

# BYRON NUCLEAR GENERATING STATION UNITS 1 and 2

Annual Radiological  
Environmental Operating Report

1 January Through 31 December 2006

**Prepared By**

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**Nuclear**

Byron Nuclear Generating Station  
Byron, IL 61010

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## I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Byron Nuclear Generating Station (BNGS) by Exelon covers the period 1 January 2006 through 31 December 2006. During that time period, 1,311 analyses were performed on 1,473 samples. In assessing all the data gathered for this report and comparing these results with preoperational data, it was concluded that the operation of BNGS had no adverse radiological impact on the environment.

Surface water samples were analyzed for concentrations of gross beta, tritium and gamma emitting nuclides. Ground water samples were analyzed for concentrations of gross beta and gamma emitting nuclides. No fission or activation products were detected. Gross beta 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. Cesium-137 activity was found at both sediment locations and was consistent with data from previous years. No Plant produced fission or activation products were found in fish or 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 activity.

Cow milk samples were analyzed for concentrations of I-131 and gamma emitting nuclides. All I-131 results were below the minimum detectable activity. No fission or activation products were found.

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

Environmental gamma radiation measurements were performed quarterly using thermoluminescent dosimeters. Levels detected were consistent with those observed in previous years.



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## II. Introduction

Byron Station, a two-unit PWR station, is located about two miles east of the Rock River and approximately three miles southwest of Byron in Ogle County, Illinois. The reactors are designed to have capacities of 1280 and 1254 MW gross, respectively. Unit One loaded fuel in November 1984 and went on line February 2, 1985. Unit Two went on line January 9, 1987. 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), Global Dosimetry, and Environmental Inc. (Midwest Labs) on samples collected during the period 1 January 2006 through 31 December 2006.

### 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 BNGS REMP were collected for Exelon Nuclear by Environmental Inc. (Midwest Labs). This section describes the general

collection methods used by Environmental Inc. to obtain environmental samples for the BNGS REMP in 2006. Sample locations and descriptions can be found in Tables B-1 and Figures B-1 through B-4, Appendix B.

### Aquatic Environment

The aquatic environment was evaluated by performing radiological analyses on samples of surface water, well water, fish, and sediment. Two gallon water samples were collected monthly from two surface water locations (BY-12 and BY-29 [Control location]) and six well water locations (BY-14-1, BY-18, BY-32, BY-35, BY-36 and BY-37). All samples were collected in new unused plastic bottles, which were rinsed with source water prior to collection. Fish samples comprising the flesh of smallmouth bass, channel catfish, freshwater drum, golden redhorse and river carpsucker were collected semiannually at two locations, BY-29 (control) and BY-31. Sediment samples composed of recently deposited substrate were collected at two locations semiannually, BY-12 and BY-34.

### Atmospheric Environment

The atmospheric environment was evaluated by performing radiological analyses on samples of air particulate, airborne iodine, and milk. Airborne iodine and particulate samples were collected and analyzed weekly at eight locations (BY-01, BY-04, BY-06, BY-08, BY-21, BY-22, BY-23, and BY-24). The control location was BY-08. 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.

Milk samples were collected biweekly at four locations (BY-20-1, BY-26-1, BY-30 and BY-38) from May through October, and monthly from November through April. The control location was BY-26-1. 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 (BY-Control, BY-Quad 1, BY-Quad 2, BY-Quad 3, and BY-Quad 4). Various types of samples were collected and placed in new unused plastic bags, and sent to the laboratory for analysis.

## Ambient Gamma Radiation

Direct radiation measurements were made using CaF<sub>2</sub> thermoluminescent dosimeters (TLD). Each location consisted of 2 TLD sets. The TLD locations were placed on and around the BNGS site as follows:

An inner ring consisting of 16 locations (BY-101, BY-102, BY-103, BY-104, BY-105, BY-106, BY-107, BY-108, BY-109, BY-110, BY-111, BY-112, BY-113, BY-114, BY-115, and BY-116) near and within the site perimeter representing fence post doses (i.e., at locations where the doses will be potentially greater than maximum annual off-site doses) from BNGS release.

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

An other set consisting of seven locations (BY-01, BY-04, BY-06, BY-21, BY-22, BY-23 and BY-24).

The balance of one location (BY-08) representing the control area.

The specific TLD locations were determined by the following criteria:

1. The presence of relatively dense population;
2. Site meteorological data taking into account distance and elevation for each of the sixteen–22 1/2 degree sectors around the site, where estimated annual dose from BNGS, if any, would be most significant;
3. On hills free from local obstructions and within sight of the vents (where practical);
4. And near the closest dwelling to the vents in the prevailing downwind direction.

Two TLDs – each comprised of two CaF<sub>2</sub> thermoluminescent phosphors enclosed in plastic – were placed at each location in a PVC conduit located at a minimum of five feet above ground level. The TLDs were exchanged quarterly and sent to Global Dosimetry for analysis.

## 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 BNGS REMP in 2006. 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 surface water and air particulates.
2. Concentrations of gamma emitters in ground and surface water, air particulates, milk, fish, sediment and vegetation.
3. Concentrations of tritium in ground and surface water.
4. Concentrations of I-131 in air and milk.
5. Ambient gamma radiation levels at various site environs.

## C. Data Interpretation

The radiological and direct radiation data collected prior to Byron Nuclear Generating Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Byron Nuclear Generating Station was considered operational at initial criticality. In addition, data were compared to previous years' operational data for consistency and trending. 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) 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 BNGS detection capabilities for environmental sample analysis.

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

## 2. Net Activity Calculation and Reporting of Results

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

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

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

For fish nine nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb/Zr-95, Cs-134, Cs-137 and Ba/La-140 were reported.

For sediment nine nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-95, Nb/Zr-95, Cs-134, Cs-137 and Ba/La-140 were reported.

For air particulate nine, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb/Zr-95, Cs-134, Cs-137 and Ba/La-140 were reported.

For milk ten nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb/Zr-95, Cs-134, Cs-137, Ba-140 and La-140 were reported.

For vegetation ten nuclides, Mn-54, Co-58, Fe-59, Co-60, Zn-65, Nb/Zr-95, I-131, Cs-134, Cs-137 and Ba/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 single analysis uncertainty.

D. Program Exceptions

For 2006 the BNGS REMP had a sample recovery rate in excess of 99%. 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
A/I	BY-04	03/07/06	Pump found not running; collector could not restart; replaced pump.
TLD	Other	03/29/06	Station received two TLDs labeled BY-207-1; no TLD labeled BY-207-2 sent.
M	BY-20-1, 26-1	06/27/06	I-131 LLD of 1.0 pCi/L was missed by the laboratory due to the discontinuation and poor performance of two types of filter paper used in the I-131 analysis.
M	BY-30	06/27/06	I-131 LLD of 1.0 pCi/L was missed by the laboratory due to the discontinuation and poor performance of two types of filter paper used in the I-131 analysis.
M	BY-20-1	07/25/06	I-131 LLD of 1.0 pCi/L was missed by the laboratory due to the discontinuation and poor performance of two types of filter paper used in the I-131 analysis.
A/I	BY-04	11/28/06	Estimated meter reading of 189.4 hours; timer meter broken; collector replaced meter.

Table D-2 LISTING OF MISSED SAMPLES

Sample Type	Location Code	Collection Date	Reason
SW	BY-12	01/03/06	No sample; frozen water
SW	BY-29	01/03/06	No sample; water frozen
SW	BY-12	02/07/06	No sample; ice on river bank
SW	BY-29	02/07/06	No sample; ice on river bank
SW	BY-12	02/21/06	No sample; water frozen
SW	BY-29	02/21/06	No sample; water frozen
SW	BY-12	02/27/06	No sample; water frozen
SW	BY-29	02/27/06	No sample; water frozen
M	BY-38	08/22/06	Milk not available this collection period
VE	Quad 3	09/05/06	No root vegetable available
M	BY-38	11/14/06	No sample; goats not producing milk
SW	BY-12	12/05/06	No sample; ice sheet extending 10-15' from bank.
SW	BY-29	12/05/06	No sample; ice sheet extending 20' from bank.
M	BY-38	12/05/06	No sample; goats not producing milk
SW	BY-29	12/12/06	No sample; water frozen

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

Ground water stations BY-35, BY-36 and BY-37 and goat milk station BY-38 were added to the REMP sampling in 2006.



A separate program was instituted to monitor groundwater in the surrounding environs during 2006. This program and any sampling and analysis results are discussed in the attached report, "Annual Radiological Groundwater Protection Program Report".

#### IV. Results and Discussion

##### A. Aquatic Environment

##### 1. Surface Water

Samples were taken weekly and composited monthly at two locations (BY-12 and BY-29). Of these locations only BY-12 located downstream, could be affected by Byron Nuclear Generating Station's effluent releases. The following analyses were performed.

##### Gross Beta

Samples from both locations were analyzed for concentrations of gross beta (Table C-1.1, Appendix C). The values ranged from <3.0 to 6.7 pCi/l. Concentrations detected were consistent with those detected in previous years (Figure C-1, Appendix C).

##### Tritium

Quarterly composites of weekly collections were analyzed for tritium activity (Table C-1.2, Appendix C). No tritium was detected, and the required LLD was met (Figure C-2, Appendix C).

##### Gamma Spectrometry

Samples from both locations were analyzed for gamma emitting nuclides (Table C-1.3, Appendix C). No nuclides were detected, and all required LLDs were met.

##### 2. Ground Water

Quarterly grab samples were collected at six locations (BY-14-1, BY-18, BY-32, BY-35, BY-36 and BY-37). These locations could be affected by Byron Nuclear Generating Station's effluent releases. The following analyses were performed:

### Tritium

Quarterly grab samples from the locations were analyzed for tritium activity (Table C–II.1, Appendix C). No tritium was detected, and the required LLD was met (Figures C–3 and C–6, Appendix C).

### Gamma Spectrometry

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

## 3. Fish

Fish samples comprised of smallmouth bass, channel catfish and freshwater drum, golden redhorse and river carpsucker were collected at two locations (BY-29 and BY-31) semiannually. Location BY-31 could be affected by Byron Nuclear Generating Station's effluent releases. The following analysis was performed:

### Gamma Spectrometry

The edible portion of fish samples from both locations was analyzed for gamma emitting nuclides (Table C–III.1, Appendix C). No nuclides were detected, and all required LLDs were met.

## 4. Sediment

Aquatic sediment samples were collected at two locations (BY-12 and BY-34) semiannually. Both locations, located downstream, could be affected by Byron Nuclear Generating Station's effluent releases. The following analysis was performed:

### Gamma Spectrometry

Sediment samples from both locations were analyzed for gamma emitting nuclides (Table C–IV.1, Appendix C). Cesium-137 was detected in both locations. The values ranged from <77 to 111 pCi/kg dry. Concentrations detected were consistent with those detected in previous years. No other nuclides were detected, 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: Nearsite samplers (BY-21, BY-22, BY-23 and BY-24), Far Field samplers within 4 km of the site (BY-01, BY-04, and BY-06) and the Control sampler between 10 and 30 km from the site (BY-08). The following analyses were performed:

#### Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C-V.1 and C-V.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 BNGS. The results from the Nearsite locations (Group I) ranged from <6 to 38 E-3 pCi/m<sup>3</sup> with a mean of 20 E-3 pCi/m<sup>3</sup>. The results from the Far Field locations (Group II) ranged from <5 to 38 E-3 pCi/m<sup>3</sup> with a mean of 20 E-3 pCi/m<sup>3</sup>. The results from the Control location (Group III) ranged from <6 to 36 E-3 pCi/m<sup>3</sup> with a mean of 20 E-3 pCi/m<sup>3</sup>. Comparison of the 2006 air particulate data with previous years data indicate no effects from the operation of BNGS. In addition a comparison of the weekly mean values for 2006 indicate no notable differences among the three groups (Figures C-7 through C-11, Appendix C).

#### Gamma Spectrometry

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

#### b. Airborne Iodine

Continuous air samples were collected from eight locations (BY-01, BY-04, BY-06, BY-08, BY-21, BY-22, BY-23, and BY-24) and analyzed weekly for I-131 (Table C-VI.1,

Appendix C). No I-131 was detected and the required LLD was met.

2. Terrestrial

a. Milk

Samples were collected from four locations (BY-20-1, BY-26-1, BY-30 and BY-38) biweekly May through October and monthly November through April. The following analyses were performed:

Iodine-131

Milk samples from all locations were analyzed for concentrations of I-131 (Table C–VII.1, Appendix C). No nuclides were detected, and all required LLDs were met, except as noted in the program exceptions table (Section III.D).

Gamma Spectrometry

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

b. Vegetation

Vegetation samples were collected at five locations (BY-Control, BY-Quad 1, BY-Quad 2, BY-Quad 3 and BY-Quad 4) when available. Four locations (BY-Quad 1, BY-Quad 2, BY-Quad 3 and BY-Quad 4) could be affected by Byron Nuclear Generating Station's effluent releases. The following analysis was performed:

Gamma Spectrometry

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

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing Panasonic 814 (CaF<sub>2</sub>) thermoluminescent dosimeters. Forty TLD locations were

established around the site. Results of TLD measurements are listed in Tables C–IX.1 to C–IX.3, Appendix C.

All TLD measurements were below 40 mR/standard month, with a range of 15 to 35 mR/standard month. A comparison of the Inner Ring, Outer Ring, Other and Control Location data indicate that the ambient gamma radiation levels were comparable among the groups.

D. Land Use Survey

A Land Use Survey conducted during August 2006 around the Byron Nuclear Generating Station (BNGS) was performed by Environmental Inc. (Midwest Labs) for Exelon Nuclear to comply with the Byron Nuclear Generating 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<sup>2</sup> in each of the sixteen 22 ½ degree sectors around the site. There were no changes required to the BNGS REMP, as a result of this survey. The results of this survey are summarized below.

Distance in Miles from the BNGS Containment Building			
Sector	Residence Miles	Livestock Miles	Milk Farm Miles
A N	1.0	5.0	12.0
B NNE	0.9	1.5	-
C NE	1.1	1.9	-
D ENE	1.3	6.5	-
E E	1.3	1.3	-
F ESE	1.5	1.5	-
G SE	0.8	4.5	5.1
H SSE	0.6	3.2	-
J S	0.5	0.6	-
K SSW	0.6	2.2	-
L SW	0.8	2.0	-
M WSW	1.7	4.5	-
N W	1.8	2.5	4.5
P WNW	0.8	3.5	-
Q NW	1.3	4.5	-
R NNW	1.0	1.4	-

E. 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  $\pm 20\%$  of the reference value. Performance is acceptable with warning when a mean result falls in the range from  $\pm 20\%$  to  $\pm 30\%$  of the reference value (i.e.,  $20\% < \text{bias} < 30\%$ ). If the bias is greater than 30%, the results are deemed not acceptable.

For the primary laboratory, 24 out of 28 analytes met the specified acceptance criteria. Four samples did not meet the specified acceptance criteria for the following reasons:

1. Teledyne Brown Engineering's MAPEP Series 15 January 2006 soil Cs-134 was evaluated as a false positive, although TBE considered the result a non-detect due to the peak not being identified by the gamma software. MAPEP suggests the Bi-214 is not being differentiated from the Cs-134 peak. When the ratio of activity to uncertainty exceeds 3, TBE will use a key line analysis rather than a

weighted mean analysis when evaluating MAPEP non-detects.

2. Teledyne Brown Engineering's MAPEP Series 15 January 2006 Sr-90 in vegetation result of 2.22 Bq/kg exceeded the upper acceptance range of 2.029 Bq/kg. The samples were analyzed in triplicate and the results averaged. One high result of 2.43 Bq/kg biased the submitted results on the high side. TBE was unable to determine the cause for the higher result. The Sr-90 in vegetation results for MAPEP Series 14 and MAPEP Series 16 were acceptable. No client samples were analyzed during the MAPEP Series 14 time period.
3. Teledyne Brown Engineering's MAPEP Series 15 January 2006 Pu-238 and Pu-239/240 in vegetation result of 2.22 Bq/kg failed the required acceptance ranges. TBE was evaluating the current preparation method for vegetation samples, which proved insufficient for the analyses. TBE does not perform isotopic Pu on client's vegetation samples.

For the secondary laboratory, 20 out of 25 analytes met the specified acceptance criteria. Seven samples did not meet the specified acceptance criteria for the following reasons:

1. Environmental Inc.'s ERA November 2006 water I-131 result of 28.4 pCi/L exceeded the upper control limit of 27.3 pCi/L. The reported result was an average of three analyses, results ranged from 25.36 pCi/L to 29.23 pCi/L. A fourth analysis was performed, with a result of 24.89 pCi/L.
2. Environmental Inc.'s MAPEP January 2006 vegetation Pu-238 result of 0.08 Bq/sample exceeded the lower control limit of 0.10 Bq/sample due to incomplete dissolution of the sample.
3. Environmental Inc.'s MAPEP January 2006 air particulate Pu-238 result of 0.03 Bq/sample exceeded the lower control limit of 0.05 Bq/sample due to incomplete dissolution of the sample.
4. Environmental Inc.'s MAPEP January 2006 soil Pu-238, Pu-239/240, U-233/234 and U-238 results of 14.6, 14.6, 13.5 and 15.4 Bq/kg, respectively, exceeded the lower control limits of 42.81, 32.09, 25.9 and 27.2 Bq/kg, respectively, due to incomplete dissolution of the sample.

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 SUMMARY**



**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>									
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>1ST QUARTER, 2006</b>									
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS			
SURFACE WATER (PC/LITER)	GR-B	6	4	5.5 (3/3) (4.6/6.7)	5.7 (3/3) (5.3/6.2)	5.7 (3/3) (5.3/6.2)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0			
				H-3	2	200	194 (0/1) (<192)	194 (0/1) (<194)	194 (0/1) (<194)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
				GAMMA MN-54	6	15	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
CO-58	15	3	15	3 (0/3) (<2/<4)	3 (0/3) (<2/<3)	3 (0/3) (<2/<4)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0			
				FE-59	6	30	6 (0/3) (<5/<8)	6 (0/3) (<4/<7)	6 (0/3) (<5/<8)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
CO-60	15	2	15	2 (0/3) (<2/<3)	2 (0/3) (<2/<2)	2 (0/3) (<2/<3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0			
				ZN-65	30	5 (0/3) (<4/<7)	5 (0/3) (<4/<6)	5 (0/3) (<4/<7)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0	
NB-95	15	3	15	3 (0/3) (<2/<4)	3 (0/3) (<2/<3)	3 (0/3) (<2/<4)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0			

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>1ST QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95	5	30	5 (0/3) (<3/<7)	5 (0/3) (<3/<5)	5 (0/3) (<4/<7)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	I-131	9	15	(0/3) (<6/<15)	10 (0/3) (<7/<14)	10 (0/3) (<7/<14)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
	CS-134	3	15	(0/3) (<2/<3)	2 (0/3) (<2/<3)	3 (0/3) (<2/<3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	CS-137	2	18	(0/3) (<2/<3)	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	BA-140	35	60	(0/3) (<23/<42)	33 (0/3) (<21/<45)	35 (0/3) (<23/<42)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	LA-140	12	15	(0/3) (<8/<14)	11 (0/3) (<7/<15)	12 (0/3) (<8/<14)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	H-3	3	200	(0/3) (<160/<161)	N/A	161 (0/3) (<161)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
	GAMMA MN-54	3	15	(0/3) (<7/<8)	N/A	8 (0/3) (<8)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>											
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>1ST QUARTER, 2006</b>											
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS					
GROUND WATER (PCI/LITER)	CO-58	15	8 (0/3) (<7/<9)	N/A	9 (0/1) (<9)	BY-32 INDICATOR RON WOLFORD WELL 1.8 MILES W OF SITE	0						
								FE-59	30	N/A	19 (0/1) (<19)	BY-32 INDICATOR RON WOLFORD WELL 1.8 MILES W OF SITE	0
ZN-65	30	N/A	24 (0/1) (<24)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0								
						NB-95	15	N/A	9 (0/1) (<9)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0		
ZR-95	30	N/A	15 (0/1) (<15)	BY-32 INDICATOR RON WOLFORD WELL 1.8 MILES W OF SITE	0								
						I-131	15	N/A	15 (0/1) (<15)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0		
CS-134	15	N/A	13 (0/1) (<13)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0								

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>												
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>1ST QUARTER, 2006</b>												
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS						
GROUND WATER (PCI/LITER)	CS-137	18	8 (0/3) (<8/<9)	N/A	9 (0/1) (<9)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0							
								BA-140	60	N/A	41 (0/1) (<41)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0	
														LA-140
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	10	17 (84/91) (<6/28)	16 (12/13) (<6/23)	17 (12/13) (<6/23)	BY-01 INDICATOR BYRON 3.0 MILES N OF SITE	0							
								GAMMA MN-54	8	N/A	6.3 (0/1) (< 5.0/< 7.0)	7.0 (0/1) (< 7.0)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
FE-59	N/A	N/A	51.9 (0/7) (<46.2/<64)	42.3 (0/1) (<42.3)	64 (0/1) (<64)	BY-06 INDICATOR OREGON 4.7 MILES SSW OF SITE	0							
								CO-60	N/A	5.3 (0/7) (< 4.3/< 6.9)	6.9 (0/1) (< 6.9)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0	

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>1ST QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	ZN-65		N/A	12.4 (0/7) (< 9.6/<16.6)	9.2 (0/1) (< 9.2)	16.6 (0/1) (<16.6)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
	ZRNB-95		N/A	12.5 (0/7) (< 7.2/<16.2)	10.5 (0/1) (<10.5)	16.2 (0/1) (<16.2)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
	CS-134		50	4.5 (0/7) (< 3.9/< 5.4)	3.7 (0/1) (< 3.7)	5.4 (0/1) (< 5.4)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
AIR IODINE (E-3 PCI/CU.METER)	CS-137		60	3.7 (0/7) (< 3.0/< 4.8)	3.3 (0/1) (< 3.3)	4.8 (0/1) (< 4.8)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
	BALA140		N/A	4564.3 (0/7) (<1350/<6570)	5410 (0/1) (<5410)	6570 (0/1) (<6570)	BY-04 INDICATOR PAYNES POINT 5.0 MILES SE OF SITE	0
MILK (PCI/LITER)	GAMMA I-131	104	70	48 (0/91) (<18/<66)	47 (0/13) (<21/<66)	49 (0/13) (<29/<66)	BY-04 INDICATOR PAYNES POINT 5.0 MILES SE OF SITE	0
	I-131	12	1	0.5 (0/9) (< 0.4/< 0.8)	0.6 (0/3) (< 0.4/< 0.8)	0.6 (0/3) (< 0.4/< 0.8)	BY-26-1 CONTROL DENNIS HERBERT 12.0 MILES N OF SITE	0

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>1ST QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	GAMMA MN-54	12	N/A	7	6	8	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0
				(0/9) (<4/<9)	(0/3) (<5/<7)	(0/3) (<7/<9)		
CO-58	N/A	N/A	7	6	8	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
			(0/9) (<4/<9)	(0/3) (<5/<7)	(0/3) (<7/<9)			
FE-59	N/A	N/A	16	14	19	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
			(0/9) (<10/<21)	(0/3) (<10/<16)	(0/3) (<17/<21)			
CO-60	N/A	N/A	7	7	8	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
			(0/9) (<6/<11)	(0/3) (<5/<8)	(0/3) (<7/<9)			
ZN-65	N/A	N/A	16	16	20	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
			(0/9) (<8/<22)	(0/3) (<12/<19)	(0/3) (<17/<22)			
ZNRB-95	N/A	N/A	7	7	8	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
			(0/9) (<4/<9)	(0/3) (<5/<8)	(0/3) (<7/<9)			
CS-134	15	N/A	7	7	8	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
			(0/9) (<2/<10)	(0/3) (<5/<8)	(0/3) (<6/<10)			
CS-137	18	N/A	7	6	8	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
			(0/9) (<5/<10)	(0/3) (<5/<8)	(0/3) (<7/<10)			



**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 1ST QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>1ST QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PC/LITER)	BA-140	60	31 (0/9) (<19/<39)	28 (0/3) (<21/<36)	37 (0/3) (<33/<39)	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0	
								9 (0/9) (<6/<12)
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	80	N/A	30 (78/78) (24/35)	27 (2/2) (25/28)	BY-107-2 INDICATOR	0	

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>									
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>									
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS			
SURFACE WATER (PC/LITER)	GR-B	6	4	4.7 (3/3) (4.0/ 5.3)	5.0 (3/3) (3.6/ 5.8)	5.0 (3/3) (3.6/ 5.8)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0			
				H-3	2	200	184 (0/1) (<184)	184 (0/1) (<184)	184 (0/1) (<184)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
				GAMMA MN-54	6	15	2 (0/3) (<1/<2)	2 (0/3) (<1/<3)	2 (0/3) (<1/<3)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
CO-58	CO-58	15	15	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0			
				FE-59	30	5 (0/3) (<5/<7)	5 (0/3) (<5/<7)	5 (0/3) (<5/<7)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0	
				CO-60	15	2 (0/3) (<1/<2)	2 (0/3) (<1/<2)	2 (0/3) (<1/<2)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0	
ZN-65	ZN-65	30	30	4 (0/3) (<3/<5)	4 (0/3) (<3/<6)	4 (0/3) (<3/<6)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0			
				NB-95	15	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0	

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95	4	30	4 (0/3) (<3/<5)	4 (0/3) (<3/<6)	4 (0/3) (<3/<6)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
	I-131	11	15	11 (0/3) (<9/<15)	11 (0/3) (<9/<15)	11 (0/3) (<9/<15)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	CS-134	2	15	2 (0/3) (<1/<2)	2 (0/3) (<1/<3)	2 (0/3) (<1/<3)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	CS-137	2	18	2 (0/3) (<1/<2)	2 (0/3) (<1/<2)	2 (0/3) (<1/<2)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
	BA-140	36	60	36 (0/3) (<23/<44)	38 (0/3) (<23/<47)	38 (0/3) (<23/<47)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
	LA-140	12	15	12 (0/3) (<8/<15)	12 (0/3) (<8/<14)	12 (0/3) (<8/<15)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	H-3	6	200	166 (0/6) (<162/<169)	N/A	169 (0/1) (<169)	BY-32 INDICATOR RON WOLFORD WELL 1.8 MILES W OF SITE	0
	GAMMA MN-54	6	15	3 (0/6) (<1/<6)	N/A	6 (0/1) (<6)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CO-58	3	15	N/A (0/6) (<1/<6)	N/A	6 (0/1) (<6)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
	FE-59	6	30	N/A (0/6) (<3/<13)	N/A	13 (0/1) (<13)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
	CO-60	3	15	N/A (0/6) (<1/<6)	N/A	6 (0/1) (<6)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
	ZN-65	6	30	N/A (0/6) (<3/<13)	N/A	13 (0/1) (<13)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
	NB-95	3	15	N/A (0/6) (<1/<6)	N/A	6 (0/1) (<6)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
	ZR-95	5	30	N/A (0/6) (<2/<11)	N/A	11 (0/1) (<11)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
	I-131	6	15	N/A (0/6) (<3/<12)	N/A	12 (0/1) (<12)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
	CS-134	3	15	N/A (0/6) (<1/<6)	N/A	6 (0/1) (<6)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CS-137	3	18	N/A	N/A	6 (0/1) (<6)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
				16 (0/6) (<8/<33)	N/A	33 (0/1) (<33)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
				6 (0/6) (<3/<12)	N/A	12 (0/1) (<12)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
FISH (PCI/KG WET)	GAMMA MN-54	4	130	85 (0/2) (<84/<86)	72 (0/2) (<61/<83)	85 (0/2) (<84/<86)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
				111 (0/2) (<101/<120)	92 (0/2) (<73/<111)	111 (0/2) (<101/<120)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
				246 (0/2) (<236/<256)	213 (0/2) (<171/<254)	246 (0/2) (<236/<256)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
				82 (0/2) (<79/<85)	67 (0/2) (<57/<78)	82 (0/2) (<79/<85)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
CO-60	ZN-65	N/A	N/A	229 (0/2) (<224/<233)	187 (0/2) (<174/<199)	229 (0/2) (<224/<233)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FISH (PCI/KG WET)	ZRNB-95	N/A	N/A	107 (0/2) (<104/<110)	101 (0/2) (<86/<116)	107 (0/2) (<104/<110)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
	CS-134	130		97 (0/2) (<95/<99)	90 (0/2) (<87/<93)	97 (0/2) (<95/<99)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
	CS-137	150		89 (0/2) (<88/<90)	70 (0/2) (<57/<83)	89 (0/2) (<88/<90)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
SEDIMENT (PCI/KG DRY)	BALA140	N/A	N/A	620 (0/2) (<578/<661)	606 (0/2) (<598/<613)	620 (0/2) (<578/<661)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
	GAMMA MN-54	2	N/A	88 (0/2) (<86/<89)	N/A	89 (0/1) (<89)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0
	CO-58	N/A	N/A	85 (0/2) (<82/<89)	N/A	89 (0/1) (<89)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
FE-59	N/A	N/A	N/A	193 (0/2) (<186/<199)	N/A	199 (0/1) (<199)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	CO-60	N/A	N/A	80 (0/2) (<80/<81)	N/A	81 (0/1) (<81)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PC/KG DRY)	ZN-65	N/A	N/A	191 (0/2) (<179/<202)	N/A	202 (0/1) (<202)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	ZRNB-95	N/A	N/A	95 (0/2) (<83/<107)	N/A	107 (0/1) (<107)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	CS-134	150	N/A	83 (0/2) (<80/<86)	N/A	86 (0/1) (<86)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	CS-137	180	180	104 (2/2) (97/111)	N/A	111 (1/1) (111)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0
	BALA140	N/A	N/A	166 (0/2) (<152/<180)	N/A	180 (0/1) (<180)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GAMMA MIN-54	GR-B	104	10	16 (90/91) (<5/30)	15 (13/13) (8/23)	16 (12/13) (<5/30)	BY-06 INDICATOR OREGON 4.7 MILES SSW OF SITE	0
	CO-58	8	N/A	3.6 (0/7) (<2.7/<5.4)	3.1 (0/1) (<3.1)	5.4 (0/1) (<5.4)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
				6.3 (0/7) (<3.0/<8.5)	7.4 (0/1) (<7.4)	8.5 (0/1) (<8.5)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0

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

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	FE-59	N/A	N/A	26.1 (0/7) (<15.5/<35.3)	16.7 (0/1) (<16.7)	35.3 (0/1) (<35.3)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	CO-60	N/A	N/A	3.3 (0/7) (<2.5/<4.5)	3.8 (0/1) (<3.8)	4.5 (0/1) (<4.5)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	ZN-65	N/A	N/A	8.4 (0/7) (<5.9/<11.9)	11.6 (0/1) (<11.6)	11.9 (0/1) (<11.9)	BY-21 INDICATOR BYRON NEARSITE NORTH 0.3 MILES N OF SITE	0
	ZRNB-95	N/A	N/A	8.8 (0/7) (<5.3/<12.9)	11.3 (0/1) (<11.3)	12.9 (0/1) (<12.9)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	CS-134	50		3.0 (0/7) (<1.9/<4.4)	3.5 (0/1) (<3.5)	4.4 (0/1) (<4.4)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	CS-137	60		2.6 (0/7) (<1.9/<3.9)	3.0 (0/1) (<3.0)	3.9 (0/1) (<3.9)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	BALA140	N/A		1194.9 (0/7) (<752/<1690)	1680 (0/1) (<1680)	1690 (0/1) (<1690)	BY-04 INDICATOR PAYNES POINT 5.0 MILES SE OF SITE	0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	104	70	57 (0/91) (<37/<70)	58 (0/13) (<45/<67)	58 (0/13) (<45/<67)	BY-08 CONTROL LEAF RIVER 6.8 MILES WNW OF SITE	0

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



**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>						
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	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	I-131	24	1	0.9 (0/18) (< 0.4/< 3.7)	0.8 (0/6) (< 0.4/< 1.3)	1.2 (0/6) (< 0.5/< 3.7)	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0
	GAMMA MN-54	24	N/A	7 (0/18) (< 5/< 11)	6 (0/6) (< 5/< 7)	7 (0/6) (< 5/< 11)	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0
	CO-58		N/A	8 (0/18) (< 5/< 10)	7 (0/6) (< 6/< 8)	8 (0/6) (< 7/< 10)	BY-20-1 CONTROL RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	FE-59		N/A	19 (0/18) (< 13/< 30)	16 (0/6) (< 15/< 17)	19 (0/6) (< 13/< 30)	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0
	CO-60		N/A	8 (0/18) (< 6/< 13)	7 (0/6) (< 7/< 9)	9 (0/6) (< 7/< 13)	BY-20-1 CONTROL RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	ZN-65		N/A	20 (0/18) (< 14/< 33)	17 (0/6) (< 15/< 20)	21 (0/6) (< 16/< 32)	BY-20-1 CONTROL RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	ZRNB-95		N/A	8 (0/17) (< 6/< 13)	7 (0/6) (< 7/< 8)	9 (0/6) (< 7/< 13)	BY-20-1 CONTROL RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	CS-134		15	8 (0/18) (< 5/< 13)	7 (0/6) (< 6/< 9)	9 (0/6) (< 7/< 11)	BY-20-1 CONTROL RON SNODGRASS FARM 4.5 MILES W OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 2ND QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>												
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>2ND QUARTER, 2006</b>												
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS						
MILK (PCI/LITER)	CS-137	18	8 (0/18) (<6/<11)	7 (0/6) (<6/<8)	8 (0/6) (<7/<11)	BY-20-1 CONTROL RON SNODGRASS FARM 4.5 MILES W OF SITE	0							
								BA-140	60	44 (0/18) (<27/<53)	39 (0/6) (<32/<48)	47 (0/6) (<36/<51)	BY-20-1 CONTROL RON SNODGRASS FARM 4.5 MILES W OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	80	N/A	19 (78/78) (17/28)	13 (1/1) (28)	BY-208-2 INDICATOR	0							

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>									
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>									
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS			
SURFACE WATER (PCI/LITER)	GR-B	6	4	5.8 (3/3) (5.3/6.7)	5.8 (3/3) (5.0/6.5)	5.8 (3/3) (5.3/6.7)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0			
				H-3	2	200	184 (0/1) (<184)	185 (0/1) (<185)	185 (0/1) (<185)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
				GAMMA MN-54	6	15	1 (0/3) (<1/<1)	1 (0/3) (<1/<1)	1 (0/3) (<1/<1)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
CO-58			15	1 (0/3) (<1/<2)	1 (0/3) (<1/<1)	1 (0/3) (<1/<2)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0			
				FE-59	30	3 (0/3) (<3/<4)	3 (0/3) (<3/<3)	3 (0/3) (<3/<4)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0	
CO-60			15	1 (0/3) (<1/<2)	1 (0/3) (<1/<1)	1 (0/3) (<1/<2)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0			
				ZN-65	30	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0	
NB-95			15	1 (0/3) (<1/<2)	1 (0/3) (<1/<2)	1 (0/3) (<1/<2)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0			

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95		30	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	2 (0/3) (<2/<3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	I-131		15	13 (0/3) (<10/<15)	13 (0/3) (<10/<15)	13 (0/3) (<10/<15)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	CS-134		15	1 (0/3) (<1/<1)	1 (0/3) (<1/<1)	1 (0/3) (<1/<1)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	CS-137		18	1 (0/3) (<1/<1)	1 (0/3) (<1/<1)	1 (0/3) (<1/<1)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	BA-140		60	18 (0/3) (<17/<19)	17 (0/3) (<15/<19)	18 (0/3) (<17/<19)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	LA-140		15	6 (0/3) (<5/<6)	5 (0/3) (<5/<6)	6 (0/3) (<5/<6)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	H-3	6	200	166 (0/6) (<162/<169)	N/A	169 (0/1) (<169)	BY-35 INDICATOR VANCKO WELL 2.0 MILES WNW OF SITE	0
	GAMMA MN-54	6	15	2 (0/6) (<2/<3)	N/A	3 (0/1) (<3)	BY-32 INDICATOR RON WOLFORD WELL 1.8 MILES W OF SITE	0

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

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BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CO-58	3	15	3 (0/6) (<2/<3)	N/A	3	BY-32 INDICATOR	0
						(0/1) (<3)	RON WOLFORD WELL 1.8 MILES W OF SITE	
	FE-59	6	30	(0/6) (<4/<7)	N/A	7	BY-32 INDICATOR	0
						(0/1) (<7)	RON WOLFORD WELL 1.8 MILES W OF SITE	
	CO-60	2	15	(0/6) (<2/<3)	N/A	3	BY-32 INDICATOR	0
						(0/1) (<3)	RON WOLFORD WELL 1.8 MILES W OF SITE	
	ZN-65	5	30	(0/6) (<4/<7)	N/A	7	BY-32 INDICATOR	0
						(0/1) (<7)	RON WOLFORD WELL 1.8 MILES W OF SITE	
	NB-95	3	15	(0/6) (<2/<3)	N/A	3	BY-32 INDICATOR	0
						(0/1) (<3)	RON WOLFORD WELL 1.8 MILES W OF SITE	
	ZR-95	5	30	(0/6) (<4/<6)	N/A	6	BY-32 INDICATOR	0
						(0/1) (<6)	RON WOLFORD WELL 1.8 MILES W OF SITE	
	I-131	12	15	(0/6) (<9/<15)	N/A	15	BY-32 INDICATOR	0
						(0/1) (<15)	RON WOLFORD WELL 1.8 MILES W OF SITE	
	CS-134	3	15	(0/6) (<2/<3)	N/A	3	BY-32 INDICATOR	0
						(0/1) (<3)	RON WOLFORD WELL 1.8 MILES W OF SITE	

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CS-137	18	3 (0/6) (<2/<3)	N/A	3	BY-32 INDICATOR	0	
						RON WOLFORD WELL 1.8 MILES W OF SITE		
BA-140	60	23 (0/6) (<17/<27)	N/A	27	BY-32 INDICATOR	0		
					RON WOLFORD WELL 1.8 MILES W OF SITE			
LA-140	15	7 (0/6) (<6/<9)	N/A	9	BY-32 INDICATOR	0		
					RON WOLFORD WELL 1.8 MILES W OF SITE			
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	10	22 (91/91) (14/38)	22 (13/13) (15/36)	24 (13/13) (18/38)	BY-06 INDICATOR	0	
						OREGON		
						4.7 MILES SSW OF SITE		
GAMMA MN-54	8	N/A	3.6 (0/7) (< 3.1/< 4.2)	2.3 (0/1) (< 2.3)	4.2 (0/1) (< 4.2)	BY-23 INDICATOR	0	
						BYRON NEARSITE SOUTH 0.6 MILES S OF SITE		
CO-58	N/A	7.3 (0/7) (< 6.2/< 9.1)	4.9 (0/1) (< 4.9)	9.1 (0/1) (< 9.1)	BY-24 INDICATOR	0		
					BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE			
FE-59	N/A	26.8 (0/7) (<20.4/<43.3)	27.1 (0/1) (<27.1)	43.3 (0/1) (<43.3)	BY-23 INDICATOR	0		
					BYRON NEARSITE SOUTH 0.6 MILES S OF SITE			
CO-60	N/A	3.2 (0/7) (< 2.7/< 3.6)	2.5 (0/1) (< 2.5)	3.6 (0/1) (< 3.6)	BY-04 INDICATOR	0		
					PAYNES POINT 5.0 MILES SE OF SITE			

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	ZN-65		N/A	9.2 (0/7) (< 6.7/<14.6)	4.3 (0/1) (< 4.3)	14.6 (0/1) (<14.6)	BY-23 INDICATOR BYRON NEARSITE SOUTH 0.6 MILES S OF SITE	0
	ZRNB-95		N/A	7.9 (0/7) (< 5.9/< 9.9)	6.3 (0/1) (< 6.3)	9.9 (0/1) (< 9.9)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
	CS-134		50	3.2 (0/7) (< 2.4/< 4.0)	2.8 (0/1) (< 2.8)	4.0 (0/1) (< 4.0)	BY-23 INDICATOR BYRON NEARSITE SOUTH 0.6 MILES S OF SITE	0
AIR IODINE (E-3 PCI/CU.METER)	CS-137		60	2.9 (0/7) (< 1.8/< 4.0)	2.1 (0/1) (< 2.1)	4.0 (0/1) (< 4.0)	BY-23 INDICATOR BYRON NEARSITE SOUTH 0.6 MILES S OF SITE	0
	BALA140		N/A	1400 (0/7) (<1060/<2500)	1040 (0/1) (<1040)	2500 (0/1) (<2500)	BY-23 INDICATOR BYRON NEARSITE SOUTH 0.6 MILES S OF SITE	0
MILK (PCI/LITER)	GAMMA I-131	104	70	46 (0/91) (<11/<66)	45 (0/13) (<25/<64)	49 (0/13) (<11/<65)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
	I-131	23	1	0.7 (0/17) (< 0.5/< 1.8)	0.6 (0/6) (< 0.4/< 0.8)	0.9 (0/6) (< 0.5/< 1.8)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	GAMMA MN-54	23	N/A	7 (0/17) (<2/<10)	7 (0/6) (<2/<11)	7 (0/5) (<3/<10)	BY-38 INDICATOR LARSON GOAT FARM 5.0 MILES ENE OF SITE	0
				7 (0/17) (<2/<9)	6 (0/6) (<2/<12)	7 (0/6) (<4/<9)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
FE-59	N/A	N/A	N/A	17 (0/17) (<5/<24)	15 (0/6) (<5/<21)	18 (0/5) (<8/<22)	BY-38 INDICATOR LARSON GOAT FARM 5.0 MILES ENE OF SITE	0
				7 (0/17) (<2/<10)	7 (0/6) (<2/<11)	7 (0/5) (<3/<10)	BY-38 INDICATOR LARSON GOAT FARM 5.0 MILES ENE OF SITE	0
ZN-65	N/A	N/A	N/A	15 (0/17) (<5/<24)	16 (0/6) (<5/<24)	17 (0/5) (<7/<24)	BY-38 INDICATOR LARSON GOAT FARM 5.0 MILES ENE OF SITE	0
				7 (0/17) (<2/<11)	7 (0/6) (<3/<12)	8 (0/6) (<4/<10)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
CS-134	N/A	15	N/A	6 (0/17) (<2/<9)	6 (0/6) (<2/<9)	7 (0/6) (<3/<9)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
				6 (0/17) (<2/<9)	6 (0/6) (<2/<9)	7 (0/6) (<3/<9)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)



**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>								
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>								
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS	CONTROL LOCATION	LOCATION WITH HIGHEST ANNUAL MEAN	STATION # NAME	MEAN(M) (F) RANGE	DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	CS-137	18	7	(0/17)	(0/6)	8	BY-38 INDICATOR			0
				(<2/<12)	(<2/<9)	(0/5)	LARSON GOAT FARM			
						(<3/<12)	5.0 MILES ENE OF SITE			
BA-140	60	42	(0/17)	(0/6)	45	BY-38 INDICATOR				0
			(<14/<53)	(<16/<48)	(0/5)	LARSON GOAT FARM				
					(<32/<53)	5.0 MILES ENE OF SITE				
LA-140	15	12	(0/17)	(0/6)	13	BY-20-1 INDICATOR				0
			(<4/<15)	(<5/<14)	(0/6)	RON SNODGRASS FARM				
					(<11/<15)	4.5 MILES W OF SITE				
VEGETATION (PCI/KG WET)	GAMMA MN-54	9	N/A	(0/7)	(0/2)	15	BY-CONTROL CONTROL			0
				(<12/<15)	(<13/<17)	(0/2)	GENSLER GARDENS			
						(<13/<17)	13.0 MILES ENE OF SITE			
CO-58	N/A	14	(0/7)	(0/7)	(0/2)	16	BY-CONTROL CONTROL			0
				(<11/<16)	(<14/<18)	(0/2)	GENSLER GARDENS			
						(<14/<18)	13.0 MILES ENE OF SITE			
FE-59	N/A	39	(0/7)	(0/7)	(0/2)	41	BY-QUAD 2 INDICATOR			0
				(<33/<41)	(<35/<36)	(0/2)	LIMERICK ROAD			
						(<40/<41)	3.0 MILES SE OF SITE			
CO-60	N/A	14	(0/7)	(0/7)	(0/2)	18	BY-CONTROL CONTROL			0
				(<12/<17)	(<14/<21)	(0/2)	GENSLER GARDENS			
						(<14/<21)	13.0 MILES ENE OF SITE			
ZN-65	N/A	32	(0/7)	(0/7)	(0/2)	36	BY-QUAD 2 INDICATOR			0
				(<25/<37)	(<30/<38)	(0/2)	LIMERICK ROAD			
						(<36/<37)	3.0 MILES SE OF SITE			

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 3RD QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>3RD QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	ZRNB-95		N/A	16 (0/7) (<14/<18)	15 (0/2) (<14/<16)	17 (0/2) (<16/<18)	BY-QUAD 4 INDICATOR EQUESTRIAN POINTE 2.0 MILES WNW OF SITE	0
	I-131	60		53 (0/7) (<50/<55)	55 (0/2) (<52/<58)	55 (0/2) (<52/<58)	BY-CONTROL CONTROL GENSLER GARDENS 13.0 MILES ENE OF SITE	0
	CS-134	60		13 (0/7) (<12/<14)	11 (0/2) (<9/<13)	14 (0/1) (<14)	BY-QUAD 3 INDICATOR E. SPRING CREEK ROAD 2.0 MILES WSW OF SITE	0
	CS-137	80		15 (0/7) (<12/<18)	16 (0/2) (<14/<17)	18 (0/2) (<17/<18)	BY-QUAD 2 INDICATOR LIMERICK ROAD 3.0 MILES SE OF SITE	0
	BALA140	N/A		30 (0/7) (<19/<41)	24 (0/2) (<20/<29)	33 (0/2) (<26/<41)	BY-QUAD 1 INDICATOR NORTH COX ROAD 4.9 MILES ENE OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	80	N/A	21 (78/78) (15/25)	17 (2/2) (16/17)	33 (1/1) (25)	BY-212-1 INDICATOR	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PC/LITER)	GR-B	6	4	5.4 (3/3) (5.2/ 5.6)	4.1 (2/3) (< 3.0/ 4.8)	5.4 (3/3) (5.2/ 5.6)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
				H-3	2	200	181 (0/1) (<181)	179 (0/1) (<179)
	GAMMA MN-54	6	15	2 (0/3) (<1/<3)	2 (0/3) (<1/<4)	2 (0/3) (<1/<4)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
				CO-58	15	15	3 (0/3) (<1/<5)	2 (0/3) (<1/<4)
	FE-59	30	30	6 (0/3) (<3/<9)	6 (0/3) (<3/<9)	6 (0/3) (<3/<9)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
				CO-60	15	15	2 (0/3) (<1/<4)	2 (0/3) (<1/<4)
	ZN-65	30	30	4 (0/3) (<2/<8)	5 (0/3) (<2/<8)	5 (0/3) (<2/<8)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
				NB-95	15	15	2 (0/3) (<1/<4)	3 (0/3) (<1/<4)

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95	4	30	4 (0/3) (<2/<6)	4 (0/3) (<2/<7)	4 (0/3) (<2/<7)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
	I-131	14	15	14 (0/3) (<13/<15)	13 (0/3) (<12/<15)	14 (0/3) (<13/<15)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	CS-134	2	15	2 (0/3) (<1/<4)	2 (0/3) (<1/<4)	2 (0/3) (<1/<4)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	CS-137	2	18	2 (0/3) (<1/<4)	2 (0/3) (<1/<4)	2 (0/3) (<1/<4)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
	BA-140	23	60	23 (0/3) (<18/<31)	23 (0/3) (<19/<27)	23 (0/3) (<18/<31)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	LA-140	7	15	7 (0/3) (<6/<10)	7 (0/3) (<6/<8)	7 (0/3) (<6/<10)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	H-3	6	200	169 (0/6) (<167/<172)	N/A	172 (0/1) (<172)	BY-36 INDICATOR BLANCHARD WELL 1.0 MILE NW OF SITE	0
	GAMMA MN-54	6	15	1 (0/6) (<1/<1)	N/A	1 (0/1) (<1)	BY-35 INDICATOR VANCKO WELL 2.0 MILES WNW OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CO-58	15	1 (0/6) (<1/<1)	N/A	1	BY-35 INDICATOR	0	
						VANCKO WELL 2.0 MILES WNW OF SITE		
	FE-59	30	3 (0/6) (<3/<3)	N/A	3	BY-14-1 INDICATOR	0	
					3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE			
	CO-60	15	2 (0/6) (<1/<5)	N/A	5	BY-14-1 INDICATOR	0	
					3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE			
	ZN-65	30	2 (0/6) (<2/<3)	N/A	3	BY-35 INDICATOR	0	
					VANCKO WELL 2.0 MILES WNW OF SITE			
	NB-95	15	1 (0/6) (<1/<2)	N/A	2	BY-35 INDICATOR	0	
					VANCKO WELL 2.0 MILES WNW OF SITE			
	ZR-95	30	2 (0/6) (<2/<3)	N/A	3	BY-35 INDICATOR	0	
					VANCKO WELL 2.0 MILES WNW OF SITE			
	I-131	15	13 (0/6) (<12/<15)	N/A	15	BY-35 INDICATOR	0	
					VANCKO WELL 2.0 MILES WNW OF SITE			
	CS-134	15	1 (0/6) (<1/<1)	N/A	1	BY-35 INDICATOR	0	
					VANCKO WELL 2.0 MILES WNW OF SITE			

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

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BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>											
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>											
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	STATION # NAME	DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CS-137	1	18	N/A	1	N/A	BY-35 INDICATOR	1	0	BY-35 INDICATOR		0	
								(0/6)	(0/1)	VANCKO WELL			
								(<1/<1)	(<1)	2.0 MILES WNW OF SITE			
BA-140	18	60	N/A	18	N/A	BY-35 INDICATOR	20	0	BY-35 INDICATOR		0		
							(0/6)	(0/1)	VANCKO WELL				
							(<17/<20)	(<20)	2.0 MILES WNW OF SITE				
LA-140	15	N/A	15	N/A	6	BY-14-1 INDICATOR	6	0	BY-14-1 INDICATOR		0		
							(0/6)	(0/1)	3200 NORTH GERMAN CHURCH ROAD				
							(<5/<6)	(<6)	1.0 MILES SSE OF SITE				
FISH (PCI/KG WET)	GAMMA MN-54	4	130	49	43	BY-29 CONTROL	49	0	BY-29 CONTROL		0		
							(0/2)	(0/2)	BYRON - UPSTREAM				
							(<40/<46)	(<45/<53)	3.0 MILES SSW OF SITE				
CO-58	130	60	60	60	55	BY-29 CONTROL	60	0	BY-29 CONTROL		0		
							(0/2)	(0/2)	BYRON - UPSTREAM				
							(<44/<65)	(<59/<61)	3.0 MILES SSW OF SITE				
FE-59	260	176	149	176	149	BY-29 CONTROL	176	0	BY-29 CONTROL		0		
							(0/2)	(0/2)	BYRON - UPSTREAM				
							(<124/<174)	(<158/<194)	3.0 MILES SSW OF SITE				
CO-60	130	44	38	44	38	BY-29 CONTROL	44	0	BY-29 CONTROL		0		
							(0/2)	(0/2)	BYRON - UPSTREAM				
							(<31/<45)	(<37/<50)	3.0 MILES SSW OF SITE				
ZN-65	N/A	110	N/A	97	110	BY-31 INDICATOR	110	0	BY-31 INDICATOR		0		
							(0/2)	(0/2)	BYRON - DISCHARGE				
							(<100/<119)	(<100/<119)	2.2 MILES WNW OF SITE				

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
FISH (PCI/KG WET)	ZRN-95	N/A	N/A	68 (0/2) (<63/<73)	65 (0/2) (<63/<67)	68 (0/2) (<63/<73)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
				45 (0/2) (<37/<53)	44 (0/2) (<42/<46)	45 (0/2) (<37/<53)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
				43 (0/2) (<36/<50)	52 (0/2) (<48/<56)	52 (0/2) (<48/<56)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
BALA140	N/A	N/A	358 (0/2) (<335/<380)	378 (0/2) (<276/<479)	378 (0/2) (<276/<479)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0	
			57 (0/2) (<51/<63)	N/A	63 (0/1) (<63)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0	
CO-58	N/A	N/A	82 (0/2) (<70/<95)	N/A	95 (0/1) (<95)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0	
			257 (0/2) (<244/<269)	N/A	269 (0/1) (<269)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0	
CO-60	N/A	N/A	82 (0/2) (<73/<92)	N/A	92 (0/1) (<92)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0	

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Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PC/KG DRY)	ZN-65	N/A	N/A	128 (0/2) (<119/<136)	N/A	136 (0/1) (<136)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0
	ZRNB-95	N/A	N/A	88 (0/2) (<77/<99)	N/A	99 (0/1) (<99)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
CS-134	CS-137	150	180	63 (0/2) (<60/<66)	N/A	66 (0/1) (<66)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
		N/A	N/A	77 (0/2) (<77/<78)	N/A	78 (0/1) (<78)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	112	10	451 (0/2) (<438/<463)	N/A	463 (0/1) (<463)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
		8	N/A	24 (98/98) (12/37)	24 (14/14) (16/33)	25 (14/14) (15/36)	BY-06 INDICATOR OREGON 4.7 MILES SSW OF SITE	0
GAMMA MN-54	CO-58	N/A	N/A	2.6 (0/7) (< 1.7/< 3.0)	3.1 (0/1) (< 3.1)	3.1 (0/1) (< 3.1)	BY-08 CONTROL LEAF RIVER 6.8 MILES WNW OF SITE	0
		N/A	N/A	4.4 (0/7) (< 3.2/< 5.1)	4.5 (0/1) (< 4.5)	5.1 (0/1) (< 5.1)	BY-23 INDICATOR BYRON NEARSITE SOUTH 0.6 MILES S OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)



**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU.METER)	FE-59	N/A	N/A	10.7 (0/7) (< 6.0/<13.9)	15.7 (0/1) (<15.7)	15.7 (0/1) (<15.7)	BY-08 CONTROL LEAF RIVER 6.8 MILES WNW OF SITE	0
	CO-60	N/A	N/A	2.3 (0/7) (< 1.9/<2.5)	3.2 (0/1) (< 3.2)	3.2 (0/1) (< 3.2)	BY-08 CONTROL LEAF RIVER 6.8 MILES WNW OF SITE	0
	ZN-65	N/A	N/A	7.1 (0/7) (< 6.3/< 8.3)	7.6 (0/1) (< 7.6)	8.3 (0/1) (< 8.3)	BY-21 INDICATOR BYRON NEARSITE NORTH 0.3 MILES N OF SITE	0
	ZRNB-95	N/A	N/A	5.2 (0/7) (< 4.3/< 5.8)	4.9 (0/1) (< 4.9)	5.8 (0/1) (< 5.8)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	CS-134	50		3.0 (0/7) (< 2.6/< 3.2)	2.7 (0/1) (< 2.7)	3.2 (0/1) (< 3.2)	BY-23 INDICATOR BYRON NEARSITE SOUTH 0.6 MILES S OF SITE	0
	CS-137	60		2.4 (0/7) (< 1.9/< 3.0)	2.7 (0/1) (< 2.7)	3.0 (0/1) (< 3.0)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
	BALA140	N/A		133.3 (0/7) (<108/<164)	123 (0/1) (<123)	164 (0/1) (<164)	BY-21 INDICATOR BYRON NEARSITE NORTH 0.3 MILES N OF SITE	0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	112	70	47 (0/98) (<17/<69)	42 (0/14) (<5/<68)	50 (0/14) (<22/<69)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0

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

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	I-131	18	1	0.6 (0/13) (< 0.3/< 0.8)	0.5 (0/5) (< 0.4/< 0.7)	0.6 (0/3) (< 0.3/< 0.8)	BY-38 INDICATOR LARSON GOAT FARM 5.0 MILES ENE OF SITE	0
	GAMMA MN-54	18	N/A	5 (0/13) (<3/<7)	5 (0/5) (<4/<6)	5 (0/5) (<3/<7)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	CO-58		N/A	5 (0/13) (<3/<7)	6 (0/5) (<4/<7)	6 (0/5) (<4/<7)	BY-26-1 CONTROL DENNIS HERBERT 12.0 MILES N OF SITE	0
	FE-59		N/A	13 (0/13) (<8/<16)	13 (0/5) (<10/<16)	14 (0/5) (<8/<16)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	CO-60		N/A	5 (0/13) (<3/<8)	5 (0/5) (<4/<6)	6 (0/5) (<4/<8)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	ZN-65		N/A	10 (0/13) (<7/<13)	12 (0/5) (<8/<14)	12 (0/5) (<8/<14)	BY-26-1 CONTROL DENNIS HERBERT 12.0 MILES N OF SITE	0
	ZRNB-95		N/A	5 (0/13) (<4/<7)	6 (0/5) (<4/<8)	6 (0/5) (<4/<8)	BY-26-1 CONTROL DENNIS HERBERT 12.0 MILES N OF SITE	0
	CS-134		15	4 (0/13) (<3/<6)	5 (0/5) (<3/<6)	5 (0/5) (<3/<6)	BY-26-1 CONTROL DENNIS HERBERT 12.0 MILES N OF SITE	0

MEAN AND RANGE BASED ON DETECTABLE MEASUREMENTS ONLY (M)  
FRACTION OF DETECTABLE MEASUREMENTS AT SPECIFIED LOCATIONS IS INDICATED IN PARENTHESES (F)

**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM 4TH QUARTER SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>												
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>4TH QUARTER, 2006</b>												
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS						
MILK (PCI/LITER)	CS-137	18	5 (0/13) (<3/<7)	5 (0/5) (<3/<6)	5 (0/5) (<3/<7)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0							
								BA-140	60	44 (0/13) (<31/<56)	44 (0/5) (<32/<52)	46 (0/3) (<43/<49)	BY-38 INDICATOR LARSON GOAT FARM 5.0 MILES ENE OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	80	N/A	26 (78/78) (19/29)	22 (2/2) (21/22)	14 (1/1) (29)	BY-107-1 INDICATOR	0						

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GR-B	24	4	5.4 (12/12) (4.0/6.7)	5.1 (11/12) (<3.0/6.5)	5.4 (12/12) (4.0/6.7)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
				H-3	8	200	186 (0/4) (<181/<192)	186 (0/4) (<179/<194)
GAMMA MN-54	24	15	15	2 (0/12) (<1/<3)	2 (0/12) (<1/<4)	2 (0/12) (<1/<3)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
				CO-58	15	15	2 (0/12) (<1/<5)	2 (0/12) (<1/<4)
FE-59	30	15	15	5 (0/12) (<3/<9)	5 (0/12) (<3/<9)	5 (0/12) (<3/<9)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
				CO-60	15	15	2 (0/12) (<1/<4)	2 (0/12) (<1/<4)
ZN-65	30	15	15	4 (0/12) (<2/<8)	4 (0/12) (<2/<8)	4 (0/12) (<2/<8)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
				NB-95	15	15	2 (0/12) (<1/<4)	2 (0/12) (<1/<4)

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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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	ZR-95	4	30	(0/12) (<2/<7)	4 (0/12) (<2/<7)	4 (0/12) (<2/<7)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
	I-131	12	15	(0/12) (<6/<15)	12 (0/12) (<7/<15)	12 (0/12) (<6/<15)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	CS-134	2	15	(0/12) (<1/<4)	2 (0/12) (<1/<4)	2 (0/12) (<1/<4)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	CS-137	2	18	(0/12) (<1/<4)	2 (0/12) (<1/<4)	2 (0/12) (<1/<4)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	BA-140	28	60	(0/12) (<17/<44)	28 (0/12) (<15/<47)	28 (0/12) (<17/<44)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	LA-140	9	15	(0/12) (<5/<15)	9 (0/12) (<5/<15)	9 (0/12) (<5/<15)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
GROUND WATER (PCI/LITER)	H-3	21	200	(0/21) (<160/<172)	N/A	168 (0/3) (<168/<169)	BY-35 INDICATOR VANCKO WELL 2.0 MILES WNW OF SITE	0
	GAMMA MN-54	21	15	(0/21) (<1/<8)	N/A	4 (0/4) (<1/<8)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0

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Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CO-58	3	15	(0/21) (<1/<9)	N/A	5 (0/4) (<1/<8)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
	FE-59	7	30	(0/21) (<3/<19)	N/A	9 (0/4) (<3/<17)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
CO-60		3	15	(0/21) (<1/<9)	N/A	5 (0/4) (<3/<9)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
		7	30	(0/21) (<2/<24)	N/A	11 (0/4) (<2/<24)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
NB-95		3	15	(0/21) (<1/<9)	N/A	5 (0/4) (<1/<9)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
		5	30	(0/21) (<2/<15)	N/A	8 (0/4) (<2/<14)	BY-18 INDICATOR MCCOY FARMSTEAD 0.7 MILES SW OF SITE	0
I-131		11	15	(0/21) (<3/<15)	N/A	13 (0/4) (<12/<15)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0
		4	15	(0/21) (<1/<13)	N/A	6 (0/4) (<1/<13)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE	0

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Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
GROUND WATER (PCI/LITER)	CS-137	3	18	N/A (0/21) (<1/<9)	5 (0/4) (<1/<9)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE		0
	BA-140	22	60	N/A (0/21) (<8/<41)	29 (0/4) (<18/<41)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE		0
	LA-140	7	15	N/A (0/21) (<3/<15)	10 (0/4) (<6/<14)	BY-14-1 INDICATOR 3200 NORTH GERMAN CHURCH ROAD 1.0 MILES SSE OF SITE		0
FISH (PCI/KG WET)	GAMMA MN-54	8	130	60 (0/4) (<45/<83)	64 (0/4) (<40/<86)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE		0
	CO-58		130	76 (0/4) (<44/<120)	83 (0/4) (<59/<111)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE		0
	FE-59		260	194 (0/4) (<124/<256)	198 (0/4) (<158/<254)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE		0
CO-60		130	60 (0/4) (<31/<85)	55 (0/4) (<37/<78)	60 (0/4) (<31/<85)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE		0
ZN-65		N/A		142 (0/4) (<100/<233)	169 (0/4) (<96/<199)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE		0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>				
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>				
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)			
		INDICATOR LOCATIONS	CONTROL LOCATION			
		MEAN(M) (F) RANGE	MEAN(M) (F) RANGE			
		LOCATION WITH HIGHEST ANNUAL MEAN				
		STATION #	STATION #			
		DISTANCE AND DIRECTION	DISTANCE AND DIRECTION			
			NUMBER OF NONROUTINE REPORTED MEASUREMENTS			
ZRNB-95	N/A	87 (0/4) (<63/<110)	83 (0/4) (<63/<116)	87 (0/4) (<63/<110)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
CS-134	130	71 (0/4) (<37/<99)	67 (0/4) (<42/<93)	71 (0/4) (<37/<99)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
CS-137	150	66 (0/4) (<36/<90)	61 (0/4) (<48/<83)	66 (0/4) (<36/<90)	BY-31 INDICATOR BYRON - DISCHARGE 2.2 MILES WNW OF SITE	0
BALA140	N/A	489 (0/4) (<335/<661)	492 (0/4) (<276/<613)	492 (0/4) (<276/<613)	BY-29 CONTROL BYRON - UPSTREAM 3.0 MILES SSW OF SITE	0
GAMMA MN-54	N/A	72 (0/4) (<51/<89)	N/A	76 (0/2) (<63/<89)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0
CO-58	N/A	84 (0/4) (<70/<95)	N/A	88 (0/2) (<82/<95)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0
FE-59	N/A	225 (0/4) (<186/<269)	N/A	234 (0/2) (<199/<269)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
CO-60	N/A	81 (0/4) (<73/<92)	N/A	86 (0/2) (<81/<92)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0

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BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SEDIMENT (PCI/KG DRY)	ZN-65	N/A	N/A	159 (0/4) (<119/<202)	N/A	161 (0/2) (<119/<202)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
	ZRNB-95	N/A	N/A	92 (0/4) (<77/<107)	N/A	103 (0/2) (<99/<107)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
CS-134	CS-137	150	180	73 (0/4) (<60/<86)	N/A	76 (0/2) (<66/<86)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
		N/A	N/A	91 (2/4) (<77/111)	N/A	94 (1/2) (<78/111)	BY-34 INDICATOR ROCK RIVER - DOWNSTREAM 0.6 MILES W OF SITE	0
AIR PARTICULATE (E-3 PCI/CU.METER)	GR-B	424	10	308 (0/4) (<152/<463)	N/A	322 (0/2) (<180/<463)	BY-12 INDICATOR OREGON POOL OF ROCK RIVER - DOWNSTREAM 4.5 MILES SSW OF SITE	0
		32	N/A	20 (363/371) (<5/38)	20 (52/53) (<6/36)	21 (51/53) (<5/38)	BY-06 INDICATOR OREGON 4.7 MILES SSW OF SITE	0
GAMMA MN-54	CO-58	N/A	N/A	3.9 (0/28) (<1.7/<7.0)	3.7 (0/4) (<2.3/<6.3)	4.6 (0/4) (<2.9/<7.0)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
		N/A	N/A	7.2 (0/28) (<3.0/<15)	6.9 (0/4) (<4.5/<10.9)	8.5 (0/4) (<5.1/<13.7)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>					
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>					
MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPES OF ANALYSIS PERFORMED	NUMBER OF ANALYSIS PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)				
		INDICATOR LOCATIONS	CONTROL LOCATION				
		MEAN(M) (F) RANGE	MEAN(M) (F) RANGE				
			LOCATION WITH HIGHEST ANNUAL MEAN				
			STATION # NAME				
			DISTANCE AND DIRECTION				
			NUMBER OF NONROUTINE REPORTED MEASUREMENTS				
AIR PARTICULATE (E-3 PCI/CU.METER)	FE-59	28.9 (0/28) (< 6.0/<64)	N/A	25.5 (0/4) (<15.7/<42.3)	33.7 (0/4) (<10.1/<49)	BY-23 INDICATOR BYRON NEARSITE SOUTH 0.6 MILES S OF SITE	0
	CO-60	3.5 (0/28) (< 1.9/< 6.9)	N/A	3.2 (0/4) (< 2.5/< 3.8)	4.2 (0/4) (< 2.5/< 6.9)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	ZN-65	9.3 (0/28) (< 5.9/<16.6)	N/A	8.2 (0/4) (< 4.3/<11.6)	10.9 (0/4) (< 7.8/<13.6)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	ZRNB-95	8.6 (0/28) (< 4.3/<16.2)	N/A	8.3 (0/4) (< 4.9/<11.3)	10.4 (0/4) (< 5.4/<16.2)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0
	CS-134	3.4 (0/28) (< 1.9/< 5.4)	50	3.2 (0/4) (< 2.7/< 3.7)	3.8 (0/4) (< 2.9/< 4.4)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	CS-137	2.9 (0/28) (< 1.8/< 4.8)	60	2.8 (0/4) (< 2.1/< 3.3)	3.6 (0/4) (< 2.5/< 4.6)	BY-24 INDICATOR BYRON NEARSITE SOUTHWEST 0.6 MILES SW OF SITE	0
	BALA140	1823.1 (0/28) (<108/<6570)	N/A	2063.3 (0/4) (<123/<5410)	2373.8 (0/4) (<115/<6570)	BY-04 INDICATOR PAYNES POINT 5.0 MILES SE OF SITE	0
AIR IODINE (E-3 PCI/CU.METER)	GAMMA I-131	424	70	48 (0/53) (<5/<68)	51 (0/53) (<11/<70)	BY-22 INDICATOR BYRON NEARSITE EAST-SOUTHEAST 0.4 MILES ESE OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	I-131	77	1	0.7 (0/57) (< 0.3/< 3.7)	0.6 (0/20) (< 0.4/< 1.3)	0.8 (0/20) (< 0.4/< 3.7)	BY-30 INDICATOR DON ROOS DAIRY 5.3 MILES SE OF SITE	0
	GAMMA MN-54	77	N/A	6 (0/57) (< 2/< 11)	6 (0/20) (< 2/< 11)	7 (0/17) (< 3/< 11)	BY-38 INDICATOR LARSON GOAT FARM 5.0 MILES ENE OF SITE	0
	CO-58		N/A	7 (0/57) (< 2/< 10)	6 (0/20) (< 2/< 12)	7 (0/20) (< 3/< 10)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	FE-59		N/A	16 (0/57) (< 5/< 30)	15 (0/20) (< 5/< 21)	17 (0/20) (< 8/< 24)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	CO-60		N/A	7 (0/57) (< 2/< 13)	7 (0/20) (< 2/< 11)	7 (0/20) (< 4/< 13)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	ZN-65		N/A	16 (0/57) (< 5/< 33)	15 (0/20) (< 5/< 24)	16 (0/20) (< 7/< 32)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	ZRNB-95		N/A	7 (0/56) (< 2/< 13)	7 (0/20) (< 3/< 12)	7 (0/20) (< 4/< 13)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0
	CS-134		15	6 (0/57) (< 2/< 13)	6 (0/20) (< 2/< 9)	7 (0/20) (< 2/< 11)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0

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**TABLE A-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY FOR  
BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
MILK (PCI/LITER)	CS-137	18	7 (0/57) (<2/<12)	6 (0/20) (<2/<9)	7 (0/20) (<3/<11)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0	
	BA-140	60	41 (0/57) (<14/<56)	38 (0/20) (<16/<52)	43 (0/20) (<19/<56)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0	
	LA-140	15	12 (0/57) (<4/<15)	12 (0/20) (<5/<15)	12 (0/20) (<6/<15)	BY-20-1 INDICATOR RON SNODGRASS FARM 4.5 MILES W OF SITE	0	
VEGETATION (PCI/KG WET)	GAMMA MN-54	9	N/A	14 (0/7) (<12/<15)	15 (0/2) (<13/<17)	BY-CONTROL CONTROL GENSLER GARDENS 13.0 MILES ENE OF SITE	0	
	CO-58	N/A	N/A	14 (0/7) (<11/<16)	16 (0/2) (<14/<18)	BY-CONTROL CONTROL GENSLER GARDENS 13.0 MILES ENE OF SITE	0	
	FE-59	N/A	N/A	39 (0/7) (<33/<41)	35 (0/2) (<35/<36)	BY-QUAD 2 INDICATOR LIMERICK ROAD 3.0 MILES SE OF SITE	0	
	CO-60	N/A	N/A	14 (0/7) (<12/<17)	18 (0/2) (<14/<21)	BY-CONTROL CONTROL GENSLER GARDENS 13.0 MILES ENE OF SITE	0	
	ZN-65	N/A	N/A	32 (0/7) (<25/<37)	34 (0/2) (<30/<38)	BY-QUAD 2 INDICATOR LIMERICK ROAD 3.0 MILES SE OF SITE	0	

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BYRON NUCLEAR GENERATING STATION, 2006**

Name of Facility: <b>BYRON</b>		DOCKET NUMBER: <b>50-454 &amp; 50-455</b>						
Location of Facility: <b>BYRON, IL</b>		REPORTING PERIOD: <b>ANNUAL 2006</b>						
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 MEAN(M) (F) RANGE	STATION # NAME DISTANCE AND DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
VEGETATION (PCI/KG WET)	ZRNB-95		N/A	16 (0/7) (<14/<18)	15 (0/2) (<14/<16)	17 (0/2) (<16/<18)	BY-QUAD 4 INDICATOR EQUESTRIAN POINTE 2.0 MILES WNW OF SITE	0
	I-131	60		53 (0/7) (<50/<55)	55 (0/2) (<52/<58)	55 (0/2) (<52/<58)	BY-CONTROL CONTROL GENSLER GARDENS 13.0 MILES ENE OF SITE	0
	CS-134	60		13 (0/7) (<12/<14)	11 (0/2) (<9/<13)	14 (0/1) (<14)	BY-QUAD 3 INDICATOR E. SPRING CREEK ROAD 2.0 MILES WSW OF SITE	0
	CS-137	80		15 (0/7) (<12/<18)	16 (0/2) (<14/<17)	18 (0/2) (<17/<18)	BY-QUAD 2 INDICATOR LIMERICK ROAD 3.0 MILES SE OF SITE	0
	BALA140	N/A		30 (0/7) (<19/<41)	24 (0/2) (<20/<29)	33 (0/2) (<26/<41)	BY-QUAD 1 INDICATOR NORTH COX ROAD 4.9 MILES ENE OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN/QTR.)	TLD-QUARTERLY	320	N/A	25 (312/312) (15/35)	21 (8/8) (16/28)	33 (4/4) (23/35)	BY-107-2 INDICATOR	0

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## **APPENDIX B**

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





TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Byron Nuclear Generating Station, 2006

Location	Location Description	Distance & Direction From Site
<u>A. Surface Water</u>		
BY-12	Oregon Pool of Rock River, Downstream (indicator)	4.5 miles SSW
BY-29	Byron, Upstream (control)	3.0 miles N
<u>B. Ground/Well Water</u>		
BY-14-1	3200 North German Church Road (indicator)	1.0 miles SSE
BY-18	McCoy Farmstead (indicator)	0.7 miles SW
BY-32	Ron Wolford Well (indicator)	1.8 miles W
BY-35	Vancko Well	2.0 miles WNW
BY-36	Blanchard Well	1.0 miles NW
BY-37	Alexander Well	1.8 miles WNW
<u>C. Milk</u>		
BY-20-1	Ron Snodgrass Farm (indicator)	4.7 miles WSW
BY-26-1	Dennis Herbert (control)	12.8 miles N
BY-30	Don Roos Dairy (indicator)	5.3 miles SE
BY-38	Larson Goat Farm	5.0 miles ENE
<u>D. Air Particulates / Air Iodine</u>		
BY-01	Byron (indicator)	3.0 miles N
BY-04	Paynes Point (indicator)	5.0 miles SE
BY-06	Oregon (indicator)	4.7 miles SSW
BY-08	Leaf River (control)	6.8 miles WNW
BY-21	Byron Nearsite North (indicator)	0.3 miles N
BY-22	Byron Nearsite East-Southeast (indicator)	0.4 miles ESE
BY-23	Byron Nearsite South (indicator)	0.6 miles S
BY-24	Byron Nearsite Southwest (indicator)	0.6 miles SW
<u>E. Fish</u>		
BY-29	Byron, Upstream (control)	3.0 miles N
BY-31	Byron, Discharge (indicator)	2.2 miles WNW
<u>F. Sediment</u>		
BY-12	Oregon Pool of Rock River, Downstream (indicator)	4.5 miles SSW
BY-34	Rock River, Downstream (indicator)	0.6 miles W
<u>G. Vegetation</u>		
Quadrant 1	North Cox Road	4.9 miles ENE
Quadrant 2	Limerick Road	3.0 miles SE
Quadrant 3	E. Spring Creek Road	2.0 miles WSW
Quadrant 4	Equestrian Pointe	2.0 miles WNW
Control	Gensler Gardens	13.0 miles ENE
<u>H. Environmental Dosimetry - TLD</u>		
<u>Inner Ring</u>		
BY-101-1 and -2		0.3 miles N
BY-102-1		0.9 miles NNE
BY-102-2		1.0 miles NNE

TABLE B-1: Radiological Environmental Monitoring Program - Sampling Locations, Distance and Direction, Byron Nuclear Generating Station, 2006

Location	Location Description	Distance & Direction From Site
BY-103-1 and -2		1.7 miles NE
BY-104-1 and -2		1.5 miles ENE
BY-105-1 and -2		1.3 miles E
BY-106-1 and -2		1.4 miles ESE
BY-107-1 and -2		1.4 miles SE
BY-108-1		0.7 miles SSE
BY-108-2		0.6 miles SSE
BY-109-1 and -2		0.6 miles S
BY-110-1 and -2		0.6 miles SSW
BY-111-3		0.7 miles SW
BY-111-4		0.8 miles SW
BY-112-3 and -4		0.8 miles WSW
BY-113-1 and -2		0.7 miles W
BY-114-1 and -2		0.8 miles WNW
BY-115-1 and -2		1.0 miles NW
BY-116-1 and -2		1.4 miles NNW
<u>Outer Ring</u>		
BY-201-3		4.5 miles N
BY-201-4		4.4 miles N
BY-202-1		4.3 miles NNE
BY-202-2		4.8 miles NNE
BY-203-1		4.8 miles NE
BY-203-2		4.7 miles NE
BY-204-1		4.2 miles ENE
BY-204-2		4.1 miles ENE
BY-205-1 and -2		3.8 miles E
BY-206-1		4.1 miles ESE
BY-206-2		4.4 miles ESE
BY-207-1		4.2 miles SE
BY-207-2		3.6 miles SE
BY-208-1		4.0 miles SSE
BY-208-2		3.7 miles SSE
BY-209-1 and -4		3.7 miles S
BY-210-3 and -4		3.9 miles SSW
BY-211-1 and -4		4.9 miles SW
BY-212-1 and -4		4.7 miles WSW
BY-213-1		4.7 miles W
BY-213-4		4.6 miles W
BY-214-1		4.6 miles WNW
BY-214-4		4.9 miles WNW
BY-215-1		5.3 miles NW
BY-215-4		5.2 miles NW
BY-216-1		4.6 miles NNW
BY-216-2		4.8 miles NNW
<u>Other</u>		
BY-01-1 and -2		3.0 miles N
BY-04-1 and -2		5.0 miles SE
BY-06-1 and -2		4.7 miles SSW
BY-21-1 and -2		0.3 miles N
BY-22-1 and -2		0.4 miles ESE
BY-23-1 and -2		0.6 miles S
BY-24-1 and -2		0.6 miles SW
<u>Control and Special Interest</u>		
BY-08-1 and -2		6.8 miles WNW

TABLE B-2: Radiological Environmental Monitoring Program – Summary of Sample Collection and Analytical Methods, Byron Nuclear Generating Station, 2006

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 Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Surface Water	Gross Beta	Monthly composite from weekly grab samples.	TBE, TBE-2008 Gross Alpha and/or gross beta activity in various matrices Env. Inc., W(DS)-01 Determination of gross alpha and/or <u>gross beta in water (dissolved solids or total residue)</u>
Surface Water	Tritium	Quarterly composite from weekly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Ground Water	Gamma Spectroscopy	Quarterly grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Ground Water	Tritium	Quarterly grab samples.	TBE, TBE-2011 Tritium analysis in drinking water by liquid scintillation Env. Inc., T-02 Determination of tritium in water (direct method)
Fish	Gamma Spectroscopy	Semi-annual samples collected via electroshocking or other techniques	TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Sediment	Gamma Spectroscopy	Semi-annual grab samples	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
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 Env. Inc., AP-02 Determination of gross alpha and/or gross <u>beta in air particulate filters</u>
Air Particulates	Gamma Spectroscopy	Quarterly composite of each station	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Air Iodine	Gamma Spectroscopy	One-week composite of continuous air sampling through charcoal filter	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., I-131-02 Determination of I-131 in charcoal canisters by <u>gamma spectroscopy (batch method)</u>
Milk	I-131	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2012 Radioiodine in various matrices Env. Inc., I-131-01 Determination of I-131 in milk by anion exchange
Milk	Gamma Spectroscopy	Bi-weekly grab sample when cows are on pasture. Monthly all other times	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
Vegetation	Gamma Spectroscopy	Annual grab samples.	TBE, TBE-2007 Gamma emitting radioisotope analysis Env. Inc., GS-01 Determination of gamma emitters by <u>gamma spectroscopy</u>
TLD	Thermoluminescence Dosimetry	Quarterly TLDs comprised of two Global Dosimetry CaF <sub>2</sub> elements.	Global Dosimetry

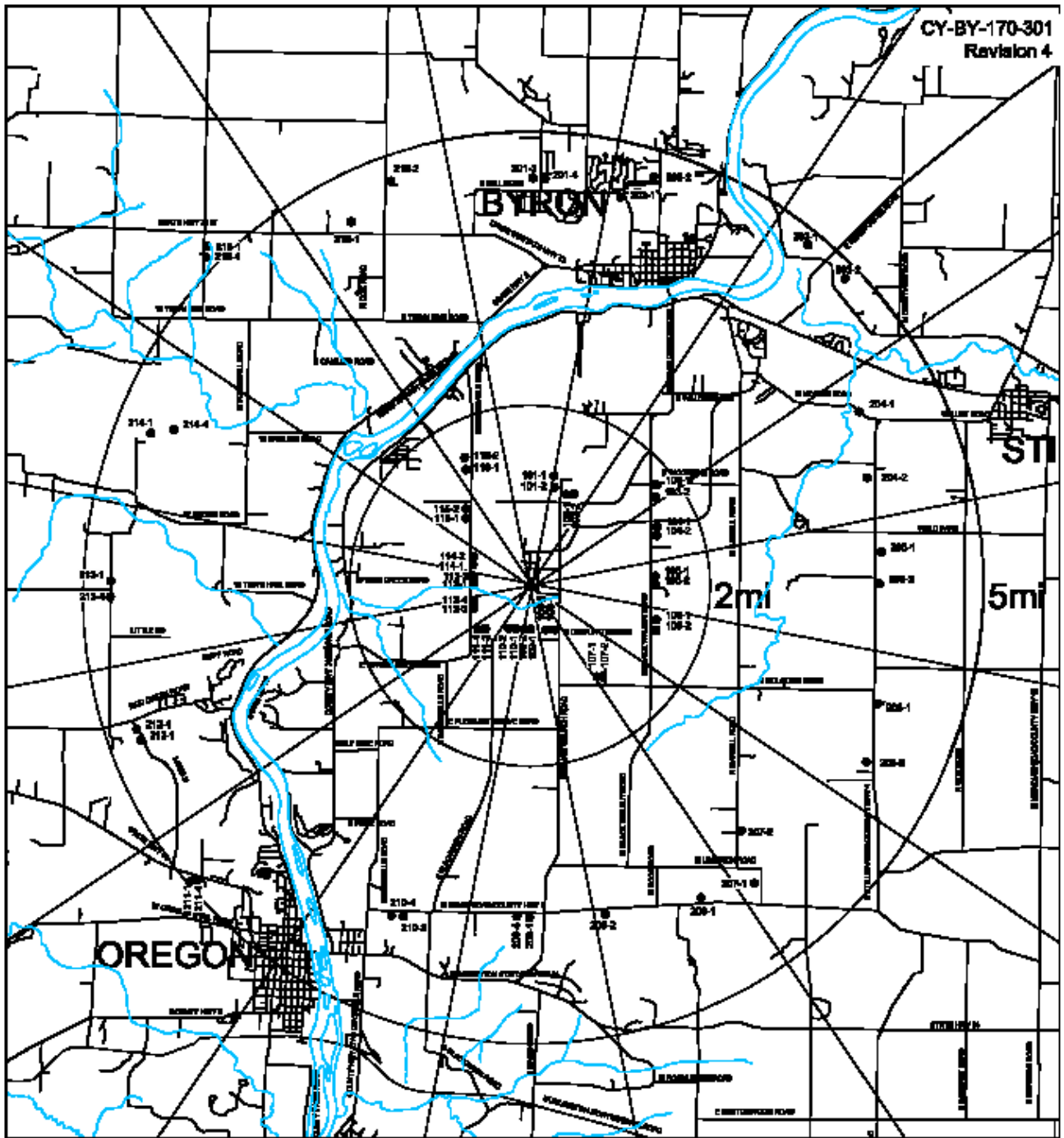


Figure B-1  
 Inner and Outer Ring TLD Locations of the  
 Byron Nuclear Generating Station, 2006

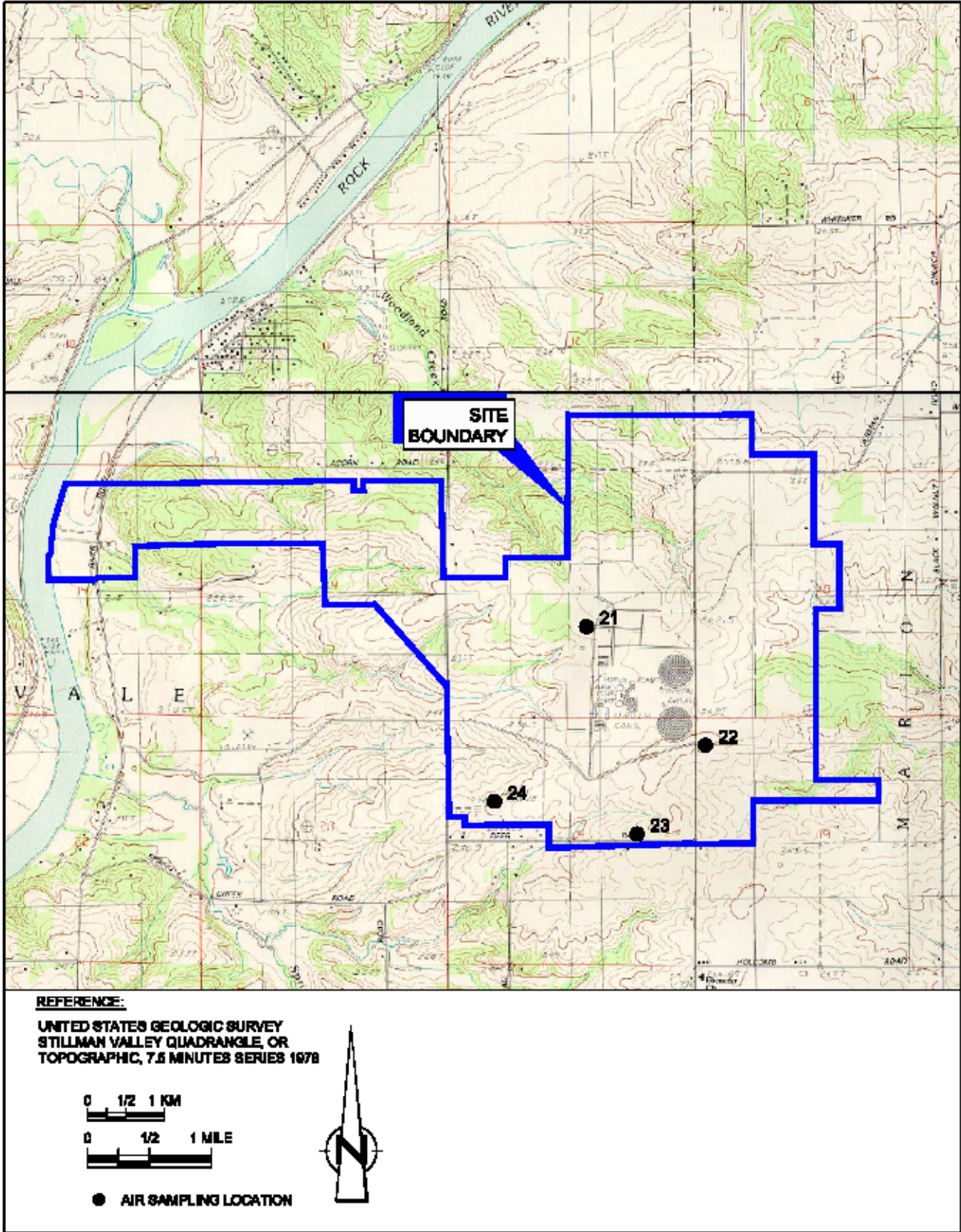
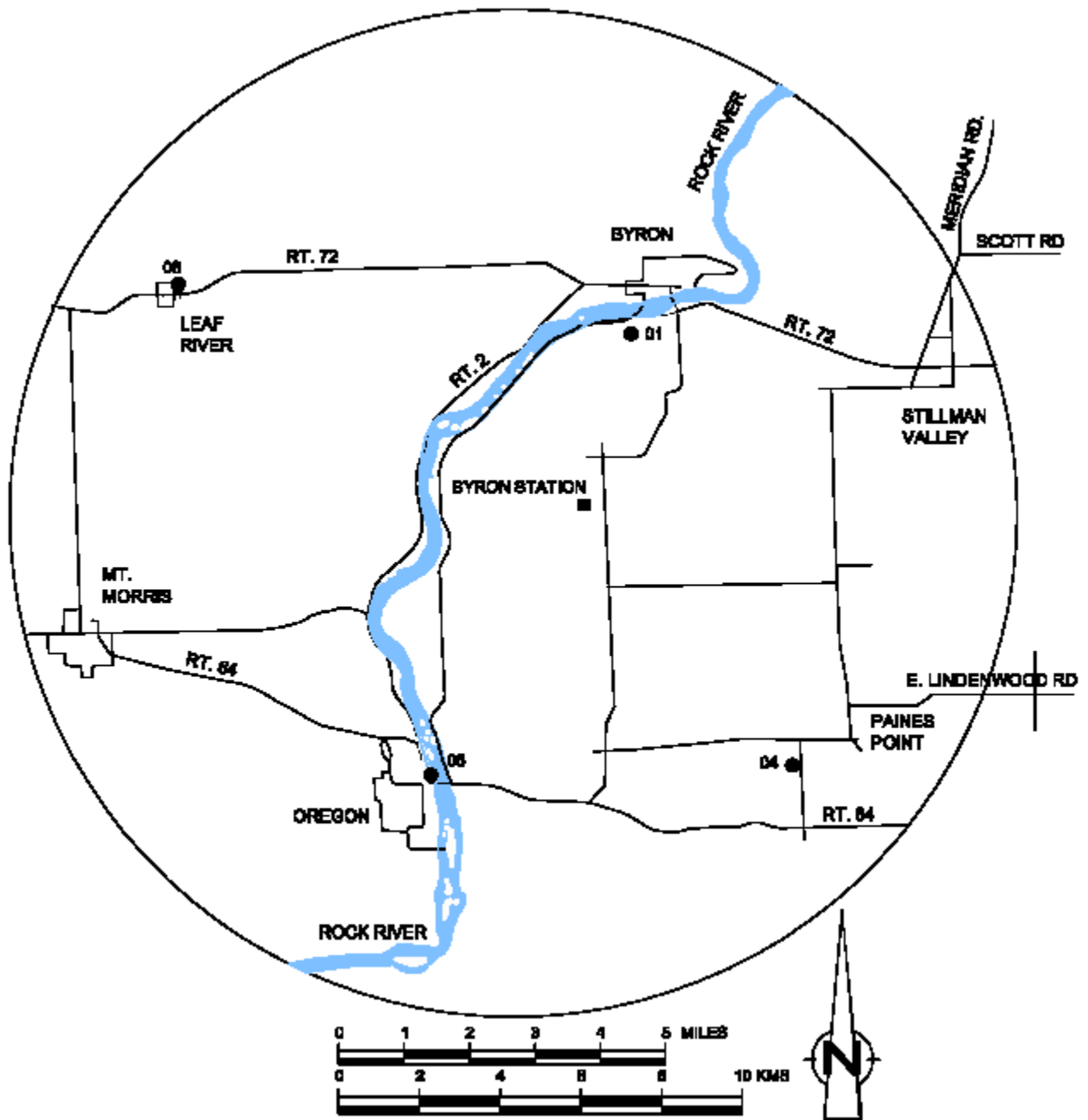


Figure B-2  
 Onsite Air Sampling Locations of the  
 Byron Nuclear Generating Station, 2006



- Air Sampling Location
- Byron Station

Figure B-3  
 Offsite Air Sampling Locations of the  
 Byron Nuclear Generating Station, 2006

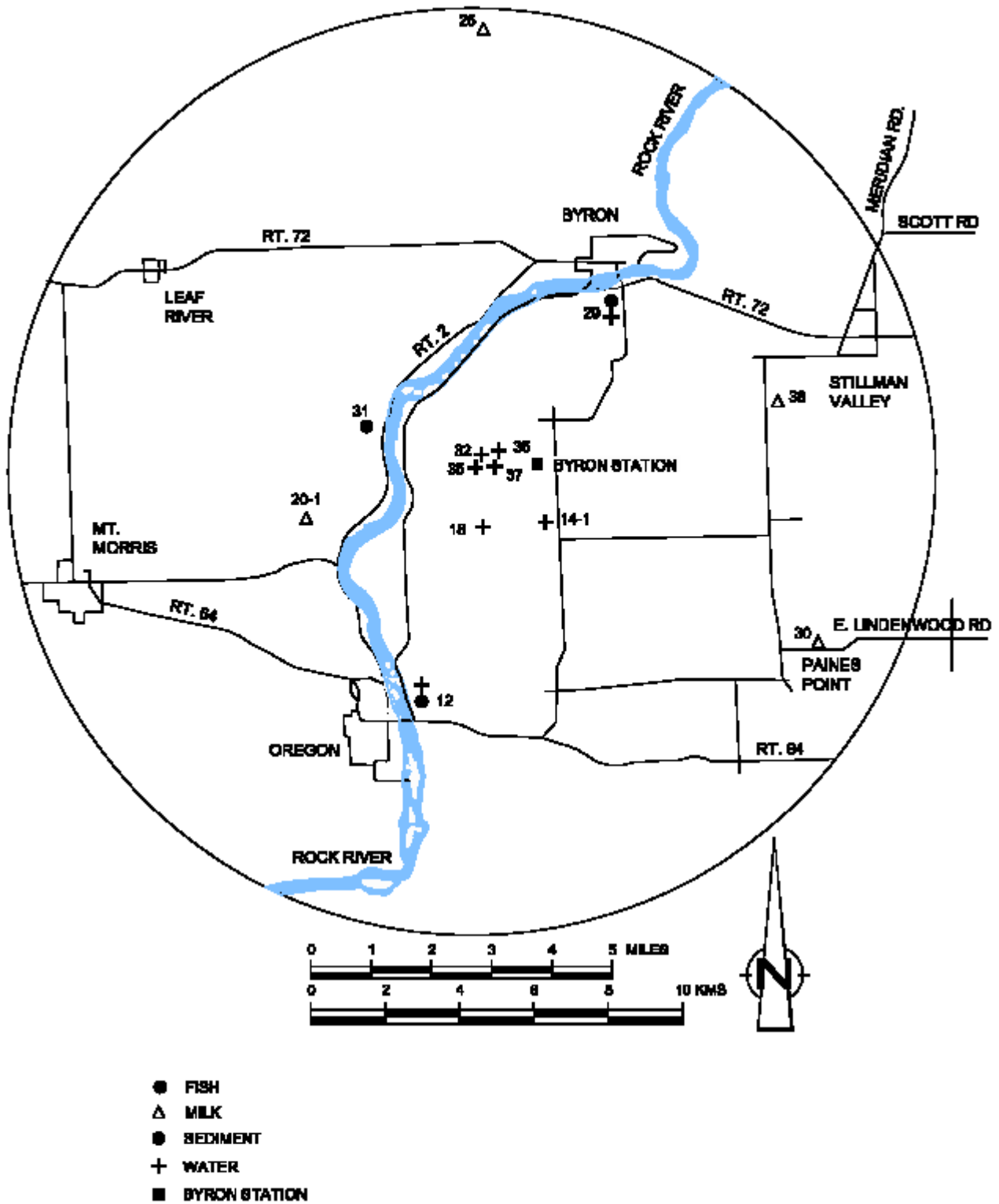


Figure B-4  
 Ingestion and Waterborne Exposure Pathway Sampling Locations  
 of the Byron Nuclear Generating Station, 2006

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## **APPENDIX C**

### **DATA TABLES AND FIGURES PRIMARY LABORATORY**



**TABLE C-I.1 CONCENTRATIONS OF GROSS BETA IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION		
PERIOD	BY-12	BY-29
JAN	4.6 $\pm$ 2.0	5.5 $\pm$ 2.1
FEB	6.7 $\pm$ 2.0	6.2 $\pm$ 2.0
MAR	5.2 $\pm$ 2.0	5.3 $\pm$ 2.0
APR	4.8 $\pm$ 2.0	5.5 $\pm$ 2.1
MAY	5.3 $\pm$ 2.2	5.8 $\pm$ 2.3
JUN	4.0 $\pm$ 1.9	3.6 $\pm$ 1.9
JUL	5.3 $\pm$ 2.2	5.0 $\pm$ 2.2
AUG	5.3 $\pm$ 1.9	5.8 $\pm$ 2.0
SEP	6.7 $\pm$ 2.1	6.5 $\pm$ 2.1
OCT	5.2 $\pm$ 1.8	4.8 $\pm$ 1.8
NOV	5.6 $\pm$ 2.3	< 3.0
DEC	5.4 $\pm$ 1.9	4.4 $\pm$ 1.8
MEAN*	5.4 $\pm$ 1.5	5.1 $\pm$ 2.1

**TABLE C-I.2 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION		
PERIOD	BY-12	BY-29
JAN-MAR	< 192	< 194
APR-JUN	< 184	< 184
JUL-SEP	< 184	< 185
OCT-DEC	< 181	< 179
MEAN	185 $\pm$ 9	186 $\pm$ 12

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

**TABLE C-I.3 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

STC PERIOD	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I-131	CS-134	CS-137	BA-140	LA-140
BY-12											
JAN	< 2	< 5	< 2	< 4	< 2	< 4	< 15	< 2	< 2	< 23	< 8
FEB	< 3	< 8	< 3	< 7	< 4	< 7	< 8	< 3	< 3	< 41	< 13
MAR	< 2	< 6	< 2	< 5	< 3	< 4	< 6	< 2	< 2	< 42	< 14
APR	< 2	< 7	< 2	< 5	< 3	< 5	< 9	< 2	< 2	< 42	< 15
MAY	< 1	< 5	< 1	< 3	< 2	< 3	< 9	< 1	< 1	< 44	< 14
JUN	< 2	< 5	< 2	< 4	< 2	< 3	< 15	< 2	< 2	< 23	< 8
JUL	< 1	< 3	< 1	< 2	< 1	< 3	< 15	< 1	< 1	< 19	< 6
AUG	< 1	< 3	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 19	< 5
SEP	< 1	< 4	< 2	< 3	< 2	< 3	< 10	< 1	< 2	< 17	< 6
OCT	< 1	< 3	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 18	< 6
NOV	< 2	< 5	< 2	< 3	< 2	< 4	< 13	< 2	< 2	< 20	< 6
DEC	< 3	< 9	< 4	< 8	< 4	< 6	< 15	< 4	< 4	< 31	< 10
MEAN	2 $\pm$ 2	5 $\pm$ 4	2 $\pm$ 2	4 $\pm$ 4	2 $\pm$ 2	4 $\pm$ 3	12 $\pm$ 7	2 $\pm$ 2	2 $\pm$ 2	28 $\pm$ 22	9 $\pm$ 8
BY-29											
JAN	< 2	< 4	< 2	< 4	< 2	< 3	< 14	< 2	< 2	< 21	< 7
FEB	< 3	< 7	< 2	< 6	< 3	< 5	< 10	< 3	< 3	< 33	< 10
MAR	< 2	< 7	< 2	< 5	< 3	< 5	< 7	< 2	< 2	< 45	< 15
APR	< 3	< 7	< 2	< 6	< 3	< 6	< 9	< 3	< 2	< 47	< 14
MAY	< 1	< 5	< 1	< 3	< 2	< 3	< 9	< 1	< 1	< 44	< 14
JUN	< 2	< 5	< 2	< 4	< 2	< 4	< 15	< 2	< 2	< 23	< 8
JUL	< 1	< 3	< 1	< 2	< 2	< 2	< 14	< 1	< 1	< 19	< 6
AUG	< 1	< 3	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 17	< 5
SEP	< 1	< 3	< 1	< 3	< 2	< 3	< 10	< 1	< 1	< 15	< 5
OCT	< 1	< 3	< 1	< 2	< 1	< 2	< 15	< 1	< 1	< 19	< 6
NOV	< 2	< 5	< 2	< 4	< 2	< 4	< 14	< 2	< 2	< 23	< 7
DEC	< 4	< 9	< 4	< 8	< 4	< 7	< 12	< 4	< 4	< 27	< 8
MEAN	2 $\pm$ 2	5 $\pm$ 4	2 $\pm$ 2	4 $\pm$ 4	2 $\pm$ 2	4 $\pm$ 3	12 $\pm$ 6	2 $\pm$ 2	2 $\pm$ 2	28 $\pm$ 23	9 $\pm$ 7

**TABLE C-II.1 CONCENTRATIONS OF TRITIUM IN GROUND WATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION PERIOD	BY-14-1	BY-18	BY-32	BY-35	BY-36	BY-37
JAN-MAR	< 161	< 161	< 160	(1)	(1)	(1)
APR-JUN	< 165	< 166	< 169	< 168	< 165	< 162
JUL-SEP	< 166	< 167	< 168	< 169	< 165	< 162
OCT-DEC	< 167	< 168	< 170	< 168	< 172	< 168
MEAN	165 $\pm$ 5	166 $\pm$ 6	167 $\pm$ 9	168 $\pm$ 1	167 $\pm$ 8	164 $\pm$ 7

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

**TABLE C-II.2 CONCENTRATIONS OF GAMMA EMITTERS IN GROUND WATER SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	ZR-95	I131	CS-134	CS-137	BA-140	LA-140
BY-14-1	JAN	< 8	< 8	< 17	< 9	< 24	< 9	< 13	< 15	< 13	< 9	< 41	< 14
	APR	< 5	< 6	< 11	< 5	< 12	< 6	< 9	< 12	< 6	< 5	< 29	< 11
	JUL	< 3	< 3	< 7	< 3	< 6	< 3	< 6	< 14	< 3	< 3	< 27	< 8
	OCT	< 1	< 1	< 3	< 5	< 2	< 1	< 3	< 13	< 1	< 1	< 18	< 6
	MEAN	4 $\pm$ 6	5 $\pm$ 6	9 $\pm$ 12	5 $\pm$ 5	11 $\pm$ 19	5 $\pm$ 7	8 $\pm$ 9	13 $\pm$ 2	6 $\pm$ 10	5 $\pm$ 7	29 $\pm$ 19	10 $\pm$ 6
BY-18	JAN	< 7	< 7	< 17	< 7	< 21	< 8	< 14	< 13	< 11	< 8	< 34	< 11
	APR	< 6	< 6	< 13	< 6	< 13	< 6	< 11	< 12	< 6	< 6	< 33	< 12
	JUL	< 2	< 2	< 5	< 2	< 4	< 3	< 4	< 10	< 2	< 2	< 19	< 6
	OCT	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 17	< 5
	MEAN	4 $\pm$ 6	4 $\pm$ 5	9 $\pm$ 13	4 $\pm$ 6	10 $\pm$ 17	4 $\pm$ 6	8 $\pm$ 11	12 $\pm$ 2	5 $\pm$ 9	4 $\pm$ 7	26 $\pm$ 18	9 $\pm$ 6
BY-32	JAN	< 8	< 9	< 19	< 9	< 21	< 8	< 15	< 14	< 10	< 8	< 39	< 15
	APR	< 1	< 1	< 3	< 1	< 3	< 1	< 2	< 3	< 1	< 1	< 8	< 3
	JUL	< 3	< 3	< 7	< 3	< 7	< 3	< 6	< 15	< 3	< 3	< 27	< 9
	OCT	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 17	< 5
	MEAN	3 $\pm$ 6	4 $\pm$ 7	8 $\pm$ 15	3 $\pm$ 7	8 $\pm$ 17	4 $\pm$ 7	6 $\pm$ 12	11 $\pm$ 11	4 $\pm$ 8	3 $\pm$ 6	23 $\pm$ 27	8 $\pm$ 10
BY-35	JAN	(1)											
	APR	< 1	< 2	< 3	< 1	< 3	< 2	< 3	< 4	< 2	< 2	< 9	< 3
	JUL	< 2	< 2	< 4	< 2	< 4	< 2	< 4	< 9	< 2	< 2	< 17	< 6
	OCT	< 1	< 1	< 3	< 1	< 3	< 2	< 3	< 15	< 1	< 1	< 20	< 6
	MEAN	2 $\pm$ 1	2 $\pm$ 1	4 $\pm$ 1	1 $\pm$ 1	3 $\pm$ 1	2 $\pm$ 1	3 $\pm$ 1	9 $\pm$ 11	2 $\pm$ 1	2 $\pm$ 1	15 $\pm$ 11	5 $\pm$ 3
BY-36	JAN	(1)											
	APR	< 2	< 2	< 3	< 1	< 3	< 2	< 3	< 4	< 2	< 2	< 9	< 3
	JUL	< 2	< 3	< 6	< 3	< 5	< 3	< 5	< 13	< 2	< 3	< 23	< 8
	OCT	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 18	< 6
	MEAN	2 $\pm$ 1	2 $\pm$ 1	4 $\pm$ 3	2 $\pm$ 2	3 $\pm$ 3	2 $\pm$ 1	3 $\pm$ 2	10 $\pm$ 10	2 $\pm$ 1	2 $\pm$ 1	17 $\pm$ 14	6 $\pm$ 5
BY-37	JAN	(1)											
	APR	< 1	< 1	< 3	< 1	< 3	< 1	< 2	< 3	< 1	< 1	< 8	< 3
	JUL	< 2	< 3	< 6	< 2	< 6	< 3	< 5	< 13	< 3	< 2	< 23	< 7
	OCT	< 1	< 1	< 3	< 1	< 2	< 1	< 2	< 12	< 1	< 1	< 17	< 6
	MEAN	2 $\pm$ 1	2 $\pm$ 1	4 $\pm$ 3	2 $\pm$ 1	4 $\pm$ 3	2 $\pm$ 2	2 $\pm$ 2	9 $\pm$ 11	2 $\pm$ 2	2 $\pm$ 1	16 $\pm$ 15	5 $\pm$ 5

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-III.1

CONCENTRATIONS OF GAMMA EMITTERS IN FISH SAMPLES COLLECTED  
IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	MIN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA-140
BY-29										
Channel Catfish	05/10/06	< 61	< 73	< 171	< 57	< 174	< 86	< 87	< 57	< 598
Freshwater Drum	05/10/06	< 83	< 111	< 254	< 78	< 199	< 116	< 93	< 83	< 613
Golden Redhorse	10/18/06	< 45	< 59	< 158	< 50	< 98	< 67	< 46	< 48	< 479
Smallmouth Bass	10/18/06	< 53	< 61	< 194	< 37	< 96	< 63	< 42	< 56	< 276
MEAN		60 ± 33	76 ± 48	194 ± 85	55 ± 34	142 ± 105	83 ± 49	67 ± 54	61 ± 31	492 ± 311
BY-31										
Channel Catfish	05/10/06	< 84	< 120	< 236	< 85	< 233	< 110	< 95	< 88	< 578
Freshwater Drum	05/10/06	< 86	< 101	< 256	< 79	< 224	< 104	< 99	< 90	< 661
River Carpsucker	10/18/06	< 40	< 44	< 124	< 31	< 100	< 63	< 37	< 36	< 335
Smallmouth Bass	10/18/06	< 46	< 65	< 174	< 45	< 119	< 73	< 53	< 50	< 380
MEAN		64 ± 49	83 ± 69	198 ± 120	60 ± 52	169 ± 138	87 ± 46	71 ± 61	66 ± 54	489 ± 312

**TABLE C-IV.1 CONCENTRATIONS OF GAMMA EMITTERS IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/KG DRY ± 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA-140
BY-12	05/10/06	< 86	< 89	< 199	< 80	< 202	< 107	< 86	97 ± 86	< 180
	10/10/06	< 51	< 70	< 269	< 73	< 119	< 99	< 66	< 77	< 463
	MEAN*	69 ± 49	79 ± 27	234 ± 99	76 ± 10	161 ± 117	103 ± 11	76 ± 27	87 ± 29	322 ± 400
BY-34	05/10/06	< 89	< 82	< 186	< 81	< 179	< 83	< 80	111 ± 56	< 152
	10/10/06	< 63	< 95	< 244	< 92	< 136	< 77	< 60	< 78	< 438
	MEAN*	76 ± 36	88 ± 19	215 ± 82	86 ± 16	158 ± 61	80 ± 9	70 ± 28	94 ± 47	295 ± 404



**TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

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

WEEK	GROUP I				GROUP II			GROUP III
	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
1	19 ± 4	19 ± 4	20 ± 4	19 ± 4	21 ± 4	15 ± 4	19 ± 4	17 ± 4
2	20 ± 5	19 ± 5	17 ± 4	17 ± 4	18 ± 5	16 ± 4	16 ± 4	17 ± 4
3	21 ± 4	28 ± 5	22 ± 4	22 ± 4	22 ± 4	22 ± 4	23 ± 4	20 ± 4
4	21 ± 5	19 ± 4	23 ± 5	21 ± 5	21 ± 4	19 ± 4	21 ± 5	21 ± 5
5	12 ± 4	9 ± 4	7 ± 4	8 ± 4	14 ± 4	10 ± 4	13 ± 4	9 ± 4
6	20 ± 4	21 ± 4	19 ± 4	17 ± 4	23 ± 5	18 ± 4	19 ± 4	17 ± 4
7	15 ± 4	17 ± 4	14 ± 4	16 ± 4	18 ± 4	16 ± 4	18 ± 4	14 ± 4
8	24 ± 5	23 ± 5	21 ± 5	20 ± 5	19 ± 4	19 ± 4	17 ± 4	23 ± 5
9	19 ± 5	20 ± 5	27 ± 5	18 ± 5	22 ± 5	21 ± 5	23 ± 5	23 ± 5
10	14 ± 4	15 ± 4	15 ± 4	16 ± 4	15 ± 4	25 ± 7	16 ± 4	16 ± 4
11	13 ± 4	17 ± 4	17 ± 4	16 ± 4	13 ± 4	12 ± 4	13 ± 4	17 ± 4
12	19 ± 4	19 ± 4	21 ± 4	17 ± 4	22 ± 4	18 ± 4	21 ± 4	19 ± 4
13	< 6	< 6	< 6	< 6	< 6	< 6	< 6	< 6
14	14 ± 4	13 ± 3	13 ± 3	14 ± 4	11 ± 3	15 ± 4	13 ± 4	11 ± 3
15	22 ± 4	17 ± 4	19 ± 4	22 ± 4	23 ± 5	19 ± 4	21 ± 4	19 ± 4
16	19 ± 4	15 ± 4	19 ± 4	15 ± 4	22 ± 4	22 ± 4	19 ± 4	21 ± 4
17	13 ± 4	15 ± 4	13 ± 4	11 ± 4	11 ± 4	12 ± 4	15 ± 4	14 ± 4
18	15 ± 4	14 ± 4	13 ± 4	11 ± 4	12 ± 4	13 ± 4	14 ± 4	13 ± 4
19	16 ± 4	13 ± 4	14 ± 4	14 ± 4	15 ± 4	15 ± 4	15 ± 4	14 ± 4
20	11 ± 4	8 ± 3	8 ± 3	10 ± 3	11 ± 4	11 ± 4	12 ± 4	8 ± 3
21	7 ± 4	7 ± 4	8 ± 4	13 ± 4	8 ± 4	11 ± 4	< 4.8	11 ± 4
22	20 ± 4	16 ± 4	16 ± 4	18 ± 4	21 ± 4	23 ± 5	21 ± 4	17 ± 4
23	14 ± 4	16 ± 4	16 ± 4	18 ± 4	14 ± 4	15 ± 4	16 ± 4	10 ± 4
24	13 ± 4	11 ± 4	13 ± 4	16 ± 4	13 ± 4	10 ± 4	11 ± 4	11 ± 4
25	17 ± 4	16 ± 4	18 ± 4	20 ± 4	21 ± 4	15 ± 4	17 ± 4	18 ± 4
26	20 ± 4	19 ± 4	13 ± 4	13 ± 4	13 ± 4	17 ± 4	19 ± 4	20 ± 4
27	23 ± 5	30 ± 6	22 ± 5	21 ± 5	28 ± 6	25 ± 5	30 ± 6	23 ± 5
28	18 ± 4	22 ± 4	18 ± 4	23 ± 5	24 ± 5	25 ± 5	21 ± 4	18 ± 4
29	20 ± 4	25 ± 4	24 ± 4	23 ± 4	20 ± 4	22 ± 4	20 ± 4	22 ± 4
30	16 ± 4	18 ± 4	17 ± 4	18 ± 4	18 ± 4	15 ± 4	18 ± 4	15 ± 4
31	31 ± 5	28 ± 5	26 ± 5	29 ± 5	26 ± 5	31 ± 5	34 ± 5	26 ± 4
32	24 ± 4	24 ± 4	22 ± 4	25 ± 4	22 ± 4	21 ± 4	24 ± 4	24 ± 5
33	24 ± 5	22 ± 4	24 ± 5	21 ± 4	20 ± 4	22 ± 5	21 ± 4	19 ± 4
34	24 ± 5	26 ± 5	29 ± 5	27 ± 5	29 ± 5	26 ± 5	26 ± 5	28 ± 5
35	32 ± 6	36 ± 6	35 ± 6	38 ± 6	35 ± 6	31 ± 6	38 ± 6	36 ± 6
36	17 ± 4	15 ± 4	17 ± 4	17 ± 4	17 ± 4	14 ± 3	19 ± 4	19 ± 4
37	23 ± 5	22 ± 5	20 ± 4	23 ± 5	25 ± 5	22 ± 5	27 ± 5	23 ± 5
38	17 ± 4	14 ± 4	17 ± 4	20 ± 4	17 ± 4	17 ± 4	18 ± 4	15 ± 4
39	23 ± 4	23 ± 4	18 ± 4	18 ± 4	17 ± 4	16 ± 4	21 ± 4	21 ± 4
40	20 ± 4	18 ± 4	18 ± 4	18 ± 4	18 ± 4	21 ± 4	20 ± 4	19 ± 4
41	14 ± 4	17 ± 4	22 ± 5	20 ± 5	16 ± 4	18 ± 4	21 ± 5	18 ± 4
42	15 ± 4	15 ± 4	13 ± 4	21 ± 4	13 ± 4	15 ± 4	15 ± 4	16 ± 4
43	22 ± 5	16 ± 4	23 ± 5	21 ± 5	20 ± 4	19 ± 4	22 ± 5	18 ± 4
44	14 ± 4	17 ± 4	18 ± 4	12 ± 4	17 ± 4	15 ± 4	16 ± 4	16 ± 4
45	30 ± 5	29 ± 5	30 ± 5	31 ± 5	30 ± 5	28 ± 5	29 ± 5	32 ± 5
46	20 ± 4	18 ± 4	19 ± 4	24 ± 5	22 ± 4	18 ± 4	23 ± 5	20 ± 5
47	31 ± 5	34 ± 6	30 ± 5	33 ± 6	37 ± 6	33 ± 6	32 ± 6	33 ± 6
48	22 ± 4	31 ± 5	30 ± 5	24 ± 4	28 ± 5	29 ± 5	30 ± 5	30 ± 5
49	23 ± 4	25 ± 4	29 ± 5	26 ± 4	28 ± 5	25 ± 4	30 ± 5	28 ± 5
50	28 ± 5	20 ± 4	20 ± 4	29 ± 5	20 ± 4	18 ± 4	23 ± 5	23 ± 4
51	26 ± 5	28 ± 5	35 ± 5	33 ± 5	31 ± 5	33 ± 5	36 ± 5	32 ± 5
52	25 ± 5	27 ± 5	27 ± 5	29 ± 5	25 ± 5	29 ± 5	29 ± 5	33 ± 5
53	21 ± 5	22 ± 5	27 ± 5	23 ± 5	17 ± 4	23 ± 5	27 ± 5	25 ± 5
MEAN*	19 ± 11	19 ± 13	20 ± 13	20 ± 13	20 ± 13	19 ± 12	21 ± 14	20 ± 13

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

**TABLE C-V.2 MONTHLY AND YEARLY MEAN VALUES OF GROSS BETA CONCENTRATIONS (E-3 PCI/CU METER) IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

GROUP I - NEARSITE LOCATIONS						GROUP II - FAR FIELD LOCATIONS						GROUP III - CONTROL LOCATION					
COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD		
12/27/05 - 01/31/06	7	28	18 ± 11	12/27/05 - 01/31/06	10	23	18 ± 8	12/27/05 - 01/31/06	9	21	17 ± 9	12/27/05 - 01/31/06	9	21	17 ± 9		
01/31/06 - 02/27/06	14	27	19 ± 7	01/31/06 - 02/27/06	16	23	19 ± 5	01/31/06 - 02/27/06	14	23	19 ± 9	01/31/06 - 02/27/06	14	23	19 ± 9		
02/27/06 - 03/27/06	< 6	21	14 ± 10	02/27/06 - 03/27/06	< 6	25	15 ± 13	02/27/06 - 03/27/06	< 6	19	14 ± 11	02/27/06 - 03/27/06	< 6	19	14 ± 11		
03/27/06 - 05/02/06	11	22	15 ± 7	03/27/06 - 05/02/06	11	23	16 ± 8	03/27/06 - 05/02/06	11	21	16 ± 9	03/27/06 - 05/02/06	11	21	16 ± 9		
05/02/06 - 05/30/06	7	20	12 ± 8	05/02/06 - 05/30/06	< 5	23	14 ± 11	05/02/06 - 05/30/06	8	17	13 ± 8	05/02/06 - 05/30/06	8	17	13 ± 8		
05/30/06 - 06/27/06	11	20	16 ± 6	05/30/06 - 06/27/06	10	21	15 ± 6	05/30/06 - 06/27/06	10	20	15 ± 10	05/30/06 - 06/27/06	10	20	15 ± 10		
06/27/06 - 08/01/06	16	31	23 ± 9	06/27/06 - 08/01/06	15	34	24 ± 11	06/27/06 - 08/01/06	15	26	21 ± 8	06/27/06 - 08/01/06	15	26	21 ± 8		
08/01/06 - 08/28/06	21	38	27 ± 10	08/01/06 - 08/28/06	20	38	26 ± 11	08/01/06 - 08/28/06	19	36	27 ± 14	08/01/06 - 08/28/06	19	36	27 ± 14		
08/28/06 - 10/03/06	14	23	19 ± 6	08/28/06 - 10/03/06	14	27	19 ± 7	08/28/06 - 10/03/06	15	23	19 ± 6	08/28/06 - 10/03/06	15	23	19 ± 6		
10/03/06 - 10/31/06	12	23	18 ± 7	10/03/06 - 10/31/06	13	22	17 ± 5	10/03/06 - 10/31/06	16	18	17 ± 2	10/03/06 - 10/31/06	16	18	17 ± 2		
10/31/06 - 11/28/06	18	34	27 ± 10	10/31/06 - 11/28/06	18	37	28 ± 10	10/31/06 - 11/28/06	20	33	29 ± 12	10/31/06 - 11/28/06	20	33	29 ± 12		
11/28/06 - 01/02/07	20	35	26 ± 8	11/28/06 - 01/02/07	17	36	26 ± 11	11/28/06 - 01/02/07	23	33	28 ± 9	11/28/06 - 01/02/07	23	33	28 ± 9		
12/27/05 - 01/02/07	< 6	38	20 ± 10	12/27/05 - 01/02/07	< 5	38	20 ± 10	12/27/05 - 01/02/07	< 6	36	20 ± 11	12/27/05 - 01/02/07	< 6	36	20 ± 11		

**TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

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

STC	COLLECTION PERIOD	MIN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BALA140
BY-01	12/27/05 - 03/27/06	< 5.4	< 15	< 46	< 5.0	< 11	< 13	< 5.0	< 3.6	< 1350
	03/27/06 - 06/27/06	< 3.1	< 6.8	< 23	< 2.8	< 6.8	< 8.0	< 3.0	< 2.2	< 1380
	06/27/06 - 10/03/06	< 3.1	< 6.2	< 24	< 3.4	< 7.4	< 5.9	< 2.7	< 2.5	< 1090
	10/03/06 - 01/02/07	< 1.7	< 4.0	< 9.5	< 1.9	< 6.6	< 4.3	< 3.0	< 1.9	< 128
MEAN	3.3 ± 3.1	8.0 ± 9.6	26 ± 30	3.3 ± 2.5	8.0 ± 4.3	7.8 ± 7.6	3.4 ± 2.2	2.6 ± 1.4	987 ± 1175	
BY-04	12/27/05 - 03/27/06	< 6.1	< 4.9	< 51	< 4.5	< 10	< 12	< 4.9	< 3.2	< 6570
	03/27/06 - 06/27/06	< 2.7	< 4.9	< 27	< 3.1	< 7.8	< 7.7	< 2.6	< 2.1	< 1690
	06/27/06 - 10/03/06	< 4.0	< 8.0	< 23	< 3.6	< 6.7	< 9.3	< 3.3	< 2.9	< 1120
	10/03/06 - 01/02/07	< 2.8	< 4.2	< 12	< 2.4	< 6.8	< 5.6	< 3.2	< 2.5	< 115
MEAN	3.9 ± 3.2	5.5 ± 3.4	28 ± 33	3.4 ± 1.8	7.9 ± 3.1	8.7 ± 5.6	3.5 ± 1.9	2.7 ± 1.0	2374 ± 5745	
BY-06	12/27/05 - 03/27/06	< 5.4	< 11	< 64	< 5.0	< 12	< 7.2	< 3.9	< 3.0	< 3690
	03/27/06 - 06/27/06	< 2.7	< 3.0	< 20	< 2.5	< 5.9	< 5.3	< 1.9	< 1.9	< 986
	06/27/06 - 10/03/06	< 3.3	< 6.7	< 20	< 3.2	< 8.9	< 8.3	< 2.7	< 2.1	< 1270
	10/03/06 - 01/02/07	< 2.6	< 3.2	< 11	< 2.3	< 6.3	< 4.5	< 2.6	< 2.3	< 115
MEAN	3.5 ± 2.6	5.9 ± 7.4	29 ± 48	3.2 ± 2.4	8.4 ± 6.0	6.3 ± 3.5	2.8 ± 1.6	2.4 ± 1.0	1515 ± 3062	
BY-08	12/27/05 - 03/27/06	< 6.3	< 11	< 42	< 3.4	< 9.2	< 11	< 3.7	< 3.3	< 5410
	03/27/06 - 06/27/06	< 3.1	< 7.4	< 17	< 3.8	< 12	< 11	< 3.5	< 3.0	< 1680
	06/27/06 - 10/03/06	< 2.3	< 4.9	< 27	< 2.5	< 4.3	< 6.3	< 2.8	< 2.1	< 1040
	10/03/06 - 01/02/07	< 3.1	< 4.5	< 16	< 3.2	< 7.6	< 4.9	< 2.7	< 2.7	< 123
MEAN	3.7 ± 3.5	6.9 ± 5.9	25 ± 25	3.2 ± 1.1	8.2 ± 6.2	8.3 ± 6.2	3.2 ± 1.0	2.8 ± 1.1	2063 ± 4642	

**TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

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

STC	COLLECTION PERIOD	MIN-54	CO-58	FE-59	CO-60	ZN-65	NB-95	CS-134	CS-137	BALA140
BY-21	12/27/05 - 03/27/06	< 6.0	< 12	< 49	< 4.3	< 13	< 14	< 3.9	< 3.3	< 5590
	03/27/06 - 06/27/06	< 3.6	< 7.1	< 30	< 2.6	< 12	< 7.9	< 3.0	< 3.1	< 752
	06/27/06 - 10/03/06	< 3.4	< 6.3	< 24	< 3.4	< 8.0	< 6.0	< 2.4	< 1.8	< 1060
	10/03/06 - 01/02/07	< 3.0	< 4.3	< 14	< 1.9	< 8.3	< 5.6	< 3.2	< 2.3	< 164
	MEAN	4.0 ± 2.7	7.5 ± 6.8	29 ± 30	3.0 ± 2.1	10 ± 5.3	8.3 ± 7.5	3.1 ± 1.3	2.6 ± 1.4	1892 ± 4987
BY-22	12/27/05 - 03/27/06	< 7.0	< 11	< 49	< 6.3	< 17	< 16	< 5.4	< 4.8	< 5370
	03/27/06 - 06/27/06	< 4.4	< 8.5	< 16	< 4.4	< 6.8	< 9.9	< 3.1	< 2.4	< 965
	06/27/06 - 10/03/06	< 4.0	< 7.8	< 31	< 3.1	< 8.0	< 9.9	< 3.6	< 3.5	< 1180
	10/03/06 - 01/02/07	< 2.9	< 4.9	< 12	< 2.3	< 6.5	< 5.4	< 3.1	< 3.0	< 141
	MEAN	4.6 ± 3.5	8.0 ± 5.0	27 ± 34	4.0 ± 3.5	9.5 ± 9.6	10 ± 9	3.8 ± 2.1	3.4 ± 2.0	1914 ± 4694
BY-23	12/27/05 - 03/27/06	< 6.2	< 6.7	< 49	< 5.5	< 9.6	< 16	< 4.1	< 3.3	< 4690
	03/27/06 - 06/27/06	< 3.3	< 8.2	< 32	< 3.1	< 7.9	< 9.5	< 3.1	< 2.4	< 921
	06/27/06 - 10/03/06	< 4.2	< 7.3	< 43	< 2.7	< 15	< 9.1	< 4.0	< 4.0	< 2500
	10/03/06 - 01/02/07	< 2.4	< 5.1	< 10	< 2.5	< 7.3	< 5.2	< 3.2	< 2.4	< 162
	MEAN	4.0 ± 3.3	6.8 ± 2.5	34 ± 34	3.5 ± 2.8	9.9 ± 6.6	10 ± 9.2	3.6 ± 1.0	3.0 ± 1.6	2068 ± 4002
BY-24	12/27/05 - 03/27/06	< 5.0	< 14	< 55	< 6.9	< 14	< 9.3	< 4.1	< 4.6	< 4690
	03/27/06 - 06/27/06	< 5.4	< 5.9	< 35	< 4.5	< 12	< 13	< 4.4	< 3.9	< 1670
	06/27/06 - 10/03/06	< 3.4	< 9.1	< 21	< 2.9	< 11	< 6.8	< 3.9	< 3.3	< 1580
	10/03/06 - 01/02/07	< 2.6	< 5.1	< 6.0	< 2.5	< 7.8	< 5.8	< 2.9	< 2.5	< 108
	MEAN	4.1 ± 2.7	8.5 ± 7.8	29 ± 41	4.2 ± 3.9	11 ± 4.8	8.7 ± 6	3.8 ± 1.3	3.6 ± 1.8	2012 ± 3847

**TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

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

WEEK	GROUP I				GROUP II			GROUP III
	BY-21	BY-22	BY-23	BY-24	BY-01	BY-04	BY-06	BY-08
1	< 56	< 56	< 56	< 56	< 45	< 46	< 46	< 46
2	< 51	< 51	< 50	< 50	< 55	< 53	< 53	< 52
3	< 49	< 51	< 50	< 50	< 33	< 49	< 49	< 49
4	< 64	< 64	< 64	< 64	< 51	< 52	< 52	< 54
5	< 52	< 52	< 52	< 52	< 53	< 29	< 53	< 52
6	< 27	< 27	< 27	< 27	< 30	< 31	< 30	< 31
7	< 59	< 45	< 45	< 45	< 60	< 60	< 30	< 58
8	< 56	< 56	< 56	< 56	< 57	< 58	< 57	< 57
9	< 63	< 63	< 63	< 63	< 63	< 63	< 62	< 34
10	< 18	< 18	< 18	< 18	< 20	< 37	< 20	< 21
11	< 42	< 64	< 64	< 63	< 59	< 60	< 58	< 57
12	< 45	< 45	< 45	< 46	< 38	< 38	< 37	< 37
13	< 64	< 48	< 63	< 64	< 64	< 66	< 66	< 66
14	< 40	< 40	< 40	< 40	< 46	< 46	< 46	< 47
15	< 64	< 64	< 47	< 62	< 54	< 53	< 54	< 52
16	< 45	< 45	< 47	< 47	< 65	< 67	< 66	< 66
17	< 56	< 56	< 55	< 41	< 50	< 50	< 51	< 51
18	< 56	< 56	< 56	< 56	< 54	< 55	< 53	< 54
19	< 50	< 50	< 50	< 50	< 50	< 49	< 49	< 48
20	< 57	< 57	< 57	< 57	< 65	< 66	< 65	< 67
21	< 69	< 70	< 70	< 69	< 65	< 66	< 65	< 64
22	< 67	< 67	< 67	< 68	< 62	< 63	< 63	< 65
23	< 50	< 50	< 50	< 50	< 62	< 63	< 63	< 63
24	< 67	< 67	< 67	< 68	< 66	< 37	< 66	< 67
25	< 53	< 53	< 52	< 52	< 49	< 48	< 48	< 48
26	< 47	< 47	< 48	< 48	< 44	< 45	< 46	< 45
27	< 67	< 67	< 67	< 66	< 62	< 62	< 62	< 62
28	< 11	< 11	< 11	< 11	< 65	< 66	< 65	< 64
29	< 38	< 38	< 38	< 21	< 25	< 25	< 25	< 25
30	< 49	< 49	< 49	< 49	< 56	< 56	< 57	< 58
31	< 57	< 57	< 46	< 58	< 27	< 26	< 27	< 26
32	< 60	< 60	< 60	< 48	< 57	< 59	< 58	< 60
33	< 52	< 52	< 52	< 52	< 41	< 42	< 42	< 40
34	< 62	< 62	< 62	< 61	< 38	< 39	< 39	< 40
35	< 52	< 65	< 65	< 66	< 60	< 60	< 60	< 63
36	< 63	< 63	< 64	< 64	< 30	< 30	< 30	< 31
37	< 48	< 48	< 48	< 48	< 46	< 46	< 46	< 45
38	< 47	< 47	< 47	< 48	< 43	< 43	< 43	< 44
39	< 43	< 43	< 43	< 43	< 44	< 43	< 43	< 42
40	< 44	< 43	< 44	< 44	< 41	< 41	< 41	< 42
41	< 51	< 50	< 50	< 50	< 51	< 50	< 48	< 5
42	< 39	< 39	< 39	< 39	< 48	< 49	< 49	< 51
43	< 44	< 52	< 52	< 52	< 22	< 44	< 44	< 43
44	< 32	< 32	< 32	< 32	< 29	< 29	< 29	< 30
45	< 53	< 67	< 67	< 66	< 47	< 46	< 46	< 45
46	< 67	< 67	< 67	< 67	< 65	< 67	< 66	< 68
47	< 66	< 66	< 66	< 66	< 65	< 66	< 66	< 63
48	< 67	< 67	< 67	< 67	< 55	< 56	< 56	< 54
49	< 25	< 25	< 20	< 25	< 30	< 31	< 31	< 31
50	< 64	< 64	< 64	< 63	< 65	< 64	< 64	< 63
51	< 22	< 22	< 22	< 17	< 23	< 23	< 23	< 23
52	< 40	< 69	< 40	< 40	< 46	< 45	< 45	< 44
53	< 29	< 29	< 29	< 29	< 27	< 27	< 27	< 28
MEAN	50 ± 28	51 ± 28	50 ± 28	50 ± 29	48 ± 27	49 ± 26	49 ± 26	48 ± 29

**TABLE C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

COLLECTION PERIOD	CONTROL FARM	INDICATOR FARMS		
	BY-26-1	BY-20-1	BY-30	BY-38
01/03/06	< 0.6	< 0.6	< 0.6	< 0.6
02/07/06	< 0.4	< 0.8	< 0.5	< 0.5
03/07/06	< 0.8	< 0.4	< 0.5	< 0.4
04/04/06	< 0.4	< 0.4	< 0.5	< 0.5
05/02/06	< 0.5	< 0.5	< 0.5	< 0.5
05/16/06	< 0.7	< 0.7	< 0.6	< 0.5
05/30/06	< 0.6	< 0.7	< 1.0	< 0.7
06/13/06	< 0.9	< 0.9	< 0.9	< 0.9
06/27/06	< 1.3 (1)	< 2.0 (1)	< 3.7 (1)	< 0.9
07/11/06	< 0.7	< 0.5	< 0.7	< 0.7
07/25/06	< 0.8	< 1.8 (1)	< 0.5	< 0.9
08/08/06	< 0.7	< 0.8	< 0.9	< 0.8
08/22/06	< 0.5	< 0.7	< 0.8	(1)
09/05/06	< 0.4	< 0.6	< 0.5	< 0.5
09/19/06	< 0.4	< 0.7	< 0.6	< 0.6
10/03/06	< 0.4	< 0.6	< 0.4	< 0.3
10/17/06	< 0.6	< 0.6	< 0.7	< 0.7
10/31/06	< 0.7	< 0.6	< 0.8	< 0.8
11/14/06	< 0.5	< 0.6	< 0.6	(1)
12/05/06	< 0.5	< 0.4	< 0.4	(1)
MEAN	0.6 $\pm$ 0.5	0.7 $\pm$ 0.8	0.8 $\pm$ 1.4	0.6 $\pm$ 0.4

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BA-140	LA-140
BY-20-1	01/03/06	< 4	< 4	< 10	< 6	< 8	< 4	< 2	< 5	< 19	< 6
	02/07/06	< 8	< 8	< 20	< 11	< 20	< 7	< 9	< 8	< 37	< 10
	03/07/06	< 7	< 7	< 15	< 7	< 15	< 6	< 7	< 7	< 31	< 9
	04/04/06	< 7	< 8	< 15	< 7	< 23	< 8	< 11	< 8	< 36	< 11
	05/02/06	< 7	< 9	< 20	< 9	< 19	< 9	< 8	< 8	< 51	< 13
	05/16/06	< 7	< 8	< 18	< 8	< 17	< 8	< 8	< 7	< 46	< 14
	05/30/06	< 7	< 7	< 17	< 7	< 16	< 7	< 7	< 7	< 49	< 14
	06/13/06	< 8	< 9	< 21	< 9	< 20	< 10	< 9	< 9	< 47	< 14
	06/27/06	< 10	< 10	< 22	< 13	< 32	< 13	< 10	< 11	< 51	< 10
	07/11/06	< 7	< 7	< 16	< 7	< 15	< 7	< 6	< 7	< 36	< 11
	07/25/06	< 7	< 9	< 19	< 7	< 22	< 10	< 9	< 8	< 49	< 15
	08/08/06	< 3	< 4	< 10	< 4	< 8	< 4	< 3	< 4	< 34	< 11
	08/22/06	< 7	< 7	< 18	< 8	< 13	< 8	< 6	< 6	< 46	< 15
	09/05/06	< 8	< 9	< 24	< 10	< 17	< 9	< 9	< 10	< 49	< 13
09/19/06	< 9	< 9	< 19	< 7	< 21	< 8	< 8	< 7	< 46	< 13	
10/03/06	< 6	< 6	< 16	< 6	< 13	< 6	< 5	< 6	< 56	< 15	
10/17/06	< 5	< 5	< 15	< 6	< 11	< 6	< 5	< 5	< 52	< 15	
10/31/06	< 5	< 5	< 15	< 5	< 10	< 6	< 4	< 4	< 48	< 15	
11/14/06	< 3	< 3	< 8	< 4	< 7	< 4	< 4	< 3	< 41	< 15	
12/05/06	< 7	< 7	< 15	< 8	< 13	< 7	< 6	< 6	< 31	< 12	
MEAN		6 ± 4	7 ± 4	17 ± 8	7 ± 4	16 ± 12	7 ± 4	7 ± 5	7 ± 4	43 ± 18	12 ± 5
BY-26-1	01/03/06	< 5	< 5	< 10	< 5	< 12	< 5	< 5	< 5	< 21	< 8
	02/07/06	< 7	< 7	< 16	< 8	< 17	< 7	< 7	< 6	< 29	< 11
	03/07/06	< 7	< 7	< 16	< 8	< 19	< 8	< 8	< 8	< 36	< 11
	04/04/06	< 6	< 6	< 15	< 7	< 15	< 7	< 7	< 7	< 32	< 9
	05/02/06	< 6	< 7	< 16	< 7	< 16	< 7	< 6	< 7	< 39	< 14
	05/16/06	< 6	< 8	< 17	< 7	< 18	< 8	< 7	< 7	< 48	< 15
	05/30/06	< 5	< 6	< 16	< 7	< 15	< 7	< 6	< 6	< 43	< 15
	06/13/06	< 7	< 7	< 17	< 8	< 16	< 8	< 7	< 8	< 37	< 13
	06/27/06	< 7	< 7	< 17	< 9	< 20	< 8	< 9	< 8	< 37	< 11
	07/11/06	< 9	< 8	< 21	< 10	< 24	< 10	< 9	< 9	< 48	< 14
	07/25/06	< 8	< 7	< 20	< 9	< 20	< 8	< 7	< 7	< 46	< 14
	08/08/06	< 3	< 3	< 8	< 3	< 7	< 3	< 3	< 3	< 29	< 10
	08/22/06	< 2	< 2	< 5	< 2	< 5	< 3	< 2	< 2	< 16	< 5
	09/05/06	< 11	< 12	< 21	< 11	< 21	< 12	< 8	< 8	< 46	< 11
09/19/06	< 8	< 6	< 14	< 6	< 18	< 7	< 6	< 7	< 42	< 10	
10/03/06	< 5	< 7	< 16	< 6	< 13	< 8	< 6	< 6	< 52	< 10	
10/17/06	< 5	< 5	< 13	< 5	< 11	< 6	< 4	< 4	< 51	< 14	
10/31/06	< 4	< 5	< 13	< 5	< 12	< 6	< 5	< 5	< 43	< 14	
11/14/06	< 4	< 4	< 10	< 4	< 8	< 4	< 4	< 3	< 44	< 14	
12/05/06	< 6	< 7	< 13	< 6	< 14	< 6	< 6	< 5	< 32	< 9	
MEAN		6 ± 4	6 ± 4	15 ± 8	7 ± 4	15 ± 10	7 ± 4	6 ± 4	6 ± 4	38 ± 20	12 ± 5

**TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	CS-134	CS-137	BA-140	LA-140
BY-30	01/03/06	< 7	< 7	< 17	< 7	< 17	< 7	< 6	< 7	< 33	< 10
	02/07/06	< 9	< 9	< 21	< 9	< 22	< 9	< 10	< 10	< 39	< 11
	03/07/06	< 8	< 8	< 20	< 9	< 21	< 8	< 9	< 8	< 38	< 12
	04/04/06	< 5	< 5	< 13	< 6	< 14	< 6	< 7	< 6	< 27	< 8
	05/02/06	< 7	< 7	< 18	< 8	< 19	< 7	< 8	< 7	< 47	< 13
	05/16/06	< 7	< 8	< 18	< 8	< 18	< 8	< 7	< 7	< 46	< 14
	05/30/06	< 5	< 6	< 15	< 7	< 14	< 6	< 5	< 6	< 42	< 13
	06/13/06	< 9	< 9	< 20	< 9	< 24	< 10	< 10	< 9	< 52	< 15
	06/27/06	< 11	< 10	< 30	< 12	< 33	< 13	< 13	< 11	< 53	< 13
	07/11/06	< 7	< 7	< 16	< 7	< 17	< 7	< 8	< 7	< 37	< 12
	07/25/06	< 6	< 6	< 15	< 7	< 13	< 6	< 5	< 6	< 36	< 14
	08/08/06	< 3	< 4	< 11	< 4	< 8	< 4	< 3	< 4	< 37	< 11
	08/22/06	< 2	< 2	< 5	< 2	< 5	< 2	< 2	< 2	< 14	< 4
	09/05/06	< 9	< 9	< 20	< 9	< 22	< 11	< 9	< 9	< 51	< 13
09/19/06	< 8	< 7	< 19	< 8	< 16	< 9	< 7	< 9	< 49	< 9	
10/03/06	< 5	< 5	< 13	< 6	< 11	< 6	< 4	< 5	< 44	< 15	
10/17/06	< 3	< 4	< 10	< 4	< 7	< 4	< 3	< 4	< 35	< 12	
10/31/06	< 5	< 6	< 14	< 7	< 12	< 6	< 5	< 5	< 53	< 13	
11/14/06	< 3	< 4	< 9	< 3	< 7	< 5	< 3	< 3	< 43	< 14	
12/05/06	< 6	< 6	< 15	< 5	< 9	< 5	< 5	< 6	< 32	< 7	
MEAN		6 ± 5	7 ± 4	16 ± 11	7 ± 5	15 ± 14	7 ± 5	6 ± 6	7 ± 5	40 ± 19	12 ± 5
BY-38	01/03/06	< 5	< 6	< 14	< 6	< 13	< 6	< 5	< 6	< 23	< 8
	02/07/06	< 8	< 7	< 17	< 7	< 19	< 7	< 7	< 7	< 34	< 10
	03/07/06	< 6	< 6	< 13	< 6	< 14	< 6	< 6	< 6	< 28	< 8
	04/04/06	< 6	< 6	< 15	< 7	< 15	< 6	< 7	< 7	< 31	< 10
	05/02/06	< 6	< 7	< 15	< 6	< 15	< 7	< 6	< 7	< 41	< 14
	05/16/06	< 7	< 7	< 19	< 7	< 18	< 8	< 7	< 7	< 47	< 13
	05/30/06	< 6	< 6	< 16	< 6	< 15	< 7	< 6	< 6	< 45	< 14
	06/13/06	< 7	< 8	< 20	< 9	< 17	< 8	< 7	< 7	< 41	< 13
	06/27/06	< 11	< 10	< 25	< 9	< 27	< 11	< 11	< 10	< 48	< 12
	07/11/06	< 10	< 9	< 22	< 10	< 21	< 9	< 9	< 9	< 53	< 11
	07/25/06	< 6	< 7	< 18	< 7	< 16	< 8	< 6	< 7	< 41	< 14
	08/08/06	< 3	< 3	< 8	< 3	< 7	< 4	< 3	< 3	< 32	< 8
	08/22/06	(1)									
	09/05/06	< 10	< 8	< 22	< 9	< 24	< 8	< 7	< 12	< 49	< 15
09/17/06	< 8	< 9	< 22	< 8	< 17	< 10	< 8	< 9	< 51	< 11	
10/03/06	< 4	< 5	< 14	< 5	< 13	< 6	< 4	< 5	< 45	< 14	
10/15/06	< 4	< 4	< 13	< 6	< 7	< 4	< 3	< 4	< 43	< 13	
10/28/06	< 4	< 5	< 12	< 5	< 10	< 5	< 4	< 4	< 49	< 13	
11/14/06	(1)										
12/05/06	(1)										
MEAN		7 ± 4	7 ± 3	17 ± 9	7 ± 4	16 ± 11	7 ± 4	6 ± 4	7 ± 4	41 ± 18	12 ± 5

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION



**TABLE C-VIII.1 CONCENTRATIONS OF GAMMA EMITTERS IN VEGETATION SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/KG WET ± 2 SIGMA

STC	COLLECTION PERIOD	MN-54	CO-58	FE-59	CO-60	ZN-65	ZRNB-95	I-131	CS-134	CS-137	BALA140
BY-QUAD 1 Carrots	09/05/06	< 15	< 16	< 39	< 12	< 31	< 18	< 53	< 13	< 15	< 26
BY-QUAD 1 Cabbage	09/05/06	< 14	< 11	< 40	< 13	< 31	< 16	< 54	< 12	< 15	< 41
	MEAN	15 ± 1	14 ± 8	39 ± 3	13 ± 1	31 ± 0	17 ± 3	53 ± 3	12 ± 2	15 ± 0	33 ± 21
BY-QUAD 2 Rutabagas	09/05/06	< 14	< 14	< 41	< 17	< 37	< 17	< 53	< 14	< 18	< 34
BY-QUAD 2 Lettuce	09/05/06	< 14	< 15	< 40	< 16	< 36	< 17	< 52	< 14	< 17	< 19
	MEAN	14 ± 1	14 ± 2	41 ± 1	16 ± 1	36 ± 1	17 ± 0	53 ± 2	14 ± 0	18 ± 1	26 ± 21
BY-QUAD 3 Corn Leaves	09/05/06	< 14	< 14	< 33	< 14	< 25	< 14	< 55	< 14	< 12	< 30
BY-QUAD 3 (1)	09/05/06										
	MEAN										
BY-QUAD 4 Cabbage	09/05/06	< 12	< 15	< 40	< 14	< 34	< 18	< 50	< 13	< 14	< 27
BY-QUAD 4 Potatoes	09/05/06	< 15	< 16	< 39	< 16	< 35	< 16	< 51	< 13	< 15	< 36
	MEAN	13 ± 4	16 ± 1	40 ± 1	15 ± 3	34 ± 1	17 ± 2	51 ± 1	13 ± 1	14 ± 1	31 ± 12
BY-QUAD C Potatoes	09/05/06	< 17	< 18	< 35	< 21	< 38	< 16	< 58	< 13	< 17	< 29
BY-QUAD C Swiss Chard	09/05/06	< 13	< 14	< 36	< 14	< 30	< 14	< 52	< 9	< 14	< 20
	MEAN	15 ± 5	16 ± 7	35 ± 1	18 ± 10	34 ± 12	15 ± 4	55 ± 8	11 ± 5	16 ± 3	24 ± 13

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

**TABLE C-IX.1 QUARTERLY TLD RESULTS FOR BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S. D.	JAN - MAR	APR-JUN	JUL-SEP	OCT-DEC
BY-01-1	21.0 ± 11.0	28	19	15	22
BY-01-2	19.8 ± 7.0	24	18	16	21
BY-04-1	23.8 ± 6.8	28	21	21	25
BY-04-2	23.8 ± 9.7	30	21	19	25
BY-06-1	20.5 ± 6.8	24	20	16	22
BY-06-2	20.3 ± 8.1	25	18	16	22
BY-08-1	20.0 ± 7.8	25	18	16	21
BY-08-2	21.5 ± 9.6	28	19	17	22
BY-21-1	22.0 ± 7.3	26	20	18	24
BY-21-2	20.3 ± 8.7	26	18	16	21
BY-22-1	25.8 ± 6.8	29	26	21	27
BY-22-2	25.8 ± 8.7	30	22	22	29
BY-23-1	24.8 ± 10.4	31	21	20	27
BY-23-2	25.5 ± 11.0	32	22	20	28
BY-24-1	24.0 ± 11.4	31	21	18	26
BY-24-2	24.2 ± 10.0	31	22	19	25
BY-101-1	20.0 ± 7.1	24	17	17	22
BY-101-2	18.8 ± 7.7	24	17	15	19
BY-102-1	26.8 ± 8.2	32	26	22	27
BY-102-2	26.8 ± 8.2	32	23	24	28
BY-103-1	24.0 ± 9.1	30	21	20	25
BY-103-2	24.5 ± 10.1	31	21	20	26
BY-104-1	25.0 ± 8.5	31	22	22	25
BY-104-2	26.0 ± 7.7	31	23	23	27
BY-105-1	26.5 ± 9.3	33	25	22	26
BY-105-2	26.3 ± 8.5	32	23	23	27
BY-106-1	26.3 ± 9.3	32	23	22	28
BY-106-2	25.0 ± 8.5	30	22	21	27
BY-107-1	27.0 ± 9.9	33	24	22	29
BY-107-2	27.5 ± 11.5	35	23	23	29
BY-108-1	26.3 ± 8.5	32	23	23	27
BY-108-2	25.0 ± 7.5	30	24	21	25
BY-109-1	25.0 ± 11.4	32	22	19	27
BY-109-2	24.5 ± 11.1	32	22	19	25
BY-110-1	23.3 ± 10.8	30	20	18	25
BY-110-2	23.8 ± 7.7	28	21	20	26
BY-111-3	27.0 ± 8.3	32	26	22	28
BY-111-4	24.8 ± 8.2	30	22	21	26
BY-112-3	24.0 ± 6.3	28	22	21	25
BY-112-4	24.0 ± 7.1	28	21	21	26
BY-113-1	25.5 ± 9.0	32	22	23	25
BY-113-2	22.0 ± 11.0	29	20	16	23
BY-114-1	22.5 ± 10.1	29	19	18	24
BY-114-2	25.0 ± 9.1	31	22	21	26
BY-115-1	25.0 ± 8.5	31	22	22	25
BY-115-2	24.3 ± 8.4	30	23	20	24
BY-116-1	23.5 ± 8.1	29	21	20	24
BY-116-2	22.5 ± 8.1	28	20	19	23

**TABLE C-IX.1 QUARTERLY TLD RESULTS FOR BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS

STATION CODE	MEAN ± 2 S. D.	JAN - MAR	APR-JUN	JUL-SEP	OCT-DEC
BY-201-3	23.3 ± 8.5	29	20	20	24
BY-201-4	24.8 ± 9.0	31	22	21	25
BY-202-1	22.8 ± 11.0	30	19	18	24
BY-202-2	25.8 ± 9.6	32	22	22	27
BY-203-1	20.0 ± 6.3	24	17	18	21
BY-203-2	25.0 ± 8.6	31	23	21	25
BY-204-1	21.8 ± 6.6	25	20	18	24
BY-204-2	26.0 ± 9.8	32	22	22	28
BY-205-1	26.8 ± 9.7	33	24	22	28
BY-205-2	24.0 ± 7.1	28	21	21	26
BY-206-1	26.3 ± 9.3	32	23	22	28
BY-206-2	24.5 ± 7.7	29	23	20	26
BY-207-1	26.8 ± 8.2	32	23	24	28
BY-207-2	25.8 ± 7.5	31	23	23	26
BY-208-1	26.5 ± 10.4	33	24	21	28
BY-208-2	26.5 ± 8.9	30	28	20	28
BY-209-1	27.5 ± 9.3	33	26	22	29
BY-209-4	26.5 ± 8.7	32	23	23	28
BY-210-3	24.8 ± 6.6	27	25	20	27
BY-210-4	24.5 ± 10.9	31	20	20	27
BY-211-1	24.8 ± 9.0	31	21	22	25
BY-211-4	25.8 ± 7.7	31	24	22	26
BY-212-1	26.5 ± 7.7	32	23	25	26
BY-212-4	26.8 ± 4.4	29	26	24	28
BY-213-1	26.3 ± 10.0	33	23	22	27
BY-213-4	27.0 ± 9.8	33	23	23	29
BY-214-1	24.8 ± 9.0	30	25	19	25
BY-214-4	25.0 ± 7.7	30	22	22	26
BY-215-1	26.3 ± 7.5	30	23	23	29
BY-215-4	25.5 ± 4.8	28	23	24	27
BY-216-1	26.0 ± 5.9	29	26	22	27
BY-216-2	24.0 ± 5.9	26	22	21	27

**TABLE C-IX.2 MEAN QUARTERLY TLD RESULTS FOR THE INNER RING, OUTER RING, OTHER AND CONTROL LOCATIONS FOR BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER ± 2 STANDARD DEVIATIONS OF THE STATION DATA

STATION CODE	INNER RING ± 2 S. D.	OUTER RING	OTHER	CONTROL
JAN-MAR	30.3 ± 2.4	30.2 ± 2.4	29.1 ± 2.7	26.5 ± 2.1
APR-JUN	21.9 ± 2.1	22.8 ± 2.2	21.2 ± 2.2	18.5 ± 0.7
JUL-SEP	20.6 ± 2.2	21.5 ± 1.8	18.9 ± 2.2	16.5 ± 0.7
OCT-DEC	25.6 ± 2.1	26.5 ± 1.8	25.3 ± 2.6	21.5 ± 0.7

**TABLE C-IX.3 SUMMARY OF THE AMBIENT DOSIMETRY PROGRAM FOR BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF MILLI-ROENTGEN/QUARTER

LOCATION	SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S. D.
INNER RING	128	15	35	24.6 ± 6.0
OUTER RING	128	17	33	25.0 ± 5.0
OTHER	80	15	32	23.9 ± 5.4
CONTROL	8	16	28	20.8 ± 4.1

INNER RING STATIONS - BY-101-1, BY-101-2, BY-102-1, BY-102-2, BY-103-1, BY-103-2, BY-104-1, BY-104-2, BY-105-1, BY-105-2, BY-106-1, BY-106-2, BY-107-1, BY-107-2, BY-108-1, BY-108-2, BY-109-1, BY-109-2, BY-110-1, BY-110-2, BY-111-3, BY-111-4, BY-112-3, BY-112-4, BY-113-1, BY-113-2, BY-114-1, BY-114-2, BY-115-1, BY-115-2, BY-116-1, BY-116-2

OUTER RING STATIONS - BY-201-3, BY-201-4, BY-202-1, BY-202-2, BY-203-1, BY-203-2, BY-204-1, BY-204-2, BY-205-1, BY-205-2, BY-206-1, BY-206-2, BY-207-1, BY-207-2, BY-208-1, BY-208-2, BY-209-1, BY-209-2, BY-210-1, BY-210-2, BY-211-1, BY-211-4, BY-212-1, BY-212-4, BY-213-1, BY-213-4, BY-214-1, BY-214-4, BY-215-1, BY-215-4, BY-216-1, BY-216-2

OTHER STATIONS - BY-01-1, BY-01-2, BY-04-1, BY-04-2, BY-06-1, BY-06-2, BY-21-1, BY-21-2, BY-22-2, BY-23-1, BY-23-2, BY-24-1, BY-24-2

CONTROL STATIONS - BY-08-1, BY-08-2

**TABLE C-X.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

**SURFACE WATER (TRITIUM LIQUID SCINTILLATION)**

COLLECTION PERIOD	BY-12	BY-29
JAN-MAR	01/10/06 - 03/27/06	01/10/06 - 03/27/06
APR-JUN	04/04/06 - 06/27/06	04/04/06 - 06/27/06
JUL-SEP	07/03/06 - 09/26/06	07/03/06 - 09/26/06
OCT-DEC	10/03/06 - 12/26/06	10/03/06 - 12/26/06

**SURFACE WATER (GROSS BETA & GAMMA SPECTROSCOPY)**

COLLECTION PERIOD	BY-12	BY-29
JAN	01/10/06 - 01/31/06	01/10/06 - 01/31/06
FEB	02/14/06 - 02/14/06	02/14/06 - 02/14/06
MAR	03/07/06 - 03/27/06	03/07/06 - 03/27/06
APR	04/04/06 - 04/25/06	04/04/06 - 04/25/06
MAY	05/02/06 - 05/30/06	05/02/06 - 05/30/06
JUN	06/06/06 - 06/27/06	06/06/06 - 06/27/06
JUL	07/03/06 - 07/25/06	07/03/06 - 07/25/06
AUG	08/01/06 - 08/28/06	08/01/06 - 08/28/06
SEP	09/05/06 - 09/26/06	09/05/06 - 09/26/06
OCT	10/03/06 - 10/31/06	10/03/06 - 10/31/06
NOV	11/07/06 - 11/28/06	11/07/06 - 11/28/06
DEC	12/12/06 - 12/26/06	12/19/06 - 12/26/06

**GROUND WATER (TRITIUM & GAMMA SPECTROSCOPY)**

COLLECTION PERIOD	BY-14-1	BY-18	BY-32
JAN-MAR	01/10/06 - 01/10/06	01/10/06 - 01/10/06	01/10/06 - 01/10/06
APR-JUN	04/11/06 - 04/11/06	04/11/06 - 04/11/06	04/11/06 - 04/11/06
JUL-SEP	07/13/06 - 07/13/06	07/13/06 - 07/13/06	07/13/06 - 07/13/06
OCT-DEC	10/10/06 - 10/10/06	10/10/06 - 10/10/06	10/10/06 - 10/10/06

COLLECTION PERIOD	BY-35	BY-36	BY-37
APR-JUN	04/11/06 - 04/11/06	04/11/06 - 04/11/06	04/11/06 - 04/11/06
JUL-SEP	07/13/06 - 07/13/06	07/13/06 - 07/13/06	07/13/06 - 07/13/06
OCT-DEC	10/10/06 - 10/10/06	10/10/06 - 10/10/06	10/10/06 - 10/10/06

**TABLE C-X.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

**AIR PARTICULATE (GAMMA SPECTROSCOPY)**

COLLECTION PERIOD	BY-01	BY-04	BY-06	BY-08	BY-21
JAN-MAR	12/27/05 - 03/27/06	12/27/05 - 03/27/06	12/27/05 - 03/27/06	12/27/05 - 03/27/06	12/27/05 - 03/27/06
APR-JUN	03/27/06 - 06/27/06	03/27/06 - 06/27/06	03/27/06 - 06/27/06	03/27/06 - 06/27/06	03/27/06 - 06/27/06
JUL-SEP	06/27/06 - 10/03/06	06/27/06 - 10/03/06	06/27/06 - 10/03/06	06/27/06 - 10/03/06	06/27/06 - 10/03/06
OCT-DEC	10/03/06 - 01/02/07	10/03/06 - 01/02/07	10/03/06 - 01/02/07	10/03/06 - 01/02/07	10/03/06 - 01/02/07

**AIR PARTICULATE (GAMMA SPECTROSCOPY)**

COLLECTION PERIOD	BY-22	BY-23	BY-24
JAN-MAR	12/27/05 - 03/27/06	12/27/05 - 03/27/06	12/27/05 - 03/27/06
APR-JUN	03/27/06 - 06/27/06	03/27/06 - 06/27/06	03/27/06 - 06/27/06
JUL-SEP	06/27/06 - 10/03/06	06/27/06 - 10/03/06	06/27/06 - 10/03/06
OCT-DEC	10/03/06 - 01/02/07	10/03/06 - 01/02/07	10/03/06 - 01/02/07



**TABLE C-X.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

**AIR PARTICULATE (GROSS BETA & I-131)**

COLLECTION PERIOD	BY-22	BY-23	BY-24
1	12/27/05 - 01/03/06	12/27/05 - 01/03/06	12/27/05 - 01/03/06
2	01/03/06 - 01/10/06	01/03/06 - 01/10/06	01/03/06 - 01/10/06
3	01/10/06 - 01/17/06	01/10/06 - 01/17/06	01/10/06 - 01/17/06
4	01/17/06 - 01/24/06	01/17/06 - 01/24/06	01/17/06 - 01/24/06
5	01/24/06 - 01/31/06	01/24/06 - 01/31/06	01/24/06 - 01/31/06
6	01/31/06 - 02/07/06	01/31/06 - 02/07/06	01/31/06 - 02/07/06
7	02/07/06 - 02/14/06	02/07/06 - 02/14/06	02/07/06 - 02/14/06
8	02/14/06 - 02/21/06	02/14/06 - 02/21/06	02/14/06 - 02/21/06
9	02/21/06 - 02/27/06	02/21/06 - 02/27/06	02/21/06 - 02/27/06
10	02/27/06 - 03/07/06	02/27/06 - 03/07/06	02/27/06 - 03/07/06
11	03/07/06 - 03/14/06	03/07/06 - 03/14/06	03/07/06 - 03/14/06
12	03/14/06 - 03/21/06	03/14/06 - 03/21/06	03/14/06 - 03/21/06
13	03/21/06 - 03/27/06	03/21/06 - 03/27/06	03/21/06 - 03/27/06
14	03/27/06 - 04/04/06	03/27/06 - 04/04/06	03/27/06 - 04/04/06
15	04/04/06 - 04/11/06	04/04/06 - 04/11/06	04/04/06 - 04/11/06
16	04/11/06 - 04/18/06	04/11/06 - 04/18/06	04/11/06 - 04/18/06
17	04/18/06 - 04/25/06	04/18/06 - 04/25/06	04/18/06 - 04/25/06
18	04/25/06 - 05/02/06	04/25/06 - 05/02/06	04/25/06 - 05/02/06
19	05/02/06 - 05/09/06	05/02/06 - 05/09/06	05/02/06 - 05/09/06
20	05/09/06 - 05/16/06	05/09/06 - 05/16/06	05/09/06 - 05/16/06
21	05/16/06 - 05/23/06	05/16/06 - 05/23/06	05/16/06 - 05/23/06
22	05/23/06 - 05/30/06	05/23/06 - 05/30/06	05/23/06 - 05/30/06
23	05/30/06 - 06/06/06	05/30/06 - 06/06/06	05/30/06 - 06/06/06
24	06/06/06 - 06/13/06	06/06/06 - 06/13/06	06/06/06 - 06/13/06
25	06/13/06 - 06/20/06	06/13/06 - 06/20/06	06/13/06 - 06/20/06
26	06/20/06 - 06/27/06	06/20/06 - 06/27/06	06/20/06 - 06/27/06
27	06/27/06 - 07/03/06	06/27/06 - 07/03/06	06/27/06 - 07/03/06
28	07/03/06 - 07/10/06	07/03/06 - 07/10/06	07/03/06 - 07/10/06
29	07/10/06 - 07/18/06	07/10/06 - 07/18/06	07/10/06 - 07/18/06
30	07/18/06 - 07/25/06	07/18/06 - 07/25/06	07/18/06 - 07/25/06
31	07/25/06 - 08/01/06	07/25/06 - 08/01/06	07/25/06 - 08/01/06
32	08/01/06 - 08/08/06	08/01/06 - 08/08/06	08/01/06 - 08/08/06
33	08/08/06 - 08/15/06	08/08/06 - 08/15/06	08/08/06 - 08/15/06
34	08/15/06 - 08/22/06	08/15/06 - 08/22/06	08/15/06 - 08/22/06
35	08/22/06 - 08/28/06	08/22/06 - 08/28/06	08/22/06 - 08/28/06
36	08/28/06 - 09/05/06	08/28/06 - 09/05/06	08/28/06 - 09/05/06
37	09/05/06 - 09/12/06	09/05/06 - 09/12/06	09/05/06 - 09/12/06
38	09/12/06 - 09/19/06	09/12/06 - 09/19/06	09/12/06 - 09/19/06
39	09/19/06 - 09/26/06	09/19/06 - 09/26/06	09/19/06 - 09/26/06
40	09/26/06 - 10/03/06	09/26/06 - 10/03/06	09/26/06 - 10/03/06
41	10/03/06 - 10/10/06	10/03/06 - 10/10/06	10/03/06 - 10/10/06
42	10/10/06 - 10/17/06	10/10/06 - 10/17/06	10/10/06 - 10/17/06
43	10/17/06 - 10/24/06	10/17/06 - 10/24/06	10/17/06 - 10/24/06
44	10/24/06 - 10/31/06	10/24/06 - 10/31/06	10/24/06 - 10/31/06
45	10/31/06 - 11/07/06	10/31/06 - 11/07/06	10/31/06 - 11/07/06
46	11/07/06 - 11/14/06	11/07/06 - 11/14/06	11/07/06 - 11/14/06
47	11/14/06 - 11/20/06	11/14/06 - 11/20/06	11/14/06 - 11/20/06
48	11/20/06 - 11/28/06	11/20/06 - 11/28/06	11/20/06 - 11/28/06
49	11/28/06 - 12/05/06	11/28/06 - 12/05/06	11/28/06 - 12/05/06
50	12/05/06 - 12/12/06	12/05/06 - 12/12/06	12/05/06 - 12/12/06
51	12/12/06 - 12/19/06	12/12/06 - 12/19/06	12/12/06 - 12/19/06
52	12/19/06 - 12/26/06	12/19/06 - 12/26/06	12/19/06 - 12/26/06
53	12/26/06 - 01/02/07	12/26/06 - 01/02/07	12/26/06 - 01/02/07





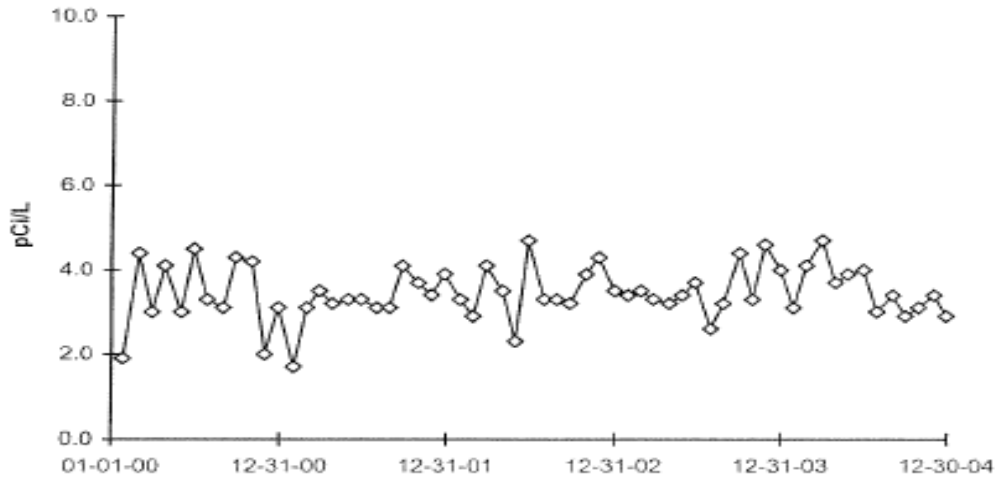
**TABLE C-X.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING STATION, 2006**

**TLD**

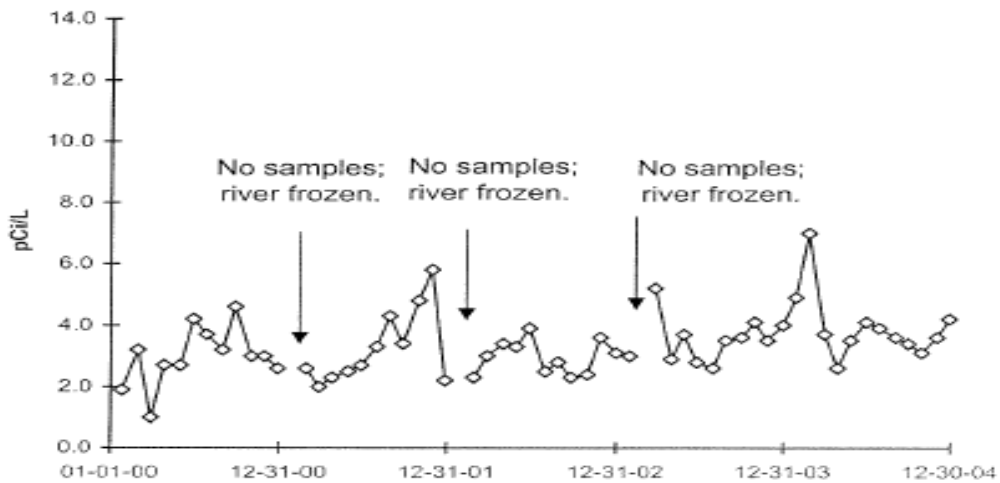
STATION CODE	JAN - MAR	APR - JUN	JUL - SEP	OCT - DEC
BY-201-3	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-201-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-202-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-202-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-203-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-203-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-204-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-204-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-205-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-205-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-206-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-206-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-207-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-207-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-208-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-208-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-209-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-209-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-210-3	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-210-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-211-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-211-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-212-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-212-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-213-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-213-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-214-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-214-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-215-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-215-4	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-216-1	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07
BY-216-2	01/03/06 - 03/28/06	03/28/06 - 06/27/06	06/27/06 - 10/03/06	10/03/06 - 01/02/07

**FIGURE C-1**  
**Surface Water - Gross Beta - Station BY-12 and BY-29 (C)**  
**Collected in the Vicinity of BNGS, 2000 - 2004**

**BY-12 Oregon Pool of Rock River,  
Downstream**

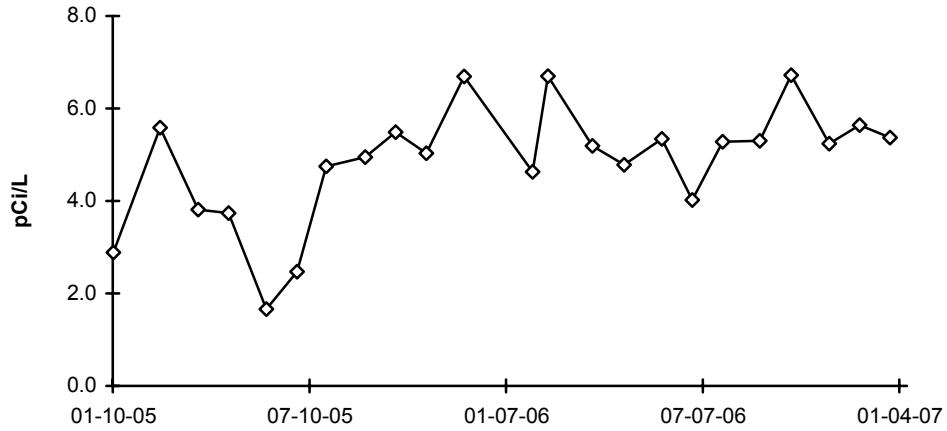


**BY-29 (C) Byron, Upstream**

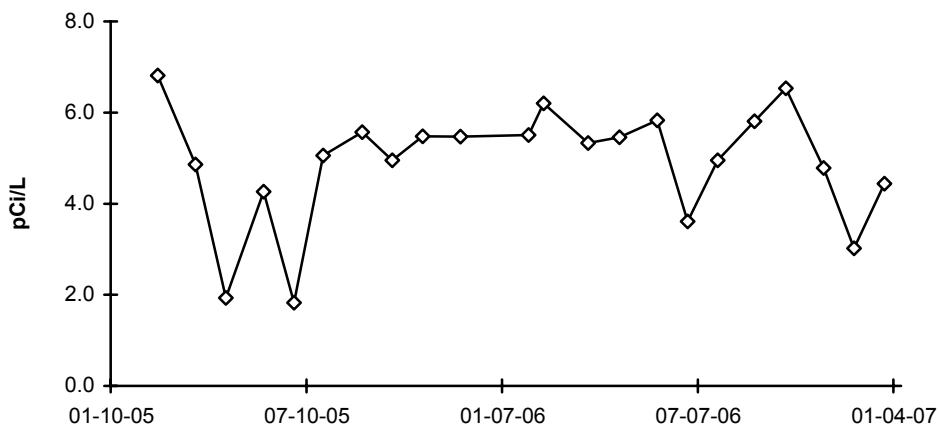


**FIGURE C-1 (cont.)**  
**Surface Water - Gross Beta - Station BY-12 and BY-29 (C)**  
**Collected in the Vicinity of BNGS, 2005 - 2006**

**BY-12 Oregon Pool of Rock River, Downstream**



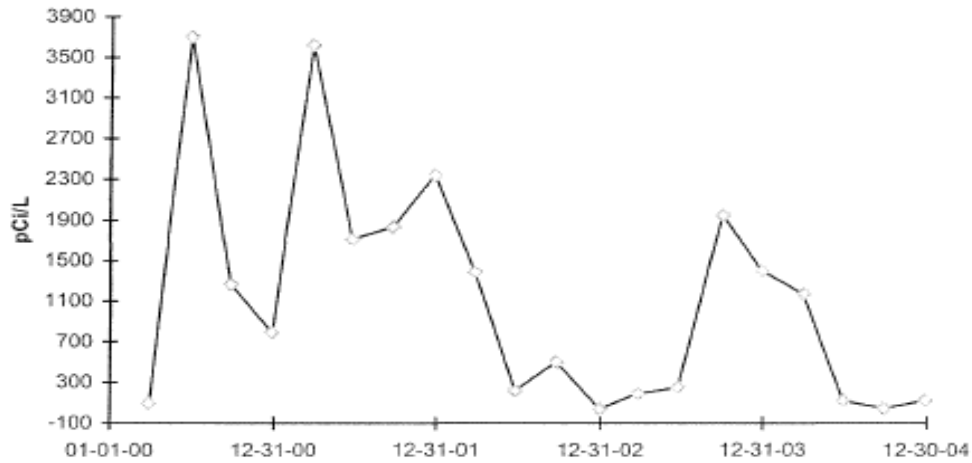
**BY-29 (C) Byron, Upstream**



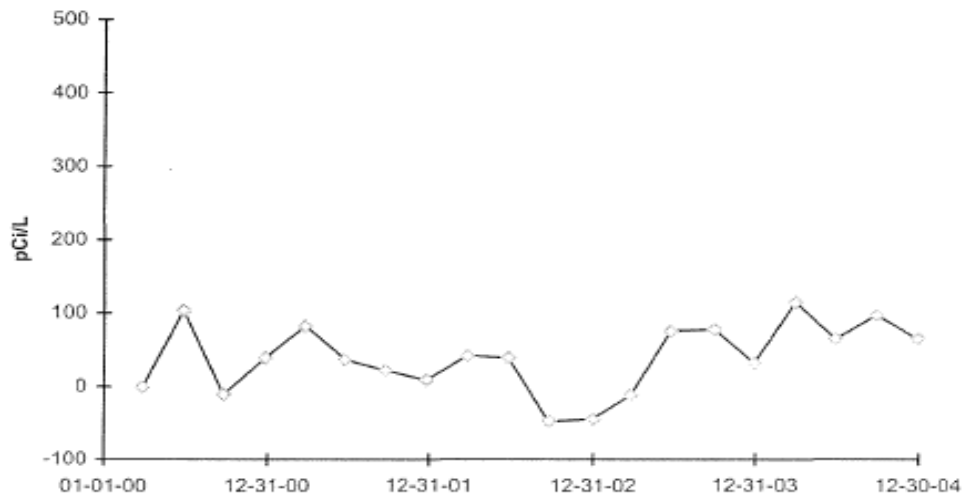
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

**FIGURE C-2**  
**Surface Water - Tritium - Stations BY-12 and BY-29 (C)**  
**Collected in the Vicinity of BNGS, 2000 - 2004**

**BY-12 Oregon Pool of Rock River,  
Downstream**

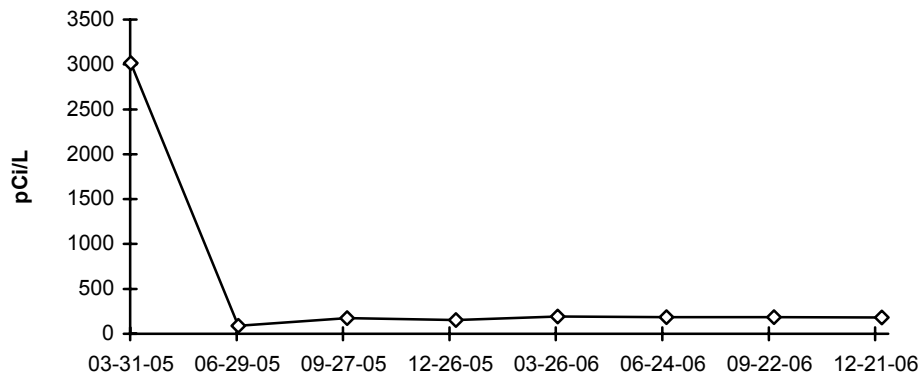


**BY-29(C) Byron, Upstream**

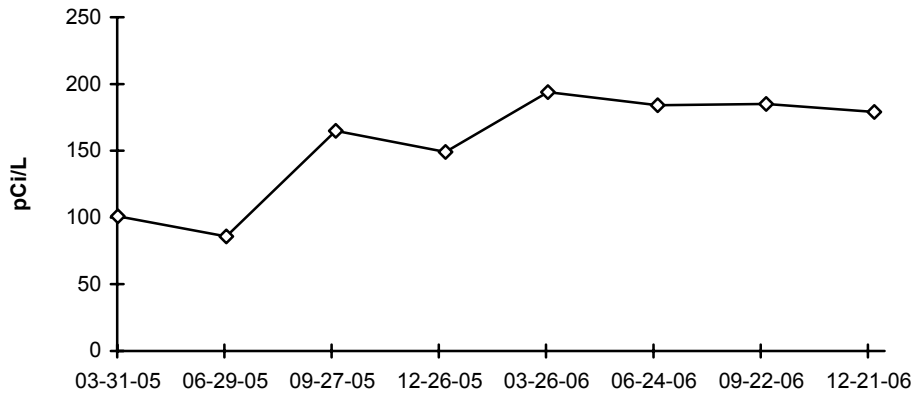


**FIGURE C-2 (cont.)**  
**Surface Water - Tritium - Stations BY-12 and BY-29 (C)**  
**Collected in the Vicinity of BNGS, 2005 - 2006**

**BY-12 Oregon Pool of Rock River, Downstream**



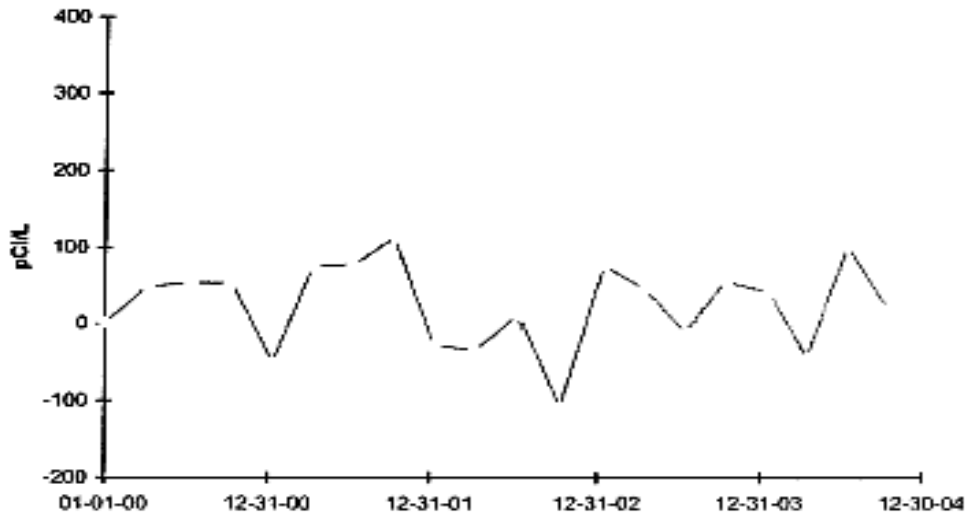
**BY-29 (C) Byron, Upstream**



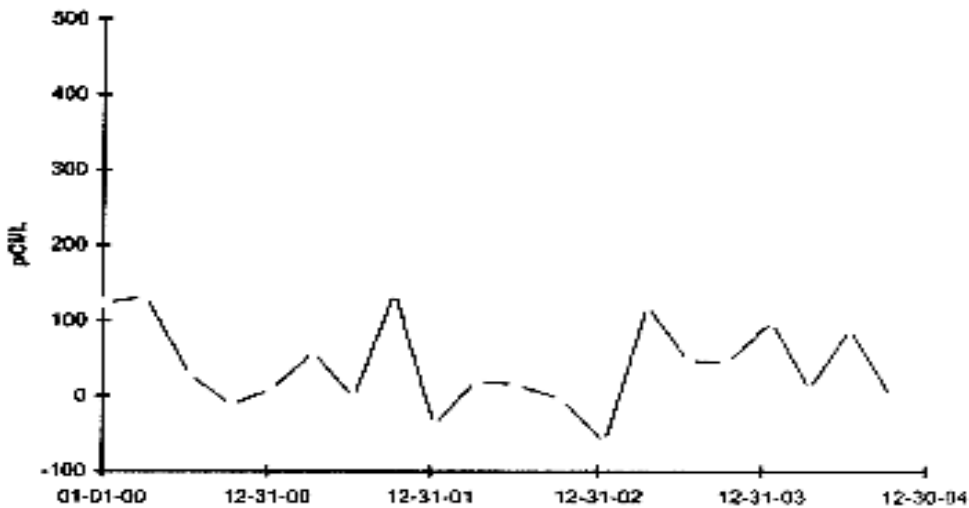
DUE TO VENDOR CHANGE IN 2005, < VALUES ARE LLD VALUES JANUARY THROUGH JUNE 2005 AND MDC VALUES AFTER JUNE 2005

**FIGURE C-3**  
**Ground Water - Tritium - Stations BY-14-1 and BY-18**  
**Collected in the Vicinity of BNGS, 2000 - 2004**

**BY-14-1 3200 N. German Church Road**

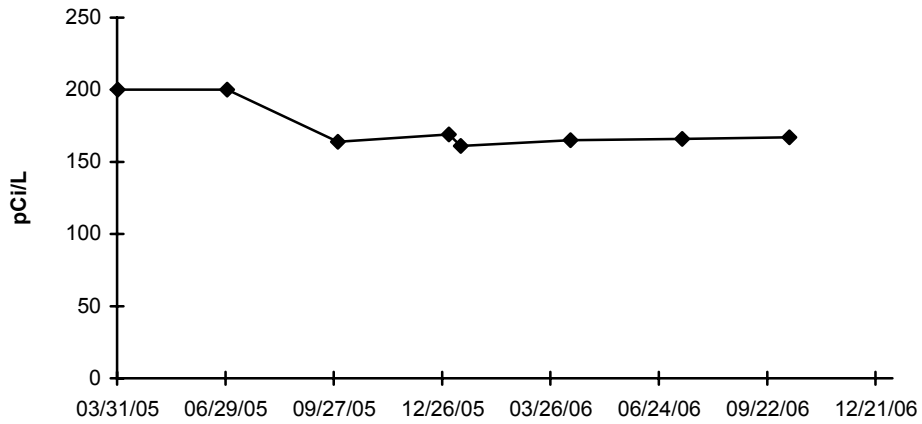


**BY-18 McCoy Farmstead Well**

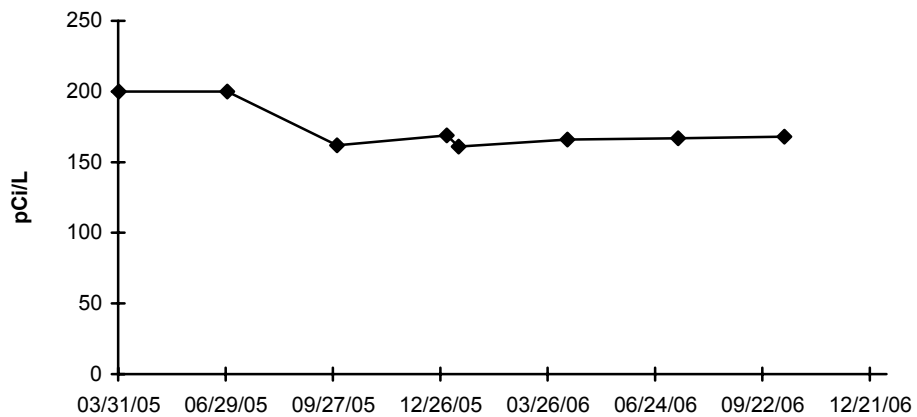


**FIGURE C-3 (cont.)**  
**Ground Water - Tritium - Stations BY-14-1 and BY-18**  
**Collected in the Vicinity of BNGS, 2005 - 2006**

**BY-14-1 3200 N. German Church Road**



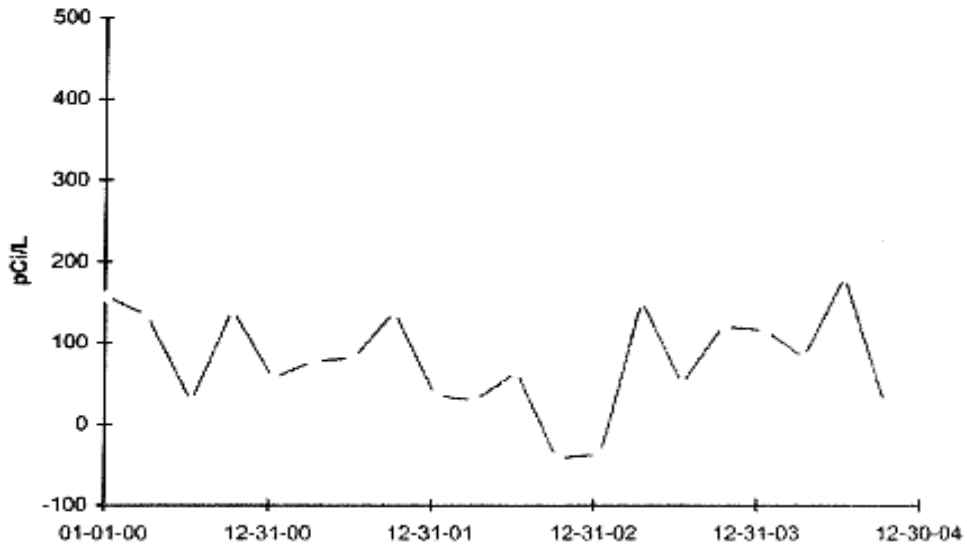
**BY-18 McCoy Farmstead Well**



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

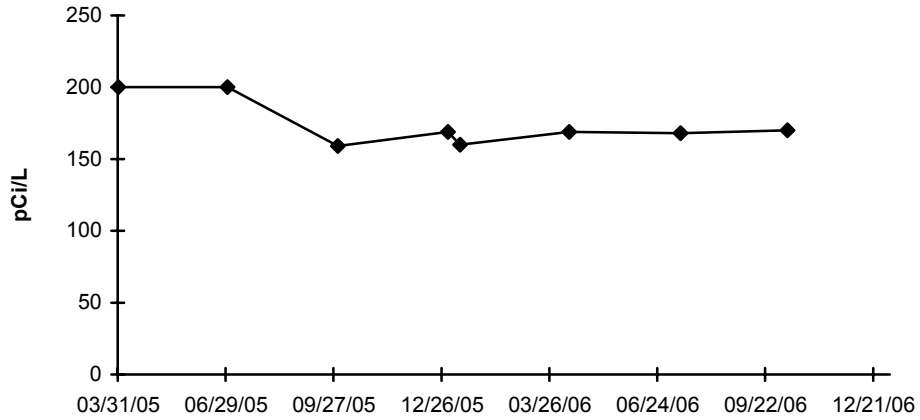


**FIGURE C-4**  
**Ground Water - Tritium - Station BY-32**  
**Collected in the Vicinity of BNGS, 2000 - 2004**  
**BY-32 Wolford Well**



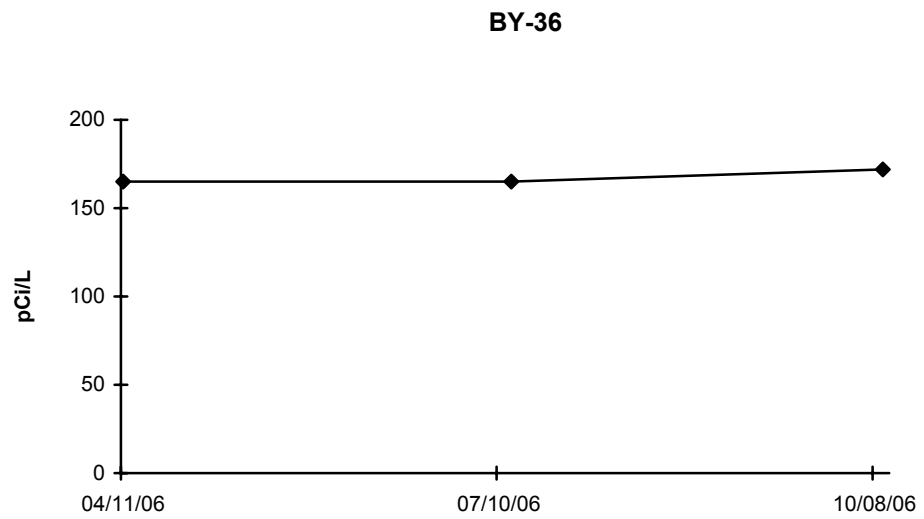
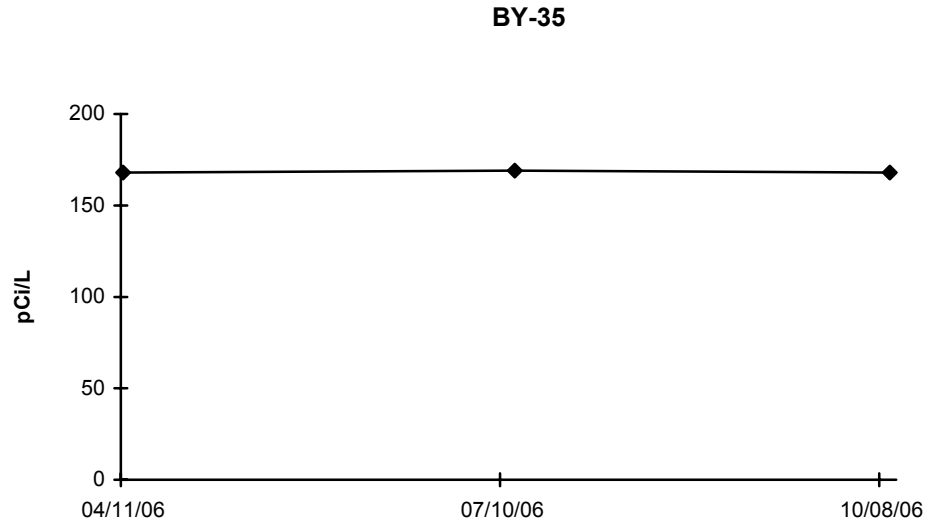
**FIGURE C-4 (cont.)**  
**Ground Water - Tritium - Station BY-32**  
**Collected in the Vicinity of BNGS, 2005 -2006**

**BY-32 Wolford Well**



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

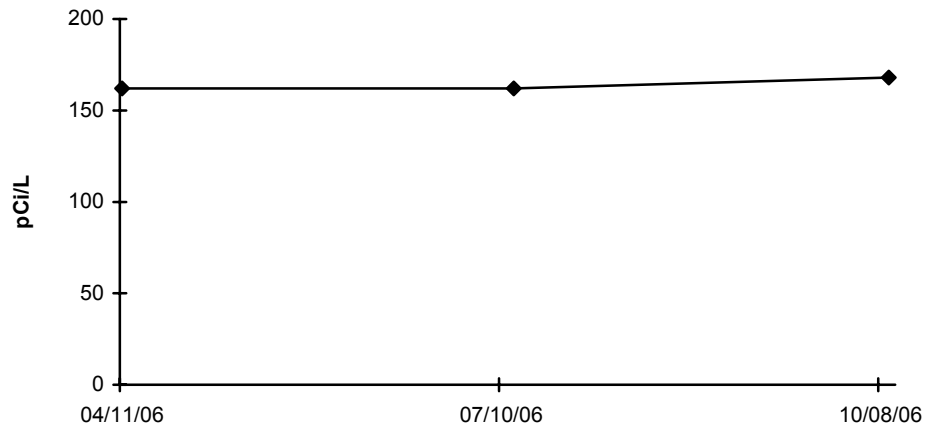
**FIGURE C-5**  
**Ground Water - Tritium - Stations BY-35 and BY-36**  
**Collected in the Vicinity of BNGS, 2006**



NEW STATIONS IN 2006

**FIGURE C-6**  
**Ground Water - Tritium - Stations BY-37**  
**Collected in the Vicinity of BNGS, 2006**

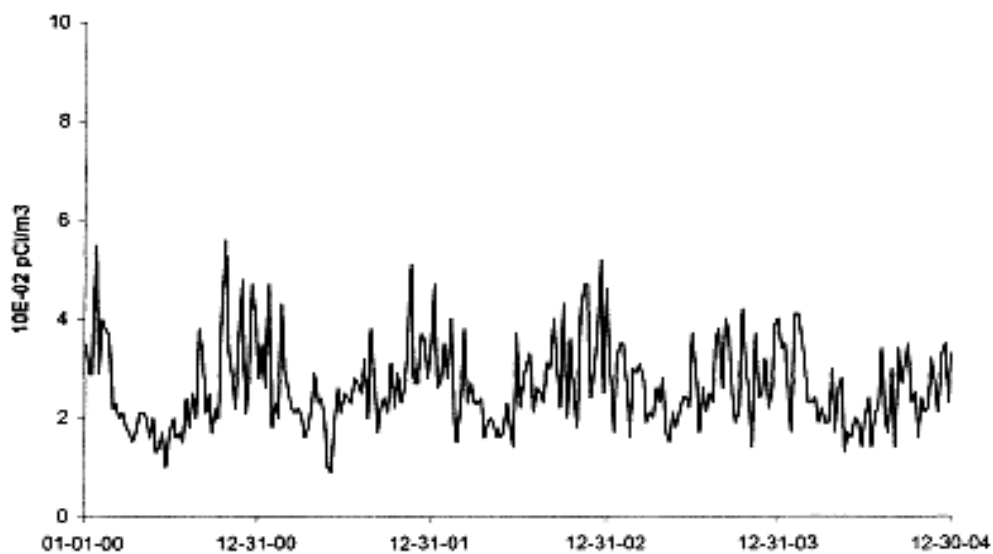
BY-37



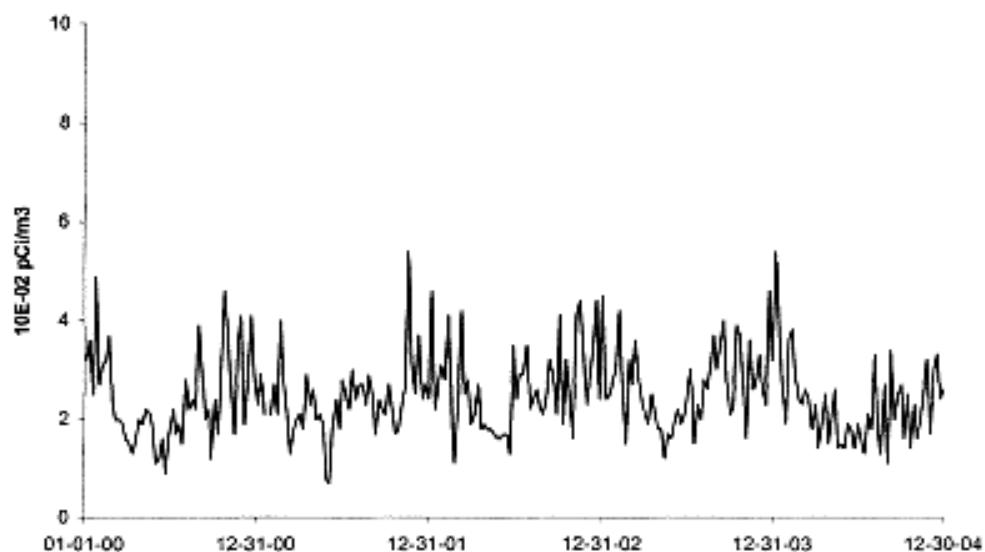
NEW STATION IN 2006

**FIGURE C-7**  
**Air Particulates - Gross Beta - Stations BY-08 (C) and**  
**BY-21 Collected in the Vicinity of BNGS, 2000 - 2004**

**BY-08 (C) Leaf River**

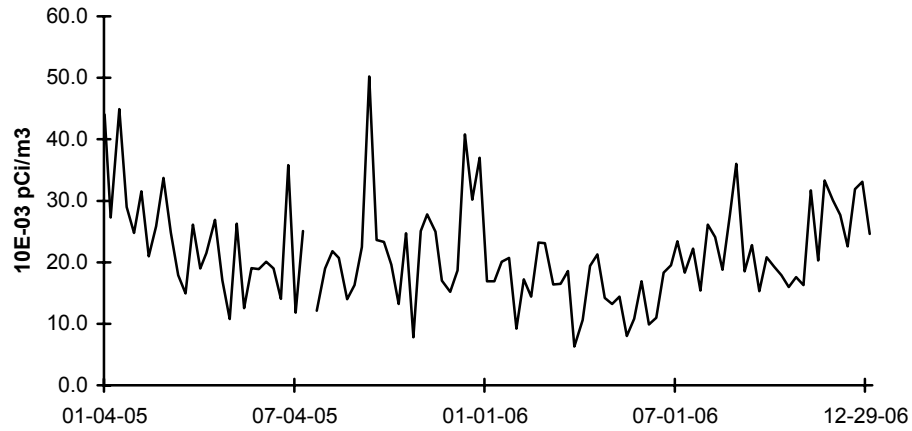


**BY-21 Byron Nearsite N**

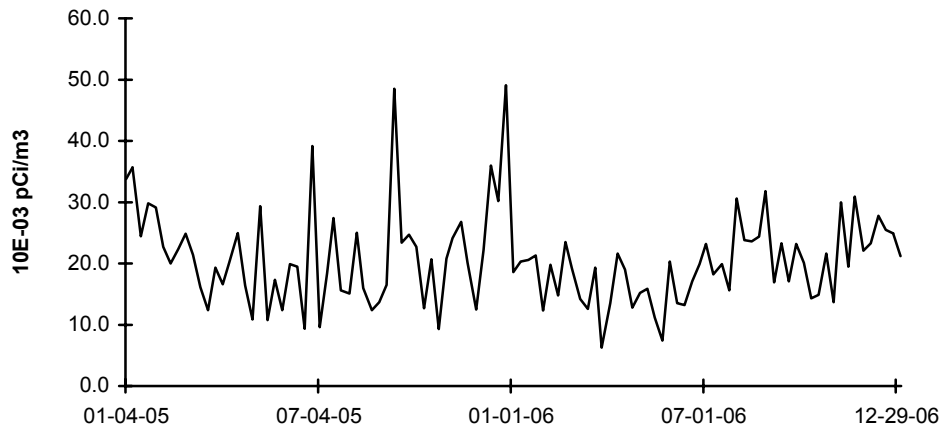


**FIGURE C-7 (cont.)**  
**Air Particulates - Gross Beta - Stations BY-08 (C) and**  
**BY-21 Collected in the Vicinity of BNGS, 2005 - 2006**

**BY-08 (C) Leaf River**



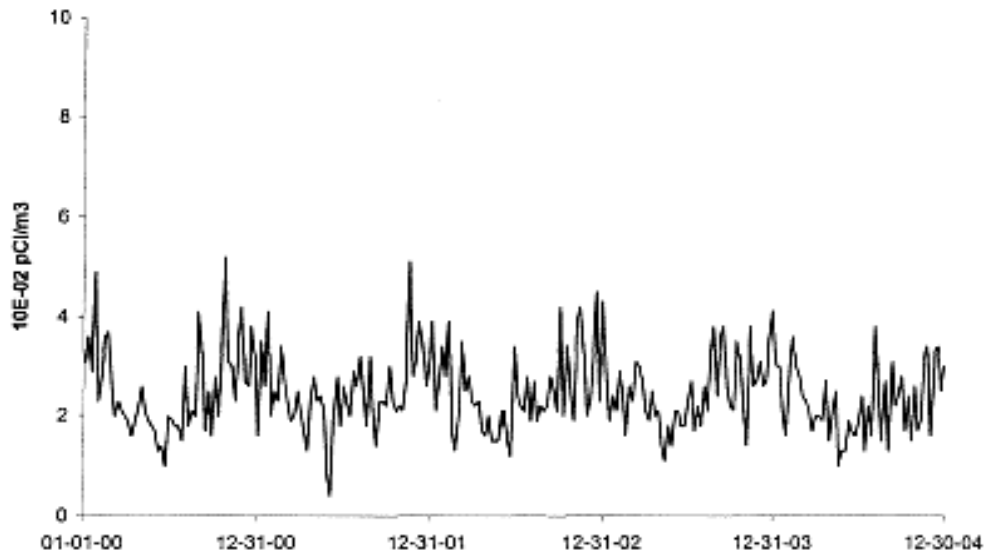
**BY-21 Byron Nearsite N**



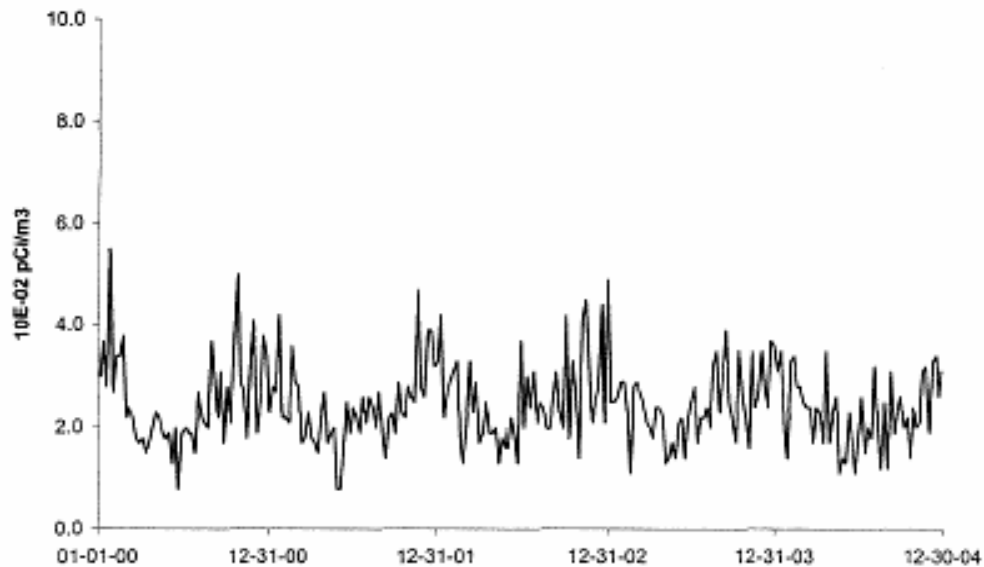
DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

**FIGURE C-8**  
**Air Particulates - Gross Beta - Stations BY-22 and**  
**BY-23 Collected in the Vicinity of BNGS, 2000 - 2004**

**BY-22 Byron Nearsite ESE**

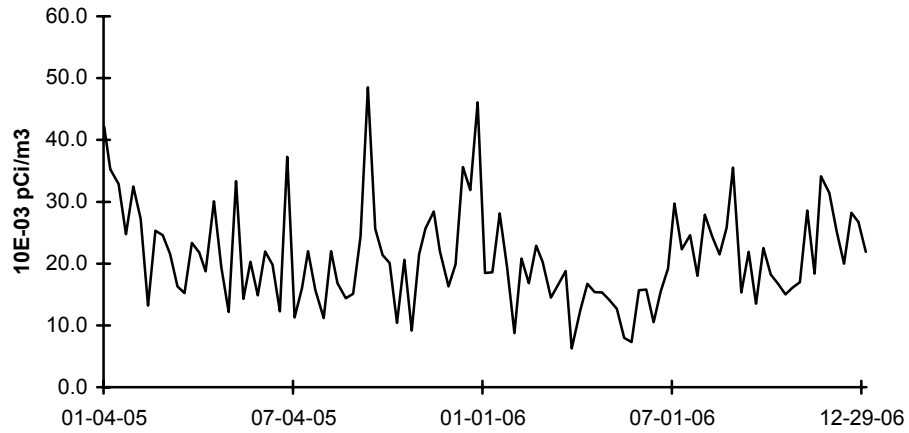


**BY-23 Byron Nearsite S**

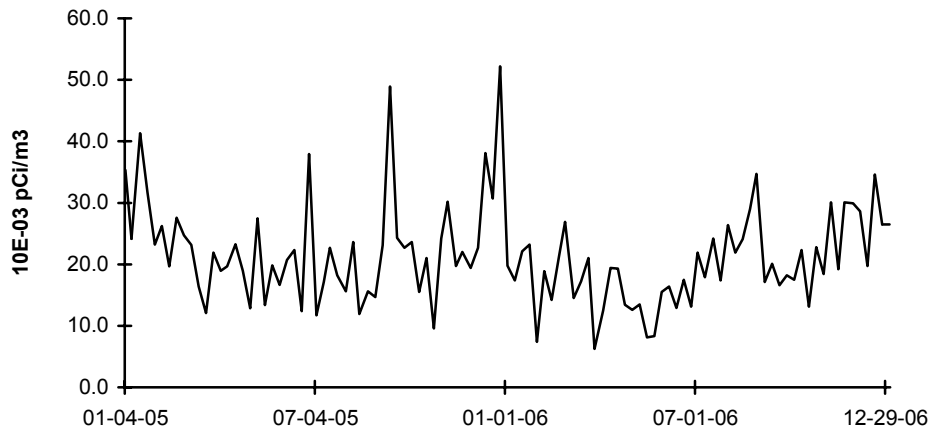


**FIGURE C-8 (cont.)**  
**Air Particulates - Gross Beta - Stations BY-22 and**  
**BY-23 Collected in the Vicinity of BNGS, 2005 - 2006**

**BY-22 Byron Nearsite ESE**



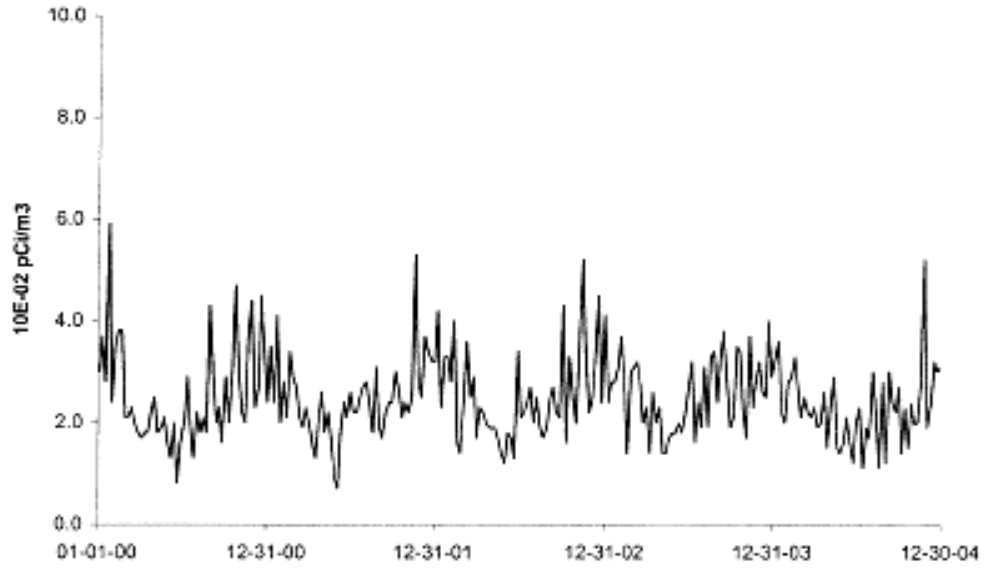
**BY-23 Byron Nearsite S**



DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

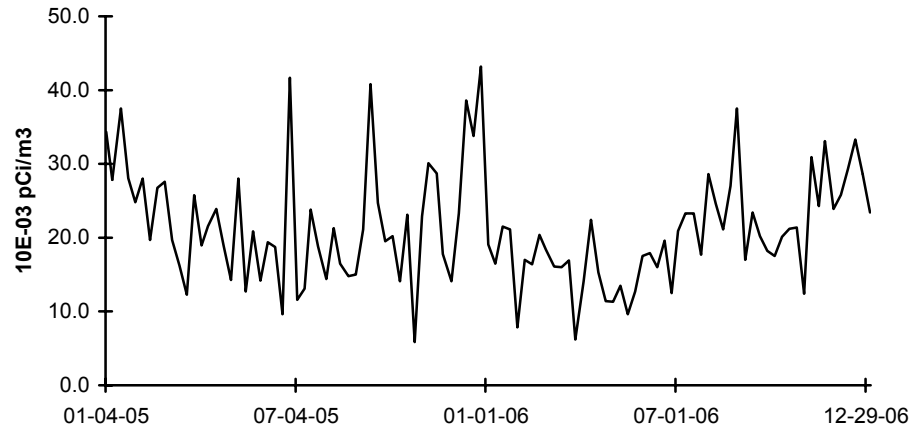


**FIGURE C-9**  
**Air Particulates - Gross Beta - Station BY-24**  
**Collected in the Vicinity of BNGS, 2000 - 2004**  
**BY-24 Byron Nearsite SW**



**FIGURE C-9 (cont.)**  
**Air Particulates - Gross Beta - Station BY-24**  
**Collected in the Vicinity of BNGS, 2005 - 2006**

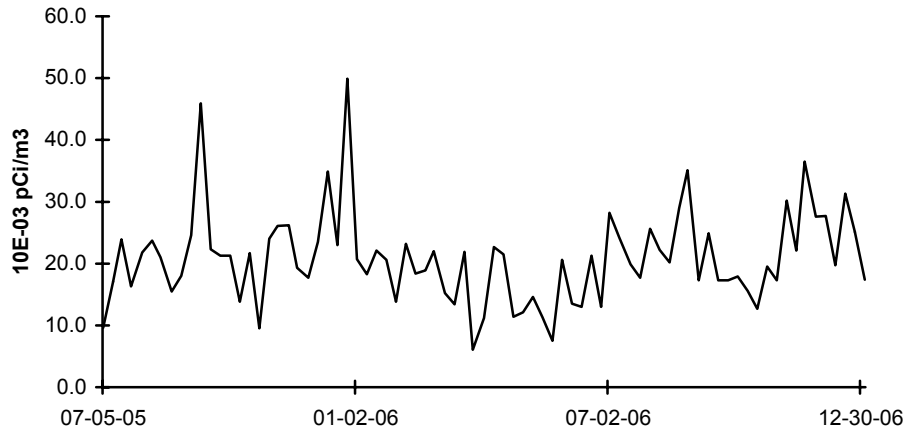
BY-24 Byron Nearsite SW



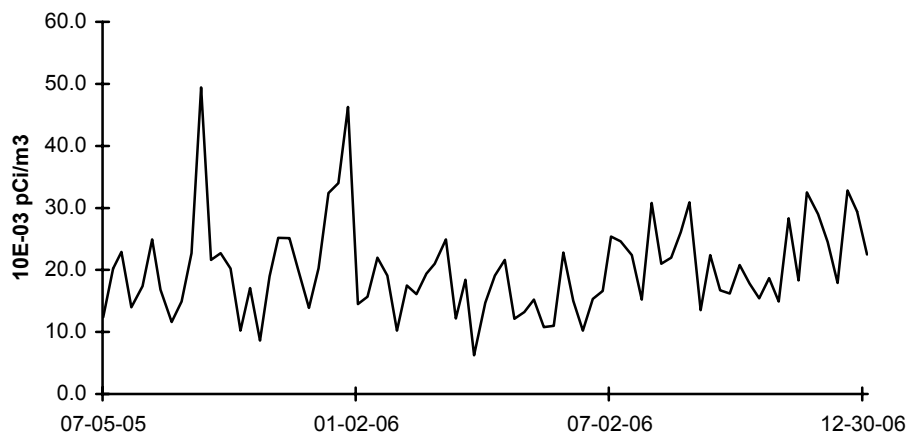
DUE TO VENDOR CHANGE IN 2005, THE REPORTED UNITS CHANGED FROM E-02 PCI/M3 TO E-03 PCI/M3

**FIGURE C-10**  
**Air Particulates - Gross Beta - Stations BY-01 and**  
**BY-04 Collected in the Vicinity of BNGS, 2005 - 2006**

**BY-01**



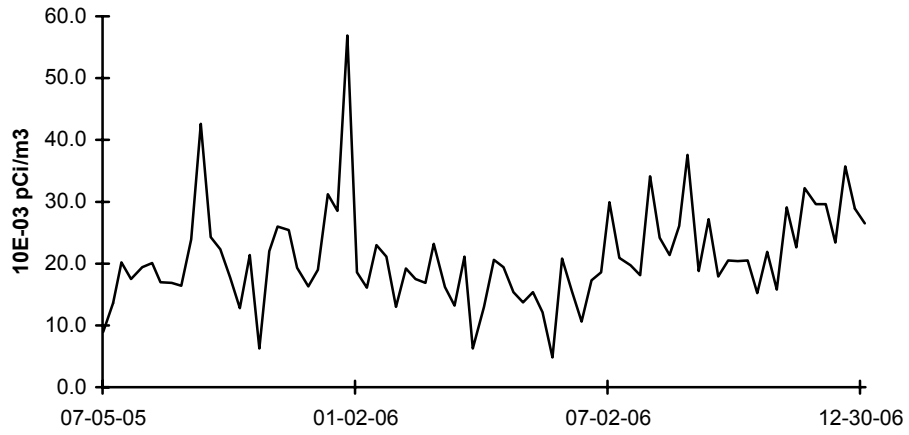
**BY-04**



AIR PARTICULATE GROSS BETA ANALYSES OF FAR FIELD LOCATIONS STARTED IN JULY 2005

**FIGURE C-11**  
**Air Particulates - Gross Beta - Station BY-06**  
**Collected in the Vicinity of BNGS, 2005 - 2006**

BY-06



AIR PARTICULATE GROSS BETA ANALYSES OF FAR FIELD LOCATIONS STARTED IN JULY 2005

## **APPENDIX D**

# **INTER-LABORATORY COMPARISON PROGRAM**



TABLE D-1

**ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM**  
**TELEDYNE BROWN ENGINEERING, 2006**

(PAGE 1 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
March 2006	E4964-396	Milk	Sr-89	pCi/L	91.5	99.2	0.92	A			
			Sr-90	pCi/L	12.2	10.8	1.13	A			
March 2006	E4965-396	Milk	I-131	pCi/L	74.4	78.0	0.95	A			
			Ce-141	pCi/L	95.1	104	0.91	A			
			Cr-51	pCi/L	278	280	0.99	A			
			Cs-134	pCi/L	103	121	0.85	A			
			Cs-137	pCi/L	87.6	88.8	0.99	A			
			Co-58	pCi/L	93.9	105	0.89	A			
			Mn-54	pCi/L	90.0	93.3	0.96	A			
			Fe-59	pCi/L	83.0	86.6	0.96	A			
			Zn-65	pCi/L	178	176	1.01	A			
			Co-60	pCi/L	118	128	0.92	A			
			March 2006	E4967-396	AP	Ce-141	pCi	89.9	74	1.21	W
						Cr-51	pCi	253	200	1.27	W
						Cs-134	pCi	71.5	86.1	0.83	A
						Cs-137	pCi	67.5	63.3	1.07	A
Co-58	pCi	79.7				74.6	1.07	A			
Mn-54	pCi	74.9				67	1.12	A			
Fe-59	pCi	75.5				61.8	1.22	W			
Zn-65	pCi	146				126	1.16	A			
Co-60	pCi	91.2	91	1.00	A						
March 2006	E4966-396	Charcoal	I-131	pCi	87.4	86.2	1.01	A			
June 2006	E5018-396	Milk	Sr-89	pCi/L	118	129	0.91	A			
			Sr-90	pCi/L	9.29	9.74	0.95	A			
June 2006	E5019-396	Milk	I-131	pCi/L	49.9	63.2	0.79	W			
			Ce-141	pCi/L	174	184	0.95	A			
			Cr-51	pCi/L	266	259	1.03	A			
			Cs-134	pCi/L	111	127	0.88	A			
			Cs-137	pCi/L	116	117	0.99	A			
			Co-58	pCi/L	101	100	1.01	A			
			Mn-54	pCi/L	144	146	0.98	A			
			Fe-59	pCi/L	96.7	93.6	1.03	A			
			Zn-65	pCi/L	182	185	0.98	A			
			Co-60	pCi/L	126	129	0.98	A			
			June 2006	E5021-396	AP	Ce-141	pCi	113	124	0.91	A
						Cr-51	pCi	176	174	1.01	A
						Cs-134	pCi	63.7	85.1	0.75	W
						Cs-137	pCi	76.8	79.0	0.97	A
Co-58	pCi	63.1				67.4	0.94	A			
Mn-54	pCi	102				99	1.04	A			
Fe-59	pCi	64.6				62.9	1.03	A			
Zn-65	pCi	131				125	1.05	A			
Co-60	pCi	81.6				86.5	0.94	A			
June 2006	E5020-396	Charcoal	I-131	pCi	65.4	65.9	0.99	A			

TABLE D-1

**ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM  
TELEDYNE BROWN ENGINEERING, 2006**

(PAGE 2 OF 3)

Month/Year	Identification Number	Matrix	Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)			
September 2006	E5120-396	Milk	Sr-89	pCi/L	90.3	89.2	1.01	A			
			Sr-90	pCi/L	11.6	12.4	0.94	A			
September 2006	E5121-396	Milk	I-131	pCi/L	67.8	73.8	0.92	A			
			Ce-141	pCi/L	85.0	86.0	0.99	A			
			Cr-51	pCi/L	263	282	0.93	A			
			Cs-134	pCi/L	74.7	85.0	0.88	A			
			Cs-137	pCi/L	172	175	0.98	A			
			Co-58	pCi/L	107	109	0.98	A			
			Mn-54	pCi/L	110	113	0.98	A			
			Fe-59	pCi/L	46.6	43.7	1.07	A			
			Zn-65	pCi/L	144	145	0.99	A			
			Co-60	pCi/L	127	134	0.95	A			
			September 2006	E5123-396	AP	Ce-141	pCi	67.1	66.4	1.01	A
						Cr-51	pCi	223	217	1.03	A
						Cs-134	pCi	51.7	65.6	0.79	W
Cs-137	pCi	134				135.0	0.99	A			
Co-58	pCi	84.8				84.3	1.01	A			
Mn-54	pCi	95.2				87	1.10	A			
Fe-59	pCi	41.6				33.7	1.23	W			
Zn-65	pCi	123				112	1.10	A			
Co-60	pCi	98.9				103	0.96	A			
September 2006	E5122-396	Charcoal	I-131	pCi	77.7	90.7	0.86	A			
December 2006	E5172-396	Milk	Sr-89	pCi/L	72.4	72.0	1.01	A			
			Sr-90	pCi/L	7.05	5.90	1.19	A			
December 2006	E5173-396	Milk	I-131	pCi/L	71.9	70.8	1.02	A			
			Ce-141	pCi/L	268	294	0.91	A			
			Cr-51	pCi/L	420	433	0.97	A			
			Cs-134	pCi/L	128	147	0.87	A			
			Cs-137	pCi/L	231	237	0.97	A			
			Co-58	pCi/L	82.0	83.8	0.98	A			
			Mn-54	pCi/L	113	111	1.02	A			
			Fe-59	pCi/L	79.8	79.7	1.00	A			
			Zn-65	pCi/L	170	164	1.04	A			
			Co-60	pCi/L	265	281	0.94	A			
			December 2006	E5175-396	AP	Ce-141	pCi	220	210	1.05	A
						Cr-51	pCi	343	309	1.11	A
						Cs-134	pCi	90.8	105	0.86	A
Cs-137	pCi	185				169.0	1.09	A			
Co-58	pCi	65.0				59.7	1.09	A			
Mn-54	pCi	90.6				79	1.15	A			
Fe-59	pCi	70.7				56.7	1.25	W			
Zn-65	pCi	136				117	1.16	A			
Co-60	pCi	208				200	1.04	A			



TABLE D-1

**ANALYTICS ENVIRONMENTAL RADIOACTIVITY CROSS CHECK PROGRAM  
TELEDYNE BROWN ENGINEERING, 2006**

(PAGE 3 OF 3)

Month/Year	Identification		Nuclide	Units	Reported Value (a)	Known Value (b)	Ratio (c) TBE/Analytics	Evaluation (d)
	Number	Matrix						
December 2006	E5174-396	Charcoal	I-131	pCi	77.4	85.4	0.91	A

(1) Impurity detected but not measured by Analytics.

(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, 2006**

(PAGE 1 OF 1)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Control Limits	Evaluation (c)
May 2006	Rad 65	Water	Sr-89	pCi/L	30.2	32.4	23.6 - 41.1	A
			Sr-90	pCi/L	8.74	9.00	0.340 - 17.7	A
			Ba-133	pCi/L	10.9	10.0	1.34 - 18.7	A
			Cs-134	pCi/L	39.7	43.4	34.7 - 52.1	A
			Cs-137	pCi/L	199	214	195 - 233	A
			Co-60	pCi/L	111	113.0	103 - 123	A
			Zn-65	pCi/L	146	152	126 - 178	A
			Gr-A	pCi/L	22.9	21.3	12.1 - 30.5	A
			Gr-B	pCi/L	23.7	23.0	14.3 - 31.7	A
			Ra-226	pCi/L	2.64	3.02	2.23 - 3.81	A
			U-Nat	pCi/L	74.9	69.1	57.1 - 81.1	A
			H-3	pCi/L	7950	8130	6720 - 9540	A
				Rad 65	Water	I-131	pCi/L	18.2
November 2006	Rad 67	Water	Sr-89	pCi/L	40.0	39.9	31.2 - 48.6	A
			Sr-90	pCi/L	16.2	16.0	7.34 - 24.7	A
			Ba-133	pCi/L	65.0	70.2	58.1 - 82.3	A
			Cs-134	pCi/L	27.4	29.9	21.2 - 38.6	A
			Cs-137	pCi/L	74.4	78.2	69.5 - 86.9	A
			Co-60	pCi/L	61.6	62.3	53.6 - 71.0	A
			Zn-65	pCi/L	277	277	229 - 325	A
			Gr-A	pCi/L	23.3	28.7	16.3 - 41.1	A
			Gr-B	pCi/L	22.0	20.9	12.2 - 29.6	A
			U-Nat	pCi/L	3.18	3.20	0.00 - 8.40	A
			H-3	pCi/L	2930	3050	2430 - 3670	A
		Water	I-131	pCi/L	19.8	22.1	16.9 - 27.3	A

(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, 2006

(PAGE 1 OF 3)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
January 2006	06-MaW15	Water	Am-241	Bq/L	1.29	1.30	0.91 - 1.69	A
			Cs-134	Bq/L	79.2	95.1	66.57 - 123.63	A
			Cs-137	Bq/L	-0.188			A
			Co-57	Bq/L	151	166.12	116.28 - 215.96	A
			Co-60	Bq/L	141	153.50	107.45 - 199.55	A
			H-3	Bq/L	988	952.01	666.41 - 1237.61	A
			Fe-55	Bq/L	106.0	129.60	90.72 - 168.48	A
			Mn-54	Bq/L	297	315.00	220.50 - 409.50	A
			Ni-63	Bq/L	61.5	60.34	44.24 - 78.44	A
			Pu-238	Bq/L	0.961	0.91	0.64 - 1.18	A
			Pu-239/240	Bq/L	0.00965	0.00710	(1)	A
			Sr-90	Bq/L	12.6	13.16	9.21 - 17.11	A
			Tc-99	Bq/L	22.5	23.38	16.37 - 30.39	A
			U-234/233	Bq/L	2.20	2.09	1.46 - 2.72	A
			U-238	Bq/L	2.23	2.17	1.52 - 2.82	A
	Zn-65	Bq/L	219	228.16	159.71 - 296.61	A		
	06-GrW15	Water	Gr-A	Bq/L	0.575	0.581	>0.0 - 1.162	A
			Gr-B	Bq/L	1.52	1.13	0.56 - 1.70	A
	06-MaS15	Soil	Am-241	Bq/kg	48.8	57.08	39.96 - 74.20	A
			Cs-134	Bq/kg	15.9			N (2)
Cs-137			Bq/kg	370	339.69	237.78 - 441.60	A	
Co-57			Bq/kg	667	656.29	459.40 - 853.18	A	
Co-60			Bq/kg	478	447.10	312.97 - 581.23	A	
Mn-54			Bq/kg	384	346.77	242.74 - 450.80	A	
Ni-63			Bq/kg	394	323.51	226.46 - 420.56	W	
K-40			Bq/kg	667	604	423 - 785	A	
Sr-90			Bq/kg	253	314.35	220.04 - 408.66	A	
Tc-99			Bq/kg	146	154.76	108.33 - 201.19	A	
Zn-65			Bq/kg	740	657.36	460.15 - 854.57	A	
06-RdF15	AP	Am-241	Bq/sample	0.0850	0.093	0.065 - 0.121	A	
		Cs-134	Bq/sample	2.34	2.934	2.054 - 3.814	A	
		Cs-137	Bq/sample	2.45	2.531	1.772 - 3.290	A	
		Co-57	Bq/sample	3.87	4.096	2.867 - 5.325	A	
		Co-60	Bq/sample	2.12	2.186	1.530 - 2.842	A	
		Mn-54	Bq/sample	0.0206		not spiked	A	
		Pu-238	Bq/sample	0.0766	0.067	0.047 - 0.087	A	
		Pu-239/240	Bq/sample	0.00520	0.00041	(1)	A	
		Sr-90	Bq/sample	0.761	0.792	0.554 - 1.030	A	
		U-234/233	Bq/sample	0.0217	0.020	0.014 - 0.026	A	
		U-238	Bq/sample	0.0220	0.021	0.015 - 0.027	A	
		Zn-65	Bq/sample	3.86	3.423	2.396 - 4.450	A	
06-GrF15	AP	Gr-A	Bq/sample	0.257	0.361	>0.0 - 0.722	A	
		Gr-B	Bq/sample	0.398	0.481	0.241 - 0.722	A	

TABLE D-3

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)  
TELEDYNE BROWN ENGINEERING, 2006

(PAGE 2 OF 3)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)
January 2006	06-RdV15	Vegetation	Am-241	Bq/sample	0.156	0.156	0.109 - 0.203	A
			Cs-134	Bq/sample	0.369		not spiked	A
			Cs-137	Bq/sample	3.15	3.074	2.152 - 3.996	A
			Co-57	Bq/sample	10.1	8.578	6.005 - 11.151	A
			Co-60	Bq/sample	4.69	4.520	3.164 - 5.876	A
			Mn-54	Bq/sample	6.53	6.247	4.373 - 8.121	A
			Pu-238	Bq/sample	0.183	0.137	0.096 - 0.178	N (3)
			Pu-239/240	Bq/sample	0.111	0.164	0.115 - 0.213	N (3)
			Sr-90	Bq/sample	2.22	1.561	1.093 - 2.029	N (3)
			U-234/233	Bq/sample	0.208	0.208	0.146 - 0.270	A
			U-238	Bq/sample	0.176	0.216	0.151 - 0.281	A
			Zn-65	Bq/sample	10.5	9.798	6.859 - 12.737	A
			July 2006	06-MaW16	Water	Am-241	Bq/L	2.09
Cs-134	Bq/L	99.8				112.82	78.98 - 146.66	A
Cs-137	Bq/L	191				196.14	137.30 - 254.98	A
Co-57	Bq/L	203				213.08	149.16 - 277.00	A
Co-60	Bq/L	46.2				47.5	33.2 - 61.8	A
H-3	Bq/L	471				428.85	300.20 - 557.50	A
Fe-55	Bq/L	173				165.4	115.8 - 215.0	A
Ni-63	Bq/L	109				118.62	83.03 - 154.21	A
Pu-238	Bq/L	1.50				1.39	0.97 - 1.81	A
Pu-239/240	Bq/L	2.01				1.94	1.36 - 2.52	A
Sr-90	Bq/L	13.7				15.69	10.98 - 20.40	A
Tc-99	Bq/L	29.0				27.15	19.00 - 35.29	A
U-234/233	Bq/L	2.19				2.15	1.50 - 2.80	A
U-238	Bq/L	2.25				2.22	1.55 - 2.89	A
Zn-65	Bq/L	178				176.37	123.46 - 229.28	A
06-GrW16	Water	Gr-A		Bq/L	1.52	1.033	>0.0 - 2.066	A
		Gr-B		Bq/L	1.18	1.03	0.52 - 1.54	A
06-MaS16	Soil	Am-241		Bq/kg	83.6	105.47	73.83 - 137.11	W
		Cs-134		Bq/kg	393	452.13	316.49 - 587.77	A
		Cs-137		Bq/kg	522	525.73	368.01 - 683.45	A
		Co-57		Bq/kg	636	676.33	473.43 - 879.23	A
		Co-60		Bq/kg	3.78	1.98		A (4)
		Mn-54		Bq/kg	598	594.25	415.98 - 772.52	A
		Ni-63	Bq/kg	571	627.3	470.6 - 874.0	A	
		Pu-238	Bq/kg	71.2	82	57 - 107	A	
		Pu-239/240	Bq/kg	0.487	0.93		A (4)	
		K-40	Bq/kg	615	604	423 - 785	A	
		Sr-90	Bq/kg	178	223.3	156.3 - 290.3	W	
		Tc-99	Bq/kg	175	218.01	152.61 - 283.41	A	
		U-234/233	Bq/kg	119	152.44	106.71 - 198.17	W	
		U-238	Bq/kg	115	158.73	111.11 - 206.35	W	
		Zn-65	Bq/kg	937	903.61	632.53 - 1174.69	A	

TABLE D-3

DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)  
TELEDYNE BROWN ENGINEERING, 2006

(PAGE 3 OF 3)

Month/Year	Identification Number	Media	Nuclide	Units	Reported Value (a)	Known Value (b)	Acceptance Range	Evaluation (c)		
July 2006	06-RdF16	AP	Am-241	Bq/sample	0.124	0.142	0.099 - 0.185	A		
			Cs-134	Bq/sample	2.62	3.147	2.203 - 4.091	A		
			Cs-137	Bq/sample	1.98	1.805	1.263 - 2.346	A		
			Co-57	Bq/sample	2.65	2.582	1.807 - 3.357	A		
			Co-60	Bq/sample	1.63	1.577	1.104 - 2.050	A		
			Mn-54	Bq/sample	2.10	1.92	1.34 - 2.50	A		
			Pu-238	Bq/sample	0.118	0.118	0.083 - 0.153	A		
			Pu-239/240	Bq/sample	0.00822		not spiked	A		
			Sr-90	Bq/sample	0.549	0.62	0.43 - 0.81	A		
			U-234/233	Bq/sample	0.140	0.134	0.094 - 0.174	A		
			U-238	Bq/sample	0.136	0.139	0.097 - 0.181	A		
			Zn-65	Bq/sample	-0.163		not spiked	A		
			06-GrF16	AP	Gr-A	Bq/sample	0.134	0.290	>0.0 - 0.580	A
					Gr-B	Bq/sample	0.358	0.359	0.180 - 0.538	A

(1) False positive test

(2) Evaluated as a false positive by MAPEP although we considered the result a non-detect due to the peak not being identified by the gamma software. For Cs-134, MAPEP suggests the Bi-214 is not being differentiated from the Cs-134 peak.

(3) Sr samples analyzed in triplicate and one high result of 2.43 pCi/kg biased the submitted results on the high side.

We were unable to determine the cause for the higher result. Since we do not analyze vegetation for isotopic Pu, no NCR was initiated for the Pu failure. MAPEP suggest pyrosulfate fusion preparation prior to analysis for isotopic Pu in vegetation samples.

(4) Not detected, reported a statistically zero result. (False positive test)

(a) Teledyne Brown Engineering reported result.

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

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

TABLE D-4

**ERA<sup>(a)</sup> STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM  
ENVIRONMENTAL, INC., 2006**

(Page 1 of 2)

Lab Code	Date	Analysis	Concentration (pCi/L)			Acceptance
			Laboratory Result <sup>b</sup>	ERA Result <sup>c</sup>	Control Limits	
STW-1078	01/16/06	Sr-89	49.9 ± 3.5	50.2	41.5 - 58.9	Pass
STW-1078	01/16/06	Sr-90	31.5 ± 1.5	30.7	22.0 - 39.4	Pass
STW-1079	01/16/06	Ba-133	86.5 ± 4.1	95.0	78.6 - 111.0	Pass
STW-1079	01/16/06	Co-60	96.3 ± 4.1	95.3	86.6 - 104.0	Pass
STW-1079	01/16/06	Cs-134	22.6 ± 3.0	23.1	14.4 - 31.8	Pass
STW-1079	01/16/06	Cs-137	109.0 ± 5.9	111.0	101.0 - 121.0	Pass
STW-1079	01/16/06	Zn-65	198.0 ± 11.2	192.0	159.0 - 225.0	Pass
STW-1080	01/16/06	Gr. Alpha	10.8 ± 1.4	9.6	1.0 - 18.3	Pass
STW-1080	01/16/06	Gr. Beta	56.9 ± 1.9	61.9	44.6 - 79.2	Pass
STW-1081	01/16/06	Ra-226	4.3 ± 0.4	4.6	3.4 - 5.8	Pass
STW-1081	01/16/06	Ra-228	7.1 ± 1.8	6.6	3.7 - 9.5	Pass
STW-1081	01/16/06	Uranium	20.7 ± 0.5	22.1	16.9 - 27.3	Pass
STW-1088	04/10/06	Sr-89	29.0 ± 1.8	32.4	23.7 - 41.1	Pass
STW-1088	04/10/06	Sr-90	8.7 ± 1.0	9.0	0.3 - 17.7	Pass
STW-1089	04/10/06	Ba-133	10.3 ± 0.4	10.0	1.3 - 18.7	Pass
STW-1089	04/10/06	Co-60	114.0 ± 2.8	113.0	103.0 - 123.0	Pass
STW-1089	04/10/06	Cs-134	41.9 ± 1.4	43.4	34.7 - 52.1	Pass
STW-1089	04/10/06	Cs-137	208.0 ± 1.1	214.0	195.0 - 233.0	Pass
STW-1089	04/10/06	Zn-65	154.0 ± 0.8	152.0	126.0 - 178.0	Pass
STW-1090	04/10/06	Gr. Alpha	13.4 ± 1.1	21.3	12.1 - 30.5	Pass
STW-1090	04/10/06	Gr. Beta	27.7 ± 2.1	23.0	14.3 - 31.7	Pass
STW-1091	04/10/06	I-131	22.0 ± 0.3	19.1	13.9 - 24.3	Pass
STW-1092	04/10/06	H-3	7960.0 ± 57.0	8130.0	6720.0 - 9540.0	Pass
STW-1092	04/10/06	Ra-226	2.9 ± 0.4	3.0	2.2 - 3.8	Pass
STW-1092	04/10/06	Ra-228	20.9 ± 1.2	19.1	10.8 - 27.4	Pass
STW-1092	04/10/06	Uranium	68.6 ± 3.4	69.1	57.1 - 81.1	Pass
STW-1094	07/10/06	Sr-89	15.9 ± 0.7	19.7	11.0 - 28.4	Pass
STW-1094	07/10/06	Sr-90	24.3 ± 0.4	25.9	17.2 - 34.6	Pass
STW-1095	07/10/06	Ba-133	94.9 ± 8.9	88.1	72.9 - 103.0	Pass
STW-1095	07/10/06	Co-60	104.0 ± 1.8	99.7	91.0 - 108.0	Pass
STW-1095	07/10/06	Cs-134	48.7 ± 1.3	54.1	45.4 - 62.8	Pass
STW-1095	07/10/06	Cs-137	236.0 ± 3.0	238.0	217.0 - 259.0	Pass
STW-1095	07/10/06	Zn-65	126.0 ± 8.0	121.0	100.0 - 142.0	Pass
STW-1096	07/10/06	Gr. Alpha	10.9 ± 1.0	10.0	1.3 - 18.6	Pass
STW-1096	07/10/06	Gr. Beta	9.7 ± 0.4	8.9	0.2 - 17.5	Pass
STW-1097	07/10/06	Ra-226	11.0 ± 0.5	10.7	7.9 - 13.5	Pass
STW-1097	07/10/06	Ra-228	12.2 ± 0.8	10.7	6.1 - 15.3	Pass
STW-1097	07/10/06	Uranium	43.4 ± 0.1	40.3	33.3 - 47.3	Pass

**TABLE D-4 ERA<sup>(a)</sup> STATISTICAL SUMMARY PROFICIENCY TESTING PROGRAM  
ENVIRONMENTAL, INC., 2006**  
(Page 2 of 2)

Lab Code	Date	Analysis	Concentration (pCi/L)			Acceptance
			Laboratory Result <sup>b</sup>	ERA Result <sup>c</sup>	Control Limits	
STW-1104	10/06/06	Sr-89	38.4 ± 1.3	39.9	31.2 - 45.7	Pass
STW-1104	10/06/06	Sr-90	15.5 ± 0.5	16.0	7.3 - 24.7	Pass
STW-1105	10/06/06	Ba-133	64.9 ± 2.8	70.2	58.1 - 82.3	Pass
STW-1105	10/06/06	Co-60	61.6 ± 1.0	62.3	53.6 - 71.0	Pass
STW-1105	10/06/06	Cs-134	29.0 ± 0.9	29.9	21.2 - 38.6	Pass
STW-1105	10/06/06	Cs-137	77.8 ± 2.4	78.2	69.5 - 86.9	Pass
STW-1105	10/06/06	Zn-65	293.0 ± 2.4	277.0	229.0 - 325.0	Pass
STW-1106	10/06/06	Gr. Alpha	23.9 ± 2.5	28.7	16.3 - 41.1	Pass
STW-1106	10/06/06	Gr. Beta	23.7 ± 1.4	20.9	12.2 - 29.6	Pass
STW-1107 <sup>d</sup>	10/06/06	I-131	28.4 ± 1.2	22.1	16.9 - 27.3	Fail
STW-1108	10/06/06	Ra-226	14.5 ± 0.5	14.4	10.7 - 18.1	Pass
STW-1108	10/06/06	Ra-228	6.6 ± 0.4	5.9	3.3 - 8.4	Pass
STW-1108	10/06/06	Uranium	2.9 ± 0.1	3.2	0.0 - 8.4	Pass
STW-1109	10/06/06	H-3	3000.0 ± 142.0	3050.0	2430.0 - 3670.0	Pass

<sup>a</sup> 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).

<sup>b</sup> Unless otherwise indicated, the laboratory result is given as the mean ± standard deviation for three determinations.

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

<sup>d</sup> The reported result was an average of three analyses, results ranged from 25.36 to 29.23 pCi/L.  
A fourth analysis was performed, result of analysis, 24.89 pCi/L.

**TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)<sup>a</sup>  
ENVIRONMENTAL, INC., 2006**

(Page 1 of 3)

Lab Code <sup>c</sup>	Date	Analysis	Concentration <sup>b</sup>		Control Limits <sup>d</sup>	Acceptance
			Laboratory result	Known Activity		
STVE-1082	01/01/06	Am-241	0.16 ± 0.06	0.16	0.11 - 0.20	Pass
STVE-1082	01/01/06	Co-57	10.40 ± 0.20	8.58	6.00 - 11.15	Pass
STVE-1082	01/01/06	Co-60	5.00 ± 0.20	4.52	3.16 - 5.88	Pass
STVE-1082 <sup>e</sup>	01/01/06	Cs-134	< 0.20	0.00		Pass
STVE-1082	01/01/06	Cs-137	3.40 ± 0.20	3.07	2.15 - 4.00	Pass
STVE-1082	01/01/06	Mn-54	6.90 ± 0.20	6.25	4.37 - 8.12	Pass
STVE-1082 <sup>f</sup>	01/01/06	Pu-238	0.08 ± 0.03	0.14	0.10 - 0.18	Fail
STVE-1082	01/01/06	Pu-239/40	0.17 ± 0.03	0.16	0.11 - 0.21	Pass
STVE-1082	01/01/06	Sr-90	1.40 ± 0.20	1.56	1.09 - 2.03	Pass
STVE-1082	01/01/06	U-233/4	0.24 ± 0.05	0.21	0.15 - 0.27	Pass
STVE-1082	01/01/06	U-238	0.19 ± 0.04	0.22	0.15 - 0.28	Pass
STVE-1082	01/01/06	Zn-65	11.10 ± 0.50	9.80	6.86 - 12.74	Pass
STSO-1083	01/01/06	Am-241	54.60 ± 5.50	57.08	39.96 - 74.20	Pass
STSO-1083	01/01/06	Co-57	762.90 ± 12.70	656.29	459.40 - 853.18	Pass
STSO-1083	01/01/06	Co-60	504.90 ± 3.10	447.10	312.97 - 581.23	Pass
STSO-1083 <sup>e</sup>	01/01/06	Cs-134	< 1.70	0.00		Pass
STSO-1083	01/01/06	Cs-137	406.50 ± 3.70	339.69	237.78 - 441.60	Pass
STSO-1083	01/01/06	K-40	719.20 ± 18.40	604.00	422.80 - 785.20	Pass
STSO-1083	01/01/06	Mn-54	415.60 ± 4.80	346.77	242.74 - 450.80	Pass
STSO-1083	01/01/06	Ni-63	261.40 ± 14.70	323.51	226.46 - 420.56	Pass
STVE-1083 <sup>f</sup>	01/01/06	Pu-238	14.60 ± 2.90	61.15	42.81 - 79.50	Fail
STVE-1083 <sup>f</sup>	01/01/06	Pu-239/40	14.60 ± 2.40	45.85	32.09 - 59.61	Fail
STVE-1083 <sup>f</sup>	01/01/06	U-233/4	13.50 ± 1.70	37.00	25.90 - 48.10	Fail
STVE-1083 <sup>f</sup>	01/01/06	U-238	15.40 ± 1.80	38.85	27.20 - 50.50	Fail
STSO-1083	01/01/06	Zn-65	783.40 ± 7.00	657.36	460.15 - 854.57	Pass
STAP-1084	01/01/06	Gr. Alpha	0.26 ± 0.02	0.36	0.00 - 0.72	Pass
STAP-1084	01/01/06	Gr. Beta	0.51 ± 0.03	0.48	0.24 - 0.72	Pass
STAP-1085	01/01/06	Am-241	0.12 ± 0.02	0.09	0.07 - 0.12	Pass
STAP-1085	01/01/06	Co-57	4.32 ± 0.10	4.10	2.87 - 5.32	Pass
STAP-1085	01/01/06	Co-60	2.24 ± 0.16	2.19	1.53 - 2.84	Pass
STAP-1085	01/01/06	Cs-134	2.96 ± 0.19	2.93	2.05 - 3.81	Pass
STAP-1085	01/01/06	Cs-137	2.64 ± 0.20	2.53	1.77 - 3.29	Pass
STAP-1085 <sup>f</sup>	01/01/06	Pu-238	0.03 ± 0.01	0.07	0.05 - 0.09	Fail
STAP-1085 <sup>e</sup>	01/01/06	Pu-239/40	< 0.01	0.00		Pass
STAP-1085	01/01/06	Sr-90	0.77 ± 0.21	0.79	0.55 - 1.03	Pass
STAP-1085	01/01/06	U-233/4	0.03 ± 0.01	0.02	0.01 - 0.03	Pass
STAP-1085	01/01/06	U-238	0.02 ± 0.01	0.02	0.01 - 0.03	Pass
STAP-1085	01/01/06	Zn-65	3.94 ± 0.44	3.42	2.40 - 4.45	Pass



**TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)<sup>a</sup>  
ENVIRONMENTAL, INC., 2006**

(Page 2 of 3)

Lab Code <sup>c</sup>	Date	Analysis	Concentration <sup>b</sup>			Acceptance
			Laboratory result	Known Activity	Control Limits <sup>d</sup>	
STW-1086	01/01/06	Am-241	1.29 ± 0.05	1.30	0.91 - 1.69	Pass
STW-1086	01/01/06	Co-57	177.10 ± 1.00	166.12	116.28 - 215.96	Pass
STW-1086	01/01/06	Co-60	158.30 ± 1.00	153.50	107.45 - 199.55	Pass
STW-1086	01/01/06	Cs-134	96.40 ± 1.50	95.10	66.57 - 123.63	Pass
STW-1086 <sup>e</sup>	01/01/06	Cs-137	< 0.80	0.00		Pass
STW-1086	01/01/06	Fe-55	102.50 ± 18.10	129.60	90.72 - 168.48	Pass
STW-1086	01/01/06	H-3	956.60 ± 16.50	952.01	666.41 - 1238.00	Pass
STW-1086	01/01/06	Mn-54	335.30 ± 2.20	315.00	220.50 - 409.50	Pass
STW-1086	01/01/06	Ni-63	62.90 ± 3.60	60.34	42.24 - 78.44	Pass
STW-1086	01/01/06	Pu-238	0.96 ± 0.07	0.91	0.70 - 1.30	Pass
STW-1086 <sup>e</sup>	01/01/06	Pu-239/40	< 0.20	0.00		Pass
STW-1086	01/01/06	Sr-90	12.80 ± 1.60	13.16	9.21 - 17.11	Pass
STW-1086	01/01/06	Tc-99	22.30 ± 1.20	23.38	16.37 - 30.39	Pass
STW-1086	01/01/06	U-233/4	2.02 ± 0.12	2.09	1.46 - 2.72	Pass
STW-1086	01/01/06	U-238	2.03 ± 0.12	2.17	1.52 - 2.82	Pass
STW-1086	01/01/06	Zn-65	249.50 ± 3.40	228.16	159.71 - 296.61	Pass
STW-1087	01/01/06	Gr. Alpha	0.59 ± 0.10	0.58	0.00 - 1.16	Pass
STW-1087	01/01/06	Gr. Beta	1.69 ± 0.07	1.13	0.56 - 1.70	Pass
STVE-1098 <sup>e</sup>	07/01/06	Co-57	< 0.14	0.00		Pass
STVE-1098 <sup>g</sup>	07/01/06	Co-60	6.89 ± 0.17	5.81	4.06 - 7.55	Pass
STVE-1098	07/01/06	Cs-134	8.46 ± 0.16	7.49	5.24 - 9.73	Pass
STVE-1098	07/01/06	Cs-137	6.87 ± 0.29	5.50	3.85 - 7.14	Pass
STVE-1098	07/01/06	Mn-54	10.36 ± 0.29	8.35	5.85 - 10.86	Pass
STVE-1098	07/01/06	Zn-65	7.46 ± 0.50	5.98	4.19 - 7.78	Pass
STSO-1099	07/01/06	Am-241	130.00 ± 11.60	105.47	73.83 - 137.11	Pass
STSO-1099	07/01/06	Co-57	784.90 ± 3.80	676.33	473.43 - 879.23	Pass
STSO-1099	07/01/06	Co-60	2.10 ± 0.90	1.98	0.00 - 5.00	Pass
STSO-1099	07/01/06	Cs-134	500.70 ± 7.40	452.13	316.49 - 587.77	Pass
STSO-1099	07/01/06	Cs-137	624.20 ± 4.90	525.73	368.01 - 683.45	Pass
STSO-1099	07/01/06	K-40	701.30 ± 3.40	604.00	423.00 - 785.00	Pass
STSO-1099	07/01/06	Mn-54	699.20 ± 5.20	594.25	415.98 - 772.52	Pass
STSO-1099	07/01/06	Ni-63	614.40 ± 17.10	672.30	470.60 - 874.00	Pass
STSO-1099	07/01/06	Pu-238	79.90 ± 5.80	82.00	57.00 - 107.00	Pass
STSO-1099 <sup>e</sup>	07/01/06	Pu-239/40	< 0.70	0.00		Pass
STSO-1099	07/01/06	U-233/4	150.50 ± 5.90	152.44	106.71 - 198.17	Pass
STSO-1099	07/01/06	U-238	151.60 ± 6.00	158.73	111.11 - 206.35	Pass
STSO-1099	07/01/06	Zn-65	1021.90 ± 9.20	903.61	632.53 - 1175.00	Pass

**TABLE D-5 DOE'S MIXED ANALYTE PERFORMANCE EVALUATION PROGRAM (MAPEP)<sup>a</sup>  
ENVIRONMENTAL, INC., 2006**

(Page 3 of 3)

Lab Code <sup>c</sup>	Date	Analysis	Concentration <sup>b</sup>		Control Limits <sup>d</sup>	Acceptance
			Laboratory result	Known Activity		
STAP-1100	07/01/06	Am-241	0.16 ± 0.03	0.14	0.10 - 0.19	Pass
STAP-1100	07/01/06	Co-57	2.17 ± 0.06	2.58	1.81 - 3.36	Pass
STAP-1100	07/01/06	Co-60	1.38 ± 0.07	1.58	1.10 - 2.05	Pass
STAP-1100	07/01/06	Cs-134	2.52 ± 0.13	3.15	2.20 - 4.09	Pass
STAP-1100	07/01/06	Cs-137	1.64 ± 0.08	1.81	1.26 - 2.35	Pass
STAP-1100	07/01/06	Mn-54	1.76 ± 0.18	1.92	1.34 - 2.50	Pass
STAP-1100	07/01/06	Pu-238	0.09 ± 0.02	0.12	0.08 - 0.15	Pass
STAP-1100	07/01/06	Sr-90	0.66 ± 0.21	0.62	0.43 - 0.81	Pass
STAP-1100	07/01/06	U-233/4	0.15 ± 0.02	0.13	0.09 - 0.17	Pass
STAP-1100	07/01/06	U-238	0.13 ± 0.02	0.14	0.10 - 0.18	Pass
STAP-1100 <sup>e</sup>	07/01/06	Zn-65	< 0.07	0.00		Pass
STAP-1101	07/01/06	Gr. Alpha	0.08 ± 0.03	0.29	0.00 - 0.58	Pass
STAP-1101	07/01/06	Gr. Beta	0.41 ± 0.05	0.36	0.18 - 0.54	Pass
STW-1102	07/01/06	Gr. Alpha	0.76 ± 0.07	1.03	0.00 - 2.07	Pass
STW-1102	07/01/06	Gr. Beta	1.23 ± 0.06	1.03	0.52 - 1.54	Pass
STW-1103	07/01/06	Am-241	1.86 ± 0.09	2.31	1.62 - 3.00	Pass
STW-1103	07/01/06	Co-57	224.10 ± 1.20	213.08	149.16 - 277.00	Pass
STW-1103	07/01/06	Co-60	49.40 ± 0.50	47.50	33.20 - 61.80	Pass
STW-1103	07/01/06	Cs-134	112.70 ± 0.90	112.82	78.97 - 146.66	Pass
STW-1103	07/01/06	Cs-137	206.60 ± 1.40	196.14	137.30 - 254.98	Pass
STW-1103	07/01/06	Fe-55	138.40 ± 5.40	165.40	115.80 - 215.00	Pass
STW-1103	07/01/06	H-3	446.50 ± 11.80	428.85	300.20 - 557.50	Pass
STW-1103 <sup>e</sup>	07/01/06	Mn-54	< 0.30	0.00		Pass
STW-1103	07/01/06	Ni-63	116.70 ± 3.60	118.62	83.03 - 154.21	Pass
STW-1103	07/01/06	Pu-238	1.27 ± 0.07	1.39	0.97 - 1.81	Pass
STW-1103	07/01/06	Pu-239/40	1.67 ± 0.08	1.94	1.36 - 2.52	Pass
STW-1103	07/01/06	Sr-90	16.40 ± 1.90	15.69	10.98 - 20.40	Pass
STW-1103	07/01/06	Tc-99	29.40 ± 1.10	27.15	19.00 - 35.29	Pass
STW-1103	07/01/06	U-233/4	1.97 ± 0.08	2.15	1.50 - 2.80	Pass
STW-1103	07/01/06	U-238	1.97 ± 0.08	2.22	1.55 - 2.89	Pass
STW-1103	07/01/06	Zn-65	192.50 ± 2.40	176.37	123.46 - 229.28	Pass

<sup>a</sup> Results obtained by Environmental, Inc., Midwest Laboratory as a participant in the Department of Energy's Mixed Analyte Performance Evaluation Program, Idaho Operations office, Idaho Falls, Idaho

<sup>b</sup> Results are reported in units of Bq/kg (soil), Bq/L (water) or Bq/total sample (filters, vegetation).

<sup>c</sup> Laboratory codes as follows: STW (water), STAP (air filter), STSO (soil), STVE (vegetation).

<sup>d</sup> MAPEP results are presented as the known values and expected laboratory precision (1 sigma, 1 determination) and control limits as defined by the MAPEP.

<sup>e</sup> Included in the MAPEP as a false positive.

<sup>f</sup> Difficulties with the analyses for transuranics isotopes in solid samples (Filters, Soil and vegetation), were attributed to incomplete dissolution of the samples. Soil samples were repeated, results of reanalyses: Pu-238, 53.1 ± 5.3 bq/kg. Pu-239/240, 42.4 ± 4.7 bq/kg. U-233/4, 33.3 ± 3.5 bq/kg. U-238, 35.5 ± 3.6 bq/kg.

<sup>g</sup> The July vegetation sample was provided in two separate geometries, (100 ml. and 500 ml.). Results reported here used the 500 ml. standard size geometry. Results for the 100 ml. geometry showed approximately a 15% higher bias.

## **APPENDIX E**



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## INTRODUCTION

Liquid effluents from Byron Station are released to the Rock 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 weekly grab samples and grab samples of batch releases prior to the release of noble gases as well as continuously collected composite samples of iodine and particulate radioactivity 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 isotopic composition of effluents and meteorological data.

Environmental monitoring is conducted by sampling at indicator and control (background) locations in the vicinity of Byron Station to measure changes in radiation or radioactivity levels that may be attributable to station operation. If significant changes attributable to Byron Station are measured, these changes are correlated with effluent releases. External gamma radiation exposure from noble gases and internal dose from I-131 in milk are the critical pathways at this site; however, an environmental monitoring program is conducted which also includes other pathways.

## SUMMARY

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

The Total Effective Dose Equivalent (TEDE) due to licensed activities at Byron Station calculated for the maximally-exposed individual for the period is 3.80E-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.

There were no additional operational controls implemented which affected the areas of radiological effluents in 2006.

There were no measurements which exceeded the reporting levels, including any which would not have been attributable to station effluents.

The results of the current radiological environmental monitoring program are approximately the same as those found during the pre-operational studies conducted at Byron Station.



## 1.0 EFFLUENTS

### 1.1 Gaseous Effluents to the Atmosphere

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

A total of  $1.44\text{E}+01$  curies of fission and activation gases were released with a maximum quarterly release rate of  $1.30\text{E}+00$   $\mu\text{Ci}/\text{sec}$ , for both units.

A total of  $2.50\text{E}-04$  curies of 1-131 were released during the year with a maximum average quarterly release rate of  $1.80\text{E}-05$   $\mu\text{Ci}/\text{sec}$ .

A total of  $1.03\text{E}-05$  curies were released as airborne particulate matter with a maximum average release rate of  $9.26\text{E}-07$   $\mu\text{Ci}/\text{sec}$ . Alpha-emitting radionuclides were below detectable limits

A total of  $3.27\text{E}+01$  curies of tritium were released with a maximum average quarterly release rate of  $9.81\text{E}-01$   $\text{uCi}/\text{sec}$ .

### 1.2 Liquids Released to Rock River

A total of  $2.34\text{E}+10$  liters of radioactive liquid wastes (prior to dilution) containing  $2.04\text{E}-02$  curies (excluding tritium, noble gases and alpha) were discharged from the station. These wastes were released at a maximum quarterly average concentration of  $1.35\text{E}-09$   $\mu\text{Ci}/\text{ml}$ . A total of  $2.26\text{E}+03$  curies of tritium were released. Quarterly release totals of principal radionuclides in liquid effluents are given in Table 1.2-1.

## 2.0 SOLID RADIOACTIVE WASTE

Solid radioactive wastes were shipped by truck. For detail, refer to Bryon Station 2006 Effluent 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 whole body dose rates are shown in Table 3.1-1 and were calculated based on measured release rates, isotopic composition of the noble gases, and average meteorological data for the period. Dose rates based on concurrent meteorological data are shown in Table 3.4-1. Based on measured effluents and average meteorological data, the maximum total body dose to an individual would be  $5.52\text{E-}03$  mrem for the year (Table 3.1-1), with an occupancy or shielding factor of 0.7 included. The maximum total body dose based on measured effluents and concurrent meteorological data would be  $3.60\text{E-}05$  mrem (Table 3.4-1). The maximum gamma air dose was  $6.44\text{E-}04$  mrad (Table 3.1-1) based on measured effluents and average meteorological data, and  $4.98\text{E-}05$  mrad based on concurrent meteorological data (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 "semi-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  $7.0\text{ mg/cm}^2$  and an occupancy factor of 1.0 is used. The skin dose based on concurrent meteorological data for the year was  $1.02\text{E-}04$  mrem (Table 3.4-1)

The maximum offsite beta air dose for the year based on measured effluents and average meteorological data, was  $4.44\text{E-}04$  mrad (Table 3.1-1). The beta air dose based on concurrent meteorological data was  $2.48\text{E-}04$  mrad (Table

3.4-1).

### 3.1.2 Radioactive Iodine

The human thyroid exhibits a significant capacity to concentrate ingested or inhaled iodine. The minimal levels of radioiodine, I-131, released during routine operation of the station, may be made available to man resulting in a dose to the thyroid. The principal pathway of interest for this radionuclide is ingestion of radioiodine in milk. Calculations made for 2006 and previous years indicate that contributions to doses from inhalation of I-131 and I-133 and ingestion of I-133 in milk are negligible.

#### 3.1.2.1 Dose to Thyroid

The hypothetical thyroid dose to the maximum exposed individual living near the station via ingestion of milk was calculated. The radionuclide considered was I-131 and the source of milk was taken to be the nearest dairy farm with the cows pastured from May through October. The maximum thyroid dose was less than 1.44E-01 mrem during the year (Table 3.1-1[infant]).

### 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 3.74E-01 mrem (adult) and no organ dose exceeded 6.08E-01 mrem (Table 3.2-1 [adult]).

### 3.3 Assessment of Dose to Member of Public

During the period January to December, 2006, Byron Station did not exceed the below limits as shown in Table 3.1-1 and Table 3.2-1 (based on yearly average meteorological data), and Table 3.4-1

(based on concurrent meteorological data):

- The RETS limits on dose or dose commitment to a member of the public 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 quarter; 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 mrad 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).

#### 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 250' level and wind speed class by atmospheric stability class determined from the temperature difference between the 250' and 30' levels. Data recovery for all measurements on the tower as 99.7% during 2006 (Table 3.4-1).

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

## **APPENDIX E-1**

### **DATA TABLES AND FIGURES**



**Table 1.1-1**

Byron Station Unit One 2006

EFFLUENT AND WASTE DISPOSAL REPORT

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2006	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	7.12E-01	7.84E-01	1.03E+01	2.12E-01	1.20E+01
2. Avg. Release Rate	uCi/sec	9.16E-02	9.97E-02	1.30E+00	2.67E-02	3.81E-01
Iodine-131						
1. Total Release	Ci	9.46E-06	9.51E-06	6.43E-05	4.91E-06	8.82E-05
2. Avg. Release Rate	uCi/sec	1.22E-06	1.21E-06	8.09E-06	6.18E-07	2.80E-06
Particulates Half Life >= 8 days						
1. Total Release	Ci	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
2. Avg. Release Rate	uCi/sec	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Tritium						
1. Total Release	Ci	2.04E-01	4.20E-02	2.51E+00	5.45E+00	8.20E+00
2. Avg. Release Rate	uCi/sec	2.62E-02	5.34E-03	3.16E-01	6.86E-01	2.60E-01

Byron Station Unit Two 2006

EFFLUENT AND WASTE DISPOSAL REPORT

TABLE 1A

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2006	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	5.91E-01	6.34E-01	1.01E+00	1.73E-01	2.41E+00
2. Avg. Release Rate	uCi/sec	7.60E-02	8.06E-02	1.27E-01	2.18E-02	7.64E-02
Iodine-131						
1. Total Release	Ci	8.86E-06	2.50E-06	1.43E-04	8.10E-06	1.62E-04
2. Avg. Release Rate	uCi/sec	1.14E-06	3.18E-07	1.80E-05	1.02E-06	5.14E-06
Particulates Half Life >= 8 days						
1. Total Release	Ci	7.20E-06	0.00E+00	2.88E-06	1.73E-07	1.03E-05
2. Avg. Release Rate	uCi/sec	9.26E-07	0.00E+00	3.62E-07	2.18E-08	3.27E-07
Tritium						
1. Total Release	Ci	6.06E-01	2.24E-01	1.59E+01	7.80E+00	2.45E+01
2. Avg. Release Rate	uCi/sec	7.79E-02	2.85E-02	2.00E+00	9.81E-01	7.77E-01

**Table 1.2-1**

Byron Station Unit One 2006

EFFLUENT AND WASTE DISPOSAL REPORT  
TABLE 2A  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2006	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	4.37E-04	1.55E-03	5.01E-03	3.24E-03	1.02E-02
2. Avg. Diluted Conc.	uCi/ml	2.11E-10	5.34E-10	1.35E-09	1.08E-09	8.71E-10
Tritium						
1. Total Release	Ci	4.59E+01	2.35E+02	6.93E+02	1.60E+02	1.13E+03
2. Avg. Diluted Conc.	uCi/ml	2.21E-05	8.10E-05	1.87E-04	5.32E-05	9.66E-05
Dissolved and Entrained Gases						
1. Total Release	Ci	5.24E-06	2.71E-04	2.13E-03	7.59E-04	3.16E-03
2. Avg. Diluted Conc.	uCi/ml	2.52E-12	9.34E-11	5.76E-10	2.52E-10	2.70E-10
Volume of liquid waste	liters	2.09E+09	2.90E+09	3.70E+09	3.01E+09	1.17E+10
Volume of dil. water	liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Byron Station Unit Two 2006

EFFLUENT AND WASTE DISPOSAL REPORT  
TABLE 2A  
LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

REPORT FOR 2006	Units	QTR 1	QTR 2	QTR 3	QTR 4	YEAR
Fission and Activation Gases						
1. Total Release	Ci	4.37E-04	1.55E-03	5.01E-03	3.24E-03	1.02E-02
2. Avg. Diluted Conc.	uCi/ml	2.11E-10	5.34E-10	1.35E-09	1.08E-09	8.71E-10
Tritium						
1. Total Release	Ci	4.59E+01	2.35E+02	6.93E+02	1.60E+02	1.13E+03
2. Avg. Diluted Conc.	uCi/ml	2.21E-05	8.10E-05	1.87E-04	5.32E-05	9.66E-05
Dissolved and Entrained Gases						
1. Total Release	Ci	5.24E-06	2.71E-04	2.13E-03	7.59E-04	3.16E-03
2. Avg. Diluted Conc.	uCi/ml	2.52E-12	9.34E-11	5.76E-10	2.52E-10	2.70E-10
Volume of liquid waste	liters	2.08E+09	2.90E+09	3.70E+09	3.01E+09	1.17E+10
Volume of dil. water	liters	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00



**Table 3.1-1**

Byron Station Unit One 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
 GASEOUS DOSE SUMMARY  
 -----

Report for: 2006  
 Unit One

=== I&P DOSE LIMIT ANALYSIS ===== ANNUAL 2006 =====

Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2006 - Admin. Any Organ	INFANT	THYROID	7.19E-02	1.13E+01	6.39E-01
2006 - Admin. Total Body	CHILD	TBODY	2.76E-03	1.05E+01	2.63E-02
2006 - T.Spc. Any Organ	INFANT	THYROID	7.19E-02	1.50E+01	4.79E-01

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Grs/Goat/Milk (GMILK)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	2.92E+00
CR-51	5.71E-06
CO-58	7.41E-05
CO-60	7.64E-03
I-131	9.63E+01
I-132	7.13E-03
I-133	7.58E-01

2006 - T.Spc. Total Body	CHILD	TBODY	2.76E-03	1.50E+01	1.84E-02
--------------------------	-------	-------	----------	----------	----------

Receptor: 5 Composite Crit. Receptor - IP  
 Distance: 0.00 (meters) Compass Point: NA

Critical Pathway: Vegetation (VEG)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	9.79E+01
CR-51	1.53E-04
CO-58	3.40E-03
CO-60	2.11E-01
I-131	1.89E+00
I-132	1.27E-02
I-133	2.08E-02

**Table 3.1-1 (continued)**

Byron Station Unit One 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
 GASEOUS DOSE SUMMARY  
 -----

Report for: 2006  
 Unit One

=== NG DOSE LIMIT ANALYSIS =====		ANNUAL 2006 =====		
Annual - Limit		Dose (mrad)	Limit (mrad)	Max % of Limit
2006	- Admin. Gamma	3.22E-04	7.50E+00	4.30E-03
2006	- Admin. Beta	2.22E-04	1.50E+01	1.48E-03
2006	- T.Spc. Gamma	3.22E-04	1.00E+01	3.22E-03

Receptor: 4 Composite Crit. Receptor - NG  
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	2.59E+00
KR-85	2.54E-02
KR-85M	2.05E-02
XE-135	7.82E+00
XE-133M	8.18E-02
KR-88	6.21E-04
XE-131M	9.44E-02
XE-133	8.94E+01

2006	- T.Spc. Beta	2.22E-04	2.00E+01	1.11E-03
------	---------------	----------	----------	----------

Receptor: 4 Composite Crit. Receptor - NG  
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	3.25E-01
KR-85	1.02E+00
KR-85M	1.17E-02
XE-135	3.57E+00
XE-133M	1.32E-01
KR-88	4.26E-05
XE-131M	2.39E-01
XE-133	9.47E+01

Table 3.1-1 (continued)

Byron Station Unit Two 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
 GASEOUS DOSE SUMMARY  
 -----

Report for: 2006  
 Unit Two

=== I&P DOSE LIMIT ANALYSIS =====			ANNUAL 2006 =====		
Annual - Limit	Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2006 - Admin. Any Organ	INFANT	THYROID	7.19E-02	1.13E+01	6.39E-01
2006 - Admin. Total Body	CHILD	TBODY	2.76E-03	1.05E+01	2.63E-02
2006 - T.Spc. Any Organ	INFANT	THYROID	7.19E-02	1.50E+01	4.79E-01
Receptor: 5 Composite Crit. Receptor - IP					
Distance: 0.00 (meters)			Compass Point: NA		

Critical Pathway: Grs/Goat/Milk (GMILK)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	2.92E+00
CR-51	5.71E-06
CO-58	7.41E-05
CO-60	7.64E-03
I-131	9.63E+01
I-132	7.13E-03
I-133	7.58E-01

2006 - T.Spc. Total Body	CHILD	TBODY	2.76E-03	1.50E+01	1.84E-02
Receptor: 5 Composite Crit. Receptor - IP					
Distance: 0.00 (meters)			Compass Point: NA		

Critical Pathway: Vegetation (VEG)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	9.79E+01
CR-51	1.53E-04
CO-58	3.40E-03
CO-60	2.11E-01
I-131	1.89E+00
I-132	1.27E-02
I-133	2.08E-02

**Table 3.1-1 (continued)**

Byron Station Unit Two 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
 GASEOUS DOSE SUMMARY  
 -----

Report for: 2006  
 Unit Two

=== NG DOSE LIMIT ANALYSIS ===== ANNUAL 2006 =====		Dose	Limit	Max % of
Annual - Limit		(mrad)	(mrad)	Limit
2006	- Admin. Gamma	3.22E-04	7.50E+00	4.30E-03
2006	- Admin. Beta	2.22E-04	1.50E+01	1.48E-03
2006	- T.Spc. Gamma	3.22E-04	1.00E+01	3.22E-03

Receptor: 4 Composite Crit. Receptor - NG  
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	2.59E+00
KR-85	2.54E-02
KR-85M	2.05E-02
XE-135	7.82E+00
XE-133M	8.18E-02
KR-88	6.21E-04
XE-131M	9.44E-02
XE-133	8.94E+01

2006	- T.Spc. Beta	2.22E-04	2.00E+01	1.11E-03
------	---------------	----------	----------	----------

Receptor: 4 Composite Crit. Receptor - NG  
 Distance: 0.00 (meters) Compass Point: NA

Nuclide	Percentage
AR-41	3.25E-01
KR-85	1.02E+00
KR-85M	1.17E-02
XE-135	3.57E+00
XE-133M	1.32E-01
KR-88	4.26E-05
XE-131M	2.39E-01
XE-133	9.47E+01

**Table 3.2-1**

Byron Station Unit One 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
LIQUID DOSE SUMMARY  
-----

Report for: 2006  
Unit One

							Liquid Receptor	
=== PERIOD DOSE BY ORGAN AND AGE GROUP (mrem) =====							ANNUAL 2006 =====	
Agegrp	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI	Skin	TB
ADULT	6.97E-03	1.89E-01	1.80E-01	1.90E-01	1.80E-01	3.04E-01	0.00E+00	1.87E-01
TEEN	7.48E-03	1.44E-01	1.35E-01	1.38E-01	1.36E-01	2.23E-01	0.00E+00	1.40E-01
CHILD	9.47E-03	1.58E-01	1.51E-01	1.53E-01	1.51E-01	1.81E-01	0.00E+00	1.54E-01
INFANT	1.01E-05	6.65E-02	6.65E-02	6.65E-02	6.65E-02	6.65E-02	0.00E+00	6.65E-02

=== SITE DOSE LIMIT ANALYSIS =====							ANNUAL 2006 =====	
Annual - Limit		Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit		
2006	- Admin. Any Organ	ADULT	GILLI	3.04E-01	7.50E+00	4.05E+00		
2006	- Admin. Total Body	ADULT	TBODY	1.87E-01	2.25E+00	8.30E+00		
2006	- T.Spc. Any Organ	ADULT	GILLI	3.04E-01	1.00E+01	3.04E+00		

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	5.92E+01
CR-51	1.16E-01
MN-54	3.05E-01
FE-59	1.89E-01
CO-58	3.18E+00
CO-60	3.35E+00
ZR-95	2.31E-03
NB-95	2.95E+01
MO-99	3.63E-04
RU-103	4.19E-03
AG-110M	8.77E-04
TE-125M	2.38E+00
TE-132	1.67E+00
I-132	1.20E-04
CS-137	4.26E-02
LA-140	1.18E-01

**Table 3.2-1 (continued)**

Byron Station Unit One 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
LIQUID DOSE SUMMARY  
-----

2006 - T.Spc. Total Body            ADULT    TBODY    1.87E-01   3.00E+00   6.22E+00

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
-----	-----
H-3	9.62E+01
CR-51	7.52E-04
MN-54	3.09E-02
FE-59	3.53E-02
CO-58	5.72E-01
CO-60	6.40E-01
ZR-95	8.01E-07
NB-95	4.24E-03
MO-99	4.85E-05
RU-103	2.51E-05
AG-110M	2.08E-06
TE-125M	1.30E-01
TE-132	5.38E-02
I-132	3.62E-04
CS-137	2.35E+00
LA-140	6.93E-07

**Table 3.2-1 (continued)**

Byron Station Unit Two 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
LIQUID DOSE SUMMARY  
-----

Report for: 2006  
Unit Two

Agegrp								Liquid Receptor
	Bone	Liver	Thyroid	Kidney	Lung	GI-LLI	Skin	TB
ADULT	6.97E-03	1.89E-01	1.80E-01	1.90E-01	1.80E-01	3.04E-01	0.00E+00	1.87E-01
TEEN	7.48E-03	1.44E-01	1.35E-01	1.38E-01	1.36E-01	2.23E-01	0.00E+00	1.40E-01
CHILD	9.47E-03	1.58E-01	1.51E-01	1.53E-01	1.51E-01	1.81E-01	0.00E+00	1.54E-01
INFANT	1.01E-05	6.65E-02	6.65E-02	6.65E-02	6.65E-02	6.65E-02	0.00E+00	6.65E-02

Annual - Limit				Age Group	Organ	Dose (mrem)	Limit (mrem)	Max % of Limit
2006	-	Admin.	Any Organ	ADULT	GILLI	3.04E-01	7.50E+00	4.05E+00
2006	-	Admin.	Total Body	ADULT	TBODY	1.87E-01	2.25E+00	8.30E+00
2006	-	T.Spc.	Any Organ	ADULT	GILLI	3.04E-01	1.00E+01	3.04E+00

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
H-3	5.92E+01
CR-51	1.16E-01
MN-54	3.05E-01
FE-59	1.89E-01
CO-58	3.18E+00
CO-60	3.35E+00
ZR-95	2.31E-03
NB-95	2.95E+01
MO-99	3.63E-04
RU-103	4.19E-03
AG-110M	8.77E-04
TE-125M	2.38E+00
TE-132	1.67E+00
I-132	1.20E-04
CS-137	4.26E-02
LA-140	1.18E-01

**Table 3.2-1 (continued)**

Byron Station Unit Two 2006

40CFR190 URANIUM FUEL CYCLE DOSE REPORT

-----  
LIQUID DOSE SUMMARY  
-----

2006 - T.Spc. Total Body            ADULT        TBODY        1.87E-01    3.00E+00    6.22E+00

Critical Pathway: Fresh Water Fish - Sport (FFSP)

Major Contributors (0% or greater to total)

Nuclide	Percentage
-----	-----
H-3	9.62E+01
CR-51	7.52E-04
MN-54	3.09E-02
FE-59	3.53E-02
CO-58	5.72E-01
CO-60	6.40E-01
ZR-95	8.01E-07
NB-95	4.24E-03
MO-99	4.85E-05
RU-103	2.51E-05
AG-110M	2.08E-06
TE-125M	1.30E-01
TE-132	5.38E-02
I-132	3.62E-04
CS-137	2.35E+00
LA-140	6.93E-07



**Table 3.4-1**

Byron Station - Unit 1

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

2006

TYPE OF DOSE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	ANNUAL
GAMMA AIR (mrad)	1.340E-06 (ESE)	1.550E-06 (ESE)	4.470E-05 (NNW)	4.220E-07 (NNW)	4.705E-05 (NNW)
BETA AIR (mrad)	5.900E-06 (ESE)	7.400E-06 ( SE)	2.200E-04 (NNW)	3.270E-06 (NNW)	2.340E-04 (NNW)
WHOLE BODY (mrem)	7.080E-07 ( SE)	8.580E-07 ( SE)	2.080E-05 (SSE)	1.310E-07 ( SE)	2.208E-05 (SSE)
SKIN (mrem)	2.600E-06 ( SE)	3.760E-06 ( SE)	7.720E-05 (WNW)	6.980E-07 (NNW)	8.162E-05 (SSE)
ORGAN (mrem)	7.340E-06 (ESE)	5.850E-06 ( SE)	1.670E-05 (NNW)	1.960E-05 (NNW)	4.476E-05 (NNW)
CRITICAL PERSON	Child	Child	Child	Teenager	Child
CRITICAL ORGAN	Thyroid	Thyroid	Thyroid	Thyroid	Thyroid

COMPLIANCE STATUS

TYPE OF DOSE	10 CFR 50 APP. I		10 CFR 50 APP.I	
	QUARTERLY OBJECTIVE	% OF APP. I	YEARLY OBJECTIVE	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	20.0	0.00
WHOLE BODY (mrem)	2.5	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	15.0	0.00
CRITICAL PERSON		Teenager		Child
CRITICAL ORGAN		Thyroid		Thyroid

Calculation used release data from the following:  
Unit 1 - Vent

Date of calculation: 3/26/2007

**Table 3.4-1 (continued)**

Byron Station - Unit 2

MAXIMUM DOSES RESULTING FROM AIRBORNE RELEASES

2006

TYPE OF DOSE	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER	ANNUAL
GAMMA AIR (mrad)	2.350E-07 (ESE)	2.050E-07 (ESE)	2.130E-06 (NNW)	3.000E-07 (NNW)	2.720E-06 (NNW)
BETA AIR (mrad)	1.970E-06 (ESE)	2.350E-06 ( SE)	9.150E-06 (NNW)	1.520E-06 (NNW)	1.415E-05 (NNW)
WHOLE BODY (mrem)	2.090E-07 ( SE)	1.090E-07 ( SE)	1.350E-05 (SSE)	1.360E-07 ( SE)	1.388E-05 (SSE)
SKIN (mrem)	9.140E-07 ( SE)	1.130E-06 ( SE)	1.850E-05 (SSE)	4.700E-07 (NNW)	2.022E-05 (SSE)
ORGAN (mrem)	1.480E-05 (ESE)	4.950E-06 ( SE)	2.420E-04 (NNW)	2.270E-04 (NNW)	4.836E-04 (NNW)
CRITICAL PERSON	Teenager	Teenager	Teenager	Teenager	Teenager
CRITICAL ORGAN	Thyroid	Thyroid	Thyroid	Thyroid	Thyroid

COMPLIANCE STATUS

TYPE OF DOSE	10 CFR 50 APP. I		10 CFR 50 APP. I	
	QUARTERLY OBJECTIVE	% OF APP. I	YEARLY OBJECTIVE	% OF APP. I
GAMMA AIR (mrad)	5.0	0.00	10.0	0.00
BETA AIR (mrad)	10.0	0.00	20.0	0.00
WHOLE BODY (mrem)	2.5	0.00	5.0	0.00
SKIN (mrem)	7.5	0.00	15.0	0.00
ORGAN (mrem)	7.5	0.00	15.0	0.00
CRITICAL PERSON		Teenager		Teenager
CRITICAL ORGAN		Thyroid		Thyroid

Calculation used release data from the following:  
Unit 2 - Vent

Date of calculation: 3/26/2007

Data Recovery (priority parameters) 99.7%

## **APPENDIX F**

### **METEOROLOGICAL**



Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

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

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: 0

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

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

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: 0

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	9	0	0	0	12
NNE	0	0	1	0	0	0	1
NE	0	0	0	1	0	0	1
ENE	0	0	2	2	0	0	4
E	0	0	3	0	0	0	3
ESE	0	0	2	0	0	0	2
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	0	0	0
S	0	0	0	2	0	0	2
SSW	0	0	0	3	1	0	4
SW	0	0	0	2	0	0	2
WSW	0	0	1	1	1	0	3
W	0	2	3	2	0	0	7
WNW	0	1	5	3	1	0	10
NW	0	0	12	1	0	0	13
NNW	0	0	4	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	0	6	42	17	3	0	68

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: 0

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	28	65	16	0	0	110
NNE	0	8	24	13	0	0	45
NE	3	7	16	26	3	0	55
ENE	0	8	20	14	0	0	42
E	1	19	16	3	0	0	39
ESE	3	9	17	10	0	0	39
SE	1	7	21	11	0	0	40
SSE	0	9	28	18	0	0	55
S	1	14	24	12	8	0	59
SSW	3	7	21	17	2	0	50
SW	0	17	23	16	2	0	58
WSW	1	17	27	7	6	5	63
W	5	23	26	30	14	6	104
WNW	9	45	80	49	12	0	195
NW	4	44	95	20	2	0	165
NNW	2	29	64	28	0	0	123
Variable	0	0	0	0	0	0	0
Total	34	291	567	290	49	11	1242

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: 0



Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	27	21	0	0	0	52
NNE	0	9	6	0	0	0	15
NE	3	5	0	0	0	0	8
ENE	3	5	7	6	0	0	21
E	14	12	7	0	0	0	33
ESE	2	15	30	10	0	0	57
SE	3	13	17	3	0	0	36
SSE	4	21	37	11	1	0	74
S	4	19	35	18	0	0	76
SSW	8	16	7	4	0	0	35
SW	8	9	14	1	1	0	33
WSW	5	14	8	2	1	0	30
W	7	13	9	1	0	0	30
WNW	11	24	9	0	0	0	44
NW	8	47	12	0	0	0	67
NNW	7	21	8	0	0	0	36
Variable	0	0	0	0	0	0	0
Total	91	270	227	56	3	0	647

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: 0

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	0	0	0	0	3
NNE	0	0	0	0	0	0	0
NE	1	1	0	0	0	0	2
ENE	0	1	1	0	0	0	2
E	1	2	0	0	0	0	3
ESE	1	6	3	0	0	0	10
SE	0	8	6	0	0	0	14
SSE	1	12	3	0	0	0	16
S	5	9	2	1	0	0	17
SSW	2	5	1	0	0	0	8
SW	1	4	0	0	0	0	5
WSW	4	0	0	0	0	0	4
W	9	4	1	0	0	0	14
WNW	12	5	0	0	0	0	17
NW	6	3	0	0	0	0	9
NNW	2	1	0	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	46	63	17	1	0	0	127

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: 0

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	1	0	0	0	1
ESE	2	0	2	0	0	0	4
SE	0	2	2	0	0	0	4
SSE	0	1	1	0	0	0	2
S	2	0	1	0	0	0	3
SSW	0	1	0	0	0	0	1
SW	0	0	0	0	0	0	0
WSW	2	0	0	0	0	0	2
W	3	0	0	0	0	0	3
WNW	3	0	0	0	0	0	3
NW	2	0	0	0	0	0	2
NNW	0	0	0	0	0	0	0
Variable	0	0	0	0	0	0	0
Total	14	4	7	0	0	0	25

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: 0

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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

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: 6

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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

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: 6

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	5	5	0	0	11
NNE	0	0	1	0	0	0	1
NE	0	0	0	0	1	0	1
ENE	0	0	0	2	2	0	4
E	0	0	2	1	0	0	3
ESE	0	0	1	1	0	0	2
SE	0	0	0	0	0	0	0
SSE	0	0	0	0	1	1	2
S	0	0	0	0	1	0	1
SSW	0	0	0	1	2	0	3
SW	0	0	0	0	3	0	3
WSW	0	0	1	2	0	1	4
W	0	1	1	3	0	0	5
WNW	0	0	5	7	1	1	14
NW	0	0	2	6	1	0	9
NNW	0	0	3	2	0	0	5
Variable	0	0	0	0	0	0	0
Total	0	2	21	30	12	3	68

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: 6

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	15	39	42	11	0	109
NNE	0	4	11	25	16	3	59
NE	1	5	4	11	22	7	50
ENE	1	1	6	17	15	6	46
E	0	3	15	23	4	5	50
ESE	0	3	12	10	8	0	33
SE	1	2	10	13	17	2	45
SSE	0	5	9	23	17	18	72
S	0	6	13	10	4	7	40
SSW	2	6	14	19	8	1	50
SW	0	13	12	23	16	7	71
WSW	3	7	20	14	6	14	64
W	2	12	20	19	25	21	99
WNW	1	16	39	65	32	13	166
NW	1	11	59	75	32	1	179
NNW	1	7	31	48	18	2	107
Variable	0	0	0	0	0	0	0
Total	15	116	314	437	251	107	1240

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: 6

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	17	26	5	0	52
NNE	1	0	9	14	3	0	27
NE	1	2	7	2	0	0	12
ENE	1	4	8	2	4	3	22
E	1	10	4	10	3	1	29
ESE	1	1	5	11	19	6	43
SE	2	2	4	18	19	4	49
SSE	1	0	4	24	28	9	66
S	1	2	8	14	22	14	61
SSW	1	7	4	30	11	3	56
SW	1	5	6	16	3	1	32
WSW	0	3	9	13	3	2	30
W	0	6	7	9	1	0	23
WNW	1	8	16	22	1	0	48
NW	0	6	15	43	3	0	67
NNW	1	3	10	19	1	0	34
Variable	0	0	0	0	0	0	0
Total	14	62	133	273	126	43	651

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: 6



Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	5	4	1	0	12
NNE	0	1	0	0	0	0	1
NE	0	1	1	0	0	0	2
ENE	0	1	0	0	0	0	1
E	0	3	3	1	0	0	7
ESE	0	0	3	1	0	0	4
SE	0	1	3	2	2	0	8
SSE	0	1	2	2	8	0	13
S	1	1	3	9	1	1	16
SSW	0	1	6	6	3	0	16
SW	1	0	2	2	1	0	6
WSW	0	0	2	7	0	0	9
W	1	0	0	2	0	0	3
WNW	0	1	7	4	0	0	12
NW	0	1	6	0	0	0	7
NNW	2	0	9	1	0	0	12
Variable	0	0	0	0	0	0	0
Total	5	14	52	41	16	1	129

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: 6

Byron Nuclear Station

Period of Record: January - March 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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

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: 6

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	2	0	1	0	0	3
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
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	1	1	0	0	0	2
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	1	0	0	0	1
WNW	0	1	8	1	0	0	10
NW	0	0	0	0	0	0	0
NNW	0	2	1	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	7	12	2	0	0	21

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: 0

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

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

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	4	6	0	0	0	10
NNE	0	2	1	1	0	0	4
NE	0	2	2	1	0	0	5
ENE	0	2	3	2	0	0	7
E	0	0	0	0	0	0	0
ESE	0	0	0	4	0	0	4
SE	0	0	0	1	0	0	1
SSE	0	0	0	1	0	0	1
S	0	0	0	0	0	0	0
SSW	0	0	3	2	0	0	5
SW	0	0	0	1	0	0	1
WSW	0	1	3	1	0	0	5
W	0	1	2	2	0	0	5
WNW	0	0	15	10	0	0	25
NW	0	0	1	4	0	0	5
NNW	0	0	1	2	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	12	37	32	0	0	81

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: 0

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	19	33	6	0	0	59
NNE	1	11	21	13	1	0	47
NE	3	8	26	19	0	0	56
ENE	8	14	12	3	4	0	41
E	7	23	8	1	0	0	39
ESE	3	9	11	14	2	2	41
SE	5	5	19	23	8	0	60
SSE	1	13	21	21	1	0	57
S	4	23	37	27	4	0	95
SSW	6	17	35	11	0	0	69
SW	1	20	16	4	0	0	41
WSW	2	18	24	10	0	0	54
W	0	18	27	7	0	0	52
WNW	1	32	45	27	2	0	107
NW	2	26	27	13	0	0	68
NNW	2	15	18	12	2	0	49
Variable	0	0	0	0	0	0	0
Total	47	271	380	211	24	2	935

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: 0

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	3	14	5	0	0	0	22
NNE	4	10	7	0	0	0	21
NE	3	10	7	0	0	0	20
ENE	2	15	17	3	0	0	37
E	6	38	13	1	0	0	58
ESE	8	10	11	8	2	7	46
SE	3	18	14	2	5	0	42
SSE	1	22	34	4	0	0	61
S	4	25	56	6	2	0	93
SSW	7	21	9	4	1	0	42
SW	9	17	5	1	0	0	32
WSW	15	18	4	1	0	0	38
W	10	19	4	0	0	0	33
WNW	15	38	10	0	0	0	63
NW	4	34	8	0	0	0	46
NNW	4	30	2	1	0	0	37
Variable	0	0	0	0	0	0	0
Total	98	339	206	31	10	7	691

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: 0

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	2	0	0	0	0	3
NNE	6	4	0	0	0	0	10
NE	3	0	0	0	0	0	3
ENE	1	1	0	0	0	0	2
E	5	8	0	0	0	0	13
ESE	12	15	7	0	0	0	34
SE	2	19	3	0	0	0	24
SSE	2	26	13	0	0	0	41
S	4	41	1	0	0	0	46
SSW	8	5	0	0	0	0	13
SW	9	5	1	0	0	0	15
WSW	6	2	0	0	0	0	8
W	9	7	0	0	0	0	16
WNW	11	7	0	0	0	0	18
NW	24	13	0	0	0	0	37
NNW	3	4	0	0	0	0	7
Variable	0	0	0	0	0	0	0
Total	106	159	25	0	0	0	290

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: 0



Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	1	1	0	0	0	0	2
NE	0	1	0	0	0	0	1
ENE	0	0	0	0	0	0	0
E	1	3	0	0	0	0	4
ESE	1	2	0	0	0	0	3
SE	0	4	1	0	0	0	5
SSE	5	12	0	0	0	0	17
S	3	5	0	0	0	0	8
SSW	2	0	0	0	0	0	2
SW	1	0	0	0	0	0	1
WSW	5	0	0	0	0	0	5
W	2	0	0	0	0	0	2
WNW	6	1	0	0	0	0	7
NW	14	1	0	0	0	0	15
NNW	4	1	0	0	0	0	5
Variable	0	0	0	0	0	0	0
Total	45	32	1	0	0	0	78

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: 0

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	2	0	1	0	3
ENE	0	0	0	0	0	0	0
E	0	0	0	0	0	0	0
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	1	1	0	0	0	2
SSW	0	0	0	0	0	0	0
SW	0	0	0	0	0	0	0
WSW	0	0	0	0	0	0	0
W	0	0	1	0	0	0	1
WNW	0	0	6	1	1	0	8
NW	0	1	1	0	0	0	2
NNW	0	2	1	0	0	0	3
Variable	0	0	0	0	0	0	0
Total	0	5	13	1	2	0	21

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: 2

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	7	1	0	0	8
NNE	0	2	0	2	1	0	5
NE	0	0	4	0	1	0	5
ENE	0	0	2	4	1	0	7
E	0	0	0	0	0	0	0
ESE	0	0	0	0	4	0	4
SE	0	0	0	0	1	0	1
SSE	0	0	0	0	1	0	1
S	0	0	1	2	0	0	3
SSW	0	0	1	0	0	1	2
SW	0	1	0	0	1	0	2
WSW	0	0	2	4	0	0	6
W	0	0	1	0	1	0	2
WNW	0	0	6	8	10	0	24
NW	0	0	2	1	4	0	7
NNW	0	0	2	0	2	0	4
Variable	0	0	0	0	0	0	0
Total	0	3	28	22	27	1	81

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: 2

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	5	17	27	3	1	53
NNE	0	9	14	13	12	6	54
NE	1	10	8	20	15	5	59
ENE	0	5	10	15	3	5	38
E	3	6	15	8	3	0	35
ESE	4	4	11	12	20	7	58
SE	1	6	4	7	16	15	49
SSE	1	8	10	12	24	2	57
S	2	12	32	23	19	7	95
SSW	3	10	24	23	5	2	67
SW	2	13	14	7	5	0	41
WSW	3	7	13	24	4	0	51
W	0	9	20	17	4	0	50
WNW	1	9	25	28	23	8	94
NW	1	13	31	26	15	11	97
NNW	2	4	16	12	6	2	42
Variable	0	0	0	0	0	0	0
Total	24	130	264	274	177	71	940

Hours of calm in this stability class: 0  
 Hours of missing wind measurements in this stability class: 7  
 Hours of missing stability measurements in all stability classes: 2

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	1	11	15	0	0	28
NNE	0	4	9	6	2	0	21
NE	0	3	8	8	4	0	23
ENE	0	3	8	15	8	0	34
E	3	14	21	23	8	0	69
ESE	0	4	6	6	11	15	42
SE	0	5	2	9	7	6	29
SSE	2	3	7	18	17	3	50
S	0	5	8	46	41	5	105
SSW	0	1	8	22	10	3	44
SW	0	2	15	14	2	1	34
WSW	1	3	10	9	1	0	24
W	0	11	14	7	1	0	33
WNW	0	7	26	31	0	0	64
NW	0	7	18	27	5	1	58
NNW	0	6	21	8	2	0	37
Variable	0	0	0	0	0	0	0
Total	7	79	192	264	119	34	695

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

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	5	4	0	0	9
NNE	1	4	5	1	0	0	11
NE	2	2	2	1	0	0	7
ENE	0	1	2	0	0	0	3
E	2	4	5	5	0	0	16
ESE	0	4	5	6	7	1	23
SE	0	5	4	6	5	1	21
SSE	2	1	3	14	7	0	27
S	0	3	4	24	12	0	43
SSW	0	3	4	20	4	0	31
SW	0	3	5	9	2	0	19
WSW	0	2	3	4	0	0	9
W	0	2	11	5	0	0	18
WNW	1	1	7	7	0	0	16
NW	0	1	9	22	0	0	32
NNW	0	0	8	9	0	0	17
Variable	0	0	0	0	0	0	0
Total	8	36	82	137	37	2	302

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: 2

Byron Nuclear Station

Period of Record: April - June 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	0	8	5	0	0	14
NNE	0	1	0	2	1	0	4
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	0	0	1	0	0	0	1
ESE	0	0	0	3	2	0	5
SE	2	2	1	0	0	0	5
SSE	0	1	1	6	2	0	10
S	0	1	2	6	2	0	11
SSW	1	0	1	4	0	0	6
SW	1	0	1	3	0	0	5
WSW	0	2	1	3	0	0	6
W	0	3	3	2	1	0	9
WNW	0	0	1	2	0	0	3
NW	0	1	1	0	0	0	2
NNW	1	1	7	3	0	0	12
Variable	0	0	0	0	0	0	0
Total	6	12	28	39	8	0	93

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: 2



Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	7	7	0	0	0	14
NNE	0	8	2	0	0	0	10
NE	0	3	8	0	0	0	11
ENE	0	1	11	0	0	0	12
E	0	6	6	0	0	0	12
ESE	0	5	1	0	0	0	6
SE	0	4	3	0	0	0	7
SSE	0	5	4	0	0	0	9
S	0	1	0	0	0	0	1
SSW	0	2	14	3	0	0	19
SW	0	1	26	6	0	0	33
WSW	0	4	18	3	0	0	25
W	0	15	6	1	0	0	22
WNW	0	3	5	0	0	0	8
NW	0	9	6	0	0	0	15
NNW	0	4	4	0	0	0	8
Variable	0	0	0	0	0	0	0
Total	0	78	121	13	0	0	212

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: 0

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	1	0	0	0	5
NNE	0	1	1	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	5	6	0	0	0	11
E	0	14	2	0	0	0	16
ESE	1	3	0	0	0	0	4
SE	0	1	1	0	0	0	2
SSE	0	1	1	0	0	0	2
S	0	3	4	0	0	0	7
SSW	0	6	4	1	0	0	11
SW	0	2	6	3	0	0	11
WSW	0	2	0	0	0	0	2
W	0	5	1	1	0	0	7
WNW	0	2	2	0	0	0	4
NW	0	0	4	0	0	0	4
NNW	0	3	6	0	0	0	9
Variable	0	0	0	0	0	0	0
Total	2	51	39	5	0	0	97

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: 0

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	6	0	0	0	0	7
NNE	0	4	0	0	0	0	4
NE	0	1	1	0	0	0	2
ENE	0	3	1	0	0	0	4
E	0	4	1	0	0	0	5
ESE	0	3	0	0	0	0	3
SE	0	3	4	0	0	0	7
SSE	0	4	2	2	0	0	8
S	0	1	4	0	0	0	5
SSW	0	3	0	0	0	0	3
SW	0	2	7	1	0	0	10
WSW	0	1	1	2	0	0	4
W	1	4	2	1	0	0	8
WNW	0	5	2	3	0	0	10
NW	0	4	3	0	0	0	7
NNW	0	5	3	0	0	0	8
Variable	0	0	0	0	0	0	0
Total	2	53	31	9	0	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: 0

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	5	18	19	0	0	0	42
NNE	3	16	2	0	0	0	21
NE	2	17	10	2	0	0	31
ENE	2	30	36	0	0	0	68
E	1	31	6	0	0	0	38
ESE	2	9	4	1	0	0	16
SE	4	21	7	3	0	0	35
SSE	5	19	31	7	0	0	62
S	1	18	9	6	0	0	34
SSW	2	20	25	3	0	0	50
SW	2	22	21	8	0	0	53
WSW	4	9	8	2	0	0	23
W	1	13	9	5	0	0	28
WNW	2	17	19	5	0	0	43
NW	2	18	16	0	0	0	36
NNW	1	21	18	0	0	0	40
Variable	0	0	0	0	0	0	0
Total	39	299	240	42	0	0	620

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: 0

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	7	16	3	0	0	0	26
NNE	4	16	5	0	0	0	25
NE	4	11	16	1	0	0	32
ENE	3	18	27	0	0	0	48
E	9	38	5	0	0	0	52
ESE	5	19	8	4	0	0	36
SE	4	24	9	4	0	0	41
SSE	6	30	20	1	0	0	57
S	6	45	28	3	0	0	82
SSW	11	20	21	4	0	0	56
SW	12	31	6	0	0	0	49
WSW	12	26	16	0	0	0	54
W	12	19	5	1	0	0	37
WNW	15	14	1	0	0	0	30
NW	8	14	1	0	0	0	23
NNW	11	17	0	0	0	0	28
Variable	0	0	0	0	0	0	0
Total	129	358	171	18	0	0	676

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: 0

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	2	0	0	0	0	6
NNE	0	4	0	0	0	0	4
NE	6	1	0	0	0	0	7
ENE	0	4	1	0	0	0	5
E	13	20	0	0	0	0	33
ESE	5	16	6	0	0	0	27
SE	8	27	2	0	0	0	37
SSE	3	24	0	0	0	0	27
S	13	33	2	0	0	0	48
SSW	3	7	1	0	0	0	11
SW	15	4	0	0	0	0	19
WSW	12	4	0	0	0	0	16
W	12	6	0	0	0	0	18
WNW	10	0	0	0	0	0	10
NW	14	1	0	0	0	0	15
NNW	12	6	0	0	0	0	18
Variable	0	0	0	0	0	0	0
Total	130	159	12	0	0	0	301

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: 0

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	2	0	0	0	0	0	2
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	3	4	0	0	0	0	7
ESE	0	9	5	0	0	0	14
SE	4	15	1	0	0	0	20
SSE	7	7	1	0	0	0	15
S	17	16	0	0	0	0	33
SSW	9	0	0	0	0	0	9
SW	4	0	0	0	0	0	4
WSW	8	0	0	0	0	0	8
W	12	0	0	0	0	0	12
WNW	6	0	0	0	0	0	6
NW	6	1	0	0	0	0	7
NNW	4	0	0	0	0	0	4
Variable	0	0	0	0	0	0	0
Total	82	52	7	0	0	0	141

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: 0

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	11	0	0	0	12
NNE	0	1	7	0	0	0	8
NE	0	3	2	3	0	0	8
ENE	0	3	3	10	0	0	16
E	0	4	3	1	0	0	8
ESE	0	2	5	0	0	0	7
SE	0	1	7	0	0	0	8
SSE	0	1	5	0	0	0	6
S	0	0	1	0	0	0	1
SSW	0	0	5	11	2	0	18
SW	0	1	9	22	3	1	36
WSW	0	3	7	15	2	0	27
W	0	5	8	3	0	0	16
WNW	0	5	1	4	0	0	10
NW	0	5	4	6	0	0	15
NNW	0	1	8	1	0	0	10
Variable	0	0	0	0	0	0	0
Total	0	36	86	76	7	1	206

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: 14



Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	5	0	0	0	6
NNE	0	0	2	0	0	0	2
NE	0	0	0	0	0	0	0
ENE	0	1	5	4	0	0	10
E	0	6	12	0	0	0	18
ESE	1	1	1	0	0	0	3
SE	0	1	0	1	0	0	2
SSE	0	1	1	1	0	0	3
S	0	1	3	2	0	0	6
SSW	0	2	4	4	1	0	11
SW	0	2	3	3	2	1	11
WSW	0	0	2	0	0	0	2
W	0	2	4	0	1	0	7
WNW	0	0	4	0	0	0	4
NW	0	0	1	3	0	0	4
NNW	0	1	5	2	0	0	8
Variable	0	0	0	0	0	0	0
Total	1	19	52	20	4	1	97

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: 14

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	2	2	0	0	0	4
NNE	0	4	2	0	0	0	6
NE	1	0	1	1	0	0	3
ENE	0	1	1	2	0	0	4
E	0	3	3	0	0	0	6
ESE	0	0	3	0	0	0	3
SE	0	3	3	1	0	0	7
SSE	0	3	3	0	2	0	8
S	0	1	2	2	0	0	5
SSW	0	2	0	0	0	0	2
SW	0	0	4	5	2	0	11
WSW	0	0	1	0	1	0	2
W	0	4	3	2	1	0	10
WNW	0	2	5	2	1	0	10
NW	0	4	2	2	0	0	8
NNW	0	1	4	1	0	0	6
Variable	0	0	0	0	0	0	0
Total	1	30	39	18	7	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: 14

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	8	12	16	1	0	37
NNE	3	2	15	7	0	0	27
NE	2	7	13	11	4	0	37
ENE	0	9	14	39	4	0	66
E	1	15	14	11	0	0	41
ESE	0	8	10	3	1	0	22
SE	1	6	12	1	4	0	24
SSE	2	7	21	22	8	0	60
S	0	8	14	8	6	0	36
SSW	2	16	6	23	3	0	50
SW	1	5	26	10	10	3	55
WSW	2	2	14	1	2	0	21
W	1	5	10	9	1	1	27
WNW	0	5	16	18	7	0	46
NW	1	8	7	14	2	0	32
NNW	0	8	15	16	0	0	39
Variable	0	0	0	0	0	0	0
Total	16	119	219	209	53	4	620

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: 14

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	7	14	5	1	0	27
NNE	1	2	10	6	1	0	20
NE	0	5	11	25	0	0	41
ENE	0	4	10	28	13	0	55
E	1	9	23	9	0	0	42
ESE	0	6	13	13	3	4	39
SE	1	2	8	10	5	2	28
SSE	0	4	14	18	18	2	56
S	1	3	14	21	14	3	56
SSW	0	2	19	42	23	2	88
SW	1	4	18	14	6	1	44
WSW	1	3	19	26	0	0	49
W	0	7	22	12	0	1	42
WNW	1	12	13	4	0	0	30
NW	1	7	17	5	0	0	30
NNW	2	6	16	8	0	0	32
Variable	0	0	0	0	0	0	0
Total	10	83	241	246	84	15	679

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: 14

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	3	7	4	0	0	14
NNE	0	4	4	1	0	0	9
NE	0	8	0	2	0	0	10
ENE	0	8	3	0	0	0	11
E	0	3	13	13	1	0	30
ESE	1	2	9	10	2	0	24
SE	0	1	5	7	12	0	25
SSE	1	1	4	11	7	0	24
S	0	0	5	15	8	0	28
SSW	0	0	5	20	4	0	29
SW	1	2	9	14	0	0	26
WSW	0	0	6	5	0	0	11
W	4	2	13	3	0	0	22
WNW	0	3	10	9	0	0	22
NW	1	6	4	6	0	0	17
NNW	3	3	7	4	0	0	17
Variable	0	0	0	0	0	0	0
Total	11	46	104	124	34	0	319

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: 14

Byron Nuclear Station

Period of Record: July - September 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	4	2	2	0	0	9
NNE	0	1	1	0	0	0	2
NE	1	2	1	0	0	0	4
ENE	2	0	1	0	0	0	3
E	1	2	1	1	0	0	5
ESE	0	1	0	8	5	0	14
SE	1	2	3	1	12	0	19
SSE	1	0	8	8	2	0	19
S	0	2	6	3	1	0	12
SSW	0	2	8	7	1	0	18
SW	0	0	4	11	0	0	15
WSW	0	0	1	7	0	0	8
W	2	2	6	5	0	0	15
WNW	1	2	1	2	0	0	6
NW	0	4	4	3	0	0	11
NNW	1	0	3	3	0	0	7
Variable	0	0	0	0	0	0	0
Total	11	24	50	61	21	0	167

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: 14

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

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

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

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

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: 0



Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

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

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	7	42	36	0	0	85
NNE	1	12	30	10	0	0	53
NE	1	8	20	10	0	0	39
ENE	1	11	11	4	0	0	27
E	1	23	1	0	0	0	25
ESE	4	11	10	3	3	0	31
SE	1	20	9	2	0	0	32
SSE	2	20	32	9	1	0	64
S	2	16	49	25	0	0	92
SSW	3	17	29	24	0	0	73
SW	3	11	21	13	0	0	48
WSW	5	10	23	23	5	0	66
W	1	24	25	32	9	0	91
WNW	1	27	51	28	2	0	109
NW	1	42	34	7	0	0	84
NNW	1	28	48	14	0	0	91
Variable	0	0	0	0	0	0	0
Total	28	287	435	240	20	0	1010

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	4	4	1	4	1	0	14
NNE	2	13	2	2	0	0	19
NE	2	1	7	1	0	0	11
ENE	1	4	10	0	0	0	15
E	5	27	12	0	0	0	44
ESE	4	15	5	3	1	0	28
SE	2	26	19	1	1	0	49
SSE	4	32	98	8	0	0	142
S	3	32	53	11	0	0	99
SSW	7	17	42	21	0	0	87
SW	10	19	11	7	0	0	47
WSW	5	17	23	13	0	0	58
W	5	26	41	7	0	0	79
WNW	8	27	11	1	0	0	47
NW	7	22	5	0	0	0	34
NNW	4	13	4	0	0	0	21
Variable	0	0	0	0	0	0	0
Total	73	295	344	79	3	0	794

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	0	0	0	0	1
NNE	1	2	1	0	0	0	4
NE	0	0	0	0	0	0	0
ENE	0	2	0	0	0	0	2
E	5	5	0	0	0	0	10
ESE	0	8	8	0	0	0	16
SE	2	18	11	0	0	0	31
SSE	3	35	34	0	0	0	72
S	3	35	11	0	0	0	49
SSW	7	11	0	0	0	0	18
SW	5	5	0	0	0	0	10
WSW	8	2	1	0	0	0	11
W	9	16	0	0	0	0	25
WNW	8	6	0	0	0	0	14
NW	3	5	0	0	0	0	8
NNW	2	4	0	0	0	0	6
Variable	0	0	0	0	0	0	0
Total	56	155	66	0	0	0	277

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 30 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	0	0	0	0	0	0
NNE	0	0	0	0	0	0	0
NE	0	0	0	0	0	0	0
ENE	0	0	0	0	0	0	0
E	2	1	0	0	0	0	3
ESE	1	3	2	0	0	0	6
SE	3	0	2	0	0	0	5
SSE	0	4	1	0	0	0	5
S	6	4	1	0	0	0	11
SSW	2	3	0	0	0	0	5
SW	2	0	0	0	0	0	2
WSW	1	0	0	0	0	0	1
W	0	0	0	0	0	0	0
WNW	1	0	0	0	0	0	1
NW	1	0	0	0	0	0	1
NNW	2	0	0	0	0	0	2
Variable	0	0	0	0	0	0	0
Total	21	15	6	0	0	0	42

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Extremely Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Moderately Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Slightly Unstable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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



Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Neutral - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	10	32	24	6	76
NNE	0	5	7	28	24	0	64
NE	0	3	11	14	7	2	37
ENE	1	3	3	7	4	0	18
E	0	5	15	10	0	0	30
ESE	1	7	8	10	6	3	35
SE	1	4	17	4	2	1	29
SSE	0	5	15	30	11	2	63
S	2	8	23	31	25	3	92
SSW	0	14	17	31	15	2	79
SW	2	7	17	9	13	1	49
WSW	2	6	9	18	20	6	61
W	1	7	19	24	24	10	85
WNW	1	7	22	39	32	7	108
NW	0	8	47	30	9	0	94
NNW	0	8	29	37	11	2	87
Variable	0	0	0	0	0	0	0
Total	12	100	269	354	227	45	1007

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

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Slightly Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	1	3	5	0	3	2	14
NNE	0	4	6	9	1	2	22
NE	0	4	0	2	4	1	11
ENE	0	1	3	5	3	0	12
E	1	6	19	16	2	0	44
ESE	0	1	3	15	1	4	24
SE	1	6	5	7	3	2	24
SSE	0	0	10	60	54	15	139
S	1	1	8	28	49	4	91
SSW	1	4	15	40	55	6	121
SW	0	1	17	18	8	3	47
WSW	0	3	10	22	16	4	55
W	2	0	12	46	17	0	77
WNW	0	1	16	26	8	0	51
NW	0	6	16	15	2	0	39
NNW	0	4	9	13	2	0	28
Variable	0	0	0	0	0	0	0
Total	7	45	154	322	228	43	799

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Moderately Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

Wind Direction	Wind Speed (in mph)						Total
	1-3	4-7	8-12	13-18	19-24	> 24	
N	0	1	3	0	0	0	4
NNE	0	0	0	2	1	0	3
NE	0	0	1	0	0	0	1
ENE	0	0	1	0	0	0	1
E	0	0	1	1	0	0	2
ESE	0	0	2	4	5	0	11
SE	0	1	4	8	8	0	21
SSE	0	1	4	6	25	5	41
S	0	2	7	12	31	6	58
SSW	0	2	6	22	9	1	40
SW	1	3	6	15	0	0	25
WSW	2	1	5	9	0	0	17
W	2	0	3	16	0	0	21
WNW	0	0	6	12	0	0	18
NW	0	1	3	14	0	0	18
NNW	0	0	2	1	1	0	4
Variable	0	0	0	0	0	0	0
Total	5	12	54	122	80	12	285

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: 0

Byron Nuclear Station

Period of Record: October - December 2006  
 Stability Class - Extremely Stable - 250Ft-30Ft Delta-T (F)  
 Winds Measured at 250 Feet

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

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: 0

## **APPENDIX G**

# **ANNUAL RADIOLOGICAL GROUNDWATER PROTECTION PROGRAM REPORT (ARGPPR)**



# BYRON NUCLEAR GENERATING STATION UNITS 1 and 2

Annual Radiological  
Groundwater Protection Program Report

1 January Through 31 December 2006

**Prepared By**

Teledyne Brown Engineering  
Environmental Services



**Nuclear**

Byron Nuclear Generating Station  
Byron, IL 61010

**May 2007**





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## Appendices

### Appendix A Location Designation

#### Tables

Table A-1: Radiological Groundwater Protection Program - Sampling Locations, Distance and Direction, Byron Nuclear Generating Station, 2006

#### Figures

Figure A-1: Monitoring Well Locations, Byron Nuclear Generating Station, 2006 (Extra wells noted on map are for reference only.)

### Appendix B Data Tables

#### Tables

Table B-I.1 Concentrations of Tritium in Groundwater Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2006.

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Table B-I.6 Highest to Lowest Concentrations of Gamma Emitters in Groundwater Samples Collected in the Vicinity of Byron Nuclear Generating Station, 2006.

## I. Summary and Conclusions

In 2006, Exelon instituted a comprehensive program to evaluate the impact of station operations on groundwater in the vicinity of Byron Nuclear Generating Station. This evaluation involved numerous station personnel and contractor support personnel. At Byron, 17 permanent groundwater-monitoring wells were installed in 2006. Of these new monitoring locations none were assigned to the station's Radiological Environmental Monitoring Program (REMP). The results for these locations are included in this report as well as results for 5 previously existing wells. This is the first in a series of annual reports on the status of the Radiological Groundwater Protection Program (RGPP) conducted at Byron Nuclear Generating Station. This report covers groundwater samples, collected from the environment, both on and off station property in 2006. During that time period, 370 analyses were performed on 175 samples from 22 locations. The monitoring was conducted in two phases. Phase 1 of the monitoring was part of a comprehensive study initiated by Exelon to determine whether groundwater or surface water at and in the vicinity of Byron Nuclear Generating Station had been adversely impacted by any releases of radionuclides. Phase 1 was conducted by Conestoga Rovers and Associates (CRA) and the conclusions were made available to state and federal regulators as well as the public on an Exelon web site <http://www.exeloncorp.com/ourcompanies/powergen/nuclear/Tritium.htm>. Phase 2 of the RGPP was conducted by Exelon corporate and station personnel to initiate follow up of Phase 1 and begin long-term monitoring at groundwater locations selected during Phase 1. All analytical results for RGPP wells from both the Phase 1 and Phase 2 monitoring are reported herein.

In assessing all the data gathered for this report, it was concluded that the operation of Byron Nuclear Generating Station had no adverse radiological impact on the environment, and there are no known active releases into the groundwater at Byron Nuclear Generating Station.

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

Strontium-89/90 was not detected in any of the groundwater samples tested.

Tritium was not detected in any of the groundwater samples at concentrations greater than the United States Environmental Protection Agency (USEPA) drinking water standard (and the Nuclear Regulatory Commission Reporting Limit) of 20,000 pCi/L. Low levels of tritium were detected at concentrations

greater than the LLD of 200 pCi/L in 4 of 22 groundwater sample locations. The tritium concentrations ranged from  $200 \pm 96$  pCi/L to  $4,080 \pm 463$  pCi/L. The tritium that was detected in groundwater at the Station was near the Circ Water Blowdown vaults (2, 3, & 4) along the blowdown line located West of the Station.

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## II. Introduction

The Byron Station, a two-unit PWR station, is located about two miles east of the Rock River and approximately three miles southwest of Byron in Ogle County, Illinois. The reactors are designed to have capacities of 1280 and 1254 MW gross, respectively. Unit One loaded fuel in November 1984 and went on line February 2, 1985. Unit Two went on line January 9, 1987.

This report covers those analyses performed by Teledyne Brown Engineering (TBE) and Environmental Inc. (Midwest Labs) on samples collected in 2006.

### A. Objective of the RGPP

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

1. Identify suitable locations to monitor and evaluate potential impacts from station operations before significant radiological impact to the environment and potential drinking water sources.
2. Understand the local hydrogeologic regime in the vicinity of the station and maintain up-to-date knowledge of flow patterns on the surface and shallow subsurface.
3. Perform routine water sampling and radiological analysis of water from selected locations.
4. Report new leaks, spills, or other detections with potential radiological significance to stakeholders in a timely manner.
5. Regularly assess analytical results to identify adverse trends.
6. Take necessary corrective actions to protect groundwater resources.

### B. Implementation of the Objectives

The objectives identified have been implemented at Byron Nuclear Generating Station as discussed below:

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

2. The Byron Nuclear Generating Station reports describe the local hydrogeologic regime. Periodically, the flow patterns on the surface and shallow subsurface are updated based on ongoing measurements.
3. Byron Nuclear Generating Station will continue to perform routine sampling and radiological analysis of water from selected locations.
4. Byron Nuclear Generating Station has implemented new procedures to identify and report new leaks, spills, or other detections with potential radiological significance in a timely manner.
5. Byron Nuclear Generating 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 Figure A-1, Appendix A.

Groundwater

Samples of water are collected, managed, transported and analyzed in accordance with approved procedures following EPA methods. Only groundwater is collected. Sample locations, sample collection frequencies and analytical frequencies are controlled in accordance with approved station procedures. Contractor and/or station personnel are trained in the collection, preservation management, and shipment of samples, as well as in documentation of sampling events. Analytical laboratories are subject to internal quality assurance programs, industry cross-check programs, as well as nuclear industry audits. Station personnel review and evaluate all analytical data deliverables as data are received.

Analytical data results are reviewed by both station personnel and an independent hydrogeologist for adverse trends or changes to hydrogeologic conditions.

#### D. Characteristics of Tritium (H-3)

Tritium (chemical symbol H-3) is a radioactive isotope of hydrogen. The most common form of tritium is tritium oxide, which is also called "tritiated water." The chemical properties of tritium are essentially those of ordinary hydrogen.

Tritiated water behaves the same as ordinary water in both the environment and the body. Tritium can be taken into the body by drinking water, breathing air, eating food, or absorption through skin. Once tritium enters the body, it disperses quickly and is uniformly distributed throughout the body. Tritium is excreted primarily through urine with a clearance rate characterized by an effective biological half-life of about 14 days. Within one month or so after ingestion, essentially all tritium is cleared. Organically bound tritium (tritium that is incorporated in organic compounds) can remain in the body for a longer period.

Tritium is produced naturally in the upper atmosphere when cosmic rays strike air molecules. Tritium is also produced during nuclear weapons explosions, as a by-product in reactors producing electricity, and in special production reactors, where the isotopes lithium-7 and/or boron-10 are activated to produce tritium. Like normal water, tritiated water is colorless and odorless. Tritiated water behaves chemically and physically like non-tritiated water in the subsurface, and therefore tritiated water will travel at the same velocity as the average groundwater velocity.

Tritium has a half-life of approximately 12.3 years. It decays spontaneously to helium-3 ( $^3\text{He}$ ). This radioactive decay releases a beta particle (low-energy electron). The radioactive decay of tritium is the source of the health risk from exposure to tritium. Tritium is one of the least dangerous radionuclides because it emits very weak radiation and leaves the body relatively quickly. Since tritium is almost always found as water, it goes directly into soft tissues and organs. The associated dose to these tissues is generally uniform and is dependent on the water content of the specific tissue.

### III. Program Description

#### A. Sample Analysis

This section describes the general analytical methodologies used by TBE and EIML to analyze the environmental samples for radioactivity for the Byron Nuclear Generating Station RGPP in 2006.



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

1. Concentrations of gamma emitters in groundwater.
2. Concentrations of strontium in groundwater.
3. Concentrations of tritium in groundwater.

#### B. Data Interpretation

The radiological data collected prior to Byron Nuclear Generating Station becoming operational were used as a baseline with which these operational data were compared. For the purpose of this report, Byron Nuclear Generating 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  $\pm$  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 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.

### 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 Byron Nuclear Generating Nuclear Power Station, Commonwealth Edison Company, Annual Report 1984, April 1985.

The pre-operational REMP contained analytical results from samples collected from the surface water and groundwater. All groundwater samples listed in the pre-Operational REMP report were <200 pCi/L.

#### 1. Background Concentrations of Tritium

The purpose of the following discussion is to summarize background measurements of tritium in various media performed by others. Additional detail may be found by consulting references (CRA 2006).

##### a. Tritium Production

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

A major anthropogenic source of tritium and strontium-90 comes from the former atmospheric testing of thermonuclear weapons. Levels of tritium in precipitation increased significantly during the 1950s and early 1960s, and later with additional testing, resulting in the release of significant amounts of tritium to the atmosphere. The Canadian heavy water nuclear power reactors, other commercial power reactors, nuclear research and weapons production continue to influence tritium concentrations in the environment.

b. Precipitation Data

Precipitation samples are routinely collected at stations around the world for the analysis of tritium and other radionuclides. Two publicly available databases that provide tritium concentrations in precipitation are Global Network of Isotopes in Precipitation (GNIP) and USEPA's RadNet database. GNIP provides tritium precipitation concentration data for samples collected world wide from 1960 to 2006. RadNet provides tritium precipitation concentration data for samples collected at stations through out the U.S. from 1960 up to and including 2006. Based on GNIP data for sample stations located in the U.S. Midwest, tritium concentrations peaked around 1963. This peak, which approached 10,000 pCi/L for some stations, coincided with the atmospheric testing of thermonuclear weapons. Tritium concentrations in surface water showed a sharp decline up until 1975 followed by a gradual decline since that time. Tritium concentrations 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  $\pm 70$  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  $\pm 70$  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  $140 \pm 100$  pCi/L. Clearly, these sample results cannot be distinguished as different from background at this concentration.

#### IV. Results and Discussion

##### A. Groundwater Results

###### Groundwater

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

###### Tritium

Samples from all locations were analyzed for tritium activity (Table B-I.1 and B-I.2, Appendix B). Tritium values ranged from less than the detection limit to 4,080 pCi/l. Within the station boundary, concentrations of tritium at the bottom of the Galena-Platteville aquifer ranged from 1710-2340 pCi/L. Outside of the station boundary, tritium concentrations were all less than detection limit (<200 pCi/L). Ten (10) residential well samples were collected and analyzed, 9 from residences located adjacent to the Station property along the blowdown line and 1 from a residence located approximately 2 miles east of the Station. Tritium was not detected above LLD of 200 pCi/L in any of the 10 residential well samples collected. The tritium detected in groundwater samples has been isolated to the Galena-Platteville aquifer, which is isolated from the deeper regional groundwater aquifer by the semi-confining Glenwood Formation. Groundwater quality data from production wells and monitoring wells at the Station located below this aquifer do not indicate concentrations of tritium greater than the LLD of 200 pCi/L. As such, the tritium impact is limited to the Galena-Platteville

aquifer.

### Strontium

Strontium-89/90 was not detected at concentrations greater than the LLD of 2.0 pCi/L in any of the samples collected. (Table B-I.3 and B-I.4, Appendix B).

### Gamma Emitters and Strontium

Gamma-emitting target radionuclides were not detected at concentrations greater than their respective LLD. Other non-targeted radionuclides are included in the tables but excluded from discussion in this report. These radionuclides were either a) naturally occurring and thus not produced by the Station, or b) could be definitively evaluated as being naturally occurring due to the lack of presence of other radionuclides which would otherwise indicate the potential of production from the Station. (Table B-I.5 and B-I.6, Appendix B).

#### B. Drinking Water Well Survey

A drinking water well survey was conducted during the summer 2006 by CRA (CRA 2006) around the Byron Nuclear Generating Station.

#### C. Summary of Results – Inter-Laboratory Comparison Program

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

#### D. Leaks, Spills, and Releases

There are no new previously unidentified leaks or plumes at Byron Station. There have been no new leaks, spills or releases at Byron Station in 2006.

#### E. Trends

There have been no significant changes in trends for previously identified plumes at Byron Station.

#### F. Investigations

There have been no anomalous results for Byron Station sample data.

## G. Actions Taken

### 1. Compensatory Actions

All Circ Water Blowdown vaults were plugged and coated to prevent any leakage of water from the vaults to the groundwater. Leakage detection system has been installed which is monitored during liquid release evolutions. Liquid release procedures have been revised to include a walk down of the Circ Water Blowdown vaults prior to and directly after a liquid release to check for the presence of water in the blowdown vaults. Any water found in the vaults is pumped out of the vaults and disposed of according to the NPDES permit.

### 2. Installation of Monitoring Wells

From late February 2006 to early April 2006, CRA supervised the installation of 17 monitoring wells and 12 temporary wells along the blowdown line and at other locations at the Station to evaluate the quality of groundwater. Monitoring wells TW-13 through TW-15 were installed to evaluate the groundwater quality near River Road, downgradient of the 1986 former fiberglass blowdown line ruptures. These wells were originally constructed as temporary wells, but were eventually converted to permanent monitoring wells. At each of the six (6) vacuum breaker vault locations along the blowdown line, two temporary wells were installed adjacent to the concrete vault and within the bedding material of the blowdown line and make-up line (TW-1 through TW-12). These shallow overburden wells were installed to determine whether groundwater was present in the overburden materials above the bedrock.

These 12 temporary wells were dry. Twelve (12) monitoring wells (AR-1 through AR-10, CAR-2, and CAR-3) were installed to screen the first occurrence of groundwater (the water table) within the Galena-Platteville limestones and dolomites. One well was placed adjacent to each vacuum breaker vault (AR-1 through AR-6) in an anticipated downgradient location as determined from historic groundwater elevations measured in the Byron Salvage Site monitoring wells and levels measured in early March 2006. Monitoring well CAR-2 was installed at a location at the bottom of the valley downgradient from the vault for vacuum breaker 4, which contained water with the highest concentrations of tritium. Five monitoring wells (AR-7 through AR-10 and CAR-3) were installed within and around the Protected Area of the Station to evaluate the groundwater quality in the areas of high-ranking systems containing contaminated liquids or potentially-contaminated liquids. Two additional monitoring wells were also installed. Monitoring well CAR-1 was screened in the alluvial sediments adjacent to TW-14 to evaluate the groundwater quality approximately 20 feet below the water

table. Due to detections of tritium concentrations in groundwater samples from monitoring AR-4, monitoring well AR-11 was screened to monitor the groundwater quality at the base of the Galena-Platteville aquifer. In total, 13 bedrock monitoring wells were constructed as part of the blowdown line investigation.

### 3. Actions to Recover/Reverse Plumes

The detection of tritium exceeding 200 pCi/L in monitoring wells AR-2, AR-3, AR-4, and AR-11 appear to be localized and confined to the areas around the wells. Tritium was not detected at the LLD of 200 pCi/L in the groundwater samples collected from monitoring wells and residential wells downgradient of these locations. The source of the tritium in the groundwater at these four well locations was the respective blowdown line vacuum breakers prior to sealing the vaults. Once in the subsurface, the tritiated water migrated downward through the unsaturated overburden and fractured bedrock to the water table. Once at the water table, downward vertical gradients caused the tritiated water to migrate downward to the base of the Galena-Platteville aquifer, where tritium was detected in the groundwater sample from monitoring well AR-11. The shale of the Glenwood Formation has a low permeability and acts as a barrier to further downward migration of the tritiated water. Due to the low permeabilities of the Galena-Platteville limestones/dolomites, combined with the shallow horizontal gradient, the tritiated water should not migrate very far laterally from the vacuum breakers. There is no indication from the hydrogeologic investigation report data that tritium-impacted groundwater in this area is migrating off the Station property. This is based upon the inferred slow groundwater flow velocities and that groundwater sampling results indicate that monitoring wells outside of these areas are not impacted. No knowledge or evidence of large failures or releases from the blowdown line have been documented or identified through investigations. Therefore additional plume delineation activities or groundwater remediation are not warranted.

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## **APPENDIX A**

### **LOCATION DESIGNATION**



TABLE A-1: Radiological Groundwater Protection Program - Sampling Locations and Distance, Byron Nuclear Generating Station, 2006

Site	Site Type	Temporary/Permanent	Distance
AR-1	Monitoring Well	Permanent	0.36 miles/NNW
AR-10	Monitoring Well	Permanent	0.28 miles/NE
AR-11	Monitoring Well	Permanent	1.36 miles/WNW
AR-2	Monitoring Well	Permanent	0.6 miles/NW
AR-3	Monitoring Well	Permanent	0.8 miles/NW
AR-4	Monitoring Well	Permanent	1.36 miles/WNW
AR-5	Monitoring Well	Permanent	1.92 miles/WNW
AR-6	Monitoring Well	Permanent	2.04 miles/WNW
AR-7	Monitoring Well	Permanent	0.04 miles/W
AR-8	Monitoring Well	Permanent	0.12 miles/S
AR-9	Monitoring Well	Permanent	0.24 miles/E
CAR-1	Monitoring Well	Permanent	2.25 miles/WNW
CAR-2	Monitoring Well	Permanent	1.52 miles/WNW
CAR-3	Monitoring Well	Permanent	0.16 miles/SE
DF-24 (EPA well)	Monitoring Well	Permanent	1.36 miles/WNW
GW-9	Monitoring Well	Permanent	0.9 miles/WNW
MW-1 (EPA well)	Monitoring Well	Permanent	0.6 miles/NW
MW-3 (EPA well)	Monitoring Well	Permanent	0.8 miles/NW
TW-13	Monitoring Well	Permanent	2.3 miles/WNW
TW-14	Monitoring Well	Permanent	2.25 miles/WNW
TW-15	Monitoring Well	Permanent	2.2 miles/WNW
Well 7	Monitoring Well	Permanent	0.4 miles/SE

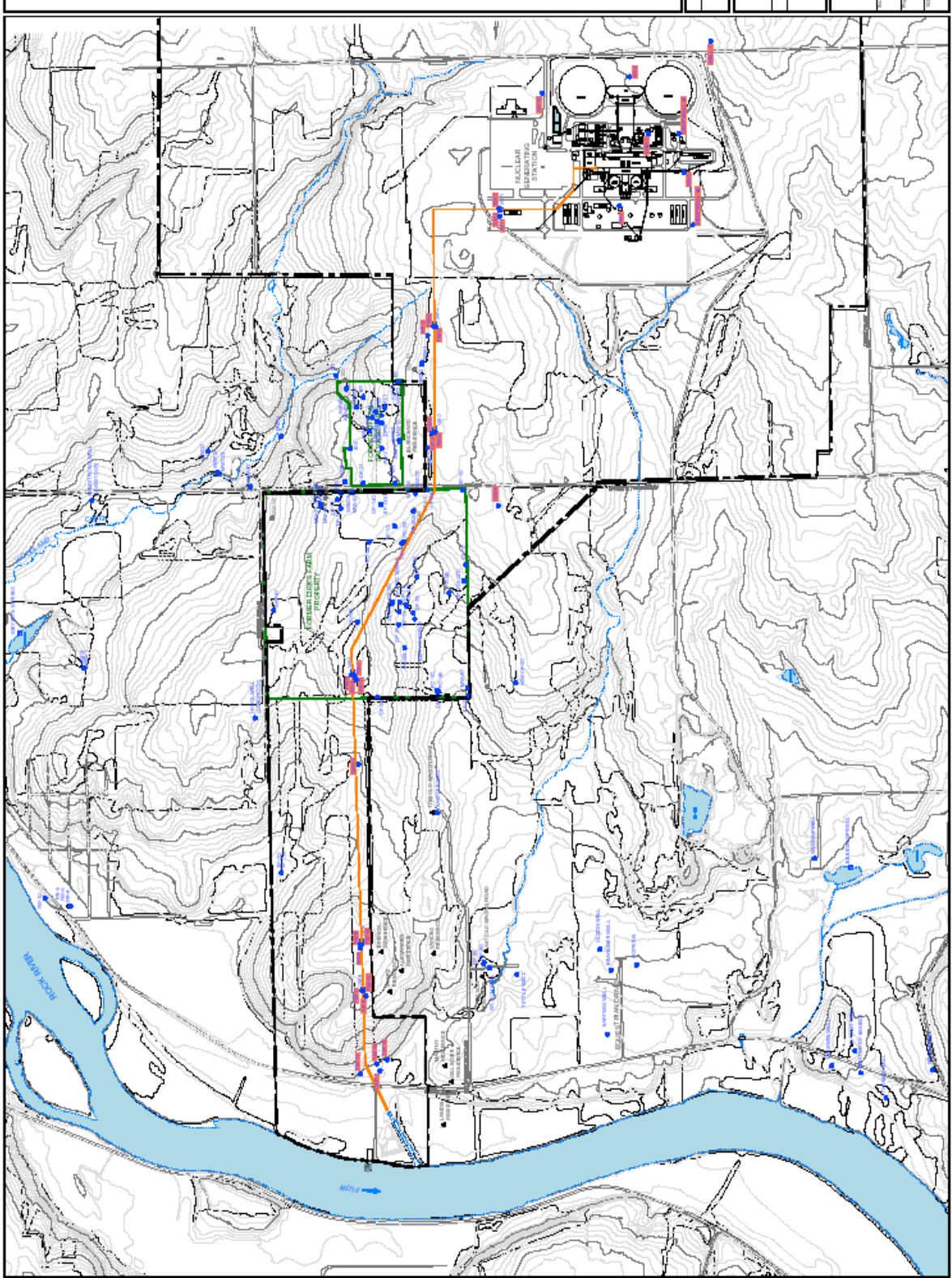


Figure A-1  
Monitoring Well Location, Byron Nuclear Generating Station, 2006

## **APPENDIX B**

### **DATA TABLES**



TABLE B-I.1

CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING  
STATION, 2006

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
AR-1	EIML	03/24/06	< 151
AR-1	EIML	03/29/06	< 154
AR-1	EIML	04/06/06	< 161
AR-1	EIML	04/06/06	< 161
AR-1	EIML	04/12/06	< 142
AR-1	EIML	04/12/06	< 142
AR-1	EIML	04/26/06	< 134
AR-1	EIML	06/22/06	< 132
AR-1	EIML	07/20/06	< 143
AR-1		04/26/06	< 165
AR-1		11/01/06	< 185 *
AR-10	EIML	04/06/06	168 ± 87
AR-10	EIML	04/06/06	168 ± 87
AR-10	EIML	04/12/06	< 142
AR-10	EIML	04/12/06	< 142
AR-10	EIML Orig	04/26/06	< 181
AR-10	EIML Dup	04/26/06	192 ± 116
AR-10	EIML	06/26/06	180 ± 75
AR-10	EIML	07/20/06	182 ± 83
AR-10		04/26/06	< 185
AR-10		11/01/06	< 188 *
AR-11	EIML Orig	04/18/06	2260 ± 162
AR-11	EIML Rerun	04/18/06	1965 ± 146
AR-11	EIML	04/18/06	2260 ± 162
AR-11	EIML	04/26/06	2104 ± 147
AR-11	EIML	06/22/06	1732 ± 130
AR-11	EIML	07/21/06	2155 ± 146
AR-11	EIML QC Sample	11/21/06	1695 ± 142
AR-11	Orig	04/26/06	2340 ± 282
AR-11	Rerun	04/26/06	2340 ± 282
AR-11	Orig	11/21/06	1780 ± 160*
AR-11	Rerun	11/21/06	1710 ± 251*
AR-11	Orig	11/21/06	2070 ± 171*
AR-11	Rerun	11/21/06	1860 ± 262*
AR-2	EIML Orig	03/24/06	205 ± 84
AR-2	EIML Recount	03/24/06	173 ± 92
AR-2	EIML Rerun	03/24/06	< 160
AR-2	EIML	03/27/06	315 ± 96
AR-2	EIML Orig	03/29/06	361 ± 95
AR-2	EIML Recount 1	03/29/06	208 ± 96
AR-2	EIML Recount 2	03/29/06	223 ± 97
AR-2	EIML Rerun 1	03/29/06	< 168
AR-2	EIML Rerun 1 Recount	03/29/06	200 ± 96
AR-2	EIML Rerun 2	03/29/06	< 168
AR-2	EIML Rerun 2 Recount	03/29/06	< 168
AR-2	EIML Orig	04/03/06	442 ± 100
AR-2	EIML Recount	04/03/06	475 ± 93
AR-2	EIML	04/10/06	566 ± 104
AR-2	EIML	04/10/06	566 ± 104
AR-2	EIML Orig	04/26/06	533 ± 126

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS

TABLE B-I.1

**CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING  
STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
AR-2	EIML Orig - 100 min.	04/26/06	391 ± 93
AR-2	EIML Orig Recount - 200 min.	04/26/06	514 ± 77
AR-2	EIML Recount Recount - 200 min.	04/26/06	624 ± 79
AR-2	EIML	06/22/06	342 ± 85
AR-2	EIML	07/20/06	487 ± 96
AR-2	Orig	04/26/06	432 ± 140
AR-2	Rerun	04/26/06	527 ± 142
AR-2	Orig	11/01/06	492 ± 142*
AR-2	Rerun	11/01/06	413 ± 138*
AR-3	EIML Orig	03/24/06	214 ± 84
AR-3	EIML Recount 1	03/24/06	< 160
AR-3	EIML Rerun 1	03/24/06	271 ± 95
AR-3	EIML Recount 2	03/24/06	198 ± 93
AR-3	EIML Rerun 2	03/24/06	207 ± 101
AR-3	EIML Orig	03/27/06	459 ± 124
AR-3	EIML Recount	03/27/06	346 ± 109
AR-3	EIML	03/29/06	372 ± 122
AR-3	EIML	04/03/06	489 ± 102
AR-3	EIML	04/10/06	351 ± 96
AR-3	EIML	04/10/06	351 ± 96
AR-3	EIML	04/26/06	389 ± 122
AR-3	EIML	06/22/06	224 ± 80
AR-3	EIML	07/20/06	225 ± 85
AR-3		04/26/06	234 ± 128
AR-3	Orig	11/01/06	253 ± 128*
AR-3	Rerun	11/01/06	< 190 *
AR-4	EIML	04/04/06	3741 ± 183
AR-4	EIML	04/10/06	3469 ± 181
AR-4	EIML	04/10/06	3469 ± 181
AR-4	EIML	04/27/06	3041 ± 168
AR-4	EIML	06/22/06	2855 ± 157
AR-4	EIML	07/20/06	3127 ± 168
AR-4	EIML QC Sample	11/21/06	2770 ± 166
AR-4	Orig	04/27/06	3260 ± 367
AR-4	Rerun	04/27/06	4080 ± 463
AR-4	Orig	11/21/06	2980 ± 213*
AR-4	Rerun	11/21/06	2440 ± 318*
AR-4	Orig	11/21/06	2610 ± 196*
AR-4	Rerun	11/21/06	2880 ± 360*
AR-5	EIML	03/24/06	< 151
AR-5	EIML	03/29/06	< 154
AR-5	EIML	04/06/06	< 141
AR-5	EIML	04/06/06	< 141
AR-5	EIML	04/11/06	< 164
AR-5	EIML	04/11/06	< 164
AR-5	EIML	04/27/06	196 ± 95
AR-5	EIML	06/26/06	< 124
AR-5	EIML	07/20/06	< 143
AR-5		04/27/06	< 151
AR-5		11/21/06	< 188 *

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS



TABLE B-I.1

CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING  
STATION, 2006

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
AR-6	EIML	03/24/06	< 151
AR-6	EIML	03/29/06	< 183
AR-6	EIML	04/06/06	< 141
AR-6	EIML	04/06/06	< 141
AR-6	EIML	04/11/06	< 164
AR-6	EIML	04/11/06	< 164
AR-6	EIML	04/27/06	< 167
AR-6	EIML	06/26/06	< 124
AR-6	EIML	07/20/06	< 143
AR-6		04/27/06	< 153
AR-6		11/21/06	< 190 *
AR-7	EIML	03/30/06	< 182
AR-7	EIML	04/05/06	< 139
AR-7	EIML	04/05/06	< 139
AR-7	EIML	04/11/06	183 ± 89
AR-7	EIML	04/11/06	183 ± 89
AR-7	EIML	04/27/06	< 133
AR-7	EIML	06/06/06	< 136
AR-7	EIML	07/12/06	< 147
AR-7		04/27/06	< 160
AR-7		10/30/06	< 187 *
AR-8	EIML	04/05/06	< 139
AR-8	EIML	04/05/06	< 139
AR-8	EIML	04/11/06	< 164
AR-8	EIML	04/11/06	< 164
AR-8	EIML	04/27/06	< 133
AR-8	EIML	06/06/06	< 136
AR-8	EIML	07/12/06	< 147
AR-8		04/27/06	< 161
AR-8		10/30/06	< 192 *
AR-9	EIML	04/05/06	< 157
AR-9	EIML	04/05/06	< 157
AR-9	EIML	04/11/06	< 164
AR-9	EIML	04/11/06	< 164
AR-9	EIML	04/27/06	< 133
AR-9	EIML	06/06/06	< 136
AR-9	EIML	07/12/06	< 147
AR-9		04/27/06	< 155
AR-9		10/30/06	< 191 *
CAR-1	EIML	03/23/06	< 151
CAR-1	EIML	03/29/06	< 154
CAR-1	EIML	04/06/06	< 161
CAR-1	EIML	04/06/06	< 161
CAR-1	EIML	04/12/06	< 142
CAR-1	EIML	04/12/06	< 142
CAR-1	EIML	04/27/06	< 167
CAR-1	EIML	06/26/06	< 124
CAR-1	EIML	07/20/06	< 143
CAR-1		04/27/06	< 154
CAR-1		11/01/06	< 190 *

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS

TABLE B-I.1

CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING  
STATION, 2006

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
CAR-2	EIML	03/24/06	< 151
CAR-2	EIML	03/29/06	< 183
CAR-2	EIML	04/06/06	< 161
CAR-2	EIML	04/06/06	< 161
CAR-2	EIML	04/12/06	< 142
CAR-2	EIML	04/12/06	< 142
CAR-2	EIML	04/12/06	< 142
CAR-2	EIML	04/12/06	< 142
CAR-2	EIML	04/27/06	< 133
CAR-2	EIML	06/26/06	129 ± 72
CAR-2	EIML	06/26/06	< 124
CAR-2	EIML	07/20/06	< 143
CAR-2		04/27/06	< 159
CAR-2		11/02/06	< 187 *
CAR-3	EIML	03/30/06	< 182
CAR-3	EIML	04/05/06	< 157
CAR-3	EIML	04/05/06	< 157
CAR-3	EIML	04/11/06	< 164
CAR-3	EIML	04/11/06	< 164
CAR-3	EIML	04/27/06	< 133
CAR-3	EIML	04/27/06	< 133
CAR-3	EIML	06/06/06	< 136
CAR-3	EIML	07/12/06	< 147
CAR-3		04/27/06	< 150
CAR-3		10/30/06	< 198 *
DF-24	EIML	03/30/06	< 182
DF-24	EIML	04/06/06	< 158
DF-24	EIML	04/25/06	< 124
DF-24	EIML	07/21/06	< 143
DF-24	EIML	07/21/06	< 143
DF-24		04/26/06	< 162
DF-24		11/21/06	< 191 *
GW-9	EIML Orig	04/28/06	211 ± 95
GW-9	EIML Recount - 200 min.	04/28/06	< 123
GW-9	EIML Rerun - 200 min.	04/28/06	< 123
GW-9		04/28/06	< 159
GW-9		11/21/06	< 190 *
MW-1	EIML	03/31/06	< 168
MW-1	EIML	04/06/06	< 158
MW-1	EIML	04/26/06	< 181
MW-1	EIML	07/21/06	< 143
MW-1		04/26/06	< 189
MW-1		11/01/06	< 186 *
MW-3	EIML	03/31/06	< 168
MW-3	EIML	04/06/06	< 158
MW-3	EIML	04/26/06	< 181
MW-3	EIML	07/21/06	< 143
MW-3		04/26/06	< 182
MW-3		11/01/06	< 186 *
TW-13	EIML	04/06/06	< 161

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS

TABLE B-I.1

CONCENTRATIONS OF TRITIUM IN GROUNDWATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING  
STATION, 2006

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE		
TW-13	EIML	04/06/06	< 161	
TW-13	EIML	04/12/06	< 163	
TW-13	EIML	04/12/06	< 163	
TW-13	EIML Orig	04/27/06	241 ± 117	
TW-13	EIML Rerun - 100 min.	04/27/06	< 127	
TW-13	EIML Recount - 200 min.	04/27/06	158 ± 69	
TW-13	EIML Recount Recount - 200 min.	04/27/06	287 ± 72	
TW-13	EIML	06/26/06	< 124	
TW-13	EIML	07/20/06	151 ± 82	82
TW-13	Orig	04/27/06	< 157	
TW-13 DUP	Dup	04/27/06	201 ± 110	
TW-13		11/01/06	< 186	*
TW-14	EIML	04/06/06	< 161	
TW-14	EIML	04/06/06	< 161	
TW-14	EIML	04/12/06	< 142	
TW-14	EIML	04/12/06	< 142	
TW-14	EIML Orig	04/27/06	221 ± 96	
TW-14	EIML Recount - 200 min.	04/27/06	196 ± 70	
TW-14	EIML Rerun - 200 min.	04/27/06	< 123	
TW-14	EIML	06/26/06	< 124	
TW-14	EIML	07/20/06	< 143	
TW-14		04/27/06	< 153	
TW-14		11/01/06	< 189	*
TW-15	EIML	04/06/06	< 161	
TW-15	EIML	04/06/06	< 161	
TW-15	EIML	04/12/06	< 142	
TW-15	EIML	04/12/06	< 142	
TW-15	EIML Orig	04/27/06	222 ± 96	
TW-15	EIML Recount - 200 min.	04/27/06	< 123	
TW-15	EIML Rerun - 200 min.	04/27/06	< 123	
TW-15	EIML	06/26/06	< 124	
TW-15	EIML	07/20/06	< 143	
TW-15	EIML	07/20/06	< 143	
TW-15		04/27/06	< 159	
TW-15		11/01/06	< 185	*
Well 7	EIML	04/27/06	< 167	
Well 7	Orig	04/27/06	< 164	
Well 7 DUP	Dup	04/27/06	< 159	

**TABLE B-I.2**

**HIGHEST TO LOWEST CONCENTRATIONS OF TRITIUM IN  
GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF  
BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
AR-4	Rerun	04/27/06	4080 ± 463
AR-4	EIML	04/04/06	3741 ± 183
AR-4	EIML	04/10/06	3469 ± 181
AR-4	EIML	04/10/06	3469 ± 181
AR-4	Orig	04/27/06	3260 ± 367
AR-4	EIML	07/20/06	3127 ± 168
AR-4	EIML	04/27/06	3041 ± 168
AR-4	Orig	11/21/06	2980 ± 213*
AR-4	Rerun	11/21/06	2880 ± 360*
AR-4	EIML	06/22/06	2855 ± 157
AR-4	EIML QC Sample	11/21/06	2770 ± 166
AR-4	Orig	11/21/06	2610 ± 196*
AR-4	Rerun	11/21/06	2440 ± 318*
AR-11	Orig	04/26/06	2340 ± 282
AR-11	Rerun	04/26/06	2340 ± 282
AR-11	EIML	04/18/06	2260 ± 162
AR-11	EIML Orig	04/18/06	2260 ± 162
AR-11	EIML	07/21/06	2155 ± 146
AR-11	EIML	04/26/06	2104 ± 147
AR-11	Orig	11/21/06	2070 ± 171*
AR-11	EIML Rerun	04/18/06	1965 ± 146
AR-11	Rerun	11/21/06	1860 ± 262*
AR-11	Orig	11/21/06	1780 ± 160*
AR-11	EIML	06/22/06	1732 ± 130
AR-11	Rerun	11/21/06	1710 ± 251*
AR-11	EIML QC Sample	11/21/06	1695 ± 142
AR-2	EIML Recount Recount - 200 min.	04/26/06	624 ± 79
AR-2	EIML	04/10/06	566 ± 104
AR-2	EIML	04/10/06	566 ± 104
AR-2	EIML Orig	04/26/06	533 ± 126
AR-2	Rerun	04/26/06	527 ± 142
AR-2	EIML Orig Recount - 200 min.	04/26/06	514 ± 77
AR-2	Orig	11/01/06	492 ± 142*
AR-3	EIML	04/03/06	489 ± 102
AR-2	EIML	07/20/06	487 ± 96
AR-2	EIML Recount	04/03/06	475 ± 93
AR-3	EIML Orig	03/27/06	459 ± 124
AR-2	EIML Orig	04/03/06	442 ± 100
AR-2	Orig	04/26/06	432 ± 140
AR-2	Rerun	11/01/06	413 ± 138*
AR-2	EIML Orig - 100 min.	04/26/06	391 ± 93
AR-3	EIML	04/26/06	389 ± 122
AR-3	EIML	03/29/06	372 ± 122
AR-2	EIML Orig	03/29/06	361 ± 95
AR-3	EIML	04/10/06	351 ± 96
AR-3	EIML	04/10/06	351 ± 96
AR-3	EIML Recount	03/27/06	346 ± 109
AR-2	EIML	06/22/06	342 ± 85
AR-2	EIML	03/27/06	315 ± 96
TW-13	EIML Recount Recount - 200 min.	04/27/06	287 ± 72

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS

**TABLE B-1.2**

**HIGHEST TO LOWEST CONCENTRATIONS OF TRITIUM IN  
GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF  
BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
AR-3	EIML Rerun 1	03/24/06	271 ± 95
AR-3	Orig	11/01/06	253 ± 128*
TW-13	EIML Orig	04/27/06	241 ± 117
AR-3		04/26/06	234 ± 128
AR-3	EIML	07/20/06	225 ± 85
AR-3	EIML	06/22/06	224 ± 80
AR-2	EIML Recount 2	03/29/06	223 ± 97
TW-15	EIML Orig	04/27/06	222 ± 96
TW-14	EIML Orig	04/27/06	221 ± 96
AR-3	EIML Orig	03/24/06	214 ± 84
GW-9	EIML Orig	04/28/06	211 ± 95
AR-2	EIML Recount 1	03/29/06	208 ± 96
AR-3	EIML Rerun 2	03/24/06	207 ± 101
AR-2	EIML Orig	03/24/06	205 ± 84
TW-13 DUP	Dup	04/27/06	201 ± 110
AR-2	EIML Rerun 1 Recount	03/29/06	200 ± 96
AR-3	EIML Recount 2	03/24/06	198 ± 93
CAR-3		10/30/06	< 198 *
TW-14	EIML Recount - 200 min.	04/27/06	196 ± 70
AR-5	EIML	04/27/06	196 ± 95
AR-10	EIML Dup	04/26/06	192 ± 116
AR-8		10/30/06	< 192 *
AR-9		10/30/06	< 191 *
DF-24		11/21/06	< 191 *
AR-3	Rerun	11/01/06	< 190 *
AR-6		11/21/06	< 190 *
CAR-1		11/01/06	< 190 *
GW-9		11/21/06	< 190 *
MW-1		04/26/06	< 189
TW-14		11/01/06	< 189 *
AR-10		11/01/06	< 188 *
AR-5		11/21/06	< 188 *
AR-7		10/30/06	< 187 *
CAR-2		11/02/06	< 187 *
MW-1		11/01/06	< 186 *
MW-3		11/01/06	< 186 *
TW-13		11/01/06	< 186 *
AR-1		11/01/06	< 185 *
AR-10		04/26/06	< 185
TW-15		11/01/06	< 185 *
AR-6	EIML	03/29/06	< 183
CAR-2	EIML	03/29/06	< 183
AR-7	EIML	04/11/06	183 ± 89
AR-7	EIML	04/11/06	183 ± 89
AR-7	EIML	03/30/06	< 182
CAR-3	EIML	03/30/06	< 182
DF-24	EIML	03/30/06	< 182
MW-3		04/26/06	< 182
AR-10	EIML	07/20/06	182 ± 83
AR-10	EIML Orig	04/26/06	< 181

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS

**TABLE B-I.2**

**HIGHEST TO LOWEST CONCENTRATIONS OF TRITIUM IN  
GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF  
BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
MW-1	EIML	04/26/06	< 181
MW-3	EIML	04/26/06	< 181
AR-10	EIML	06/26/06	180 ± 75
AR-2	EIML Recount	03/24/06	173 ± 92
AR-10	EIML	04/06/06	168 ± 87
AR-10	EIML	04/06/06	168 ± 87
AR-2	EIML Rerun 1	03/29/06	< 168
AR-2	EIML Rerun 2	03/29/06	< 168
AR-2	EIML Rerun 2 Recount	03/29/06	< 168
MW-1	EIML	03/31/06	< 168
MW-3	EIML	03/31/06	< 168
AR-6	EIML	04/27/06	< 167
CAR-1	EIML	04/27/06	< 167
Well 7	EIML	04/27/06	< 167
AR-1		04/26/06	< 165
Well 7	Orig	04/27/06	< 164
AR-5	EIML	04/11/06	< 164
AR-6	EIML	04/11/06	< 164
AR-8	EIML	04/11/06	< 164
AR-9	EIML	04/11/06	< 164
CAR-3	EIML	04/11/06	< 164
AR-5	EIML	04/11/06	< 164
AR-6	EIML	04/11/06	< 164
AR-8	EIML	04/11/06	< 164
AR-9	EIML	04/11/06	< 164
CAR-3	EIML	04/11/06	< 164
TW-13	EIML	04/12/06	< 163
TW-13	EIML	04/12/06	< 163
DF-24		04/26/06	< 162
AR-8		04/27/06	< 161
AR-1	EIML	04/06/06	< 161
CAR-1	EIML	04/06/06	< 161
CAR-2	EIML	04/06/06	< 161
TW-13	EIML	04/06/06	< 161
TW-14	EIML	04/06/06	< 161
TW-15	EIML	04/06/06	< 161
AR-1	EIML	04/06/06	< 161
CAR-1	EIML	04/06/06	< 161
CAR-2	EIML	04/06/06	< 161
TW-13	EIML	04/06/06	< 161
TW-14	EIML	04/06/06	< 161
TW-15	EIML	04/06/06	< 161
AR-2	EIML Rerun	03/24/06	< 160
AR-3	EIML Recount 1	03/24/06	< 160
AR-7		04/27/06	< 160
CAR-2		04/27/06	< 159
GW-9		04/28/06	< 159
TW-15		04/27/06	< 159
Well 7 DUP	Dup	04/27/06	< 159
DF-24	EIML	04/06/06	< 158

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS

**TABLE B-I.2**

**HIGHEST TO LOWEST CONCENTRATIONS OF TRITIUM IN  
GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF  
BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE		
MW-1	EIML	04/06/06	< 158	
MW-3	EIML	04/06/06	< 158	
TW-13	EIML Recount - 200 min.	04/27/06	158 ± 69	
AR-9	EIML	04/05/06	< 157	
CAR-3	EIML	04/05/06	< 157	
AR-9	EIML	04/05/06	< 157	
CAR-3	EIML	04/05/06	< 157	
TW-13	Orig	04/27/06	< 157	
AR-9		04/27/06	< 155	
AR-1	EIML	03/29/06	< 154	
AR-5	EIML	03/29/06	< 154	
CAR-1	EIML	03/29/06	< 154	
CAR-1		04/27/06	< 154	
AR-6		04/27/06	< 153	
TW-14		04/27/06	< 153	
AR-5		04/27/06	< 151	
CAR-1	EIML	03/23/06	< 151	
AR-1	EIML	03/24/06	< 151	
AR-5	EIML	03/24/06	< 151	
AR-6	EIML	03/24/06	< 151	
CAR-2	EIML	03/24/06	< 151	
TW-13	EIML	07/20/06	151 ± 82	82
CAR-3		04/27/06	< 150	
AR-7	EIML	07/12/06	< 147	
AR-8	EIML	07/12/06	< 147	
AR-9	EIML	07/12/06	< 147	
CAR-3	EIML	07/12/06	< 147	
AR-1	EIML	07/20/06	< 143	
AR-5	EIML	07/20/06	< 143	
AR-6	EIML	07/20/06	< 143	
CAR-1	EIML	07/20/06	< 143	
CAR-2	EIML	07/20/06	< 143	
TW-14	EIML	07/20/06	< 143	
TW-15	EIML	07/20/06	< 143	
TW-15	EIML	07/20/06	< 143	
DF-24	EIML	07/21/06	< 143	
MW-1	EIML	07/21/06	< 143	
MW-3	EIML	07/21/06	< 143	
DF-24	EIML	07/21/06	< 143	
AR-1	EIML	04/12/06	< 142	
AR-10	EIML	04/12/06	< 142	
CAR-1	EIML	04/12/06	< 142	
CAR-2	EIML	04/12/06	< 142	
CAR-2	EIML	04/12/06	< 142	
TW-14	EIML	04/12/06	< 142	
TW-15	EIML	04/12/06	< 142	
AR-1	EIML	04/12/06	< 142	
AR-10	EIML	04/12/06	< 142	
CAR-1	EIML	04/12/06	< 142	
CAR-2	EIML	04/12/06	< 142	

EIML - ENVIRONMENTAL INC. MIDWEST LAB

\* INDICATES DISTILLED ANALYSIS

**TABLE B-I.2**

**HIGHEST TO LOWEST CONCENTRATIONS OF TRITIUM IN  
GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF  
BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION DATE	
CAR-2	EIML	04/12/06	< 142
TW-14	EIML	04/12/06	< 142
TW-15	EIML	04/12/06	< 142
AR-5	EIML	04/06/06	< 141
AR-6	EIML	04/06/06	< 141
AR-5	EIML	04/06/06	< 141
AR-6	EIML	04/06/06	< 141
AR-7	EIML	04/05/06	< 139
AR-8	EIML	04/05/06	< 139
AR-7	EIML	04/05/06	< 139
AR-8	EIML	04/05/06	< 139
AR-7	EIML	06/06/06	< 136
AR-8	EIML	06/06/06	< 136
AR-9	EIML	06/06/06	< 136
CAR-3	EIML	06/06/06	< 136
AR-1	EIML	04/26/06	< 134
AR-7	EIML	04/27/06	< 133
AR-8	EIML	04/27/06	< 133
AR-9	EIML	04/27/06	< 133
CAR-2	EIML	04/27/06	< 133
CAR-3	EIML	04/27/06	< 133
CAR-3	EIML	04/27/06	< 133
AR-1	EIML	06/22/06	< 132
CAR-2	EIML	06/26/06	129 ± 72
TW-13	EIML Rerun - 100 min.	04/27/06	< 127
AR-5	EIML	06/26/06	< 124
AR-6	EIML	06/26/06	< 124
CAR-1	EIML	06/26/06	< 124
CAR-2	EIML	06/26/06	< 124
TW-13	EIML	06/26/06	< 124
TW-14	EIML	06/26/06	< 124
TW-15	EIML	06/26/06	< 124
DF-24	EIML	04/25/06	< 124
GW-9	EIML Recount - 200 min.	04/28/06	< 123
GW-9	EIML Rerun - 200 min.	04/28/06	< 123
TW-14	EIML Rerun - 200 min.	04/27/06	< 123
TW-15	EIML Recount - 200 min.	04/27/06	< 123
TW-15	EIML Rerun - 200 min.	04/27/06	< 123

EIML - ENVIRONMENTAL INC. MIDWEST LAB  
\* INDICATES DISTILLED ANALYSIS



**TABLE B-I.3**

**CONCENTRATIONS OF STRONTIUM IN GROUNDWATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING  
STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

SITE	COLLECTION DATE
No strontium detected	

**TABLE B-I.4**

**HIGHEST TO LOWEST CONCENTRATIONS OF STRONTIUM IN  
GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF BYRON  
NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER  $\pm$  2 SIGMA

SITE	COLLECTION DATE
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No strontium detected

**TABLE B-I.5**

**CONCENTRATIONS OF GAMMA EMITTERS IN GROUNDWATER SAMPLES  
COLLECTED IN THE VICINITY OF BYRON NUCLEAR GENERATING  
STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE	COLLECTION		Be-7	K-40
	DATE			
AR-11		11/21/06	-	301 ± 37
AR-11		11/21/06	-	121 ± 36
AR-3		11/01/06	-	56 ± 51
AR-5		11/21/06	-	238 ± 52
AR-5	EIML	04/11/06	-	212 ± 104
AR-6		11/21/06	-	80 ± 35
AR-7		10/30/06	-	56 ± 47
GW-9		04/28/06	-	40 ± 23
TW-13		11/01/06	-	314 ± 31
TW-13	EIML	04/06/06	-	1512 ± 139
TW-13	EIML	04/12/06	-	1028 ± 212
TW-14		11/01/06	-	221 ± 43
TW-14	EIML	04/06/06	-	516 ± 130
TW-14	EIML	04/12/06	-	2873 ± 167
TW-15		11/01/06	-	231 ± 32
TW-15	EIML	04/12/06	-	389 ± 113

EIML - ENVIRONMENTAL INC. MIDWEST LAB

**TABLE B-I.6**

**HIGHEST TO LOWEST CONCENTRATIONS OF GAMMA EMITTERS IN  
GROUNDWATER SAMPLES COLLECTED IN THE VICINITY OF  
BYRON NUCLEAR GENERATING STATION, 2006**

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

SITE		COLLECTION		Be-7	K-40
		DATE			
TW-14	EIML	04/12/06		-	2873 ± 167
TW-13	EIML	04/06/06		-	1512 ± 139
TW-13	EIML	04/12/06		-	1028 ± 212
TW-14	EIML	04/06/06		-	516 ± 130
TW-15	EIML	04/12/06		-	389 ± 113
TW-13		11/01/06		-	314 ± 31
AR-11		11/21/06		-	301 ± 37
AR-5		11/21/06		-	238 ± 52
TW-15		11/01/06		-	231 ± 32
TW-14		11/01/06		-	221 ± 43
AR-5	EIML	04/11/06		-	212 ± 104
AR-11		11/21/06		-	121 ± 36
AR-6		11/21/06		-	80 ± 35
AR-3		11/01/06		-	56 ± 51
AR-7		10/30/06		-	56 ± 47
GW-9		04/28/06		-	40 ± 23