< 12	< 8	< 8	< 55	< 13
	05/17/12	< 5	< 5	< 15	< 7	< 13	< 6	< 10	< 5	< 6	< 31	< 10
	05/31/12	< 6	< 6	< 12	< 6	< 13	< 6	< 11	< 5	< 5	< 37	< 8
	06/14/12	< 4	< 5	< 11	< 5	< 11	< 5	< 9	< 4	< 4	< 29	< 7
	06/26/12	< 5	< 6	< 13	< 7	< 15	< 6	< 12	< 6	< 6	< 35	< 11
	07/12/12	< 6	< 6	< 14	< 7	< 15	< 7	< 11	< 6	< 7	< 36	< 9
	07/26/12	< 4	< 5	< 12	< 6	< 9	< 5	< 10	< 4	< 4	< 33	< 8
	08/09/12	< 4	< 5	< 11	< 7	< 12	< 6	< 9	< 5	< 5	< 23	< 6
	08/23/12	< 4	< 4	< 11	< 5	< 9	< 4	< 8	< 4	< 4	< 28	< 9
	09/06/12	< 4	< 5	< 11	< 5	< 11	< 4	< 9	< 4	< 4	< 29	< 7
	09/20/12	< 6	< 7	< 14	< 7	< 14	< 6	< 9	< 6	< 7	< 36	< 10
	10/04/12	< 6	< 9	< 17	< 10	< 16	< 9	< 12	< 6	< 6	< 42	< 14
	10/18/12	< 5	< 6	< 12	< 6	< 13	< 6	< 9	< 6	< 6	< 36	< 10
	11/01/12	< 7	< 6	< 18	< 7	< 16	< 7	< 13	< 7	< 6	< 43	< 12
	12/06/12	< 5	< 6	< 13	< 6	< 13	< 6	< 10	< 5	< 6	< 34	< 9
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-VIII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION PERIOD	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-18	01/05/12	< 9	< 9	< 23	< 12	< 20	< 11	< 16	< 9	< 9	< 43	< 13
	02/02/12	< 6	< 6	< 14	< 8	< 12	< 7	< 9	< 5	< 6	< 39	< 11
	03/01/12	< 4	< 4	< 11	< 5	< 10	< 4	< 8	< 4	< 4	< 24	< 8
	04/05/12	< 7	< 7	< 18	< 9	< 16	< 7	< 14	< 6	< 7	< 44	< 13
	05/03/12	< 9	< 7	< 13	< 5	< 17	< 9	< 15	< 7	< 8	< 52	< 12
	05/17/12	< 5	< 5	< 13	< 5	< 12	< 5	< 9	< 4	< 5	< 26	< 9
	05/31/12	< 5	< 5	< 14	< 7	< 13	< 5	< 8	< 4	< 5	< 31	< 10
	06/14/12	< 5	< 6	< 12	< 6	< 12	< 6	< 8	< 5	< 5	< 33	< 9
	06/26/12	< 6	< 7	< 17	< 8	< 15	< 7	< 12	< 6	< 6	< 31	< 10
	07/12/12	< 5	< 6	< 14	< 7	< 12	< 6	< 8	< 5	< 6	< 38	< 12
	07/26/12	< 6	< 6	< 15	< 8	< 14	< 7	< 12	< 5	< 6	< 50	< 13
	08/09/12	< 4	< 5	< 10	< 5	< 10	< 4	< 8	< 4	< 5	< 19	< 7
	08/23/12	< 5	< 5	< 14	< 7	< 12	< 7	< 11	< 4	< 6	< 38	< 12
	09/06/12	< 5	< 5	< 12	< 6	< 11	< 5	< 9	< 5	< 5	< 30	< 10
	09/20/12	< 8	< 8	< 17	< 8	< 15	< 8	< 14	< 6	< 8	< 42	< 13
	10/04/12	< 6	< 6	< 13	< 6	< 13	< 6	< 11	< 6	< 6	< 36	< 11
	10/18/12	< 6	< 5	< 13	< 7	< 13	< 6	< 10	< 5	< 6	< 37	< 11
	11/01/12	< 6	< 6	< 14	< 7	< 12	< 5	< 10	< 5	< 6	< 41	< 12
	12/07/12	< 5	< 4	< 13	< 6	< 10	< 5	< 10	< 4	< 5	< 29	< 8
	MEAN	-	-	-	-	-	-	-	-	-	-	-

TABLE C-IX.1

CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

SITE	COLLECTION PERIOD		Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	Cs-134	Cs-137	Ba-140	La-140
BD-CONTROL	09/15/12	Onions	< 12	< 12	< 31	< 12	< 30	< 15	< 24	< 11	< 13	< 68	< 26
	09/19/12	Beet greens	< 14	< 12	< 38	< 17	< 31	< 12	< 19	< 11	< 13	< 94	< 25
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 1	09/19/12	Cauliflower	< 11	< 14	< 36	< 18	< 32	< 12	< 21	< 12	< 13	< 97	< 22
	09/19/12	Potatoes	< 16	< 16	< 40	< 19	< 43	< 19	< 31	< 14	< 15	< 104	< 45
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 2	09/19/12	Cabbage	< 12	< 14	< 32	< 16	< 32	< 14	< 24	< 11	< 13	< 87	< 25
	09/19/12	Onions	< 10	< 11	< 26	< 12	< 23	< 12	< 21	< 10	< 10	< 89	< 21
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 3	09/19/12	Beets	< 11	< 11	< 34	< 18	< 31	< 14	< 25	< 12	< 12	< 84	< 22
	09/19/12	Cabbage	< 13	< 15	< 28	< 17	< 30	< 15	< 20	< 12	< 16	< 85	< 33
	MEAN		-	-	-	-	-	-	-	-	-	-	-
BD-QUAD 4	09/19/12	Kale	< 12	< 15	< 32	< 12	< 28	< 14	< 22	< 12	< 12	< 95	< 25
	09/19/12	Radishes	< 13	< 15	< 34	< 16	< 32	< 15	< 26	< 14	< 16	< 108	< 24
	MEAN		-	-	-	-	-	-	-	-	-	-	-

TABLE C-X.1 QUARTERLY OSLD RESULTS FOR BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
BD-02-1	19.7 ± 2.4	20	21	20	18
BD-02-2	20.3 ± 3.5	20	23	20	19
BD-03-1	20.1 ± 3.3	22	21	19	18
BD-03-2	20.4 ± 1.9	21	21	21	19
BD-04-1	18.3 ± 3.1	19	20	18	17
BD-04-2	18.8 ± 2.1	19	20	18	18
BD-05-1	20.0 ± 1.5	20	21	19	20
BD-05-2	20.0 ± 2.4	21	21	19	19
BD-06-1	18.7 ± 2.4	19	20	19	17
BD-06-2	19.2 ± 3.0	19	21	18	18
BD-101-3	18.8 ± 2.6	18	21	19	18
BD-101-4	19.2 ± 5.6	(1)	22	19	17
BD-102-1	19.2 ± 3.7	19	21	20	17
BD-102-2	20.9 ± 2.4	21	23	20	20
BD-103-1	19.0 ± 3.1	17	21	20	19
BD-103-2	19.3 ± 1.6	20	20	19	18
BD-104-1	17.5 ± 1.7	17	19	17	18
BD-104-2	18.0 ± 2.7	17	19	19	17
BD-104-3	19.8 ± 2.8	20	21	21	18
BD-104-4	19.4 ± 1.7	19	21	20	19
BD-105-1	18.3 ± 4.9	16	21	19	17
BD-105-2	19.0 ± 2.8	19	21	18	18
BD-105-3	20.4 ± 3.0	20	22	21	19
BD-105-4	25.2 ± 2.5	25	26	27	24
BD-106-1	17.1 ± 2.0	18	(1)	17	16
BD-106-2	18.8 ± 2.3	18	21	19	18
BD-107-1	19.3 ± 2.9	20	21	18	18
BD-107-2	18.8 ± 5.9	17	22	20	16
BD-108-1	17.8 ± 5.0	19	20	18	14
BD-108-2	19.6 ± 2.7	20	21	20	18
BD-109-1	22.3 ± 4.6	21	25	24	20
BD-109-2	22.2 ± 0.8	22	22	23	22
BD-110-1	18.9 ± 1.3	19	19	19	18
BD-110-2	18.4 ± 0.6	18	19	19	18
BD-110-3	19.4 ± 3.8	19	22	20	17
BD-110-4	19.9 ± 3.1	20	21	21	18
BD-111A-1	17.6 ± 1.9	18	19	17	16
BD-111A-2	18.1 ± 2.8	19	16	19	18
BD-112-1	18.0 ± 3.2	17	20	17	17
BD-112-2	18.1 ± 1.6	18	19	18	17
BD-113A-1	18.8 ± 2.2	19	20	19	17
BD-113A-2	17.8 ± 4.1	16	21	18	17
BD-114-1	20.0 ± 4.2	18	23	20	19
BD-114-2	18.7 ± 3.1	18	21	19	17
BD-115-1	19.1 ± 3.1	18	21	18	19
BD-115-2	18.9 ± 2.1	19	20	18	18
BD-116-1	20.4 ± 2.5	21	21	21	19
BD-116-2	19.2 ± 2.2	18	21	19	19

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-X.1 QUARTERLY OSLD RESULTS FOR BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S.D.	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
BD-19-1	20.2 ± 4.7	20	24	18	19
BD-19-2	20.0 ± 2.3	21	21	19	19
BD-20-1	19.3 ± 3.6	19	21	20	17
BD-20-2	20.3 ± 2.9	20	22	20	19
BD-201-1	24.7 ± 1.5	25	25	25	24
BD-201-2	21.0 ± 2.0	20	21	22	20
BD-202-1	19.8 ± 4.7	20	23	19	17
BD-202-2	19.5 ± 3.5	18	22	20	18
BD-203-1	19.4 ± 2.5	19	20	20	18
BD-203-2	18.6 ± 3.7	17	21	19	17
BD-204-1	18.3 ± 3.3	18	20	19	16
BD-204-2	18.0 ± 1.4	18	19	17	18
BD-205-1	18.5 ± 3.2	19	19	19	16
BD-205-2	18.0 ± 3.0	17	19	19	17
BD-206-1	19.1 ± 2.8	19	21	19	18
BD-206-2	18.2 ± 2.7	17	20	19	17
BD-207-1	18.4 ± 3.4	17	21	18	18
BD-207-2	17.3 ± 1.8	18	16	17	18
BD-208-1	18.4 ± 1.8	18	20	19	18
BD-208-2	18.7 ± 2.0	18	19	20	18
BD-209-1	23.0 ± 2.2	22	25	23	23
BD-209-2	24.2 ± 1.2	24	24	25	23
BD-210-1	21.4 ± 4.1	20	24	22	20
BD-210-2	20.1 ± 2.0	20	22	20	19
BD-21-1	19.7 ± 2.6	19	22	20	19
BD-21-2	19.8 ± 3.0	22	20	19	19
BD-211-1	23.7 ± 5.0	22	27	23	22
BD-211-2	24.6 ± 2.0	25	26	24	24
BD-212-3	18.8 ± 2.8	19	21	18	17
BD-212-4	23.8 ± 2.9	23	26	24	22
BD-213-3	18.5 ± 2.7	19	20	18	17
BD-213-4	18.4 ± 3.5	18	21	18	17
BD-214-1	19.0 ± 3.6	18	21	(1)	18
BD-214-2	21.4 ± 2.8	22	23	21	20
BD-215-1	18.0 ± 2.7	19	19	18	16
BD-215-2	17.9 ± 1.5	18	19	18	17
BD-216-1	20.8 ± 2.7	22	22	19	20
BD-216-2	21.1 ± 1.8	21	22	21	20

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-X.2 **MEAN QUARTERLY OSLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS

COLLECTION PERIOD	SITE BOUNDARY ± 2 S.D.	INTERMEDIATE DISTANCE	OTHER	CONTROL
JAN-MAR	18.9 ± 3.5	19.7 ± 4.6	19.9 ± 1.9	21.5 ± 1.4
APR-JUN	20.8 ± 3.4	21.5 ± 5.0	21.2 ± 2.3	20.8 ± 0.0
JUL-SEP	19.4 ± 3.7	20.2 ± 4.5	18.9 ± 1.4	20.2 ± 2.1
OCT-DEC	17.9 ± 3.2	18.8 ± 4.7	18.3 ± 1.9	18.6 ± 1.1

TABLE C-X.3 **SUMMLARY OF T HE AMBIENT DOSIMETRY PROGRAM FOR BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF MREM/QUARTER ± 2 STANDARD DEVIATIONS

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.
SITE BOUNDARY	150	14.2	26.5	19.2 ± 4.0
INTERMEDIATE DISTANCE	127	16.0	27.4	20.0 ± 5.1
OTHER	56	16.5	23.6	19.6 ± 2.8
CONTROL	8	18.2	22.0	20.3 ± 2.5

SITE BOUNDARY STATIONS - BD-101-3, BD-101-4, BD-102-1, BD-102-2, BD-103-1, BD-103-2, BD-104-1, BD-104-2, BD-104-3, BD-104-4, BD-105-1, BD-105-2, BD-105-3, BD-105-4, BD-106-1, BD-106-2, BD-107-1, BD-107-2, BD-108-1, BD-108-2, BD-109-1, BD-109-2, BD-110-1, BD-110-2, BD-110-3, BD-110-4, BD-111A-1, BD-111A-2, BD-112-1, BD-112-2, BD-113A-1, BD-113A-2, BD-114-1, BD-114-2, BD-115-1, BD-115-2, BD-116-1, BD-116-2

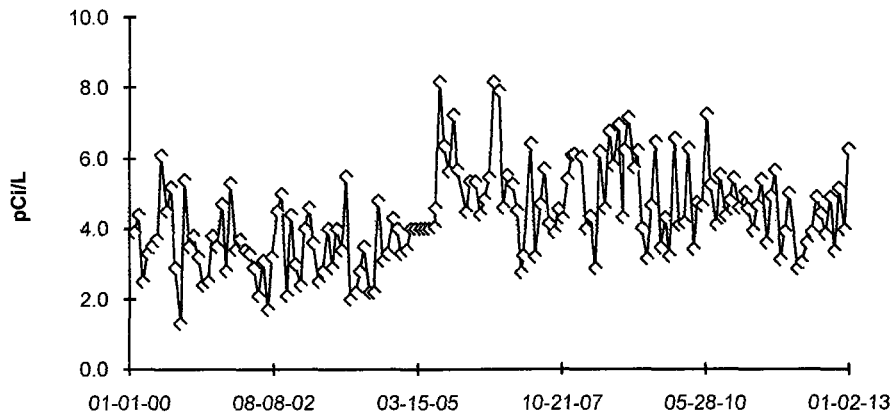
INTERMEDIATE DISTANCE STATIONS - BD-201-1, BD-201-2, BD-202-1, BD-202-2, BD-203-1, BD-203-2, BD-204-1, BD-204-2, BD-205-1, BD-205-2, BD-206-1, BD-206-2, BD-207-1, BD-207-2, BD-208-1, BD-208-2, BD-209-1, BD-209-2, BD-210-1, BD-210-2, BD-211-1, BD-211-2, BD-212-3, BD-212-4, BD-213-3, BD-213-4, BD-214-1, BD-214-2, BD-215-1, BD-215-2, BD-216-1, BD-216-2

OTHER STATIONS - BD-02-1, BD-02-2, BD-04-1, BD-04-2, BD-05-1, BD-05-2, BD-06-1, BD-06-2, BD-19-1, BD-19-2, BD-20-1, BD-20-2, BD-21-1, BD-21-2

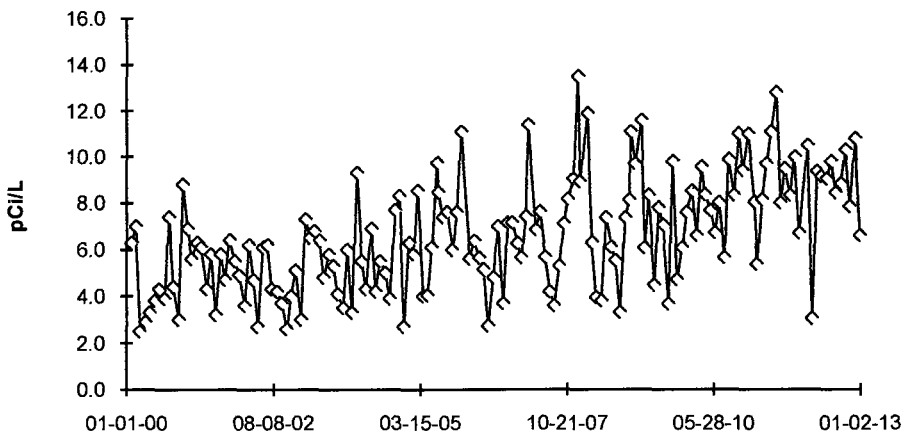
CONTROL STATIONS - BD-03-1, BD-03-2

FIGURE C-1
Surface Water - Gross Beta - Stations BD-10 and BD-25 (C) Collected in the Vicinity of Braidwood Station, 2000 - 2012

BD-10 Kankaee River, Downstream



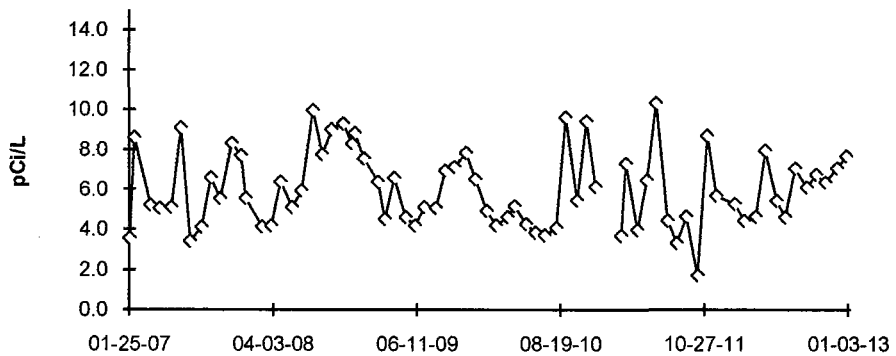
BD-25 (C) Kankakee River, Upstream



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-2
Surface Water - Gross Beta - Stations BD-38 and BD-40 Collected in the Vicinity of Braidwood Station, 2007 - 2012

BD-38 Main Drainage Ditch



BD-40 Braidwood Station Cooling Lake

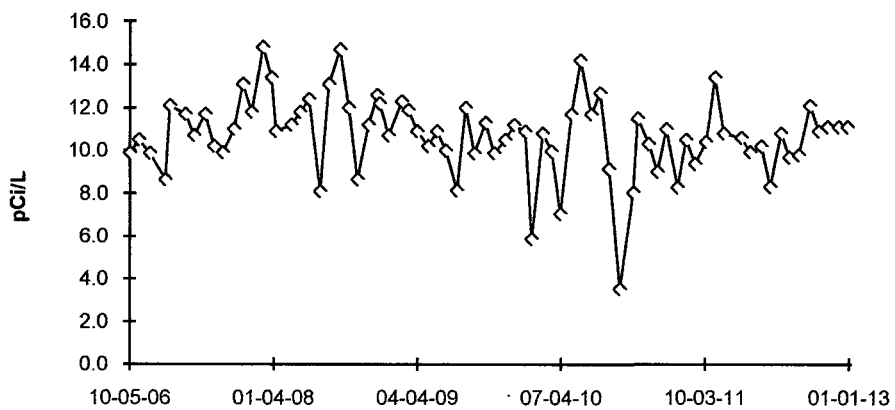
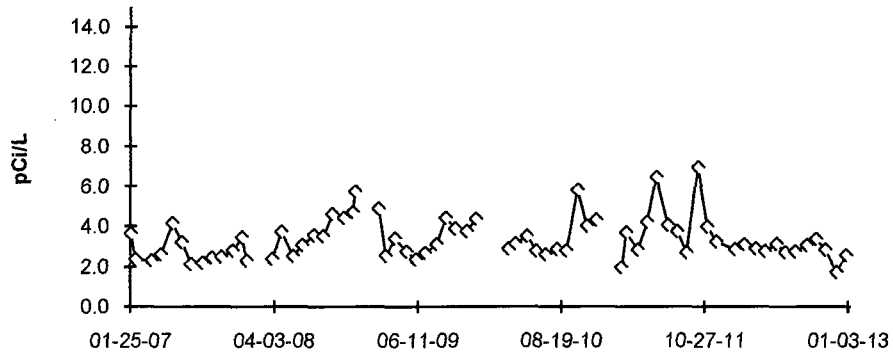
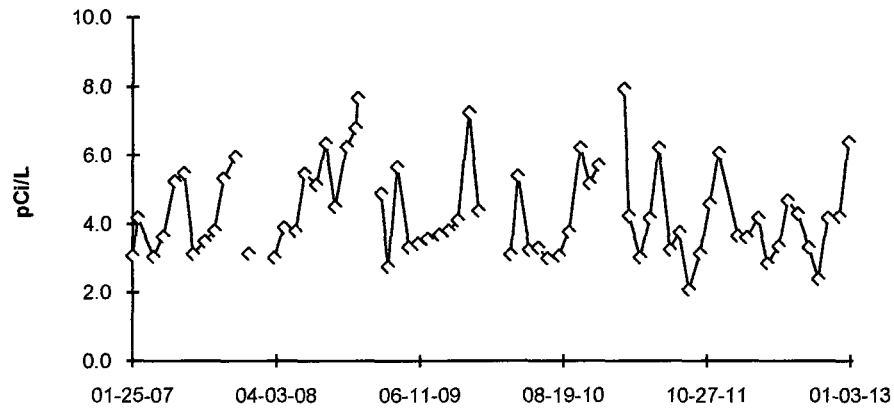


FIGURE C-3
Surface Water - Gross Beta - Stations BD-55 and BD-56 Collected in the Vicinity of Braidwood Station, 2007 - 2012

BD-55 North Pond Fatlan Site



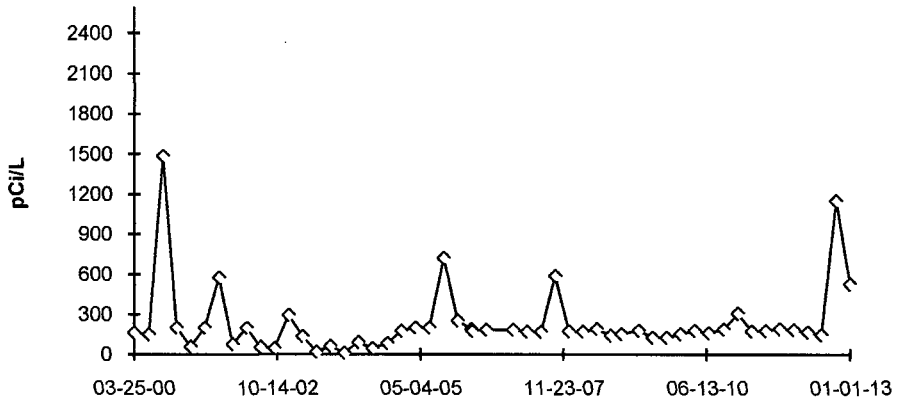
BD-56 South Pond Fatlan Site



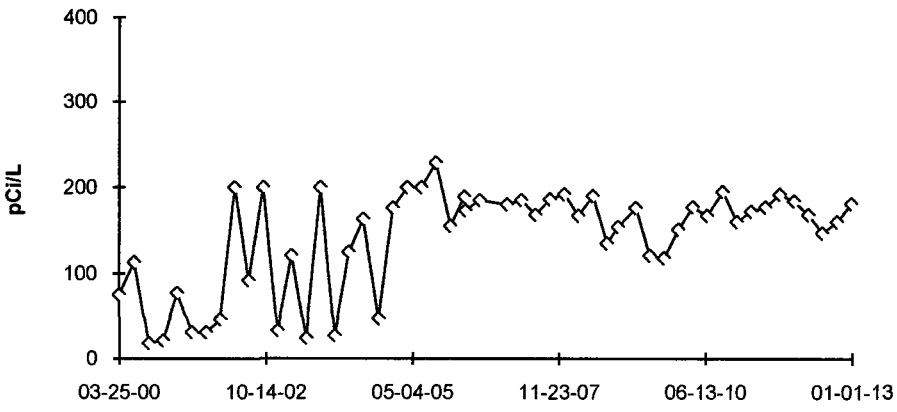
GAPS IN DATA ARE DUE TO SAMPLING POINTS BEING FROZEN AT TIME OF COLLECTION

FIGURE C-4
Surface Water - Tritium - Stations BD-10 and BD-25 (C) Collected in the Vicinity of Braidwood Station, 2000 - 2012

BD-10 Kankakee River, Downstream



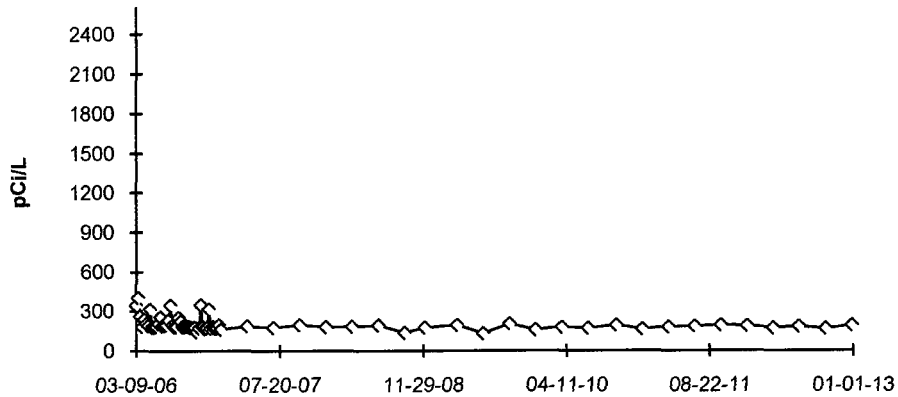
BD-25 (C) Kankakee River, Upstream



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-5
Surface Water - Tritium - Stations BD-38 and BD-40 Collected in the Vicinity of Braidwood Station, 2006 - 2012

BD-38 Main Drainage Ditch



BD-40 Braidwood Station Cooling Lake

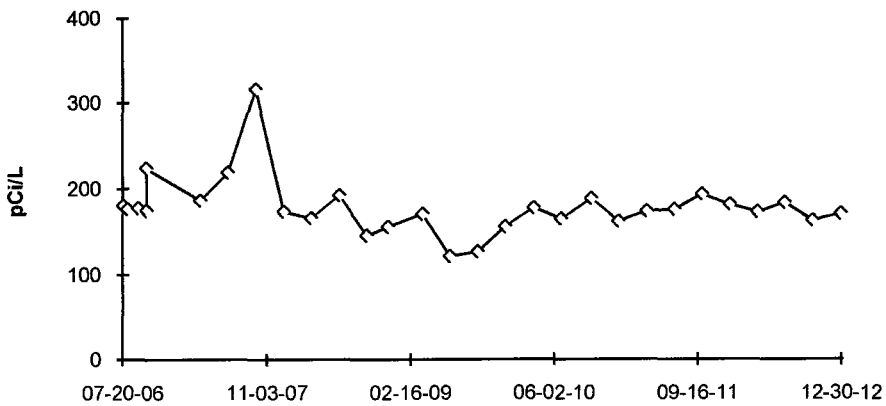
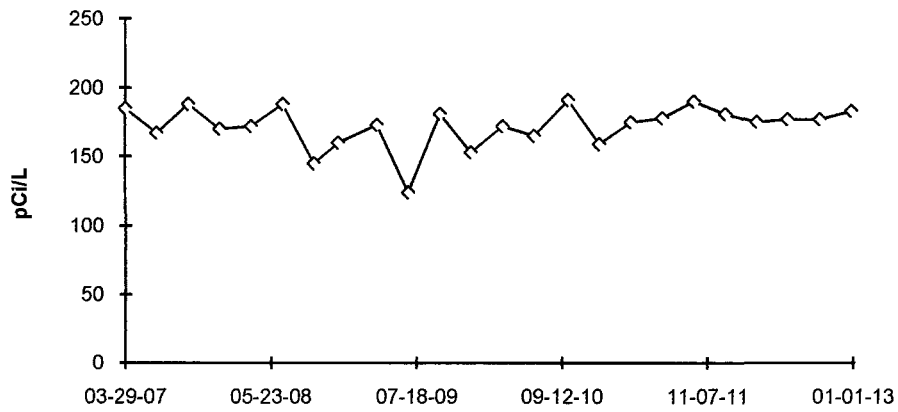


FIGURE C-6
Surface Water - Tritium - Stations BD-55 and BD-56 Collected in the Vicinity of Braidwood Station, 2007 - 2012

BD-55 North Pond Fatlan Site



BD-56 South Pond Fatlan Site

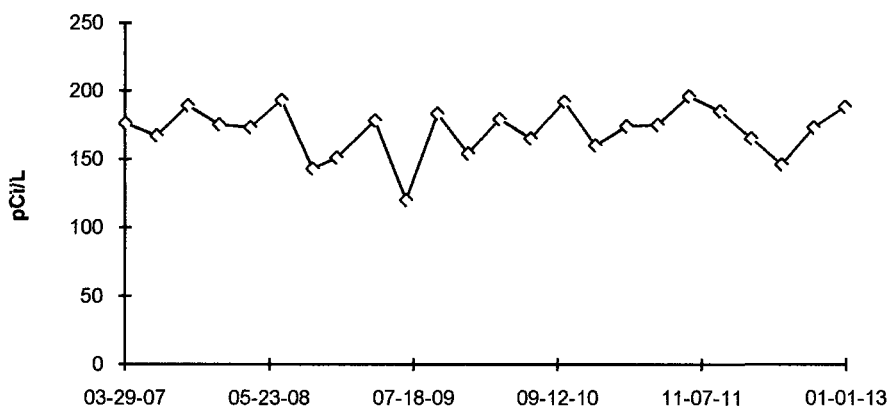
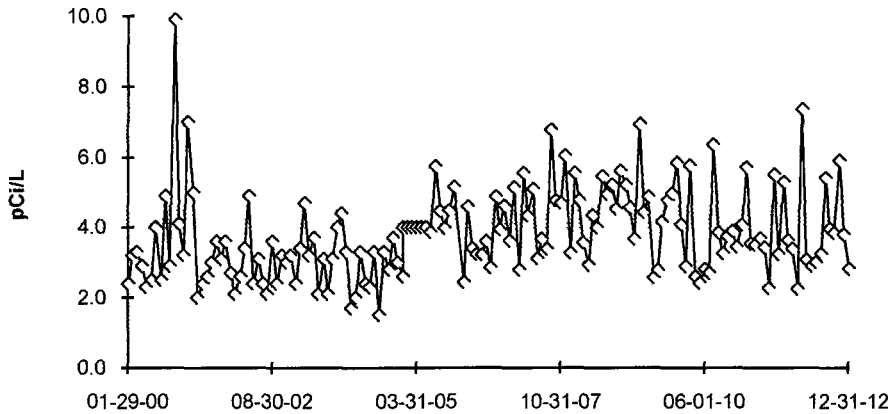


FIGURE C-7
Public Water - Gross Beta - Station BD-22
Collected in the Vicinity of Braidwood Station, 2000 - 2012

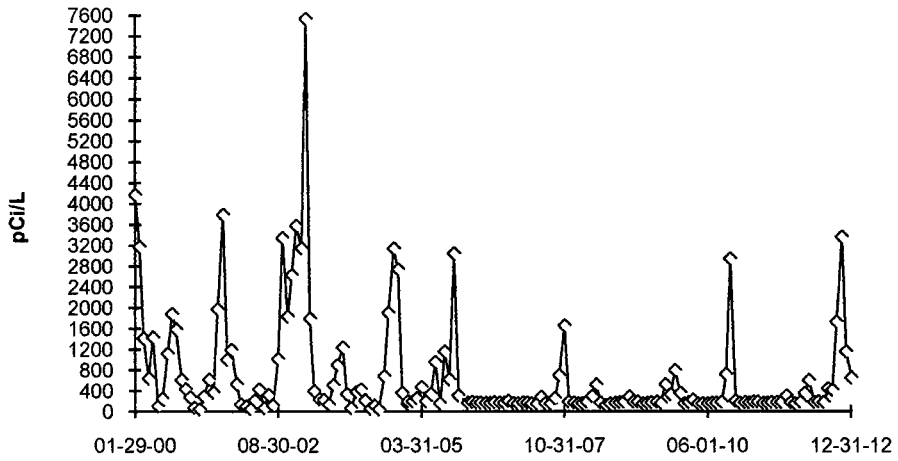
BD-22 Wilmington



DUE TO VENDOR CHANGE, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-8
Public Water - Tritium - Station BD-22
Collected in the Vicinity of Braidwood Station, 2000 - 2012

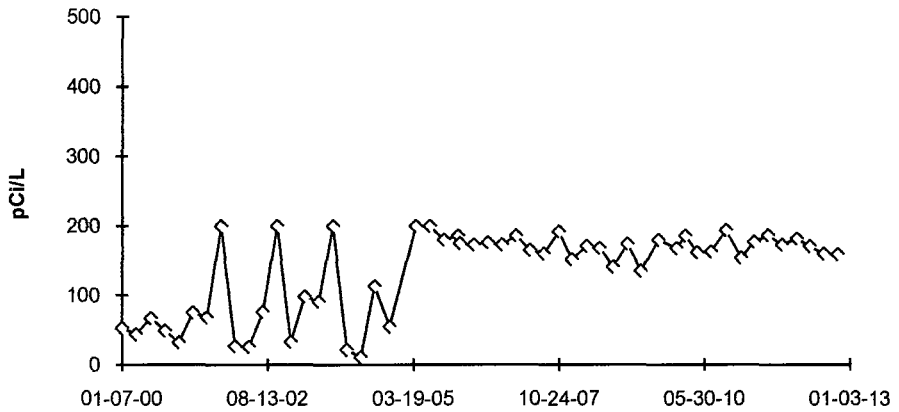
BD-22 Wilmington



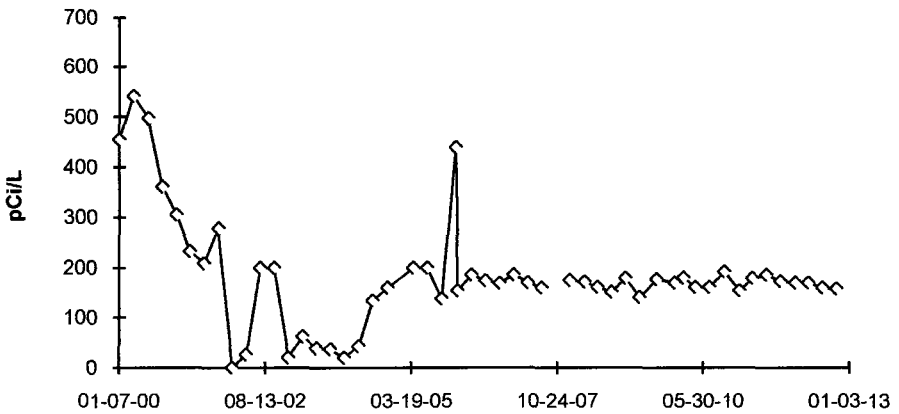
DUE TO VENDOR CHANGE, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

FIGURE C-9
Ground/Well Water - Tritium - Stations BD-13 and BD-34 Collected in the Vicinity of Braidwood Station, 2000 - 2012

BD-13 Braidwood City Hall Well



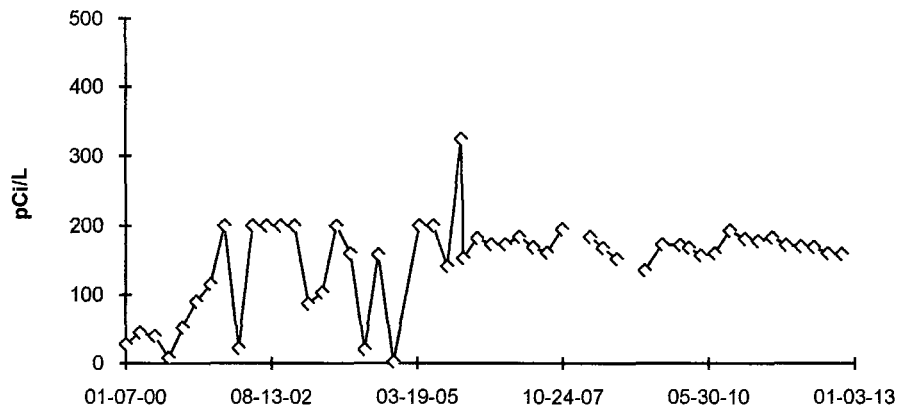
BD-34 Gibson Well



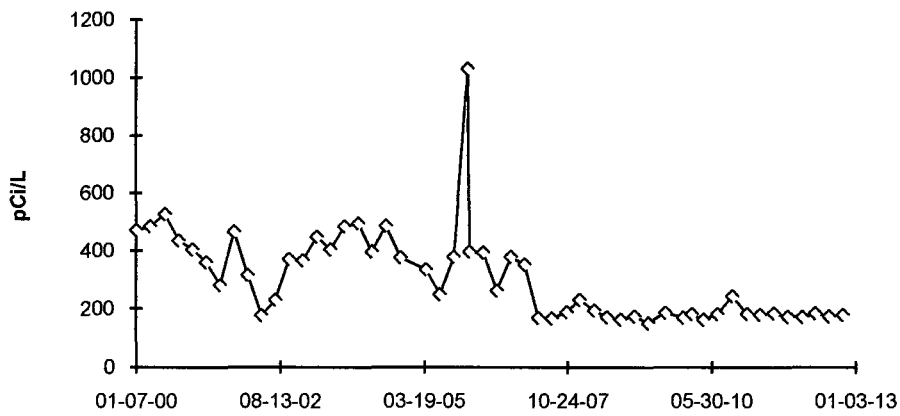
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY.

FIGURE C-10
Ground/Well Water - Tritium - Stations BD-35 and BD-36 Collected in the Vicinity of Braidwood Station, 2000 - 2012

BD-35 Joly Well



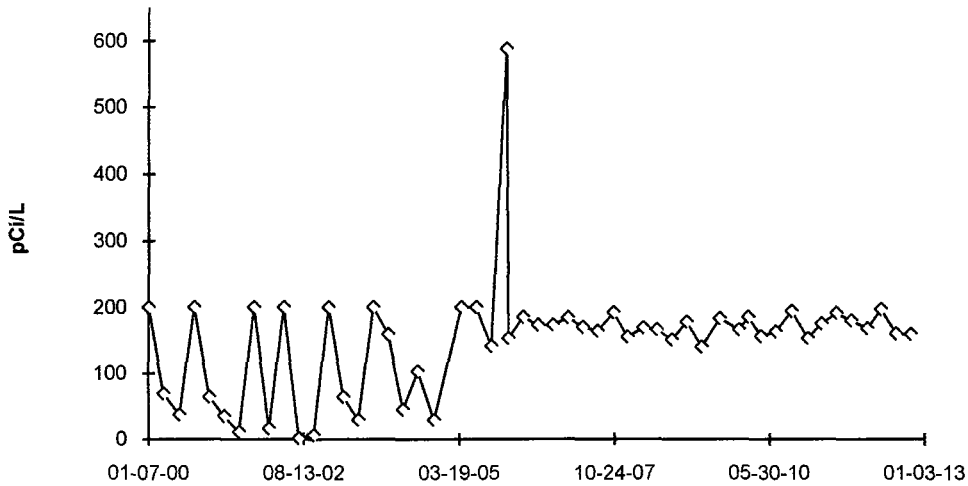
BD-36 Hutton Well



DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY.

FIGURE C-11
Ground/Well Water - Tritium - Station BD-37
Collected in the Vicinity of Braidwood Station, 2000 - 2012

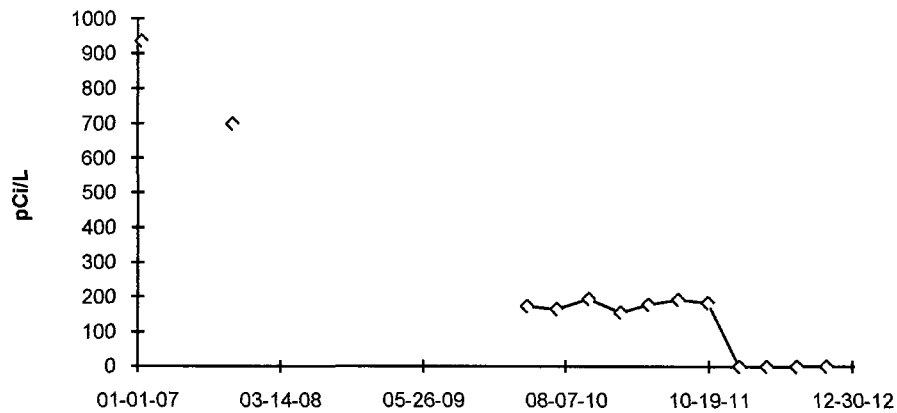
BD-37 Nurczyk Well



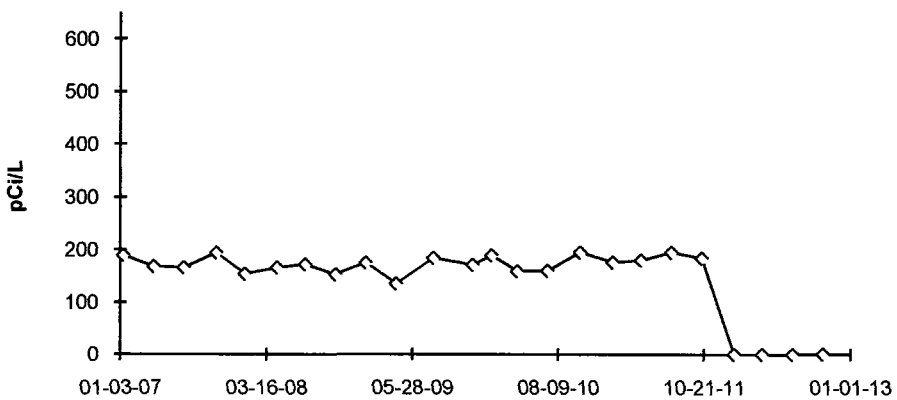
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JULY.

FIGURE C-12
Ground/Well Water - Tritium - Station BD-50 and BD-51 Collected in the Vicinity of Braidwood Station, 2007 - 2012

BD-50 Skole Well



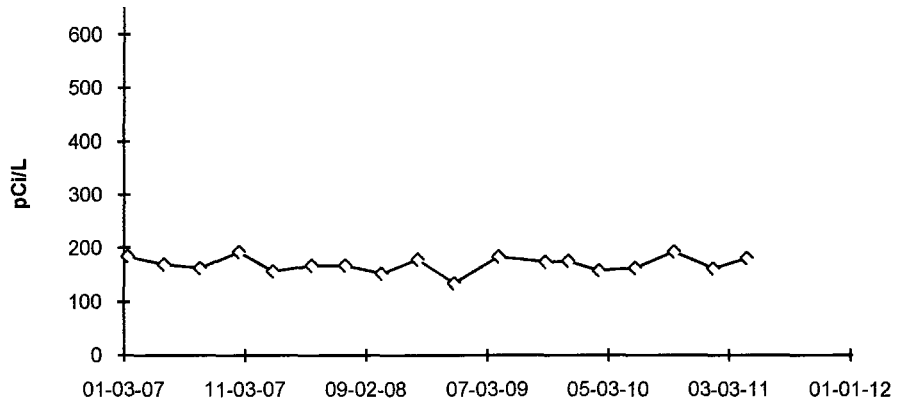
BD-51 Fatlan Well



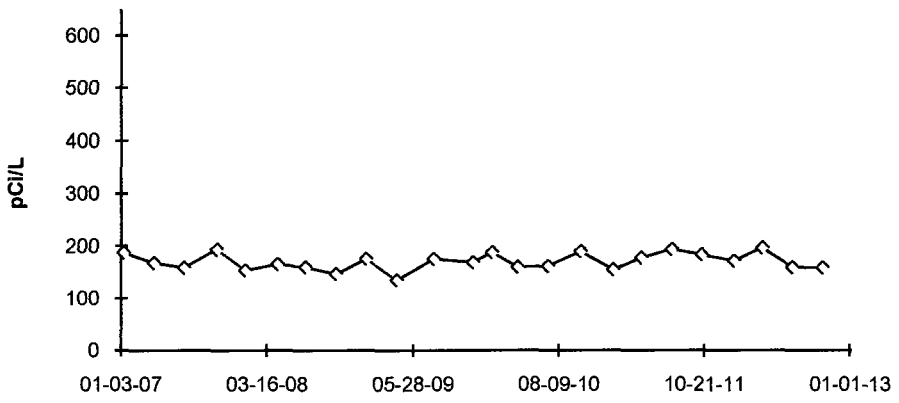
NEW STATIONS BD-50 AND BD-51 ADDED IN 2007
STATION BD-50 WAS INITIALLY DISCONTINUED ON 10/18/07 AND RESUMED ON 04/08/10

FIGURE C-13
Ground/Well Water - Tritium - StationS BD-53 and BD-54 Collected in the Vicinity of Braidwood Station, 2007 - 2012

BD-53 Phelps Well



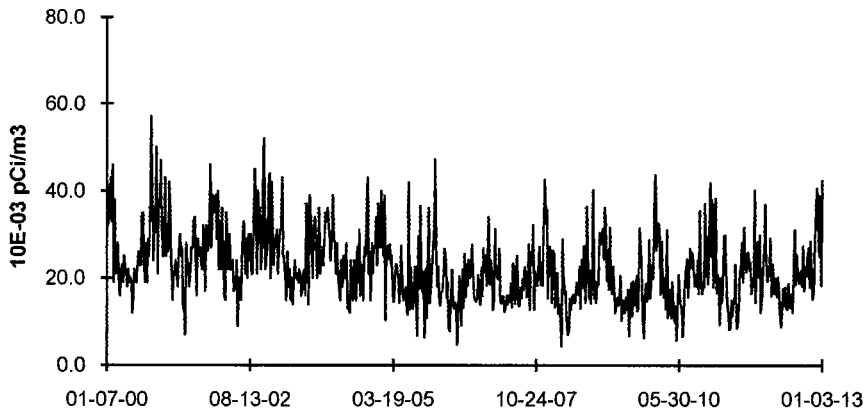
BD-54 Cash Well



BD-53 was removed from the program during the 3rd quarter of 2011

FIGURE C-14
Air Particulate - Gross Beta- Stations BD-03 (C) and BD-06 Collected in the Vicinity of Braidwood Station, 2000 - 2012

BD-03 (C) County Line Road



BD-06 Godley

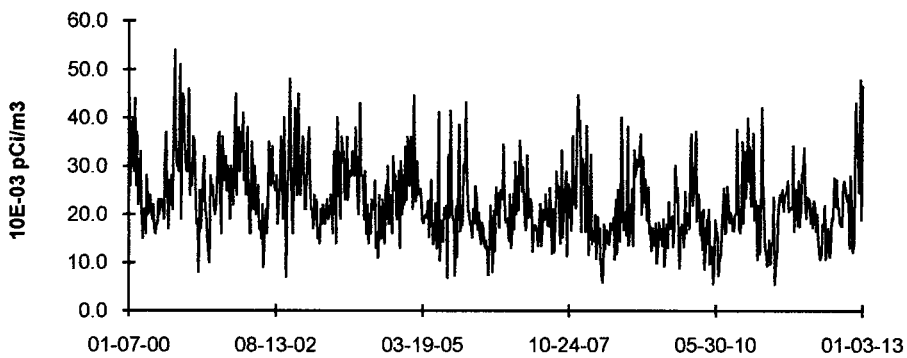
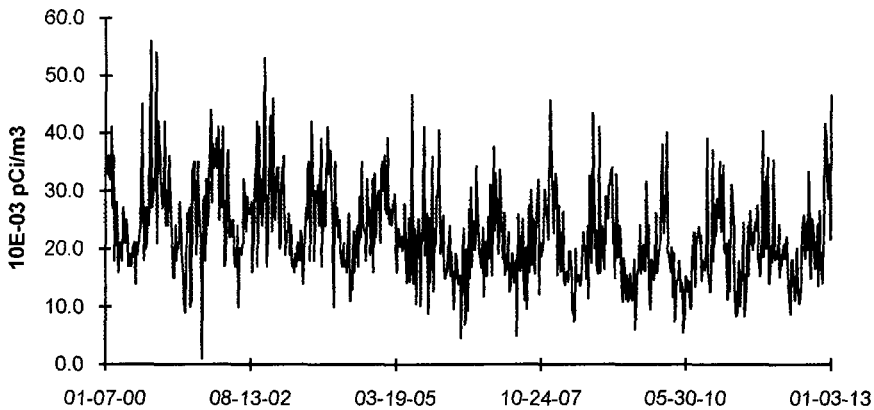


FIGURE C-15
Air Particulate - Gross Beta- Stations BD-19 and BD-20 Collected in the Vicinity of Braidwood Station, 2000 - 2012

BD-19 Nearsite, NW



BD-20 Nearsite, N

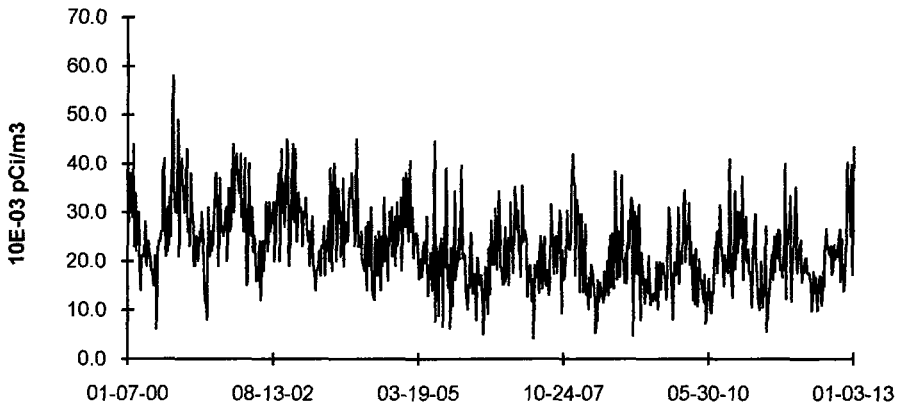


FIGURE C-16
Air Particulate - Gross Beta- Station BD-21
Collected in the Vicinity of Braidwood Station, 2000 - 2012

BD-21 Nearsite, NE

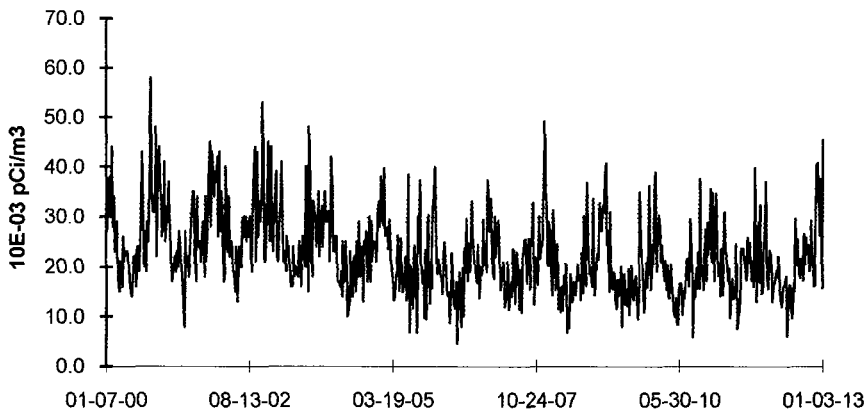
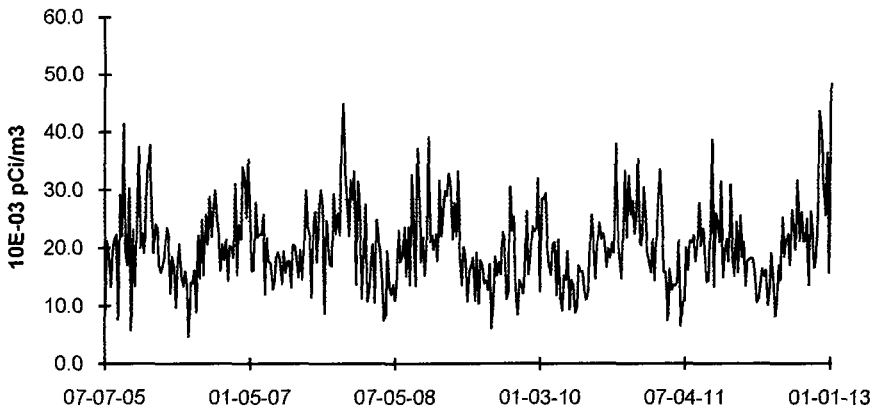


FIGURE C-17
Air Particulate - Gross Beta- Stations BD-02 and BD-04 Collected in the Vicinity of Braidwood Station, 2005 - 2012

BD-02 Nearsite, NW



BD-04 Nearsite, N

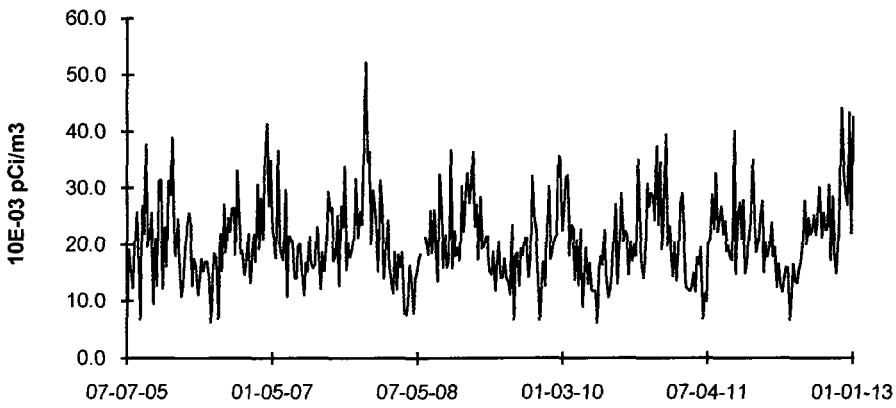
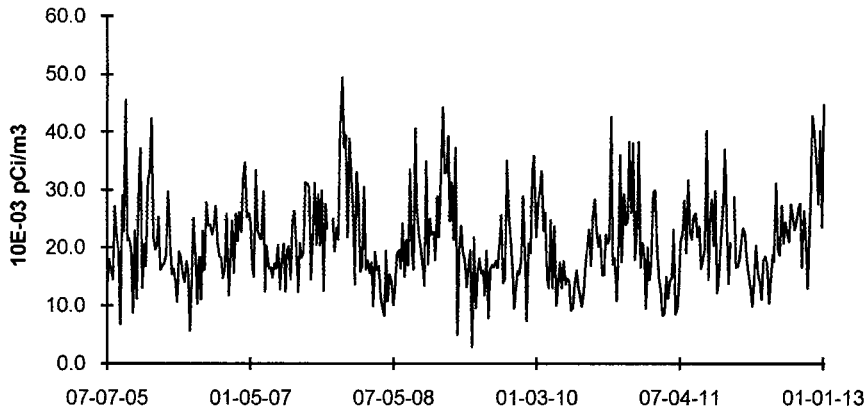


FIGURE C-18
Air Particulate - Gross Beta- Station BD-05
Collected in the Vicinity of Braidwood Station, 2005 - 2012

BD-05 Nearsite, NE



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APPENDIX D

INTER-LABORATORY COMPARISON PROGRAM

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TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
March 2012	E10066	Milk	Sr-89	pCi/L	101	94.8	1.07	A
			Sr-90	pCi/L	11.7	13.5	0.87	A
	E10067	Milk	I-131	pCi/L	87.5	92.5	0.95	A
			Ce-141	pCi/L	247	260	0.95	A
			Cr-51	pCi/L	435	436	1.00	A
			Cs-134	pCi/L	133	149	0.89	A
			Cs-137	pCi/L	156	159	0.98	A
			Co-58	pCi/L	127	132	0.96	A
			Mn-54	pCi/L	190	195	0.97	A
			Fe-59	pCi/L	179	168	1.07	A
			Zn-65	pCi/L	327	333	0.98	A
			Co-60	pCi/L	274	279	0.98	A
	E10069	AP	Ce-141	pCi	167	164	1.02	A
			Cr-51	pCi	310	276	1.12	A
			Cs-134	pCi	107	94.5	1.13	A
			Cs-137	pCi	109	101	1.08	A
			Co-58	pCi	87.6	83.5	1.05	A
			Mn-54	pCi	133	123	1.08	A
			Fe-59	pCi	113	106	1.07	A
			Zn-65	pCi	226	210	1.08	A
			Co-60	pCi	185	176	1.05	A
	E10068	Charcoal	I-131	pCi	92.8	94.2	0.99	A
	E10070	Water	Fe-55	pCi/L	1800	1570	1.15	A
June 2012	E10198	Milk	Sr-89	pCi/L	86.1	99.8	0.86	A
			Sr-90	pCi/L	9.2	12.7	0.72	W
	E10199	Milk	I-131	pCi/L	88.9	99.7	0.89	A
			Ce-141	pCi/L	72.8	82.2	0.89	A
			Cr-51	pCi/L	394	402	0.98	A
			Cs-134	pCi/L	159	174	0.91	A
			Cs-137	pCi/L	206	212	0.97	A
			Co-58	pCi/L	89.5	92.3	0.97	A
			Mn-54	pCi/L	129	132	0.98	A
			Fe-59	pCi/L	129	128	1.01	A
			Zn-65	pCi/L	193	199	0.97	A
			Co-60	pCi/L	342	355	0.96	A
	E10201	AP	Ce-141	pCi	73.2	75.1	0.97	A
			Cr-51	pCi	367	366	1.00	A
			Cs-134	pCi	165	159	1.04	A
			Cs-137	pCi	205	193	1.06	A
			Co-58	pCi	84.7	84.2	1.01	A
			Mn-54	pCi	118	121	0.98	A
			Fe-59	pCi	125	117	1.07	A
			Zn-65	pCi	181	182	0.99	A
			Co-60	pCi	338	324	1.04	A
	E10200	Charcoal	I-131	pCi	101	96.6	1.05	A

TABLE D-1 **ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
June 2012	E10202	Water	Fe-55	pCi/L	1890	1580	1.20	A
September 2012	E10296	Milk	Sr-89	pCi/L	106	99.6	1.06	A
			Sr-90	pCi/L	13.6	16.0	0.85	A
	E10297	Milk	I-131	pCi/L	89.8	99.6	0.90	A
			Ce-141	pCi/L	160	164	0.98	A
			Cr-51	pCi/L	230	248	0.93	A
			Cs-134	pCi/L	101	108	0.94	A
			Cs-137	pCi/L	174	174	1.00	A
			Co-58	pCi/L	97.2	100	0.97	A
			Mn-54	pCi/L	188	196	0.96	A
			Fe-59	pCi/L	159	152	1.05	A
			Zn-65	pCi/L	195	192	1.02	A
			Co-60	pCi/L	155	152	1.02	A
	E10299	AP	Ce-141	pCi	145	135	1.07	A
			Cr-51	pCi	219	205	1.07	A
			Cs-134	pCi	94.1	89.4	1.05	A
			Cs-137	pCi	140	144	0.97	A
			Co-58	pCi	88.3	83.0	1.06	A
			Mn-54	pCi	173	162	1.07	A
			Fe-59	pCi	136	125	1.09	A
			Zn-65	pCi	165	159	1.04	A
			Co-60	pCi	133	125	1.06	A
	E10298	Charcoal	I-131	pCi	95.5	97.2	0.98	A
	E10300	Water	Fe-55	pCi/L	1630	1900	0.86	A
December 2012	E10334	Milk	Sr-89	pCi/L	101	96.6	1.05	A
			Sr-90	pCi/L	11.3	13.8	0.82	A
	E10335	Milk	I-131	pCi/L	93.1	90.0	1.03	A
			Ce-141	pCi/L	52.5	51.0	1.03	A
			Cr-51	pCi/L	373	348	1.07	A
			Cs-134	pCi/L	157	165	0.95	A
			Cs-137	pCi/L	113	117	0.97	A
			Co-58	pCi/L	94.1	98.5	0.96	A
			Mn-54	pCi/L	116	116	1.00	A
			Fe-59	pCi/L	124	116	1.07	A
			Zn-65	pCi/L	190	186	1.02	A
			Co-60	pCi/L	172	170	1.01	A
	E10337A	AP	Ce-141	pCi	51.8	49.6	1.04	A
			Cr-51	pCi	372	338	1.10	A
			Cs-134	pCi	165	161	1.02	A
			Cs-137	pCi	113	114	0.99	A
			Co-58	pCi	96.5	95.8	1.01	A
			Mn-54	pCi	118	112	1.05	A
			Fe-59	pCi	105	112	0.94	A
			Zn-65	pCi	166	181	0.92	A
			Co-60	pCi	179	165	1.08	A

TABLE D-1 ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 3 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
December 2012	E10336	Charcoal	I-131	pCi	73.1	72.7	1.01	A
	E10333	Water	Fe-55	pCi/L	1550	1750	0.89	A

(a) Teledyne Brown Engineering reported result.

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

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

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

TABLE D-2 **ERA ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Limits	Evaluation (c)
May 2012	RAD-89	Water	Sr-89	pCi/L	63.4	58.5	46.9 - 66.3	A
			Sr-90	pCi/L	33.5	37.4	27.4 - 43.1	A
			Ba-133	pCi/L	89.2	82.3	69.1 - 90.5	A
			Cs-134	pCi/L	66.5	74.2	60.6 - 81.6	A
			Cs-137	pCi/L	152	155	140 - 172	A
			Co-60	pCi/L	73.3	72.9	65.6 - 82.6	A
			Zn-65	pCi/L	109	105	94.5 - 125	A
			Gr-A	pCi/L	82.4	62.9	33.0 - 78.0	N (1)
			Gr-B	pCi/L	43.6	44.2	29.6 - 51.5	A
			I-131	pCi/L	25.9	27.1	22.5 - 31.9	A
			H-3	pCi/L	15433	15800	13800 - 17400	A
	MRAD-16	Filter	Gr-A	pCi/filter	39.5	77.8	26.1 - 121	A
November, 2012	RAD-91	Water	Sr-89	pCi/L	46.5	39.1	29.7 - 46.1	N (2)
			Sr-90	pCi/L	16.6	20.1	14.4 - 23.8	A
			Ba-133	pCi/L	85.2	84.8	71.3 - 93.3	A
			Cs-134	pCi/L	76.9	76.6	62.6 - 84.3	A
			Cs-137	pCi/L	177	183	165 - 203	A
			Co-60	pCi/L	77.4	78.3	70.5 - 88.5	A
			Zn-65	pCi/L	209	204	184 - 240	A
			Gr-A	pCi/L	50.6	58.6	30.6 - 72.9	A
			Gr-B	pCi/L	59.3	39.2	26.0 - 46.7	N (2)
			I-131	pCi/L	22.9	24.8	20.6 - 29.4	A
			H-3	pCi/L	5020	4890	4190 - 5380	A
	MRAD-17	Filter	Gr-A	pCi/filter	59.6	87.5	29.3 - 136	A

(1) Detector G1 is slightly biased high for Th-230 based measurements used only for ERA Gross Alpha samples. NCR 12-05

(2) The Sr-89 found to known ratio was 1.19, which TBE considers acceptable. It appears the aliquot was entered incorrectly for the Gross Beta NCR 12-13

(a) Teledyne Brown Engineering reported result.

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

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

TABLE D-3 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 1 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
March 2012	12-MaW26	Water	Cs-134	Bq/L	-0.0045		(1)	A
			Cs-137	Bq/L	37.5	39.9	27.9 - 51.9	A
			Co-57	Bq/L	30.8	32.9	23.0 - 42.8	A
			Co-60	Bq/L	22.4	23.72	16.60 - 30.84	A
			H-3	Bq/L	456	437	306 - 568	A
			Mn-54	Bq/L	31.0	31.8	22.3 - 41.3	A
			K-40	Bq/L	144	142	99 - 185	A
			Sr-90	Bq/L	-0.0084		(1)	A
			Zn-65	Bq/L	-0.369		(1)	A
	12-GrW26	Water	Gr-A	Bq/L	2.06	2.14	0.64 - 3.64	A
			Gr-B	Bq/L	7.48	6.36	3.18 - 9.54	A
	12-MaS26	Soil	Cs-134	Bq/kg	831	828	580 - 1076	A
			Cs-137	Bq/kg	0.145		(1)	A
			Co-57	Bq/kg	1270	1179	825 - 1533	A
			Co-60	Bq/kg	7.61	1.56	(2)	N (3)
			Mn-54	Bq/kg	634	558	391 - 725	A
			K-40	Bq/kg	1690	1491	1044 - 1938	A
			Sr-90	Bq/kg	328	392	274 - 540	A
			Zn-65	Bq/kg	753	642	449 - 835	A
	12-RdF26	AP	Cs-134	Bq/sample	2.31	2.38	1.67 - 3.09	A
			Cs-137	Bq/sample	2.15	1.79	1.25 - 2.33	W
			Co-57	Bq/sample	-0.0701		(1)	A
			Co-60	Bq/sample	2.62	2.182	1.527 - 2.837	W
			Mn-54	Bq/sample	4.13	3.24	2.27 - 4.21	W
			Sr-90	Bq/sample	0.0185		(1)	A
			Zn-65	Bq/sample	4.19	2.99	2.09 - 3.89	N (3)
	12-GrF26	AP	Gr-A	Bq/sample	0.365	1.2	0.4 - 2.0	A
			Gr-B	Bq/sample	2.31	2.4	1.2 - 3.6	A
	12-RdV26	Vegetation	Cs-134	Bq/sample	8.72	8.43	5.90 - 10.96	A
			Cs-137	Bq/sample	0.0424		(1)	A
			Co-57	Bq/sample	15.5	12.0	8.4 - 15.6	W
			Co-60	Bq/sample	6.80	6.05	4.24 - 7.87	A
			Mn-54	Bq/sample	0.0057		(1)	A
			Sr-90	Bq/sample	2.24	2.11	1.48 - 2.74	A
			Zn-65	Bq/sample	10.5	8.90	6.23 - 11.57	A
September 2012	12-MaW27	Water	Cs-134	Bq/L	21.4	23.2	16.2 - 30.2	A
			Cs-137	Bq/L	17.0	16.7	11.7 - 21.7	A
			Co-57	Bq/L	28.7	29.3	20.5 - 38.1	A
			Co-60	Bq/L	0.179		(1)	A
			H-3	Bq/L	387	334	234 - 434	A
			Mn-54	Bq/L	18.1	17.8	12.5 - 23.1	A
			K-40	Bq/L	139	134	94 - 174	A
			Sr-90	Bq/L	19.6	12.2	8.5 - 15.9	N (4)
			Zn-65	Bq/L	27.2	25.9	18.1 - 33.7	A
	12-GrW27	Water	Gr-A	Bq/L	0.966	1.79	0.54 - 3.04	A
			Gr-B	Bq/L	10.0	9.1	4.6 - 13.7	A

TABLE D-3 **DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)**
TELEDYNE BROWN ENGINEERING, 2012
(PAGE 2 OF 2)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
September 2012	12-MaS27	Soil	Cs-134	Bq/kg	880	939	657 - 1221	A
			Cs-137	Bq/kg	1220	1150	805 - 1495	A
			Co-57	Bq/kg	1330	1316	921 - 1711	A
			Co-60	Bq/kg	552	531	372 - 690	A
			Mn-54	Bq/kg	1000	920	644 - 1196	A
			K-40	Bq/kg	674	632	442 - 822	A
			Sr-90	Bq/kg	528	508	356 - 660	A
			Zn-65	Bq/kg	665	606	424 - 788	A
	12-RdF27	AP	Cs-134	Bq/sample	2.760	2.74	1.92 - 3.56	A
			Cs-137	Bq/sample	0.0415		(1)	A
			Co-57	Bq/sample	2.00	191.00	1.34 - 2.48	A
			Co-60	Bq/sample	1.78	1.728	1.210 - 2.246	A
			Mn-54	Bq/sample	2.40	2.36	1.65 - 3.07	A
			Sr-90	Bq/sample	0.931	1.03	0.72 - 1.34	A
			Zn-65	Bq/sample	-0.688		(1)	A
	12-GrF27	AP	Gr-A	Bq/sample	0.434	0.97	0.29 - 1.65	A
			Gr-B	Bq/sample	1.927	1.92	0.96 - 2.88	A
	12-RdV27	Vegetation	Cs-134	Bq/sample	6.28	6.51	4.56 - 8.46	A
			Cs-137	Bq/sample	4.62	4.38	3.07 - 5.69	A
			Co-57	Bq/sample	6.51	5.66	3.96 - 7.36	A
			Co-60	Bq/sample	5.32	5.12	3.58 - 6.66	A
			Mn-54	Bq/sample	3.59	3.27	2.29 - 4.25	A
			Sr-90	Bq/sample	0.0012		(1)	A
			Zn-65	Bq/sample	-0.046		(1)	A

(1) False positive test.

(2) Sensitivity evaluation

(3) No cause was found for the failed high soil Co-60 sensitivity test or the high Zn-65 in AP, which TBE considers an anomaly. NCR 12-08

(4) Sr-90 in water high due to incorrect aliquot entered in LIMS. 12-11

(a) Teledyne Brown Engineering reported result.

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

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

TABLE D-4 **ERA STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM[a]**
ENVIRONMENTAL, INC., 2012
(Page 1 of 1)

Lab Code	Date	Analysis	Concentration (pCi/L) Laboratory Result [b]	ERA Result [c]	Control Limits	Acceptance
ERW-1783	04/09/12	Sr-89	62.2 ± 6.0	58.5	46.9 - 66.3	Pass
ERW-1783	04/09/12	Sr-90	33.7 ± 2.1	37.4	27.4 - 43.1	Pass
ERW-1786	04/09/12	Ba-133	75.7 ± 4.1	82.3	69.1 - 90.5	Pass
ERW-1786	04/09/12	Co-60	71.9 ± 4.0	72.9	65.6 - 82.6	Pass
ERW-1786	04/09/12	Cs-134	70.0 ± 4.3	74.2	60.6 - 81.6	Pass
ERW-1786	04/09/12	Cs-137	151.5 ± 6.1	155.0	140.0 - 172.0	Pass
ERW-1786	04/09/12	Zn-65	108.3 ± 89.0	105.0	94.5 - 125.0	Pass
ERW-1789	04/09/12	Gr. Alpha	55.0 ± 2.4	62.9	33.0 - 78.0	Pass
ERW-1789 [d]	04/09/12	Gr. Beta	76.2 ± 1.8	44.2	29.6 - 51.5	Fail
ERW-1798	04/09/12	H-3	16023 ± 355	15800	13800 - 17400	Pass
ERW-6283	10/05/12	Sr-89	41.5 ± 4.1	39.1	29.7 - 46.1	Pass
ERW-6283	10/05/12	Sr-90	19.7 ± 1.6	20.1	14.4 - 23.8	Pass
ERW-6286	10/05/12	Ba-133	82.7 ± 4.4	84.8	71.3 - 93.3	Pass
ERW-6286	10/05/12	Co-60	77.2 ± 3.7	78.3	70.5 - 88.5	Pass
ERW-6286	10/05/12	Cs-134	74.4 ± 1.5	76.6	62.6 - 84.3	Pass
ERW-6286	10/05/12	Cs-137	183.0 ± 6.2	183.0	165.0 - 203.0	Pass
ERW-6286	10/05/12	Zn-65	211.0 ± 9.9	204.0	184.0 - 240.0	Pass
ERW-6288	10/05/12	Gr. Alpha	47.0 ± 2.3	58.6	30.6 - 72.9	Pass
ERW-6288	10/05/12	Gr. Beta	33.4 ± 1.2	39.2	26.0 - 46.7	Pass
ERW-6290	10/05/12	I-131	23.3 ± 1.0	24.8	20.6 - 29.4	Pass

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

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

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

[d] Result of reanalysis: 38.3 ± 1.3 pCi/L. Sample dilution problem suspected. A new dilution was prepared.

TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)
ENVIRONMENTAL, INC., 2012
(Page 1 of 2)

			Concentration [a]			
Lab Code [b]	Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
STSO-1766	02/01/12	Co-57	1352.10 ± 4.00	1179.00	825.00 - 1533.00	Pass
STSO-1766	02/01/12	Co-60	1.70 ± 0.70	1.56	1.00 - 2.00	Pass
STSO-1766	02/01/12	Cs-134	842.20 ± 4.30	828.00	580.00 - 1076.00	Pass
STSO-1766	02/01/12	Cs-137	0.40 ± 0.90	0.00	0.00 - 1.00	Pass
STSO-1766	02/01/12	K-40	1729.60 ± 22.20	1491.00	1044.00 - 1938.00	Pass
STSO-1766	02/01/12	Mn-54	647.60 ± 4.20	558.00	391.00 - 725.00	Pass
STSO-1766	02/01/12	Sr-90	383.20 ± 15.30	392.00	274.00 - 510.00	Pass
STSO-1766	02/01/12	Zn-65	766.70 ± 6.70	642.00	449.00 - 835.00	Pass
STAP-1772	02/01/12	Co-57	0.010 ± 0.01	0.00	0.000 - 1.00	Pass
STAP-1772	02/01/12	Co-60	2.40 ± 0.08	2.18	1.53 - 2.84	Pass
STAP-1772	02/01/12	Cs-134	2.33 ± 0.13	2.38	1.67 - 3.09	Pass
STAP-1772	02/01/12	Cs-137	2.07 ± 0.10	1.79	1.25 - 2.33	Pass
STAP-1772	02/01/12	Mn-54	3.77 ± 0.14	3.24	2.27 - 4.21	Pass
STAP-1772	02/01/12	Sr-90	-0.010 ± 0.060	0.000	-0.10 - 0.13	Pass
STAP-1772	02/01/12	Zn-65	3.67 ± 0.20	2.99	2.09 - 3.89	Pass
STAP-1773	02/01/12	Gr. Alpha	0.51 ± 0.05	1.20	0.40 - 2.00	Pass
STAP-1773	02/01/12	Gr. Beta	2.75 ± 0.10	2.40	1.20 - 3.60	Pass
STVE-1776	02/01/12	Co-57	14.57 ± 0.28	12.00	8.40 - 15.60	Pass
STVE-1776	02/01/12	Co-60	6.45 ± 0.23	6.05	4.24 - 7.87	Pass
STVE-1776	02/01/12	Cs-134	8.39 ± 0.29	8.43	5.90 - 10.96	Pass
STVE-1776	02/01/12	Cs-137	0.01 ± 0.09	0.00	0.00 - 0.10	Pass
STVE-1776	02/01/12	Mn-54	0.03 ± 0.08	0.00	0.00 - 0.10	Pass
STVE-1776	02/01/12	Zn-65	10.31 ± 0.67	8.90	6.23 - 11.57	Pass
STW-1960	02/01/12	Gr. Alpha	1.68 ± 0.09	2.14	0.64 - 3.64	Pass
STW-1960	02/01/12	Gr. Beta	6.33 ± 0.10	6.36	3.18 - 9.54	Pass
STW-1964	02/01/12	Co-57	33.30 ± 0.40	32.90	23.00 - 42.80	Pass
STW-1964	02/01/12	Co-60	23.20 ± 0.40	23.72	16.60 - 30.84	Pass
STW-1964	02/01/12	Cs-134	0.30 ± 3.00	0.00	0.00 - 1.00	Pass
STW-1964	02/01/12	Cs-137	40.10 ± 0.60	39.90	27.90 - 51.90	Pass
STW-1964	02/01/12	H-3	460.00 ± 12.10	437.00	306.00 - 568.00	Pass
STW-1964	02/01/12	K-40	153.00 ± 4.20	142.00	99.00 - 185.00	Pass
STW-1964	02/01/12	Mn-54	32.70 ± 0.60	31.80	22.30 - 41.30	Pass
STW-1964	02/01/12	Sr-90	0.10 ± 0.20	0.00	0.00 - 1.00	Pass
STW-1964	02/01/12	Zn-65	0.01 ± 0.20	0.00	0.00 - 1.00	Pass

TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP) ENVIRONMENTAL, INC., 2012

(Page 2 of 2)

			Concentration [a]			
Lab Code [b]	Date	Analysis	Laboratory result	Known Activity	Control Limits [c]	Acceptance
STSO-5392	08/01/12	Sr-90	483.52 ± 16.47	508.00	356.00 - 660.00	Pass
STSO-5394	08/01/12	Co-57	1528.00 ± 4.10	1316.00	921.00 - 1711.00	Pass
STSO-5394	08/01/12	Co-60	592.00 ± 3.20	531.00	372.00 - 690.00	Pass
STSO-5394	08/01/12	Cs-134	933.60 ± 5.82	939.00	657.00 - 1221.00	Pass
STSO-5394	08/01/12	Cs-137	1319.80 ± 5.50	1150.00	805.00 - 1495.00	Pass
STSO-5394	08/01/12	K-40	737.30 ± 17.70	632.00	442.00 - 822.00	Pass
STSO-5394	08/01/12	Mn-54	1083.20 ± 5.20	920.00	644.00 - 1196.00	Pass
STSO-5394	08/01/12	Zn-65	696.10 ± 7.00	606.00	424.00 - 788.00	Pass
STVE-5395 [d]	08/01/12	Co-57	7.44 ± 0.17	5.66	3.96 - 7.36	Fail
STVE-5395	08/01/12	Co-60	5.90 ± 0.15	5.12	3.58 - 6.66	Pass
STVE-5395	08/01/12	Cs-134	7.40 ± 0.31	6.51	4.56 - 8.46	Pass
STVE-5395	08/01/12	Cs-137	5.45 ± 0.18	4.38	3.07 - 5.69	Pass
STVE-5395	08/01/12	Mn-54	4.06 ± 0.21	3.27	2.29 - 4.25	Pass
STAP-5398	08/01/12	Gr. Alpha	0.41 ± 0.05	0.97	0.29 - 1.65	Pass
STAP-5398	08/01/12	Gr. Beta	2.11 ± 0.09	1.92	0.96 - 2.88	Pass
STAP-5403	08/01/12	Co-57	1.96 ± 0.05	1.91	1.34 - 2.48	Pass
STAP-5403	08/01/12	Co-60	1.76 ± 0.07	1.73	1.21 - 2.25	Pass
STAP-5403	08/01/12	Cs-134	2.74 ± 0.18	2.74	1.92 - 3.56	Pass
STAP-5403	08/01/12	Cs-137	0.00 ± 0.03	0.00	-0.01 - 0.01	Pass
STAP-5403	08/01/12	Mn-54	2.52 ± 0.10	2.36	1.65 - 3.07	Pass
STAP-5403	08/01/12	Zn-65	0.01 ± 0.06	0.00	-0.010 - 0.010	Pass

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

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

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

[d] Result of reanalysis; 6.74 ± 0.15 Bq/sample. Gamma emitters for the vegetation matrix exhibited a high bias, only Co-57 exceeded acceptance limits. Recounted using a geometry more closely matched to the MAPEP sample size.

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APPENDIX E

EFFLUENT DATA

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INTRODUCTION

Braidwood Station, a two-unit PWR station, is located in Will County, Illinois, fifteen (15) miles south-southwest of Joliet, Illinois. Each reactor is designed to have a capacity of 3587 thermal megawatts. Unit No. 1 went critical on May 29, 1987, and Unit No. 2 went critical on March 8, 1988. The station has been designed to keep releases to the environment at levels below those specified in the regulations.

Liquid effluents from Braidwood Station are released to the Kankakee River in controlled batches after radioassay of each batch. Gaseous effluents are released to the atmosphere and are calculated on the basis of analyses of grab samples of noble gases and tritium, as well as continuously collected composite samples of iodine and particulate activity sampled during the course of the year. The results of effluent analyses are summarized on a monthly basis. Airborne concentrations of noble gases, I-131, and particulate radioactivity in offsite areas are calculated using effluent and meteorological data. Carbon-14 concentration in offsite areas is calculated based on industry-approved methodology for estimation of the amount released and meteorological data.

Environmental monitoring is conducted by sampling at indicator and control (background) locations in the vicinity of Braidwood Station to measure changes in radiation or radioactivity levels that may be attributable to station operations. If significant changes attributable to Braidwood Station are measured, these changes are correlated with effluent releases. An environmental monitoring program is conducted which also includes all potential pathways at the site. Gaseous pathways include ground plane (direct), inhalation, vegetation, meat, and milk. Liquid pathways include potable water and freshwater fish. The critical pathway for 2012 gaseous dose was vegetation. The critical pathway for 2012 liquid dose was potable water.

SUMMARY

Calculations based on gaseous and liquid effluents, Kankakee River Flow and meteorological data indicate that public dose due to radioactive material attributable to Braidwood Station during the period does not exceed regulatory or Offsite Dose Calculation Manual (ODCM) limits.

The maximally exposed individual's total body dose due to gaseous and liquid emissions from licensed activities at Braidwood Station is 6.22E-01 mrem. The annual limit on TEDE is 100 mrem.

The assessment of radiation doses to the public is performed in accordance with the ODCM. The results of these analyses confirm that the station is operating in compliance with 10CFR50 Appendix I, 10CFR20 and 40CFR190.

1.0 EFFLUENTS

1.1 Gaseous Effluents to the Atmosphere

Measured concentrations of noble gases, radioiodine, and particulate radioactivity released to the atmosphere during the year, are listed in Table 1.1-1.

A total of 8.16E-01 curies of fission and activation gases were released with a maximum quarterly average release rate of 1.80E-02 µCi/sec for Unit 1 and 1.79E-02 µCi/sec for Unit 2.

A total of 1.48E-03 curies of radioiodine were released during the year with a maximum average quarterly release rate of 5.62E-05 µCi/sec for Unit 1 and 8.52E-05 µCi/sec for Unit 2.

A total of 1.00E-04 curies of beta-gamma emitters were released as airborne particulate matter with a maximum average release rate of 1.47E-06 µCi/sec for Unit 1 and 1.11E-05 µCi/sec for Unit 2. Alpha-emitting radionuclides were below the lower limit of detection (LLD) for the year.

A total of 5.71E+02 curies of tritium were released with a maximum average quarterly release rate of 7.75E+00 µCi/sec for Unit 1 and 1.99E+01 µCi/sec for Unit 2.

A total of 8.31E+00 curies of C-14 was released with a maximum average quarterly release rate of 1.43E-01 uCi/sec from Unit 1 and 1.42E-01 uCi/sec from Unit 2.

1.2 Liquids Released to Kankakee River

A total of 3.89E+06 liters of radioactive liquid wastes (prior to dilution) containing 1.08E+00 curies (excluding tritium, noble gases and alpha) were discharged from the station. These wastes were released at a maximum quarterly diluted average concentration of 1.71E-07 µCi/ml. Alpha-emitting radionuclides were less than the LLD for the year. A total of 2.58E+03 curies of tritium were released from the station. Quarterly release activities are given in Table 1.2-1.

2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck to the Envirocare of Utah disposal facility and various waste processors. For details, refer to the Braidwood Station 2012 Radioactive Effluent Release Report.

3.0 DOSE TO MAN

3.1 Gaseous Effluent Pathways

Table 3.1-1 summarizes the doses resulting from releases of airborne radioactivity via the different exposure pathways.

3.1.1 Noble Gases

3.1.1.1 Gamma Dose Rates

Offsite Gamma air and total body dose rates are shown in Table 3.1-1 and were calculated based on measured effluents and average meteorological data. Based on measured effluents and average meteorological data, the maximum total body dose to an individual would be 5.73E-01 mrem for the year (Table 3.1-1) with an occupancy or shielding factor of 0.7 used. The maximum total body dose based on measured effluents and concurrent meteorological data would be 6.75E-01 mrem (Table 3.4-1). The maximum gamma air dose was 8.82E-06 mrad (Table 3.1-1) based on measured effluents and average meteorological data and 1.70E-05 mrad based on concurrent meteorological date (Table 3.4-1).

3.1.1.2 Beta Air and Skin Dose Rates

The range of beta particles in air is relatively small (on the order of a few meters or less); consequently, plumes of gaseous effluents may be considered "infinite" for purpose of calculating the dose from beta radiation incident on the skin. However, the actual dose to sensitive skin tissues is difficult to calculate due to the effect of the beta particle energies, thickness of inert skin and clothing covering sensitive tissues. For purposes of this report the skin is taken to have a thickness of 7.0 mg/cm^2 and an occupancy factor of 1.0 is used. The skin dose from beta and gamma radiation for the year was 2.80E-05 mrem based on concurrent meteorological data (Table 3.4-1).

The maximum offsite beta air dose for the year was

3.45E-05 mrad (Table 3.1-1) based on measured effluents and average meteorological data and 4.10E-05 mrad based on concurrent meteorological data (Table 3.4-1).

3.1.2 Radioactive Iodine & Particulate

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. I-131 released during routine operation of the station may be made available to man resulting in a dose to the thyroid. C-14 is also included in this category. C-14 exhibits a capacity to concentrate in bone. C-14 is released in gaseous form and is absorbed into vegetation through photosynthesis. The principal pathways of interest for C-14 are the consumption of vegetation by humans and milk from which animals have ingested C-14 through the consumption of vegetation. With the inclusion of C-14 in plant effluent calculations, human dose in this category is primarily driven by the release of C-14 from the plant.

The hypothetical dose to the maximum exposed individual living near the station via ingestion of milk and vegetation was calculated. The source of milk and vegetation was assumed to be at the nearest site boundary with the cows pastured and vegetation grown from May through October. The maximum dose from radioactive iodine and particulate (including C-14) to any organ was 2.23E+00 mrem (child/bone) based on measured effluents and average meteorological data and 2.65E+00 mrem based on concurrent meteorological data. The maximum dose from radioactive iodine and particulate (including C-14) to the whole body was 5.73E-01 mrem (child) based on measured effluents and average meteorological data and 6.75E-01 mrem based on concurrent meteorological data.

3.2 Liquid Effluent Pathways

The three principal pathways through the aquatic environment for potential doses to man from liquid waste are ingestion of potable water, eating aquatic foods, and exposure while on the shoreline. Not all of these pathways are significant or applicable at a given time or station but a reasonable approximation of the dose can be made by adjusting the dose formula for season of the year or type and degree of use of the aquatic environment. NRC developed equations* were used to calculate the doses to the whole body, lower GI tracts, thyroid, bone and skin; specific parameters for use in the equations are given

in the Exelon Offsite Dose Calculation Manual. The maximum whole body dose for the year was 4.64E-02 mrem and no organ dose exceeded 6.74E-02 mrem (Table 3.2-1 [child]).

3.3 Assessment of Dose to Member of Public

During the period January to December, 2012, Braidwood Station did not exceed the following limits as shown in Table 3.1-1 and Table 3.2-1 (based on annual average meteorological data), Table 3.4-1 (based on concurrent meteorological data), and Table 3.3-1:

- The RETS limits on dose or dose commitment to an individual due to radioactive materials in liquid effluents from each reactor unit (1.5 mrem to the whole body or 5 mrem to any organ during any calendar year; 3 mrem to the whole body or 10 mrem to any organ during the calendar year).
- The RETS limits on air dose in noble gases released in gaseous effluents to a member of the public from each reactor unit (5 mrads for gamma radiation or 10 mrad for beta radiation during any calendar quarter; 10 mrad for gamma radiation or 20 mrad for beta radiation during a calendar year).
- The RETS limits on dose to a member of the public due to iodine-131, iodine-133, tritium, and radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released from each reactor unit (7.5 mrem to any organ during any calendar quarter; 15 mrem to any organ during any calendar year).
- The 10CFR20 limit on Total Effective Dose Equivalent to individual members of the public (100 mrem) during any calendar year.

4.0 SITE METEOROLOGY

A summary of the site meteorological measurements taken during each calendar quarter of the year is given in Appendix E. The data are presented as cumulative joint frequency distributions of the wind direction for the 203' level and wind speed class by atmospheric stability class determined from the temperature difference between the 199' and 30' levels. Data recovery for these measurements was 99.4% during 2012.

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*Nuclear Regulatory Commission, Regulatory Guide 1.109 (Rev. 1)

APPENDIX E-1

DATA TABLES AND FIGURES

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Table 1.1-1
BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2012
GAS RELEASES
UNIT 1 (Docket Number 50-456)
SUMMATION OF ALL RELEASES

	Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error%
A. FISSION AND ACTIVATION GAS RELEASES						
1. Total Release Activity	Ci	3.49E-02	1.24E-01	1.06E-01	1.43E-01	7.59
2. Average Release Rate	µCi/sec	4.44E-03	1.58E-02	1.33E-02	1.80E-02	
3. Percent of ODCM Limit - gamma	%	5.56E-06	3.23E-05	1.74E-05	3.29E-05	
4. Percent of ODCM Limit - beta	%	1.35E-05	5.55E-05	4.18E-05	6.16E-05	
B. Iodine Releases						
1. Total Iodine	Ci	1.24E-06	4.42E-04	7.62E-08	5.15E-06	33.20
2. Average Release Rate	µCi/sec	1.58E-07	5.62E-05	9.58E-09	6.48E-07	
3. Percent of ODCM Limit	%	1.03E-05	1.17E-03	4.51E-07	5.12E-06	
C. PARTICULATE (> 8 DAY HALF-LIFE) RELEASE						
1. Particulates with half-lives > 8 days	Ci	<LLD	<LLD	<LLD	1.17E-05	19.80
2. Average Release Rate	µCi/sec	<LLD	<LLD	<LLD	1.47E-06	
3. Percent of ODCM Limit	%	N/A	N/A	N/A	2.12E-03	
3. Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. Tritium Releases						
1. Total Release Activity	Ci	2.91E+01	4.87E+01	6.16E+01	4.41E+01	8.07
2. Average Release Rate	µCi/sec	3.70E+00	6.20E+00	7.75E+00	5.55E+00	
3. Percent of ODCM Limit	%	8.28E-02	1.39E-01	1.74E-01	1.25E-01	
E. Gross Alpha Releases						
1. Total Release Activity	Ci	<LLD	<LLD	<LLD	<LLD	19.80
2. Average Release Rate	µCi/sec	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM limit	%	N/A	N/A	N/A	N/A	
F. Carbon-14 Releases						
1. Total Release Activity	Ci	1.11E+00	7.70E-01	1.12E+00	1.14E+00	
2. Average Release Rate	µCi/sec	1.41E-01	9.80E-02	1.41E-01	1.43E-01	

Note: LLD Values are included in Appendix A of this report.

Table 1.1-1 (cont)
BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2012
GAS RELEASES
UNIT 2 (Docket Number 50-457)
SUMMATION OF ALL RELEASES

	Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error%
A. FISSION AND ACTIVATION GAS RELEASES						
1. Total Activity Released	Ci	3.49E-02	1.24E-01	1.06E-01	1.43E-01	7.59
2. Average Release Rate	µCi/sec	4.44E-03	1.58E-02	1.33E-02	1.79E-02	
3. Percent of ODCM Limit - gamma	%	5.56E-06	3.23E-05	1.74E-05	3.29E-05	
4. Percent of ODCM Limit - beta	%	1.35E-05	5.55E-05	4.18E-05	6.16E-05	
B. IODINE RELEASES						
1. Total Iodine	Ci	7.41E-06	6.70E-04	<LLD	3.55E-04	33.20
2. Average Release Rate	µCi/sec	9.43E-07	8.52E-05	<LLD	4.47E-05	
3. Percent of ODCM Limit	%	7.18E-08	7.10E-04	N/A	1.07E-05	
C. PARTICULATE (> 8 DAY HALF-LIFE) RELEASE						
1. Particulates with half-lives > 8 days	Ci	<LLD	<LLD	<LLD	8.86E-05	19.80
2. Average Release Rate	µCi/sec	<LLD	<LLD	<LLD	1.11E-05	
3. Percent of OCDM Limit	%	N/A	N/A	N/A	1.60E-02	
4. Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. Tritium Releases						
1. Total Release Activity	Ci	4.95E+01	9.09E+01	1.58E+02	8.87E+01	8.07
2. Average Release Rate	µCi/sec	6.30E+00	1.16E+01	1.99E+01	1.12E+01	
3. Percent of ODCM Limit	%	1.40E-01	2.59E-01	4.49E-01	2.52E-01	
E. Gross Alpha Releases						
1. Total Release Activity	Ci	<LLD	<LLD	<LLD	<LLD	19.80
2. Average Release Rate	µCi/sec	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM Limit	%	N/A	N/A	N/A	N/A	
F. Carbon-14 Releases						
1. Total Release Activity	Ci	1.09E+00	1.12E+00	1.12E+00	8.38E-01	
2. Average Release Rate	µCi/sec	1.39E-01	1.42E-01	1.41E-01	1.05E-01	

Note: LLD Values are included in Appendix A of this report.

Table 1.2-1
BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2012
LIQUID RELEASES
UNIT 1 (Docket Number 50-456)
SUMMATION OF ALL RELEASES

	Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error %
A. Fission and Activation Products						
1. Total Release	Ci	8.19E-02	4.46E-01	1.94E-03	1.19E-02	2.64
2. Average Diluted Concentration	µCi/ml	1.13E-08	1.71E-07	6.78E-10	2.90E-09	
3. Percent of applicable limit	%	*	*	*	*	
B. TRITIUM						
1. Total Release	Ci	3.26E+02	3.23E+02	1.69E+02	4.72E+02	5.85
2. Average Diluted Concentration	µCi/ml	4.50E-05	1.23E-04	5.89E-05	1.15E-04	
3. % of Limit (1E-2 µCi/ml)	%	4.50E-01	1.23E+00	5.89E-01	1.15E+00	
C. Dissolved Noble Gases						
1. Total Release	Ci	0.00E+00	8.35E-06	0.00E+00	0.00E+00	2.64
2. Average Diluted Concentration	µCi/ml	0.00E+00	3.19E-12	0.00E+00	0.00E+00	
3. % of Limit (2E-4 µCi/ml)	%	0.00E+00	1.60E-06	0.00E+00	0.00E+00	
D. Gross Alpha						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	14.70
E. Volume of Waste Released (prior to dilution)	liters	3.94E+05	6.10E+05	3.02E+05	6.41E+05	
F. Volume of Dilution Water	liters	1.45E+10	5.23E+09	5.72E+09	8.17E+09	

Note: LLD Values are included in Appendix A of this report.

Note: % Limit Values are included in Appendix B of this report.

*This limit is equal to 10 times the concentration values in Appendix B, Table 2, Column 2 to 10CFR20.1001-20.2402.

Table 1.1-1 (cont)
BRAIDWOOD NUCLEAR POWER STATION
ANNUAL EFFLUENT REPORT FOR 2012
GAS RELEASES
UNIT 2 (Docket Number 50-457)
SUMMATION OF ALL RELEASES

	Units	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Est. Total Error%
1. **A. FISSION AND ACTIVATION GAS RELEASES**						
1. Total Activity Released	Ci	3.49E-02	1.24E-01	1.06E-01	1.43E-01	7.59
2. Average Release Rate	µCi/sec	4.44E-03	1.58E-02	1.33E-02	1.79E-02	
3. Percent of ODCM Limit - gamma	%	5.56E-06	3.23E-05	1.74E-05	3.29E-05	
4. Percent of ODCM Limit - beta	%	1.35E-05	5.55E-05	4.18E-05	6.16E-05	
2. **B. IODINE RELEASES**						
1. Total Iodine	Ci	7.41E-06	6.70E-04	<LLD	3.55E-04	33.20
2. Average Release Rate	µCi/sec	9.43E-07	8.52E-05	<LLD	4.47E-05	
3. Percent of ODCM Limit	%	7.18E-08	7.10E-04	N/A	1.07E-05	
3. **C. PARTICULATE (> 8 DAY HALF-LIFE) RELEASES**						
1. Particulates with half-lives > 8 days	Ci	<LLD	<LLD	<LLD	8.86E-05	19.80
2. Average Release Rate	µCi/sec	<LLD	<LLD	<LLD	1.11E-05	
3. Percent of OCDM Limit	%	N/A	N/A	N/A	1.60E-02	
4. Gross Alpha Radioactivity	Ci	<LLD	<LLD	<LLD	<LLD	
D. Tritium Releases						
1. Total Release Activity	Ci	4.95E+01	9.09E+01	1.58E+02	8.87E+01	8.07
2. Average Release Rate	µCi/sec	6.30E+00	1.16E+01	1.99E+01	1.12E+01	
3. Percent of ODCM Limit	%	1.40E-01	2.59E-01	4.49E-01	2.52E-01	
E. Gross Alpha Releases						
1. Total Release Activity	Ci	<LLD	<LLD	<LLD	<LLD	19.80
2. Average Release Rate	µCi/sec	<LLD	<LLD	<LLD	<LLD	
3. Percent of ODCM Limit	%	N/A	N/A	N/A	N/A	
F. Carbon-14 Releases						
1. Total Release Activity	Ci	1.09E+00	1.12E+00	1.12E+00	8.38E-01	
2. Average Release Rate	µCi/sec	1.39E-01	1.42E-01	1.41E-01	1.05E-01	

Note: LLD Values are included in Appendix A of this report.

Table 3.1-1

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date.....: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit.....: 1

=== RELEASE DATA ==========

Total Release Duration (minutes)..... 5.746E+05
Total Release Volume (cf)..... 5.212E+10
Average Release Flowrate (cfm)..... 9.070E+04

Average Period Flowrate (cfm)..... 9.889E+04

=== NUCLIDE DATA ==========

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
AR-41	1.38E+03	9.34E-13	9.34E-05	1.00E-08
KR-85M	3.30E+02	2.24E-13	2.24E-06	1.00E-07
KR-85	0.00E+00	0.00E+00	0.00E+00	7.00E-07
KR-87	2.05E+02	1.39E-13	6.94E-06	2.00E-08
XE-133M	2.63E+03	1.78E-12	2.97E-06	6.00E-07
KR-83M	0.00E+00	0.00E+00	0.00E+00	5.00E-05
KR-88	0.00E+00	0.00E+00	0.00E+00	9.00E-09
XE-131M	0.00E+00	0.00E+00	0.00E+00	2.00E-06
XE-135	2.41E+04	1.63E-11	2.33E-04	7.00E-08
XE-133	3.79E+05	2.57E-10	5.14E-04	5.00E-07
F&AG	4.08E+05	2.76E-10	8.53E-04	
I-131	5.56E+01	3.77E-14	1.88E-04	2.00E-10
I-132	3.86E+02	2.62E-13	1.31E-05	2.00E-08
I-133	7.24E+00	4.90E-15	4.90E-06	1.00E-09
I-135	0.00E+00	0.00E+00	0.00E+00	6.00E-09
Iodine	4.49E+02	3.04E-13	2.06E-04	
BR-82	0.00E+00	0.00E+00	0.00E+00	5.00E-09
C-14	4.14E+06	2.81E-09	9.35E-01	3.00E-09
Other	4.14E+06	2.81E-09	9.35E-01	
H-3	1.84E+08	1.24E-07	1.24E+00	1.00E-07
H-3	1.84E+08	1.24E-07	1.24E+00	
TC-99M	3.65E+00	2.48E-15	1.24E-08	2.00E-07

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  1
```

=== NUCLIDE DATA ==========

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
P<8	3.65E+00	2.48E-15	1.24E-08	
CO-60	1.17E+01	7.94E-15	1.59E-04	5.00E-11
P>=8	1.17E+01	7.94E-15	1.59E-04	
Total	1.88E+08	1.27E-07	2.18E+00	

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  1
Receptor............: 5   Composite Crit. Receptor - IP
Distance (meters)....: 0.0
Compass Point........: 0.0
```

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ==========

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
AGPD	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	0.00E+00	1.50E-04
AINHL	2.77E-03	5.37E-03	5.40E-03	5.37E-03	5.38E-03	5.37E-03	0.00E+00	5.37E-03
AVEG	1.37E-01	3.60E-02	3.71E-02	3.60E-02	3.60E-02	3.60E-02	0.00E+00	3.60E-02
AGMILK	4.11E-03	6.84E-03	1.16E-02	6.85E-03	6.82E-03	6.83E-03	0.00E+00	6.83E-03
ACMEAT	5.07E-02	1.14E-02	1.15E-02	1.14E-02	1.14E-02	1.14E-02	0.00E+00	1.14E-02
ACMILK	5.53E-02	1.40E-02	1.80E-02	1.40E-02	1.40E-02	1.40E-02	0.00E+00	1.40E-02
TGPD	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	0.00E+00	1.50E-04
TINHL	3.96E-03	5.64E-03	5.67E-03	5.64E-03	5.64E-03	5.64E-03	0.00E+00	5.64E-03
TVEG	2.21E-01	5.43E-02	5.52E-02	5.43E-02	5.43E-02	5.43E-02	0.00E+00	5.43E-02
TGMILK	7.42E-03	9.31E-03	1.69E-02	9.33E-03	9.28E-03	9.29E-03	0.00E+00	9.30E-03
TCMEAT	4.28E-02	9.31E-03	9.42E-03	9.31E-03	9.31E-03	9.31E-03	0.00E+00	9.31E-03
TCMILK	1.02E-01	2.43E-02	3.06E-02	2.43E-02	2.42E-02	2.43E-02	0.00E+00	2.43E-02
CGPD	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	0.00E+00	1.50E-04
CINHL	5.47E-03	5.35E-03	5.39E-03	5.35E-03	5.35E-03	5.35E-03	0.00E+00	5.35E-03
CVEG	5.33E-01	1.22E-01	1.24E-01	1.22E-01	1.22E-01	1.22E-01	0.00E+00	1.22E-01
CGMILK	2.38E-01	6.25E-02	7.76E-02	6.26E-02	6.25E-02	6.25E-02	0.00E+00	6.25E-02
CCMEAT	8.06E-02	1.71E-02	1.72E-02	1.71E-02	1.71E-02	1.71E-02	0.00E+00	1.71E-02
CCMILK	2.51E-01	5.62E-02	6.88E-02	5.63E-02	5.62E-02	5.62E-02	0.00E+00	5.62E-02
IGPD	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	1.50E-04	0.00E+00	1.50E-04
IINHL	4.04E-03	3.30E-03	3.33E-03	3.30E-03	3.30E-03	3.30E-03	0.00E+00	3.30E-03
IGMILK	4.92E-01	1.24E-01	1.60E-01	1.24E-01	1.24E-01	1.24E-01	0.00E+00	1.24E-01
ICMILK	4.92E-01	1.14E-01	1.45E-01	1.14E-01	1.14E-01	1.14E-01	0.00E+00	1.14E-01

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ==========

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	2.50E-01	7.38E-02	8.39E-02	7.38E-02	7.37E-02	7.38E-02	0.00E+00	7.38E-02
TEEN	3.77E-01	1.03E-01	1.18E-01	1.03E-01	1.03E-01	1.03E-01	0.00E+00	1.03E-01
CHILD	1.11E+00	2.64E-01	2.93E-01	2.64E-01	2.64E-01	2.64E-01	0.00E+00	2.64E-01
INFANT	9.89E-01	2.42E-01	3.09E-01	2.42E-01	2.41E-01	2.41E-01	0.00E+00	2.41E-01

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  1
Receptor............: 5   Composite Crit. Receptor - IP
Distance (meters)....: 0.0
Compass Point........: 0.0
```

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ==========

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	BONE	1.11E+00	31-day	2.25E-01	4.93E+02	3.00E-01	3.70E+02
Qrtr->End	CHILD	BONE	1.11E+00	Quarter	5.63E+00	1.97E+01	7.50E+00	1.48E+01
Year->End	CHILD	BONE	1.11E+00	Annual	1.13E+01	9.86E+00	1.50E+01	7.39E+00

Critical Pathway........: 2 Vegetation (VEG)
Major Contributors......: 0.0 % or greater to total

Nuclide	Percentage
H-3	0.00E+00
C-14	1.00E+02
CO-60	1.35E-02
TC-99M	3.16E-08
I-131	7.96E-03
I-132	2.53E-05
I-133	1.53E-05
I-135	0.00E+00

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body)) ==========

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	TBODY	2.64E-01	31-day	1.50E-01	1.76E+02	2.00E-01	1.32E+02
Qrtr->End	CHILD	TBODY	2.64E-01	Quarter	5.25E+00	5.02E+00	7.50E+00	3.51E+00
Year->End	CHILD	TBODY	2.64E-01	Annual	1.05E+01	2.51E+00	1.50E+01	1.76E+00

Critical Pathway........: 2 Vegetation (VEG)
Major Contributors......: 0.0 % or greater to total

Nuclide	Percentage
H-3	1.48E+01
C-14	8.50E+01
CO-60	6.03E-02
TC-99M	1.33E-07
I-131	1.92E-02
I-132	1.05E-04
I-133	3.19E-05

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  1

Major Contributors......: 0.0  % or greater to total
Nuclide     Percentage
----------  ----------
I-135       0.00E+00
```

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  1
Receptor.............: 4   Composite Crit. Receptor - NG
Distance (meters)....: 0.0
Compass Point........: 0.0
```

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Gamma) ==========

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Gamma	4.41E-06	31-day	1.50E-01	2.94E-03	2.00E-01	2.21E-03
Qrtr->End	Gamma	4.41E-06	Quarter	3.75E+00	1.18E-04	5.00E+00	8.82E-05
Year->End	Gamma	4.41E-06	Annual	7.50E+00	5.88E-05	1.00E+01	4.41E-05

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
AR-41	6.56E+00
KR-85M	2.08E-01
KR-85	0.00E+00
KR-87	6.47E-01
XE-133M	4.41E-01
KR-83M	0.00E+00
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	2.37E+01
XE-133	6.85E+01

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Beta)) ==========

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Beta	1.72E-05	31-day	3.00E-01	5.75E-03	4.00E-01	4.31E-03
Qrtr->End	Beta	1.72E-05	Quarter	7.50E+00	2.30E-04	1.00E+01	1.72E-04
Year->End	Beta	1.72E-05	Annual	1.50E+01	1.15E-04	2.00E+01	8.62E-05

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
AR-41	9.65E-01
KR-85M	1.39E-01
KR-85	0.00E+00
KR-87	4.51E-01
XE-133M	8.32E-01
KR-83M	0.00E+00
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	1.26E+01

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  1

Major Contributors......: 0.0  % or greater to total
Nuclide     Percentage
----------  ----------
XE-133      8.50E+01
```

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

Release ID.....: 1 All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date.....: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit.....: 2

=== RELEASE DATA ==========

Total Release Duration (minutes)..... 5.632E+05
Total Release Volume (cf)..... 7.473E+10
Average Release Flowrate (cfm)..... 1.327E+05

Average Period Flowrate (cfm)..... 1.418E+05

=== NUCLIDE DATA ==========

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
AR-41	1.38E+03	6.51E-13	6.51E-05	1.00E-08
KR-85M	3.30E+02	1.56E-13	1.56E-06	1.00E-07
KR-85	0.00E+00	0.00E+00	0.00E+00	7.00E-07
KR-87	2.05E+02	9.69E-14	4.84E-06	2.00E-08
XE-133M	2.63E+03	1.24E-12	2.07E-06	6.00E-07
KR-83M	0.00E+00	0.00E+00	0.00E+00	5.00E-05
KR-88	0.00E+00	0.00E+00	0.00E+00	9.00E-09
XE-131M	0.00E+00	0.00E+00	0.00E+00	2.00E-06
XE-135	2.41E+04	1.14E-11	1.63E-04	7.00E-08
XE-133	3.79E+05	1.79E-10	3.58E-04	5.00E-07
F&AG	4.08E+05	1.93E-10	5.95E-04	
I-131	3.19E+01	1.51E-14	7.53E-05	2.00E-10
I-132	8.84E+02	4.18E-13	2.09E-05	2.00E-08
I-133	1.16E+02	5.50E-14	5.50E-05	1.00E-09
Iodine	1.03E+03	4.88E-13	1.51E-04	
C-14	4.17E+06	1.97E-09	6.57E-01	3.00E-09
Other	4.17E+06	1.97E-09	6.57E-01	
H-3	3.87E+08	1.83E-07	1.83E+00	1.00E-07
H-3	3.87E+08	1.83E-07	1.83E+00	
AG-108M	0.00E+00	0.00E+00	0.00E+00	3.00E-11
CO-60	8.86E+01	4.19E-14	8.38E-04	5.00E-11

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  2
```

=== NUCLIDE DATA ==========

Nuclide	uCi	Average uCi/cc	ECrcent Ratio	EC
P>=8	8.86E+01	4.19E-14	8.38E-04	
Total	3.92E+08	1.85E-07	2.49E+00	

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  2
Receptor............: 5   Composite Crit. Receptor - IP
Distance (meters)....: 0.0
Compass Point........: 0.0
```

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ==========

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
AGPD	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	0.00E+00	1.13E-03
AINHL	2.79E-03	1.08E-02	1.08E-02	1.08E-02	1.08E-02	1.08E-02	0.00E+00	1.08E-02
AVEG	1.38E-01	4.59E-02	4.65E-02	4.58E-02	4.58E-02	4.60E-02	0.00E+00	4.59E-02
AGMILK	4.13E-03	1.35E-02	1.63E-02	1.35E-02	1.35E-02	1.35E-02	0.00E+00	1.35E-02
ACMEAT	5.11E-02	1.29E-02	1.29E-02	1.29E-02	1.29E-02	1.29E-02	0.00E+00	1.29E-02
ACMILK	5.57E-02	1.74E-02	1.97E-02	1.74E-02	1.73E-02	1.74E-02	0.00E+00	1.74E-02
TGPD	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	0.00E+00	1.13E-03
TINHL	3.99E-03	1.11E-02	1.11E-02	1.11E-02	1.11E-02	1.11E-02	0.00E+00	1.11E-02
TVEG	2.23E-01	6.57E-02	6.62E-02	6.57E-02	6.57E-02	6.58E-02	0.00E+00	6.57E-02
TGMILK	7.47E-03	1.80E-02	2.24E-02	1.80E-02	1.80E-02	1.80E-02	0.00E+00	1.80E-02
TCMEAT	4.31E-02	1.02E-02	1.03E-02	1.02E-02	1.02E-02	1.02E-02	0.00E+00	1.02E-02
TCMILK	1.03E-01	2.87E-02	3.24E-02	2.87E-02	2.86E-02	2.87E-02	0.00E+00	2.86E-02
CGPD	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	0.00E+00	1.13E-03
CINHL	5.51E-03	1.02E-02	1.02E-02	1.02E-02	1.02E-02	1.02E-02	0.00E+00	1.02E-02
CVEG	5.37E-01	1.40E-01	1.41E-01	1.40E-01	1.40E-01	1.40E-01	0.00E+00	1.40E-01
CGMILK	2.39E-01	7.66E-02	8.55E-02	7.66E-02	7.66E-02	7.66E-02	0.00E+00	7.66E-02
CCMEAT	8.12E-02	1.82E-02	1.83E-02	1.82E-02	1.82E-02	1.82E-02	0.00E+00	1.82E-02
CCMILK	2.53E-01	6.33E-02	7.07E-02	6.33E-02	6.33E-02	6.33E-02	0.00E+00	6.33E-02
IGPD	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	1.13E-03	0.00E+00	1.13E-03
IINHL	4.07E-03	6.06E-03	6.10E-03	6.06E-03	6.08E-03	6.06E-03	0.00E+00	6.06E-03
IGMILK	4.96E-01	1.45E-01	1.67E-01	1.45E-01	1.45E-01	1.45E-01	0.00E+00	1.45E-01
ICMILK	4.96E-01	1.25E-01	1.43E-01	1.25E-01	1.25E-01	1.25E-01	0.00E+00	1.25E-01

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ==========

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	2.53E-01	1.01E-01	1.07E-01	1.01E-01	1.01E-01	1.02E-01	0.00E+00	1.01E-01
TEEN	3.81E-01	1.35E-01	1.44E-01	1.35E-01	1.35E-01	1.35E-01	0.00E+00	1.35E-01
CHILD	1.12E+00	3.10E-01	3.27E-01	3.10E-01	3.10E-01	3.10E-01	0.00E+00	3.10E-01
INFANT	9.97E-01	2.78E-01	3.17E-01	2.78E-01	2.78E-01	2.78E-01	0.00E+00	2.78E-01

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  2
Receptor............: 5   Composite Crit. Receptor - IP
Distance (meters)....: 0.0
Compass Point........: 0.0
```

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ==========

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	BONE	1.12E+00	31-day	2.25E-01	4.97E+02	3.00E-01	3.73E+02
Qrtr->End	CHILD	BONE	1.12E+00	Quarter	5.63E+00	1.99E+01	7.50E+00	1.49E+01
Year->End	CHILD	BONE	1.12E+00	Annual	1.13E+01	9.94E+00	1.50E+01	7.45E+00

```
Critical Pathway........: 2  Vegetation (VEG)
Major Contributors......: 0.0  % or greater to total
```

Nuclide	Percentage
H-3	0.00E+00
C-14	1.00E+02
CO-60	1.01E-01
I-131	4.52E-03
I-132	5.74E-05
I-133	2.44E-04

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body)) ==========

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	TBODY	3.10E-01	31-day	1.50E-01	2.06E+02	2.00E-01	1.55E+02
Qrtr->End	CHILD	TBODY	3.10E-01	Quarter	5.25E+00	5.90E+00	7.50E+00	4.13E+00
Year->End	CHILD	TBODY	3.10E-01	Annual	1.05E+01	2.95E+00	1.50E+01	2.06E+00

```
Critical Pathway........: 2  Vegetation (VEG)
Major Contributors......: 0.0  % or greater to total
```

Nuclide	Percentage
H-3	2.66E+01
C-14	7.30E+01
CO-60	3.88E-01
I-131	9.37E-03
I-132	2.05E-04
I-133	4.36E-04

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  2
Receptor............: 4   Composite Crit. Receptor - NG
Distance (meters)....: 0.0
Compass Point........: 0.0
```

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Gamma) ==========

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Gamma	4.41E-06	31-day	1.50E-01	2.94E-03	2.00E-01	2.21E-03
Qrtr->End	Gamma	4.41E-06	Quarter	3.75E+00	1.18E-04	5.00E+00	8.82E-05
Year->End	Gamma	4.41E-06	Annual	7.50E+00	5.88E-05	1.00E+01	4.41E-05

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
AR-41	6.56E+00
KR-85M	2.08E-01
KR-85	0.00E+00
KR-87	6.47E-01
XE-133M	4.41E-01
KR-83M	0.00E+00
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	2.37E+01
XE-133	6.85E+01

=== MAXIMUM PERIOD NG DOSE TO LIMIT (Beta)) ==========

Dose Period	Dose Type	Dose (mrad)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	Beta	1.72E-05	31-day	3.00E-01	5.75E-03	4.00E-01	4.31E-03
Qrtr->End	Beta	1.72E-05	Quarter	7.50E+00	2.30E-04	1.00E+01	1.72E-04
Year->End	Beta	1.72E-05	Annual	1.50E+01	1.15E-04	2.00E+01	8.62E-05

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
AR-41	9.65E-01
KR-85M	1.39E-01
KR-85	0.00E+00
KR-87	4.51E-01
XE-133M	8.32E-01
KR-83M	0.00E+00
KR-88	0.00E+00
XE-131M	0.00E+00
XE-135	1.26E+01

Table 3.1-1 (cont.)

GASEOUS RELEASE AND DOSE SUMMARY REPORT - BY UNIT
(Composite Critical Receptor - Limited Analysis)

```
Release ID...........: 1  All Gas Release Types
Period Start Date....: 01/01/2012 00:00
Period End Date......: 01/01/2013 00:00
Period Duration (min): 5.270E+05
Coefficient Type.....: Historical
Unit................:  2

Major Contributors......: 0.0  % or greater to total
Nuclide     Percentage
----------  ----------
XE-133      8.50E+01
```

Table 3.2-1

```
                    LIQUID RELEASE AND DOSE SUMMARY REPORT
                    ------ (PERIOD BASIS - BY UNIT) ------

Release ID............: 1  All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.......: 01/01/2013 00:00
Period Duration (mins): 5.270E+05
Unit..................: 1

=== MULTIPLE RELEASE POINT MESSAGE ==========================================
Undiluted and Diluted Flowrate(s) and Concentration(s) cannot be combined.

=== RELEASE DATA ============================================================
Total Release Duration (minutes)..................................... 1.848E+06
Total Undiluted Volume Released (gallons)............................ NA
Average Undiluted Flowrate (gpm)..................................... NA

Total Dilution Volume (gallons)...................................... NA
Average Dilution Flowrate (gpm)...................................... NA

=== NUCLIDE DATA ============================================================
Nuclide    uCi
---------  --------
CO-57      8.58E+00
NB-97      5.99E+01
SN-113     5.30E+00
SB-124     2.45E+02
SB-125     8.67E+03
TE-123M    1.91E+02
CR-51      5.18E+05
MN-54      1.31E+02
FE-59      2.98E+02
CO-58      4.37E+03
CO-60      3.17E+03
ZR-95      7.31E+01
NB-95      1.67E+02
AG-110M    8.02E+01
TE-125M    5.49E+03
TE-129M    3.53E+01
TE-132     1.07E+01
I-132      7.80E+00
W-187      4.58E+00
---------  --------
Gamma      5.41E+05

XE-133M    8.34E+00
---------  --------
D&EG       8.34E+00

H-3        1.29E+09
NI-63      1.09E+03
SR-91      4.69E+00
```

Table 3.2-1 (cont.)

```
                    LIQUID RELEASE AND DOSE SUMMARY REPORT
                    ------ (PERIOD BASIS - BY UNIT) ------


Release ID............: 1  All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.......: 01/01/2013 00:00
Period Duration (mins): 5.270E+05


=== NUCLIDE DATA ==============================================================
Nuclide    uCi
---------  --------
---------  --------
Beta       1.29E+09

---------  --------
Total      1.29E+09
```

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
------ (PERIOD BASIS - BY UNIT) ------

```
Release ID............: 1  All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.......: 01/01/2013 00:00
Period Duration (mins): 5.270E+05
Unit..................: 1
Receptor..............: 0  Liquid Receptor
```

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ==========

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
APWtr	2.16E-05	1.48E-02	1.48E-02	1.48E-02	1.48E-02	1.49E-02	0.00E+00	1.48E-02
AFWFSp	1.28E-03	6.39E-03	6.25E-03	7.68E-03	6.16E-03	1.94E-02	0.00E+00	6.31E-03
TPWtr	2.06E-05	1.04E-02	1.04E-02	1.04E-02	1.04E-02	1.05E-02	0.00E+00	1.04E-02
TFWFSp	1.35E-03	4.99E-03	4.83E-03	4.77E-03	4.74E-03	1.42E-02	0.00E+00	4.89E-03
CPWtr	6.26E-05	2.00E-02	2.00E-02	2.00E-02	2.00E-02	2.01E-02	0.00E+00	2.00E-02
CFWFSp	1.75E-03	4.16E-03	4.06E-03	3.95E-03	3.92E-03	7.29E-03	0.00E+00	4.12E-03
IPWtr	5.13E-05	1.96E-02	1.96E-02	1.96E-02	1.96E-02	1.97E-02	0.00E+00	1.96E-02

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ==========

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	1.30E-03	2.12E-02	2.10E-02	2.25E-02	2.09E-02	3.43E-02	0.00E+00	2.11E-02
TEEN	1.37E-03	1.54E-02	1.53E-02	1.52E-02	1.52E-02	2.46E-02	0.00E+00	1.53E-02
CHILD	1.82E-03	2.42E-02	2.41E-02	2.40E-02	2.39E-02	2.73E-02	0.00E+00	2.41E-02
INFANT	5.13E-05	1.96E-02	1.96E-02	1.96E-02	1.96E-02	1.97E-02	0.00E+00	1.96E-02

Table 3.2-1 (cont.)

```
                    LIQUID RELEASE AND DOSE SUMMARY REPORT
                    ------ (PERIOD BASIS - BY UNIT) ------

Release ID............: 1  All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.......: 01/01/2013 00:00
Period Duration (mins): 5.270E+05
Unit..................: 1
Receptor..............: 0  Liquid Receptor

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ==================================
Dose      Age              Dose      Limit   Admin    Admin  %  T.Spec   T.Spec %
Period    Group  Organ     (mrem)    Period  Limit    of Limit  Limit    of Limit
--------- ------ -------   --------  ------- -------- --------  -------- --------
Strt->End ADULT  GILLI     3.43E-02  31-day  1.50E-01 2.28E+01  2.00E-01 1.71E+01
Qrtr->End ADULT  GILLI     3.43E-02  Quarter 3.75E+00 9.14E-01  5.00E+00 6.85E-01
Year->End ADULT  GILLI     3.43E-02  Annual  7.50E+00 4.57E-01  1.00E+01 3.43E-01

Critical Pathway........: 1  Fresh Water Fish - Sport (FFSP)
Major Contributors......: 0.0  % or greater to total
Nuclide     Percentage
----------  ----------
H-3         6.10E+01
CR-51       1.30E+01
MN-54       1.35E-01
FE-59       1.89E-01
CO-58       6.30E-01
CO-60       1.21E+00
NI-63       3.85E-02
SR-91       7.44E-04
ZR-95       2.26E-03
NB-95       1.92E+01
AG-110M     3.97E-03
TE-125M     4.32E+00
TE-129M     1.50E-01
TE-132      6.04E-02
I-132       2.49E-06
W-187       2.83E-02

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body)) ==================================
Dose      Age              Dose      Limit   Admin    Admin  %  T.Spec   T.Spec %
Period    Group  Organ     (mrem)    Period  Limit    of Limit  Limit    of Limit
--------- ------ -------   --------  ------- -------- --------  -------- --------
Strt->End CHILD  TBODY     2.41E-02  31-day  4.50E-02 5.36E+01  6.00E-02 4.02E+01
Qrtr->End CHILD  TBODY     2.41E-02  Quarter 1.13E+00 2.15E+00  1.50E+00 1.61E+00
Year->End CHILD  TBODY     2.41E-02  Annual  2.25E+00 1.07E+00  3.00E+00 8.04E-01

Critical Pathway........: 0  Potable Water (PWtr)
Major Contributors......: 0.0  % or greater to total
Nuclide     Percentage
----------  ----------
H-3         9.90E+01
CR-51       8.16E-02
```

Table 3.2-1 (cont.)

```
                    LIQUID RELEASE AND DOSE SUMMARY REPORT
                    ------ (PERIOD BASIS - BY UNIT) ------

Release ID............: 1  All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.......: 01/01/2013 00:00
Period Duration (mins): 5.270E+05

Major Contributors......: 0.0  % or greater to total
Nuclide     Percentage
----------  ----------
MN-54       1.29E-02
FE-59       3.54E-02
CO-58       1.12E-01
CO-60       2.30E-01
NI-63       1.79E-01
SR-91       1.26E-05
ZR-95       1.12E-06
NB-95       2.67E-03
AG-110M     1.38E-05
TE-125M     2.88E-01
TE-129M     9.20E-03
TE-132      1.99E-03
I-132       8.83E-06
W-187       5.35E-05
```

Table 3.2-1 (cont.)

```
LIQUID RELEASE AND DOSE SUMMARY REPORT
------ (PERIOD BASIS - BY UNIT) ------


Release ID............: 1  All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.......: 01/01/2013 00:00
Period Duration (mins): 5.270E+05
Unit..................: 2

=== MULTIPLE RELEASE POINT MESSAGE ==========================================
Undiluted and Diluted Flowrate(s) and Concentration(s) cannot be combined.

=== RELEASE DATA ============================================================
Total Release Duration (minutes)..................................... 1.848E+06
Total Undiluted Volume Released (gallons)............................ NA
Average Undiluted Flowrate (gpm)..................................... NA

Total Dilution Volume (gallons)...................................... NA
Average Dilution Flowrate (gpm)...................................... NA

=== NUCLIDE DATA ============================================================
Nuclide    uCi
---------  --------
CO-57      8.58E+00
NB-97      5.99E+01
SN-113     5.30E+00
SB-124     2.45E+02
SB-125     8.67E+03
TE-123M    1.91E+02
CR-51      5.18E+05
MN-54      1.31E+02
FE-59      2.98E+02
CO-58      4.37E+03
CO-60      3.17E+03
ZR-95      7.31E+01
NB-95      1.67E+02
AG-110M    8.02E+01
TE-125M    5.49E+03
TE-129M    3.53E+01
TE-132     1.07E+01
I-132      7.80E+00
W-187      4.58E+00
---------  --------
Gamma      5.41E+05

XE-133M    8.34E+00
---------  --------
D&EG       8.34E+00

H-3        1.29E+09
NI-63      1.09E+03
SR-91      4.69E+00
```

Table 3.2-1 (cont.)

```
                    LIQUID RELEASE AND DOSE SUMMARY REPORT
                    ------ (PERIOD BASIS - BY UNIT) ------


Release ID............: 1  All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.......: 01/01/2013 00:00
Period Duration (mins): 5.270E+05


=== NUCLIDE DATA ==============================================================
Nuclide    uCi
---------  --------
---------  --------
Beta       1.29E+09

---------  --------
Total      1.29E+09
```

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
------ (PERIOD BASIS - BY UNIT) ------

Release ID.....: 1 All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.....: 01/01/2013 00:00
Period Duration (mins): 5.270E+05
Unit.....: 2
Receptor.....: 0 Liquid Receptor

=== PERIOD DOSE BY AGEGROUP, PATHWAY, ORGAN (mrem) ==========

Age/Path	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
APWtr	2.16E-05	1.48E-02	1.48E-02	1.48E-02	1.48E-02	1.49E-02	0.00E+00	1.48E-02
AFWFSp	1.28E-03	6.39E-03	6.25E-03	7.68E-03	6.16E-03	1.94E-02	0.00E+00	6.31E-03
TPWtr	2.06E-05	1.04E-02	1.04E-02	1.04E-02	1.04E-02	1.05E-02	0.00E+00	1.04E-02
TFWFSp	1.35E-03	4.99E-03	4.83E-03	4.77E-03	4.74E-03	1.42E-02	0.00E+00	4.89E-03
CPWtr	6.26E-05	2.00E-02	2.00E-02	2.00E-02	2.00E-02	2.01E-02	0.00E+00	2.00E-02
CFWFSp	1.75E-03	4.16E-03	4.06E-03	3.95E-03	3.92E-03	7.29E-03	0.00E+00	4.12E-03
IPWtr	5.13E-05	1.96E-02	1.96E-02	1.96E-02	1.96E-02	1.97E-02	0.00E+00	1.96E-02

=== PERIOD DOSE BY AGEGROUP, ORGAN (mrem) ==========

Agegroup	Bone	Liver	Thyroid	Kidney	Lung	GI-Lli	Skin	TB
ADULT	1.30E-03	2.12E-02	2.10E-02	2.25E-02	2.09E-02	3.43E-02	0.00E+00	2.11E-02
TEEN	1.37E-03	1.54E-02	1.53E-02	1.52E-02	1.52E-02	2.46E-02	0.00E+00	1.53E-02
CHILD	1.82E-03	2.42E-02	2.41E-02	2.40E-02	2.39E-02	2.73E-02	0.00E+00	2.41E-02
INFANT	5.13E-05	1.96E-02	1.96E-02	1.96E-02	1.96E-02	1.97E-02	0.00E+00	1.96E-02

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
------ (PERIOD BASIS - BY UNIT) ------

Release ID.....: 1 All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.....: 01/01/2013 00:00
Period Duration (mins): 5.270E+05
Unit.....: 2
Receptor.....: 0 Liquid Receptor

=== MAXIMUM PERIOD DOSE TO LIMIT (Any Organ) ==========

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	ADULT	GILLI	3.43E-02	31-day	1.50E-01	2.28E+01	2.00E-01	1.71E+01
Qrtr->End	ADULT	GILLI	3.43E-02	Quarter	3.75E+00	9.14E-01	5.00E+00	6.85E-01
Year->End	ADULT	GILLI	3.43E-02	Annual	7.50E+00	4.57E-01	1.00E+01	3.43E-01

Critical Pathway.....: 1 Fresh Water Fish - Sport (FFSP)
Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	6.10E+01
CR-51	1.30E+01
MN-54	1.35E-01
FE-59	1.89E-01
CO-58	6.30E-01
CO-60	1.21E+00
NI-63	3.85E-02
SR-91	7.44E-04
ZR-95	2.26E-03
NB-95	1.92E+01
AG-110M	3.97E-03
TE-125M	4.32E+00
TE-129M	1.50E-01
TE-132	6.04E-02
I-132	2.49E-06
W-187	2.83E-02

=== MAXIMUM PERIOD DOSE TO LIMIT (Tot Body)) ==========

Dose Period	Age Group	Organ	Dose (mrem)	Limit Period	Admin Limit	Admin % of Limit	T.Spec Limit	T.Spec % of Limit
Strt->End	CHILD	TBODY	2.41E-02	31-day	4.50E-02	5.36E+01	6.00E-02	4.02E+01
Qrtr->End	CHILD	TBODY	2.41E-02	Quarter	1.13E+00	2.15E+00	1.50E+00	1.61E+00
Year->End	CHILD	TBODY	2.41E-02	Annual	2.25E+00	1.07E+00	3.00E+00	8.04E-01

Critical Pathway.....: 0 Potable Water (PWtr)
Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
H-3	9.90E+01
CR-51	8.16E-02

Table 3.2-1 (cont.)

LIQUID RELEASE AND DOSE SUMMARY REPORT
------ (PERIOD BASIS - BY UNIT) ------

Release ID.....: 1 All Liquid Release Types
Period Start Date.....: 01/01/2012 00:00
Period End Date.....: 01/01/2013 00:00
Period Duration (mins): 5.270E+05

Major Contributors.....: 0.0 % or greater to total

Nuclide	Percentage
MN-54	1.29E-02
FE-59	3.54E-02
CO-58	1.12E-01
CO-60	2.30E-01
NI-63	1.79E-01
SR-91	1.26E-05
ZR-95	1.12E-06
NB-95	2.67E-03
AG-110M	1.38E-05
TE-125M	2.88E-01
TE-129M	9.20E-03
TE-132	1.99E-03
I-132	8.83E-06
W-187	5.35E-05

Table 3-3.1

Braidwood Nuclear Station

Unit 1

10 CFR 20 Compliance Assessment

Period of Assessment: **1/1/12** through **12/31/12**
Calculated **5/9/13**

10 CFR 20.1301(a)(1) Compliance

Total Effective Dose Equivalent (TEDE)	mrem/year	**1.45 E+00**
10 CFR 20.1301(a)(1) limit	mrem/year	100.00
	% of limit	**1.45**

Compliance Summary

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total
TEDE (mrem)	**3.72E-01**	**2.91E-01**	**3.85E-01**	**3.97E-01**	**1.45 E+00**

Table 3-3.1 (cont.)

Braidwood Nuclear Station

Unit 2

10 CFR 20 Compliance Assessment

Period of Assessment: **1/1/12** through **12/31/12**
Calculated **5/9/13**

10 CFR 20.1301(a)(1) Compliance

Total Effective Dose Equivalent (TEDE)	mrem/year	**1.50E+00**
10 CFR 20.1301(a)(1) limit	mrem/year	100.00
	% of limit	**1.50**

Compliance Summary

	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	Total
TEDE (mrem)	**3.69E-01**	**4.13E-01**	**4.07E-01**	**3.12E-01**	**1.50E+00**

Table 3.4-1

Doses Resulting from Airborne Releases

The following are the maximum annual calculated cumulative offsite doses resulting from Braidwood Station airborne releases.

Unit 1:

Dose	*Maximum Value*	*Sector Affected*
gamma air [1]	**8.520×10^{-6}** mrad	North
beta air [2]	**2.050×10^{-5}** mrad	North
whole body [3]	**3.102×10^{-1}** mrem	North
skin [4]	**1.400×10^{-5}** mrem	North
organ [5] (child-bone)	**$1.320 \times 10^{+0}$** mrem	North

Unit 1 Compliance Status

10 CFR 50 Appendix I	**Yearly Objective**	**% of Appendix I**
gamma air	10.0 mrad	**0.00**
beta air	20.0 mrad	**0.00**
whole body	5.0 mrem	**6.20**
skin	15.0 mrem	**0.00**
organ	15.0 mrem	**8.80**

Unit 2:

Dose	*Maximum Value*	Sector *Affected*
gamma air [1]	**8.520×10^{-6}** mrad	North
beta air [2]	**2.050×10^{-5}** mrad	North
whole body [3]	**3.644×10^{-1}** mrem	North
skin [4]	**1.400×10^{-5}** mrem	North
organ [5] (child-bone)	**$1.329 \times 10^{+0}$** mrem	North

Unit 2 Compliance Status

10 CFR 50 Appendix I	**Yearly Objective**	**% of Appendix I**
gamma air	10.0 mrad	**0.00**
beta air	20.0 mrad	**0.00**
whole body	5.0 mrem	**7.29**
skin	15.0 mrem	**0.00**
organ	15.0 mrem	**8.86**

(1) Gamma Air Dose – GASPAR II, NUREG-0597
(2) Beta Air Dose – GASPAR II, NUREG-0597
(3) Whole Body Dose – GASPAR II, NUREG-0597
(4) Skin Dose – GASPAR II, NUREG-0597
(5) Inhalation and Food Pathways Dose – GASPAR II, NUREG-0597

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APPENDIX F

METEOROLOGICAL

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Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	2	0	0	0	2
NE	0	0	2	0	0	0	2
ENE	0	4	2	0	0	0	6
E	0	0	0	0	0	0	0
ESE	0	1	0	0	0	0	1
SE	0	0	6	0	0	0	6
SSE	0	0	9	2	0	0	11
S	0	0	8	4	1	0	13
SSW	0	0	7	6	3	0	16
SW	0	0	0	3	0	0	3
WSW	0	0	7	0	0	0	7
W	0	0	3	0	0	0	3
WNW	0	8	27	5	0	0	40
NW	0	4	14	0	0	0	18
NNW	0	2	5	3	0	0	10
Variable	0	0	0	0	0	0	0
Total	0	19	92	23	4	0	138

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	3	2	0	0	0	5
ENE	0	3	3	0	0	0	6
E	0	1	0	0	0	0	1
ESE	0	4	0	0	0	0	4
SE	0	0	2	0	0	0	2
SSE	0	3	2	1	0	0	6
S	0	1	4	1	0	0	6
SSW	0	2	3	2	6	2	15
SW	0	0	3	5	3	0	11
WSW	0	1	6	2	1	0	10
W	0	3	3	2	0	0	8
WNW	0	7	6	1	0	0	14
NW	0	4	4	3	0	0	11
NNW	0	1	4	2	0	0	7
Variable	0	0	0	0	0	0	0
Total	0	33	43	19	10	2	107

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	2	0	0	0	4
NNE	0	1	0	0	0	0	1
NE	0	2	0	0	0	0	2
ENE	0	2	2	0	0	0	4
E	0	5	0	0	0	0	5
ESE	1	2	0	0	0	0	3
SE	0	1	0	1	0	0	2
SSE	0	0	4	0	0	0	4
S	0	2	3	2	0	0	7
SSW	0	2	3	5	0	1	11
SW	0	5	3	5	1	1	15
WSW	0	2	6	2	0	0	10
W	0	6	3	6	1	0	16
WNW	0	3	8	2	1	0	14
NW	0	5	3	1	0	0	9
NNW	0	5	5	3	0	0	13
Variable	0	0	0	0	0	0	0
Total	1	45	42	27	3	2	120

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	3	14	9	2	0	0	28
NNE	5	19	9	0	0	0	33
NE	14	35	31	2	0	0	82
ENE	10	51	18	0	0	0	79
E	6	11	0	0	0	0	17
ESE	1	13	5	0	0	0	19
SE	0	12	28	4	0	0	44
SSE	1	13	39	13	0	0	66
S	0	14	56	22	0	0	92
SSW	0	0	10	24	10	6	50
SW	1	7	44	18	4	2	76
WSW	2	30	37	8	0	0	77
W	4	28	52	39	5	0	128
WNW	10	21	55	39	6	0	131
NW	5	21	23	1	0	0	50
NNW	5	24	23	17	0	0	69
Variable	0	0	0	0	0	0	0
Total	67	313	439	189	25	8	1041

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	5	0	0	0	0	0	5
NNE	4	4	0	0	0	0	8
NE	8	5	0	0	0	0	13
ENE	10	6	0	0	0	0	16
E	13	4	0	0	0	0	17
ESE	12	12	5	0	0	0	29
SE	8	25	6	0	0	0	39
SSE	1	18	25	0	0	0	44
S	0	15	55	8	0	0	78
SSW	1	5	34	16	10	0	66
SW	2	5	37	7	0	0	51
WSW	5	33	9	1	0	0	48
W	5	33	2	1	0	0	41
WNW	21	23	1	0	0	0	45
NW	8	15	2	0	0	0	25
NNW	7	5	0	0	0	0	12
Variable	1	0	0	0	0	0	1
Total	111	208	176	33	10	0	538

Hours of calm in this stability class: 8
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	4	0	0	0	0	0	4
NNE	7	0	0	0	0	0	7
NE	7	0	0	0	0	0	7
ENE	12	1	0	0	0	0	13
E	8	0	0	0	0	0	8
ESE	10	1	0	0	0	0	11
SE	3	6	1	0	0	0	10
SSE	4	1	0	0	0	0	5
S	1	2	0	0	0	0	3
SSW	1	3	0	0	0	0	4
SW	4	2	2	0	0	0	8
WSW	4	22	0	0	0	0	26
W	18	20	0	0	0	0	38
WNW	12	8	0	0	0	0	20
NW	11	0	0	0	0	0	11
NNW	4	0	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	110	66	3	0	0	0	179

Hours of calm in this stability class: 5
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	3	0	0	0	0	0	3
NE	3	0	0	0	0	0	3
ENE	1	0	0	0	0	0	1
E	3	0	0	0	0	0	3
ESE	2	0	0	0	0	0	2
SE	0	0	0	0	0	0	0
SSE	1	0	0	0	0	0	1
S	0	0	0	0	0	0	0
SSW	4	2	0	0	0	0	6
SW	3	2	0	0	0	0	5
WSW	1	4	0	0	0	0	5
W	2	2	0	0	0	0	4
WNW	3	0	0	0	0	0	3
NW	3	0	0	0	0	0	3
NNW	0	0	0	0	0	0	0
Variable	1	0	0	0	0	0	1
Total	30	10	0	0	0	0	40

Hours of calm in this stability class: 3
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	0	0	0	0
NNE	0	0	1	1	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	0	7	2	0	0	9
E	0	0	0	0	0	0	0
ESE	0	0	1	0	0	0	1
SE	0	0	1	6	0	0	7
SSE	0	0	3	9	3	0	15
S	0	0	5	3	2	3	13
SSW	0	0	1	4	4	3	12
SW	0	0	1	1	2	0	4
WSW	0	0	2	3	0	0	5
W	0	0	2	0	0	0	2
WNW	0	1	13	19	6	3	42
NW	0	0	6	10	4	0	20
NNW	0	0	3	1	3	0	7
Variable	0	0	0	0	0	0	0
Total	0	1	46	59	24	9	139

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	3	1	0	0	4
ENE	0	0	4	2	0	0	6
E	0	1	2	0	0	0	3
ESE	0	3	0	0	0	0	3
SE	0	0	0	2	0	0	2
SSE	0	0	4	2	1	1	8
S	0	0	3	4	0	3	10
SSW	0	0	3	1	1	6	11
SW	0	0	3	0	2	4	9
WSW	0	1	5	4	1	1	12
W	0	0	4	1	2	0	7
WNW	0	5	3	4	2	1	15
NW	0	0	5	1	5	0	11
NNW	0	0	1	4	0	0	5
Variable	0	0	0	0	0	0	0
Total	0	10	41	26	14	16	107

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	1	1	0	0	3
NNE	0	0	2	0	0	0	2
NE	0	1	1	0	0	0	2
ENE	0	2	1	1	0	0	4
E	0	4	1	0	0	0	5
ESE	0	3	0	0	0	0	3
SE	0	0	1	0	1	0	2
SSE	0	0	1	4	1	0	6
S	0	2	0	3	1	1	7
SSW	0	2	3	2	5	2	14
SW	0	0	6	0	2	3	11
WSW	0	1	7	2	3	0	13
W	0	2	4	0	4	2	12
WNW	0	1	2	7	2	2	14
NW	0	2	2	4	2	1	11
NNW	0	2	6	0	3	0	11
Variable	0	0	0	0	0	0	0
Total	0	23	38	24	24	11	120

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	10	15	2	2	0	29
NNE	1	11	8	8	0	0	28
NE	1	17	26	25	3	0	72
ENE	1	18	39	27	0	0	85
E	0	8	15	1	0	0	24
ESE	0	2	6	8	4	0	20
SE	1	1	9	19	25	2	57
SSE	0	6	7	28	25	2	68
S	0	4	9	27	31	6	77
SSW	0	0	2	14	24	23	63
SW	0	6	22	37	10	4	79
WSW	1	12	27	23	6	7	76
W	3	7	22	30	38	9	109
WNW	3	7	15	39	39	29	132
NW	0	7	9	16	19	1	52
NNW	2	13	21	18	14	2	70
Variable	0	0	0	0	0	0	0
Total	13	129	252	322	240	85	1041

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	3	2	0	0	0	5
NNE	1	4	5	0	0	0	10
NE	0	6	4	2	0	0	12
ENE	1	4	7	2	0	0	14
E	1	7	12	2	0	0	22
ESE	0	2	12	10	4	0	28
SE	0	0	13	18	6	0	37
SSE	0	0	10	26	14	0	50
S	1	3	8	42	21	3	78
SSW	1	1	7	27	23	16	75
SW	0	2	12	22	10	0	46
WSW	0	6	16	17	1	0	40
W	0	4	15	16	3	0	38
WNW	0	4	13	19	1	0	37
NW	2	7	22	12	0	0	43
NNW	0	1	10	0	0	0	11
Variable	0	0	0	0	0	0	0
Total	7	54	168	215	83	19	546

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	5	3	0	0	0	8
NNE	1	0	5	0	0	0	6
NE	0	1	2	0	0	0	3
ENE	0	3	5	1	0	0	9
E	1	3	5	0	0	0	9
ESE	0	6	1	3	0	0	10
SE	1	0	6	4	0	0	11
SSE	2	2	2	0	1	0	7
S	0	0	1	2	0	0	3
SSW	0	1	5	0	1	0	7
SW	2	8	2	0	1	0	13
WSW	1	0	2	2	0	0	5
W	0	3	13	19	0	0	35
WNW	0	5	13	17	0	0	35
NW	2	4	6	3	0	0	15
NNW	2	3	2	0	0	0	7
Variable	1	0	0	0	0	0	1
Total	13	44	73	51	3	0	184

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: January - March 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	1	0	0	0	0	2
NNE	0	0	0	1	0	0	1
NE	2	2	1	0	0	0	5
ENE	0	3	1	0	0	0	4
E	0	0	1	0	0	0	1
ESE	1	1	0	0	0	0	2
SE	0	1	0	0	0	0	1
SSE	0	0	0	0	0	0	0
S	0	2	0	0	0	0	2
SSW	0	1	0	0	0	0	1
SW	2	2	4	0	0	0	8
WSW	0	4	2	1	0	0	7
W	0	0	1	2	0	0	3
WNW	0	0	2	2	0	0	4
NW	0	0	1	0	0	0	1
NNW	1	1	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	7	18	13	6	0	0	44

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	7	9	5	0	0	21
NNE	0	10	12	5	0	0	27
NE	0	9	32	1	0	0	42
ENE	0	15	4	0	0	0	19
E	0	11	8	0	0	0	19
ESE	0	8	2	0	0	0	10
SE	0	11	7	0	0	0	18
SSE	0	17	9	2	0	0	28
S	0	10	16	8	0	0	34
SSW	0	5	32	26	6	0	69
SW	0	7	8	23	0	0	38
WSW	0	10	16	3	0	0	29
W	0	12	16	4	0	0	32
WNW	0	6	8	4	0	0	18
NW	0	7	17	5	0	0	29
NNW	0	7	17	7	0	0	31
Variable	0	0	0	0	0	0	0
Total	0	152	213	93	6	0	464

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	2	0	0	0	6
NNE	0	6	4	0	0	0	10
NE	0	6	11	0	0	0	17
ENE	1	4	0	0	0	0	5
E	1	2	2	0	0	0	5
ESE	0	2	2	0	0	0	4
SE	1	3	2	0	0	0	6
SSE	1	5	1	0	0	0	7
S	0	4	3	1	0	0	8
SSW	0	2	4	5	0	0	11
SW	0	4	3	5	0	0	12
WSW	0	6	1	0	0	0	7
W	0	5	2	0	0	0	7
WNW	0	3	1	1	0	0	5
NW	0	4	1	0	0	0	5
NNW	0	4	2	2	0	0	8
Variable	0	0	0	0	0	0	0
Total	4	64	41	14	0	0	123

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	3	0	0	0	7
NNE	0	2	4	2	0	0	8
NE	0	8	8	0	0	0	16
ENE	0	5	1	0	0	0	6
E	1	4	0	0	0	0	5
ESE	0	2	1	0	0	0	3
SE	0	2	1	0	0	0	3
SSE	0	1	1	0	0	0	2
S	1	3	2	2	0	0	8
SSW	1	1	0	3	1	0	6
SW	0	2	2	0	0	0	4
WSW	0	2	4	0	1	0	7
W	1	4	2	0	0	0	7
WNW	0	4	0	0	0	0	4
NW	0	4	0	0	0	0	4
NNW	0	2	2	1	0	0	5
Variable	0	0	0	0	0	0	0
Total	4	50	31	8	2	0	95

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	8	20	0	0	0	28
NNE	5	9	38	2	0	0	54
NE	6	43	49	7	0	0	105
ENE	4	56	7	0	0	0	67
E	1	15	3	0	0	0	19
ESE	2	12	7	0	0	0	21
SE	3	9	7	0	0	0	19
SSE	0	14	4	0	0	0	18
S	1	13	22	7	0	0	43
SSW	0	5	27	22	15	0	69
SW	2	11	16	19	1	0	49
WSW	0	17	10	0	1	0	28
W	2	14	4	0	2	0	22
WNW	5	16	3	1	0	0	25
NW	6	9	2	1	0	0	18
NNW	4	10	10	2	0	0	26
Variable	1	0	0	0	0	0	1
Total	42	261	229	61	19	0	612

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	7	7	5	0	0	0	19
NNE	9	20	3	0	0	0	32
NE	10	10	4	3	0	0	27
ENE	15	28	0	0	0	0	43
E	22	14	1	0	0	0	37
ESE	9	27	1	0	0	0	37
SE	6	42	6	0	0	0	54
SSE	12	35	12	0	0	0	59
S	4	42	36	7	0	0	89
SSW	0	7	28	11	1	0	47
SW	2	12	5	0	0	0	19
WSW	2	17	2	0	0	0	21
W	9	14	4	0	0	0	27
WNW	11	17	1	0	0	0	29
NW	6	13	1	0	0	0	20
NNW	6	22	4	0	0	0	32
Variable	0	0	0	0	0	0	0
Total	130	327	113	21	1	0	592

Hours of calm in this stability class: 1
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	6	0	0	0	0	0	6
NNE	9	0	0	0	0	0	9
NE	7	0	0	0	0	0	7
ENE	11	0	0	0	0	0	11
E	20	1	0	0	0	0	21
ESE	19	11	0	0	0	0	30
SE	7	14	0	0	0	0	21
SSE	2	9	0	0	0	0	11
S	2	5	0	0	0	0	7
SSW	3	6	2	0	0	0	11
SW	6	2	1	0	0	0	9
WSW	6	12	0	0	0	0	18
W	11	3	0	0	0	0	14
WNW	14	0	0	0	0	0	14
NW	11	0	0	0	0	0	11
NNW	10	2	0	0	0	0	12
Variable	0	0	0	0	0	0	0
Total	144	65	3	0	0	0	212

Hours of calm in this stability class: 12
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	0	0	0	0	0	2
NNE	3	0	0	0	0	0	3
NE	5	0	0	0	0	0	5
ENE	8	1	0	0	0	0	9
E	7	0	0	0	0	0	7
ESE	4	0	0	0	0	0	4
SE	2	1	0	0	0	0	3
SSE	2	0	0	0	0	0	2
S	0	0	0	0	0	0	0
SSW	1	1	0	0	0	0	2
SW	1	0	0	0	0	0	1
WSW	7	0	0	0	0	0	7
W	2	0	0	0	0	0	2
WNW	3	0	0	0	0	0	3
NW	2	0	0	0	0	0	2
NNW	1	0	0	0	0	0	1
Variable	1	0	0	0	0	0	1
Total	51	3	0	0	0	0	54

Hours of calm in this stability class: 17
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	7	4	1	0	16
NNE	0	3	9	7	5	0	24
NE	0	5	12	25	1	0	43
ENE	0	4	7	2	0	0	13
E	0	2	19	7	0	0	28
ESE	0	2	4	4	1	0	11
SE	0	5	11	5	0	0	21
SSE	0	6	18	4	3	1	32
S	0	3	10	13	13	1	40
SSW	0	5	4	32	18	6	65
SW	0	3	5	11	8	0	27
WSW	0	8	10	13	0	0	31
W	0	8	4	12	2	2	28
WNW	0	2	5	10	1	3	21
NW	0	3	8	18	6	3	38
NNW	0	1	8	13	3	1	26
Variable	0	0	0	0	0	0	0
Total	0	64	141	180	62	17	464

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	3	1	0	0	0	5
NNE	0	1	5	2	0	0	8
NE	0	2	6	6	1	0	15
ENE	0	4	2	2	0	0	8
E	0	0	2	3	0	0	5
ESE	1	1	1	4	0	0	7
SE	0	2	2	1	0	0	5
SSE	1	1	2	1	1	0	6
S	0	0	4	3	2	1	10
SSW	0	3	2	4	1	0	10
SW	0	2	4	1	3	0	10
WSW	1	3	1	1	0	0	6
W	0	2	2	2	0	0	6
WNW	0	3	2	0	1	1	7
NW	0	2	3	0	1	0	6
NNW	0	0	5	2	2	0	9
Variable	0	0	0	0	0	0	0
Total	4	29	44	32	12	2	123

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	2	2	0	0	4
NNE	0	3	3	1	2	0	9
NE	0	1	9	5	0	0	15
ENE	0	2	2	2	0	0	6
E	0	2	6	0	0	0	8
ESE	1	0	1	2	0	0	4
SE	0	1	1	0	0	0	2
SSE	0	1	2	1	0	0	4
S	0	0	2	1	2	1	6
SSW	0	1	1	1	1	1	5
SW	0	3	2	0	0	0	5
WSW	0	0	2	2	0	1	5
W	0	3	2	3	0	0	8
WNW	0	1	4	0	0	0	5
NW	0	1	2	0	0	0	3
NNW	0	3	0	2	1	0	6
Variable	0	0	0	0	0	0	0
Total	1	22	41	22	6	3	95

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	12	15	1	0	32
NNE	1	3	8	18	1	0	31
NE	1	9	20	66	11	0	107
ENE	2	9	49	15	0	0	75
E	0	0	9	14	1	0	24
ESE	0	2	8	15	1	0	26
SE	2	3	6	5	1	0	17
SSE	0	0	11	5	2	0	18
S	1	1	10	20	6	6	44
SSW	1	4	7	30	14	20	76
SW	0	4	13	17	7	1	42
WSW	1	8	10	6	0	1	26
W	1	5	11	3	2	2	24
WNW	0	4	13	2	2	2	23
NW	2	7	8	3	0	0	20
NNW	3	5	6	10	2	0	26
Variable	1	0	0	0	0	0	1
Total	16	68	201	244	51	32	612

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	14	10	0	0	26
NNE	0	5	6	3	0	0	14
NE	0	3	29	8	3	0	43
ENE	1	5	27	1	0	0	34
E	1	5	25	5	1	0	37
ESE	0	4	13	22	0	0	39
SE	0	1	23	31	2	0	57
SSE	0	10	14	34	3	0	61
S	1	6	11	63	13	2	96
SSW	0	1	4	27	10	2	44
SW	0	4	11	4	0	0	19
WSW	0	3	11	7	0	0	21
W	0	2	10	4	0	0	16
WNW	0	0	27	6	1	0	34
NW	0	3	11	8	1	0	23
NNW	0	6	13	10	0	0	29
Variable	0	0	0	0	0	0	0
Total	3	60	249	243	34	4	593

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	10	1	0	0	12
NNE	1	3	7	0	0	0	11
NE	0	1	6	0	0	0	7
ENE	0	5	11	0	0	0	16
E	0	5	8	3	0	0	16
ESE	0	0	7	9	0	0	16
SE	0	2	17	14	0	0	33
SSE	0	3	7	6	0	0	16
S	1	3	4	4	0	0	12
SSW	0	2	2	5	0	0	9
SW	0	4	5	2	1	0	12
WSW	0	2	6	4	0	0	12
W	0	2	10	0	0	0	12
WNW	1	1	8	2	0	0	12
NW	0	1	18	0	0	0	19
NNW	0	0	9	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	3	35	135	50	1	0	224

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: April - June 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	2	0	0	0	3
NNE	0	3	0	0	0	0	3
NE	0	1	1	0	0	0	2
ENE	0	4	2	0	0	0	6
E	0	1	6	0	0	0	7
ESE	0	1	4	2	0	0	7
SE	0	0	3	2	0	0	5
SSE	1	2	1	1	0	0	5
S	0	5	2	0	0	0	7
SSW	0	2	2	0	0	0	4
SW	0	1	0	0	0	0	1
WSW	1	3	2	1	0	0	7
W	2	1	4	0	0	0	7
WNW	0	0	2	0	0	0	2
NW	0	0	1	0	0	0	1
NNW	0	1	3	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	4	26	35	6	0	0	71

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 1

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	10	4	0	0	18
NNE	0	2	7	0	0	0	9
NE	0	9	20	0	0	0	29
ENE	1	2	0	0	0	0	3
E	0	3	0	0	0	0	3
ESE	0	10	1	0	0	0	11
SE	0	16	4	0	0	0	20
SSE	0	25	5	0	0	0	30
S	0	34	7	0	0	0	41
SSW	0	15	21	8	0	0	44
SW	0	8	19	7	0	0	34
WSW	0	20	11	0	0	0	31
W	0	34	17	0	0	0	51
WNW	0	11	9	0	0	0	20
NW	0	14	12	1	0	0	27
NNW	0	18	22	0	0	0	40
Variable	1	1	0	0	0	0	2
Total	2	226	165	20	0	0	413

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	5	1	0	0	8
NNE	0	8	3	0	0	0	11
NE	0	3	2	0	0	0	5
ENE	0	3	0	0	0	0	3
E	0	3	0	0	0	0	3
ESE	1	11	0	0	0	0	12
SE	0	6	0	0	0	0	6
SSE	1	8	1	0	0	0	10
S	0	9	2	0	0	0	11
SSW	0	4	4	1	1	0	10
SW	0	6	1	1	0	0	8
WSW	0	8	2	0	0	0	10
W	2	8	4	0	0	0	14
WNW	0	4	0	0	0	0	4
NW	0	7	0	0	0	0	7
NNW	0	7	6	0	0	0	13
Variable	1	0	0	0	0	0	1
Total	5	97	30	3	1	0	136

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	10	4	0	0	0	15
NNE	1	7	3	0	0	0	11
NE	1	7	5	0	0	0	13
ENE	2	2	2	0	0	0	6
E	1	0	0	0	0	0	1
ESE	1	4	0	0	0	0	5
SE	2	1	0	0	0	0	3
SSE	1	6	0	0	0	0	7
S	2	5	1	0	0	0	8
SSW	2	6	5	2	0	0	15
SW	1	4	5	1	0	0	11
WSW	0	1	5	0	0	0	6
W	0	7	3	0	0	0	10
WNW	3	4	0	0	0	0	7
NW	1	3	0	0	0	0	4
NNW	1	6	6	0	0	0	13
Variable	0	0	0	0	0	0	0
Total	20	73	39	3	0	0	135

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	5	23	22	0	0	0	50
NNE	4	31	11	0	0	0	46
NE	9	33	9	0	0	0	51
ENE	10	25	3	0	0	0	38
E	14	12	0	0	0	0	26
ESE	7	13	0	0	0	0	20
SE	4	4	3	0	0	0	11
SSE	2	11	3	0	0	0	16
S	1	13	6	2	1	0	23
SSW	0	8	12	3	1	0	24
SW	0	20	21	3	0	0	44
WSW	2	16	4	0	0	0	22
W	3	8	6	0	0	0	17
WNW	7	5	3	0	0	0	15
NW	6	7	1	0	0	0	14
NNW	3	31	19	0	0	0	53
Variable	0	0	0	0	0	0	0
Total	77	260	123	8	2	0	470

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	6	7	0	1	0	0	14
NNE	14	25	3	0	0	0	42
NE	11	14	0	0	0	0	25
ENE	23	12	0	0	0	0	35
E	21	4	0	0	0	0	25
ESE	23	11	0	0	0	0	34
SE	8	37	1	0	0	0	46
SSE	16	50	2	0	0	0	68
S	3	62	23	3	0	0	91
SSW	2	25	24	0	0	0	51
SW	3	21	16	0	0	0	40
WSW	7	20	2	0	0	0	29
W	9	8	1	0	0	0	18
WNW	13	6	0	0	0	0	19
NW	14	4	0	0	0	0	18
NNW	8	14	1	0	0	0	23
Variable	1	0	0	0	0	0	1
Total	182	320	73	4	0	0	579

Hours of calm in this stability class: 2
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	1	0	0	0	0	2
NNE	7	6	0	0	0	0	13
NE	3	1	0	0	0	0	4
ENE	10	1	0	0	0	0	11
E	24	3	0	0	0	0	27
ESE	27	1	0	0	0	0	28
SE	9	10	0	0	0	0	19
SSE	7	2	0	0	0	0	9
S	7	3	0	0	0	0	10
SSW	7	9	1	0	0	0	17
SW	6	9	0	0	0	0	15
WSW	23	8	0	0	0	0	31
W	37	2	0	0	0	0	39
WNW	30	1	0	0	0	0	31
NW	7	0	0	0	0	0	7
NNW	3	0	0	0	0	0	3
Variable	2	0	0	0	0	0	2
Total	210	57	1	0	0	0	268

Hours of calm in this stability class: 23
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	3	0	0	0	0	0	3
NNE	2	1	0	0	0	0	3
NE	4	0	0	0	0	0	4
ENE	14	0	0	0	0	0	14
E	6	0	0	0	0	0	6
ESE	4	0	0	0	0	0	4
SE	4	0	0	0	0	0	4
SSE	3	0	0	0	0	0	3
S	2	0	0	0	0	0	2
SSW	4	0	0	0	0	0	4
SW	8	1	0	0	0	0	9
WSW	13	6	0	0	0	0	19
W	13	1	0	0	0	0	14
WNW	11	0	0	0	0	0	11
NW	3	0	0	0	0	0	3
NNW	7	0	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	101	9	0	0	0	0	110

Hours of calm in this stability class: 69
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	6	7	0	0	15
NNE	0	2	2	1	0	0	5
NE	0	5	10	13	0	0	28
ENE	0	1	5	0	0	0	6
E	1	3	1	0	0	0	5
ESE	0	4	10	0	0	0	14
SE	0	7	13	1	0	0	21
SSE	0	14	21	2	0	0	37
S	0	16	14	5	0	2	37
SSW	0	8	17	10	4	0	39
SW	0	3	11	15	3	0	32
WSW	0	9	10	6	0	0	25
W	0	6	34	10	0	0	50
WNW	0	10	12	8	0	0	30
NW	0	8	11	11	5	0	35
NNW	0	5	18	9	0	0	32
Variable	1	1	0	0	0	0	2
Total	2	104	195	98	12	2	413

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	5	2	0	0	7
NNE	0	2	2	2	0	0	6
NE	0	4	2	4	0	0	10
ENE	0	2	1	0	0	0	3
E	0	5	1	0	0	0	6
ESE	1	4	4	0	0	0	9
SE	0	5	1	0	0	0	6
SSE	0	6	3	2	0	0	11
S	0	5	5	1	0	1	12
SSW	0	2	4	1	1	0	8
SW	0	5	2	1	0	0	8
WSW	1	6	3	1	0	0	11
W	0	7	3	3	0	0	13
WNW	0	2	0	0	0	0	2
NW	0	3	4	0	0	0	7
NNW	0	6	7	2	0	0	15
Variable	1	0	0	0	0	0	1
Total	3	64	47	19	1	1	135

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 1
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	6	4	3	0	0	13
NNE	1	5	2	1	0	0	9
NE	1	2	7	5	0	0	15
ENE	1	1	2	2	0	0	6
E	0	2	1	0	0	0	3
ESE	2	2	1	0	0	0	5
SE	0	3	1	0	0	0	4
SSE	1	2	3	0	0	0	6
S	1	3	4	0	0	0	8
SSW	0	4	6	4	1	0	15
SW	1	4	4	1	0	0	10
WSW	0	2	2	3	0	0	7
W	1	6	5	1	0	0	13
WNW	0	4	1	1	0	0	6
NW	0	3	0	0	0	0	3
NNW	1	3	5	3	0	0	12
Variable	0	0	0	0	0	0	0
Total	10	52	48	24	1	0	135

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	12	18	14	0	0	45
NNE	3	11	15	5	0	0	34
NE	4	9	31	14	0	0	58
ENE	2	15	23	3	0	0	43
E	5	13	13	2	0	0	33
ESE	2	7	9	0	0	0	18
SE	2	2	4	5	0	0	13
SSE	0	4	10	3	0	0	17
S	0	4	8	8	0	3	23
SSW	0	2	14	12	3	2	33
SW	2	11	14	10	0	0	37
WSW	0	9	11	2	0	0	22
W	1	6	2	5	0	0	14
WNW	0	4	3	2	1	0	10
NW	1	14	6	0	0	0	21
NNW	1	8	23	16	1	0	49
Variable	0	0	0	0	0	0	0
Total	24	131	204	101	5	5	470

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	8	8	0	1	0	18
NNE	1	2	18	2	1	0	24
NE	0	5	24	3	0	0	32
ENE	0	8	26	0	0	0	34
E	2	9	25	2	0	0	38
ESE	2	1	15	2	0	0	20
SE	1	5	29	19	0	0	54
SSE	0	11	29	12	1	0	53
S	2	6	34	49	5	0	96
SSW	0	3	26	29	0	0	58
SW	0	5	33	17	0	0	55
WSW	0	3	16	2	0	0	21
W	1	4	12	0	1	0	18
WNW	0	3	8	1	0	0	12
NW	0	12	12	1	0	0	25
NNW	0	6	13	3	0	0	22
Variable	1	0	0	0	0	0	1
Total	11	91	328	142	9	0	581

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	2	3	2	0	0	0	7
NNE	1	3	2	4	0	0	10
NE	0	1	6	1	0	0	8
ENE	0	7	4	1	0	0	12
E	0	9	11	1	0	0	21
ESE	1	2	10	8	0	0	21
SE	0	3	16	6	0	0	25
SSE	2	7	8	0	0	0	17
S	0	6	3	1	0	0	10
SSW	1	7	8	0	0	0	16
SW	0	10	12	2	0	0	24
WSW	0	11	16	0	0	0	27
W	0	6	13	1	0	0	20
WNW	2	5	14	2	0	0	23
NW	0	6	28	0	0	0	34
NNW	1	1	11	0	0	0	13
Variable	0	0	0	0	0	0	0
Total	10	87	164	27	0	0	288

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 3
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: July - September 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	3	2	2	2	0	0	9
NNE	0	7	1	1	0	0	9
NE	3	3	2	1	0	0	9
ENE	2	4	2	0	0	0	8
E	5	3	3	1	0	0	12
ESE	1	1	7	1	0	0	10
SE	1	2	1	0	0	0	4
SSE	2	6	0	0	0	0	8
S	1	4	0	0	0	0	5
SSW	5	10	4	0	0	0	19
SW	1	9	3	0	0	0	13
WSW	1	6	5	1	0	0	13
W	0	5	12	4	0	0	21
WNW	2	4	8	3	0	0	17
NW	1	5	5	0	0	0	11
NNW	1	4	4	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	29	75	59	14	0	0	177

Hours of calm in this stability class: 2
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 3

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	0	0	0	1
NNE	0	0	1	0	0	0	1
NE	0	0	3	0	0	0	3
ENE	0	1	0	0	0	0	1
E	0	4	0	0	0	0	4
ESE	0	0	0	0	0	0	0
SE	0	0	2	0	0	0	2
SSE	0	0	4	1	0	0	5
S	0	0	2	0	0	0	2
SSW	0	0	1	10	1	0	12
SW	0	0	0	3	0	0	3
WSW	0	0	0	1	0	0	1
W	0	1	0	2	0	0	3
WNW	0	5	5	0	0	0	10
NW	0	4	6	0	0	0	10
NNW	0	0	4	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	15	29	17	1	0	62

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	2	1	0	0	3
NNE	0	0	0	1	0	0	1
NE	0	2	0	0	0	0	2
ENE	0	1	0	0	0	0	1
E	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	1	1	0	0	0	2
S	0	0	0	1	0	0	1
SSW	0	0	4	0	0	0	4
SW	0	0	0	4	0	0	4
WSW	0	0	0	0	0	0	0
W	0	4	1	2	0	0	7
WNW	0	2	2	0	0	0	4
NW	0	4	2	0	0	0	6
NNW	0	0	2	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	15	14	9	0	0	38

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	5	1	0	0	6
NNE	0	0	0	0	0	0	0
NE	0	1	2	0	0	0	3
ENE	0	4	0	0	0	0	4
E	1	1	0	0	0	0	2
ESE	0	0	0	0	0	0	0
SE	0	0	1	0	0	0	1
SSE	0	0	1	2	0	0	3
S	0	0	2	2	0	0	4
SSW	0	0	6	6	3	0	15
SW	0	1	1	3	0	0	5
WSW	0	3	1	1	0	0	5
W	0	7	0	0	0	0	7
WNW	0	7	1	0	0	0	8
NW	0	1	3	1	0	0	5
NNW	0	1	1	1	0	0	3
Variable	0	0	0	0	0	0	0
Total	1	26	24	17	3	0	71

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	7	28	27	3	0	0	65
NNE	3	29	20	7	0	0	59
NE	7	23	11	1	0	0	42
ENE	11	7	0	0	0	0	18
E	5	16	0	0	0	0	21
ESE	2	8	0	0	0	0	10
SE	1	26	9	1	0	0	37
SSE	1	49	24	8	0	0	82
S	0	14	58	28	8	1	109
SSW	2	10	20	32	14	0	78
SW	1	17	23	16	3	0	60
WSW	2	19	11	1	1	0	34
W	2	38	22	5	0	0	67
WNW	13	52	39	6	2	0	112
NW	4	27	24	5	0	0	60
NNW	7	40	26	13	0	0	86
Variable	0	0	0	0	0	0	0
Total	68	403	314	126	28	1	940

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 21
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	7	18	15	0	0	0	40
NNE	4	28	5	0	0	0	37
NE	11	11	0	1	0	0	23
ENE	14	7	0	0	0	0	21
E	10	10	4	0	0	0	24
ESE	8	7	3	0	0	0	18
SE	5	57	14	0	0	0	76
SSE	9	63	18	0	0	0	90
S	5	47	86	23	1	0	162
SSW	3	12	35	13	6	0	69
SW	3	19	26	2	0	0	50
WSW	9	22	4	0	0	0	35
W	24	37	5	2	0	0	68
WNW	18	18	2	6	0	0	44
NW	11	11	1	2	0	0	25
NNW	8	45	10	2	0	0	65
Variable	0	0	0	0	0	0	0
Total	149	412	228	51	7	0	847

Hours of calm in this stability class: 2
Hours of missing wind measurements in this stability class: 4
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	2	0	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	2	0	0	0	0	0	2
ENE	7	0	0	0	0	0	7
E	18	0	0	0	0	0	18
ESE	17	8	0	0	0	0	25
SE	3	9	0	0	0	0	12
SSE	8	5	0	0	0	0	13
S	1	1	0	0	0	0	2
SSW	2	5	2	0	0	0	9
SW	3	0	0	0	0	0	3
WSW	2	4	0	0	0	0	6
W	1	8	0	0	0	0	9
WNW	6	5	0	0	0	0	11
NW	6	0	0	0	0	0	6
NNW	5	2	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	81	49	2	0	0	0	132

Hours of calm in this stability class: 7
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 34 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	1	0	0	0	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	4	0	0	0	0	0	4
E	7	0	0	0	0	0	7
ESE	7	0	0	0	0	0	7
SE	0	1	0	0	0	0	1
SSE	3	0	0	0	0	0	3
S	2	0	0	0	0	0	2
SSW	2	0	0	0	0	0	2
SW	2	0	0	0	0	0	2
WSW	0	0	0	0	0	0	0
W	0	0	0	0	0	0	0
WNW	3	0	0	0	0	0	3
NW	4	0	0	0	0	0	4
NNW	1	0	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	36	1	0	0	0	0	37

Hours of calm in this stability class: 15
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Extremely Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	0	1	0	0	1
NNE	0	0	0	0	0	0	0
NE	0	0	0	4	0	0	4
ENE	0	0	1	0	0	0	1
E	0	1	3	0	0	0	4
ESE	0	0	0	0	0	0	0
SE	0	0	0	4	0	0	4
SSE	0	0	0	1	2	0	3
S	0	0	0	2	0	0	2
SSW	0	0	0	3	7	3	13
SW	0	0	0	0	2	0	2
WSW	0	0	0	0	2	0	2
W	0	0	1	0	1	0	2
WNW	0	0	7	2	2	0	11
NW	0	0	5	6	1	0	12
NNW	0	0	0	1	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	1	17	24	17	3	62

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Moderately Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	0	1	0	2
NNE	0	0	0	1	1	0	2
NE	0	1	1	0	0	0	2
ENE	0	0	1	0	0	0	1
E	0	1	0	0	0	0	1
ESE	0	0	0	0	0	0	0
SE	0	0	0	0	0	0	0
SSE	0	0	1	1	0	0	2
S	0	0	0	2	0	0	2
SSW	0	0	0	3	0	1	4
SW	0	0	0	1	2	0	3
WSW	0	0	0	0	0	0	0
W	0	0	4	0	3	0	7
WNW	0	0	2	2	0	0	4
NW	0	2	2	2	0	0	6
NNW	0	0	1	1	0	0	2
Variable	0	0	0	0	0	0	0
Total	0	4	13	13	7	1	38

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Slightly Unstable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	5	0	1	7
NNE	0	0	0	0	0	0	0
NE	0	0	2	1	0	0	3
ENE	0	3	0	0	0	0	3
E	0	1	1	0	0	0	2
ESE	0	0	1	0	0	0	1
SE	0	0	0	1	0	0	1
SSE	0	0	0	1	2	0	3
S	0	0	1	6	3	3	13
SSW	0	0	0	4	3	0	7
SW	0	1	1	2	1	0	5
WSW	0	0	1	0	1	0	2
W	0	3	6	0	0	0	9
WNW	0	3	4	1	0	0	8
NW	0	1	0	1	4	0	6
NNW	0	1	0	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	0	13	18	22	14	4	71

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Neutral - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	3	13	34	9	0	1	60
NNE	2	9	22	12	6	2	53
NE	0	7	24	12	1	2	46
ENE	3	9	5	2	0	0	19
E	1	8	9	8	0	0	26
ESE	0	6	5	3	1	0	15
SE	1	8	17	12	5	0	43
SSE	0	12	34	19	16	0	81
S	0	10	15	45	29	17	116
SSW	1	6	12	19	26	17	81
SW	1	13	16	14	4	1	49
WSW	1	6	12	8	1	1	29
W	0	4	28	17	3	2	54
WNW	1	14	39	36	7	9	106
NW	1	8	33	18	7	11	78
NNW	2	12	37	17	12	2	82
Variable	0	0	0	0	0	0	0
Total	17	145	342	251	118	65	938

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 23
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Slightly Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	4	26	22	0	0	52
NNE	0	7	23	6	0	0	36
NE	0	5	22	0	1	0	28
ENE	0	5	9	0	0	0	14
E	0	8	15	3	4	0	30
ESE	0	7	5	1	4	0	17
SE	2	3	22	36	3	0	66
SSE	0	7	44	42	4	0	97
S	0	7	20	76	43	11	157
SSW	1	5	16	43	9	7	81
SW	3	10	24	20	1	0	58
WSW	0	8	13	5	0	0	26
W	1	6	20	9	4	0	40
WNW	1	8	32	11	1	2	55
NW	0	15	12	12	0	5	44
NNW	0	3	28	13	2	0	46
Variable	0	0	0	0	0	0	0
Total	8	108	331	299	76	25	847

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 6
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Moderately Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	1	7	1	0	0	9
NNE	0	0	1	1	0	0	2
NE	1	1	1	0	0	0	3
ENE	0	3	1	0	0	0	4
E	0	3	5	0	0	0	8
ESE	0	0	10	9	0	0	19
SE	1	4	14	5	0	0	24
SSE	0	5	7	1	0	0	13
S	0	1	4	0	0	0	5
SSW	0	4	7	0	0	0	11
SW	1	3	3	2	0	0	9
WSW	0	0	2	0	0	0	2
W	0	0	4	1	0	0	5
WNW	0	2	1	8	0	0	11
NW	0	1	3	9	0	0	13
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	3	28	71	37	0	0	139

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

Braidwood Generating Station

Period of Record: October - December 2012
Stability Class - Extremely Stable - 199Ft-30Ft Delta-T (F)
Winds Measured at 203 Feet

Wind Direction	Wind Speed (in mph) 1-3	4-7	8-12	13-18	19-24	> 24	Total
N	0	0	1	0	0	0	1
NNE	0	1	0	0	0	0	1
NE	1	1	0	0	0	0	2
ENE	0	0	0	0	0	0	0
E	1	0	1	0	0	0	2
ESE	1	0	0	0	0	0	1
SE	0	1	3	1	0	0	5
SSE	0	4	0	1	0	0	5
S	1	6	1	0	0	0	8
SSW	4	7	1	0	0	0	12
SW	0	6	1	0	0	0	7
WSW	1	2	0	0	0	0	3
W	1	0	1	0	0	0	2
WNW	0	2	0	0	0	0	2
NW	0	0	0	0	0	0	0
NNW	0	0	1	0	0	0	1
Variable	0	0	0	0	0	0	0
Total	10	30	10	2	0	0	52

Hours of calm in this stability class: 0
Hours of missing wind measurements in this stability class: 0
Hours of missing stability measurements in all stability classes: 32

APPENDIX G

ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)

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Docket No: 50-456
50-457

BRAIDWOOD STATION
UNITS 1 and 2

Annual Radiological
Groundwater Protection Program Report

1 January through 31 December 2012

Prepared By

Teledyne Brown Engineering
Environmental Services

Exelon Generation.

Braidwood Station
Braceville, IL 60407

May 2013

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Table B-I.2 Concentrations of Gamma Emitters in Groundwater Samples Collected in the Vicinity of Braidwood Station, 2012.

Table B-I.3 Concentrations of Hard-To-Detects in Groundwater Samples Collected in the Vicinity of Braidwood Station, 2012.

Table B-II.1 Concentrations of Tritium, Strontium, Gross Alpha and Gross Beta in Surface Water Samples Collected in the Vicinity of Braidwood Station, 2012.

Table B-II.2 Concentrations of Gamma Emitters in Surface Water Samples Collected in the Vicinity of Braidwood Station, 2012.

I. Summary and Conclusions

In 2012, Exelon continued a comprehensive program that evaluates the impact of station operations on groundwater and surface water in the vicinity of Braidwood Station. This evaluation involved numerous station personnel and contractor support personnel. This report covers groundwater and surface water samples collected from the environment, both on and off station property, in 2012. During that time period, 589 analyses were performed on 353 samples from 166 locations.

In assessing all the data gathered for this report, it was concluded that the operation of Braidwood Station had no adverse radiological impact on the environment.

Gamma-emitting radionuclides associated with licensed plant operations were not detected at concentrations greater than their respective Lower Limits of Detection (LLDs) as specified in the Offsite Dose Calculation Manual (ODCM) in any of the groundwater or surface water samples. In the case of tritium, Exelon specified that its laboratories achieve a lower limit of detection 10 times less than Braidwood's ODCM and 100 times less than federal regulation.

Strontium-89/90 was not detected at a concentration greater than the LLD of 1.0 picoCuries per liter (pCi/L) in any of the groundwater or surface water samples tested.

No tritium was detected in the groundwater or surface water samples at concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L. Low levels of tritium were detected in groundwater and surface water at concentrations greater than the LLD of 200 pCi/L in 96 of 354 analyses. The tritium concentrations ranged from 180 ± 119 pCi/L to 3,820 ± 431 pCi/L. The tritium that was detected in the groundwater is believed to be the result of isolated historical releases and/or background from external sources greater than 200 pCi/L.

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions were performed on groundwater and surface water samples during the 4th quarter of the sampling year in 2012. Gross Alpha (dissolved) was detected in six groundwater and surface water samples. The concentrations ranged from 0.7 to 19.5 pCi/L. Gross Alpha (suspended) was detected in 5 groundwater and surface water samples. The concentrations ranged from 1.0 to 7.3 pCi/L. Gross Beta (dissolved) was detected in 32 groundwater and surface water samples. The concentrations ranged from 1.7 to 57.9 pCi/L. Gross Beta (suspended) was detected in 7 groundwater and surface water samples. The concentrations ranged from 1.7 to 12.3 pCi/L.

Hard-To-Detect analyses were performed on two groundwater samples to establish background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235 and U-238. All

hard-to-detect nuclides were not detected at concentrations greater than their respective MDCs.

II. Introduction

Braidwood Station, a two-unit PWR station is located in Will County, Illinois, fifteen (15) miles south-southwest of Joliet, Illinois. Each reactor is designed to have a capacity of 3587 thermal megawatts. Units No. 1 went critical on May 29, 1987 and Unit No. 2 went critical on March 8, 1988. The station has been designed to keep releases to the environment at levels below those specified in the regulations.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) and Environmental Inc. Midwest Labs (EIML) on samples collected in 2012.

A. Objective of the RGPP

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

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

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

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

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

5. Regularly assess analytical results to identify adverse trends.

6. Take necessary corrective actions to protect groundwater resources.

B. Implementation of the Objectives

The objectives identified have been implemented at Braidwood Station as discussed below:

1. Exelon identified locations to monitor and evaluated potential impacts from station operations.

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

3. Braidwood Station will continue to perform routine sampling and radiological analysis of water from selected locations.

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

5. Braidwood Station staff and consulting hydrogeologist assess analytical results on an ongoing basis to identify adverse trends.

C. Program Description

1. Sample Collection

Sample locations can be found in Table A-1 and Figures A-1 through A-3, Appendix A.

Groundwater and Surface Water

Samples of groundwater and surface water are collected, managed, transported and analyzed in accordance with EPA methods. Sample locations, sample collection frequencies and analytical frequencies are managed in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management and shipment of samples as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs as well as nuclear industry audits. Station personnel review and evaluate all analytical data as it is received. Additionally, analytical data results are reviewed by an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

D. Characteristics of Tritium (H-3)

Tritium is a radioactive isotope of hydrogen. Its chemical properties are the same as hydrogen. Tritiated water behaves the same as ordinary water in both the environment and the body. Tritiated water can be taken into the body by drinking water, breathing air, eating food or absorption through the skin. Once tritiated water enters the body, it disperses quickly and is uniformly distributed. Tritiated water is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. With such a short biological half-life, an acute ingestion would be cleared rapidly. Organically bound tritium (tritium that is incorporated into carbon containing compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays interact with air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity and in special production reactors. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface and therefore tritiated water will travel at the same velocity as non tritiated groundwater.

III. Program Description

A. Sample Analysis

This section describes the general analytical methodologies used by Teledyne Brown Engineering (TBE) and Environmental Incorporated Midwest Laboratory (EIML) to analyze the environmental samples for radioactivity for the Braidwood Station RGPP in 2012.
In order to achieve the stated objectives, the current program includes the following analyses:

1. Concentrations of gamma emitters in groundwater and surface water.
2. Concentrations of strontium in groundwater and surface water.
3. Concentrations of tritium in groundwater and surface water.
4. Concentrations of Gross Alpha and Gross Beta (Dissolved and Suspended) in groundwater and surfacewater.
5. Concentrations of Am-241 in groundwater.
6. Concentrations of Cm-242 and Cm-243/244 in groundwater.
7. Concentrations of Pu-238 and Pu-239/240 in groundwater.
8. Concentrations of U-234, U-235 and U-238 in groundwater.
9. Concentrations of Fe-55 in groundwater.
10. Concentrations of Ni-63 in groundwater.

B. Data Interpretation

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

1. Lower Limit of Detection and Minimum Detectable Concentration

The lower limit of detection (LLD) is specified by federal regulation as a minimum sensitivity value that must be achieved routinely by the analytical parameter.

2. Laboratory Measurements Uncertainty

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

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

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

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

For groundwater and surface water 14 nuclides, Be-7, K-40, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb-95, Zr-95, I-131, Cs-134, Cs-137, Ba-140 and La-140 were reported.

C. Background Analysis

A pre-operational radiological environmental monitoring program

(pre-operational REMP) was conducted to establish background radioactivity levels prior to operation of the Station. The environmental media sampled and analyzed during the pre-operational REMP were atmospheric radiation, fall-out, domestic water, surface water, marine life and foodstuffs. The results of the monitoring were detailed in the report entitled, Environmental Radiological Monitoring for Braidwood Nuclear Power Station Commonwealth Edison Company, Annual Report 1986, May 1987.

At the upstream Kankakee River collection point, BD-25, monthly composites of weekly sample collections from all surface water locations indicated tritium concentrations were not detectable above the LLD (<200 pCi/L). Monthly composites of weekly sample collections from all surface water locations indicate strontium-89, strontium-90, cesium-134 and cesium-137 concentrations were less than their specified LLDs.

Groundwater was collected from one off-site well on a quarterly basis. Gamma isotopic, radio strontium and tritium analyses were performed on all samples. Strontium-89, strontium-90, tritium, and gamma emitters were below their respective LLDs.

1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others.

a. Tritium Production

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

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased

significantly during the 1950s and early 1960s and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2012. RadNet provides tritium precipitation concentration data for samples collected at stations through out the U.S. from 1960 up to and including 2012. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations in Midwest precipitation have typically been below 100 pCi/L since around 1980. Tritium concentrations in wells may still be above the 200 pCi/L detection limit from the external causes described above. Water from previous years and decades is naturally captured in groundwater, so some well water sources today are affected by the surface water from the 1960s that was elevated in tritium.

c. Surface Water Data

Tritium concentrations are routinely measured in large surface water bodies, including Lake Michigan and the Mississippi River. Illinois surface water data were typically less than 100 pCi/L.

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

100 pCi/L.

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

IV. Results and Discussion

A. Missed Sample

Exelon maintains a Radiological Groundwater Protection Program (RGPP) as part of the nuclear industry's voluntary groundwater protection initiative as described in NEI 07-07. As part of this program, samples are obtained routinely from monitoring wells and surface waters at Braidwood based on the frequencies outlined in station procedures.

According to the Station RGPP, MW-11, MW-13, MW-144D, MW-BW-202S, MW-BW-203S, MW-BW-207I, MW-103, MW-109D, MW-110, MW-111DR, MW-112D, MW-113, MW-130D, MW-131D, MW-134D, MW-135D, MW-136D, MW-137D, MW-138D, MW-139D, MW-158D, RW-5, RW-6, RW-7, RW-9, RW-10, and 0WM31P are detection wells. The station RGPP requires the wells designated as detection wells to be sampled and analyzed for tritium on a quarterly basis. The aforementioned wells were not sampled during one or more of the quarters in 2012. Reasons for lack of sampling include well condition deficiencies, low well production, and frozen water preventing sampling.

The Station RGPP also requires designated detection wells be analyzed for gamma-radionuclides, gross-alpha and beta, and strontium 89/90 on an annual basis. MW-103, RW-10, RW-5, RW-6, RW-7, and RW-9 did not have these analyses performed during 2012. The sample is pulled on an annual periodicity and the sample was not able to be obtained for the requisite analyses.

B. Groundwater Results

Groundwater

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

Tritium

Samples from all locations were analyzed for tritium activity. Tritium values ranged from the detection limit to 3,820 pCi/l. Some contamination still exists and monitoring is ongoing (Table B-I.1, Appendix B).

Strontium

Strontium-89 and Strontium-90 were analyzed for in 36 samples. Strontium-89 was less than the required detection limit of 10.0 pCi/liter. Strontium-90 was less than the required detection limit of 1.0 pCi/liter. (Table B-I.1, Appendix B).

Gross Alpha and Beta (dissolved and suspended)

Gross Alpha and Gross Beta analyses in the dissolved and suspended fractions. were performed on groundwater samples during the fourth quarter of the sampling year in 2012. Gross Alpha (dissolved) was detected in five groundwater samples. The concentrations ranged from 1.0 to 19.5 pCi/L. Gross Alpha (suspended) was detected in 5 groundwater samples. The concentrations ranged from 1.0 to 7.3 pCi/L. Gross Beta (dissolved) was detected in 30 groundwater samples. The concentrations ranged from 1.7 to 57.9 pCi/L. Gross Beta (suspended) was detected in 7 groundwater samples. The concentrations ranged from 1.7 to 12.3 pCi/L (Table B-I.1, Appendix B).

Hard-To-Detect

Hard-To-Detect analyses were performed on two groundwater samples to establish background levels. The analyses included Fe-55, Ni-63, Am-241, Cm-242, Cm-243/244, Pu-238, Pu-239/240, U-234, U-235 and U-238. No hard-to-detect nuclides were detected at concentrations greater than their respective MDCs. (Table B-I.3, Appendix B).

Gamma Emitters

Naturally occurring K-40 was detected in 5 samples. The concentrations ranged from 37 to 107 pCi/L. No other gamma emitting nuclides were detected in any of the samples analyzed. (Table B–I.2, Appendix B)

C. Surface Water Results

Surface Water

Samples were collected from 13 surface water locations throughout the year in accordance with the station radiological groundwater protection program. Analytical results and anomalies are discussed below.

Tritium

Samples from all locations were analyzed for tritium activity (Table B-II.1, Appendix B). Tritium values ranged from the minimum detection limit to 408 pCi/l.

Strontium

Strontium-89 and strontium-90 was analyzed in one sample and was less than the required detection limits.(Table B-II.1, Appendix B).

Gamma Emitters

No gamma emitting nuclides were detected in any of the samples analyzed. (Table B–II.2, Appendix B)

D. Drinking Water Well Survey

Requested drinking water wells near Braidwood Station were sampled on a quarterly basis in 2012.

E. Summary of Results – Inter-Laboratory Comparison Program

Inter-Laboratory Comparison Program results for TBE are presented in the AREOR.

F. Leaks, Spills, and Releases

Previously identified contaminated groundwater plumes are being addressed by the Braidwood Station tritium remediation activities. There were no liquid leaks, spills, or releases in 2012 that affected groundwater.

G. Trends and Analyses

Monitoring of remediation activities indicate that tritium concentrations in affected areas are trending down.

H. Investigations

Investigation of historic spills and the groundwater contamination has resulted in groundwater remediation activities at Braidwood Station.

I. Actions Taken

1. Compensatory Actions

   All Circulating Water Blowdown valve vaults were coated to prevent any leakage of water from the vaults to the groundwater. A remote leakage detection system has been installed which provides continuous monitoring of the vaults. Operations procedures are in place for actions to take in the event the leak detection system alarms. Walkdowns of the Circulating Water Blowdown pipeline and vaults were performed weekly.

2. Installation of Monitoring Wells

   Exelon has installed a permanent monitoring well network that ensures that ground water will be appropriately monitored around the plant and at the various remediation sites. Monitoring well locations were based on contamination source, ground flow direction, and source concentration. Some monitoring points are not primarily used for sampling but rather to measure ground water elevation. Water elevation is used extensively around active remediation sites to verify that ground water is still flowing toward remediation wells.

3. Actions to Recover/Reverse Plumes

   Vacuum Breaker 1 area: Three remediation wells have been installed in this area to remove contaminated ground water. Monitoring of this activity indicates the remediation is proceeding acceptably.
   Vacuum Breaker 2 area: Two remediation wells have been installed in this area to remove contaminated ground water. These wells, which became operational in 2008, discharge to the Exelon Pond. The wells

are in place to remediate a previously identified contamination plume and were not installed to remediate contamination from a new spill.

Vacuum Breakers 4, 6, & 7: Monitoring wells have been installed within and down gradient of these plumes which originated from vacuum breaker valves along the blowdown line. These sites are being remediated by monitored natural attenuation.

Exelon Pond area: The combination of groundwater sample monitoring and water level monitoring ensures that the active remedial pumping of Exelon Pond continues to capture the tritium that spilled from vacuum breakers 2 and 3 almost ten years ago. Monitoring to date has shown marked reduction in the most contaminated area and the station continues to monitor plume capture to determine whether adjustments are needed in the pumping rate.

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APPENDIX A

LOCATION DESIGNATION

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TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2012

Station Code	Sample Description
BL-03	Monitoring Well
BL-06	Monitoring Well
BL-06D	Monitoring Well
BL-09D	Monitoring Well
BL-10D	Monitoring Well
BL-11	Monitoring Well
BL-11D	Monitoring Well
BL-12D	Monitoring Well
BL-13D	Monitoring Well
BL-14D	Monitoring Well
BL-15D	Monitoring Well
BL-16D	Monitoring Well
BL-17D	Monitoring Well
BL-18D	Monitoring Well
BL-21	Monitoring Well
BL-22	Monitoring Well
BL-23	Monitoring Well
BL-24	Monitoring Well
BL-25	Monitoring Well
BL-26	Monitoring Well
BL-27	Monitoring Well
D-2D	Monitoring Well
D-3D	Monitoring Well
DITCH (DS-2)	Surface Water
EXELON POND	Surface Water
F-1D	Monitoring Well
F-3D	Monitoring Well
F-4D	Monitoring Well
F-5D	Monitoring Well
F-6D	Monitoring Well
F-8D	Monitoring Well
F-9D	Monitoring Well
MW-102R	Monitoring Well
MW-103	Monitoring Well
MW-105	Monitoring Well
MW-105D	Monitoring Well
MW-106D	Monitoring Well
MW-109D	Monitoring Well
MW-11	Monitoring Well
MW-110	Monitoring Well
MW-111	Monitoring Well
MW-111DR	Monitoring Well
MW-112D	Monitoring Well
MW-113	Monitoring Well
MW-113DR	Monitoring Well
MW-13	Monitoring Well
MW-130D	Monitoring Well
MW-131D	Monitoring Well
MW-132D	Monitoring Well
MW-133D	Monitoring Well
MW-134D	Monitoring Well

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2012

Station Code	Sample Description
MW-135D	Monitoring Well
MW-136D	Monitoring Well
MW-137D	Monitoring Well
MW-138D	Monitoring Well
MW-139D	Monitoring Well
MW-14	Monitoring Well
MW-140D	Monitoring Well
MW-141D	Monitoring Well
MW-142D	Monitoring Well
MW-143D	Monitoring Well
MW-144D	Monitoring Well
MW-145D	Monitoring Well
MW-154	Monitoring Well
MW-155	Monitoring Well
MW-156	Monitoring Well
MW-158D	Monitoring Well
MW-159D	Monitoring Well
MW-160D	Monitoring Well
MW-161D	Monitoring Well
MW-162D	Monitoring Well
MW-2	Monitoring Well
MW-22	Monitoring Well
MW-4	Monitoring Well
MW-5	Monitoring Well
MW-6	Monitoring Well
MW-7	Monitoring Well
MW-9	Monitoring Well
MW-BW-201BD	Monitoring Well
MW-BW-201I	Monitoring Well
MW-BW-201S	Monitoring Well
MW-BW-202I	Monitoring Well
MW-BW-202S	Monitoring Well
MW-BW-203I	Monitoring Well
MW-BW-203S	Monitoring Well
MW-BW-204I	Monitoring Well
MW-BW-205I	Monitoring Well
MW-BW-206I	Monitoring Well
MW-BW-207I	Monitoring Well
MW-BW-208BD	Monitoring Well
P-2D	Monitoring Well
P-4D	Monitoring Well
P-5D	Monitoring Well
P-13D	Monitoring Well
P-14D	Monitoring Well
RW-10	Monitoring Well
RW-5	Monitoring Well
RW-6	Monitoring Well
RW-7	Monitoring Well
RW-8	Monitoring Well

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2012

Station Code	Sample Description
RW-9	Monitoring Well
S-1D	Monitoring Well
S-2D	Monitoring Well
S-4	Monitoring Well
S-4D	Monitoring Well
S-5	Monitoring Well
S-6	Monitoring Well
S-7D	Monitoring Well
S-8	Monitoring Well
S-8DR	Monitoring Well
SG-BW-101	Surface Water
SG-BW-102	Surface Water
SG-BW-103	Surface Water
SG-BW-105	Surface Water
SG-BW-106	Surface Water
SW-101	Surface Water
SW-102 POINT C	Surface Water
SW-103	Surface Water
SW-104 A DITCH	Surface Water
TB-20	Monitoring Well
TB-20D	Monitoring Well
TB-21	Monitoring Well
TB-21D	Monitoring Well
TB-22	Monitoring Well
TB-22D	Monitoring Well
TB-23	Monitoring Well
TB-23D	Monitoring Well
TB-24	Monitoring Well
TB-24D	Monitoring Well
TB-25	Monitoring Well
TB-25D	Monitoring Well
TB-26D	Monitoring Well
VB10-1	Monitoring Well
VB1-1	Monitoring Well
VB1-10	Monitoring Well
VB1-10D	Monitoring Well
VB11-1	Monitoring Well
VB1-11	Monitoring Well
VB1-11D	Monitoring Well
VB1-12D	Monitoring Well
VB1-2	Monitoring Well
VB1-2D	Monitoring Well
VB1-3	Monitoring Well
VB1-3D	Monitoring Well
VB1-4	Monitoring Well
VB1-4D	Monitoring Well
VB1-5	Monitoring Well
VB1-5D	Monitoring Well
VB1-6	Monitoring Well

TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations, Braidwood Station, 2012

Station Code	Sample Description
VB1-6D	Monitoring Well
VB1-7	Monitoring Well
VB1-7D	Monitoring Well
VB1-8	Monitoring Well
VB1-8D	Monitoring Well
VB1-9	Monitoring Well
VB1-9D	Monitoring Well
VB2-10	Monitoring Well
VB2-10D	Monitoring Well
VB2-11	Monitoring Well
VB2-11D	Monitoring Well
VB2-12	Monitoring Well
VB2-12D	Monitoring Well
VB2-13	Monitoring Well
VB2-13D	Monitoring Well
VB2-14	Monitoring Well
VB2-14D	Monitoring Well
VB2-15D	Monitoring Well
VB2-16	Monitoring Well
VB2-16D	Monitoring Well
VB2-17	Monitoring Well
VB2-17D	Monitoring Well
VB2-2D	Monitoring Well
VB2-5D	Monitoring Well
VB2-6D	Monitoring Well
VB2-7D	Monitoring Well
VB2-9D	Monitoring Well
VB3-10D	Monitoring Well
VB3-2	Monitoring Well
VB3-4D	Monitoring Well
VB3-7D	Monitoring Well
VB3-9D	Monitoring Well
VB4-1	Monitoring Well
VB4-5D	Monitoring Well
VB4-6D	Monitoring Well
VB5-2	Monitoring Well
VB6-1	Monitoring Well
VB7-1	Monitoring Well
VB8-2R	Monitoring Well
VB9-1	Monitoring Well
OWM31P	Monitoring Well

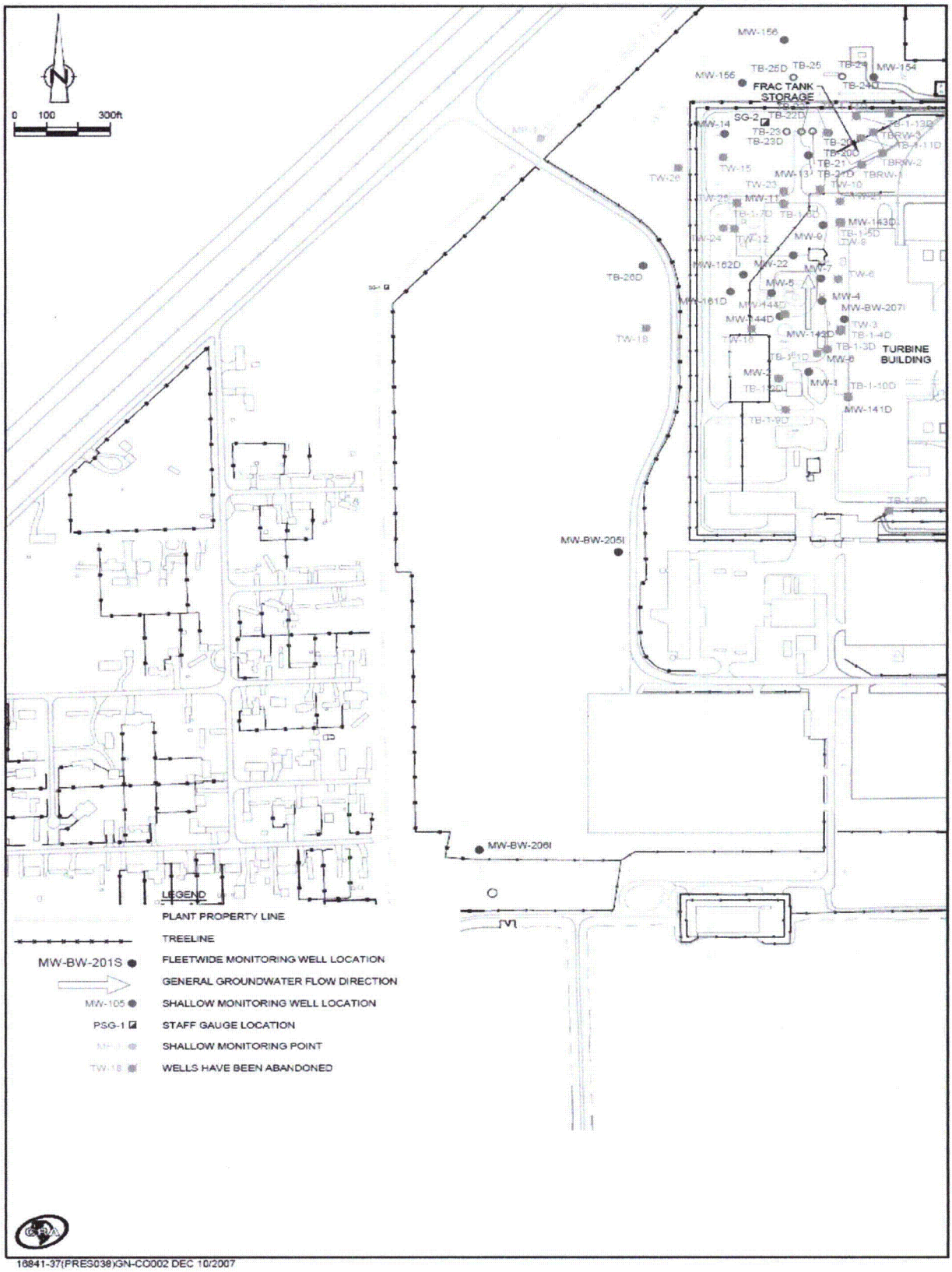

Figure A-1
Sampling Locations near the Site Boundary of Braidwood Station, 2012

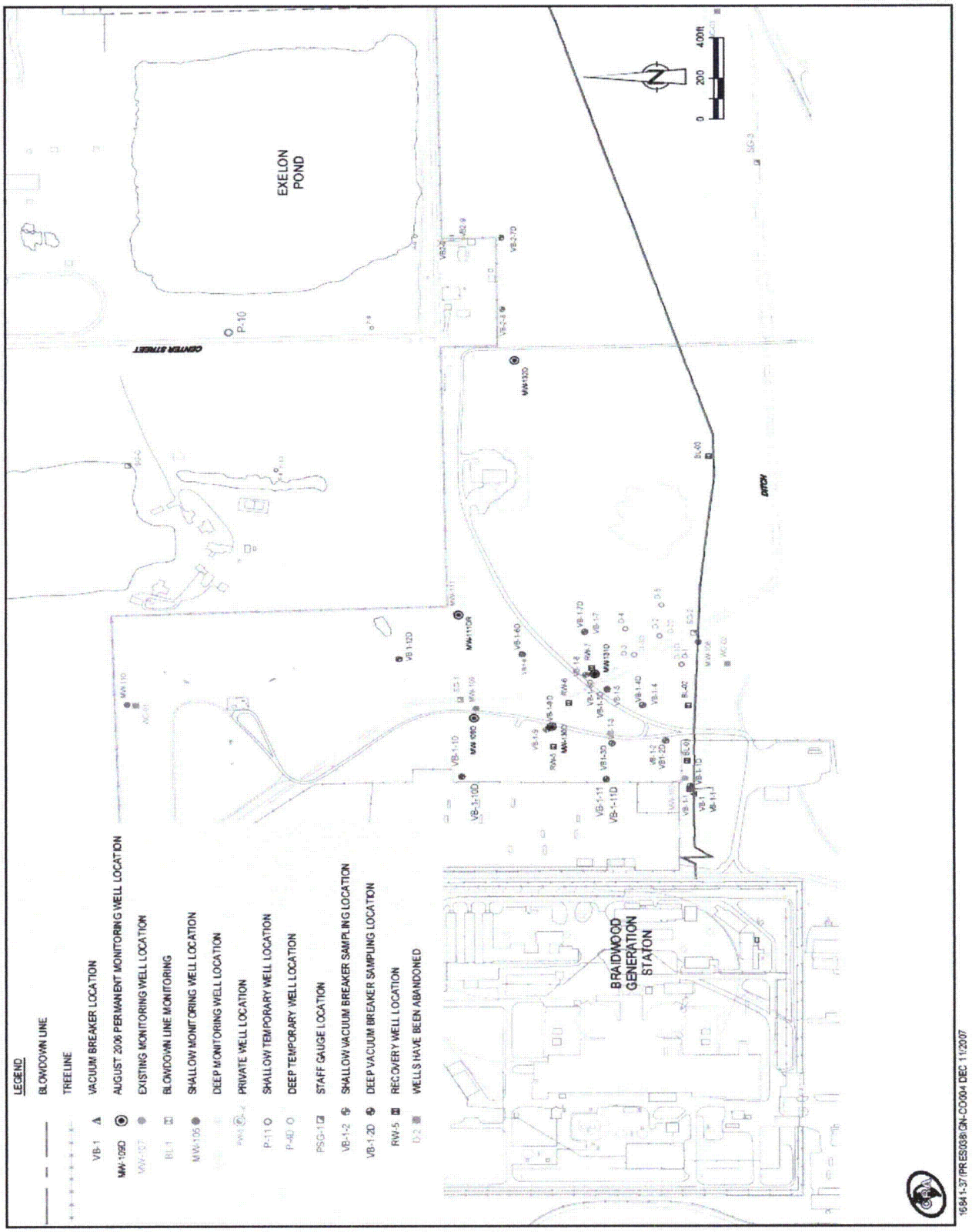

Figure A-2
Sampling Locations near the Site Boundary of Braidwood Station, 2012

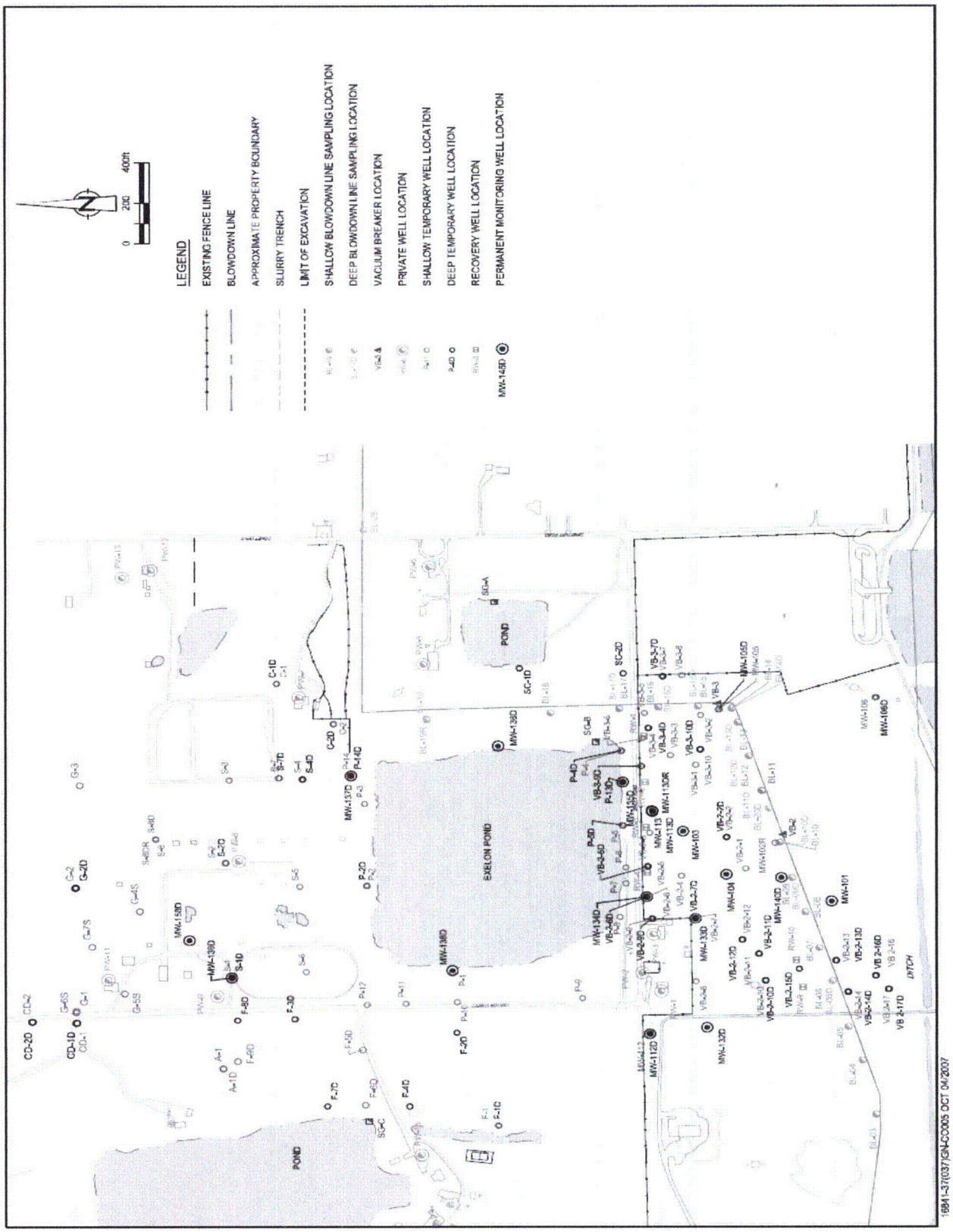

Figure A-3
Distant Sampling Locations of the Braidwood Station, 2012

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APPENDIX B

DATA TABLES

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TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
BL-03	03/14/12	< 186						
BL-03	06/12/12	< 175						
BL-03	12/12/12	< 169						
BL-06D	06/13/12	< 191						
BL-09D	06/18/12	< 178						
BL-10D	06/15/12	< 176						
BL-11	03/14/12	< 186						
BL-11	06/11/12	< 174						
BL-11	12/12/12	< 175						
BL-11D	06/15/12	< 178						
BL-12D	06/15/12	< 173						
BL-13D	06/15/12	< 175						
BL-14D	06/15/12	< 177						
BL-15D	06/15/12	< 174						
BL-16D	06/15/12	< 172						
BL-17D	06/15/12	< 177						
BL-18D	06/15/12	< 177						
BL-19R	03/13/12	< 192						
BL-19R	06/13/12	< 189						
BL-19R	09/18/12	< 195						
BL-19R	12/11/12	< 172						
BL-20D	06/15/12	< 174						
BL-21	03/13/12	< 186						
BL-21	06/13/12	< 174						
BL-21	09/17/12	< 176						
BL-21	12/11/12	< 177						
BL-22	03/12/12	< 184						
BL-22	06/12/12	< 174						
BL-22	09/17/12	< 178						
BL-22	12/11/12	< 176						
BL-23	03/12/12	< 184						
BL-23	06/12/12	< 174						
BL-23	09/17/12	< 176						
BL-23	12/11/12	< 174						
BL-24	03/12/12	< 182						
BL-24	06/12/12	< 170						
BL-24	09/17/12	< 177						
BL-24	12/11/12	< 174						
BL-25	03/12/12	< 183						
BL-25	06/11/12	< 172						
BL-25	09/17/12	< 175						
BL-25	12/11/12	< 174						
BL-26	03/12/12	< 185						
BL-26	06/11/12	< 172						
BL-26	09/17/12	< 175						
BL-26	12/11/12	< 169						
BL-27	03/12/12	< 182						
BL-27	06/12/12	< 171						
BL-27	09/17/12	< 175						
BL-27	12/11/12	< 172						
C-1D	06/13/12	< 194						
C-2D	06/13/12	< 193						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
CD-1D	06/13/12	< 192						
D-1D	06/12/12	< 174						
D-2D	06/12/12	< 176						
D-3D	06/12/12	< 175						
F-1D	06/12/12	< 192						
F-1D	12/12/12	< 171						
F-4D	06/12/12	< 172						
F-4D	12/12/12	< 174						
F-5D	03/13/12	460 ± 140						
F-5D	06/12/12	282 ± 120						
F-5D	09/19/12	231 ± 136						
F-5D	12/12/12	180 ± 119						
F-6D	06/12/12	< 171						
F-6D	12/12/12	< 174						
F-7D	03/13/12	191 ± 126						
F-7D	06/12/12	< 171						
F-7D	09/19/12	< 191						
F-7D	12/12/12	< 171						
F-8D	03/13/12	338 ± 132						
F-8D	06/14/12	187 ± 118						
F-8D	09/19/12	342 ± 140						
F-8D	12/12/12	230 ± 119						
F-9D	03/13/12	185 ± 122						
F-9D	06/12/12	< 172						
F-9D	09/19/12	< 198						
F-9D	12/12/12	< 172						
G-2D	06/15/12	< 175						
MW-102R	03/14/12	< 184						
MW-102R	06/14/12	< 173						
MW-102R	09/19/12	< 193						
MW-102R	12/18/12	< 169						
MW-105D	06/15/12	< 177						
MW-106D	06/18/12	< 174						
MW-109D	03/13/12	< 172						
MW-109D	06/11/12	< 175						
MW-109D	11/14/12	< 181	< 3.4	< 0.7	< 1.3	< 0.4	< 1.4	< 1.8
MW-11	02/02/12	503 ± 146						
MW-11	09/19/12	357 ± 125						
MW-11	11/13/12	300 ± 118	< 4.3	< 0.7	< 0.9	< 1.0	7.0 ± 1.2	1.7 ± 1.0
MW-110	11/14/12	< 183	< 3.4	< 0.7	< 1.0	< 1.1	18.3 ± 1.6	< 1.7
MW-111 DR	06/13/12	< 191						
MW-111DR	03/14/12	< 190						
MW-111DR	11/15/12	< 185						
MW-111DR	12/18/12	< 173	< 5.2	< 1.0	< 0.3	< 0.4	< 0.9	< 1.5
MW-112D	06/12/12	< 175						
MW-112D	11/15/12	< 183	< 3.2	< 0.8	< 0.8	< 0.5	1.7 ± 1.0	< 1.6
MW-113	11/14/12	< 182	< 3.6	< 0.6	< 1.3	< 0.4	2.3 ± 1.0	< 1.8
MW-113DR	06/14/12	< 196						
MW-13	02/02/12	336 ± 121						
MW-13	06/12/12	273 ± 131						
MW-13	11/14/12	260 ± 120	< 4.2	< 0.8	< 0.8	< 0.3	2.0 ± 0.9	< 1.6
MW-130D	06/11/12	< 172						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
MW-130D	12/18/12	< 173	< 5.1	< 0.7	< 1.2	< 0.4	5.4 ± 1.1	< 1.5
MW-131D	06/13/12	< 189						
MW-131D	11/14/12	< 182	< 4.0	< 0.6	< 0.7	< 0.9	3.9 ± 1.1	< 1.7
MW-132D	06/12/12	< 177						
MW-133D	06/14/12	< 172						
MW-134D	06/14/12	< 192						
MW-134D	11/14/12	< 182	< 3.3	< 0.8	< 0.5	< 0.6	1.7 ± 0.7	< 1.9
MW-135D	06/14/12	< 180						
MW-135D	12/13/12	< 172	< 4.7	< 0.8	< 0.7	< 0.9	< 1.4	< 1.7
MW-136D	06/13/12	< 195						
MW-136D	12/13/12	< 170	< 4.6	< 0.6	< 1.0	< 0.3	3.2 ± 1.0	< 1.9
MW-137D	06/13/12	< 193						
MW-137D	12/13/12	< 172	< 5.1	< 0.7	< 0.6	< 0.5	1.8 ± 0.8	< 1.6
MW-138D	06/13/12	< 194						
MW-138D	12/13/12	< 176	< 6.2	< 0.7	< 0.9	< 0.5	4.2 ± 1.1	< 1.6
MW-139D	06/14/12	< 176						
MW-139D	12/12/12	< 172	< 4.7	< 0.8	< 0.9	< 0.7	12.1 ± 1.3	< 1.3
MW-14	02/02/12	421 ± 127						
MW-14	11/13/12	494 ± 133						
MW-140D	06/14/12	< 173						
MW-141D	02/01/12	738 ± 149						
MW-141D	06/12/12	583 ± 148						
MW-141D	09/24/12	666 ± 140						
MW-141D	11/12/12	683 ± 141	< 3.2	< 0.7	< 4.0	7.3 ± 2.5	57.8 ± 6.7	6.3 ± 3.7
MW-142D	02/02/12	1460 ± 205						
MW-142D	06/12/12	1780 ± 235						
MW-142D	09/24/12	1200 ± 179						
MW-142D	11/12/12	1680 ± 227	< 3.3	< 0.9	< 2.7	< 1.1	30.6 ± 3.7	< 2.7
MW-143D	02/01/12	< 183						
MW-143D	06/12/12	304 ± 135						
MW-143D	09/21/12	346 ± 122						
MW-143D	11/12/12	256 ± 126	< 3.8	< 0.8	< 3.9	4.1 ± 1.7	20.1 ± 2.0	12.3 ± 2.1
MW-144D	02/06/12	3020 ± 352						
MW-144D	06/11/12	3820 ± 431						
MW-144D	11/15/12	2550 ± 313	< 3.8	< 0.8	< 0.6	< 0.6	3.9 ± 0.9	8.0 ± 1.6
MW-145D	12/12/12	211 ± 115	< 4.8	< 0.6	< 0.7	< 0.7	< 1.3	< 1.3
MW-154	12/18/12	278 ± 121						
MW-155	12/18/12	227 ± 118						
MW-158D	06/14/12	< 176						
MW-158D	12/12/12	< 172	< 5.0	< 0.6	1.3 ± 0.6	< 0.9	18.2 ± 1.3	< 1.7
MW-159D	11/13/12	< 181						
MW-161D	02/06/12	826 ± 163						
MW-161D	06/15/12	789 ± 161						
MW-161D	09/19/12	643 ± 152						
MW-161D	11/13/12	656 ± 142	< 3.5	< 0.7	< 1.6	< 1.0	9.8 ± 1.5	< 1.6
MW-162D	02/07/12	865 ± 150						
MW-162D	06/12/12	801 ± 160						
MW-162D	09/21/12	765 ± 144						
MW-162D	11/14/12	893 ± 151	< 4.7	< 0.8	< 0.9	1.3 ± 0.8	6.9 ± 1.1	2.5 ± 1.2
MW-2	02/01/12	864 ± 154						
MW-2	06/15/12	927 ± 167						
MW-2	09/24/12	933 ± 157						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
MW-2	11/15/12	923 ± 161	< 3.2	< 0.9	1.7 ± 0.7	< 0.6	5.2 ± 1.0	< 1.8
MW-22	02/01/12	958 ± 161						
MW-22	06/11/12	944 ± 168						
MW-22	09/20/12	746 ± 147						
MW-22	11/13/12	701 ± 141	< 4.4	< 0.7	< 2.3	< 0.4	< 2.0	< 1.7
MW-4	02/02/12	797 ± 151						
MW-4	06/11/12	1470 ± 206						
MW-4	09/24/12	1380 ± 196						
MW-4	11/15/12	1160 ± 180	< 3.8	< 0.6	< 1.2	< 1.1	4.1 ± 1.2	< 1.7
MW-5	02/06/12	614 ± 139						
MW-5	06/13/12	1080 ± 175						
MW-5	09/21/12	779 ± 147						
MW-5	11/13/12	1200 ± 177	< 3.4	< 0.8	1.0 ± 0.5	1.0 ± 0.7	3.9 ± 0.8	< 1.6
MW-6	02/02/12	1410 ± 204						
MW-6	06/12/12	1180 ± 182						
MW-6	09/24/12	1410 ± 199						
MW-6	11/13/12	1310 ± 188	< 4.1	< 0.6	8.2 ± 3.3	< 1.0	11.4 ± 1.8	2.3 ± 1.1
MW-7	02/02/12	1060 ± 171						
MW-7	06/12/12	969 ± 169						
MW-7	09/24/12	1180 ± 176						
MW-7	09/24/12	1020 ± 160						
MW-7	11/12/12	1070 ± 172	< 3.5	< 0.6	< 1.9	3.2 ± 1.1	3.0 ± 1.2	4.1 ± 1.3
MW-9	02/01/12	417 ± 134						
MW-9	06/11/12	500 ± 146						
MW-9	09/19/12	561 ± 137						
MW-9	11/12/12	494 ± 136	< 4.4	< 0.7	< 4.1	< 2.7	15.0 ± 4.1	< 5.8
MW-BW-201I	09/25/12	335 ± 137						
MW-BW-201S	02/06/12	274 ± 134						
MW-BW-201S	06/13/12	324 ± 135						
MW-BW-201S	09/25/12	259 ± 117						
MW-BW-201S	11/15/12	< 181	< 3.4	< 0.9	< 1.3	< 0.4	10.7 ± 1.4	< 1.4
MW-BW-202I	09/19/12	199 ± 127						
MW-BW-202S	02/01/12	< 182						
MW-BW-202S	09/19/12	< 170						
MW-BW-202S	11/12/12	348 ± 125	< 3.6	< 0.8	< 2.4	< 0.5	11.5 ± 1.8	< 1.6
MW-BW-203I	09/20/12	< 174						
MW-BW-203S	02/01/12	< 183						
MW-BW-203S	09/20/12	< 171						
MW-BW-203S	11/12/12	214 ± 123	< 4.2	< 0.8	< 0.6	< 0.6	4.6 ± 0.8	< 1.6
MW-BW-207I	02/02/12	537 ± 148						
MW-BW-207I	11/15/12	526 ± 135	< 3.4	< 0.8	< 3.2	< 0.8	36.2 ± 3.1	< 2.6
OWM31P	11/15/12	< 184	< 3.0	< 0.8	19.5 ± 4.4	< 0.4	57.9 ± 2.9	< 1.4
P-13D	03/13/12	494 ± 141						
P-13D	06/14/12	487 ± 138						
P-13D	09/18/12	358 ± 127						
P-14D	06/14/12	< 176						
P-2D	06/13/12	< 191						
P-2D	12/13/12	< 169						
P-4D	03/13/12	960 ± 164						
P-4D	06/13/12	945 ± 166						
P-4D	09/18/12	870 ± 176						
P-4D	12/13/12	858 ± 148						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
P-5D	06/14/12	< 175						
PW-006	04/18/12	< 175						
PW-006	07/12/12	< 196						
PW-006A	04/18/12	< 177						
PW-006A	07/11/12	< 195						
PW-006A	10/22/12	< 175						
PW-006P	01/11/12	< 171						
PW-006P	04/18/12	< 177						
PW-006P	07/12/12	< 199						
PW-006P	10/22/12	< 174						
PW-011	01/11/12	< 172						
PW-011	04/18/12	< 176						
PW-011	07/11/12	< 198						
PW-011	10/22/12	< 179						
PW-015	01/11/12	< 172						
PW-015	04/18/12	< 175						
PW-015	07/11/12	< 199						
PW-015	10/22/12	< 177						
PW-016	01/11/12	< 169						
PW-016	04/18/12	< 176						
PW-016	07/11/12	< 196						
PW-016	10/22/12	< 176						
PW-13	01/11/12	< 171						
PW-13	04/18/12	< 174						
PW-13	07/12/12	< 197						
PW-13	10/22/12	< 174						
PWN-103	06/12/12	< 175						
RW-10	07/13/12	< 178						
RW-6	06/11/12	898 ± 151						
RW-7	06/13/12	< 193						
RW-9	06/18/12	< 175						
S-1D	03/14/12	< 183						
S-1D	06/14/12	< 173						
S-1D	09/19/12	< 194						
S-2D	03/14/12	< 184						
S-2D	06/14/12	< 178						
S-2D	09/19/12	< 194						
S-4D	06/14/12	< 178						
S-7D	06/14/12	< 178						
S-8DR	06/14/12	< 192						
VB 2-5D	09/27/12	219 ± 132						
VB 2-9D	09/27/12	< 192						
VB 3-2	03/14/12	< 182						
VB 3-4D	09/27/12	436 ± 150						
VB-1-12D	06/13/12	< 192						
VB-1-4D	06/12/12	< 175						
VB-1-5D	06/12/12	< 170						
VB-1-6D	06/13/12	< 191						
VB-1-7D	06/13/12	< 171						
VB-1-8D	06/13/12	< 198						
VB-1-9D	06/11/12	917 ± 151						
VB-10-1	03/12/12	< 183						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
VB-10-1	06/11/12	< 173						
VB-10-1	09/17/12	< 200						
VB-10-1	12/10/12	< 169						
VB-11-1	03/12/12	< 183						
VB-11-1	06/12/12	< 170						
VB-11-1	09/17/12	< 175						
VB-11-1	12/11/12	< 174						
VB-2-11D	07/13/12	< 178						
VB-2-12D	07/13/12	< 180						
VB-2-13D	07/13/12	< 180						
VB-2-14D	07/12/12	< 177						
VB-2-15D	07/11/12	< 178						
VB-2-16D	07/12/12	< 193						
VB-2-17D	07/12/12	< 200						
VB-2-2D	07/13/12	< 177						
VB-2-5D	03/14/12	197 ± 125						
VB-2-5D	06/14/12	< 191						
VB-2-6D	07/13/12	< 177						
VB-2-7D	07/13/12	< 179						
VB-2-9D	03/14/12	< 180						
VB-2-9D	06/14/12	< 191						
VB-3-10D	07/12/12	< 195						
VB-3-2	06/14/12	< 179						
VB-3-4D	03/14/12	331 ± 133						
VB-3-4D	06/14/12	272 ± 123						
VB-3-7D	07/12/12	< 195						
VB-3-9D	07/12/12	< 194						
VB-4-1	03/13/12	< 183						
VB-4-1	06/13/12	< 173						
VB-4-1	09/18/12	< 176						
VB-4-1	12/11/12	< 173						
VB-5-2	03/13/12	< 185						
VB-5-2	06/11/12	< 173						
VB-5-2	09/19/12	< 193						
VB-5-2	12/12/12	< 173						
VB-6-1	03/12/12	< 182						
VB-6-1	06/12/12	< 175						
VB-6-1	09/17/12	< 177						
VB-6-1	12/11/12	< 173						
VB-7-1	03/12/12	< 183						
VB-7-1	06/12/12	< 170						
VB-7-1	09/17/12	< 175						
VB-7-1	12/11/12	< 169						
VB-8-2R	03/12/12	< 179						
VB-8-2R	06/11/12	< 174						
VB-8-2R	09/17/12	< 175						
VB-8-2R	12/11/12	< 173						
VB-9-1	03/12/12	< 180						
VB-9-1	06/11/12	< 174						
VB-9-1	09/17/12	< 175						
VB-9-1	12/11/12	< 174						
VB1-1	03/13/12	< 169						

TABLE B-I.1 CONCENTRATIONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
VB1-1	06/18/12	< 196						
VB1-1	09/26/12	< 169						
VB1-2D	06/18/12	< 189						
VB1-3D	06/18/12	< 187						
VB1-9	02/16/12	< 172						
VB1-9D	02/16/12	1670 ± 220						
VB1-9D	03/13/12	3770 ± 421						
VB1-9D	03/13/12 :ount	3490 ± 394						
VB1-9D	06/18/12	1170 ± 178						
VB2-6D	11/14/12	< 181	< 3.4	< 0.6	0.7 ± 0.4	< 0.9	2.9 ± 0.8	< 1.7
VB3-2	09/19/12	< 193						

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-109D	11/14/12	< 11.8	< 27	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 15	< 4
MW-11	11/13/12	< 42.8	< 37	< 5	< 5	< 12	< 5	< 10	< 6	< 10	< 13	< 5	< 5	< 29	< 12
MW-110	11/14/12	< 11.6	< 12	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 15	< 5
MW-111DR	12/18/12	< 12.2	< 31	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 16	< 6
MW-112D	11/15/12	< 23.2	< 20	< 2	< 2	< 6	< 2	< 4	< 3	< 4	< 13	< 2	< 2	< 24	< 8
MW-113	11/14/12	< 11.5	< 29	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 9	< 1	< 1	< 14	< 5
MW-13	11/14/12	< 45.2	< 43	< 5	< 4	< 11	< 4	< 8	< 5	< 8	< 14	< 4	< 5	< 32	< 9
MW-130D	12/18/12	< 9.2	< 7	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 13	< 3
MW-131D	11/14/12	< 14.4	< 27	< 1	< 2	< 3	< 1	< 3	< 1	< 3	< 12	< 1	< 1	< 17	< 5
MW-134D	11/14/12	< 13.6	< 12	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 12	< 1	< 1	< 17	< 6
MW-135D	12/13/12	< 42.4	< 44	< 5	< 5	< 10	< 5	< 8	< 5	< 8	< 8	< 5	< 5	< 22	< 8
MW-136D	12/13/12	< 47.6	< 122	< 5	< 5	< 11	< 7	< 12	< 6	< 9	< 11	< 6	< 6	< 27	< 12
MW-137D	12/13/12	< 27.7	< 63	< 3	< 2	< 6	< 2	< 5	< 2	< 4	< 4	< 3	< 3	< 12	< 4
MW-138D	12/13/12	< 42.2	< 80	< 4	< 5	< 9	< 5	< 9	< 5	< 8	< 9	< 5	< 5	< 22	< 6
MW-139D	12/12/12	< 51.2	< 94	< 6	< 6	< 14	< 7	< 12	< 7	< 10	< 12	< 6	< 5	< 28	< 11
MW-14	11/13/12	< 32.4	< 29	< 3	< 3	< 7	< 3	< 7	< 4	< 6	< 12	< 3	< 4	< 25	< 8
MW-141D	11/12/12	< 22.6	107 ± 40	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 15	< 2	< 2	< 24	< 8
MW-142D	11/12/12	< 19.8	< 36	< 2	< 2	< 5	< 2	< 3	< 2	< 4	< 14	< 2	< 2	< 23	< 7
MW-143D	11/12/12	< 12.0	< 27	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 11	< 1	< 1	< 15	< 5
MW-144D	11/15/12	< 22.7	< 19	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 22	< 6
MW-145D	12/12/12	< 32.2	< 55	< 3	< 3	< 8	< 3	< 6	< 4	< 6	< 7	< 3	< 3	< 18	< 6
MW-154	12/18/12	< 10.4	< 7	< 1	< 1	< 2	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 13	< 5
MW-155	12/18/12	< 9.9	< 22	< 1	< 1	< 2	< 1	< 1	< 1	< 2	< 9	< 1	< 1	< 13	< 4
MW-158D	12/12/12	< 52.3	< 50	< 5	< 6	< 13	< 6	< 13	< 6	< 10	< 11	< 6	< 6	< 29	< 9
MW-159D	11/13/12	< 37.2	< 78	< 4	< 5	< 10	< 4	< 9	< 5	< 8	< 13	< 4	< 4	< 29	< 10
MW-161D	11/13/12	< 34.7	< 71	< 4	< 3	< 8	< 4	< 7	< 4	< 6	< 13	< 3	< 3	< 28	< 8
MW-162D	11/14/12	< 37.7	< 64	< 4	< 4	< 8	< 4	< 8	< 4	< 6	< 11	< 4	< 4	< 28	< 9
MW-2	11/15/12	< 11.7	< 9.9	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 7	< 1	< 1	< 12	< 4
MW-22	11/13/12	< 47.3	< 41	< 5	< 5	< 10	< 5	< 9	< 5	< 9	< 15	< 5	< 5	< 33	< 10
MW-4	11/15/12	< 11.8	< 29	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 10	< 1	< 1	< 15	< 4
MW-5	11/13/12	< 41.7	< 49	< 5	< 5	< 12	< 6	< 9	< 6	< 7	< 14	< 5	< 6	< 34	< 13
MW-6	11/13/12	< 40.2	< 81	< 4	< 5	< 11	< 5	< 9	< 4	< 9	< 14	< 4	< 5	< 31	< 9
MW-7	11/12/12	< 14.2	< 10	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 13	< 1	< 1	< 17	< 5
MW-9	11/12/12	< 12.3	45 ± 28	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 17	< 5

TABLE B-I.2 **CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
MW-BW-201S	11/15/12	< 21.0	< 18	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 21	< 7
MW-BW-202S	11/12/12	< 17.1	37 ± 23	< 1	< 2	< 4	< 2	< 3	< 2	< 3	< 12	< 1	< 2	< 18	< 6
MW-BW-203S	11/12/12	< 13.0	< 9	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 18	< 6
MW-BW-207I	11/15/12	< 19.7	65 ± 25	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 21	< 6
OWM31P	11/15/12	< 22.0	67 ± 31	< 2	< 2	< 5	< 2	< 4	< 2	< 4	< 12	< 2	< 2	< 22	< 6
P-2D	12/13/12	< 39.9	< 77	< 4	< 5	< 10	< 5	< 10	< 5	< 7	< 8	< 4	< 4	< 22	< 7
VB2-6D	11/14/12	< 15.6	< 12	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 13	< 1	< 2	< 18	< 6

TABLE B-I.3 **CONCENTRATIONS OF HARD TO DETECTS IN GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Am-241	Cm-242	Cm-243/244	Pu-238	Pu-239/240	U-234	U-235	U-238	Fe-55	Ni-63
MW-145D	12/12/12	< 0.05	< 0.03	< 0.03	< 0.20	< 0.13	< 0.09	< 0.02	< 0.05	< 157	< 4.4
VB2-6D	11/14/12	< 0.17	< 0.06	< 0.06	< 0.08	< 0.06	< 0.05	< 0.09	< 0.08	< 141	< 3.4

TABLE B-II.1 **CONCENTRATONS OF TRITIUM, STRONTIUM, GROSS ALPHA AND GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	H-3	Sr-89	Sr-90	Gr-A (DIS)	Gr-A (SUS)	Gr-B (DIS)	Gr-B (SUS)
EXELON POND	02/03/12	< 191						
EXELON POND	03/13/12	< 181						
EXELON POND	06/14/12	< 174						
EXELON POND	09/17/12	< 172						
FATLAN POND	03/13/12	< 172						
FATLAN POND	06/13/12	< 193						
FATLAN POND	09/17/12	< 175						
FATLAN POND	12/12/12	< 177						
SG-BW-102	11/13/12	408 ± 144						
SG-BW-105	09/26/12	< 192						
SG-BW-105	11/12/12	< 180	< 3.0	< 0.7	< 1.0	< 0.4	10.6 ± 1.4	< 1.4
SG-BW-106	09/24/12	< 175						
SG-BW-106	09/24/12	< 194						
SG-BW-106	11/13/12	< 193						
SW-05	01/11/12	< 169						
SW-05	04/18/12	< 174						
SW-05	07/12/12	< 195						
SW-05	10/22/12	< 177						
SW-101	02/03/12	< 193						
SW-102	02/03/12	< 166						
SW-102	06/18/12	< 198						
SW-103	02/03/12	< 188						
SW-103	11/13/12	335 ± 126						
SW-103 DITCH E	09/24/12	< 169						
SW-104	02/03/12	< 193						
SW-104	11/13/12	359 ± 140						
SW-104 DITCH A	09/24/12	< 168						
LAKE DISCHARGE CANAL	02/03/12	< 192						
LAKE SCREEN HOUSE INTAKE	02/03/12	< 189						
DS-2	02/03/12	< 189						
DS-2	11/13/12	< 193						

TABLE B-II.2 **CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BRAIDWOOD STATION, 2012**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION DATE	Be-7	K-40	Mn-54	Co-58	Fe-59	Co-60	Zn-65	Nb-95	Zr-95	I-131	Cs-134	Cs-137	Ba-140	La-140
DS-2	11/13/12	< 37	< 33	< 4	< 4	< 8	< 3	< 7	< 4	< 7	< 13	< 4	< 4	< 25	< 8
SG-BW-102	11/13/12	< 39	< 33	< 4	< 4	< 8	< 4	< 8	< 4	< 7	< 13	< 4	< 4	< 28	< 7
SG-BW-105	11/12/12	< 14	< 11	< 1	< 1	< 3	< 1	< 2	< 2	< 3	< 14	< 1	< 1	< 20	< 6
SG-BW-106	11/13/12	< 34	< 65	< 3	< 4	< 9	< 3	< 7	< 4	< 6	< 11	< 3	< 4	< 26	< 10
SW-103	11/13/12	< 35	< 70	< 3	< 4	< 9	< 3	< 7	< 4	< 7	< 12	< 4	< 4	< 26	< 7
SW-104	11/13/12	< 30	< 30	< 3	< 3	< 9	< 4	< 7	< 4	< 6	< 10	< 3	< 4	< 25	< 7