Limerick Generating Station

PECO ENERGY

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T.S.6.9.1.7

April 28, 1995

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Attn. Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Limerick Generating Station, Units 1 and 2
1994 Annual Radiological Environmental Operating Report

Gentlemen:

In accordance with the requirements with the Limerick Generating Station (LGS) Unit 1 & 2 Technical Specifications (TS) Section 6.9.1.7, this letter submits the 1994 Annual Radiological Environmental Operating Report No. 11. This report provides the information delineated in TS Section 6.9.1.7, including a summary of the Radiological Environmental Monitoring Report (REMP).

In assessing the data collected for the Radiological Environmental Monitoring Program, we concluded that the operation of LGS had no adverse impact on the environment. The data collected indicated Mn-54 in sediment. This activity was attributable to LGS operations. The calculated dose to a teenagers skin from the sediment pathway was 1.63 E-03 mrem/yr which represents 0.01% of the allowable fraction of 10CFR50, Appendix I limits.

The 1994 Radiological Environmental Monitoring Program confirmed that the LGS environmental effects from radioactive releases were well below LGS Technician Specification and other applicable regulatory limits.

If you have any questions, please do not hesitate to contact us.

Sincerely,

Walter G. MacFarland

Attachment
WGM/LMP/cmf

cc: T.T. Martin, Administrator, Region I, USNRC
(w/attachment)
N. S. Perry, USNRC Senior Resident Inspector, LGS
(w/attachment)

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Docket No: 50-352
50-353

LIMERICK GENERATING STATION UNITS 1 and 2

Annual Radiological Environmental Operating Report

Report #11

1 January Through 31 December 1994

Prepared By

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I. Summary and Conclusions

This report on the Radiological Environmental Monitoring Program conducted for the Limerick Generating Station by PECO Energy covers the period 1 January 1994 through 31 December 1994. During that time period, 2677 analyses were performed on 2321 samples.

Surface and drinking (potable) water samples were analyzed for concentrations of gross beta (soluble and insoluble fractions), tritium, and gamma emitting nuclides. No fission or activation products were found. Gross beta and tritium activities detected were consistent with those observed in other years.

Fish (predator and bottom feeder) and sediment samples were analyzed for concentrations of gamma emitting nuclides. No activation or fission products were detected in fish samples. Sediment samples collected below the discharge had Cs-137 concentrations consistent with levels observed in the preoperational years. Statistically significant activity for the activation product Mn-54 was found at downstream location 16C4 (Vincent Dam) during the November collection. This activity was attributable to LGS operations. The calculated dose to a teenager's skin from the sediment pathway was 1.63 E-03 mrem/yr which represents 0.01% of the allowable fraction of 10 CFR 50, Appendix I limits.

Air particulate samples were analyzed for concentrations of gross beta and gamma emitting nuclides. Cosmogenic Be-7 and naturally occurring K-40 were observed at levels consistent with those observed in other years. 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 and goat milk samples were analyzed for concentrations of I-131 and gamma emitting nuclides. All I-131 results detected were below the minimum detectable activity. Concentrations of K-40 were consistent with those observed in other years. Of the 20 samples analyzed by gamma spectroscopy, only three samples contained trace activities of Cs-137. The activity was not attributable to LGS operations. The fission product Nb-95 was detected at slightly above the minimum detectable activity level and was attributed to statistical variations. No other fission or activation products were found.

Environmental gamma radiation measurements were made monthly and quarterly using thermoluminescent dosimeters. Levels detected were consistent with those observed in other years.

In assessing all the data gathered for this report and comparing these results with preoperational data, it was evident that, the operation of LGS had no adverse impact on the environment.

II. Introduction

The Limerick Generating Station (LGS), consisting of two 1055 MWe boiling water reactors owned and operated by PECO Energy (PECO), is located adjacent to the Schuylkill River in Montgomery County, Pennsylvania. Unit No. 1 went critical on 22 December 1984. Unit No. 2 went critical on 11 August 1989. The site is located in Piedmont countryside, transversed by numerous valleys containing small tributaries which feed into the Schuylkill River. On the eastern river bank elevation rises from approximately 110 to 300 feet mean sea level (MSL). On the western river bank elevation rises to approximately 50 feet MSL to the western site boundary.

A Radiological Environmental Monitoring Program (REMP) for LGS was initiated in 1971. Review of the 1971 through 1977 REMP data resulted in the modification of the program to comply with changes in the Environmental Report Operating License Stage (EROL) and the Branch Technical Position Paper (Rev. 1, 1979). The preoperational period for most media covers the periods 1 January 1982 through 21 December 1984 and was summarized in a separate report. This report covers those analyses performed by Teledyne Brown Engineering (TB) and Public Service Electric and Gas Company (PSE&G) on samples collected during the period 1 January 1994 through 31 December 1994.

A. Objectives 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 effects (if any) on man and the environment.

III. Program Description

A. Sample Collection

Samples for the LGS REMP were collected for PECO Energy by Normandeau Associates, RMC Environmental Services Division (RMC). This section describes the collection methods used by RMC to obtain environmental samples for the LGS REMP in 1994. Sample locations and descriptions can be found in Tables B-1 and B-2, and Figures B-1 through B-3, Appendix B.

Aquatic Environment

The aquatic environment was examined by analyzing samples of surface water, drinking water, fish, and sediment. Two gallon water samples were collected monthly from continuous samplers located at three surface water locations (10F2, 13B1, and 24S1) and four drinking water locations (13H2, 15F4, 15F7, and 28F3). One additional drinking water location (16C2) was sampled by compositing weekly grab samples into a monthly sample from January through August. Commencing with the September sampling a battery operated composite sampler was utilized. Control locations were 10F2, 24S1, and 28F3. All samples were collected in new unused plastic bottles, which were rinsed at least twice with source water prior to collection. Fish samples comprising the flesh of two groups, catfish/bullhead (bottom feeder) and sunfish (predator), were collected semiannually at three locations: 16C5 and 20S1 (indicator) and 29C1 (control). Sediment samples composed of recently deposited substrate were collected at three locations semiannually: 16B2 and 16C4 (indicator) and 33A2 (control).

Atmospheric Environment

The atmospheric environment was examined by analyzing samples of air particulate, airborne iodine, and milk. Air particulate were collected and analyzed weekly at seventeen locations (2B1, 6C1, 9C1, 10S3, 11S1, 13C1, 13H4, 14S1, 15D1, 17B1, 20D1, 22G1, 26B1, 29B1, 31D1. 34S2, and 35B1). Control locations were 13H4 and 22G1. Airborne iodine samples were collected and analyzed weekly from five locations, (10S3, 11S1, 13C1, 13H4, and 14S1). A sixth location (22G1) was added to the Program during the second quarter. Control locations were 13H4 and 22G1. Air particulate and airborne iodine samples were obtained using a vacuum sampler, glass fiber and charcoal filters, respectively. The filters were replaced weekly and sent to the laboratory for analysis. The vacuum samplers were run continuously at approximately 1 cubic foot per minute.

Milk samples were collected biweekly at five locations (10B1, 19B1, 18C1, 21B1, and 22F1) during April through November, and monthly during December through March and quarterly at four locations (36E1, 9G1, 22C1, and 25C1). Locations 9G1 and 22F1 were controls. All samples were collected in new unused two gallon plastic bottles from the bulk tank at each location, refrigerated, and shipped promptly to the laboratory. No preservative was added.

Ambient Gamma Radiation

Direct radiation measurements were made using thermoluminescent dosimeters (TLD) consisting of calcium sulfate ($CaSO_4$) doped with dysprosium (Dy). The TLD locations were placed on and around the LGS site using a "three ring concept" consisting of:

A site boundary ring consisting of sixteen locations (36S2, 3S1, 5S1, 7S1, 10S3, 11S1, 14S1, 16S2, 18S1, 21S1, 23S2, 25S1, 26S3, 29S1, 32S1 and 34S2) near and within the site perimeter representing fencepost doses (i.e., at locations where the doses will be potentially greater than maximum annual off-site doses) from LGS release. A middle ring consisting of twenty-seven locations (2B1, 2E1, 4E1, 6C1, 7E1, 9C1, 10E1, 10F3, 13C1, 13E1, 15D1, 16F1, 17B1, 19D1, 20D1, 20F1, 24D1, 25D1, 26B1, 28D2, 29B1, 29E1, 31D1, 31D2, 34E1, 35B1 and 35F1) extending to approximately 5 miles from the site designed to measure possible exposures to close-in population. And an outer ring consisting of five locations (5H1, 13H4, 18G1, 22G1 and 32G1) extending from approximately 12 to 30 miles from the site and considered to be unaffected by LGS releases.

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 16-22 1/2 degree sectors around the site, where estimated annual dose from LGS, 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 four thermoluminescent phosphors enclosed in plastic - were placed at each location in a PVC conduit located approximately three feet above ground level. One TLD was exchanged monthly and the other quarterly and sent to the laboratory for analysis.

B. Sample Analysis

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

1. Concentrations of beta emitters in surface and drinking (potable) water, and air particulates.

2. Concentrations of gamma emitters in surface and drinking (potable) water, air particulates, milk, fish, and sediment.

3. Concentrations of tritium in surface and drinking (potable) 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 LGS becoming operational was used as a baseline with which this operational data will be compared. For the purpose of this report, LGS was considered operational at initial criticality. In addition data will be compared to previous years' operational data for consistency and trending. Several factors are important in the interpretation of the data. These factors are discussed here to avoid undue repetition in the discussion of the results.

1. <u>Lower Limit of Detection</u>

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

2. <u>Net Activity Calculation and Reporting of Results</u>

Net activity for a sample was calculated by subtracting background activity from the sample activity. Since the REMP measures extremely small changes in radioactivity in the environment, background variations will result in sample activity being lower than the background activity effecting a negative number. For a more detailed description of the results calculation, see Appendix E.

Teledyne Brown Engineering (TB) reported all analysis results except gamma spec results as Activity ± 2 Sigma. Public Service Electric & Gas (PSE&G) reported all analysis results except gamma spec as Activity ± 1.96 Sigma.

TB reported all gamma spec results as Activity ± 2 Sigma using two conventions (statistically significant and statistically non-significant activity). A Statistically Significant Activity is calculated activity that is greater than the individual sample's Minimum Detectable Activity and therefore most likely a "true positive result". A Statistically Non-significant Activity is calculated activity that is below the individual sample's Minimum

Detectable Activity and therefore most likely not a "true positive result". Statistically Non-significant Activity includes calculated "negative activity".

PSE&G reported gamma spec and iodine-131 analyses as Activity ± 1.96 Sigma counting statistic when the activity was greater than or equal to the 1.96 sigma. When an activity was less than the 1.96 sigma, the result was reported as "< the 1.96 sigma value". PSE&G refers to the 1.96 sigma value as the individual sample MDA. For specific equations please see Appendix E.

Data reported in this report were generated using the convention of rounding the result to the same number of significant places as the first significant digit in the error term (i.e., 3.62 ± 1.23 rounds to 4 ± 1; 10.93 ± 0.96 rounds to 10.9 ± 1.0; -0.01 ± 0.1 rounds to 0.0 ± 0.1). Results for each type of sample were grouped according to the analyses performed. For gamma analyses, at least those nuclides required for each sample media and nuclides which had a significant positive occurrence were reported. Means and standard deviations of these results were calculated. These standard deviations represent the variability of measured results for different samples rather than single analysis uncertainty. For these calculations, all results reported as < MDA were considered to be at the MDA.

D. Program Exceptions

For 1994 the LGS REMP had a sample recovery rate of better than 99%. The exceptions to this program are listed below:

1. Air particulate filters were not available from location 2B1 from week #7 and 26B1 from week #6 due to sample collection errors.

2. Air particulate samples were not collected from location 15D1 (week #32), 34S2 (week #27), 29B1 (week #20) due to electrical problems.

3. Air particulate and air iodine samples were not collected from location 10S3 from week #30 due to electrical problems.

4. Air particulate sample was not collected from location 17B1 from week #39 due to a pump failure.

The specific dates for the above weeks may be found in Table C-IX.1, Appendix C.

5. Surface water samples collected at location 24S1 (LGS Intake) were composites of weekly grabs during the weeks of 1/18/94, 1/24/94, 5/24/94, 7/8/94, 8/23/94, 8/30/94, 9/7/94, 9/20/94, 10/18/94, 11/8/94, 11/14/94 11/28/94 and 12/28/94 due to equipment problems.

6. Surface water samples collected at location 13B1 (Vincent Dam) were composites of weekly grabs during the weeks of 1/10/94, 3/23/94, 3/28/94, 4/4/94, 4/11/94, 5/13/94, 5/17/94, 7/20/94, 12/19/94 and 12/28/94 due to equipment problems.

7. Surface water samples collected at location 10F2 (Perkiomen Pumping Station) were composites of weekly grabs during the weeks of 4/20/94, 4/25/94, 5/17/94, 5/24/94, 5/31/94 and 6/6/94 due to equipment problems.

8. Drinking water samples collected at location 13H2 (Belmont Water Works) were composites of weekly grabs during the weeks of 4/25/94, 5/2/94, 5/13/94 and 5/17/94 due to equipment problems.

9. Drinking water samples collected at location 15F4 (Philadelphia Suburban) were composites of weekly grabs during the week of 4/4/94 due to equipment problems.

10. Drinking water samples collected at location 15F7 (Phoenixville) were composites of weekly grabs during the week of 6/14/94 due to equipment problems.

11. The July TLD from location 20D1 was lost in transit to the laboratory.

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 numerous equipment problems noted for surface water locations 24S1 and 13B1 were discussed with the sample collection contractor. The major cause of pump failure has been silt build up and a subsequent loss of prime and then pump burn out. Maintenance inspections at these two locations will be increased to at least twice per week. The overall sample recovery rate indicates that the appropriate procedures and equipment are in place to assure reliable program implementation.

E. 1994 Program Changes

A battery operated composite water sampler was installed at location 16C2 (Citizens Utilities) in September. The sampler will be removed when temperatures cause the sampler to freeze. At that time weekly grab samples will be collected for the monthly composite.

Air iodine analyses and quarterly air particulate compositing for gamma spectroscopy analysis was added to location 22G1.

IV. Results and Discussion

A. Aquatic Environment

1. Surface Water

Samples were taken from a continuous sampler at three locations (10F2, 13B1, and 24S1) on a monthly schedule. Of these locations, only 13B1 could be affected by Station discharges. The following analyses were performed.

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta in the insoluble and soluble fractions (Tables C-I.1 and C-I.2, Appendix C). Detectable activity was observed in the insoluble and soluble fractions of the surface water samples, ranging from -0.2 to 6 pCi/l for the insoluble fraction and from 2.7 to 10 pCi/l for the soluble fraction. Similar activity levels were observed between indicator and control locations for the insoluble and soluble fractions. the values found were consistent with those found in previous years (Figures C-1 and C-2, Appendix C).

Tritium

Monthly samples from all locations were composited quarterly and analyzed for tritium activity (Table C-I.3, Appendix C). Tritium activity ranged from -20 to 130 pCi/l.

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C-I.4, Appendix C). Statistically significant activity for naturally occurring K-40 was found in 12 of 36 samples. Potassium-40 results ranged from -70 to 61 pCi/l. Statistically significant activity for Ra-226 and Th-228 was found in only one sample. No statistically significant fission or activation products were found.

2. Drinking (Potable) Water

Monthly samples were collected from continuous water samplers at four locations (13H2, 15F4, 15F7, and 28F3). One additional drinking water location (16C2) was sampled by compositing weekly grab samples into a monthly sample from January through August. Commencing with the September sampling a battery operated composite sampler was utilized. Four locations (13H2, 15F4, 15F7, and 16C2) could be affected by Station discharges. The following analyses were performed:

Gross Beta

Samples from all locations were analyzed for concentrations of gross beta in the insoluble and soluble fractions (Tables C-II.1 and C-II.2, Appendix C). The values ranged from -0.3 to 4.4 pCi/l for the insoluble fraction and from 2.0 to 9 pCi/l for the soluble fraction. Concentrations detected in both fractions were consistent with those observed in previous years (Figures C-3 and C-4, Appendix C).

Tritium

Monthly samples from all locations were composited quarterly and analyzed for tritium activity (Table C-II.3, Appendix C). Tritium activity ranged from -20 to 160 pCi/l. Similar activity levels were observed at all locations.

Gamma Spectrometry

Samples from all locations were analyzed for gamma emitting nuclides (Table C-II.4, Appendix C). Statistically significant activity for naturally occurring K-40 was found in 13 of 60 samples. Potassium-40 results ranged from -35 to 56 pCi/l. No statistically significant fission or activation products were found.

3. Fish

Fish samples comprised of catfish/bullhead (bottom feeder) and redbreast/pumpkinseed (predator) were collected at three locations (16C5, 20S1 and 29C1) semiannually. Two locations (16C5 and 20S1) could be affected by Station discharges. The following analysis was performed:

Gamma Spectrometry

The edible portion of fish samples from all three locations was analyzed for gamma emitting nuclides (Table C-III.1, Appendix C). With the exception of naturally occurring K-40, no statistically significant fission or activation products were found. Historical levels of Cs-137 are shown in Figure C-5, Appendix C.

4. Sediment

Aquatic sediment samples were collected at three locations (16B2, 16C4 and 33A2) semiannually. Of these locations, two (16B2 and 16C4) could be affected by Station discharge. The following analysis was performed:

Gamma Spectrometry

Sediment samples from all three locations were analyzed for gamma emitting nuclides (Table C-IV.1, Appendix C). Nuclides detected were

cosmogenic Be-7; naturally occurring K-40, Ra-226 and Th-228; activation products Mn-54; and fission product Cs-137. The nuclides Th-228 and Ra-226 commonly occur in sediment from daughter decay of natural uranium.

Concentrations of the fission product Cs-137 were found in sediment samples from both indicator locations. Location 16B2 had the highest average concentration of 290 pCi/kg dry. The activity detected was consistent with those observed in the preoperational years (Figure C-6, Appendix C).

Statistically significant activity for the activation product Mn-54 was found at location 16C4 (Vincent Dam) during the November collection. The activity ranged from 10 to 50 pCi/kg (dry).

The calculated dose from this pathway to a teenager's skin was 1.63 E-03 mrem/yr. This value is based upon the assumption the maximum concentration Mn-54 at the downstream locations was present the entire year. This dose represents 0.01% of the allowable fraction of 10 CFR 50, Appendix I limits.

B. Atmospheric Environment

1. Airborne

a. Air Particulates

Continuous air particulate samples were collected from seventeen locations on a weekly basis. The seventeen locations were separated into three groups: Group I represents locations within the LGS site boundary (10S3, 11S1, 14S1 and 34S2), Group II represents locations near the LGS site (2B1, 6C1, 9C1, 13C1, 15D1, 17B1, 20D1, 26B1, 29B1, 31D1, 35B1), and Group III represents control locations at remote distances from LGS (13H4 and 22G1). The following analyses were performed:

Gross Beta

Weekly samples were analyzed for concentrations of beta emitters (Table C-V.1, 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 LGS. The results from the On-Site locations (Group I) ranged from 7 to 34 E-3 pCi/m^3 with a mean of 17 E-3 pCi/m^3. The results from the Intermediate Distance locations (Group II) ranged from 6 to 34 E-3 pCi/m^3 with a mean of 17 E-3

pCi/m^3. The results from the Distant locations (Group III) ranged from 7 to 35 E-3 pCi/m^3 with a mean of 18 E-3 pCi/m^3. Comparison of the weekly mean values indicate no notable differences among the three groups (Figure C-7, Appendix C). Comparison of the 1994 air particulate data with previous years data suggest no effects from the operation of LGS (Figure C-8, Appendix C).

Gamma Spectrometry

Weekly samples from six locations (10S3, 11S1, 14S1, 13C1, 13H4, and 22G1) were composited and analyzed quarterly for gamma-emitting nuclides (Table C-V.2, Appendix C). Naturally occurring Be-7 due to cosmic ray activity was detected in all samples. These values ranged from 60 to 96 E-3 pCi/m^3. Potassium-40, also naturally occurring, was detected in statistically significantly quantities in 10 of 20 samples. Activity for K-40 ranged from -5 to 37 E-3 pCi/m^3. No statistically significant fission or activation products were found.

b. Airborne Iodine

Continuous air samples were collected from six (10S3, 11S1, 14S1, 13C1, 13H4, and 22G1) locations and analyzed weekly for I-131 (Table C-VI.1, Appendix C). No statistically significant I-131 activity was found.

2. Terrestrial

a. Milk

Samples were taken from five locations (10B1, 18C1, 19B1, 21B1 and 22F1) biweekly April through November and monthly December through March. Samples from four additional locations (9G1, 22C1, 25C1 and 36E1) were taken quarterly. The following analyses were performed:

Iodine-131

All milk samples from all locations were analyzed for concentrations of I-131 (Table C-VII.1, Appendix C). Values ranged from -.17 to .06 pCi/l. All results were below the minimum detectable activity.

Gamma Spectrometry

Each milk sample from locations 10B1, 18C1, 19B1, 21B1 and 22F1 were analyzed for concentrations of gamma emitting nuclides (Table C-VII.2, Appendix C).

Statistically significant K-40 activity was found in all samples. The values ranged from 1100 to 1800 pCi/l.

Statistically significant activity for Cs-137 was found in 3 of 102 samples. Activity for Cs-137 ranged from -2 to 5 pCi/l. Cesium-137 levels have decreased since the Chernobyl accident in 1986.

C. Ambient Gamma Radiation

Ambient gamma radiation levels were measured utilizing $CaSO_4$:Dy thermoluminescent dosimeters. Forty-eight TLD locations were established around the site in a three ring concept for comparison purposes: an "inner ring" of sixteen locations around the site boundary; a "middle ring" of twenty-seven locations within a ten mile radius of the site; and an "outer ring" of five locations at distances outside the ten mile radius of the site. Results of TLD measurements are listed in Tables C-VIII.1 to C-VIII.4, Appendix C.

Most of the TLD measurements were below 10 mrad/std. month, with a range of 3.6 to 10.5 mR/std. month for the monthly TLDs and from 3.6 to 8.0 mR/std. month for the quarterly TLDs. Levels measured were consistent with those observed in previous years (Figure C-9, Appendix C).

V. References

1. Environmental Report Operating License Stage, Limerick Generating Station, Units 1 and 2, Volumes 1-5 Philadelphia Electric Company.

2. Branch Technical Position Paper, Regulatory Guide 4.8, Revision 1, November 1979.

3. Preoperational Radiological Environmental Monitoring Program Report, Limerick Generating Station Units 1 and 2, 1 January 1982 through 21 December 1984, Teledyne Isotopes and Radiation Management Corporation.

4. Radiological Environmental Operating Report No. 2, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1985, Philadelphia Electric Company, analyses by Teledyne Isotopes.

5. Radiological Environmental Operating Report No. 3, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1986, Philadelphia Electric Company, analyses by Teledyne Isotopes.

6. Radiological Environmental Operating Report No. 4, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1987, Philadelphia Electric Company, analyses by Teledyne Isotopes.

7. Radiological Environmental Operating Report No. 5, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1988, Philadelphia Electric Company, analyses by Teledyne Isotopes.

8. Radiological Environmental Operating Report No. 6, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1989, Philadelphia Electric Company, analyses by Teledyne Isotopes.

9. Radiological Environmental Operating Report No. 7, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1990, Philadelphia Electric Company, analyses by Teledyne Isotopes.

10 Radiological Environmental Operating Report No. 8, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1991, Philadelphia Electric Company, analyses by Teledyne Isotopes.

11 Radiological Environmental Operating Report No. 9, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1992, Philadelphia Electric Company, analyses by Teledyne Isotopes.

12 Radiological Environmental Operating Report No. 10, Limerick Generating Station Units 1 and 2, 1 January through 31 December 1993, PECO Energy Company, analyses by Teledyne Isotopes.

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING REPORT SUMMARY

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: LIMERICK GENERATING STATION — DOCKET NO.: 50-352 & 50-353

LOCATION OF FACILITY: MONTGOMERY COUNTY, PA — REPORTING PERIOD: 1994

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
SURFACE WATER (PCI/LITER)	GROSS BETA INSOLUBLE	36	4	1.5 (12/12) (0.2/6.0)	0.5 (24/24) (-0.2/1.6)	1.5 (12/12) (0.2/6.0)	13B1 (INDICATOR) VINCENT DAM 1.75 MILES SE OF SITE	0
	GROSS BETA SOLUBLE	36	4	4.3 (12/12) (2.7/6.0)	5.6 (24/24) (2.7/10.0)	5.9 (12/12) (2.7/10.0)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
	TRITIUM	12	2000	50 (4/4) (-10/130)	50 (8/8) (-20/120)	50 (4/4) (-20/120)	24S1 (CONTROL) LGS INTAKE 0.20 MILES SW OF SITE	0
	GAMMA K-40	36	N/A	-1 (12/12) (-40/26)	-2 (24/24) (-70/61)	9 (12/12) (-11/61)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
	MN-54		15	0.1 (12/12) (-0.1/0.4)	0.1 (24/24) (-1.0/0.7)	0.1 (12/12) (-0.1/0.4)	13B1 (INDICATOR) VINCENT DAM 1.75 MILES SE OF SITE	0
	CO-58		15	-0.1 (12/12) (-0.5/0.2)	0.0 (24/24) (-0.4/0.5)	0.0 (12/12) (-0.3/0.5)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
	FE-59		30	-0.2 (12/12) (-1.2/0.3)	0.2 (24/24) (-1.0/1.2)	0.3 (12/12) (-1.0/1.0)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
	CO-60		15	0.2 (12/12) (-0.1/0.8)	0.2 (24/24) (-0.3/0.6)	0.2 (12/12) (-0.1/0.8)	13B1 (INDICATOR) VINCENT DAM 1.75 MILES SE OF SITE	0
	ZN-65		30	0.3 (12/12) (-0.7/1.0)	0.4 (24/24) (-0.4/2.0)	0.4 (12/12) (-0.4/2.0)	24S1 (CONTROL) LGS INTAKE 0.20 MILES SW OF SITE	0

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

APPENDIX A

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: LIMERICK GENERATING STATION DOCKET NO.: 50-352 & 50-353

LOCATION OF FACILITY: MONTGOMERY COUNTY, PA REPORTING PERIOD: 1994

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	ZR-95		30	0.8 (12/12) (-0.9/2.0)	0.6 (24/24) (-1.0/2.0)	0.8 (12/12) (-0.9/2.0)	13B1 (INDICATOR) VINCENT DAM 1.75 MILES SE OF SITE	0
	NB-95		15	0.4 (12/12) (-0.1/0.8)	0.4 (24/24) (-0.3/0.9)	0.4 (12/12) (-0.1/0.8)	13B1 (INDICATOR) VINCENT DAM 1.75 MILES SE OF SITE	0
	CS-134		15	-0.1 (12/12) (-0.6/0.3)	0.0 (24/24) (-0.7/0.3)	0.1 (12/12) (-0.4/0.3)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
	CS-137		18	0.1 (12/12) (-0.5/0.5)	0.3 (24/24) (-0.1/0.8)	0.4 (12/12) (0.0/0.8)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
	BA-140		60	0 (12/12) (-3/3)	0 (24/24) (-2/2)	0 (12/12) (-1/2)	24S1 (CONTROL) LGS INTAKE 0.20 MILES SW OF SITE	0
	LA-140		15	0.2 (12/12) (-0.3/0.8)	-0.2 (24/24) (-1.0/0.6)	0.2 (12/12) (-0.3/0.8)	13B1 (INDICATOR) VINCENT DAM 1.75 MILES SE OF SITE	0
	RA-226		N/A	-7 (12/12) (-23/5)	-6 (24/24) (-20/10)	-6 (12/12) (-20/10)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
	TH-228		N/A	-0.2 (12/12) (-2.8/2.8)	0.2 (24/24) (-2.4/2.4)	0.7 (12/12) (-2.4/2.4)	10F2 (CONTROL) PERKIOMEN PUMPING STATION 7.25 MILES E OF SITE	0
DRINKING WATER (PCI/LITER)	GROSS BETA INSOLUBLE	60	4	0.6 (48/48) (-0.3/4.4)	0.3 (12/12) (-0.2/2.2)	1.0 (12/12) (0.0/4.4)	13H2 (INDICATOR) BELMONT WATER WORKS (PHILA.) 24.91 MILES SE OF SITE	0

MEAN AND RANGE BASED UPON DETECTABLE MEASUREMENTS ONLY.

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LOCATION OF FACILITY: MONTGOMERY COUNTY, PA   REPORTING PERIOD: 1994

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	GROSS BETA SOLUBLE	60	4	5.1 (48/48) (2.0/9.0)	4.6 (12/12) (3.0/6.0)	5.8 (12/12) (4.0/9.0)	15F4 (INDICATOR) PHILA. SUB. WATER CO. 8.62 MILES SE OF SITE	0
	TRITIUM	20	2000	40 (16/16) (-40/160)	20 (4/4) (-30/120)	70 (4/4) (-40/160)	13H2 (INDICATOR) BELMONT WATER WORKS (PHILA.) 24.91 MILES SE OF SITE	0
	GAMMA K-40	60	N/A	-3 (48/48) (-35/56)	4 (12/12) (-11/25)	4 (12/12) (-11/25)	28F3 (CONTROL) POTTSTOWN WATER AUTHORITY 5.84 MILES WNW OF SITE	0
	MN-54		15	0.1 (48/48) (-0.7/0.5)	0.1 (12/12) (-0.2/0.4)	0.1 (12/12) (-0.2/0.4)	28F3 (CONTROL) POTTSTOWN WATER AUTHORITY 5.84 MILES WNW OF SITE	0
	CO-58		15	-0.1 (48/48) (-0.7/0.5)	-0.1 (12/12) (-0.4/0.4)	0.0 (12/12) (-0.4/0.5)	13H2 (INDICATOR) BELMONT WATER WORKS (PHILA.) 24.91 MILES SE OF SITE	0
	FE-59		30	0.0 (48/48) (-1.0/0.8)	0.2 (12/12) (-0.6/1.0)	0.2 (12/12) (-0.6/1.0)	28F3 (CONTROL) POTTSTOWN WATER AUTHORITY 5.84 MILES WNW OF SITE	0
	CO-60		15	0.1 (48/48) (-0.4/2.4)	0.2 (12/12) (-0.2/0.6)	0.3 (12/12) (-0.4/2.4)	13H2 (INDICATOR) BELMONT WATER WORKS (PHILA.) 24.91 MILES SE OF SITE	0
	ZN-65		30	0.2 (48/48) (-1.0/3.0)	0.3 (12/12) (-0.8/1.4)	0.4 (12/12) (-0.7/2.0)	15F7 (INDICATOR) PHOENIXVILLE WATER WORKS 6.33 MILES SSE OF SITE	0
	ZR-95		30	0.3 (48/48) (-1.0/2.0)	0.4 (12/12) (-0.5/1.0)	0.6 (12/12) (-0.3/2.0)	16C2 (INDICATOR) CITIZENS HOME WATER CO. 2.66 MILES SSE OF SITE	0

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LOCATION OF FACILITY: MONTGOMERY COUNTY, PA   REPORTING PERIOD: 1994

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	NB-95		15	0.3 (48/48) (-0.7/0.7)	0.3 (12/12) (-0.1/0.7)	0.3 (12/12) (-0.7/0.7)	13H2 (INDICATOR) BELMONT WATER WORKS (PHILA.) 24.91 MILES SE OF SITE	0
	CS-134		15	0.0 (48/48) (-0.7/0.5)	0.0 (12/12) (-1.3/0.4)	0.1 (12/12) (-0.1/0.5)	13H2 (INDICATOR) BELMONT WATER WORKS (PHILA.) 24.91 MILES SE OF SITE	0
	CS-137		18	0.2 (48/48) (-0.6/0.7)	0.3 (12/12) (-0.1/0.8)	0.3 (12/12) (-0.1/0.8)	28F3 (CONTROL) POTTSTOWN WATER AUTHORITY 5.84 MILES WNW OF SITE	0
	BA-140		60	0 (48/48) (-2/2)	0 (12/12) (-1/4)	0 (12/12) (-2/2)	15F4 (INDICATOR) PHILA. SUB. WATER CO. 8.62 MILES SE OF SITE	0
	LA-140		15	0.0 (48/48) (-1.0/1.0)	-0.2 (12/12) (-1.0/0.3)	0.1 (12/12) (-0.7/1.0)	16C2 (INDICATOR) CITIZENS HOME WATER CO. 2.66 MILES SSE OF SITE	0
PREDATOR (FISH) (PCI/KILOGRAM WET)	GAMMA K-40	6	N/A	2900 (4/4) (2400/3600)	3300 (2/2) (3000/3500)	3300 (2/2) (3000/3500)	29C1 (CONTROL) Pottstown Vicinity UPSTREAM OF DISCHARGE	0
	MN-54		130	6 (4/4) (1/10)	-3 (2/2) (-5/-1)	8 (2/2) (6/10)	20S1 (INDICATOR) Discharge Area DOWNSTREAM OF DISCHARGE	0
	CO-58		130	-3 (4/4) (-7/1)	1 (2/2) (-1/2)	1 (2/2) (-1/2)	29C1 (CONTROL) Pottstown Vicinity UPSTREAM OF DISCHARGE	0
	FE-59		260	0 (4/4) (-10/20)	0 (2/2) (0/0)	10 (2/2) (0/20)	20S1 (INDICATOR) Discharge Area DOWNSTREAM OF DISCHARGE	0

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NAME OF FACILITY: LIMERICK GENERATING STATION   DOCKET NO.: 50-352 & 50-353

LOCATION OF FACILITY: MONTGOMERY COUNTY, PA   REPORTING PERIOD: 1994

MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	CO-60		130	8 (4/4) (3/11)	0 (2/2) (0/10)	10 (2/2) (8/11)	16C5 (INDICATOR) Vincent Pool DOWNSTREAM OF DISCHARGE	0
	ZN-65		260	10 (4/4) (0/20)	0 (2/2) (0/10)	20 (2/2) (10/20)	16C5 (INDICATOR) Vincent Pool DOWNSTREAM OF DISCHARGE	0
	CS-134		130	0 (4/4) (-4/3)	3 (2/2) (2/4)	3 (2/2) (2/4)	29C1 (CONTROL) Pottstown Vicinity UPSTREAM OF DISCHARGE	0
	CS-137		150	4 (4/4) (1/7)	5 (2/2) (2/7)	6 (2/2) (5/7)	16C5 (INDICATOR) Vincent Pool DOWNSTREAM OF DISCHARGE	0
BOTTOM FEEDER (FISH) (PCI/KILOGRAM WET)	GAMMA K-40	6	N/A	3300 (4/4) (2700/3900)	3700 (2/2) (3500/3900)	3700 (2/2) (3500/3900)	29C1 (CONTROL) Pottstown Vicinity UPSTREAM OF DISCHARGE	0
	MN-54		130	2 (4/4) (-1/8)	0 (2/2) (0/10)	5 (2/2) (1/8)	20S1 (INDICATOR) Discharge Area DOWNSTREAM OF DISCHARGE	0
	CO-58		130	0 (4/4) (-2/2)	-10 (2/2) (-10/-10)	0 (2/2) (0/1)	20S1 (INDICATOR) Discharge Area DOWNSTREAM OF DISCHARGE	0
	FE-59		260	0 (4/4) (-10/10)	-10 (2/2) (-10/0)	10 (2/2) (0/10)	16C5 (INDICATOR) Vincent Pool DOWNSTREAM OF DISCHARGE	0
	CO-60		130	4 (4/4) (-2/10)	0 (2/2) (-10/0)	6 (2/2) (1/10)	20S1 (INDICATOR) Discharge Area DOWNSTREAM OF DISCHARGE	0

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
	ZN-65		260	0 (4/4) (-20/10)	10 (2/2) (10/10)	10 (2/2) (10/10)	16C5 (INDICATOR) Vincent Pool DOWNSTREAM OF DISCHARGE	0
	CS-134		130	-4 (4/4) (-8/0)	10 (2/2) (10/10)	10 (2/2) (10/10)	29C1 (CONTROL) Pottstown Vicinity UPSTREAM OF DISCHARGE	0
	CS-137		150	10 (4/4) (8/15)	10 (2/2) (10/10)	12 (2/2) (8/15)	20S1 (INDICATOR) Discharge Area DOWNSTREAM OF DISCHARGE	0
SILT (PCI/KILOGRAM DRY)	GAMMA K-40	6	N/A	13500 (4/4) (9000/16000)	8400 (2/2) (8200/8600)	15000 (2/2) (14000/16000)	16B2 (INDICATOR) LINFIELD BRIDGE 1.35 MILES SSE OF SITE	0
	MN-54		N/A	20 (4/4) (0/50)	20 (2/2) (10/40)	20 (2/2) (10/50)	16C4 (INDICATOR) Vicent Dam 2.18 MILES SSE OF SITE	0
	CS-134		150	60 (4/4) (40/90)	50 (2/2) (40/60)	80 (2/2) (60/90)	16B2 (INDICATOR) LINFIELD BRIDGE 1.35 MILES SSE OF SITE	0
	CS-137		180	220 (4/4) (140/400)	10 (2/2) (0/10)	290 (2/2) (180/400)	16B2 (INDICATOR) LINFIELD BRIDGE 1.35 MILES SSE OF SITE	0
	RA-226		N/A	1900 (4/4) (1200/2600)	1700 (2/2) (1600/1800)	2300 (2/2) (2000/2600)	16B2 (INDICATOR) LINFIELD BRIDGE 1.35 MILES SSE OF SITE	0
	TH-228		N/A	1300 (4/4) (1100/1800)	1000 (2/2) (1000/1100)	1500 (2/2) (1100/1800)	16C4 (INDICATOR) Vicent Dam 1.35 MILES SSE OF SITE	0

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RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM ANNUAL SUMMARY

NAME OF FACILITY: LIMERICK GENERATING STATION DOCKET NO.: 50-352 & 50-353

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MEDIUM OR PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE OF ANALYSES PERFORMED	NUMBER OF ANALYSES PERFORMED	REQUIRED LOWER LIMIT OF DETECTION (LLD)	INDICATOR LOCATIONS MEAN (F) RANGE	CONTROL LOCATIONS MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: MEAN (F) RANGE	LOCATION WITH HIGHEST ANNUAL MEAN: STATION # NAME DISTANCE & DIRECTION	NUMBER OF NONROUTINE REPORTED MEASUREMENTS
AIR PARTICULATE (E-3 PCI/CU. METER)	GROSS BETA	877	10	17 (773/773) (6/34)	19 (104/104) (7/140)	22 (52/52) (10/140)	13H4 (CONTROL) 2301 MARKET ST. (PHILA.) 28.53 MILES SE OF SITE	0
	GAMMA BE-7	22	N/A	74 (16/16) (63/96)	71 (6/6) (60/87)	80 (4/4) (74/96)	10S3 (INDICATOR) KEEN ROAD 0.50 MILES E OF SITE	0
	K-40		N/A	7 (16/16) (-5/37)	4 (6/6) (0/7)	16 (4/4) (1/37)	11S1 (INDICATOR) LGS INFORMATION CENTER 0.38 MILES ESE OF SITE	0
	CS-134		50	0.0 (16/16) (-0.4/0.2)	0.0 (6/6) (-0.2/0.1)	0.1 (4/4) (-0.1/0.2)	11S1 (INDICATOR) LGS INFORMATION CENTER 0.38 MILES ESE OF SITE	0
	CS-137		60	0.1 (16/16) (-0.2/0.4)	0.0 (6/6) (-0.1/0.1)	0.2 (4/4) (0.0/0.4)	13C1 (INDICATOR) KING ROAD 2.84 MILES SE OF SITE	0
AIR IODINE (E-3 PCI/CU. METER)	I-131	293	70	0 (207/207) (-21/16)	0 (86/86) (-21/13)	0 (34/34) (-21/12)	22G1 (CONTROL) MANOR SUBSTATION 17.73 MILES SW OF SITE	0
MILK (PCI/LITER)	I-131	100	1	0.00 (71/71) (-0.08/0.05)	0.00 (29/29) (-0.04/0.06)	0.02 (4/4) (0.00/0.04)	25C1 (INDICATOR) REGIONAL FARM 2.69 MILES SW OF SITE	0
	GAMMA K-40	84	N/A	1400 (63/63) (1100/1700)	1300 (21/21) (1100/1500)	1400 (21/21) (1300/1600)	18C1 (INDICATOR) REGIONAL FARM 2.26 MILES S OF SITE	0

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	CS-134		15	0 (63/63) (-2/4)	0 (21/21) (-1/2)	1 (21/21) (-2/4)	21B1 (INDICATOR) REGIONAL FARM 1.75 MILES SSW OF SITE	0
	CS-137		18	1 (63/63) (-2/4)	2 (21/21) (0/5)	2 (21/21) (0/5)	22F1 (CONTROL) REGIONAL FARM 9.58 MILES SW OF SITE	0
	BA-140		60	0 (63/63) (-6/9)	1 (21/21) (-6/6)	1 (21/21) (-6/6)	22F1 (CONTROL) REGIONAL FARM 9.58 MILES SW OF SITE	0
	LA-140		15	0 (63/63) (-4/3)	0 (21/21) (-3/2)	0 (21/21) (-3/2)	22F1 (CONTROL) REGIONAL FARM 9.58 MILES SW OF SITE	0
GOAT MILK (PCI/LITER)	I-131	18	1	-0.02 (18/18) (-0.17/0.06)		-0.02 (18/18) (-0.17/0.06)	10B1 (INDICATOR) REGIONAL FARM 1.08 MILES E OF SITE	0
	GAMMA K-40	18	N/A	1500 (18/18) (1200/1800)		1500 (18/18) (1200/1800)	10B1 (INDICATOR) REGIONAL FARM 1.08 MILES E OF SITE	0
	CS-134		15	-1 (18/18) (-5/2)		-1 (18/18) (-5/2)	10B1 (INDICATOR) REGIONAL FARM 1.08 MILES E OF SITE	0
	CS-137		18	2 (18/18) (0/6)		2 (18/18) (0/6)	10B1 (INDICATOR) REGIONAL FARM 1.08 MILES E OF SITE	0
	BA-140		60	-1 (18/18) (-7/6)		-1 (18/18) (-7/6)	10B1 (INDICATOR) REGIONAL FARM 1.08 MILES E OF SITE	0

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	LA-140		15	0 (18/18) (-1/1)		0 (18/18) (-1/1)	10B1 (INDICATOR) REGIONAL FARM 1.08 MILES E OF SITE	0
DIRECT RADIATION (MILLI-ROENTGEN / STD. MONTH)	TLD-MONTHLY	575	N/A	7.09 (515/515) (4.20-10.50)	6.76 (60/60) (3.60-10.40)	8.51 (12/12) (5.60-10.50)	31D1 (INDICATOR) LINCOLN SUBSTATION 3.00 MILES WNW OF SITE	0
	TLD-QUARTERLY	192	N/A	5.58 (172/172) (3.60-8.00)	5.22 (20/20) (3.60-7.80)	6.93 (4/4) (5.50-8.00)	31D1 (INDICATOR) LINCOLN SUBSTATION 3.00 MILES WNW OF SITE	0

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APPENDIX B

SAMPLE DESIGNATION AND LOCATIONS

APPENDIX B: SAMPLE DESIGNATION AND LOCATIONS

LIST OF TABLES AND FIGURES

TABLE B-1: Location Designation and Identification System for the Limerick Generating Station

<u>XXYZ</u> - General code for identification of locations, where:

<u>XX</u> - Angular Sector of Sampling Location. The compass is divided into 36 sectors of 10 degrees each with center at Limerick's Units 1 and 2 off-gas vents. Sector 36 is centered due North, and others are numbered in a clockwise direction.

<u>Y</u> - Radial Zone of Sampling Location (in this report, the radial distance from the Limerick vent for all regional stations).

S : on-site location
A : 0-1 mile off-site
B : 1-2 miles off-site
C : 2-3 miles off-site
D : 3-4 miles off-site
E : 4-5 miles off-site
F : 5-10 miles off-site
G : 10-20 miles off-site
H : 20-100 miles off-site

<u>Z</u> - Station's Numerical Designation within sector and zone, using 1, 2, 3... in each sector and zone.

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
A. Surface Water				
10F2	Perkiomen Pumping Station (control)	7.25 miles E	Two gallon sample collected from a continuous water sampler, monthly	G. Beta (S&I) - monthly - TB Gamma Spec - monthly - TB Tritium - quarterly comp. - TB G. Beta (S&I) - monthly - PSEG* Gamma Spec - monthly - PSEG*
13B1	Vincent Dam (indicator)	1.75 miles SE	Same as 10F2	Same as 10F2
24S1	Limerick Intake (control)	0.20 miles SW	Same as 10F2	Same as 10F2
B. Drinking (Potable) Water				
13H2	Belmont Water Works (indicator)	24.91 miles SE	Two gallon composite sample collected from a continuous water sampler, monthly	G. Beta (S&I) - monthly - TB Gamma Spec - monthly - TB Tritium - quarterly comp. - TB
15F4	Philadelphia Suburban Water Company (indicator)	8.62 miles SE	Same as 13H2	Same as 13H2
15F7	Phoenixville Water Works (indicator)	6.33 miles SSE	Same as 13H2	Same as 13H2

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
16C2	Citizens Home Water Company (indicator)	2.66 miles SSE	Two gallon composite sample collected by weekly grab samples, monthly	Same as 13H2
28F3	Pottstown Water Authority (control)	5.84 miles WNW	Same as 13H2	Same as 13H2
C. Cow's Milk				
36E1		4.70 miles N	Two gallons processed milk purchased quarterly at farm dairy store	I-131 - quarterly - TB
9G1	Control	11.64 miles E	Two gallon grab sample collected from bulk tank at farm quarterly	Same as 36E1
18C1		2.26 miles S	Two gallon grab sample collected from bulk tank at farm bi-weekly during grazing season (April through November); monthly otherwise	I-131 - biweekly - TB Gamma Spec - biweekly - TB
19B1		1.95 miles SSW	Same as 18C1	I-131 - biweekly - TB Gamma Spec - biweekly - TB I-131 - quarterly - PSEG* Gamma Spec - quarterly - PSEG*

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
21B1		1.75 miles SSW	Same as 18C1	Same as 19B1
22C1		2.92 miles SW	Same as 9G1	Same as 36E1
22F1	Control	9.58 miles SW	Same as 18C1	Same as 19B1
25C1		2.69 miles WSW	Same as 18C1	Same as 18C1
D. Goat's Milk				
10B1		1.08 miles E	Two gallon grab sample purchased at goat farm, biweekly during grazing season (April through November); monthly otherwise	I-131 - biweekly - TB Gamma Spec - biweekly - TB
E. Air Particulates / Air Iodine				
2B1	Sanatoga Substation	1.49 miles NNE	Approximately 1 cfm continuous flow through glass fiber and charcoal filters (approx. 2" diameter) which are installed for one week and replaced	G. Beta - weekly - TB I-131 - if necessary
6C1	Pottstown Landing Field	2.14 miles NE	Same as 2B1	Same as 2B1
9C1	Reed Road	2.15 miles E	Same as 2B1	Same as 2B1

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
10S3	Keen Road	0.50 miles E	Same as 2B1	G. Beta - weekly - TB Gamma Spec - quarterly comp. - TB I-131 - weekly - TB
11S1	LGS Information Center	0.38 miles ESE	Same as 2B1	Same as 10S3
11S2	LGS Information Center	0.38 miles ESE	Same as 2B1	G. Beta - weekly - PSEG* Gamma Spec - quar comp - PSEG*
13C1	King Road	2.84 miles SE	Same as 2B1	Same as 10S3
13H4	2301 Market St., Philadelphia (control)	28.53 miles SE	Same as 2B1	Same as 10S3
14S1	Longview Road	0.63 miles SSE	Same as 2B1	Same as 10S3
14S2	Longview Road	0.63 miles SSE	Same as 2B1	Same as 11S2
15D1	Spring City Substation	3.20 miles SE	Same as 2B1	Same as 2B1
17B1	Linfield Substation	1.60 miles S	Same as 2B1	Same as 2B1
20D1	Ellis Wood Road	3.06 miles SSW	Same as 2B1	Same as 2B1
22G1	Manor Substation (control)	17.73 miles SW	Same as 2B1	Same as 2B1
26B1	Old Schuylkill Road	1.68 miles W	Same as 2B1	Same as 2B1
29B1	Vost Road	1.77 miles WNW	Same as 2B1	Same as 2B1

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
31D1	Lincoln Substation	3.00 miles WNW	Same as 2B1	Same as 2B1
34S2	Met. Tower #1	0.58 miles NNW	Same as 2B1	Same as 2B1
35B1	Pleasantview Road	1.86 miles NNW	Same as 2B1	Same as 2B1
F. Fish				
16C5	Vincent Pool (indicator)	Downstream of Discharge	Fish flesh from two groups representing predator and bottom feeder species collected by electrofisher or other appropriate fishery gear, semiannually	Gamma Spec - semiannually - TB
20S1	Discharge Area (indicator)	Downstream of Discharge	Same as 16C5	Same as 16C5
29C1	Pottstown Vicinity (control)	Upstream of Intake	Same as 16C5	Same as 16C5
G. Sediment				
16B2	Linfield Bridge (indicator)	1.35 miles SSE	Recently deposited sediment collected below the waterline, semi-annually	Gamma Spec - semiannually - TB
16C4	Vicent Dam (indicator)	2.18 miles SSE	Same as 16B2	Same as 16B2
33A2	Control	0.84 miles NNW	Same as 16B2	Same as 16B2

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
<u>H. Environmental Dosimetry - TLD</u>				
36S2	Evergreen & Sanatoga Road	0.60 miles N	Collection method and frequency is described in placement procedure Section III, A.	TLD - monthly - TB TLD - quarterly - TB
2B1	Sanatoga Substation	1.49 miles NNE	Same as 36S2	Same as 36S2
2E1	Laughing Waters GSC	4.76 miles NNE	Same as 36S2	Same as 36S2
3S1	Sanatoga Road	0.44 miles NNE	Same as 36S2	Same as 36S2
4E1	Neiffer Road	4.78 miles NE	Same as 36S2	Same as 36S2
5S1	Possum Hollow Road	0.45 miles NE	Same as 36S2	Same as 36S2
5H1	Birch Substation	21.54 miles NE	Same as 36S2	Same as 36S2
6C1	Pottstown Landing Field	2.14 miles NE	Same as 36S2	Same as 36S2
7S1	LGS Training Center	0.59 miles ENE	Same as 36S2	Same as 36S2
7E1	Pheasant Road	4.26 miles ENE	Same as 36S2	Same as 36S2
9C1	Reed Road	2.15 miles E	Same as 36S2	Same as 36S2
10S3	Keen Road	0.50 miles E	Same as 36S2	Same as 36S2
10E1	Royersford Road	3.94 miles E	Same as 36S2	Same as 36S2

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
10F3	Trappe Substation	5.58 miles ESE	Same as 36S2	Same as 36S2
11S1	LGS Information Center	0.38 miles ESE	Same as 36S2	Same as 36S2
13C1	King Road	2.84 miles SE	Same as 36S2	Same as 36S2
13E1	Vaughn Substation	4.31 miles SE	Same as 36S2	Same as 36S2
13H4	2301 Market Street Philadelphia, (control)	28.53 miles SE	Same as 36S2	Same as 36S2
14S1	Longview Road	0.63 miles SSE	Same as 36S2	Same as 36S2
15D1	Spring City Substation	3.20 miles SE	Same as 36S2	Same as 36S2
16S2	Longview Road	0.64 miles SSE	Same as 36S2	Same as 36S2
16F1	Pikeland Substation	5.04 miles SSE	Same as 36S2	Same as 36S2
17B1	Linfield Substation	1.60 miles S	Same as 36S2	Same as 36S2
18S1	Rail Line along Longview Road	0.43 miles SSE	Same as 36S2	Same as 36S2
18G1	Planebrook Substation	12.97 miles S	Same as 36S2	Same as 36S2
19D1	Snowden Substation	3.49 miles S	Same as 36S2	Same as 36S2
20D1	Ellis Woods Road	3.06 miles SSW	Same as 36S2	Same as 36S2

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
20F1	Sheeder Substation	5.24 miles SSW	Same as 36S2	Same as 36S2
21S1	Impound Basin	0.51 miles SW	Same as 36S2	Same as 36S2
22G1	Manor Substation	17.73 miles SW	Same as 36S2	Same as 36S2
23S2	Transmission Tower	0.53 miles SW	Same as 36S2	Same as 36S2
24D1	Porters Mill Substation	3.97 miles SW	Same as 36S2	Same as 36S2
25S1	Sector Site Boundary	0.40 miles WSW	Same as 36S2	Same as 36S2
25D1	Hoffecker & Keim Streets	3.99 miles WSW	Same as 36S2	Same as 36S2
26S3	Met. Tower #2	0.40 miles W	Same as 36S2	Same as 36S2
26B1	Old Schuylkill Road	1.68 miles W	Same as 36S2	Same as 36S2
28D2	W. Cedarville Road	4.40 miles W	Same as 36S2	Same as 36S2
29S1	Sectur Site Boundary	0.55 miles WNW	Same as 36S2	Same as 36S2
29B1	Yost Road	1.77 miles WNW	Same as 36S2	Same as 36S2
29E1	Prince Street	4.95 miles WNW	Same as 36S2	Same as 36S2
31D1	Lincoln Substation	3.00 miles WNW	Same as 36S2	Same as 36S2
31D2	Poplar Substation	3.87 miles NW	Same as 36S2	Same as 36S2
32S1	Sector Site Boundary	0.53 miles NNW	Same as 36S2	Same as 36S2

TABLE B-2: Sample Collection and Analysis Program for the Radiological Environmental Monitoring Program for Limerick Generating Station, 1994

Location	Location Description	Distance & Direction	Collection Method and Frequency	Analysis & Frequency Performed--Consultant
32G1	Friendensburg Substation	15.20 miles NW	Same as 36S2	Same as 36S2
34S2	Met. Tower #1	0.58 miles NNW	Same as 36S2	Same as 36S2
34E1	Varnell Road	4.59 miles NNW	Same as 36S2	Same as 36S2
35B1	Pleasantville Road	1.86 miles NNW	Same as 36S2	Same as 36S2
35F1	Ringing Rock Substation	3.84 miles NNW	Same as 36S2	Same as 36S2

* QC Laboratory

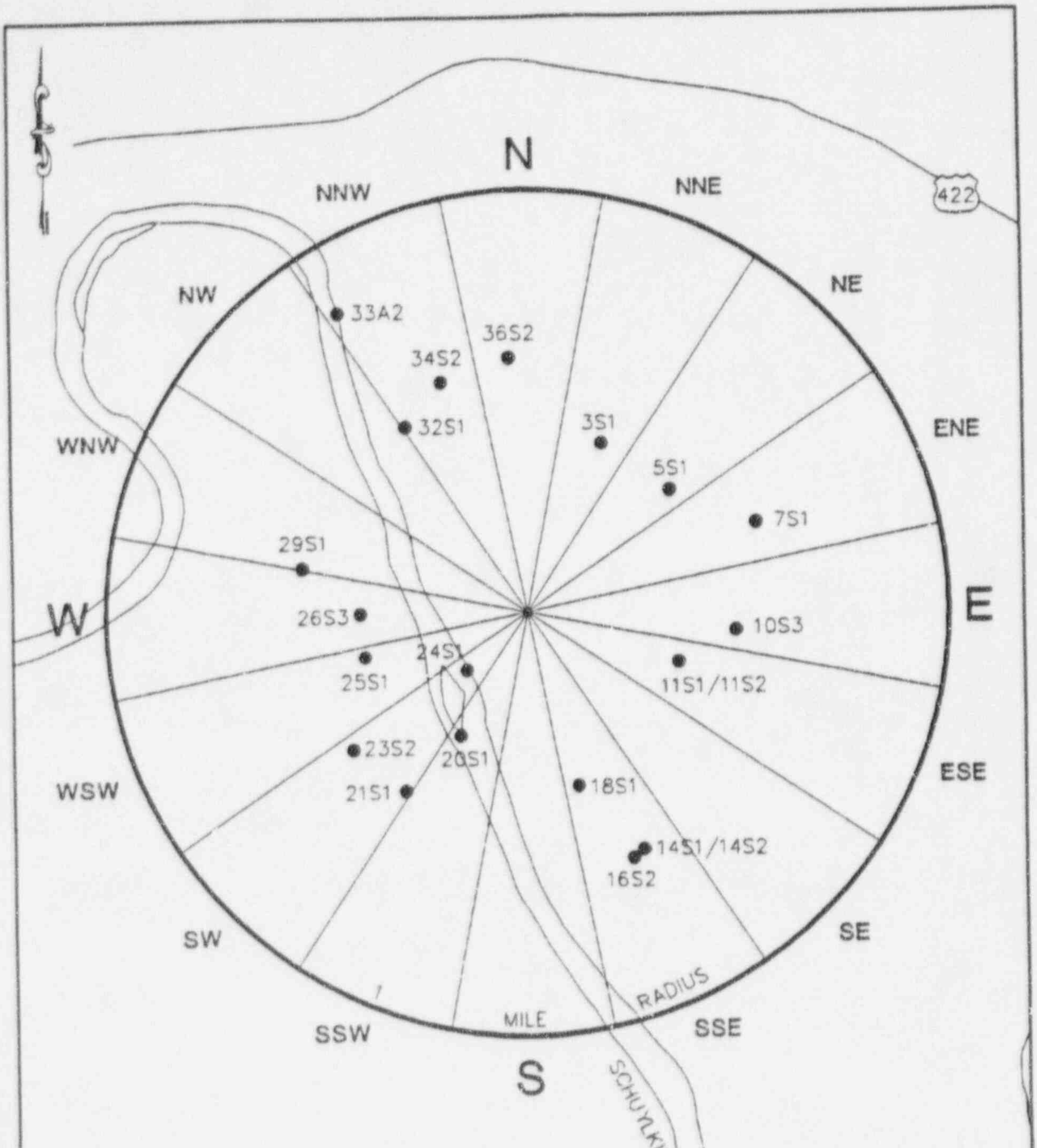


Figure B-1
Environmental Sampling Locations Within One
Mile of the Limerick Generating Station, 1994

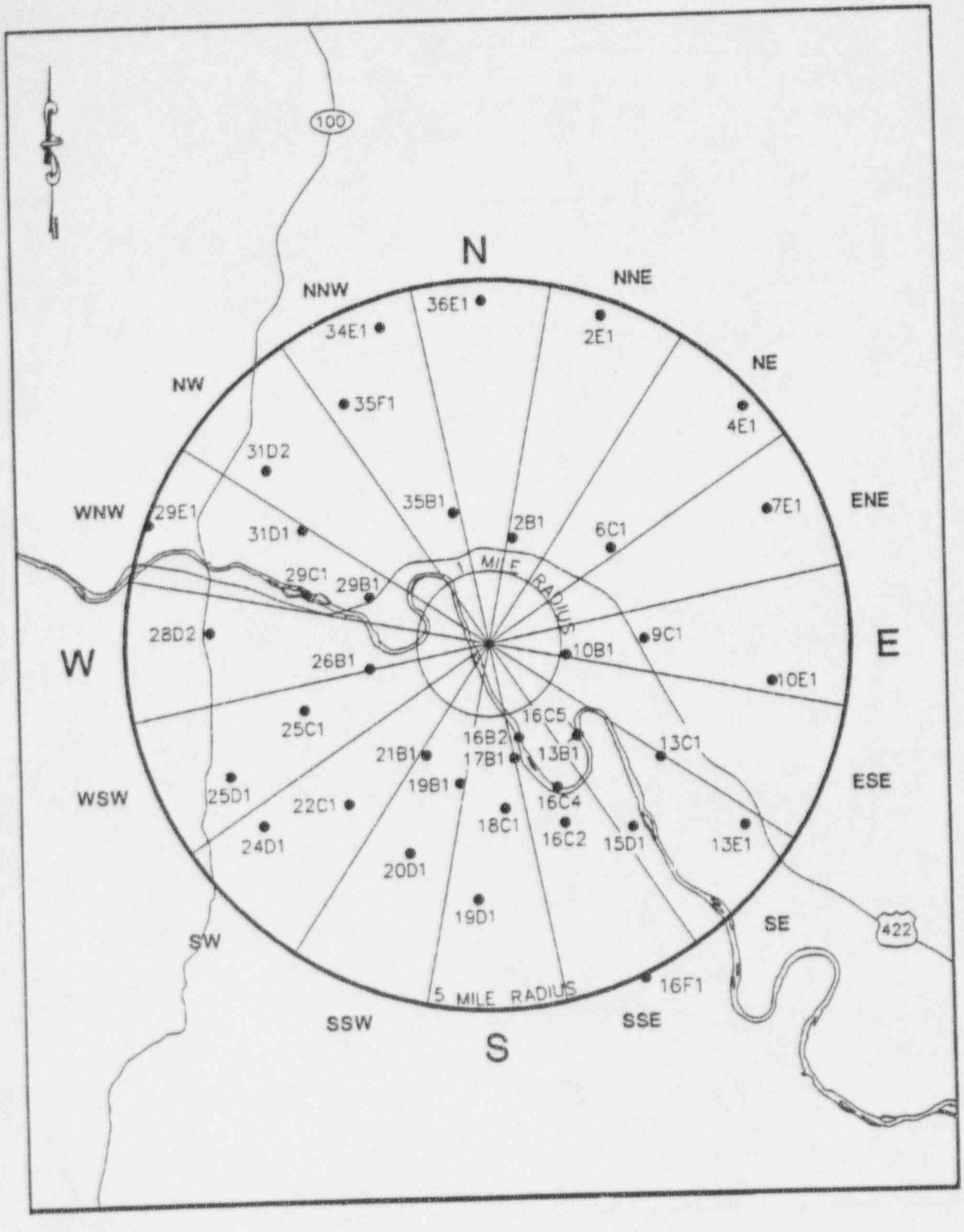


Figure B-2
Environmental Sampling Locations Between One and Five Miles from the Limerick Generating Station, 1994

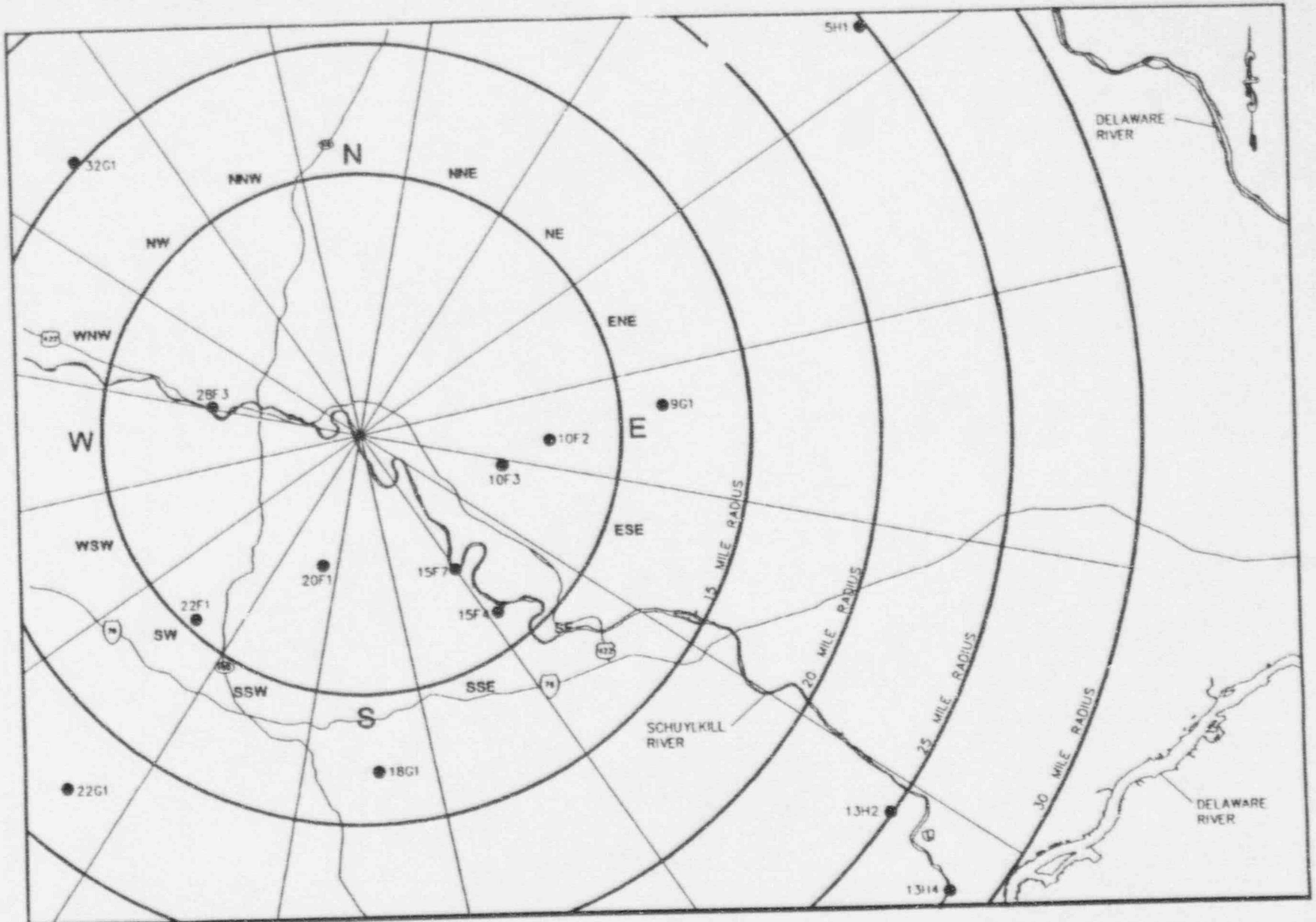


Figure B-3
Environmental Sampling Locations Greater Than
Five Miles from the Limerick Generating Station, 1994

APPENDIX C

DATA TABLES AND FIGURES
PRIMARY LABORATORY

APPENDIX C: DATA TABLES AND FIGURES - PRIMARY LABORATORY

TABLES

FIGURES

TABLE C-I.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	10F2		13B1		24S1	
JAN 94	0.1	± 0.4	0.8	± 0.5	0.8	± 0.5
FEB 94	0.2	± 0.5	0.3	± 0.5	0.0	± 0.5
MAR 94	0.3	± 0.5	1.8	± 0.6	0.0	± 0.4
APR 94	0.3	± 0.5	0.3	± 0.5	0.3	± 0.5
MAY 94	0.6	± 0.5	0.6	± 0.5	0.6	± 0.5
JUN 94	0.4	± 0.7	6	± 1	0.3	± 0.7
JUL 94	1.5	± 0.7	1.8	± 0.8	-0.2	± 0.6
AUG 94	1.6	± 0.6	1.6	± 0.6	1.1	± 0.6
SEP 94	0.2	± 0.7	4	± 1	0.2	± 0.7
OCT 94	1.1	± 0.5	0.3	± 0.4	0.8	± 0.5
NOV 94	0.0	± 0.5	0.2	± 0.5	0.7	± 0.5
DEC 94	0.3	± 0.5	0.2	± 0.5	0.4	± 0.5
MEAN	0.6	± 1.1	1.5	± 3.6	0.4	± 0.8

TABLE C-I.2 CONCENTRATIONS OF GROSS BETA SOLUBLE IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	10F2		13B1		24S1	
JAN 94	3.7	± 1.0	4	± 1	4	± 1
FEB 94	3.0	± 1.0	3	± 1	3	± 1
MAR 94	2.7	± 0.8	3.7	± 1.0	6	± 1
APR 94	3.8	± 0.9	4.0	± 1.0	6	± 1
MAY 94	8	± 1	4	± 1	6	± 1
JUN 94	8	± 1	4	± 1	6	± 2
JUL 94	6	± 1	6	± 1	9	± 2
AUG 94	7	± 1	5	± 1	5	± 1
SEP 94	5	± 1	4	± 1	3	± 1
OCT 94	7	± 1	6	± 1	5	± 1
NOV 94	10	± 1	5	± 1	4	± 1
DEC 94	7	± 1	2.7	± 0.9	5	± 1
MEAN	5.9	± 4.6	4.3	± 2.1	5	± 3

TABLE C-I.3 CONCENTRATIONS OF TRITIUM IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	10F2		13B1		24S1	
JAN-MAR 94	70	± 90	50	± 90	100	± 90
APR-JUN 94	0	± 100	0	± 100	0	± 100
JUL-SEP 94	-20	± 90	20	± 100	-20	± 90
OCT-DEC 94	110	± 100	130	± 100	120	± 100
MEAN	40	± 120	50	± 110	50	± 130

TABLE C-I.4 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40		MN-54		CO-58		FE-59		CO-60		ZN-65	
10F2	JAN 94	-1	± 6	0.3	± 0.4	0.5	± 0.5	0	± 1	-0.1	± 0.4	0.3	± 0.9
	FEB 94	-10	± 10	-0.1	± 0.6	0.2	± 0.6	0	± 1	0.6	± 0.6	0	± 1
	MAR 94	0	± 6	0.2	± 0.4	0.0	± 0.4	1	± 1	0.4	± 0.4	0.0	± 0.8
	APR 94	0	± 10	0.7	± 0.6	0.0	± 0.6	1	± 1	0.4	± 0.6	1	± 1
	MAY 94	11	± 7	0.0	± 0.5	-0.1	± 0.6	-1	± 1	0.1	± 0.6	0	± 1
	JUN 94	41	± 7	0.0	± 0.5	0.0	± 0.6	1	± 1	-0.1	± 0.5	0	± 1
	JUL 94	9	± 6	0.1	± 0.5	-0.3	± 0.5	0	± 1	0.5	± 0.5	0	± 1
	AUG 94	3	± 7	-1.0	± 0.4	-0.1	± 0.4	-0.5	± 0.9	0.2	± 0.5	0	± 1
	SEP 94	4	± 3	0.3	± 0.3	-0.1	± 0.3	0.4	± 0.7	-0.1	± 0.3	0.2	± 0.7
	OCT 94	-11	± 7	0.1	± 0.5	0.2	± 0.6	1	± 1	-0.3	± 0.5	0	± 1
	NOV 94	61	± 9	0.1	± 0.6	-0.2	± 0.6	1	± 1	0.3	± 0.6	1	± 1
	DEC 94	1	± 6	0.1	± 0.4	0.0	± 0.4	0.0	± 0.9	0.1	± 0.4	1.1	± 0.9
	MEAN	9	± 41	0.1	± 0.8	0.0	± 0.4	0.3	± 1.2	0.2	± 0.6	0.3	± 0.8
13B1	JAN 94	14	± 6	0.0	± 0.5	-0.5	± 0.5	-1	± 1	0.1	± 0.5	-1	± 1
	FEB 94	18	± 7	-0.1	± 0.6	0.2	± 0.6	-1	± 1	0.8	± 0.6	1	± 1
	MAR 94	-24	± 8	0.1	± 0.4	0.0	± 0.4	0.2	± 0.9	0.0	± 0.4	0.7	± 0.8
	APR 94	10	± 6	0.3	± 0.5	-0.2	± 0.6	-1	± 1	0.2	± 0.5	0	± 1
	MAY 94	-12	± 6	0.3	± 0.4	-0.2	± 0.4	0.1	± 0.9	0.2	± 0.5	-0.2	± 0.9
	JUN 94	26	± 7	0.1	± 0.5	-0.1	± 0.6	0	± 1	0.3	± 0.5	1	± 1
	JUL 94	0	± 10	0.2	± 0.5	-0.1	± 0.5	0	± 1	-0.1	± 0.5	-1	± 1
	AUG 94	-12	± 9	0.4	± 0.4	0.1	± 0.4	-0.1	± 1.0	-0.1	± 0.4	0.1	± 0.9
	SEP 94	12	± 5	0.1	± 0.4	0.0	± 0.4	-0.2	± 0.8	0.1	± 0.4	0.4	± 0.7
	OCT 94	-40	± 10	0.0	± 0.5	-0.2	± 0.5	0	± 1	0.3	± 0.5	0	± 1
	NOV 94	-10	± 10	0.1	± 0.6	0.0	± 0.6	0	± 1	0.5	± 0.6	1	± 1
	DEC 94	2	± 6	0.2	± 0.4	-0.4	± 0.4	-0.3	± 0.9	0.4	± 0.5	0	± 1
	MEAN	-1	± 38	0.1	± 0.3	-0.1	± 0.4	-0.2	± 0.8	0.2	± 0.5	0.3	± 1.1
24S1	JAN 94	-13	± 7	0.2	± 0.5	-0.1	± 0.5	0	± 1	0.4	± 0.5	0	± 1
	FEB 94	8	± 5	0.0	± 0.4	-0.3	± 0.4	-0.4	± 0.7	0.2	± 0.4	0.0	± 0.8
	MAR 94	-12	± 6	0.0	± 0.4	0.2	± 0.5	1.2	± 0.9	-0.1	± 0.4	0.8	± 0.9
	APR 94	-24	± 9	-0.1	± 0.5	-0.4	± 0.5	-1	± 1	0.2	± 0.5	0	± 1
	MAY 94	-30	± 10	0.4	± 0.5	-0.1	± 0.5	0	± 1	0.3	± 0.5	2	± 1
	JUN 94	-2	± 5	0.2	± 0.3	0.0	± 0.4	0.0	± 0.8	0.0	± 0.4	0.4	± 0.7
	JUL 94	11	± 4	0.2	± 0.3	0.2	± 0.3	0.0	± 0.7	-0.1	± 0.3	0.3	± 0.7
	AUG 94	-10	± 10	0.0	± 0.5	-0.1	± 0.5	0	± 1	0.5	± 0.5	1	± 1
	SEP 94	-9	± 6	0.0	± 0.4	-0.2	± 0.4	0.3	± 0.9	0.4	± 0.4	0.1	± 0.9
	OCT 94	0	± 10	0.1	± 0.5	0.0	± 0.5	0	± 1	0.0	± 0.5	0	± 1
	NOV 94	-5	± 5	0.3	± 0.4	-0.2	± 0.4	0.0	± 0.9	0.5	± 0.5	1	± 1
	DEC 94	-70	± 10	0.2	± 0.6	-0.3	± 0.6	0	± 1	0.2	± 0.6	0	± 1
	MEAN	-13	± 43	0.1	± 0.3	-0.1	± 0.4	0.1	± 0.9	0.2	± 0.4	0.4	± 1.2

TABLE C-I.4 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	ZR-95		NB-95		CS-134		CS-137		BA-140		LA-140	
10F2	JAN 94	0.2	± 0.9	0.4	± 0.5	0.1	± 0.5	0.1	± 0.5	1	± 2	0.2	± 0.8
	FEB 94	-1	± 1	0.6	± 0.6	0.3	± 0.6	0.8	± 0.6	-1	± 2	-0.7	± 0.8
	MAR 94	0.3	± 0.9	-0.1	± 0.4	0.2	± 0.4	0.5	± 0.4	0	± 2	-0.1	± 0.9
	APR 94	2	± 1	0.6	± 0.7	-0.1	± 0.7	0.3	± 0.6	0	± 3	-1	± 1
	MAY 94	0	± 1	0.5	± 0.6	0.1	± 0.6	0.5	± 0.6	2	± 3	0	± 1
	JUN 94	1	± 1	0.8	± 0.6	0.2	± 0.5	0.5	± 0.5	-2	± 3	0	± 1
	JUL 94	1	± 1	0.6	± 0.5	-0.1	± 0.5	0.4	± 0.5	1	± 2	0.1	± 0.9
	AUG 94	1	± 1	0.3	± 0.5	0.3	± 0.5	0.1	± 0.5	-1	± 2	-0.7	± 0.9
	SEP 94	0.3	± 0.7	0.1	± 0.3	0.3	± 0.3	0.2	± 0.3	1	± 2	-0.6	± 0.7
	OCT 94	2	± 1	0.6	± 0.6	0.3	± 0.5	0.3	± 0.6	0	± 4	0	± 2
	NOV 94	0	± 1	0.1	± 0.6	-0.4	± 0.6	0.8	± 0.6	1	± 3	0	± 1
	DEC 94	0.8	± 0.8	0.3	± 0.4	0.0	± 0.4	0.0	± 0.4	-1	± 2	-0.7	± 0.8
	MEAN	0.6	± 1.7	0.4	± 0.5	0.1	± 0.4	0.4	± 0.5	0	± 2	-0.4	± 0.8
13B1	JAN 94	0	± 1	0.1	± 0.5	-0.1	± 0.5	0.1	± 0.5	0	± 2	0.3	± 0.8
	FEB 94	2	± 1	0.8	± 0.6	-0.6	± 0.6	0.2	± 0.6	-1	± 2	0.1	± 0.9
	MAR 94	1.5	± 0.9	0.6	± 0.4	-0.1	± 0.5	-0.5	± 0.4	1	± 2	0.3	± 0.8
	APR 94	1	± 1	0.6	± 0.6	0.3	± 0.6	0.1	± 0.6	0	± 3	0	± 1
	MAY 94	-0.2	± 0.9	-0.1	± 0.5	0.0	± 0.4	0.3	± 0.5	1	± 2	0.2	± 0.8
	JUN 94	2	± 1	-0.1	± 0.6	0.1	± 0.6	0.0	± 0.6	3	± 4	0	± 1
	JUL 94	1	± 1	0.5	± 0.5	-0.2	± 0.5	0.4	± 0.5	2	± 2	0	± 1
	AUG 94	0.1	± 0.9	0.7	± 0.5	-0.1	± 0.5	0.5	± 0.5	-1	± 2	-0.1	± 0.7
	SEP 94	0.3	± 0.7	0.1	± 0.4	-0.4	± 0.4	0.0	± 0.4	-1	± 2	0.0	± 0.8
	OCT 94	-1	± 1	0.5	± 0.5	0.0	± 0.5	-0.4	± 0.5	-3	± 3	0	± 1
	NOV 94	2	± 1	0.7	± 0.6	-0.2	± 0.6	0.0	± 0.6	-2	± 2	1	± 1
	DEC 94	0.7	± 0.9	0.5	± 0.5	0.3	± 0.5	0.1	± 0.5	0	± 2	0.8	± 0.9
	MEAN	0.8	± 1.9	0.4	± 0.6	-0.1	± 0.5	0.1	± 0.6	0	± 3	0.2	± 0.6
24S1	JAN 94	1.0	± 0.9	0.3	± 0.5	0.0	± 0.5	0.5	± 0.5	0	± 2	-0.4	± 0.8
	FEB 94	-0.3	± 0.8	0.1	± 0.4	0.3	± 0.4	0.2	± 0.4	-1	± 1	0.3	± 0.6
	MAR 94	0.6	± 0.9	0.4	± 0.5	0.3	± 0.4	-0.1	± 0.5	0	± 2	-0.3	± 0.9
	APR 94	1	± 1	0.0	± 0.5	0.2	± 0.6	0.5	± 0.5	-1	± 3	0	± 1
	MAY 94	0	± 1	0.8	± 0.5	-0.3	± 0.6	0.0	± 0.5	0	± 2	-0.3	± 0.9
	JUN 94	0.0	± 0.8	-0.3	± 0.4	-0.2	± 0.3	0.2	± 0.3	0	± 2	0.3	± 0.9
	JUL 94	0.0	± 0.7	0.0	± 0.3	0.1	± 0.3	0.4	± 0.3	-1	± 2	-0.2	± 0.7
	AUG 94	2	± 1	0.4	± 0.5	0.0	± 0.5	0.4	± 0.5	1	± 2	-0.3	± 0.9
	SEP 94	1.3	± 0.9	0.4	± 0.4	0.1	± 0.4	0.5	± 0.5	-1	± 2	-0.4	± 0.8
	OCT 94	1	± 1	0.5	± 0.6	-0.4	± 0.5	0.2	± 0.5	2	± 4	1	± 1
	NOV 94	0.8	± 0.9	0.3	± 0.4	0.1	± 0.5	0.1	± 0.4	0	± 2	0.0	± 0.8
	DEC 94	0	± 1	0.9	± 0.6	-0.7	± 0.6	0.4	± 0.6	0	± 3	-0.1	± 0.9
	MEAN	0.6	± 1.3	0.3	± 0.7	0.0	± 0.6	0.3	± 0.4	0	± 2	-0.1	± 0.7

TABLE C-I.4 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	RA-226	TH-228
10F2	JAN 94	-10 ± 10	0.2 ± 0.9
	FEB 94	-20 ± 9	1.2 ± 0.9
	MAR 94	10 ± 10	0.7 ± 0.8
	APR 94	-10 ± 10	-0.4 ± 0.9
	MAY 94	0 ± 10	2.4 ± 0.9
	JUN 94	-16 ± 8	1.5 ± 0.8
	JUL 94	-9 ± 8	1.1 ± 0.9
	AUG 94	-20 ± 10	-0.4 ± 0.8
	SEP 94	7 ± 7	0.9 ± 0.6
	OCT 94	-10 ± 10	-2 ± 1
	NOV 94	10 ± 10	1.4 ± 0.9
	DEC 94	8 ± 9	1.8 ± 0.8
	MEAN	-6 ± 22	0.7 ± 2.6
13B1	JAN 94	5 ± 8	0.0 ± 0.7
	FEB 94	1 ± 9	-0.3 ± 0.9
	MAR 94	-9 ± 7	-0.6 ± 0.6
	APR 94	-10 ± 10	-1 ± 1
	MAY 94	-20 ± 10	1.4 ± 0.8
	JUN 94	-11 ± 8	0.1 ± 0.8
	JUL 94	5 ± 8	-0.3 ± 0.7
	AUG 94	-9 ± 8	2.8 ± 0.7
	SEP 94	-4 ± 5	-1.5 ± 0.5
	OCT 94	4 ± 8	-0.4 ± 0.7
	NOV 94	-12 ± 9	0.2 ± 0.9
	DEC 94	-18 ± 9	-2.8 ± 0.8
	MEAN	-7 ± 18	-0.2 ± 2.7
24S1	JAN 94	-20 ± 10	-2.0 ± 0.9
	FEB 94	-2 ± 8	0.2 ± 0.7
	MAR 94	0 ± 10	-2.0 ± 0.8
	APR 94	-14 ± 9	0.3 ± 0.7
	MAY 94	7 ± 9	1.4 ± 0.8
	JUN 94	-3 ± 7	0.9 ± 0.6
	JUL 94	0 ± 7	-1.3 ± 0.6
	AUG 94	-10 ± 8	-0.9 ± 0.7
	SEP 94	-15 ± 9	-0.5 ± 0.8
	OCT 94	-14 ± 8	-0.2 ± 0.7
	NOV 94	-9 ± 6	-1.5 ± 0.6
	DEC 94	-10 ± 10	2.3 ± 0.9
	MEAN	-7 ± 16	-0.3 ± 2.7

TABLE C-II.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13H2		15F4		15F7		16C2		28F3	
JAN 94	2.0	± 0.6	0.1	± 0.4	0.0	± 0.4	0.5	± 0.5	0.2	± 0.4
FEB 94	0.2	± 0.5	0.0	± 0.5	-0.2	± 0.5	0.7	± 0.5	-0.2	± 0.5
MAR 94	0.7	± 0.5	0.5	± 0.5	0.1	± 0.4	0.9	± 0.5	0.0	± 0.4
APR 94	0.2	± 0.5	0.0	± 0.5	0.0	± 0.5	0.2	± 0.5	0.3	± 0.5
MAY 94	0.7	± 0.5	0.7	± 0.5	0.4	± 0.5	0.5	± 0.5	0.0	± 0.4
JUN 94	4.4	± 0.9	0.3	± 0.7	2.0	± 0.8	3.7	± 0.9	2.2	± 0.8
JUL 94	0.6	± 0.7	0.4	± 0.6	0.3	± 0.6	1.7	± 0.7	0.0	± 0.6
AUG 94	1.6	± 0.6	0.5	± 0.5	0.0	± 0.4	1.0	± 0.5	0.2	± 0.5
SEP 94	0.0	± 0.5	0.1	± 0.5	-0.3	± 0.4	-0.2	± 0.5	0.0	± 0.5
OCT 94	0.6	± 0.4	0.4	± 0.4	0.2	± 0.4	0.3	± 0.4	0.3	± 0.4
NOV 94	1.0	± 0.6	0.6	± 0.6	0.5	± 0.6	0.4	± 0.6	0.4	± 0.6
DEC 94	0.2	± 0.5	-0.2	± [illegible]	0.0	± 0.5	0.4	± 0.5	0.0	± 0.5
MEAN	1.0	± 2.4	0.3	± 0.6	0.2	± 1.2	0.8	± 2.0	0.3	± 1.3

TABLE C-II.2 CONCENTRATIONS OF GROSS BETA SOLUBLE IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13H2		15F4		15F7		16C2		28F3	
JAN 94	4	± 1	8	± 1	4	± 1	3	± 1	6	± 1
FEB 94	9	± 1	4	± 1	4	± 1	3	± 1	4	± 1
MAR 94	3.3	± 0.9	4.0	± 1.0	5	± 1	3	± 1	4	± 1
APR 94	5	± 1	5	± 1	4	± 1	4	± 1	4.0	± 1.0
MAY 94	4	± 1	5	± 1	5	± 1	3.0	± 1.0	3	± 1
JUN 94	7	± 2	5	± 1	5	± 1	6	± 2	6	± 2
JUL 94	6	± 1	5	± 1	5	± 1	5	± 1	5	± 1
AUG 94	8	± 1	5	± 1	5	± 1	4	± 1	4	± 1
SEP 94	6	± 2	7	± 2	5	± 2	4	± 2	5	± 2
OCT 94	8	± 1	9	± 1	7	± 1	6	± 1	6	± 1
NOV 94	5	± 1	6	± 1	6	± 1	6	± 1	5	± 1
DEC 94	2.9	± 0.9	6	± 1	4	± 1	2.0	± 1.0	3	± 1
MEAN	5.7	± 4.0	5.8	± 3.1	5	± 2	4.1	± 2.8	4.6	± 2.2

TABLE C-II.3 CONCENTRATIONS OF TRITIUM IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	13H2		15F4		15F7		16C2		28F3	
JAN-MAR 94	70	± 90	40	± 90	60	± 90	50	± 90	-30	± 90
APR-JUN 94	0	± 100	0	± 100	-10	± 100	0	± 100	0	± 100
JUL-SEP 94	80	± 100	-20	± 90	70	± 90	50	± 90	-20	± 90
OCT-DEC 94	160	± 100	140	± 100	10	± 90	80	± 90	120	± 100
MEAN	70	± 160	30	± 160	30	± 80	40	± 70	20	± 140

TABLE C-II.4 CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40		MN-54		CO-58		FE-59		CO-60		ZN-65	
13H2	JAN 94	8	± 6	-0.2	± 0.5	0.1	± 0.5	0	± 1	0.6	± 0.6	0.0	± 1.0
	FEB 94	-8	± 7	0.5	± 0.5	-0.2	± 0.5	0	± 1	-0.4	± 0.5	0	± 1
	MAR 94	-13	± 5	0.3	± 0.4	-0.4	± 0.3	0.6	± 0.8	0.0	± 0.4	0.3	± 0.8
	APR 94	9	± 6	0.3	± 0.4	-0.2	± 0.4	-0.2	± 0.9	-0.1	± 0.5	-0.6	± 0.9
	MAY 94	-9	± 7	0.1	± 0.5	-0.2	± 0.5	1	± 1	-0.1	± 0.5	1	± 1
	JUN 94	-2	± 6	0.4	± 0.4	0.0	± 0.4	0.0	± 0.9	0.2	± 0.4	0.3	± 0.8
	JUL 94	-28	± 9	-0.2	± 0.5	-0.3	± 0.5	0	± 1	2.4	± 0.6	0	± 1
	AUG 94	5	± 7	-0.7	± 0.4	-0.1	± 0.4	-0.3	± 0.9	0.2	± 0.5	-0.2	± 0.9
	SEP 94	-2	± 6	0.1	± 0.5	0.5	± 0.5	0	± 1	0.4	± 0.5	1	± 1
	OCT 94	-5	± 6	0.4	± 0.4	0.3	± 0.5	0	± 1	-0.2	± 0.4	0	± 1
	NOV 94	-9	± 7	0.5	± 0.5	0.2	± 0.5	-1	± 1	-0.2	± 0.5	0	± 1
	DEC 94	-11	± 9	0.0	± 0.5	-0.1	± 0.6	0	± 1	0.7	± 0.5	2	± 1
	MEAN	-5	± 20	0.1	± 0.7	0.0	± 0.5	0.0	± 0.7	0.3	± 1.5	0.3	± 1.3
15F4	JAN 94	18	± 8	0.1	± 0.6	-0.7	± 0.6	0	± 1	0.0	± 0.6	0	± 1
	FEB 94	0	± 6	0.2	± 0.5	0.0	± 0.5	0	± 1	0.3	± 0.5	0	± 1
	MAR 94	-10	± 10	0.1	± 0.5	-0.3	± 0.5	0	± 1	0.2	± 0.5	-1	± 1
	APR 94	-7	± 5	-0.1	± 0.3	-0.1	± 0.4	0.3	± 0.8	-0.2	± 0.4	0.3	± 0.8
	MAY 94	-3	± 6	0.1	± 0.4	0.2	± 0.4	0.2	± 0.8	0.1	± 0.4	-0.2	± 0.8
	JUN 94	-2	± 6	0.0	± 0.4	-0.3	± 0.5	0	± 1	0.7	± 0.5	0	± 1
	JUL 94	-2	± 5	0.4	± 0.4	0.2	± 0.5	-0.1	± 0.9	0.2	± 0.4	-0.4	± 0.9
	AUG 94	0	± 5	-0.1	± 0.3	-0.2	± 0.4	-0.6	± 0.8	0.1	± 0.4	0.0	± 0.8
	SEP 94	3	± 5	0.1	± 0.4	0.1	± 0.4	0.5	± 0.9	0.2	± 0.4	0.6	± 0.8
	OCT 94	-10	± 4	0.0	± 0.4	-0.1	± 0.4	0.0	± 0.9	0.1	± 0.4	0.3	± 0.8
	NOV 94	40	± 8	0.3	± 0.6	0.0	± 0.6	0	± 1	0.2	± 0.6	0	± 1
	DEC 94	-1	± 7	0.3	± 0.5	-0.2	± 0.6	1	± 1	-0.2	± 0.6	0	± 1
	MEAN	2	± 28	0.1	± 0.3	-0.1	± 0.5	0.1	± 0.7	0.1	± 0.5	-0.1	± 0.9
15F7	JAN 94	-30	± 10	-0.2	± 0.5	0.3	± 0.6	-1	± 1	0.0	± 0.6	2	± 1
	FEB 94	-2	± 5	-0.2	± 0.4	0.0	± 0.4	0.3	± 0.9	0.3	± 0.5	-0.5	± 0.9
	MAR 94	-7	± 6	0.2	± 0.4	-0.2	± 0.4	0	± 1	-0.2	± 0.5	-0.5	± 0.9
	APR 94	5	± 4	0.0	± 0.3	0.2	± 0.3	-0.1	± 0.6	-0.1	± 0.3	-0.1	± 0.6
	MAY 94	0	± 10	0.2	± 0.5	-0.4	± 0.6	0	± 1	0.5	± 0.6	-1	± 1
	JUN 94	0	± 5	0.3	± 0.4	0.0	± 0.4	-0.1	± 0.9	0.2	± 0.4	0.2	± 0.8
	JUL 94	-4	± 5	-0.1	± 0.3	0.0	± 0.3	0.5	± 0.8	0.1	± 0.4	0.9	± 0.8
	AUG 94	10	± 4	0.2	± 0.3	-0.2	± 0.3	-0.5	± 0.7	0.2	± 0.3	0.7	± 0.6
	SEP 94	-1	± 5	0.3	± 0.3	-0.3	± 0.4	0.3	± 0.8	0.0	± 0.4	0.5	± 0.7
	OCT 94	4	± 4	0.1	± 0.3	-0.2	± 0.3	-0.1	± 0.8	0.3	± 0.3	0.1	± 0.7
	NOV 94	-3	± 7	0.5	± 0.5	-0.4	± 0.5	0	± 1	-0.1	± 0.5	1	± 1
	DEC 94	6	± 8	-0.1	± 0.5	0.0	± 0.6	1	± 1	0.1	± 0.5	1	± 1
	MEAN	-2	± 20	0.1	± 0.4	-0.1	± 0.4	0.0	± 0.9	0.1	± 0.4	0.4	± 1.6
16C2	JAN 94	-5	± 5	0.1	± 0.4	-0.1	± 0.4	-0.1	± 0.9	0.0	± 0.4	-0.7	± 0.9
	FEB 94	-28	± 9	0.0	± 0.5	-0.2	± 0.5	1	± 1	0.0	± 0.5	0	± 1
	MAR 94	4	± 4	0.2	± 0.3	-0.1	± 0.3	0.2	± 0.7	0.1	± 0.4	-0.6	± 0.7
	APR 94	-5	± 8	0.4	± 0.5	0.4	± 0.5	0	± 1	0.1	± 0.5	0	± 1
	MAY 94	-35	± 8	-0.4	± 0.4	-0.2	± 0.5	0	± 1	0.0	± 0.4	0	± 1
	JUN 94	-10	± 10	-0.2	± 0.6	-0.4	± 0.6	0	± 1	0.1	± 0.6	-1	± 1
	JUL 94	-18	± 7	0.0	± 0.4	-0.2	± 0.4	0.0	± 0.9	-0.4	± 0.4	-0.1	± 0.9
	AUG 94	-20	± 7	0.3	± 0.4	-0.3	± 0.4	-0.2	± 0.8	-0.1	± 0.4	0.3	± 0.8
	SEP 94	56	± 7	0.2	± 0.5	-0.4	± 0.5	0	± 1	0.1	± 0.5	1	± 1
	OCT 94	-27	± 7	0.1	± 0.4	-0.1	± 0.5	0	± 1	0.5	± 0.4	-0.1	± 0.8
	NOV 94	-3	± 5	0.3	± 0.4	-0.1	± 0.4	-0.3	± 0.9	-0.3	± 0.4	2	± 1
	DEC 94	5	± 8	0.0	± 0.5	0.0	± 0.5	0	± 1	0.6	± 0.6	3	± 1
	MEAN	-7	± 47	0.1	± 0.4	-0.1	± 0.4	0.0	± 0.6	0.0	± 0.6	0.3	± 2.3
28F3	JAN 94	-4	± 6	0.1	± 0.4	-0.1	± 0.4	0.2	± 0.8	-0.1	± 0.4	0.9	± 0.7
	FEB 94	4	± 6	-0.2	± 0.4	-0.2	± 0.4	0.5	± 0.9	0.5	± 0.5	0	± 1
	MAR 94	8	± 6	0.1	± 0.5	-0.2	± 0.5	1	± 1	0.6	± 0.5	0	± 1
	APR 94	9	± 6	0.4	± 0.4	-0.1	± 0.4	-1	± 1	0.1	± 0.4	-0.2	± 0.9
	MAY 94	-4	± 5	0.0	± 0.4	0.4	± 0.4	0.2	± 0.9	0.5	± 0.4	0.5	± 0.9
	JUN 94	15	± 7	0.4	± 0.6	0.0	± 0.6	0	± 1	0.2	± 0.5	1	± 1
	JUL 94	14	± 5	0.0	± 0.4	0.0	± 0.4	0.1	± 0.9	0.3	± 0.4	0.1	± 0.9
	AUG 94	1	± 6	0.3	± 0.4	-0.3	± 0.4	0	± 1	-0.2	± 0.5	-1	± 1
	SEP 94	-6	± 8	-0.1	± 0.5	-0.1	± 0.5	0	± 1	0.2	± 0.6	1	± 1
	OCT 94	-11	± 6	0.3	± 0.4	-0.4	± 0.5	0	± 1	0.5	± 0.5	-0.5	± 0.9
	NOV 94	25	± 8	0.2	± 0.6	-0.2	± 0.6	0	± 1	0.3	± 0.6	-1	± 1
	DEC 94	-2	± 5	0.0	± 0.4	0.0	± 0.4	0.1	± 0.9	0.1	± 0.4	1.1	± 0.8
	MEAN	4	± 21	0.1	± 0.4	-0.1	± 0.4	0.2	± 0.8	0.2	± 0.5	0.3	± 1.4

TABLE C-II.4 CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	ZR-95		NB-95		CS-134		CS-137		BA-140		LA-140	
13N	JAN 94	-1	± 1	0.6	± 0.5	0.2	± 0.5	0.6	± 0.5	1	± 2	-0.1	± 0.9
	FEB 94	0	± 1	-0.2	± 0.5	0.2	± 0.5	0.1	± 0.5	0	± 2	-0.7	± 0.8
	MAR 94	0.5	± 0.8	0.2	± 0.4	-0.1	± 0.4	0.2	± 0.4	-1	± 2	-0.2	± 0.8
	APR 94	0.3	± 0.9	0.6	± 0.5	0.2	± 0.4	0.4	± 0.5	0	± 2	-0.1	± 0.8
	MAY 94	0	± 1	0.4	± 0.5	0.1	± 0.5	0.4	± 0.5	0	± 2	0.3	± 0.9
	JUN 94	-0.5	± 0.8	-0.7	± 0.4	0.2	± 0.4	0.1	± 0.4	0	± 2	-1	± 1
	JUL 94	0	± 1	0.7	± 0.5	0.2	± 0.5	-0.1	± 0.5	1	± 3	0	± 1
	AUG 94	0.1	± 0.9	0.1	± 0.4	0.1	± 0.5	-0.1	± 0.5	0	± 2	0.2	± 0.8
	SEP 94	1	± 1	0.7	± 0.5	0.5	± 0.5	0.3	± 0.5	2	± 3	-1	± 1
	OCT 94	-0.2	± 0.9	0.2	± 0.5	0.0	± 0.5	0.2	± 0.4	-1	± 3	-1	± 1
	NOV 94	1	± 1	0.6	± 0.5	0.1	± 0.5	0.0	± 0.6	0	± 2	-0.3	± 0.9
	DEC 94	2	± 1	0.7	± 0.6	-0.1	± 0.6	0.0	± 0.6	0	± 3	-0.3	± 0.9
	MEAN	0.2	± 1.5	0.3	± 0.9	0.1	± 0.3	0.2	± 0.4	0	± 2	-0.3	± 0.8
15F4	JAN 94	2	± 1	0.5	± 0.6	-0.1	± 0.7	-0.1	± 0.6	1	± 2	0.6	± 0.9
	FEB 94	-1	± 1	-0.1	± 0.5	0.4	± 0.5	0.5	± 0.6	-2	± 2	0.6	± 0.8
	MAR 94	0	± 1	0.7	± 0.5	0.1	± 0.5	0.7	± 0.5	-1	± 2	-0.8	± 0.8
	APR 94	0.4	± 0.7	0.3	± 0.4	0.3	± 0.4	-0.4	± 0.4	1	± 2	-0.5	± 0.8
	MAY 94	-0.4	± 0.8	0.3	± 0.4	0.1	± 0.4	0.2	± 0.4	-1	± 2	0.4	± 0.7
	JUN 94	0	± 1	0.3	± 0.5	0.1	± 0.5	0.5	± 0.5	1	± 3	0	± 1
	JUL 94	0	± 1	-0.1	± 0.5	0.4	± 0.5	0.0	± 0.5	0	± 2	0.5	± 0.9
	AUG 94	0.3	± 0.7	0.1	± 0.4	-0.4	± 0.4	0.3	± 0.4	0	± 2	0.1	± 0.7
	SEP 94	0.5	± 0.8	0.1	± 0.4	0.1	± 0.4	0.1	± 0.4	1	± 2	0	± 1
	OCT 94	0.2	± 0.8	0.4	± 0.4	0.2	± 0.4	0.0	± 0.4	1	± 2	1	± 1
	NOV 94	0	± 1	0.1	± 0.6	-0.2	± 0.6	0.4	± 0.6	2	± 2	0.0	± 0.9
	DEC 94	-1	± 1	0.5	± 0.6	0.3	± 0.6	0.1	± 0.6	2	± 3	0	± 1
	MEAN	0.2	± 1.4	0.3	± 0.5	0.1	± 0.5	0.2	± 0.6	0	± 2	0.1	± 0.9
15F7	JAN 94	0	± 1	0.6	± 0.6	-0.7	± 0.6	0.3	± 0.6	0	± 2	0.4	± 0.7
	FEB 94	-0.5	± 0.8	0.3	± 0.4	0.0	± 0.5	0.3	± 0.4	0	± 1	0.0	± 0.7
	MAR 94	0.7	± 0.9	-0.2	± 0.5	0.0	± 0.5	0.4	± 0.5	1	± 2	0.4	± 0.9
	APR 94	0.0	± 0.7	-0.1	± 0.3	0.1	± 0.3	0.3	± 0.4	1	± 2	0.0	± 0.6
	MAY 94	1	± 1	0.6	± 0.6	0.3	± 0.6	0.4	± 0.6	-1	± 3	0	± 1
	JUN 94	-0.4	± 0.8	0.2	± 0.4	0.0	± 0.4	-0.2	± 0.4	2	± 2	0	± 1
	JUL 94	-0.2	± 0.7	0.6	± 0.4	-0.2	± 0.4	0.1	± 0.4	0	± 2	-0.3	± 0.8
	AUG 94	0.1	± 0.7	0.2	± 0.3	0.0	± 0.3	0.3	± 0.3	0	± 1	0.4	± 0.6
	SEP 94	0.2	± 0.8	0.3	± 0.4	0.0	± 0.4	0.2	± 0.4	0	± 2	0	± 1
	OCT 94	0.0	± 0.7	0.2	± 0.4	0.1	± 0.3	0.1	± 0.3	-2	± 2	-0.6	± 0.9
	NOV 94	-1	± 1	0.3	± 0.5	0.4	± 0.6	-0.6	± 0.6	-2	± 2	0	± 1
	DEC 94	1	± 1	0.7	± 0.6	0.2	± 0.5	0.2	± 0.5	1	± 3	0	± 1
	MEAN	0.1	± 1.0	0.3	± 0.6	0.0	± 0.6	0.1	± 0.6	0	± 2	0.0	± 0.7
16C2	JAN 94	0.4	± 0.8	-0.1	± 0.4	-0.3	± 0.4	0.2	± 0.4	0	± 1	0.0	± 0.7
	FEB 94	1	± 1	0.2	± 0.5	-0.3	± 0.5	0.1	± 0.5	-1	± 2	0.5	± 0.7
	MAR 94	-0.3	± 0.7	0.4	± 0.4	0.1	± 0.4	0.2	± 0.3	0	± 2	0.1	± 0.7
	APR 94	0	± 1	0.0	± 0.6	0.1	± 0.6	0.2	± 0.6	2	± 3	1	± 1
	MAY 94	1	± 1	0.2	± 0.5	-0.2	± 0.5	0.1	± 0.5	0	± 2	0.3	± 0.8
	JUN 94	2	± 1	0.1	± 0.7	-0.2	± 0.7	0.4	± 0.6	1	± 4	0	± 2
	JUL 94	0.0	± 0.9	0.1	± 0.4	-0.2	± 0.4	0.4	± 0.4	1	± 2	0.3	± 0.8
	AUG 94	1.0	± 0.9	0.4	± 0.4	-0.2	± 0.4	0.1	± 0.4	1	± 2	0.0	± 0.7
	SEP 94	0	± 1	0.7	± 0.5	-0.2	± 0.5	0.4	± 0.5	1	± 2	0.2	± 0.8
	OCT 94	1	± 1	0.6	± 0.5	-0.3	± 0.4	0.3	± 0.4	0	± 3	1	± 1
	NOV 94	0.6	± 0.9	0.3	± 0.4	-0.2	± 0.5	0.2	± 0.4	0	± 2	-0.2	± 0.7
	DEC 94	1	± 1	0.5	± 0.6	-0.3	± 0.5	0.2	± 0.6	-2	± 3	-1	± 1
	MEAN	0.6	± 1.2	0.3	± 0.5	-0.2	± 0.3	0.2	± 0.3	0	± 2	0.1	± 0.9
28F3	JAN 94	0.0	± 0.7	-0.1	± 0.4	0.1	± 0.4	-0.1	± 0.4	0	± 2	0.2	± 0.6
	FEB 94	0.6	± 0.9	0.3	± 0.5	0.4	± 0.5	0.2	± 0.5	2	± 2	-0.1	± 0.8
	MAR 94	1	± 1	0.2	± 0.6	-1.3	± 0.6	0.2	± 0.5	1	± 2	-1	± 1
	APR 94	0.6	± 0.9	0.1	± 0.4	-0.2	± 0.5	0.2	± 0.5	0	± 2	0.1	± 0.9
	MAY 94	0.2	± 0.8	0.3	± 0.4	-0.5	± 0.4	0.4	± 0.4	-1	± 2	0.0	± 0.9
	JUN 94	0	± 1	0.7	± 0.7	0.4	± 0.6	0.4	± 0.6	-1	± 4	0	± 1
	JUL 94	0.6	± 0.8	0.5	± 0.4	0.0	± 0.4	-0.1	± 0.4	0	± 2	-0.1	± 0.9
	AUG 94	1	± 1	-0.1	± 0.5	0.4	± 0.5	0.5	± 0.5	0	± 2	0.3	± 0.9
	SEP 94	0	± 1	0.4	± 0.6	0.0	± 0.5	0.4	± 0.5	0	± 3	-1	± 1
	OCT 94	0	± 1	0.0	± 0.5	0.2	± 0.5	0.3	± 0.5	4	± 3	0	± 2
	NOV 94	1	± 1	0.6	± 0.6	0.1	± 0.7	0.8	± 0.7	-1	± 2	0.1	± 1.0
	DEC 94	-0.5	± 0.8	0.2	± 0.4	-0.1	± 0.4	0.0	± 0.4	-1	± 2	-0.1	± 0.8
	MEAN	0.4	± 1.0	0.3	± 0.5	0.0	± 1.0	0.3	± 0.5	0	± 3	-0.2	± 0.8

TABLE C-II.4 CONCENTRATIONS OF GAMMA EMITTERS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	RA-226		TH-228	
13H2	JAN 94	10	± 10	-1	± 1
	FEB 94	-10	± 10	-0.5	± 0.9
	MAR 94	-10	± 6	-1.2	± 0.5
	APR 94	-20	± 10	-1.7	± 0.8
	MAY 94	-20	± 10	1.6	± 0.9
	JUN 94	-6	± 9	1.0	± 0.7
	JUL 94	-5	± 8	-0.2	± 0.7
	AUG 94	-10	± 10	0.1	± 0.8
	SEP 94	-5	± 9	-1.2	± 0.9
	OCT 94	0	± 10	-0.9	± 0.8
	NOV 94	0	± 10	0	± 1
	DEC 94	0	± 10	2	± 1
	MEAN	-7	± 15	-0.2	± 2.3
15F4	JAN 94	6	± 9	0.0	± 0.9
	FEB 94	-20	± 10	0	± 1
	MAR 94	-10	± 8	0.6	± 0.7
	APR 94	-4	± 5	0.2	± 0.5
	MAY 94	-2	± 8	-1.3	± 0.7
	JUN 94	-9	± 9	-2.1	± 0.9
	JUL 94	3	± 9	-1.3	± 0.8
	AUG 94	-13	± 5	-0.8	± 0.5
	SEP 94	-7	± 6	-0.9	± 0.5
	OCT 94	-14	± 5	-0.6	± 0.5
	NOV 94	-1	± 10	0.2	± 0.9
	DEC 94	0	± 10	1	± 1
	MEAN	-6	± 15	-0.4	± 1.8
15F7	JAN 94	-9	± 9	-2.5	± 0.8
	FEB 94	-3	± 6	-0.8	± 0.6
	MAR 94	-9	± 9	-3.0	± 0.9
	APR 94	1	± 7	-0.6	± 0.6
	MAY 94	-9	± 9	1.2	± 0.8
	JUN 94	-7	± 5	-0.1	± 0.5
	JUL 94	-14	± 5	-0.8	± 0.5
	AUG 94	-8	± 7	1.1	± 0.9
	SEP 94	-1	± 8	-0.7	± 0.6
	OCT 94	-9	± 7	0.6	± 0.6
	NOV 94	0	± 10	1	± 1
	DEC 94	-20	± 10	-3	± 1
	MEAN	-7	± 12	-0.6	± 2.9
16C2	JAN 94	-2	± 6	-0.6	± 0.6
	FEB 94	-6	± 8	-0.9	± 0.7
	MAR 94	-3	± 7	0.5	± 0.6
	APR 94	-20	± 10	-2	± 1
	MAY 94	-10	± 8	0.2	± 0.7
	JUN 94	-6	± 9	-0.1	± 0.9
	JUL 94	-17	± 7	0.8	± 0.6
	AUG 94	1	± 7	-0.1	± 0.6
	SEP 94	-10	± 8	1.1	± 0.7
	OCT 94	-1	± 7	0.1	± 0.6
	NOV 94	-6	± 6	-0.7	± 0.6
	DEC 94	-20	± 10	-3	± 1
	MEAN	-8	± 14	-0.4	± 2.2
28F3	JAN 94	1	± 8	0.2	± 0.7
	FEB 94	0	± 10	0.8	± 0.9
	MAR 94	-1	± 8	-2.1	± 0.8
	APR 94	-13	± 9	-1.0	± 0.8
	MAY 94	-9	± 6	-1.0	± 0.6
	JUN 94	-10	± 10	1.4	± 0.9
	JUL 94	-8	± 9	0.0	± 0.7
	AUG 94	-7	± 9	-1.6	± 0.8
	SEP 94	-20	± 10	-0.5	± 0.9
	OCT 94	2	± 9	-1.3	± 0.9
	NOV 94	-10	± 10	0.7	± 0.9
	DEC 94	-25	± 6	-0.5	± 0.6
	MEAN	-8	± 16	-0.4	± 2.1

TABLE C-III.1 CONCENTRATIONS OF GAMMA EMITTERS IN PREDATOR (FISH) SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/KILOGRAM WET ± 2 SIGMA

STC	MEDIA	COLLECTION PERIOD	K-40	MN-54	CO-58	FE-59	CO-60	ZN-65	CS-134	CS-137
16C5	PREDATOR	04/29-04/29/94	2400 ± 200	1 ± 8	-2 ± 8	-10 ± 20	11 ± 9	20 ± 20	-4 ± 9	7 ± 9
		10/17-10/17/94	3600 ± 600	7 ± 7	-4 ± 7	-10 ± 20	8 ± 8	10 ± 20	1 ± 8	5 ± 9
		MEAN	3000 ± 1700	4 ± 8	-3 ± 3	-10 ± 0	10 ± 4	20 ± 10	-2 ± 7	6 ± 3
	BOTTOM FEEDER	04/29-04/29/94	3300 ± 300	0 ± 10	0 ± 10	10 ± 20	0 ± 10	10 ± 20	0 ± 10	10 ± 10
		10/17-10/17/94	2700 ± 300	0 ± 10	0 ± 10	0 ± 20	10 ± 10	10 ± 30	-10 ± 10	10 ± 10
		MEAN	3000 ± 800	0 ± 2	0 ± 10	10 ± 0	0 ± 10	10 ± 0	-10 ± 10	10 ± 0
20S1	PREDATOR	04/28-04/28/94	2900 ± 300	6 ± 9	-10 ± 10	20 ± 20	11 ± 9	0 ± 20	0 ± 10	0 ± 10
		10/21-10/24/94	2800 ± 300	10 ± 10	1 ± 10	0 ± 20	0 ± 10	20 ± 20	0 ± 10	0 ± 10
		MEAN	2900 ± 100	8 ± 6	-3 ± 11	10 ± 30	7 ± 11	10 ± 30	0 ± 0	0 ± 0
	BOTTOM FEEDER	04/28-04/28/94	3900 ± 400	8 ± 8	1 ± 8	-10 ± 20	10 ± 8	-20 ± 20	-3 ± 8	8 ± 9
		10/21-10/24/94	3200 ± 300	1 ± 8	0 ± 8	0 ± 20	1 ± 8	10 ± 20	-2 ± 9	15 ± 9
		MEAN	3600 ± 1000	5 ± 10	0 ± 1	0 ± 20	6 ± 13	-10 ± 40	-3 ± 1	12 ± 10
29C1	PREDATOR	04/27-04/27/94	3000 ± 300	-10 ± 10	0 ± 10	0 ± 30	0 ± 10	0 ± 20	0 ± 10	10 ± 10
		10/14-10/14/94	3500 ± 300	-1 ± 9	2 ± 9	0 ± 20	10 ± 10	10 ± 20	2 ± 9	2 ± 9
		MEAN	3300 ± 700	-3 ± 6	1 ± 4	0 ± 0	0 ± 10	0 ± 10	3 ± 3	5 ± 7
	BOTTOM FEEDER	04/27-04/27/94	3900 ± 400	0 ± 10	-10 ± 10	-10 ± 30	0 ± 10	10 ± 30	10 ± 10	10 ± 10
		10/14-10/14/94	3500 ± 400	10 ± 10	-10 ± 10	0 ± 20	-10 ± 10	10 ± 30	10 ± 10	10 ± 10
		MEAN	3700 ± 600	0 ± 10	-10 ± 0	-10 ± 10	0 ± 10	10 ± 0	10 ± 0	10 ± 10

TABLE C-IV.1 CONCENTRATIONS OF GAMMA EMITTERS IN SILT SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/KILOGRAM DRY ± 2 SIGMA

STC	COLLECTION PERIOD	BE-7	K-40	MN-54	CS-134	CS-137	RA-226	TH-228
16B2	05/24/94	2400 ± 300	14000 ± 1000	0 ± 20	60 ± 20	180 ± 40	2600 ± 600	1200 ± 100
	11/03/94	600 ± 400	16000 ± 2000	10 ± 30	90 ± 30	400 ± 60	2000 ± 800	1200 ± 100
	MEAN	1500 ± 2500	15000 ± 3000	0 ± 0	80 ± 40	290 ± 310	2300 ± 800	1200 ± 0
16C4	05/24/94	1100 ± 300	9000 ± 900	10 ± 20	50 ± 20	140 ± 30	1200 ± 500	1100 ± 100
	11/03/94	1200 ± 400	15000 ± 1000	50 ± 40	40 ± 30	150 ± 40	1700 ± 700	1800 ± 200
	MEAN	1200 ± 100	12000 ± 8500	30 ± 60	50 ± 10	150 ± 10	1500 ± 700	1500 ± 1000
33A2	05/24/94	0 ± 300	8600 ± 900	10 ± 30	40 ± 30	10 ± 30	1600 ± 700	1100 ± 100
	11/03/94	0 ± 300	8200 ± 800	40 ± 30	60 ± 30	0 ± 30	1800 ± 700	1000 ± 100
	MEAN	0 ± 100	8400 ± 600	20 ± 50	50 ± 30	10 ± 10	1700 ± 300	1000 ± 200

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

GROUP I - ON-SITE LOCATIONS

WEEK	10S3		11S1		14S1		34S2	
01	18	± 3	16	± 3	14	± 3	15	± 3
02	15	± 3	17	± 3	15	± 3	16	± 3
03	28	± 3	29	± 4	30	± 4	32	± 4
04	14	± 3	15	± 3	14	± 3	15	± 3
05	21	± 4	23	± 4	19	± 4	20	± 4
06	23	± 3	18	± 3	15	± 3	18	± 3
07	23	± 4	20	± 3	22	± 4	23	± 4
08	14	± 3	13	± 3	13	± 3	13	± 3
09	16	± 3	15	± 3	14	± 3	16	± 3
10	21	± 3	18	± 3	20	± 3	20	± 3
11	14	± 3	13	± 3	12	± 3	13	± 3
12	16	± 3	12	± 3	12	± 3	13	± 3
13	21	± 4	16	± 4	16	± 4	13	± 3
14	15	± 3	13	± 3	14	± 3	13	± 3
15	14	± 4	18	± 4	19	± 4	14	± 4
16	17	± 8	17	± 3	15	± 3	17	± 3
17	15	± 3	13	± 3	15	± 3	16	± 3
18	15	± 3	17	± 3	14	± 3	14	± 3
19	13	± 3	17	± 4	19	± 4	21	± 4
20	8	± 3	11	± 3	7	± 3	11	± 3
21	16	± 3	9	± 2	11	± 3	13	± 3
22	14	± 3	12	± 3	12	± 3	12	± 3
23	16	± 3	12	± 3	11	± 3	13	± 3
24	19	± 3	18	± 3	21	± 3	20	± 3
25	14	± 3	15	± 3	13	± 3	16	± 3
26	14	± 3	16	± 3	14	± 3	13	± 3
27	24	± 4	19	± 4	21	± 4		(1)
28	20	± 4	28	± 4	16	± 4	20	± 4
29	17	± 3	15	± 3	13	± 3	17	± 3
30		(1)	15	± 3	11	± 3	12	± 3
31	17	± 3	16	± 3	12	± 3	15	± 3
32	19	± 3	15	± 3	17	± 4	17	± 3
33	11	± 3	9	± 3	8	± 3	10	± 3
34	19	± 3	24	± 4	17	± 3	19	± 3
35	15	± 3	14	± 3	15	± 3	15	± 3
36	21	± 4	16	± 4	16	± 4	17	± 4
37	28	± 3	34	± 4	28	± 4	31	± 4
38	14	± 4	13	± 3	11	± 3	12	± 3
39	16	± 3	12	± 3	15	± 3	14	± 3
40	15	± 3	15	± 3	10	± 3	15	± 3
41	16	± 3	17	± 3	17	± 3	18	± 3
42	24	± 3	26	± 4	20	± 3	26	± 4
43	21	± 3	19	± 3	21	± 3	21	± 3
44	15	± 3	15	± 3	14	± 3	21	± 3
45	23	± 3	21	± 3	18	± 3	21	± 3
46	20	± 3	22	± 3	18	± 3	19	± 3
47	15	± 3	17	± 3	17	± 3	15	± 3
48	30	± 4	31	± 4	29	± 4	28	± 4
49	15	± 3	16	± 3	14	± 3	14	± 3
50	19	± 3	22	± 3	21	± 3	24	± 3
51	25	± 3	25	± 3	23	± 3	25	± 3
52	21	± 3	22	± 3	21	± 3	24	± 3
MEAN	18	± 9	18	± 11	16	± 10	17	± 10

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

GROUP II - INTERMEDIATE DISTANCE LOACATIONS

WEEK	2B1	6C1	9C1	13C1	15D1	17B1
01	16 ± 3	14 ± 3	14 ± 3	16 ± 3	14 ± 3	14 ± 3
02	15 ± 3	17 ± 3	19 ± 3	15 ± 3	18 ± 3	18 ± 3
03	31 ± 4	32 ± 4	30 ± 4	28 ± 4	33 ± 4	26 ± 3
04	16 ± 3	15 ± 3	20 ± 3	15 ± 3	21 ± 4	15 ± 3
05	24 ± 4	20 ± 4	25 ± 4	19 ± 4	25 ± 4	19 ± 4
06	22 ± 3	17 ± 3	17 ± 3	21 ± 3	22 ± 3	18 ± 3
07	(1)	28 ± 4	21 ± 3	25 ± 4	22 ± 4	26 ± 4
08	14 ± 3	12 ± 3	16 ± 3	12 ± 3	14 ± 3	14 ± 3
09	17 ± 3	14 ± 3	16 ± 3	14 ± 3	15 ± 3	13 ± 3
10	22 ± 3	17 ± 3	17 ± 3	19 ± 3	17 ± 3	17 ± 3
11	12 ± 3	11 ± 3	13 ± 3	11 ± 3	13 ± 3	13 ± 3
12	16 ± 3	12 ± 3	12 ± 3	13 ± 3	13 ± 3	13 ± 3
13	15 ± 4	16 ± 4	16 ± 4	15 ± 4	17 ± 4	15 ± 4
14	14 ± 3	8 ± 3	13 ± 3	14 ± 3	14 ± 3	13 ± 3
15	12 ± 4	8 ± 4	11 ± 4	13 ± 4	15 ± 4	10 ± 4
16	19 ± 3	17 ± 3	17 ± 3	18 ± 3	18 ± 3	13 ± 3
17	14 ± 3	14 ± 3	9 ± 3	14 ± 3	17 ± 3	14 ± 3
18	14 ± 3	15 ± 3	15 ± 3	10 ± 3	13 ± 3	14 ± 3
19	14 ± 3	12 ± 3	18 ± 4	29 ± 4	15 ± 3	15 ± 3
20	7 ± 3	6 ± 2	9 ± 3	8 ± 3	9 ± 3	8 ± 3
21	15 ± 3	14 ± 3	8 ± 2	12 ± 3	12 ± 3	16 ± 3
22	13 ± 3	14 ± 3	12 ± 3	12 ± 3	13 ± 3	13 ± 3
23	13 ± 3	12 ± 3	14 ± 3	15 ± 3	16 ± 3	14 ± 3
24	19 ± 3	21 ± 3	20 ± 3	20 ± 3	19 ± 3	19 ± 3
25	17 ± 3	17 ± 3	15 ± 3	13 ± 3	15 ± 3	13 ± 3
26	14 ± 3	13 ± 3	17 ± 3	16 ± 3	13 ± 3	11 ± 3
27	27 ± 8	25 ± 4	18 ± 4	18 ± 4	27 ± 4	29 ± 4
28	18 ± 4	23 ± 4	19 ± 4	26 ± 4	19 ± 4	20 ± 4
29	19 ± 3	21 ± 3	19 ± 3	17 ± 3	19 ± 3	15 ± 3
30	12 ± 3	16 ± 3	14 ± 3	14 ± 3	15 ± 3	11 ± 3
31	16 ± 3	9 ± 3	18 ± 3	14 ± 3	13 ± 3	15 ± 3
32	17 ± 3	17 ± 3	15 ± 3	17 ± 3	(1)	16 ± 3
33	10 ± 3	11 ± 3	10 ± 3	12 ± 3	13 ± 3	10 ± 3
34	20 ± 4	15 ± [illegible]	17 ± 3	24 ± 4	22 ± 4	14 ± 3
35	15 ± 3	12 ± [illegible]	15 ± 3	16 ± 3	14 ± 3	12 ± 3
36	21 ± 4	17 ± 4	21 ± 4	15 ± 4	23 ± 4	19 ± 4
37	30 ± 4	27 ± 3	27 ± 3	32 ± 4	30 ± 4	26 ± 3
38	13 ± 3	13 ± 3	12 ± 3	11 ± 3	11 ± 3	16 ± 5
39	14 ± 3	12 ± 3	14 ± 3	13 ± 3	14 ± 3	(1)
40	13 ± 3	13 ± 3	10 ± 3	14 ± 3	14 ± 3	13 ± 3
41	19 ± 3	20 ± 3	17 ± 3	16 ± 3	19 ± 3	22 ± 3
42	22 ± 4	22 ± 3	20 ± 3	23 ± 3	24 ± 3	23 ± 3
43	20 ± 3	21 ± 3	19 ± 3	19 ± 3	21 ± 3	21 ± 3
44	17 ± 3	16 ± 3	16 ± 3	17 ± 3	16 ± 3	15 ± 3
45	22 ± 4	21 ± 3	19 ± 3	19 ± 3	22 ± 3	20 ± 3
46	23 ± 3	19 ± 3	20 ± 3	22 ± 3	19 ± 3	17 ± 3
47	18 ± 3	16 ± 3	15 ± 3	16 ± 3	18 ± 3	14 ± 3
48	29 ± 4	29 ± 3	28 ± 3	28 ± 4	30 ± 4	32 ± 4
49	14 ± 3	13 ± 3	15 ± 3	14 ± 3	15 ± 3	13 ± 3
50	22 ± 3	17 ± 3	22 ± 3	21 ± 3	20 ± 3	19 ± 3
51	25 ± 3	25 ± 3	24 ± 3	24 ± 3	24 ± 3	25 ± 3
52	19 ± 3	22 ± 3	23 ± 3	23 ± 3	27 ± 4	17 ± 3
MEAN	18 ± 10	17 ± 11	17 ± 10	17 ± 11	18 ± 11	17 ± 10

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

GROUP II - INTERMEDIATE DISTANCE LOACATIONS

WEEK	20D1	26B1	29B1	31D1	35B1
01	13 ± 3	10 ± 3	13 ± 3	14 ± 3	15 ± 3
02	18 ± 3	18 ± 3	18 ± 3	18 ± 3	19 ± 3
03	30 ± 4	32 ± 4	33 ± 4	28 ± 4	24 ± 3
04	15 ± 3	15 ± 3	18 ± 3	16 ± 3	16 ± 3
05	25 ± 4	17 ± 4	21 ± 4	19 ± 4	20 ± 4
06	18 ± 3	(1)	17 ± 3	19 ± 3	17 ± 3
07	23 ± 4	23 ± 4	20 ± 3	27 ± 4	25 ± 4
08	15 ± 3	11 ± 3	13 ± 3	16 ± 3	17 ± 3
09	15 ± 3	14 ± 3	20 ± 3	14 ± 3	12 ± 3
10	17 ± 3	18 ± 3	18 ± 3	14 ± 3	18 ± 3
11	13 ± 3	13 ± 3	13 ± 3	13 ± 3	14 ± 3
12	15 ± 3	13 ± 3	16 ± 3	17 ± 3	14 ± 3
13	13 ± 3	15 ± 4	16 ± 4	16 ± 4	13 ± 4
14	12 ± 3	13 ± 3	12 ± 3	13 ± 7	16 ± 3
15	9 ± 4	10 ± 4	7 ± 3	15 ± 4	12 ± 4
16	16 ± 3	19 ± 3	14 ± 3	15 ± 3	15 ± 3
17	14 ± 3	14 ± 3	13 ± 3	14 ± 3	8 ± 3
18	13 ± 3	13 ± 3	14 ± 3	12 ± 3	13 ± 3
19	14 ± 4	13 ± 3	15 ± 3	14 ± 3	13 ± 3
20	7 ± 3	9 ± 3	(1)	7 ± 2	9 ± 3
21	15 ± 3	11 ± 3	15 ± 3	13 ± 3	17 ± 3
22	18 ± 3	13 ± 3	13 ± 3	14 ± 3	12 ± 3
23	16 ± 3	13 ± 3	11 ± 3	15 ± 3	15 ± 3
24	18 ± 3	18 ± 3	19 ± 3	14 ± 3	19 ± 3
25	16 ± 3	12 ± 3	16 ± 3	16 ± 3	17 ± 3
26	17 ± 3	15 ± 3	15 ± 3	18 ± 3	12 ± 3
27	23 ± 4	17 ± 4	24 ± 4	21 ± 4	22 ± 4
28	18 ± 4	16 ± 4	18 ± 4	19 ± 4	20 ± 4
29	14 ± 3	13 ± 3	15 ± 3	15 ± 3	19 ± 3
30	14 ± 3	17 ± 3	15 ± 3	15 ± 3	14 ± 3
31	15 ± 3	17 ± 3	17 ± 3	16 ± 3	13 ± 3
32	18 ± 3	17 ± 3	15 ± 3	17 ± 3	18 ± 3
33	9 ± 3	11 ± 3	12 ± 3	11 ± 3	10 ± 3
34	20 ± 4	23 ± 4	19 ± 3	18 ± 3	20 ± 3
35	12 ± 3	17 ± 3	14 ± 3	13 ± 3	15 ± 3
36	17 ± 4	19 ± 4	19 ± 4	20 ± 4	18 ± 4
37	29 ± 4	30 ± 4	31 ± 4	30 ± 4	30 ± 4
38	19 ± 3	12 ± 3	15 ± 2	11 ± 3	11 ± 3
39	14 ± 3	12 ± 7	15 ± 3	12 ± 3	17 ± 3
40	12 ± 3	14 ± 3	11 ± 3	15 ± 3	15 ± 3
41	18 ± 3	18 ± 3	20 ± 3	17 ± 3	23 ± 3
42	24 ± 4	22 ± 4	22 ± 3	29 ± 4	23 ± 3
43	18 ± 3	20 ± 3	23 ± 3	19 ± 3	21 ± 3
44	17 ± 3	15 ± 3	18 ± 3	16 ± 3	14 ± 3
45	22 ± 3	20 ± 3	23 ± 3	20 ± 3	21 ± 3
46	19 ± 3	20 ± 3	19 ± 3	18 ± 3	22 ± 3
47	19 ± 3	13 ± 3	15 ± 3	16 ± 3	16 ± 3
48	32 ± 4	34 ± 4	28 ± 3	30 ± 4	30 ± 4
49	15 ± 3	15 ± 3	12 ± 3	16 ± 3	16 ± 3
50	19 ± 3	24 ± 3	20 ± 3	24 ± 3	21 ± 3
51	23 ± 3	25 ± 3	25 ± 3	26 ± 3	23 ± 3
52	22 ± 3	19 ± 3	23 ± 3	22 ± 3	20 ± 3
MEAN	17 ± 10	17 ± 11	17 ± 10	17 ± 10	17 ± 10

(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-V.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

GROUP III - CONTROL LOACATIONS

WEEK	13H4		22G1	
01	15	± 3	12	± 3
02	15	± 3	15	± 3
03	29	± 4	26	± 3
04	15	± 3	13	± 3
05	27	± 3	19	± 4
06	20	± 3	19	± 3
07	23	± 3	26	± 4
08	13	± 3	7	± 3
09	18	± 3	14	± 3
10	13	± 3	20	± 3
11	16	± 4	14	± 3
12	18	± 3	12	± 3
13	14	± 3	18	± 4
14	19	± 3	15	± 3
15	20	± 3	9	± 4
16	20	± 3	18	± 3
17	19	± 3	15	± 3
18	12	± 3	13	± 3
19	25	± 4	17	± 4
20	10	± 2	7	± 3
21	17	± 3	16	± 3
22	16	± 3	11	± 3
23	20	± 3	14	± 3
24	20	± 3	19	± 3
25	18	± 3	17	± 3
26	25	± 3	14	± 3
27	14	± 3	27	± 6
28	23	± 3	21	± 4
29	18	± 3	15	± 3
30	19	± 3	13	± 3
31	18	± 3	13	± 3
32	18	± 3	17	± 3
33	13	± 3	10	± 3
34	22	± 3	20	± 3
35	18	± 2	16	± 3
36	27	± 4	19	± 4
37	35	± 4	28	± 4
38	14	± 3	17	± 3
39	22	± 3	13	± 3
40	16	± 3	14	± 3
41	18	± 3	16	± 3
42	25	± 3	21	± 3
43	19	± 3	18	± 3
44	18	± 3	16	± 3
45	19	± 3	22	± 3
46	22	± 3	17	± 3
47	13	± 2	16	± 3
48	30	± 3	29	± 4
49	17	± 3	15	± 3
50	21	± 3	18	± 3
51	24	± 3	21	± 3
52	20	± 3	19	± 3
MEAN	19	± 10	17	± 10

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 LIMERICK GENERATING STATION, 1994

GROUP I - ON-SITE LOCATIONS

COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	
01/03/94-01/31/94	14	32	19	± 13
01/31/94-02/28/94	13	23	19	± 8
02/28/94-03/28/94	12	21	15	± 6
03/28/94-05/02/94	13	21	16	± 4
05/02/94-05/31/94	7	21	14	± 8
05/31/94-06/27/94	11	21	15	± 6
06/27/94-08/01/94	11	28	17	± 9
08/01/94-08/29/94	8	24	15	± 9
08/29/94-10/03/94	11	34	18	± 14
10/03/94-10/31/94	10	26	19	± 9
10/31/94-11/28/94	14	23	18	± 6
11/28/94-01/03/95	14	31	22	± 10
01/03/94-01/03/95	7	34	17	± 10

GROUP II - INTERMEDIATE DISTANCE LOCATIONS

COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	
01/03/94-01/31/94	10	33	19	± 13
01/31/94-02/28/94	11	28	19	± 9
02/28/94-03/28/94	11	22	15	± 5
03/28/94-05/02/94	7	19	14	± 6
05/02/94-05/31/94	6	29	13	± 8
05/31/94-06/27/94	11	21	15	± 5
06/27/94-08/01/94	11	29	18	± 8
08/01/94-08/29/94	9	24	15	± 8
08/29/94-10/03/94	11	32	18	± 13
10/03/94-10/31/94	10	29	19	± 8
10/31/94-11/28/94	13	23	18	± 5
11/28/94-01/03/95	12	34	22	± 11
01/03/94-01/03/95	6	34	17	± 10

GROUP III - CONTROL LOCATIONS

COLLECTION PERIOD	MIN.	MAX.	MEAN ± 2 SD	
01/03/94-01/31/94	12	29	18	± 13
01/31/94-02/28/94	7	27	19	± 13
02/28/94-03/28/94	12	20	16	± 6
03/28/94-05/02/94	9	20	17	± 7
05/02/94-05/31/94	7	25	15	± 11
05/31/94-06/27/94	11	20	17	± 6
06/27/94-08/01/94	13	27	19	± 10
08/01/94-08/29/94	10	22	16	± 8
08/29/94-10/03/94	13	35	21	± 14
10/03/94-10/31/94	14	25	18	± 7
10/31/94-11/28/94	13	22	18	± 6
11/28/94-01/04/95	15	30	21	± 10
01/03/94-01/04/95	7	35	18	± 10

NOTE: GROUP I CONSIST OF LOCATIONS 10S3, 11S1, 14S1, 34S2
GROUP II CONSIST OF LOCATIONS 2B1, 6C1, 13C1, 15D1, 17B1, 20D1, 26B1, 29B1, 31D1, 35B1
GROUP III CONSIST OF LOCATIONS 13H4, 22G1

TABLE C-V.3 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

STC	COLLECTION PERIOD	BE-7		K-40		CS-134		CS-137	
10S3	01/03-04/04/94	75	± 7	5	± 3	0.0	± 0.3	0.1	± 0.3
	04/04-07/05/94	100	± 10	-5	± 5	0.2	± 0.3	0.0	± 0.3
	07/05-10/03/94	74	± 7	0	± 5	-0.2	± 0.3	0.1	± 0.3
	10/03-01/03/95	75	± 8	-2	± 4	0.0	± 0.3	0.1	± 0.3
	MEAN	80	± 21	-1	± 8	0.0	± 0.3	0.1	± 0.1
11S1	01/03-04/04/94	67	± 7	15	± 5	0.1	± 0.4	0.1	± 0.3
	04/04-07/05/94	69	± 7	37	± 6	0.1	± 0.4	0.2	± 0.3
	07/05-10/03/94	75	± 7	1	± 4	0.2	± 0.3	0.0	± 0.3
	10/03-01/03/95	69	± 8	11	± 7	-0.1	± 0.4	-0.2	± 0.4
	MEAN	70	± 7	16	± 30	0.1	± 0.2	0.0	± 0.3
13C1	01/03-04/04/94	68	± 7	4	± 4	-0.1	± 0.2	0.2	± 0.2
	04/04-07/05/94	88	± 9	5	± 5	0.1	± 0.3	0.1	± 0.3
	07/05-10/03/94	64	± 6	4	± 4	0.2	± 0.3	0.0	± 0.2
	10/03-01/03/95	68	± 7	1	± 4	-0.1	± 0.3	0.4	± 0.3
	MEAN	72	± 22	4	± 3	0.0	± 0.3	0.2	± 0.3
13H4	01/03-04/04/94	60	± 6	3	± 4	0.0	± 0.2	0.0	± 0.2
	04/04-07/05/94	87	± 9	3	± 4	0.1	± 0.2	0.0	± 0.2
	07/05-10/03/94	73	± 7	4	± 4	-0.2	± 0.3	0.1	± 0.4
	10/03-01/04/95	70	± 7	0	± 4	0.0	± 0.2	0.1	± 0.2
	MEAN	73	± 22	2	± 4	0.0	± 0.2	0.1	± 0.1
14S1	01/03-04/04/94	65	± 7	12	± 5	0.0	± 0.3	0.0	± 0.3
	04/04-07/05/94	89	± 9	-1	± 5	0.2	± 0.3	0.0	± 0.3
	07/05-10/03/94	63	± 6	22	± 6	-0.4	± 0.4	0.1	± 0.3
	10/03-01/03/95	71	± 7	-4	± 5	-0.2	± 0.3	0.0	± 0.3
	MEAN	72	± 24	7	± 24	-0.1	± 0.5	0.0	± 0.1
22G1	01/03-04/04/94		(1)						
	04/04-07/05/94								
	07/05-10/03/94	67	± 7	6	± 3	0.0	± 0.2	-0.1	± 0.2
	10/03-01/03/95	69	± 7	7	± 4	-0.1	± 0.3	0.0	± 0.2
	MEAN	68	± 3	7	± 1	0.0	± 0.2	0.0	± 0.1

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION

TABLE C-VI.1 CONCENTRATIONS OF I-131 IN AIR IODINE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

	GROUP I						GROUP II		GROUP III			
WEEK	10S3		11S1		14S1		13C1		13H4		22G1	
01	-10	± 10	0	± 10	0	± 10	-3	± 8	-10	± 10	(1)	
02	0	± 10	0	± 10	0	± 10	-3	± 8	-4	± 10		
03	-5	± 9	-5	± 9	-5	± 9	-3	± 6	-10	± 10		
04	0	± 20	0	± 20	0	± 20	0	± 10	0	± 20		
05	10	± 20	10	± 20	10	± 20	0	± 10	10	± 20		
06	-10	± 10	-10	± 10	-10	± 10	-10	± 10	-4	± 8		
07	-20	± 10	-20	± 10	-20	± 10	-20	± 10	-9	± 7		
08	20	± 20	20	± 20	20	± 20	20	± 20	10	± 10		
09	0	± 10	0	± 10	0	± 10	-2	± 6	-10	± 10		
10	-10	± 10	-10	± 10	-10	± 10	-10	± 10	-3	± 6		
11	1	± 8	1	± 8	1	± 8	1	± 6	1	± 8		
12	-10	± 10	-10	± 20	-10	± 20	-10	± 10	0	± 6		
13	0	± 20	0	± 20	0	± 20	0	± 20	0	± 10		
14	-10	± 20	-10	± 20	-10	± 20	0	± 10	-10	± 20		
15	0	± 10	0	± 10	0	± 10	1	± 6	0	± 10		
16	-10	± 20	-2	± 8	-2	± 8	-1	± 6	-2	± 8		
17	20	± 20	10	± 20	10	± 20	8	± 10	10	± 20		
18	0	± 10	0	± 10	0	± 10	-2	± 7	0	± 10	5	± 10
19	10	± 20	10	± 20	10	± 20	10	± 20	0	± 8	0	± 10
20	0	± 10	0	± 10	0	± 10	2	± 8	-2	± 8	3	± 6
21	5	± 10	4	± 9	4	± 9	8	± 9	5	± 10	0	± 10
22	0	± 20	0	± 20	0	± 20	1	± 8	0	± 20	1	± 7
23	1	± 7	1	± 7	1	± 7	1	± 5	-10	± 10	0	± 10
24	0	± 20	0	± 20	0	± 20	1	± 7	0	± 20	10	± 20
25	10	± 20	10	± 20	10	± 20	0	± 10	7	± 9	-6	± 9
26	-6	± 9	-6	± 9	-6	± 9	-4	± 6	-3	± 6	-10	± 20
27	0	± 20	0	± 20	0	± 20	0	± 10	0	± 10	0	± 20
28	0	± 20	0	± 20	0	± 20	0	± 10	-1	± 9	0	± 20
29	0	± 20	0	± 20	0	± 20	0	± 10	0	± 10	-20	± 20
30		(2)	-20	± 20	-20	± 20	-10	± 10	0	± 10	0	± 10
31	0	± 10	0	± 10	0	± 10	1	± 7	0	± 9	5	± 9
32	4	± 8	4	± 8	10	± 10	3	± 6	0	± 10	0	± 10
33	0	± 10	0	± 10	0	± 10	-3	± 10	0	± 8	6	± 9
34	5	± 9	6	± 9	6	± 9	4	± 6	-2	± 8	2	± 7
35	0	± 10	0	± 10	0	± 10	10	± 10	0	± 10	0	± 10
36	0	± 20	0	± 20	0	± 20	0	± 10	0	± 20	10	± 10
38	10	± 10	10	± 10	10	± 10	5	± 6	-6	± 7	0	± 10
39	-10	± 20	0	± 10	0	± 10	-3	± 8	3	± 5	0	± 20
40	0	± 10	0	± 10	0	± 20	3	± 10	-1	± 9	10	± 10
41	10	± 10	10	± 10	10	± 10	8	± 8	0	± 10	-3	± 8
42	-10	± 10	-10	± 10	-10	± 10	10	± 10	-10	± 10	-2	± 6
43	-3	± 8	-3	± 8	-3	± 8	0	± 8	-3	± 8	0	± 10
44	0	± 10	0	± 10	0	± 10	2	± 6	10	± 9	0	± 10
45	0	± 20	0	± 20	0	± 20	-6	± 8	0	± 20	10	± 10
46	10	± 10	10	± 10	10	± 10	3	± 8	10	± 10	0	± 20
47	0	± 20	0	± 20	0	± 20	0	± 10	0	± 20	-10	± 10
48	-10	± 10	-10	± 10	-10	± 10	[illegible]	± 6	-1	± 9	1	± 8
49	0	± 10	0	± 10	0	± 10	0	± 10	0	± 10	-2	± 10
50	0	± 10	0	± 10	0	± 10	3	± 6	0	± 10	0	± 10
51	0	± 10	0	± 10	0	± 10	-2	± 9	0	± 10	0	± 10
52	0	± 10	0	± 10	0	± 10	0	± 9	-2	± 6	0	± 10
53	0	± 10	0	± 10	0	± 10	-1	± 6	0	± 10		
MEAN	0	± 12	0	± 13	0	± 13	0	± 11	-1	± 9	0	± 12

(1) SEE PROGRAM CHANGES SECTION FOR EXPLANATION
(2) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VII.1 CONCENTRATIONS OF I-131 IN MILK SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION DATE	CONTROL FARMS			INDICATOR FARMS					
	36E1	9G1	22F1	10B1	18C1	19B1	21B1	22C1	25C1
01/11/94	-0.04 ± 0.04	0.00 ± 0.04	0.00 ± 0.03	0.06 ± 0.07	0.02 ± 0.03	0.01 ± 0.03	-0.01 ± 0.03	-0.01 ± 0.03	0.04 ± 0.04
02/08/94			-0.01 ± 0.03	-0.2 ± 0.1	-0.01 ± 0.04	0.00 ± 0.05	0.02 ± 0.04		
03/08/96			-0.04 ± 0.04	-0.07 ± 0.08	-0.04 ± 0.04	0.03 ± 0.05	0.01 ± 0.05		
04/12/94	±0.00 ± 0.05	-0.03 ± 0.04	0.03 ± 0.04	-0.01 ± 0.09	0.00 ± 0.03	-0.01 ± 0.04	-0.02 ± 0.03	0.00 ± 0.04	0.00 ± 0.04
04/26/94			0.01 ± 0.04	-0.04 ± 0.07	-0.02 ± 0.03	-0.02 ± 0.05	-0.02 ± 0.03		
05/10/94			0.00 ± 0.07	0.02 ± 0.05	-0.05 ± 0.06	-0.08 ± 0.05	0.01 ± 0.05		
05/24/94			0.01 ± 0.04	0.00 ± 0.05	-0.03 ± 0.04	0.02 ± 0.05	0.00 ± 0.04		
06/07/94			0.01 ± 0.04	0.00 ± 0.06	0.00 ± 0.05	-0.04 ± 0.05	0.02 ± 0.05		
06/21/94			-0.01 ± 0.06	0.01 ± 0.05	0.02 ± 0.05	0.02 ± 0.05	0.03 ± 0.05		
07/05/94	±0.00 ± 0.06	0.05 ± 0.06	0.01 ± 0.05	0.04 ± 0.07	0.02 ± 0.05	0.05 ± 0.06	0.02 ± 0.06	-0.02 ± 0.05	0.03 ± 0.05
07/19/94			0.02 ± 0.05	-0.1 ± 0.1	-0.01 ± 0.05	-0.04 ± 0.05	-0.01 ± 0.05		
08/02/94			0.01 ± 0.04	0.02 ± 0.05	-0.02 ± 0.06	-0.01 ± 0.04	-0.03 ± 0.05		
08/16/94			-0.02 ± 0.06	-0.02 ± 0.04	-0.03 ± 0.06	-0.03 ± 0.04	-0.05 ± 0.05		
08/30/94			-0.02 ± 0.04	0.01 ± 0.07	0.01 ± 0.05	0.02 ± 0.04	-0.03 ± 0.04		
09/13/94			0.04 ± 0.05	-0.03 ± 0.08	0.00 ± 0.05	0.04 ± 0.05	0.05 ± 0.06		
09/27/94			-0.04 ± 0.04	-0.03 ± 0.07	0.01 ± 0.04	0.01 ± 0.05	-0.01 ± 0.05		
10/11/94	-0.04 ± 0.05	0.01 ± 0.06	0.00 ± 0.05	0.04 ± 0.08	-0.01 ± 0.05	0.02 ± 0.05	0.04 ± 0.05	-0.06 ± 0.05	0.02 ± 0.04
10/25/94			0.00 ± 0.05	-0.1 ± 0.2	0.00 ± 0.05	0.00 ± 0.05	-0.01 ± 0.05		
11/08/94			0.01 ± 0.04	(1)	-0.03 ± 0.03	-0.02 ± 0.04	-0.03 ± 0.03		
11/22/94			0.00 ± 0.05	(1)	-0.06 ± 0.05	-0.01 ± 0.05	0.02 ± 0.05		
12/13/94			0.06 ± 0.06	(1)	-0.01 ± 0.06	-0.03 ± 0.05	-0.01 ± 0.06		
MEAN	-0.02 ± 0.04	0.01 ± 0.07	0.00 ± 0.05	-0.02 ± 0.12	-0.01 ± 0.04	0.00 ± 0.06	0.00 ± 0.05	-0.02 ± 0.05	0.02 ± 0.03

NOTE: STATION 10B1 IS A GOAT MILK
(1) SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	CS-134	CS-137	BA-140	LA-140
10B1	01/11-01/11/94	1300 ± 100	0 ± 3	4 ± 3	1 ± 9	0 ± 3
	02/08-02/08/94	1400 ± 100	1 ± 2	1 ± 2	-3 ± 7	1 ± 3
	03/08-03/08/94	1400 ± 100	-5 ± 2	1 ± 2	-5 ± 6	1 ± 3
	04/12-04/12/94	1600 ± 200	2 ± 3	4 ± 3	-4 ± 7	0 ± 3
	04/26-04/26/94	1600 ± 200	-2 ± 2	1 ± 2	-2 ± 6	1 ± 3
	05/10-05/10/94	1700 ± 200	0 ± 2	1 ± 2	2 ± 6	1 ± 2
	05/24-05/24/94	1700 ± 200	0 ± 2	1 ± 2	-2 ± 6	0 ± 3
	06/07-06/07/94	1600 ± 200	-1 ± 2	4 ± 2	-2 ± 8	0 ± 3
	06/21-06/21/94	1700 ± 200	1 ± 3	1 ± 3	-1 ± 7	0 ± 3
	07/05-07/05/94	1700 ± 200	-1 ± 3	6 ± 3	-7 ± 9	0 ± 4
	07/19-07/19/94	1800 ± 200	-1 ± 3	1 ± 3	0 ± 10	1 ± 4
	08/02-08/02/94	1500 ± 100	0 ± 3	2 ± 2	6 ± 8	-1 ± 3
	08/16-08/16/94	1600 ± 200	1 ± 2	1 ± 2	6 ± 8	-1 ± 3
	08/30-08/30/94	1200 ± 100	0 ± 3	4 ± 3	-6 ± 7	1 ± 3
	09/13-09/13/94	1600 ± 200	0 ± 3	1 ± 3	3 ± 8	1 ± 3
	09/27-09/27/94	1400 ± 100	-5 ± 3	0 ± 3	-4 ± 7	0 ± 3
	10/11-10/11/94	1400 ± 100	1 ± 2	2 ± 2	6 ± 8	1 ± 3
	10/25-10/25/94	1500 ± 200	-3 ± 3	0 ± 3	-1 ± 7	0 ± 3
	MEAN	1500 ± 300	-1 ± 4	2 ± 4	-1 ± 8	0 ± 1
18C1	01/11-01/11/94	1500 ± 100	0 ± 2	1 ± 2	-1 ± 8	1 ± 3
	02/08-02/08/94	1500 ± 200	1 ± 2	1 ± 2	-3 ± 7	3 ± 3
	03/08-03/08/94	1400 ± 100	0 ± 2	0 ± 2	-5 ± 6	1 ± 2
	04/12-04/12/94	1400 ± 100	-1 ± 2	2 ± 2	-2 ± 6	1 ± 3
	04/26-04/26/94	1500 ± 100	-1 ± 2	-1 ± 2	0 ± 6	0 ± 2
	05/10-05/10/94	1400 ± 100	0 ± 2	2 ± 2	-1 ± 6	0 ± 3
	05/24-05/24/94	1500 ± 100	1 ± 2	0 ± 2	-5 ± 6	0 ± 2
	06/07-06/07/94	1400 ± 100	1 ± 2	1 ± 2	3 ± 6	1 ± 2
	06/21-06/21/94	1400 ± 100	-1 ± 2	1 ± 2	1 ± 6	1 ± 3
	07/05-07/05/94	1400 ± 100	2 ± 2	0 ± 2	-4 ± 8	0 ± 3
	07/19-07/19/94	1400 ± 100	0 ± 3	-1 ± 2	5 ± 7	1 ± 3
	08/02-08/02/94	1400 ± 100	1 ± 2	1 ± 2	2 ± 7	-3 ± 3
	08/16-08/16/94	1500 ± 200	0 ± 2	1 ± 2	-4 ± 7	-1 ± 3
	08/30-08/30/94	1400 ± 100	0 ± 2	2 ± 2	0 ± 6	-2 ± 2
	09/13-09/13/94	1400 ± 100	0 ± 3	1 ± 3	0 ± 10	2 ± 4
	09/27-09/27/94	1300 ± 100	-1 ± 2	2 ± 2	-3 ± 6	-1 ± 3
	10/11-10/11/94	1500 ± 100	1 ± 2	2 ± 2	[illegible] ± 6	-2 ± 2
	10/25-10/25/94	1400 ± 100	-1 ± 2	-1 ± 2	0 ± 6	2 ± 3
	11/08-11/08/94	1400 ± 100	0 ± 2	2 ± 2	2 ± 6	-1 ± 2
	11/22-11/22/94	1500 ± 100	0 ± 2	1 ± 2	4 ± 7	-1 ± 3
	12/13-12/13/94	1600 ± 200	0 ± 2	2 ± 2	-2 ± 8	1 ± 3
	MEAN	1400 ± 100	0 ± 2	1 ± 2	-1 ± 6	0 ± 3
19B1	01/11-01/11/94	1300 ± 100	0 ± 2	1 ± 2	2 ± 7	-4 ± 3
	02/08-02/08/94	1400 ± 100	-1 ± 3	2 ± 3	-1 ± 9	-1 ± 3
	03/08-03/08/94	1400 ± 100	-1 ± 2	1 ± 2	1 ± 5	0 ± 2
	04/12-04/12/94	1400 ± 100	1 ± 2	2 ± 2	1 ± 6	-1 ± 2
	04/26-04/26/94	1300 ± 100	0 ± 2	-1 ± 2	0 ± 5	1 ± 2
	05/10-05/10/94	1300 ± 100	-1 ± 3	2 ± 3	0 ± 7	-1 ± 3
	05/24-05/24/94	1400 ± 100	1 ± 2	1 ± 2	0 ± 5	0 ± 2
	06/07-06/07/94	1200 ± 100	0 ± 2	1 ± 2	-4 ± 5	-1 ± 2
	06/21-06/21/94	1300 ± 100	1 ± 2	2 ± 2	-6 ± 6	-1 ± 2
	07/05-07/05/94	1400 ± 100	1 ± 2	2 ± 2	9 ± 8	3 ± 3
	07/19-07/19/94	1600 ± 200	0 ± 2	2 ± 2	3 ± 7	-2 ± 3
	08/02-08/02/94	1500 ± 200	0 ± 2	2 ± 2	3 ± 7	-1 ± 3
	08/16-08/16/94	1400 ± 100	1 ± 2	2 ± 2	3 ± 8	1 ± 3
	08/30-08/30/94	1100 ± 100	0 ± 2	2 ± 2	0 ± 5	0 ± 2
	09/13-09/13/94	1700 ± 200	0 ± 2	2 ± 2	5 ± 7	-2 ± 3
	09/27-09/27/94	1600 ± 200	0 ± 2	2 ± 2	1 ± 6	0 ± 2
	10/11-10/11/94	1300 ± 100	1 ± 2	1 ± 2	-1 ± 6	-1 ± 3
	10/25-10/25/94	1300 ± 100	1 ± 2	4 ± 2	1 ± 6	-1 ± 2
	11/08-11/08/94	1400 ± 100	-1 ± 2	2 ± 2	-3 ± 6	0 ± 3
	11/22-11/22/94	1200 ± 100	-2 ± 2	1 ± 2	-3 ± 7	1 ± 3
	12/13-12/13/94	1300 ± 100	1 ± 2	-2 ± 2	3 ± 7	3 ± 3
	MEAN	1400 ± 300	0 ± 2	1 ± 2	1 ± 6	0 ± 3

TABLE C-VII.2 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40		CS-134		CS-137		BA-140		LA-140	
21B1	01/11-01/11/94	1500	± 100	0	± 2	1	± 2	0	± 7	0	± 2
	02/08-02/08/94	1400	± 100	-1	± 2	1	± 2	-2	± 8	-1	± 4
	03/08-03/08/94	1300	± 100	1	± 3	1	± 3	-2	± 7	0	± 3
	04/12-04/12/94	1400	± 100	0	± 2	2	± 2	-2	± 5	0	± 2
	04/26-04/26/94	1300	± 100	-1	± 3	1	± 3	-1	± 7	1	± 3
	05/10-05/10/94	1500	± 100	0	± 3	0	± 2	2	± 5	0	± 2
	05/24-05/24/94	1400	± 100	4	± 3	1	± 3	-4	± 8	1	± 3
	06/07-06/07/94	1400	± 100	1	± 2	0	± 2	-4	± 6	1	± 3
	06/21-06/21/94	1400	± 100	-2	± 2	0	± 2	2	± 5	0	± 2
	07/05-07/05/94	1500	± 100	-1	± 2	1	± 2	-4	± 7	0	± 3
	07/19-07/19/94	1500	± 100	0	± 2	0	± 2	3	± 6	2	± 2
	08/02-08/02/94	1400	± 100	4	± 3	3	± 3	0	± 10	-1	± 4
	08/16-08/16/94	1400	± 100	-1	± 3	-2	± 3	0	± 10	1	± 4
	08/30-08/30/94	1300	± 100	1	± 2	0	± 2	0	± 5	-2	± 2
	09/13-09/13/94	1400	± 100	-1	± 2	1	± 2	0	± 6	0	± 2
	09/27-09/27/94	1400	± 100	0	± 2	2	± 2	-1	± 5	0	± 2
	10/11-10/11/94	1400	± 100	2	± 3	1	± 3	-1	± 8	1	± 3
	10/25-10/25/94	1400	± 100	1	± 2	0	± 2	2	± 5	-1	± 2
	11/08-11/08/94	1400	± 100	3	± 3	2	± 3	5	± 8	2	± 3
	11/22-11/22/94	1500	± 200	-1	± 3	2	± 3	8	± 9	1	± 4
	12/13-12/13/94	1400	± 100	3	± 2	2	± 2	-1	± 8	-1	± 3
	MEAN	1400	± 100	1	± 3	1	± 2	0	± 6	0	± 2
22F1	01/11-01/11/94	1300	± 100	1	± 2	4	± 2	-6	± 8	-3	± 3
	02/08-02/08/94	1400	± 100	1	± 3	3	± 3	4	± 9	2	± 3
	03/08-03/08/94	1400	± 100	-1	± 2	3	± 2	5	± 6	0	± 3
	04/12-04/12/94	1200	± 100	0	± 3	4	± 3	-2	± 7	1	± 3
	04/26-04/26/94	1400	± 100	-1	± 2	2	± 2	-1	± 6	1	± 3
	05/10-05/10/94	1300	± 100	-1	± 2	2	± 2	2	± 6	-2	± 2
	05/24-05/24/94	1300	± 100	1	± 2	4	± 2	-4	± 7	0	± 3
	06/07-06/07/94	1200	± 100	1	± 2	2	± 2	2	± 6	0	± 3
	06/21-06/21/94	1400	± 100	1	± 3	3	± 3	-2	± 8	2	± 3
	07/05-07/05/94	1400	± 100	0	± 3	1	± 3	0	± 10	2	± 4
	07/19-07/19/94	1400	± 100	1	± 3	1	± 3	0	± 10	0	± 4
	08/02-08/02/94	1500	± 200	0	± 2	2	± 2	0	± 7	1	± 3
	08/16-08/16/94	1400	± 100	0	± 3	4	± 3	10	± 10	1	± 5
	08/30-08/30/94	1300	± 100	1	± 2	3	± 2	-3	± 6	-2	± 3
	09/13-09/13/94	1300	± 100	2	± 3	2	± 3	-10	± 10	2	± 4
	09/27-09/27/94	1300	± 100	2	± 3	1	± 3	2	± 8	-2	± 3
	10/11-10/11/94	1100	± 100	0	± 2	1	± 2	-3	± 6	0	± 2
	10/25-10/25/94	1300	± 100	0	± 3	2	± 3	3	± 8	1	± 3
	11/08-11/08/94	1400	± 100	0	± 2	2	± 2	4	± 5	-1	± 2
	11/22-11/22/94	1300	± 100	-1	± 3	0	± 2	4	± 8	1	± 3
	12/13-12/13/94	1200	± 100	0	± 2	5	± 2	1	± 8	2	± 3
	MEAN	1300	± 200	0	± 2	2	± 3	1	± 7	0	± 3

TABLE C-VIII.1 MONTHLY TLD RESULTS FOR LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 S.D.

STATION CODE	MEAN ± 2 S.D. (1)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
36S2	7.7 ± 3.0	6.0 ± 0.8	5.4 ± 0.7	5.3 ± 0.6	7.2 ± 0.3	10.1 ± 6.0	9.1 ± 0.7	8.6 ± 0.3	7.9 ± 0.3	8.5 ± 0.6	8.6 ± 0.6	8.0 ± 0.4	7.5 ± 0.2
2B1	7.0 ± 1.8	6.5 ± 1.2	5.6 ± 0.4	5.7 ± 0.6	6.0 ± 0.5	7.7 ± 1.2	8.0 ± 1.2	7.7 ± 0.4	7.4 ± 1.1	7.5 ± 0.2	8.1 ± 0.8	7.2 ± 0.3	6.7 ± 0.8
2E1	7.3 ± 2.9	5.8 ± 0.5	4.9 ± 0.3	4.8 ± 1.0	6.9 ± 0.3	7.3 ± 1.2	8.5 ± 1.4	8.7 ± 0.5	7.8 ± 0.3	8.5 ± 0.4	9.0 ± 0.3	8.1 ± 0.3	7.4 ± 1.1
3S1	7.0 ± 2.5	5.9 ± 0.8	4.5 ± 0.2	5.3 ± 0.2	6.9 ± 0.7	7.0 ± 0.8	8.3 ± 1.7	8.1 ± 0.5	7.5 ± 0.4	8.3 ± 1.1	8.3 ± 0.2	7.5 ± 0.2	7.0 ± 0.3
4E1	5.8 ± 1.6	5.1 ± 0.2	4.6 ± 0.5	4.4 ± 0.8	5.7 ± 0.4	5.5 ± 0.3	6.3 ± 1.2	6.7 ± 0.4	6.1 ± 0.4	6.6 ± 0.4	6.9 ± 0.2	6.2 ± 0.4	6.0 ± 0.3
5S1	8.0 ± 2.7	6.5 ± 0.3	5.3 ± 0.2	6.0 ± 0.6	8.0 ± 0.2	7.9 ± 0.5	3.9 ± 1.2	8.8 ± 0.3	8.7 ± 1.2	9.1 ± 0.3	9.6 ± 0.2	8.7 ± 0.3	8.2 ± 0.3
5H1	8.4 ± 2.7	6.6 ± 0.6	6.1 ± 0.6	6.1 ± 0.7	8.8 ± 0.5	8.3 ± 0.5	9.5 ± 1.6	9.5 ± 0.9	8.7 ± 0.2	9.8 ± 0.2	9.6 ± 0.9	8.8 ± 0.4	8.6 ± 1.0
6C1	7.3 ± 2.4	5.7 ± 0.6	5.7 ± 0.6	5.9 ± 1.0	6.7 ± 0.3	6.9 ± 0.4	8.5 ± 1.4	8.7 ± 0.4	7.8 ± 0.9	8.1 ± 0.3	9.1 ± 0.2	7.8 ± 0.3	7.1 ± 0.7
7S1	7.5 ± 2.3	6.4 ± 0.3	5.3 ± 0.2	5.8 ± 0.4	7.4 ± 0.2	7.5 ± 0.7	8.8 ± 0.7	0.2 ± 0.3	8.0 ± 0.4	8.1 ± 0.3	8.9 ± 1.0	8.2 ± 0.6	8.0 ± 0.3
7E1	7.3 ± 2.5	6.0 ± 0.6	4.7 ± 0.5	5.5 ± 0.5	7.5 ± 0.9	7.0 ± 0.2	8.5 ± 1.9	8.3 ± 0.3	7.7 ± 0.4	8.4 ± 0.2	8.7 ± 0.1	7.2 ± 1.8	7.7 ± 0.6
9C1	7.0 ± 2.3	6.4 ± 1.3	4.2 ± 0.5	5.8 ± 1.0	6.5 ± 0.4	6.8 ± 0.8	8.3 ± 1.1	7.8 ± 0.1	7.6 ± 0.9	7.8 ± 0.1	8.3 ± 0.3	7.4 ± 0.2	6.9 ± 0.8
10S3	7.7 ± 2.2	8.9 ± 1.3	5.5 ± 1.0	5.9 ± 0.9	7.1 ± 1.1	7.2 ± 0.3	8.4 ± 0.9	8.3 ± 0.4	7.8 ± 0.2	8.5 ± 0.5	9.0 ± 0.1	8.1 ± 0.3	7.5 ± 0.4
10E1	7.3 ± 2.6	5.7 ± 0.4	4.9 ± 0.3	5.6 ± 0.6	7.2 ± 0.6	7.0 ± 0.2	9.0 ± 1.6	8.5 ± 0.3	7.5 ± 0.3	8.2 ± 0.[illegible]	8.7 ± 0.3	8.0 ± 0.6	6.9 ± 0.9
10F3	7.3 ± 2.3	5.7 ± 0.6	5.6 ± 0.7	5.3 ± 0.9	7.3 ± 0.4	7.2 ± 0.2	8.5 ± 1.1	8.2 ± 0.2	7.4 ± 0.7	8.4 ± 0.3	8.3 ± 1.1	8.0 ± 0.4	7.4 ± 0.3
11S1	8.3 ± 2.9	6.5 ± 0.5	6.3 ± 1.4	5.9 ± 0.9	7.8 ± 0.7	8.0 ± 0.6	9.7 ± 1.5	9.1 ± 0.2	8.6 ± 0.2	9.5 ± 0.3	9.9 ± 0.3	9.8 ± 2.8	8.8 ± 1.5
13C1	5.8 ± 1.7	4.7 ± 0.2	5.1 ± 0.8	4.2 ± 0.7	5.5 ± 0.1	5.1 ± 0.9	6.8 ± 1.1	6.5 ± 0.3	5.8 ± 0.2	6.4 ± 0.1	7.0 ± 0.4	6.1 ± 0.5	5.8 ± 0.3
13E1	7.5 ± 2.3	5.2 ± 0.2	6.6 ± 1.0	6.0 ± 0.5	7.1 ± 0.3	7.2 ± 0.6	8.9 ± 1.4	8.2 ± 0.3	7.7 ± 0.2	8.5 ± 0.3	8.8 ± 0.3	8.1 ± 0.3	7.9 ± 0.4
13H4	5.0 ± 1.2	4.6 ± 0.8	3.6 ± 0.5	4.7 ± 0.5	4.9 ± 0.2	4.7 ± 0.3	4.8 ± 0.5	5.2 ± 0.1	4.9 ± 0.6	5.5 ± 0.6	6.0 ± 0.3	5.2 ± 0.1	5.7 ± 0.4
14S1	6.8 ± 2.3	5.4 ± 1.5	5.5 ± 0.7	5.3 ± 0.3	6.0 ± 0.5	6.5 ± 0.4	8.7 ± 1.8	7.4 ± 0.2	6.8 ± 0.3	7.8 ± 0.4	8.5 ± 0.6	7.3 ± 0.1	7.0 ± 0.3
15D1	7.5 ± 2.5	6.0 ± 0.6	5.6 ± 0.8	5.6 ± 0.6	7.1 ± 0.4	7.6 ± 1.2	9.2 ± 0.7	8.6 ± 0.3	7.6 ± 0.1	8.5 ± 0.4	8.7 ± 0.1	8.2 ± 0.5	7.2 ± 0.8
16S2	6.7 ± 2.1	5.8 ± 0.6	5.4 ± 1.5	4.7 ± 0.4	6.3 ± 0.3	6.2 ± 0.2	8.0 ± 0.8	7.4 ± 0.4	7.4 ± 1.4	7.6 ± 0.3	7.9 ± 0.2	7.0 ± 0.2	7.0 ± 0.4
16F1	7.6 ± 3.1	5.9 ± 0.3	5.1 ± 0.3	4.9 ± 0.9	7.7 ± 1.7	7.2 ± 0.4	9.9 ± 1.5	8.4 ± 0.4	7.7 ± 0.9	8.7 ± 0.3	9.0 ± 0.3	8.4 ± 0.1	7.9 ± 0.3
17B1	7.0 ± 2.0	5.8 ± 0.6	6.0 ± 1.3	5.3 ± 0.8	6.9 ± 0.7	6.7 ± 0.4	8.5 ± 1.2	7.8 ± 0.2	6.9 ± 0.3	7.7 ± 0.4	8.2 ± 0.3	7.5 ± 0.1	7.1 ± 0.1
18S1	6.6 ± 2.3	5.6 ± 1.1	5.4 ± 2.3	5.1 ± 0.8	5.6 ± 0.8	6.2 ± 0.1	9.2 ± 1.4	6.9 ± 0.1	6.6 ± 0.2	7.4 ± 0.1	7.7 ± 0.4	7.1 ± 0.3	6.6 ± 0.9

1. MEAN AND TWO TIMES THE STANDARD DEVIATION OF THE MONTHLY RESULTS.

TABLE C-VIII.1 MONTHLY TLD RESULTS FOR LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 S.D.

STATION CODE	MEAN ± 2 S.D. (1)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
18G1	5.9 ± 3.0	4.9 ± 0.4	4.9 ± 1.5	4.7 ± 0.1	5.3 ± 0.6	5.2 ± 0.2	10.2 ± 3.6	5.8 ± 0.3	5.6 ± 0.1	6.4 ± 0.4	6.7 ± 0.4	5.7 ± 0.2	5.3 ± 0.5
19D1	7.1 ± 2.6	5.8 ± 0.5	5.4 ± 1.0	5.3 ± 0.3	6.9 ± 0.2	6.3 ± 0.3	9.8 ± 2.0	7.9 ± 0.3	6.9 ± 0.2	7.7 ± 0.5	8.3 ± 0.3	7.7 ± 0.4	6.9 ± 0.6
20D1	6.8 ± 2.0	5.8 ± 0.4	5.5 ± 0.6	5.2 ± 0.8	6.5 ± 0.3	6.6 ± 0.4	8.0 ± 0.8	(2)	6.8 ± 0.2	7.3 ± 0.5	8.1 ± 0.1	7.1 ± 0.3	7.6 ± 0.8
20F1	7.3 ± 2.8	5.8 ± 0.9	5.5 ± 0.4	5.3 ± 0.1	7.1 ± 0.5	6.7 ± 0.3	10.2 ± 2.8	7.8 ± 0.0	7.2 ± 0.2	8.5 ± 1.4	8.7 ± 0.7	7.8 ± 0.2	7.6 ± 1.5
21S1	6.4 ± 2.3	5.3 ± 0.5	5.0 ± 1.4	4.3 ± 0.6	6.4 ± 0.3	5.6 ± 0.3	8.2 ± 1.6	7.2 ± 0.1	6.4 ± 0.2	7.2 ± 0.5	7.6 ± 0.2	6.9 ± 0.2	7.2 ± 0.2
22G1	7.1 ± 2.8	5.8 ± 0.2	5.9 ± 1.0	4.9 ± 1.0	6.6 ± 0.2	6.3 ± 0.2	10.4 ± 1.8	7.5 ± 0.0	7.0 ± 0.1	7.6 ± 0.2	8.3 ± 0.3	7.1 ± 0.1	7.4 ± 0.6
23S2	6.8 ± 2.7	4.6 ± 1.9	4.7 ± 0.1	5.3 ± 0.2	6.6 ± 0.3	6.3 ± 0.2	8.7 ± 1.6	7.4 ± 0.3	7.1 ± 0.4	7.6 ± 0.4	8.4 ± 0.3	7.4 ± 0.2	7.8 ± 0.2
24D1	6.5 ± 2.2	5.3 ± 0.4	4.9 ± 0.2	4.8 ± 0.3	6.3 ± 0.3	5.5 ± 0.1	8.2 ± 1.4	7.1 ± 0.9	7.0 ± 0.9	7.2 ± 0.8	7.8 ± 0.2	6.7 ± 0.2	6.9 ± 0.3
25S1	6.6 ± 2.5	5.1 ± 0.6	4.9 ± 0.8	4.7 ± 0.3	6.2 ± 0.4	5.9 ± 0.2	8.1 ± 1.3	7.4 ± 0.3	6.7 ± 0.1	7.5 ± 0.3	8.2 ± 0.1	7.0 ± 0.1	7.5 ± 0.6
25D1	6.3 ± 2.1	4.7 ± 1.3	4.8 ± 1.0	5.2 ± 0.7	6.0 ± 0.1	5.6 ± 0.6	7.8 ± 1.6	6.8 ± 0.4	6.2 ± 0.2	6.8 ± 0.3	7.8 ± 1.3	6.6 ± 0.2	6.9 ± 0.3
26S3	6.5 ± 2.6	4.7 ± 0.4	4.9 ± 1.2	4.4 ± 0.5	6.7 ± 0.3	5.7 ± 0.2	8.1 ± 1.3	7.2 ± 0.3	6.8 ± 0.9	7.4 ± 0.5	8.0 ± 0.5	6.5 ± 0.1	7.4 ± 0.3
26B1	6.7 ± 2.5	4.6 ± 0.7	5.0 ± 0.4	4.9 ± 0.5	6.5 ± 0.2	6.2 ± 0.4	7.6 ± 2.6	7.8 ± 0.1	6.9 ± 0.2	7.9 ± 0.4	8.3 ± 0.1	7.3 ± 0.3	7.3 ± 0.2
28D2	6.9 ± 2.6	5.3 ± 0.5	5.3 ± 0.7	4.8 ± 0.7	6.6 ± 0.2	6.2 ± 0.2	9.1 ± 2.5	7.6 ± 0.1	7.3 ± 0.9	7.5 ± 0.2	8.3 ± 0.3	7.3 ± 0.1	7.4 ± 0.3
29S1	6.6 ± 2.0	6.1 ± 0.8	5.2 ± 0.3	4.8 ± 0.1	6.4 ± 0.4	5.9 ± 0.3	8.0 ± 1.6	7.1 ± 0.2	6.5 ± 0.3	7.3 ± 0.3	8.0 ± 0.5	6.7 ± 0.5	7.3 ± 0.3
29B1	7.1 ± 2.5	5.3 ± 0.9	5.2 ± 1.0	5.7 ± 0.4	6.6 ± 0.6	6.4 ± 0.1	9.0 ± 1.8	7.8 ± 0.8	7.1 ± 0.8	8.4 ± 0.8	8.4 ± 0.3	7.2 ± 0.2	7.8 ± 0.3
29E1	7.1 ± 2.6	6.2 ± 1.5	4.5 ± 0.7	5.5 ± 0.3	5.6 ± 0.3	6.6 ± 0.3	9.0 ± 1.1	7.7 ± 0.1	7.1 ± 0.7	7.8 ± 0.5	8.8 ± 0.1	7.6 ± 0.8	7.5 ± 0.3
31D1	8.5 ± 3.3	5.6 ± 0.9	5.9 ± 0.6	6.3 ± 0.2	8.6 ± 0.1	9.0 ± 0.8	9.9 ± 0.8	9.6 ± 0.2	8.7 ± 0.4	9.6 ± 0.4	10.5 ± 0.7	9.0 ± 0.2	9.4 ± 0.4
31D2	7.6 ± 2.7	5.8 ± 0.4	5.8 ± 1.1	5.4 ± 0.6	7.4 ± 0.3	7.0 ± 0.3	9.6 ± 1.4	8.4 ± 0.3	7.9 ± 1.0	8.6 ± 0.1	9.1 ± 0.3	7.9 ± 0.1	8.0 ± 0.6
32S1	5.9 ± 1.9	4.7 ± 0.4	4.6 ± 1.2	4.9 ± 0.3	5.4 ± 0.1	5.3 ± 0.3	7.6 ± 1.5	6.1 ± 0.2	5.9 ± 0.4	6.3 ± 0.3	7.2 ± 0.3	6.1 ± 0.2	6.6 ± 0.4
32G1	7.5 ± 2.8	5.9 ± 0.9	5.2 ± 0.5	5.6 ± 0.9	7.3 ± 0.5	7.1 ± 0.3	10.0 ± 0.5	8.2 ± 0.1	7.3 ± 0.1	8.6 ± 0.3	8.5 ± 1.1	8.1 ± 0.2	8.4 ± 0.8
34S2	7.6 ± 2.2	6.6 ± 0.2	6.9 ± 1.4	5.5 ± 0.7	7.1 ± 0.5	7.5 ± 0.6	8.8 ± 1.0	8.8 ± 0.1	7.6 ± 0.7	8.6 ± 0.2	9.3 ± 0.3	8.2 ± 0.2	8.6 ± 0.6
34E1	7.2 ± 2.6	5.4 ± 0.6	5.6 ± 1.0	5.2 ± 0.2	6.7 ± 0.2	6.9 ± 0.3	9.3 ± 1.7	7.8 ± 0.5	7.2 ± 0.2	8.1 ± 0.2	8.7 ± 1.1	7.7 ± 0.2	7.8 ± 0.5
35B1	7.2 ± 2.8	5.5 ± 0.9	5.0 ± 0.7	5.0 ± 0.2	6.9 ± 0.1	6.6 ± 0.3	9.0 ± 1.6	8.2 ± 0.2	7.3 ± 0.1	8.2 ± 0.3	8.5 ± 0.7	7.5 ± 0.7	8.3 ± 0.5
35F1	7.9 ± 2.9	5.7 ± 0.5	5.9 ± 0.5	6.0 ± 0.8	7.6 ± 0.2	7.4 ± 0.2	9.8 ± 1.1	9.3 ± 0.2	7.7 ± 0.2	8.8 ± 0.3	9.5 ± 0.3	8.6 ± 0.3	8.4 ± 0.3

1. MEAN AND TWO TIMES THE STANDARD DEVIATION OF THE MONTHLY RESULTS.
2. SEE PROGRAM EXCEPTIONS SECTION FOR EXPLANATION.

TABLE C-VIII.2 QUARTERLY TLD RESULTS FOR LIMERICK GENERATING STATION, 1994
RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 S.D.

STATION CODE	MEAN ± 2 S.D. (1)	JAN-MAR	APR-JUN	JUL-SEP	OCT-DEC
36S2	6.0 ± 2.2	4.5 ± 0.1	5.7 ± 0.2	6.8 ± 0.3	6.9 ± 0.8
2B1	5.4 ± 1.5	4.7 ± 0.3	4.9 ± 0.5	6.2 ± 0.3	6.0 ± 0.2
2E1	5.5 ± 2.1	4.2 ± 0.4	5.3 ± 0.1	6.3 ± 1.1	6.4 ± 1.0
3S1	5.8 ± 2.2	4.4 ± 0.1	5.3 ± 0.3	6.7 ± 0.3	6.6 ± 0.3
4E1	4.5 ± 1.6	3.7 ± 0.2	4.0 ± 0.4	5.3 ± 0.1	5.1 ± 0.3
5S1	6.4 ± 2.7	4.7 ± 0.2	6.1 ± 1.1	7.7 ± 0.3	7.2 ± 0.2
5H1	6.8 ± 2.1	5.4 ± 0.5	6.7 ± 0.7	7.8 ± 0.3	7.4 ± 0.8
6C1	6.0 ± 1.9	5.0 ± 0.2	5.3 ± 0.1	6.9 ± 0.2	6.7 ± 0.6
7S1	6.0 ± 2.4	4.7 ± 0.1	5.3 ± 0.7	7.1 ± 0.2	6.9 ± 0.5
7E1	5.7 ± 2.2	4.6 ± 0.2	5.0 ± 1.0	6.7 ± 0.3	6.6 ± 0.2
9C1	5.6 ± 1.6	4.6 ± 0.3	5.5 ± 0.7	6.4 ± 0.3	6.1 ± 0.5
10S3	6.0 ± 1.9	4.9 ± 0.1	5.5 ± 0.4	6.9 ± 0.4	6.7 ± 0.9
10E1	6.0 ± 2.0	4.7 ± 0.3	5.7 ± 0.5	6.8 ± 0.3	6.8 ± 1.0
10F3	6.2 ± 2.3	4.7 ± 0.2	5.9 ± 0.3	7.3 ± 1.0	6.8 ± 0.3
11S1	6.5 ± 2.2	5.1 ± 0.3	6.1 ± 0.9	7.5 ± 0.5	7.2 ± 0.6
13C1	4.5 ± 1.4	3.6 ± 0.1	4.3 ± 0.6	5.0 ± 0.2	5.1 ± 0.6
13E1	6.0 ± 1.6	5.1 ± 0.4	5.6 ± 0.5	6.7 ± 0.3	6.7 ± 0.3
13H4	4.0 ± 0.7	4.1 ± 0.2	3.6 ± 0.4	4.0 ± 0.2	4.5 ± 0.7
14S1	5.3 ± 1.8	4.2 ± 0.2	5.0 ± 0.3	6.1 ± 0.3	5.9 ± 0.3
15D1	5.8 ± 1.6	4.9 ± 0.2	5.3 ± 1.4	6.2 ± 1.0	6.6 ± 0.2
16S2	5.4 ± 1.6	4.5 ± 0.5	5.0 ± 0.2	6.1 ± 0.3	6.0 ± 0.2
16F1	6.1 ± 2.6	4.3 ± 0.1	6.1 ± 0.5	7.1 ± 0.2	7.1 ± 1.2
17B1	5.4 ± 1.8	4.3 ± 0.1	5.1 ± 0.2	6.1 ± 0.1	6.2 ± 0.3
18S1	5.1 ± 1.8	4.1 ± 0.1	4.6 ± 0.7	5.9 ± 0.2	5.8 ± 0.4
18G1	4.1 ± 1.0	3.6 ± 0.0	3.8 ± 0.3	4.4 ± 0.5	4.7 ± 0.3
19D1	5.5 ± 1.7	4.5 ± 0.2	5.1 ± 0.7	6.3 ± 0.3	6.1 ± 0.4
20D1	5.1 ± 1.1	4.6 ± 0.5	4.9 ± 0.3	5.2 ± 1.9	5.9 ± 0.3
20F1	5.6 ± 1.7	4.5 ± 0.2	5.3 ± 0.6	6.3 ± 0.3	6.2 ± 0.4
21S1	4.9 ± 1.9	3.9 ± 0.2	4.3 ± 0.5	5.4 ± 1.0	5.9 ± 0.2
22G1	5.2 ± 2.0	4.5 ± 0.1	4.2 ± 0.5	6.2 ± 0.4	5.9 ± 0.4
23S2	5.3 ± 1.8	4.3 ± 0.1	4.7 ± 0.3	6.0 ± 0.3	6.0 ± 1.1
24D1	5.0 ± 1.6	4.2 ± 0.2	4.5 ± 0.6	5.7 ± 0.2	5.7 ± 0.5
25S1	5.3 ± 1.8	4.2 ± 0.2	4.8 ± 0.2	6.1 ± 0.2	5.9 ± 0.2
25D1	4.9 ± 1.4	4.4 ± 0.2	4.2 ± 0.4	5.5 ± 0.2	5.5 ± 0.1
26S3	5.1 ± 2.0	4.1 ± 0.4	4.3 ± 0.5	6.0 ± 0.1	5.9 ± 0.3
26B1	5.6 ± 2.2	4.3 ± 0.2	5.1 ± 0.8	6.7 ± 0.5	6.2 ± 0.2
28D2	5.4 ± 1.9	4.3 ± 0.2	5.0 ± 0.5	6.4 ± 1.0	6.1 ± 0.2
29S1	5.1 ± 1.7	4.2 ± 0.1	4.5 ± 0.8	5.8 ± 0.2	5.8 ± 0.2
29B1	5.5 ± 1.8	4.6 ± 0.1	5.0 ± 0.4	6.6 ± 0.2	6.0 ± 0.5
29E1	5.5 ± 1.6	4.7 ± 0.3	5.0 ± 0.8	6.3 ± 0.2	6.1 ± 0.1
31D1	6.9 ± 2.2	5.5 ± 0.2	6.6 ± 0.8	8.0 ± 0.3	7.6 ± 0.7
31D2	5.8 ± 1.9	4.8 ± 0.1	5.3 ± 0.4	6.8 ± 1.0	6.4 ± 0.2
32S1	4.5 ± 1.2	4.0 ± 0.3	4.1 ± 0.5	5.1 ± 0.3	5.0 ± 0.5
32G1	5.9 ± 1.7	5.0 ± 0.2	5.5 ± 0.7	6.9 ± 0.3	6.2 ± 1.7
34S2	6.1 ± 1.7	5.3 ± 0.3	5.4 ± 0.8	6.9 ± 0.8	6.7 ± 0.4
34E1	5.7 ± 1.7	4.6 ± 0.5	5.4 ± 0.5	6.4 ± 0.2	6.3 ± 0.4
35B1	5.8 ± 1.9	4.6 ± 0.1	5.3 ± 0.9	6.7 ± 0.2	6.4 ± 0.2
35F1	6.2 ± 2.1	4.7 ± 0.2	6.2 ± 0.9	7.1 ± 0.6	6.8 ± 0.2

1. MEAN AND TWO TIMES THE STANDARD DEVIATION OF THE QUARTERLY RESULTS.

TABLE C-VIII.3 1994 MEAN TLD RESULTS FROM LIMERICK GENERATING STATION FOR THE SITE BOUNDARY, MIDDLE, AND OUTER RINGS

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO. ± 2 STANDARD DEVIATIONS OF THE STATION DATA

SAMPLE TYPE	EXPOSURE PERIOD	SITE	MIDDLE RING	OUTER RING
MONTHLY	JAN 1994	5.9 ± 2.1	5.6 ± 0.9	5.6 ± 1.6
	FEB 1994	5.3 ± 1.2	5.3 ± 1.1	5.1 ± 2.0
	MAR 1994	5.2 ± 1.1	5.3 ± 1.0	5.2 ± 1.2
	APR 1994	6.7 ± 1.5	6.8 ± 1.3	6.6 ± 3.1
	MAY 1994	6.8 ± 2.4	6.7 ± 1.6	6.3 ± 2.9
	JUN 1994	8.5 ± 1.1	8.7 ± 1.9	9.0 ± 4.7
	JUL 1994	7.8 ± 1.7	8.0 ± 1.5	7.2 ± 3.5
	AUG 1994	7.3 ± 1.6	7.3 ± 1.2	6.7 ± 3.0
	SEP 1994	7.9 ± 1.6	8.0 ± 1.4	7.6 ± 3.4
	OCT 1994	8.4 ± 1.5	8.5 ± 1.4	7.8 ± 2.9
	NOV 1994	7.5 ± 1.9	7.6 ± 1.4	7.0 ± 3.1
	DEC 1994	7.5 ± 1.2	7.4 ± 1.4	7.1 ± 3.0
QUARTERLY	JAN-MAR 1994	4.4 ± 0.8	4.5 ± 0.8	4.5 ± 1.4
	APR-JUN 1994	5.0 ± 1.2	5.2 ± 1.2	4.8 ± 2.6
	JUL-SEP 1994	6.4 ± 1.5	6.4 ± 1.3	5.9 ± 3.2
	OCT-DEC 1994	6.3 ± 1.2	6.3 ± 1.1	5.7 ± 2.4

TABLE C-VIII.4 SUMMARY OF THE 1994 AMBIENT DOSIMETRY PROGRAM FOR LIMERICK GENERATING STATION

RESULTS IN UNITS OF MILLI-ROENTGEN/STD. MO.

SAMPLE TYPE	LOCATION	NO. OF SAMPLES ANALYZED	PERIOD MINIMUM	PERIOD MAXIMUM	PERIOD MEAN ± 2 S.D.	PRE-OP MEAN ± 2 S.D. (1)
MONTHLY	SITE	192	4.3	10.1	7.1 ± 2.7	7.6 ± 2.4
	MIDDLE RING	323	4.2	10.5	7.1 ± 2.6	7.8 ± 2.2
	OUTER RING	60	3.6	10.4	6.8 ± 3.5	7.8 ± 3.0
QUARTERLY	SITE	64	3.9	7.7	5.5 ± 2.0	
	MIDDLE RING	108	3.6	8.0	5.6 ± 1.9	
	OUTER RING	20	3.6	7.8	5.2 ± 2.6	

(1) THE PRE-OPERATIONAL MEAN WAS CALCULATED FROM TLD READINGS 1-15-82 TO 12-02-84.

SITE BOUNDARY RING STATIONS - 3S1, 5S1, 7S1,10S3,11S1,14S1,16S2,18S1,
- 21S1,23S2,25S1,26S3,29S1,32S1,34S2,36S1,
- 36S2.

MIDDLE RING STATIONS - [illegible]1, 2E1, 4E1, 6C1, 7E1, 9C1,10E1,10F3,
- [illegible]C1,13E1,15D1,16F1,17B1,19D1,20D1,20F1,
- 24D1,25D1,26B1,28D2,29B1,29E1,31D1,31D2,
- 34E1,35B1,35F1.

OUTER RING STATIONS - 5H1,13H4,18G1,22G1,32G1.

TABLE C-IX.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

SURFACE WATER (GROSS BETA AND GAMMA)

COLLECTION PERIOD	10F2	13B1	24S1
JAN 94	12/27-01/31	12/27-01/31	12/27-01/31
FEB 94	01/31-02/28	01/31-02/28	01/31-02/28
MAR 94	02/28-03/29	02/28-03/28	02/28-03/28
APR 94	03/29-05/02	03/28-05/02	03/28-05/02
MAY 94	05/02-05/31	05/02-05/31	05/02-05/31
JUN 94	05/31-06/28	05/31-06/28	05/31-06/28
JUL 94	06/28-08/01	06/28-08/01	06/28-08/01
AUG 94	08/01-08/30	08/01-08/30	08/01-08/30
SEP 94	08/30-09/27	08/30-09/27	08/30-09/27
OCT 94	09/27-10/31	09/27-10/31	09/27-10/31
NOV 94	10/31-11/28	10/31-11/28	10/31-11/28
DEC 94	11/28-12/28	11/28-12/28	11/28-12/28

SURFACE WATER (TRITIUM)

JAN-MAR 94	12/27-03/29	12/27-03/28	12/27-03/28
APR-JUN 94	03/28-06/28	03/29-06/28	03/28-06/28
JUL-SEP 94	06/28-09/27	06/28-09/27	06/28-09/27
OCT-DEC 94	09/27-12/28	09/27-12/28	09/27-12/28

DRINKING WATER (GROSS BETA AND GAMMA)

COLLECTION PERIOD	13H2	15F4	15F7	16C2	28F3
JAN 94	12/27-01/31	12/27-01/31	12/27-01/31	12/27-01/31	12/27-01/31
FEB 94	01/31-02/28	01/31-02/28	01/31-02/28	01/31-02/28	01/31-02/28
MAR 94	02/28-03/29	02/28-03/29	02/28-03/29	02/28-03/28	02/28-03/29
APR 94	03/29-05/02	03/29-05/02	03/29-05/02	03/28-05/02	03/29-05/02
MAY 94	05/02-05/31	05/02-05/31	05/02-05/31	05/02-05/31	05/02-05/31
JUN 94	05/31-06/28	05/31-06/28	05/31-06/28	05/31-06/28	05/31-06/28
JUL 94	06/28-08/01	06/28-08/01	06/28-08/01	06/28-08/01	06/28-08/01
AUG 94	08/01-08/30	08/01-08/30	08/01-08/30	08/01-08/30	08/01-08/30
SEP 94	08/30-09/27	08/30-09/27	08/30-09/27	08/30-09/27	08/30-09/27
OCT 94	09/27-10/31	09/27-10/31	09/27-10/31	09/27-10/31	09/27-10/31
NOV 94	10/31-11/28	10/31-11/28	10/31-11/28	10/31-11/28	10/31-11/28
DEC 94	11/28-12/28	11/28-12/28	11/28-12/28	11/28-12/28	11/28-12/28

DRINKING WATER (TRITIUM)

JAN-MAR 94	12/27-03/29	12/27-03/29	12/27-03/29	12/27-03/28	12/27-03/29
APR-JUN 94	03/29-06/28	03/29-06/28	03/29-06/28	03/28-06/28	03/29-06/28
JUL-SEP 94	06/28-09/27	06/28-09/27	06/28-09/27	06/28-09/27	06/28-09/27
OCT-DEC 94	09/27-12/28	09/27-12/28	09/27-12/28	09/27-12/28	09/27-12/28

TABLE C-IX.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

AIR PARTICULATE AND AIR IODINE

GROUP I - ON-SITE LOCATIONS

WEEK	10S3	11S1	14S1	34S2
01	01/03-01/10	01/03-01/10	01/03-01/10	01/03-01/10
02	01/10-01/17	01/10-01/17	01/10-01/17	01/10-01/17
03	01/17-01/24	01/17-01/24	01/17-01/24	01/17-01/24
04	01/24-01/31	01/24-01/31	01/24-01/31	01/24-01/31
05	01/31-02/07	01/31-02/07	01/31-02/07	01/31-02/07
06	02/07-02/14	02/07-02/14	02/07-02/14	02/07-02/14
07	02/14-02/21	02/14-02/21	02/14-02/21	02/14-02/21
08	02/21-02/28	02/21-02/28	02/21-02/28	02/21-02/28
09	02/28-03/07	02/28-03/07	02/28-03/07	02/28-03/07
10	03/07-03/14	03/07-03/14	03/07-03/14	03/07-03/14
11	03/14-03/21	03/14-03/21	03/14-03/21	03/14-03/21
12	03/21-03/28	03/21-03/28	03/21-03/28	03/21-03/28
13	03/28-04/04	03/28-04/04	03/28-04/04	03/28-04/04
14	04/04-04/11	04/04-04/11	04/04-04/11	04/04-04/11
15	04/11-04/18	04/11-04/18	04/11-04/18	04/11-04/18
16	04/18-04/25	04/18-04/25	04/18-04/25	04/18-04/25
17	04/26-05/02	04/25-05/02	04/25-05/02	04/25-05/02
18	05/02-05/09	05/02-05/09	05/02-05/09	05/02-05/09
19	05/09-05/16	05/09-05/16	05/09-05/16	05/09-05/16
20	05/16-05/23	05/16-05/23	05/16-05/23	05/16-05/23
21	05/23-05/31	05/23-05/31	05/23-05/31	05/23-05/31
22	05/31-06/06	05/31-06/06	05/31-06/06	05/31-06/06
23	06/06-06/13	06/06-06/13	06/06-06/13	06/06-06/13
24	06/13-06/20	06/13-06/20	06/13-06/20	06/13-06/20
25	06/20-06/27	06/20-06/27	06/20-06/27	06/20-06/27
26	06/27-07/05	06/27-07/05	06/27-07/05	06/27-07/05
27	07/05-07/11	07/05-07/11	07/05-07/11	
28	07/11-07/18	07/11-07/18	07/11-07/18	07/11-07/18
29	07/18-07/25	07/18-07/25	07/18-07/25	07/18-07/25
30		07/25-08/01	07/25-08/01	07/25-08/01
31	08/01-08/08	08/01-08/08	08/01-08/08	08/01-08/08
32	08/08-08/15	08/08-08/15	08/08-08/15	08/08-08/15
33	08/15-08/22	08/15-08/22	08/15-08/22	08/15-08/22
34	08/22-08/29	08/22-08/29	08/22-08/29	08/22-08/29
35	08/29-09/06	08/29-09/06	08/29-09/06	08/29-09/06
36	09/06-09/12	09/06-09/12	09/06-09/12	09/06-09/12
37	09/12-09/19	09/12-09/19	09/12-09/19	09/12-09/19
38	09/19-09/26	09/19-09/26	09/19-09/26	09/19-09/26
39	09/26-10/03	09/26-10/03	09/26-10/03	09/26-10/03
40	10/03-10/10	10/03-10/10	10/03-10/10	10/03-10/10
41	10/10-10/17	10/10-10/17	10/10-10/17	10/10-10/17
42	10/17-10/24	10/17-10/24	10/17-10/24	10/17-10/24
43	10/24-10/31	10/24-10/31	10/24-10/31	10/24-10/31
44	10/31-11/07	10/31-11/07	10/31-11/07	10/31-11/07
45	11/07-11/14	11/07-11/14	11/07-11/14	11/07-11/14
46	11/14-11/21	11/14-11/21	11/14-11/21	11/14-11/21
47	11/21-11/28	11/21-11/28	11/21-11/28	11/21-11/28
48	11/28-12/05	11/28-12/05	11/28-12/05	11/28-12/05
49	12/05-12/12	12/05-12/12	12/05-12/12	12/05-12/12
50	12/12-12/19	12/12-12/19	12/12-12/19	12/12-12/19
51	12/19-12/27	12/19-12/27	12/19-12/27	12/19-12/27
52	12/27-01/03	12/27-01/03	12/27-01/03	12/27-01/03

TABLE C-IX.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

AIR PARTICULATE AND AIR IODINE

GROUP II - INTERMEDIATE DISTANCE LOACATIONS

WEEK	2B1	6C1	9C1	13C1	15D1	17B1
01	01/03-01/10	01/03-01/10	01/03-01/10	01/03-01/10	01/03-01/10	01/03-01/10
02	01/10-01/17	01/10-01/17	01/10-01/17	01/10-01/17	01/10-01/17	01/10-01/17
03	01/17-01/24	01/17-01/24	01/17-01/24	01/17-01/24	01/17-01/24	01/17-01/24
04	01/24-01/31	01/24-01/31	01/24-01/31	01/24-01/31	01/24-01/31	01/24-01/31
05	01/31-02/07	01/31-02/07	01/31-02/07	01/31-02/07	01/31-02/07	01/31-02/07
06	02/07-02/14	02/07-02/14	02/07-02/14	02/07-02/14	02/07-02/14	02/07-02/14
07		02/14-02/21	02/14-02/21	02/14-02/21	02/14-02/21	02/14-02/21
08	02/21-02/28	02/21-02/28	02/21-02/28	02/21-02/28	02/21-02/28	02/21-02/28
09	02/28-03/07	02/28-03/07	02/28-03/07	02/28-03/07	02/28-03/07	02/28-03/07
10	03/07-03/14	03/07-03/14	03/07-03/14	03/07-03/14	03/07-03/14	03/07-03/14
11	03/14-03/21	03/14-03/21	03/14-03/21	03/14-03/21	03/14-03/21	03/14-03/21
12	03/21-03/28	03/21-03/28	03/21-03/28	03/21-03/28	03/21-03/28	03/21-03/28
13	03/28-04/04	03/28-04/04	03/28-04/04	03/28-04/04	03/28-04/04	03/28-04/04
14	04/04-04/11	04/04-04/11	04/04-04/11	04/04-04/11	04/04-04/11	04/04-04/11
15	04/11-04/18	04/11-04/18	04/11-04/18	04/11-04/18	04/11-04/18	04/11-04/18
16	04/18-04/25	04/18-04/25	04/18-04/25	04/18-04/25	04/18-04/25	04/18-04/25
17	04/25-05/02	04/25-05/02	04/25-05/02	04/25-05/02	04/25-05/02	04/25-05/02
18	05/02-05/09	05/02-05/09	05/02-05/09	05/02-05/09	05/02-05/09	05/02-05/09
19	05/09-05/16	05/09-05/16	05/09-05/16	05/09-05/16	05/09-05/16	05/09-05/16
20	05/16-05/23	05/16-05/23	05/16-05/23	05/16-05/23	05/16-05/23	05/16-05/23
21	05/23-05/31	05/23-05/31	05/23-05/31	05/23-05/31	05/23-05/31	05/23-05/31
22	05/31-06/06	05/31-06/06	05/31-06/06	05/31-06/06	05/31-06/06	05/31-06/06
23	06/06-06/13	06/06-06/13	06/06-06/13	06/06-06/13	06/06-06/13	06/06-06/13
24	06/13-06/20	06/13-06/20	06/13-06/20	06/13-06/20	06/13-06/20	06/13-06/20
25	06/20-06/27	06/20-06/27	06/20-06/27	06/20-06/27	06/20-06/27	06/20-06/27
26	06/27-07/05	06/27-07/05	06/27-07/05	06/27-07/05	06/27-07/05	06/27-07/05
27	07/05-07/11	07/05-07/11	07/05-07/11	07/05-07/11	07/05-07/11	07/05-07/11
28	07/11-07/18	07/11-07/18	07/11-07/18	07/11-07/18	07/11-07/18	07/11-07/18
29	07/18-07/25	07/18-07/25	07/18-07/25	07/18-07/25	07/18-07/25	07/18-07/25
30	07/25-08/01	07/25-08/01	07/25-08/01	07/25-08/01	07/25-08/01	07/25-08/01
31	08/01-08/08	08/01-08/08	08/01-08/08	08/01-08/08	08/01-08/08	08/01-08/08
32	08/08-08/15	08/08-08/15	08/08-08/15	08/08-08/15		08/08-08/15
33	08/15-08/22	08/15-08/22	08/15-08/22	08/15-08/22	08/15-08/22	08/15-08/22
34	08/22-08/29	08/22-08/29	08/22-08/29	08/22-08/29	08/22-08/29	08/22-08/29
35	08/29-09/06	08/29-09/06	08/29-09/06	08/29-09/06	08/29-09/06	08/29-09/06
36	09/06-09/12	09/06-09/12	09/06-09/12	09/06-09/12	09/06-09/12	09/06-09/12
37	09/12-09/19	09/12-09/19	09/12-09/19	09/12-09/19	09/12-09/19	09/12-09/19
38	09/19-09/26	09/19-09/26	09/19-09/26	09/19-09/26	09/19-09/26	09/19-09/26
39	09/26-10/03	09/26-10/03	09/26-10/03	09/26-10/03	09/26-10/03	
40	10/03-10/10	10/03-10/10	10/03-10/10	10/03-10/10	10/03-10/10	10/03-10/10
41	10/10-10/17	10/10-10/17	10/10-10/17	10/10-10/17	10/10-10/17	10/10-10/17
42	10/17-10/24	10/17-10/24	10/17-10/24	10/17-10/24	10/17-10/24	10/17-10/24
43	10/24-10/31	10/24-10/31	10/24-10/31	10/24-10/31	10/24-10/31	10/24-10/31
44	10/31-11/07	10/31-11/07	10/31-11/07	10/31-11/07	10/31-11/07	10/31-11/07
45	11/07-11/14	11/07-11/14	11/07-11/14	11/07-11/14	11/07-11/14	11/07-11/14
46	11/14-11/21	11/14-11/21	11/14-11/21	11/14-11/21	11/14-11/21	11/14-11/21
47	11/21-11/28	11/21-11/28	11/21-11/28	11/21-11/28	11/21-11/28	11/21-11/28
48	11/28-12/05	11/28-12/05	11/28-12/05	11/28-12/05	11/28-12/05	11/28-12/05
49	12/0[illegible]2/12	12/05-12/12	12/05-12/12	12/05-12/12	12/05-12/12	12/05-12/12
50	12/[illegible]2/19	[illegible]/12-12/19	12/12-12/19	12/12-12/19	12/12-12/19	12/12-12/19
51	12/19-12/27	12/19-12/27	12/19-12/27	12/19-12/27	12/19-12/27	12/19-12/27
52	12/27-01/03	12/27-01/03	12/27-01/03	12/27-01/03	12/27-01/03	12/27-01/03

TABLE C-IX.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

AIR PARTICULATE AND AIR IODINE

GROUP II - INTERMEDIATE DISTANCE LOACATIONS

WEEK	20D1	26B1	29B1	31D1	35B1
01	01/03-01/10	01/03-01/10	01/03-01/10	01/03-01/10	01/03-01/10
02	01/10-01/17	01/10-01/17	01/10-01/17	01/10-01/17	01/10-01/17
03	01/17-01/24	01/17-01/24	01/17-01/24	01/17-01/24	01/17-01/24
04	01/24-01/31	01/24-01/31	01/24-01/31	01/24-01/31	01/24-01/31
05	01/31-02/07	01/31-02/07	01/31-02/07	01/31-02/07	01/31-02/07
06	02/07-02/14		02/07-02/14	02/07-02/14	02/07-02/14
07	02/14-02/21	02/14-02/21	02/14-02/21	02/14-02/21	02/14-02/21
08	02/21-02/28	02/21-02/28	02/21-02/28	02/21-02/28	02/21-02/28
09	02/28-03/07	02/28-03/07	02/28-03/07	02/28-03/07	02/28-03/07
10	03/07-03/14	03/07-03/14	03/07-03/14	03/07-03/14	03/07-03/14
11	03/14-03/21	03/14-03/21	03/14-03/21	03/14-03/21	03/14-03/21
12	03/21-03/28	03/21-03/28	03/21-03/28	03/21-03/28	03/21-03/28
13	03/28-04/04	03/28-04/04	03/28-04/04	03/28-04/04	03/28-04/04
14	04/04-04/11	04/04-04/11	04/04-04/11	04/04-04/11	04/04-04/11
15	04/11-04/18	04/11-04/18	04/11-04/18	04/11-04/18	04/11-04/18
16	04/18-04/25	04/18-04/25	04/18-04/25	04/18-04/25	04/18-04/25
17	04/25-05/02	04/25-05/02	04/25-05/02	04/25-05/02	04/25-05/02
18	05/02-05/09	05/02-05/09	05/02-05/09	05/02-05/09	05/02-05/09
19	05/09-05/16	05/09-05/16	05/09-05/16	05/09-05/16	05/09-05/16
20	05/16-05/23	05/16-05/23		05/16-05/23	05/16-05/23
21	05/23-05/31	05/23-05/31	05/23-05/31	05/23-05/31	05/23-05/31
22	05/31-06/06	05/31-06/06	05/31-06/06	05/31-06/06	05/31-06/06
23	06/06-06/13	06/06-06/13	06/06-06/13	06/06-06/13	06/06-06/13
24	06/13-06/20	06/13-06/20	06/13-06/20	06/13-06/20	06/13-06/20
25	06/20-06/27	06/20-06/27	06/20-06/27	06/20-06/27	06/20-06/27
26	06/27-07/05	06/27-07/05	06/27-07/05	06/27-07/05	06/27-07/05
27	07/05-07/11	07/05-07/11	07/05-07/11	07/05-07/11	07/05-07/11
28	07/11-07/18	07/11-07/18	07/11-07/18	07/11-07/18	07/11-07/18
29	07/18-07/25	07/18-07/25	07/18-07/25	07/18-07/25	07/18-07/25
30	07/25-08/01	07/25-08/01	07/25-08/01	07/25-08/01	07/25-08/01
31	08/01-08/08	08/01-08/08	08/01-08/08	08/01-08/08	08/01-08/08
32	08/08-08/15	08/08-08/15	08/08-08/15	08/08-08/15	08/08-08/15
33	08/15-08/22	08/15-08/22	08/15-08/22	08/15-08/22	08/15-08/22
34	08/22-08/29	08/22-08/29	08/22-08/29	08/22-08/29	08/22-08/29
35	08/29-09/06	08/29-09/06	08/29-09/06	08/29-09/06	08/29-09/06
36	09/06-09/12	09/06-09/12	09/06-09/12	09/06-09/12	09/06-09/12
37	09/12-09/19	09/12-09/19	09/12-09/19	09/12-09/19	09/12-09/19
38	09/19-09/26	09/19-09/26	09/19-09/26	09/19-09/26	09/19-09/26
39	09/26-10/03	09/26-10/03	09/26-10/03	09/26-10/03	09/26-10/03
40	10/03-10/10	10/03-10/10	10/03-10/10	10/03-10/10	10/03-10/10
41	10/10-10/17	10/10-10/17	10/10-10/17	10/10-10/17	10/10-10/17
42	10/17-10/24	10/17-10/24	10/17-10/24	10/17-10/24	10/17-10/24
43	10/24-10/31	10/24-10/31	10/24-10/31	10/24-10/31	10/24-10/31
44	10/31-11/07	10/31-11/07	10/31-11/07	10/31-11/07	10/31-11/07
45	11/07-11/14	11/07-11/14	11/07-11/14	11/07-11/14	11/07-11/14
46	11/14-11/21	11/14-11/21	11/14-11/21	11/14-11/21	11/14-11/21
47	11/21-11/28	11/21-11/28	11/21-11/28	11/21-11/28	11/21-11/28
48	11/28-12/05	11/28-12/05	11/28-12/05	11/28-12/05	11/28-12/05
49	12/05-12/12	12/05-12/12	12/05-12/12	12/05-12/12	12/05-12/12
50	12/12-12/19	12/12-12/19	12/12-12/19	12/12-12/19	12/12-12/19
51	12/19-12/27	12/19-12/27	12/19-12/27	12/19-12/27	12/19-12/27
52	12/27-01/03	12/27-01/03	12/27-01/03	12/27-01/03	12/27-01/03

TABLE C-IX.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

AIR PARTICULATE AND AIR IODINE

GROUP III - CONTROL LOACATIONS

WEEK	13H4	22G1
01	01/03-01/10	01/03-01/10
02	01/10-01/18	01/10-01/17
03	01/18-01/24	01/17-01/24
04	01/24-01/31	01/24-01/31
05	01/31-02/07	01/31-02/07
06	02/07-02/14	02/07-02/14
07	02/14-02/22	02/14-02/21
08	02/22-02/28	02/21-02/28
09	02/28-03/07	02/28-03/07
10	03/07-03/14	03/07-03/14
11	03/14-03/21	03/14-03/21
12	03/21-03/28	03/21-03/28
13	03/28-04/04	03/28-04/04
14	04/04-04/11	04/04-04/11
15	04/11-04/18	04/11-04/18
16	04/18-04/25	04/18-04/25
17	04/25-05/02	04/25-05/02
18	05/02-05/09	05/02-05/09
19	05/09-05/16	05/09-05/16
20	05/16-05/23	05/16-05/23
21	05/23-05/31	05/23-05/31
22	05/31-06/06	05/31-06/06
23	06/06-06/13	06/06-06/13
24	06/13-06/20	06/13-06/20
25	06/20-06/27	06/20-06/27
26	06/27-07/05	06/27-07/05
27	07/05-07/11	07/05-07/11
28	07/11-07/18	07/11-07/18
29	07/18-07/25	07/18-07/25
30	07/25-08/01	07/25-08/01
31	08/01-08/08	08/01-08/08
32	08/08-08/15	08/08-08/15
33	08/15-08/22	08/15-08/22
34	08/22-08/29	08/22-08/29
35	08/29-09/06	08/29-09/06
36	09/06-09/12	09/06-09/12
37	09/12-09/19	09/12-09/19
38	09/19-09/26	09/19-09/26
39	09/26-10/03	09/26-10/03
40	10/03-10/10	10/03-10/10
41	10/10-10/17	10/10-10/17
42	10/17-10/24	10/17-10/24
43	10/24-10/31	10/24-10/31
44	10/31-11/07	10/31-11/07
45	11/07-11/14	11/07-11/14
46	11/14-11/21	11/14-11/21
47	11/21-11/28	11/21-11/28
48	11/28-12/05	11/28-12/05
49	12/05-12/12	12/05-12/12
50	12/12-12/19	12/12-12/19
51	12/19-12/27	12/19-12/27
52	12/27-01/04	12/27-01/03

TABLE C-IX.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

TLD - MONTHLY

STATION CODE	JAN 1994	FEB 1994	MAR 1994	APR 1994	MAY 1994	JUN 1994	JUL 1994	AUG 1994	SEP 1994	OCT 1994	NOV 1994	DEC 1994
36S2	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
2B1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
2E1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
3S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
4E1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
5S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
5H1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
6C1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
7S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
7E1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
9C1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
10S3	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
10E1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
10F3	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/03	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
11S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
13C1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
13E1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/01	08/01-09/08	09/08-10/04	10/04-10/31	10/31-12/05	12/05-01/04
13H4	01/05-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
14S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
15D1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
16S2	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
16F1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
17B1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
18S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
18G1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
19D1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05		08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
20D1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
20F1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
21S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
22G1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
23S2	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
24D1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
25S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
25D1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/0[illegible]
26S3	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
26B1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
28D2	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
29S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
29B1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
29E1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
31D1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
31D2	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
32S1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
32G1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/03
34S2	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
34E1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
35B1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04
35F1	01/04-02/01	02/01-03/01	03/01-04/05	04/05-05/03	05/03-06/07	06/07-07/05	07/05-08/02	08/02-09/08	09/08-10/04	10/04-11/01	11/01-12/06	12/06-01/04

TABLE C-IX.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

TLD - QUARTERLY

STATION CODE	JAN-MAR 1994	APR-JUN 1994	JUL-SEP 1994	OCT-DEC 1994
36S2	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
2B1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
2E1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
3S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
4E1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
5S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
5H1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
6C1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
7S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
7E1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
9C1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
10S3	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
10E1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
10F3	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
11S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
13C1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
13E1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
13H4	01/05-04/05	04/05-07/05	07/05-10/04	10/04-01/04
14S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
15D1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
16S2	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
16F1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
17B1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
18S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
18G1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
19D1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
20D1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
20F1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
21S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
22G1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
23S2	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
24D1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
25S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
25D1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
26S3	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
26B1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
28D2	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
29S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
29B1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
29E1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
31D1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
31D2	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
32S1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
32G1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
34S2	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/03
34E1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
35B1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04
35F1	01/04-04/05	04/05-07/05	07/05-10/04	10/04-01/04

FIGURE C-1
MEAN MONTHLY INSOLUBLE GROSS BETA CONCENTRATIONS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LGS, 1982 - 1994

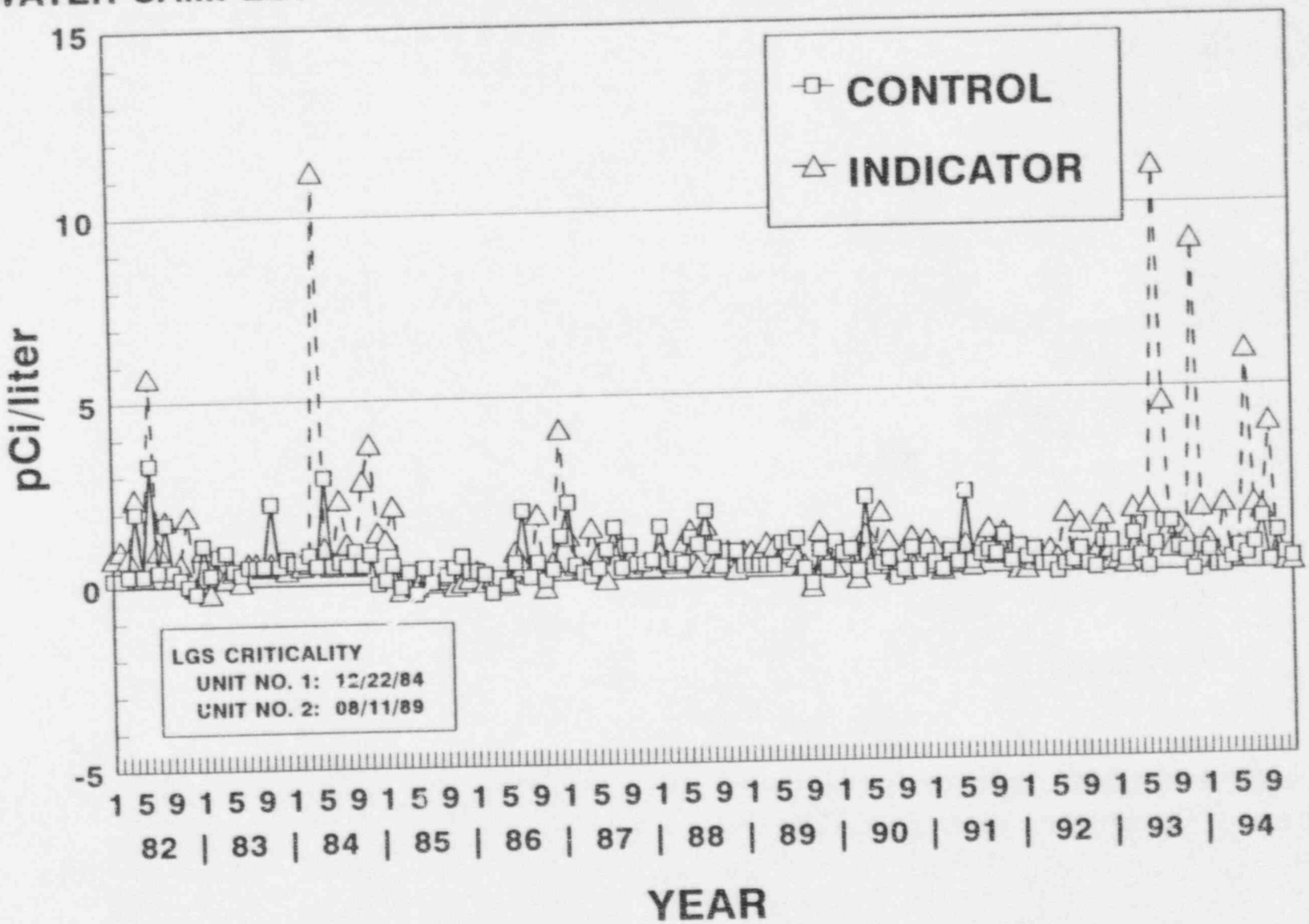


FIGURE C-2
MEAN MONTHLY SOLUBLE GROSS BETA CONCENTRATIONS IN SURFACE WATER SAMPLES COLLECTED IN THE VICINITY OF LGS, 1982 - 1994

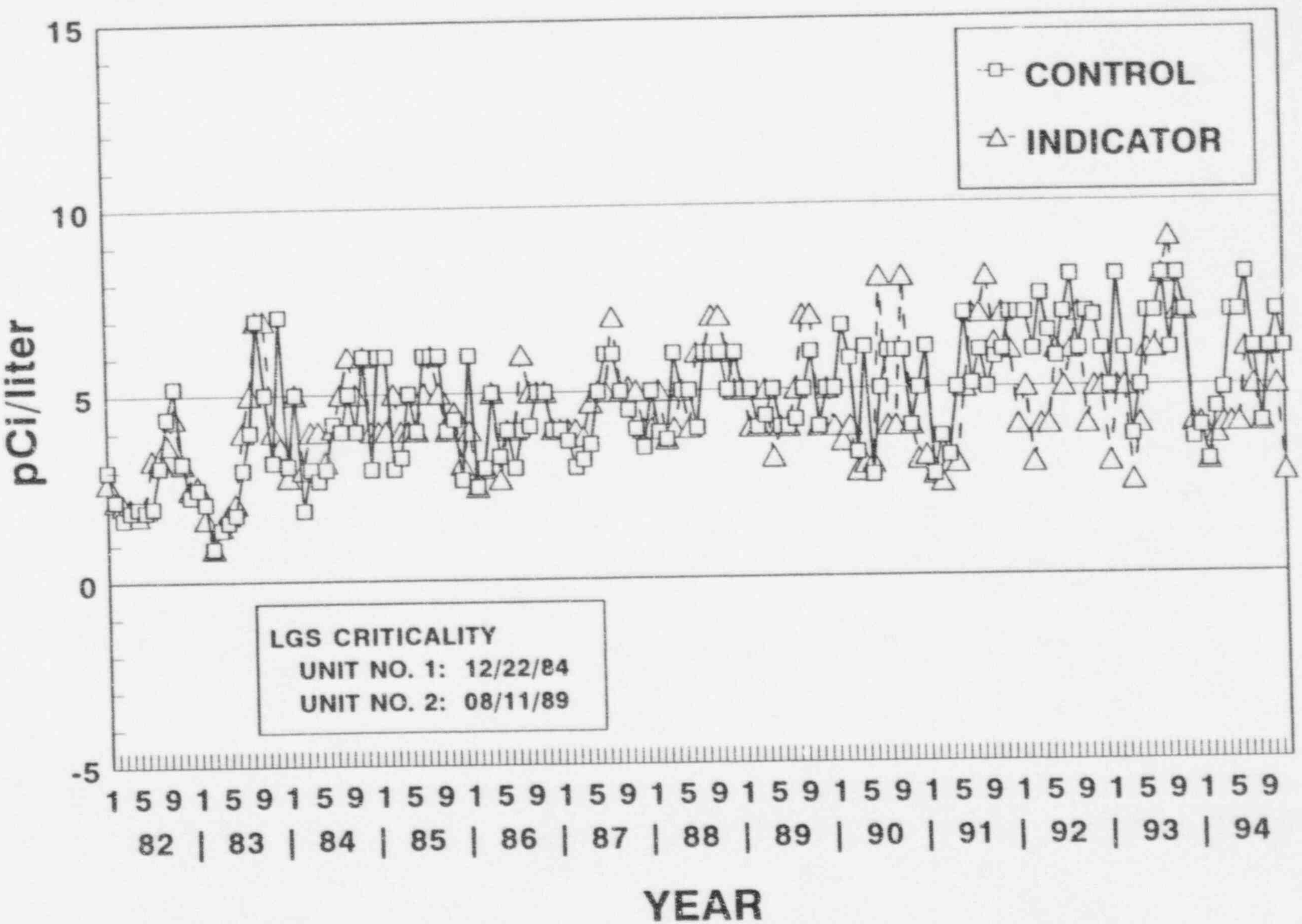


FIGURE C-3
MEAN MONTHLY INSOLUBLE GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LGS, 1982 - 1994

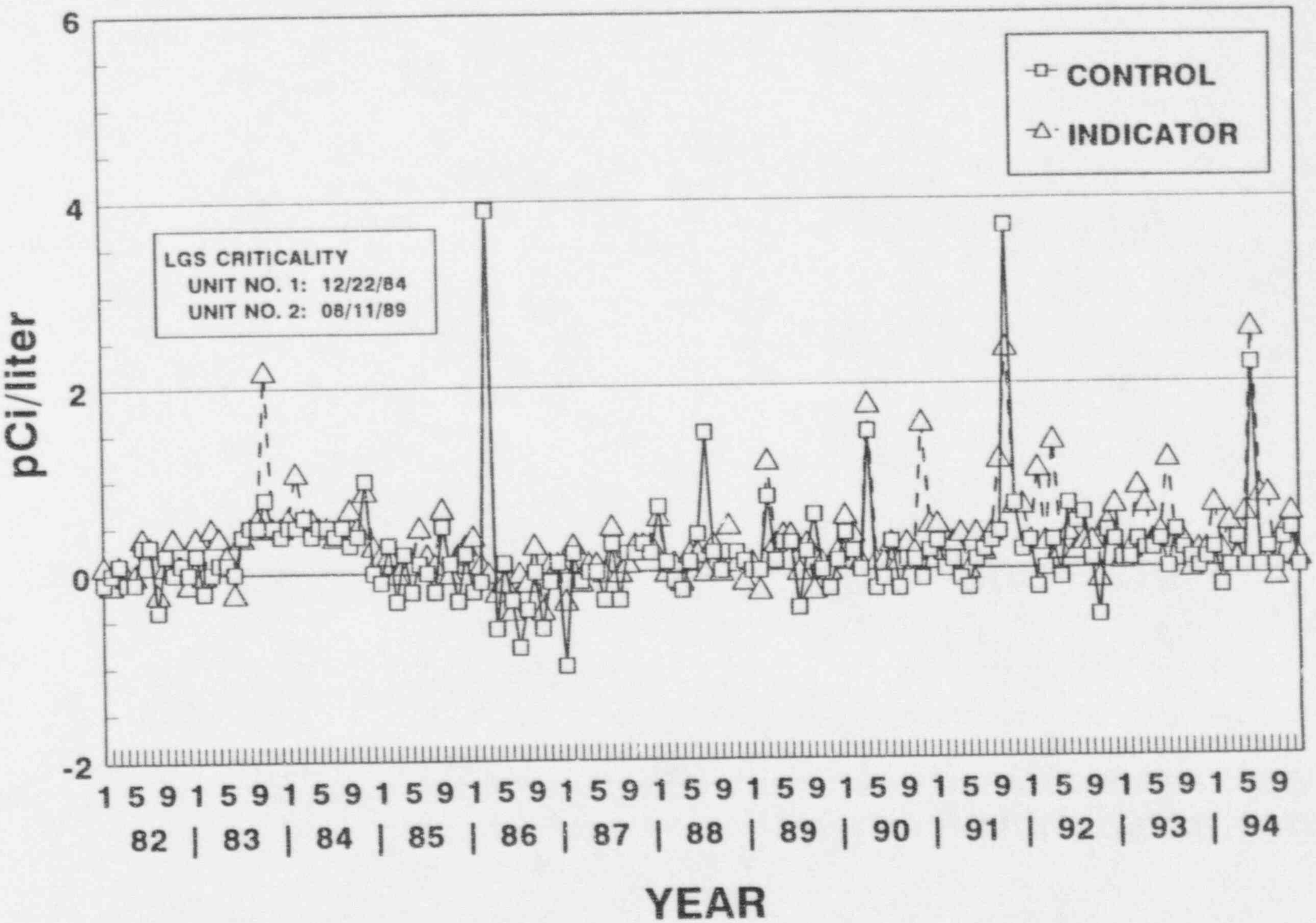


FIGURE C-4
MEAN MONTHLY SOLUBLE GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LGS, 1982 - 1994

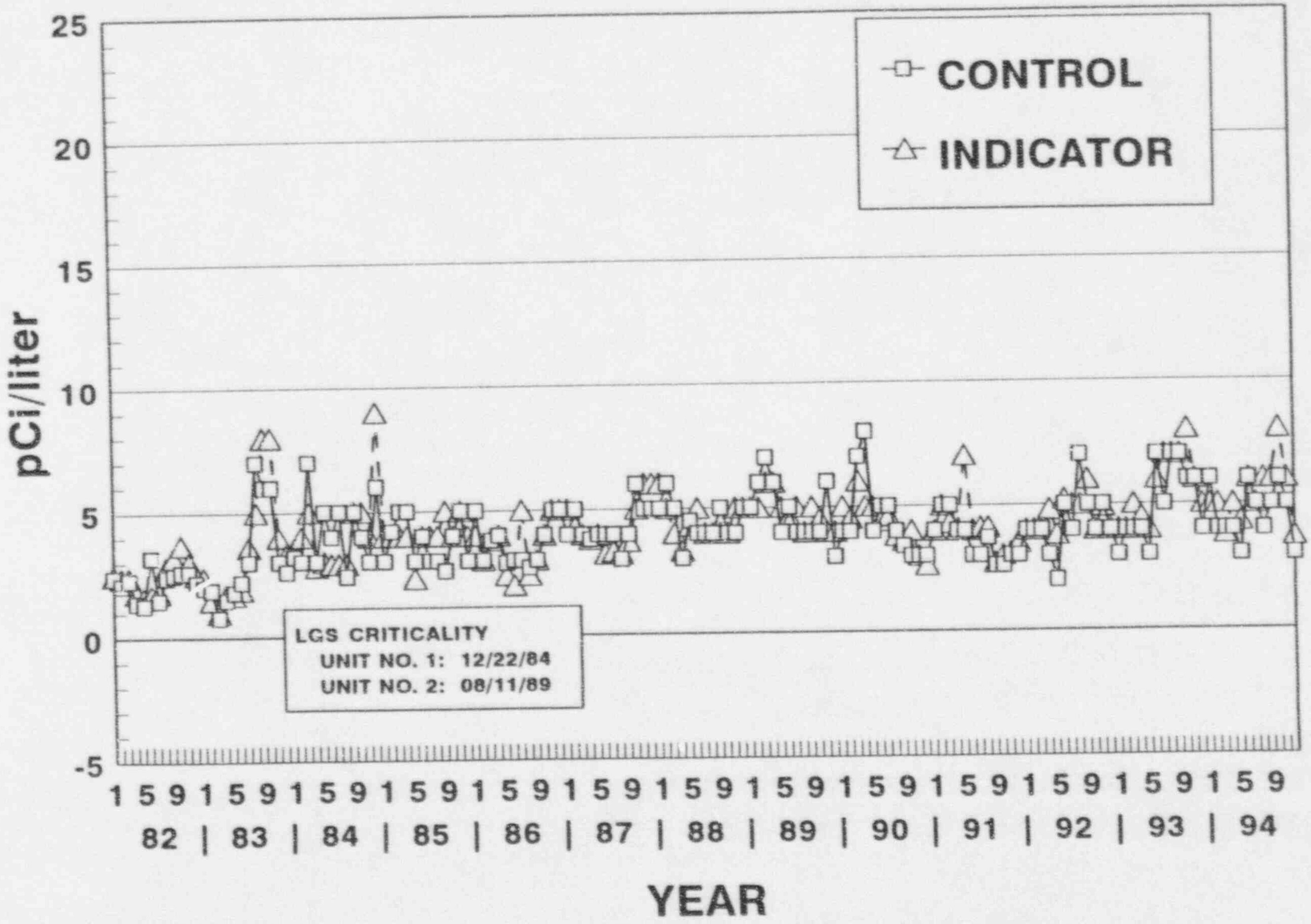


FIGURE C-5
MEAN ANNUAL CS-137 CONCENTRATIONS IN FISH SAMPLES COLLECTED IN THE VICINITY OF LGS, 1982 - 1994

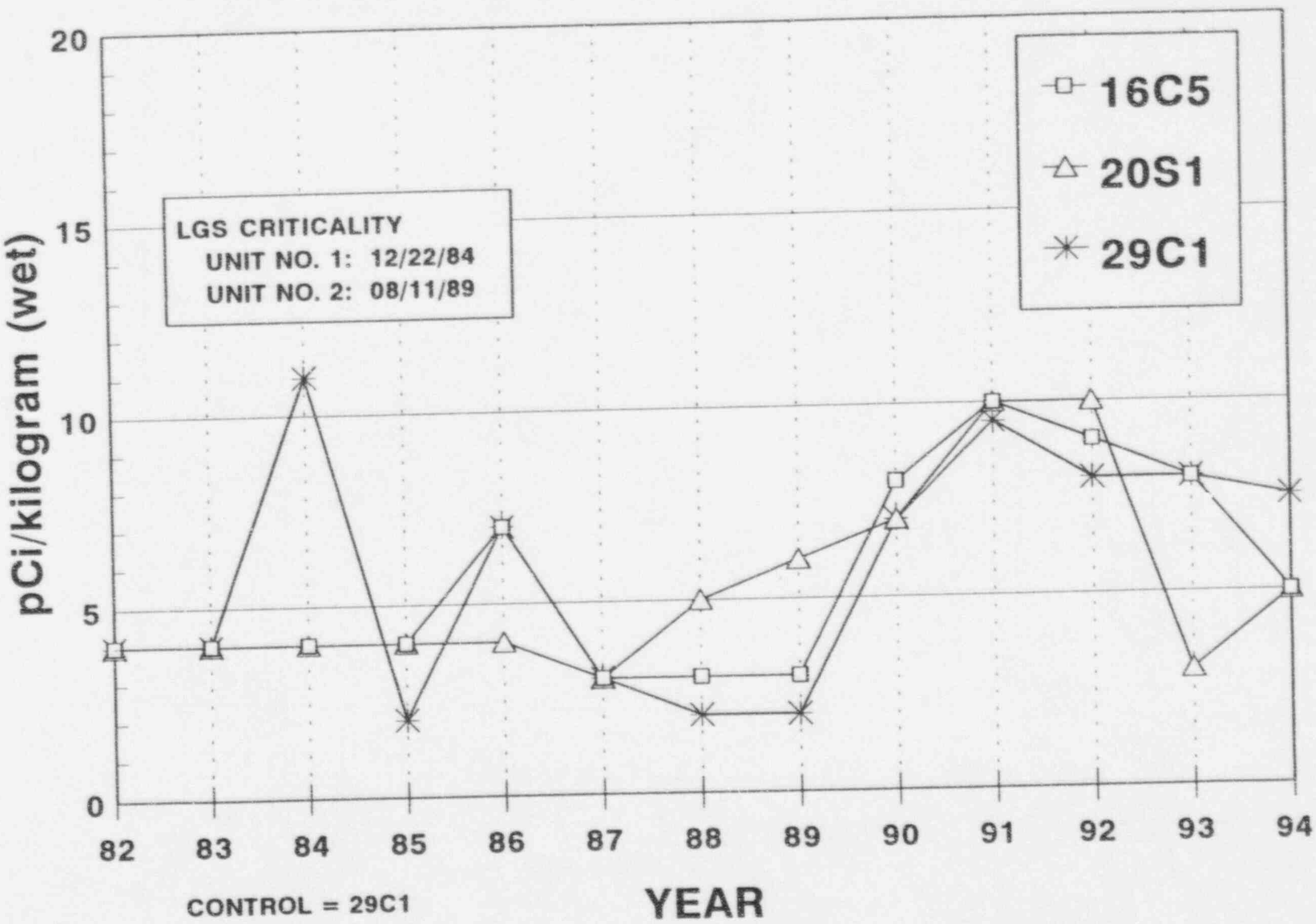


FIGURE C-6
CONCENTRATIONS OF CS-137 IN SEDIMENT SAMPLES COLLECTED IN THE VICINITY OF LGS, 1982 - 1994

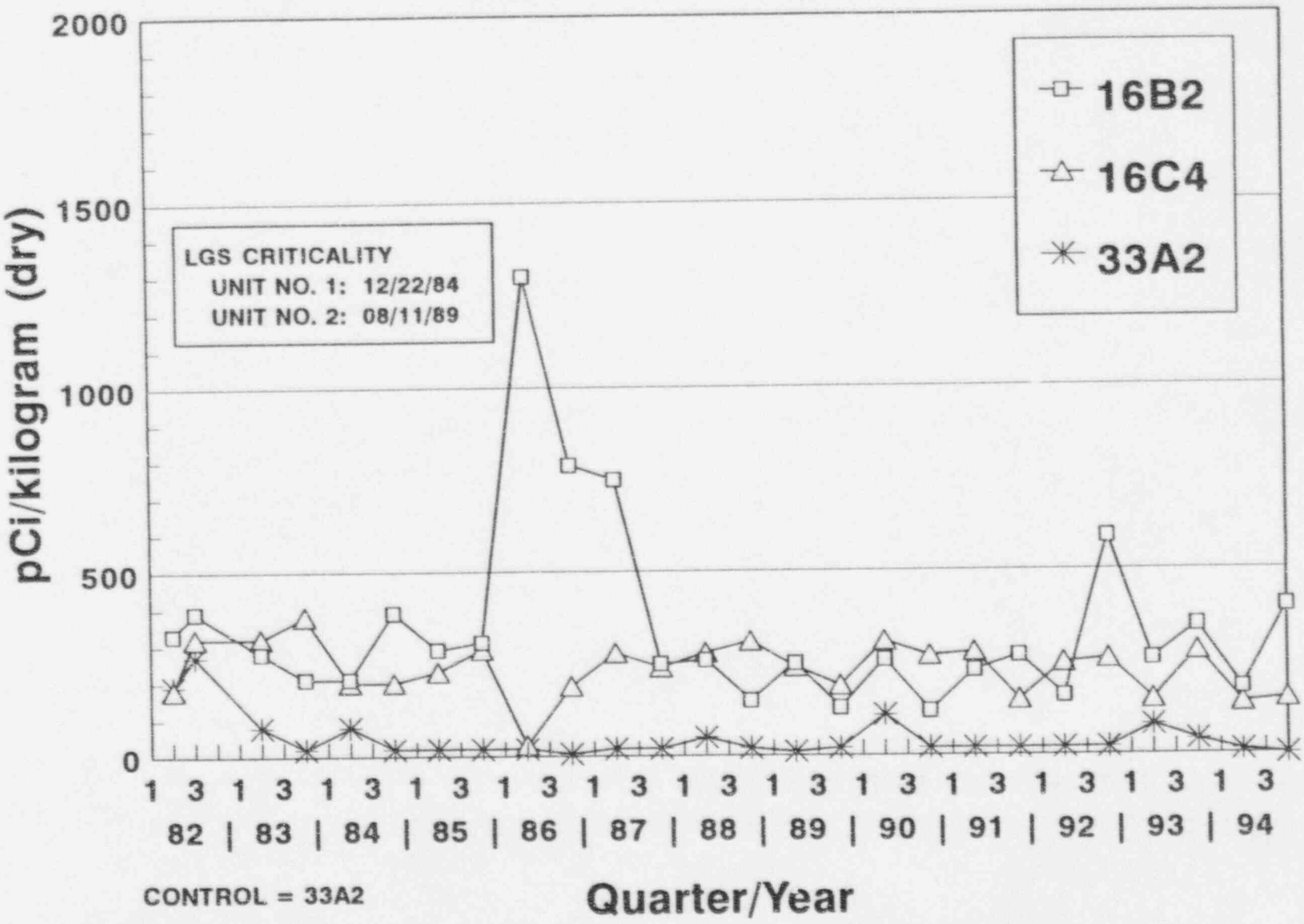


FIGURE C-7
MEAN WEEKLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LGS, 1994

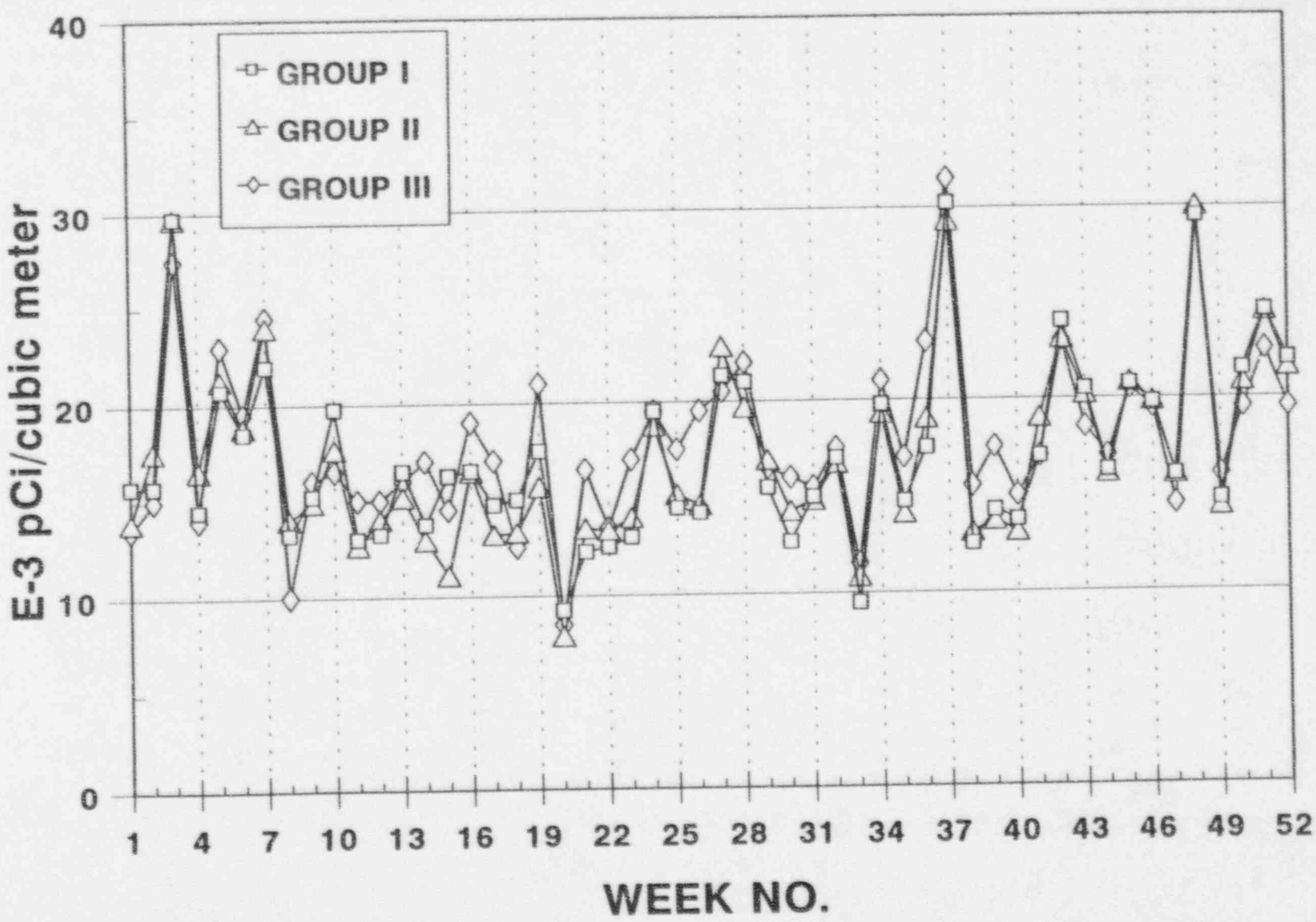


FIGURE C-8

MEAN MONTHLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LGS, 1982 - 1994

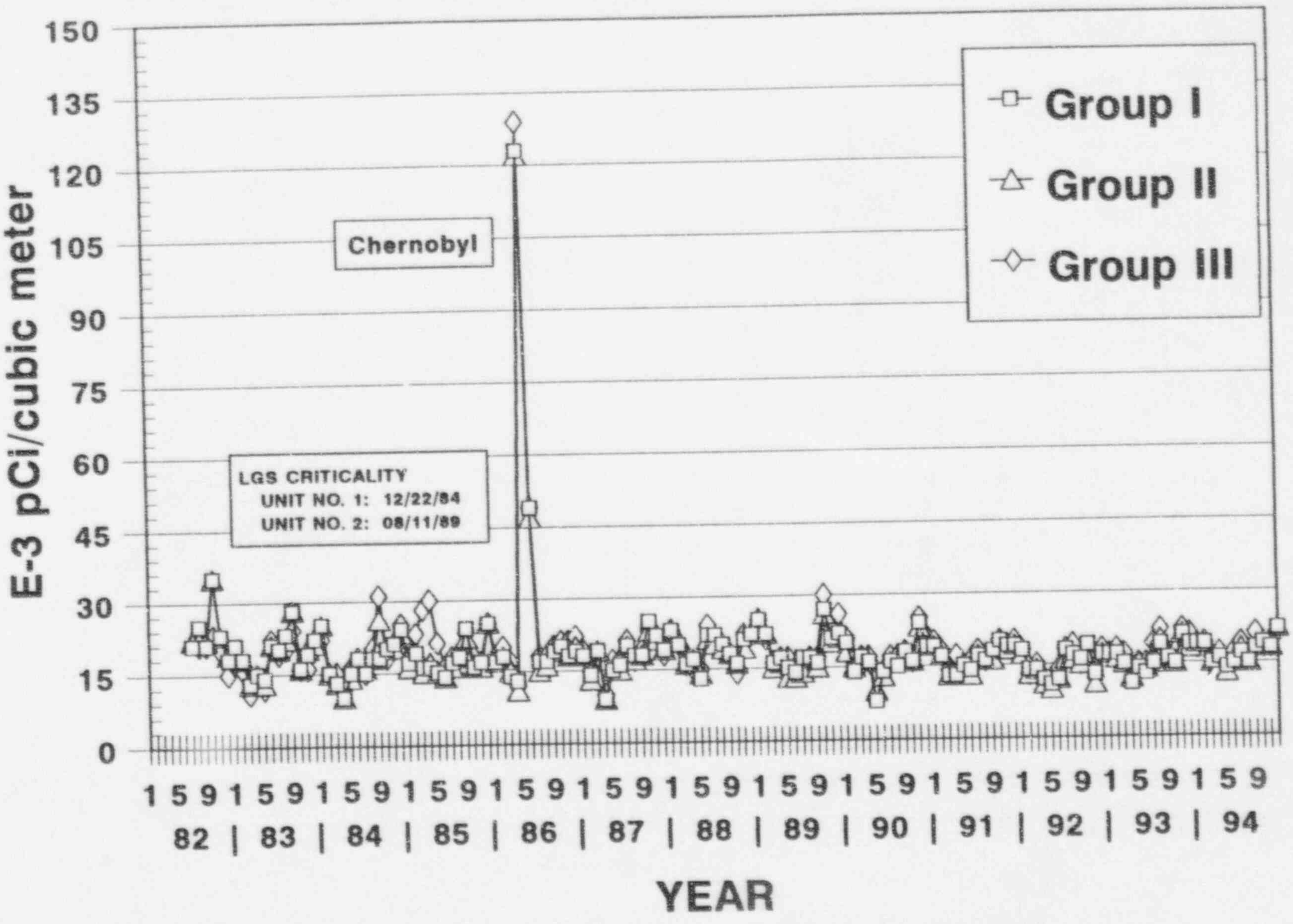
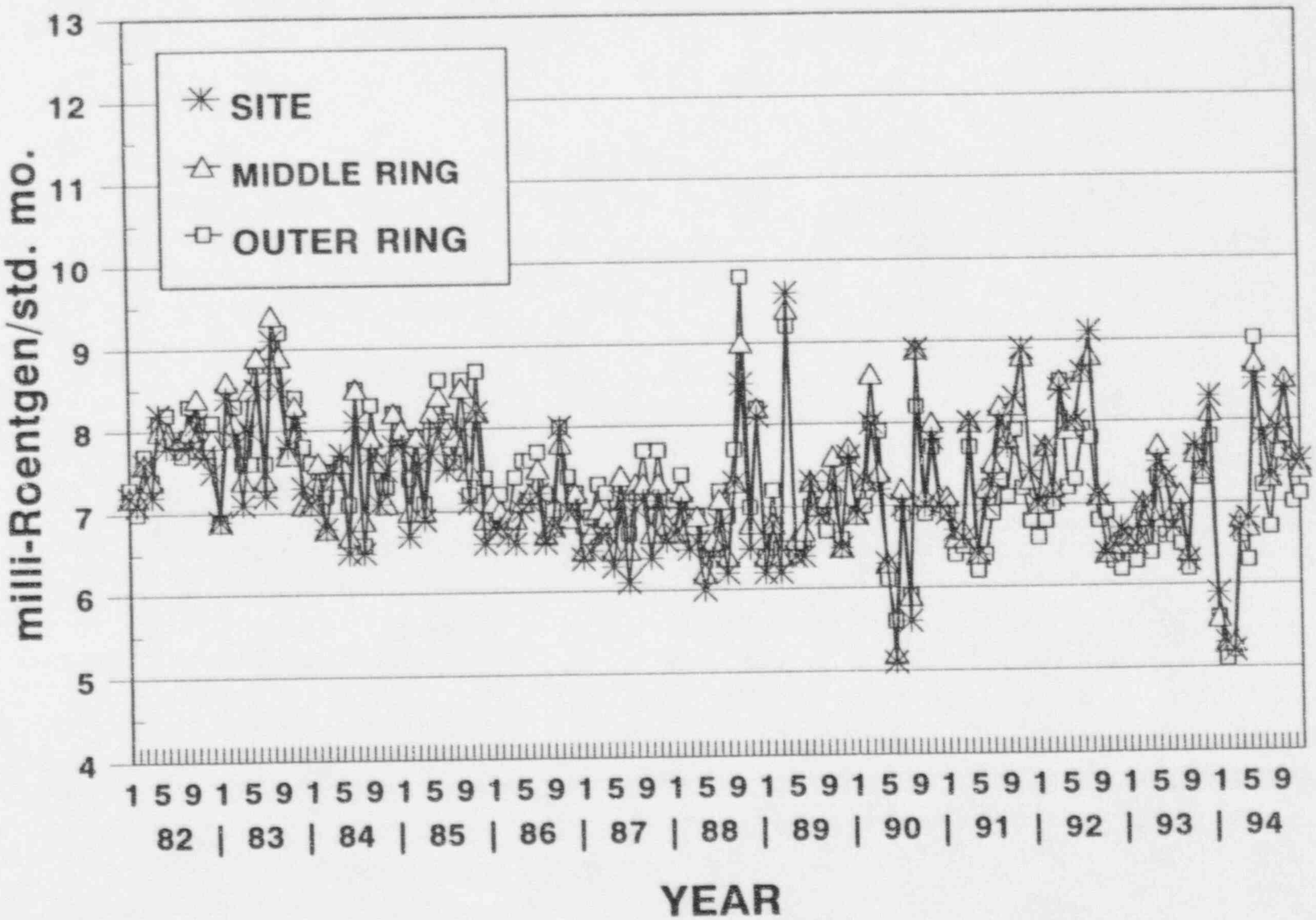


FIGURE C-9
MEAN MONTHLY AMBIENT GAMMA RADIATION LEVELS (TLD)
IN THE VICINITY OF LGS, 1982 - 1994



APPENDIX D

DATA TABLES AND FIGURES
QC LABORATORY

APPENDIX D: DATA TABLES AND FIGURES - COMPARISON LABORATORY

TABLES

FIGURES

The following section contains data and figures illustrating the analyses performed by the quality control laboratory. Duplicate samples were obtained from several locations and media and split between the primary laboratory, Teledyne Brown Engineering (TB) and the quality control laboratory, Public Service Electric & Gas Co. (PSE&G). Comparison of the results for most media were within expected ranges, though occasional differences were seen:

PSE&G's results of gross beta insoluble and soluble in surface and drinking water samples were generally lower than the results from TB (Figures D-1 through D-4, Appendix D). The differences were probably due to variations in the respective laboratory's analytical procedures. PSE&G ashes the sample prior to counting whereas, TB does not.

PSE&G's gross beta results for air particulate samples were higher than TB's results, but the trends were similar for both laboratories (Figures D-5 and D-6). PSE&G uses Sr-90 as a calibration source whereas, TB uses Cs-137.

TABLE D-I.1 CONCENTRATIONS OF GROSS BETA INSOLUBLE IN SURFACE AND DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	10F2		16C2	
JAN 94	0.4	± 0.4	0.2	± 0.4
FEB 94	0.1	± 0.4	0.0	± 0.4
MAR 94	0.2	± 0.4	0.7	± 0.4
APR 94	0.1	± 0.4	0.0	± 0.4
MAY 94	0.0	± 0.3	0.1	± 0.3
JUN 94	0.8	± 0.3	0.0	± 0.3
JUL 94	-0.5	± 0.4	-0.8	± 0.3
AUG 94	0.5	± 0.3	-0.2	± 0.3
SEP 94	0.6	± 0.3	0.1	± 0.3
OCT 94	-0.5	± 0.3	-0.2	± 0.3
NOV 94	-0.1	± 0.3	0.1	± 0.3
DEC 94	0.4	± 0.3	0.2	± 0.3
MEAN	0.2	± 0.8	0.0	± 0.7

TABLE D-I.2 CONCENTRATIONS OF GROSS BETA SOLUBLE IN SURFACE AND DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

COLLECTION PERIOD	10F2		16C2	
JAN 94	3.1	± 0.6	1.7	± 0.5
FEB 94	2.3	± 0.6	2.0	± 0.6
MAR 94	2.5	± 0.6	1.4	± 0.5
APR 94	3.4	± 0.6	1.5	± 0.5
MAY 94	5.4	± 0.6	2.6	± 0.5
JUN 94	4.8	± 0.6	2.9	± 0.5
JUL 94	4.1	± 0.5	3.0	± 0.5
AUG 94	4.5	± 0.6	3.1	± 0.5
SEP 94	4.3	± 0.6	2.3	± 0.5
OCT 94	4.7	± 0.6	3.0	± 0.5
NOV 94	8.1	± 0.7	2.3	± 0.5
DEC 94	6.8	± 0.7	1.5	± 0.4
MEAN	4.5	± 3.4	2.3	± 1.3

TABLE D-I.3 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE AND DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	K-40	MN-54	CO-58	FE-59	CO-50	ZN-65	ZR-95
10F2	JAN 94	< 20	< 0.2	< 0.2	< 0.3	< 0.8	< 0.5	< 0.3
	FEB 94	< 40	< 0.7	< 0.8	< 1.0	< 0.6	< 2	< 1
	MAR 94	< 10	< 2	< 0.9	< 1	< 0.4	< 0.7	< 0.8
	APR 94	< 50	< 0.9	< 0.5	< 2	< 0.4	< 2	< 2
	MAY 94	40 ± 20	< 0.9	< 2	< 1	< 0.8	< 0.9	< 1
	JUN 94	50 ± 20	< 0.6	< 0.3	< 0.9	< 0.5	< 0.5	< 2
	JUL 94	50 ± 20	< 2	< 0.8	< 1	< 0.4	< 2	< 1
	AUG 94	50 ± 20	< 0.6	< 0.6	< 0.5	< 0.3	< 2	< 1.0
	SEP 94	< 20	< 0.5	< 1.0	< 0.9	< 0.8	< 1	< 2
	OCT 94	60 ± 30	< 1	< 0.5	< 2	< 0.5	< 1	< 3
	NOV 94	50 ± 10	< 0.3	< 0.7	< 0.7	< 0.7	< 1	< 1
	DEC 94	70 ± 20	< 2	< 0.6	< 2	< 1	< 0.9	< 2
	MEAN	40 ± 40	< 1.0	< 0.7	< 1.1	< 0.6	< 1.2	< 1.4
16C2	JAN 94	< 10	< 0.1	< 0.3	< 0.5	< 0.3	< 0.7	< 0.3
	FEB 94	< 30	< 0.6	< 0.5	< 1	< 0.7	< 1	< 0.8
	MAR 94	< 30	< 0.9	< 0.4	< 0.9	< 0.9	< 1	< 0.8
	APR 94	< 20	< 0.8	< 0.5	< 1	< 0.6	< 2	< 1
	MAY 94	40 ± 20	< 0.9	< 0.8	< 2	< 0.9	< 1	< 0.9
	JUN 94	55 ± 9	< 0.7	< 0.4	< 2	< 0.3	< 0.7	< 1
	JUL 94	40 ± 20	< 0.9	< 1	< 1	< 1	< 1	< 3
	AUG 94	40 ± 20	< 0.7	< 0.3	< 1	< 1	< 0.6	< 1
	SEP 94	40 ± 10	< 0.7	< 0.4	< 2	< 0.3	< 0.7	< 1
	OCT 94	< 20	< 0.9	< 1	< 1	< 1	< 2	< 2
	NOV 94	60 ± 20	< 1	< 1	< 3	< 2	< 2	< 2
	DEC 94	< 40	< 1	< 1	< 0.9	< 0.8	< 1	< 3
	MEAN	36 ± 28	< 0.8	< 0.7	< 1.4	< 0.8	< 1.1	< 1.4

TABLE D-I.3 CONCENTRATIONS OF GAMMA EMITTERS IN SURFACE AND DRINKING WATER SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	NB-95	CS-134	CS-137	BA-140	LA-140	RA-226	TH-228
10F2	JAN 94	< 0.2	< 0.2	< 0.1	< 0.7	< 0.6	< 0.6	< 2
	FEB 94	< 0.5	< 0.8	< 0.5	< 3	< 2	< 2	< 3
	MAR 94	< 0.8	< 0.7	< 0.8	< 3	< 1	< 5	< 5
	APR 94	< 1.0	< 0.7	< 0.8	< 2	< 3	< 2	< 4
	MAY 94	< 2	< 0.4	< 2	< 2	< 1	< 2	< 4
	JUN 94	< 0.5	< 0.5	< 0.8	< 3	< 1	< 2	< 4
	JUL 94	< 0.4	< 0.8	< 1.0	< 3	< 3	< 2	< 8
	AUG 94	< 0.6	< 0.7	< 0.6	< 1	< 1	6 ± 2	< 10
	SEP 94	< 2	< 0.7	< 0.6	< 1	< 2	< 2	< 4
	OCT 94	< 1	< 0.9	< 1	< 4	< 4	< 2	< 10
	NOV 94	< 0.9	< 0.7	< 0.7	< 4	< 10	6 ± 2	< 4
	DEC 94	< 1.0	< 0.6	< 0.8	< 3	< 6	< 2	< 6
	MEAN	< 0.9	< 0.6	< 0.8	< 2.5	< 3.0	2.9 ± 3.6	< 5
16C2	JAN 94	< 0.2	< 0.3	< 0.2	< 0.5	< 0.5	11.0 ± 0.9	< 0.9
	FEB 94	< 0.3	< 0.6	< 0.9	< 4	< 3	23 ± 2	9 ± 4
	MAR 94	< 0.5	< 0.5	< 0.8	< 3	< 2	62 ± 3	< 5
	APR 94	< 1	< 1	< 1	< 3	< 2	< 10	< 2
	MAY 94	< 0.5	< 0.7	< 0.9	< 3	< 2	< 8	< 7
	JUN 94	< 0.3	< 0.7	< 0.8	< 3	< 1	11 ± 2	< 8
	JUL 94	< 0.6	< 0.5	< 0.6	< 6	< 2	< 2	< 10
	AUG 94	< 0.8	< 0.6	< 0.6	< 3	< 2	< 2	< 7
	SEP 94	< 0.6	< 1	< 1	< 3	< 2	2 ± 2	< 9
	OCT 94	< 0.4	< 0.9	< 0.9	< 2	< 2	10 ± 4	< 4
	NOV 94	< 0.8	< 1	< 1	< 2	< 1	16 ± 4	< 6
	DEC 94	< 1	< 1	< 0.9	< 3	< 20	7 ± 3	< 4
	MEAN	< 0.7	< 0.8	< 0.8	< 2.9	< 3.3	14.0 ± 32.6	6.0 ± 5.7

TABLE D-II.1 CONCENTRATIONS OF GROSS BETA IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

WEEK	11S2		14S2	
01	25	± 3	25	± 3
02	18	± 3	17	± 3
03	24	± 3	27	± 3
04	40	± 3	39	± 3
05	19	± 3	21	± 3
06	33	± 3	35	± 3
07	25	± 3	24	± 3
08	33	± 3	27	± 3
09	22	± 3	21	± 3
10	27	± 3	26	± 3
11	28	± 3	26	± 3
12	20	± 3	17	± 3
13	20	± 3	15	± 3
14	21	± 3	21	± 3
15	18	± 3	21	± 3
16	20	± 3	20	± 3
17	24	± 3	24	± 3
18	17	± 3	18	± 3
19	19	± 3	19	± 3
20	18	± 3	17	± 3
21	11	± 2	8	± 2
22	13	± 2	22	± 2
23	20	± 3	16	± 3
24	22	± 3	24	± 3
25	26	± 3	26	± 3
26	20	± 3	20	± 3
27	22	± 3	23	± 3
28	20	± 3	19	± 3
29	16	± 3	23	± 3
30	24	± 3	12	± 2
31	18	± 3	18	± 3
32	22	± 3	22	± 3
33	17	± 2	24	± 3
34	16	± 3	14	± 2
35	29	± 3	29	± 3
36	24	± 3	22	± 3
37	26	± 3	27	± 3
38	39	± 3	33	± 3
39	15	± 2	17	± 3
40	21	± 3	21	± 3
41	18	± 3	3	± 2
42	25	± 3	28	± 5
43	30	± 3	24	± 3
44	29	± 3	26	± 3
45	25	± 3	20	± 3
46	32	± 3	29	± 3
47	28	± 3	28	± 3
48	22	± 3	23	± 3
49	37	± 3	25	± 3
50	21	± 3	20	± 3
51	24	± 3	22	± 3
52	33	± 3	33	± 3
53	29	± 3	28	± 3
MEAN	23	± 13	22	± 13

TABLE C-II.2 CONCENTRATIONS OF GAMMA EMITTERS IN AIR PARTICULATE SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

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

STC	COLLECTION PERIOD	BE-7	K-40	CS-134	CS-137	RA-226	TH-228
11S2	12/27-03/28/94	65 ± 5	13 ± 3	< 0.1	< 0.1	< 0.7	< 0.6
	03/28-06/27/94	89 ± 5	16 ± 4	< 0.2	< 0.2	< 1.0	< 0.9
	06/26-09/26/94	51 ± 4	11 ± 5	< 0.2	< 0.3	< 0.4	< 0.8
	09/26-01/03/95	73 ± 5	22 ± 5	< 0.1	< 0.1	< 2	< 4
	MEAN	70 ± 32	16 ± 10	< 0.2	< 0.2	< 1.0	< 1.5
14S2	12/27-03/28/94	65 ± 5	< 10	< 0.1	< 0.2	< 0.4	< 0.7
	03/28-06/27/94	90 ± 6	15 ± 5	< 0.10	< 0.2	< 0.6	< 0.9
	06/26-09/26/94	67 ± 7	20 ± 5	< 0.1	< 0.2	2 ± 1	3 ± 1
	09/26-01/03/95	71 ± 5	15 ± 4	< 0.2	< 0.1	1 ± 1	2 ± 1
	MEAN	73 ± 23	16 ± 6	< 0.13	< 0.2	1.0 ± 1.4	1.5 ± 2.1

TABLE D-III.1 CONCENTRATIONS OF GAMMA EMITTERS IN MILK SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

RESULTS IN UNITS OF PCI/LITER ± 2 SIGMA

STC	COLLECTION PERIOD	I-131	K-40	CS-134	CS-137	BA-140	LA-140
19B1	01/11-01/11/94	< 0.3	1300 ± 90	< 1	< 2	< 6	< 4
	04/12-04/12/94	< 0.3	1310 ± 90	< 0.9	< 2	< 7	< 4
	07/05-07/05/94	< 0.1	1340 ± 60	< 1	< 1	< 5	< 1
	10/11-10/11/94	< 0.3	80 ± 80	< 1	< 3	< 3	< 2
	MEAN	< 0.2	1010 ± 1240	< 1.0	< 2	< 5	< 3
21B1	01/11-01/11/94	< 0.3	1270 ± 90	< 2	< 2	< 4	< 6
	04/12-04/12/94	< 0.1	1400 ± 80	< 0.7	< 1	< 6	< 3
	07/05-07/05/94	< 0.3	1440 ± 80	< 1	< 2	< 6	< 0.7
	10/11-10/11/94	< 0.3	1350 ± 90	< 0.9	< 2	< 3	< 4
	MEAN	< 0.2	1370 ± 150	< 1.2	< 2	< 5	< 3.4
22F1	01/11-01/11/94	< 0.2	1480 ± 70	< 0.4	< 2	< 4	< 2
	04/12-04/12/94	< 0.2	1340 ± 70	< 0.5	< 2	< 5	< 2
	07/05-07/05/94	< 0.1	1290 ± 100	< 2	< 5	< 6	< 1
	10/11-10/11/94	< 0.3	1320 ± 60	< 0.8	< 1	< 4	< 1
	MEAN	< 0.2	1360 ± 170	< 0.9	< 3	< 5	< 2

TABLE D-IV.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

COLLECTION PERIOD	10F2	16C2
JAN 94	12/27-01/31	12/27-01/31
FEB 94	01/31-02/28	01/31-02/18
MAR 94	02/28-03/29	02/28-03/28
APR 94	03/29-05/02	03/28-05/02
MAY 94	05/02-05/31	05/02-05/31
JUN 94	05/31-06/28	05/31-06/28
JUL 94	06/28-08/01	06/28-08/01
AUG 94	08/01-08/30	08/01-08/30
SEP 94	08/30-09/27	08/30-09/27
OCT 94	09/27-10/31	09/27-10/31
NOV 94	10/31-11/28	10/31-11/28
DEC 94	11/28-12/28	11/28-12/28

TABLE D-IV.1 SUMMARY OF COLLECTION DATES FOR SAMPLES COLLECTED IN THE VICINITY OF LIMERICK GENERATING STATION, 1994

WEEK	11S2	14S2	WEEK	11S2	14S2
01	12/27-01/03	12/27-01/03	28	07/05-07/11	07/05-07/11
02	01/03-01/10	01/03-01/10	29	07/11-07/18	07/11-07/18
03	01/10-01/17	01/10-01/17	30	07/18-07/25	07/18-07/25
04	01/17-01/24	01/17-01/24	31	07/25-08/01	07/25-08/01
05	01/24-01/31	01/24-01/31	32	08/01-08/08	08/01-08/08
06	01/31-02/07	01/31-02/07	33	08/08-08/15	08/08-08/15
07	02/07-02/14	02/07-02/14	34	08/15-08/22	08/15-08/22
08	02/14-02/21	02/14-02/21	35	08/22-08/29	08/22-08/29
09	02/21-02/28	02/21-02/28	36	08/29-09/06	08/29-09/06
10	02/28-03/07	02/28-03/07	37	09/06-09/12	09/06-09/12
11	03/07-03/14	03/07-03/14	38	09/12-09/19	09/12-09/19
12	03/14-03/21	03/14-03/21	39	09/19-09/26	09/19-09/26
13	03/21-03/28	03/21-03/28	40	09/26-10/03	09/26-10/03
14	03/28-04/04	03/28-04/04	41	10/03-10/10	10/03-10/10
15	04/04-04/11	04/04-04/11	42	10/10-10/17	10/13-10/17
16	04/11-04/18	04/11-04/18	43	10/17-10/24	10/17-10/24
17	04/18-04/25	04/18-04/25	44	10/24-10/31	10/24-10/31
18	04/25-05/02	04/25-05/02	45	10/31-11/07	10/31-11/07
19	05/02-05/09	05/02-05/09	46	11/07-11/14	11/07-11/14
20	05/09-05/16	05/09-05/16	47	11/14-11/21	11/14-11/21
21	05/16-05/23	05/16-05/23	48	11/21-11/28	11/21-11/28
22	05/23-05/31	05/23-05/31	49	11/28-12/05	11/28-12/05
23	05/31-06/06	05/31-06/06	50	12/05-12/12	12/06-12/12
24	06/06-06/13	06/06-06/13	51	12/12-12/19	12/12-12/19
25	06/13-06/20	06/13-06/20	52	12/19-12/27	12/19-12/27
26	06/20-06/27	06/20-06/27	53	12/27-01/03	12/27-01/03
27	06/27-07/05	06/27-07/05			

FIGURE D-1
COMPARISON OF MONTHLY INSOLUBLE GROSS BETA CONCENTRATIONS IN SURFACE WATER SAMPLES SPLIT BETWEEN TB AND PSE&G, 1994

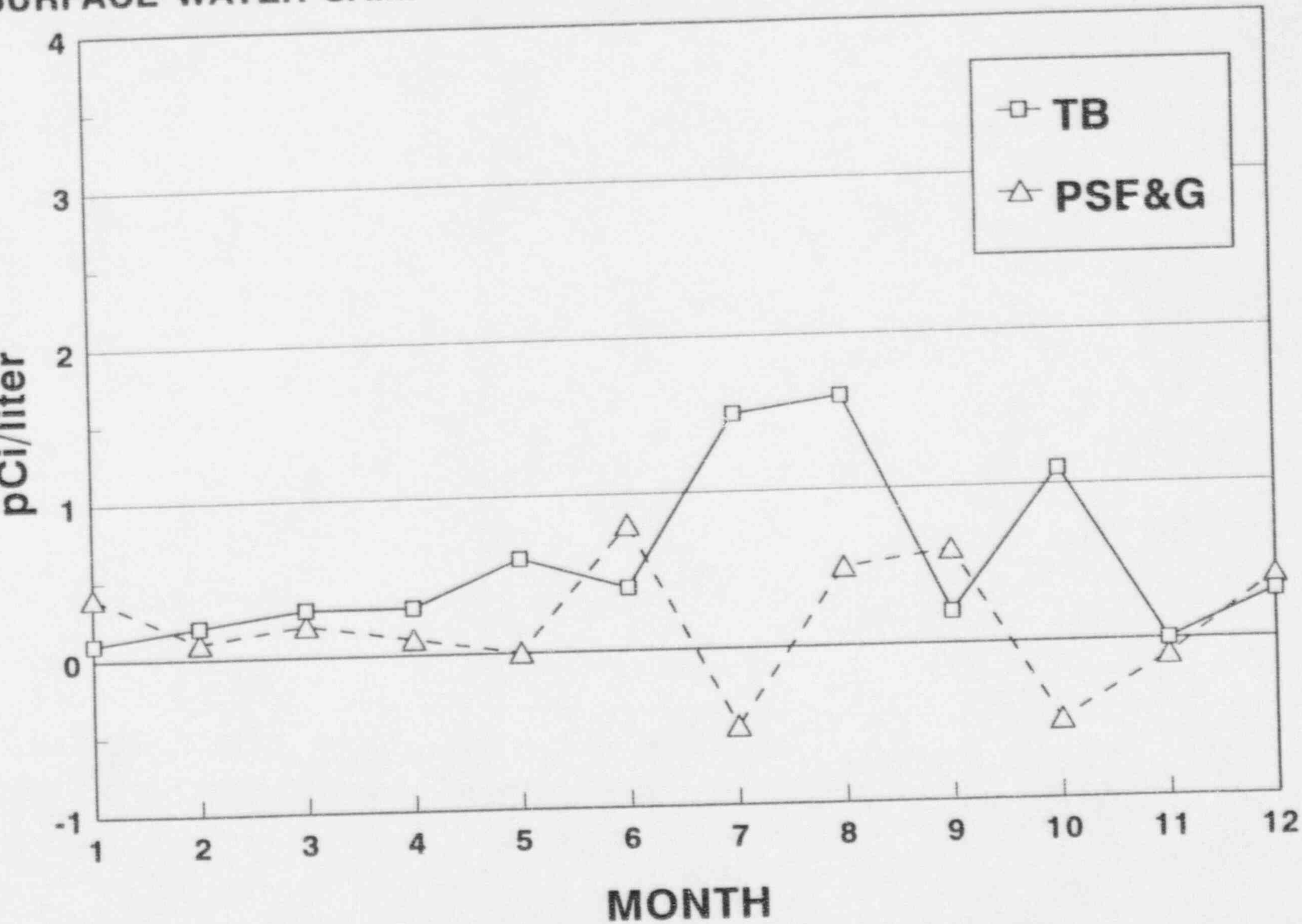


FIGURE D-2
COMPARISON OF MONTHLY SOLUBLE GROSS BETA CONCENTRATIONS IN SURFACE WATER SAMPLES SPLIT BETWEEN TB AND PSE&G, 1994

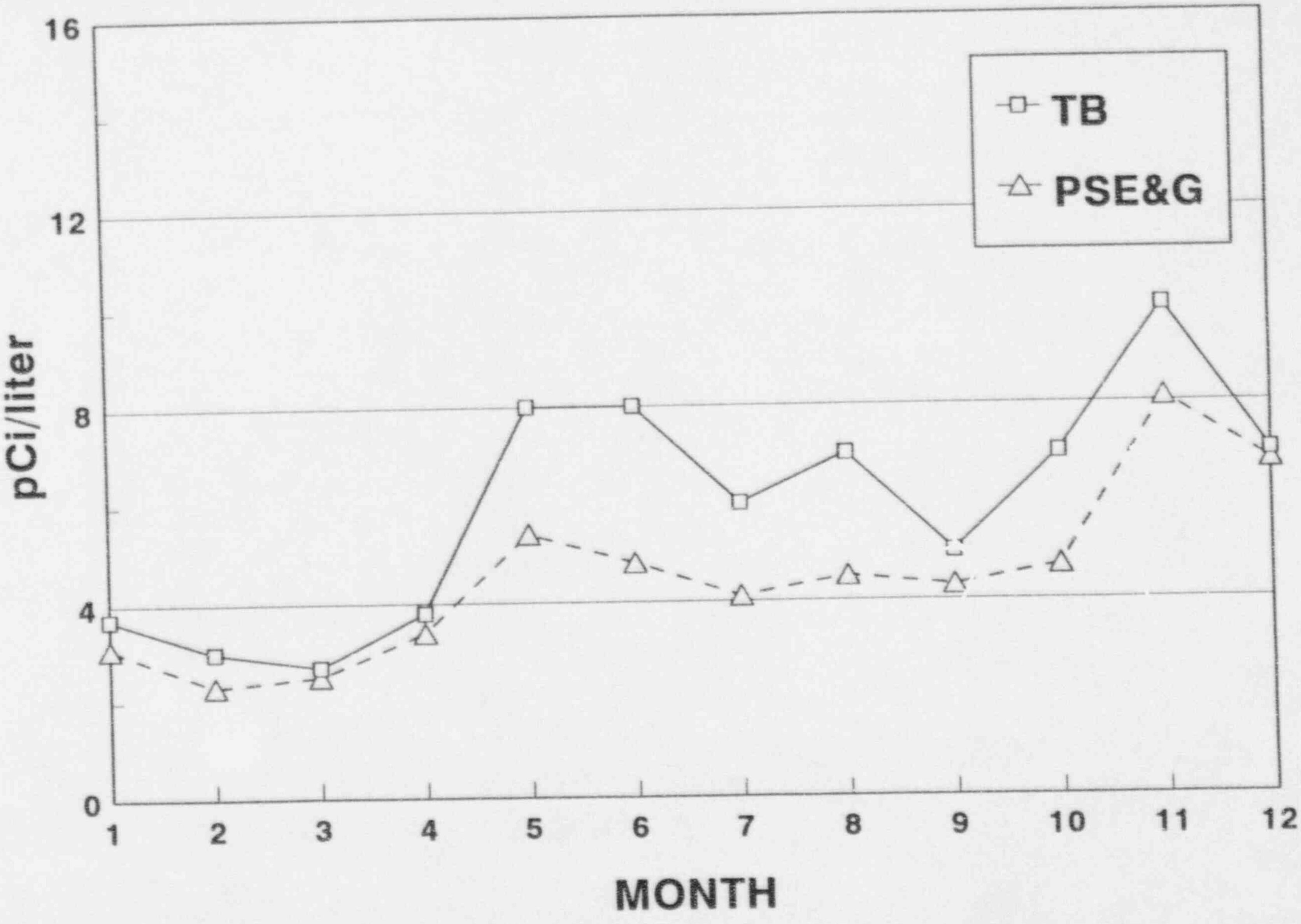


FIGURE D-3
COMPARISON OF MONTHLY INSOLUBLE GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES SPLIT BETWEEN TB AND PSE&G, 1994

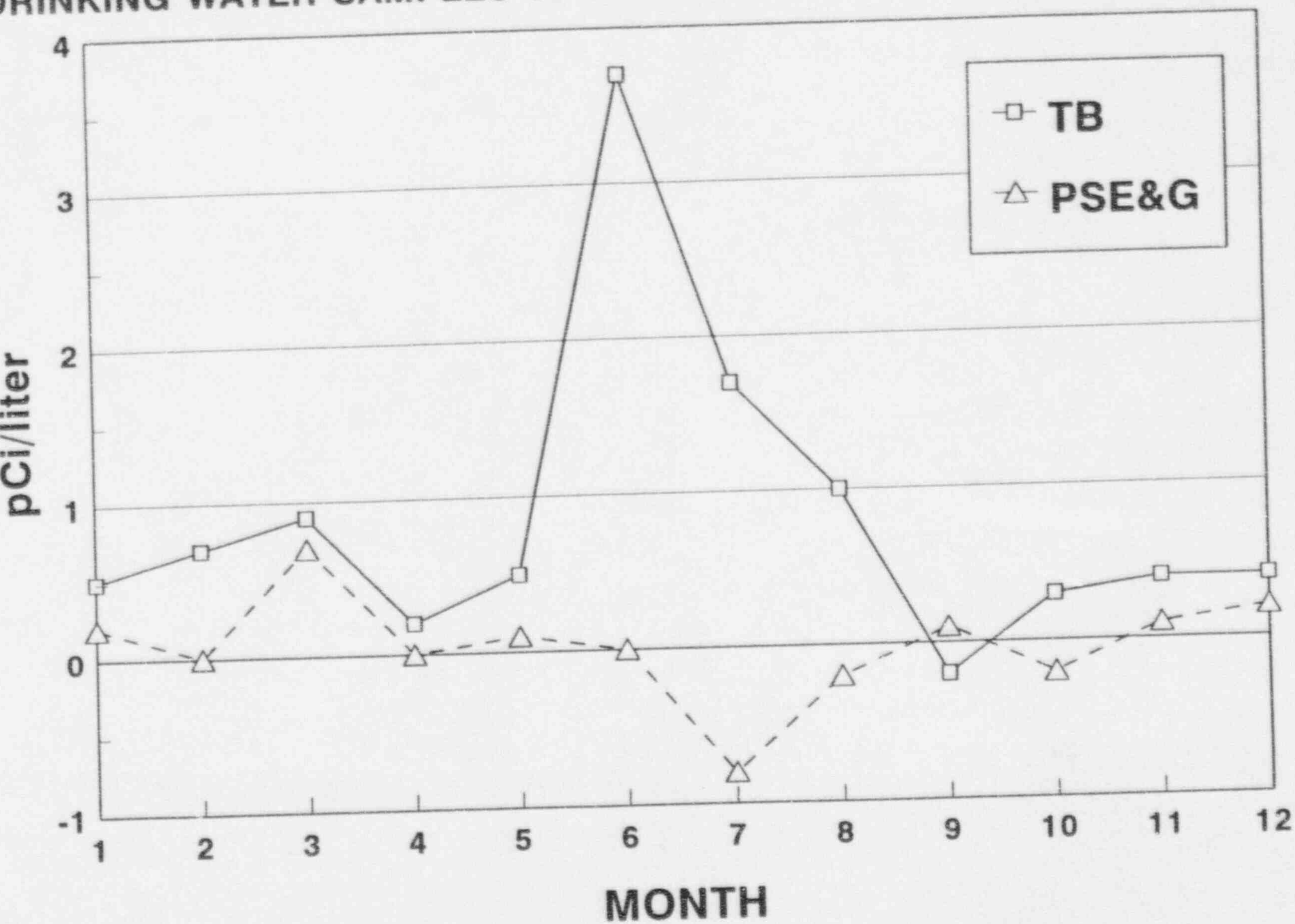


FIGURE D-4

COMPARISON OF MONTHLY SOLUBLE GROSS BETA CONCENTRATIONS IN DRINKING WATER SAMPLES SPLIT BETWEEN TB AND PSE&G, 1994

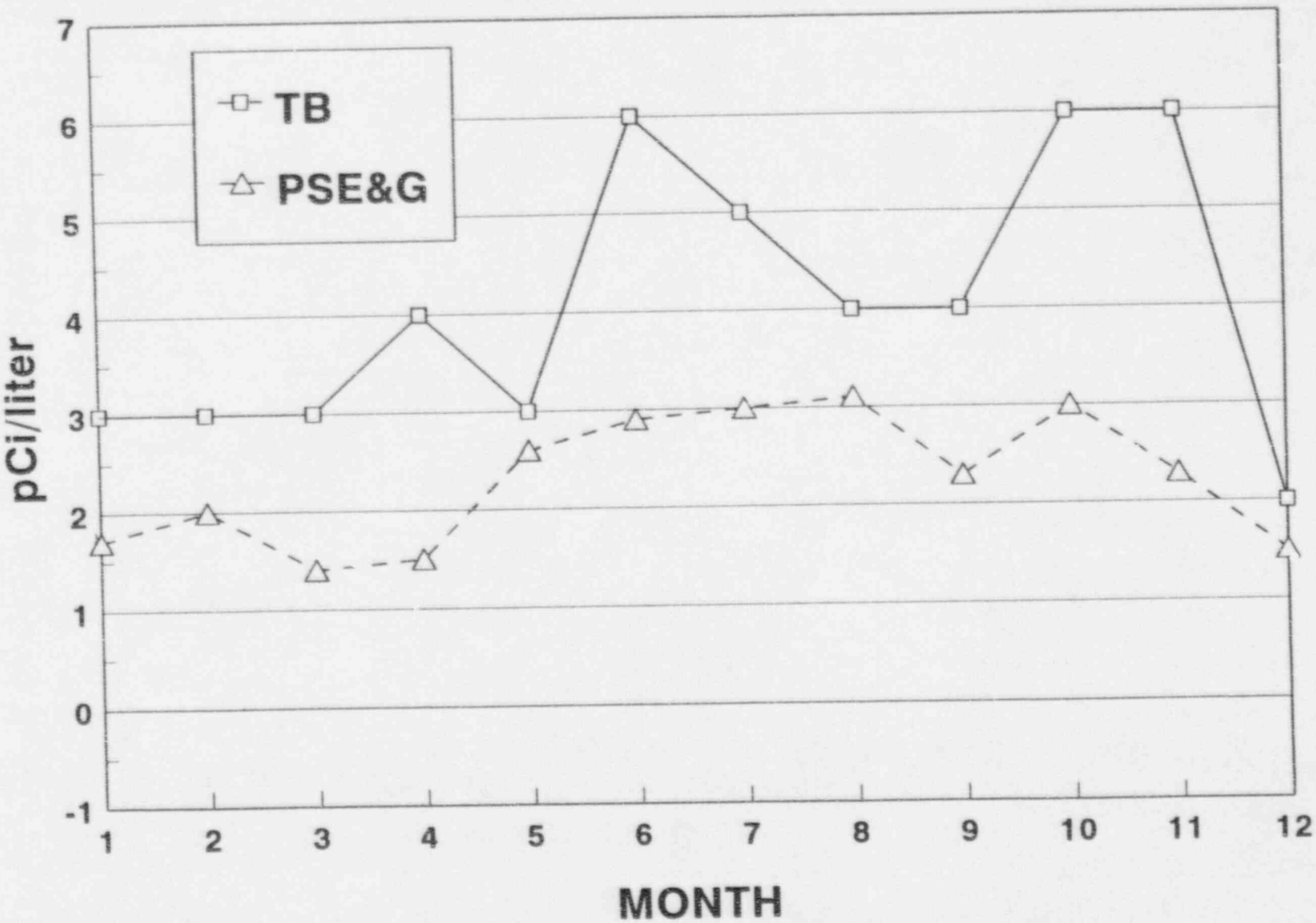


FIGURE D-5
COMPARISON OF WEEKLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED FROM LGS CO-LOCATED LOCATIONS 11S1 AND 11S2, 1994

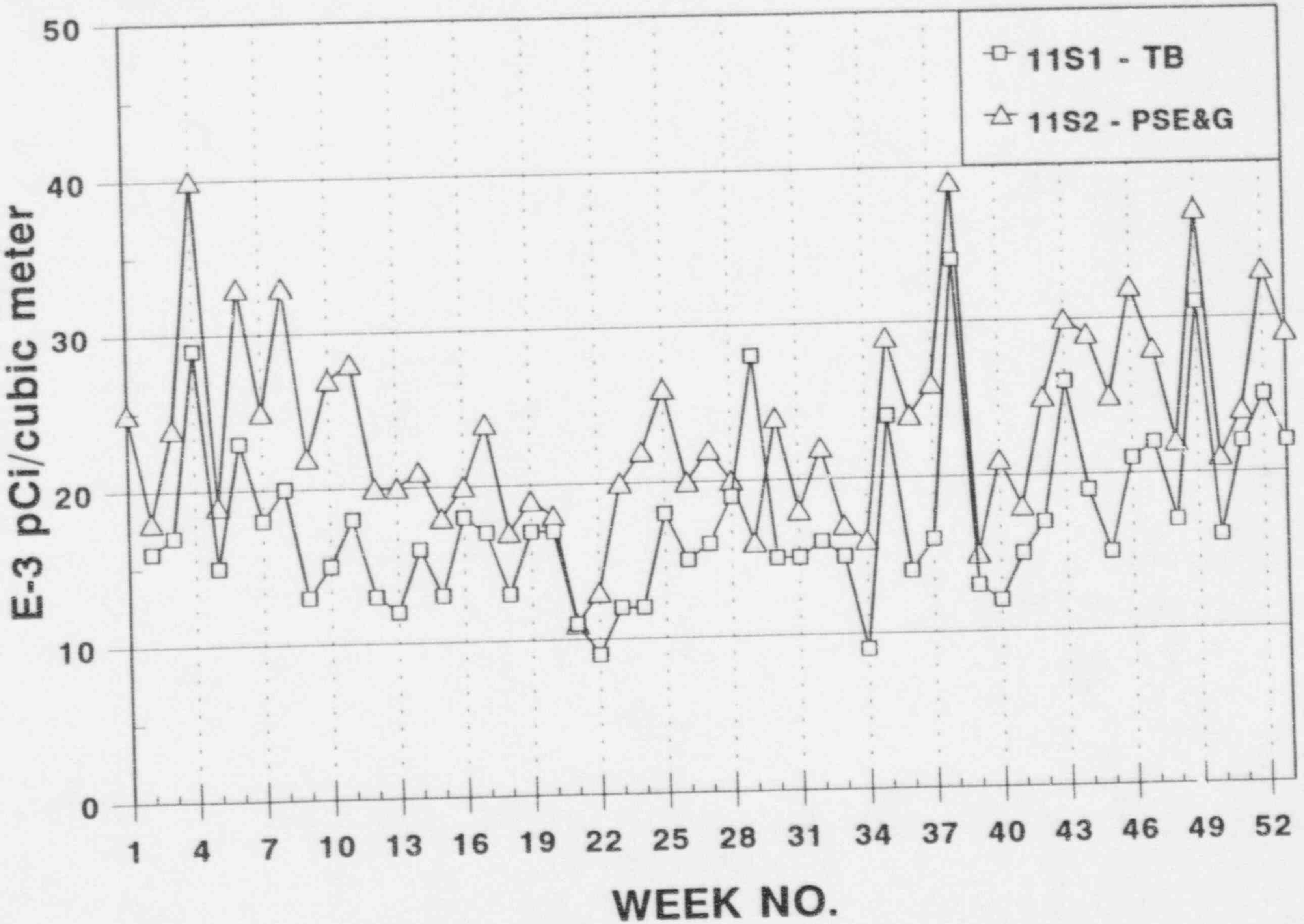
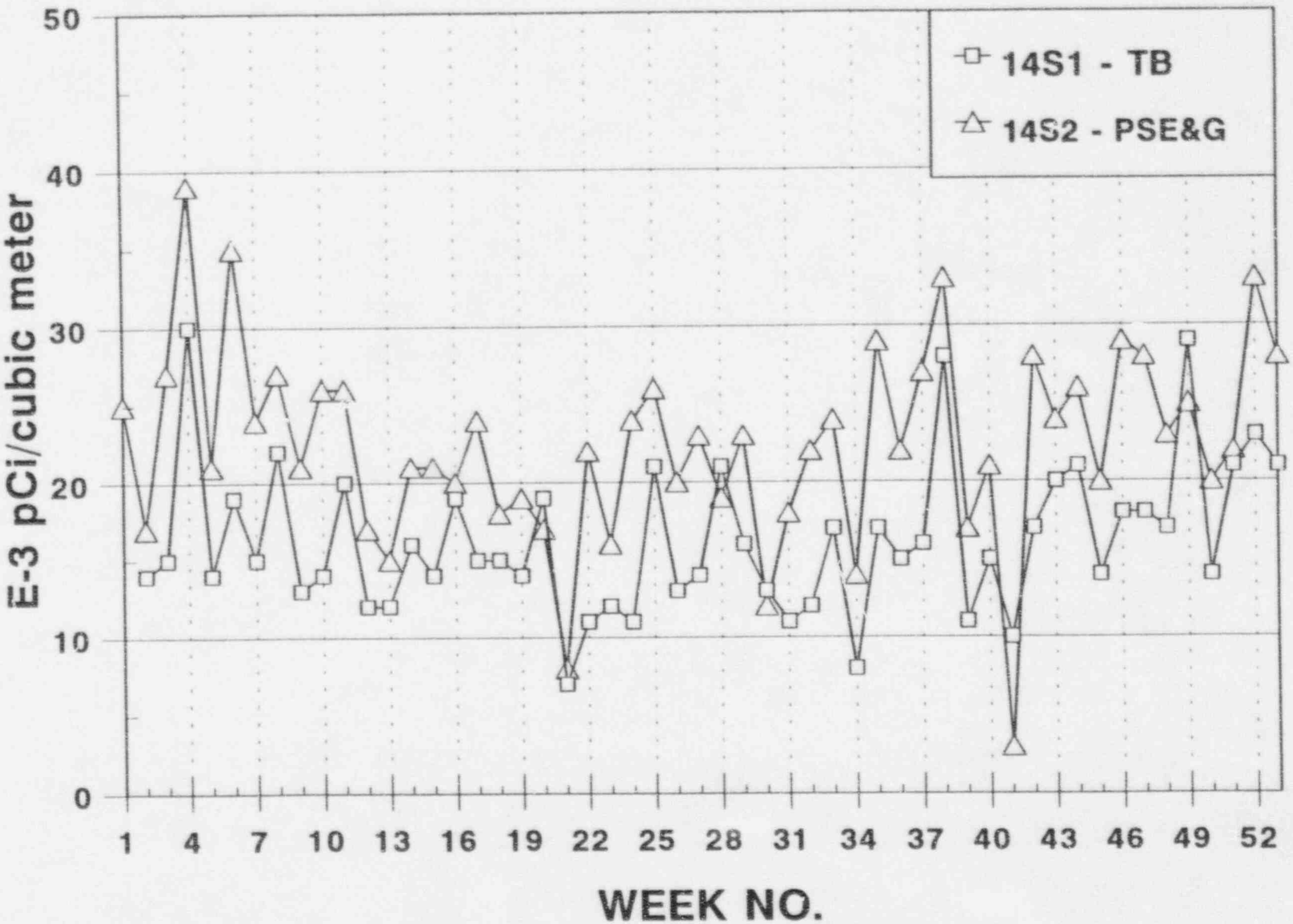


FIGURE D-6
COMPARISON OF WEEKLY GROSS BETA CONCENTRATIONS IN AIR PARTICULATE SAMPLES COLLECTED FROM LGS CO-LOCATED LOCATIONS 14S1 AND 14S2, 1994



APPENDIX E

SYNOPSIS OF ANALYTICAL PROCEDURES

APPENDIX E: SYNOPSIS OF ANALYTICAL PROCEDURES

The following section contains a description of the analytical laboratory procedures along with an explanation of the analytical calculation methods used by Teledyne Brown Engineering and Public Service Electric & Gas to obtain the sample activities.

DETERMINATION OF GROSS BETA ACTIVITY IN WATER SAMPLES (TOTAL SUSPENDED AND DISSOLVED FRACTIONS)

Teledyne Brown Engineering

This describes the process used to measure the radioactivity of water samples without identifying the radioactive species present. No chemical separation techniques are involved.

For surface and drinking water samples, one liter of the sample is filtered under vacuum through a 0.45 micron Millipore filter. This filter represents the insoluble portion of the sample. The filter is dried and mounted on a planchet. The filter which represents the soluble portion of the sample is evaporated on a hot plate, and the residue is transferred and dried on another planchet.

The planchets are counted for 50 minutes in a low-background gas flow proportional counter. Calculation of activity includes a self-absorption correction for counter efficiency based on the weight of residue on each planchet.

Calculation of Sample Activity and 2 Sigma Error:

$$\frac{Result}{(pCi/l)} = \frac{\frac{N}{t_s} - \beta}{(2.22)(v)(E)} \pm \frac{2\sqrt{\frac{N}{t_s^2} + \frac{\beta}{t_b}}}{(2.22)(v)(E)}$$

Net Activity   Counting Error

where:

N	=	total counts from sample (counts)
t_s	=	counting time for sample (min)
ß	=	background rate of counter (cpm)
t_b	=	counting time for background (min)
2.22	=	dpm/pCi
v	=	volume in liters
E	=	efficiency of the counter
2	=	multiple of counting error

The MDL is defined as that value equal to the two sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the measured result defined above.

DETERMINATION OF GROSS BETA ACTIVITY IN WATER SAMPLES (TOTAL SUSPENDED AND DISSOLVED FRACTIONS)

Public Service Electric & Gas

This describes the process used to measure the overall radioactivity of water samples without identifying the radioactive species present. No chemical separation techniques are involved.

The sample is mixed thoroughly. Then, a 1.0 liter portion is removed from the surface or drinking water container and filtered through a slow, hardened ashless filter paper mounted in a Buchner funnel. The filter paper is removed from the Buchner funnel, folded into a triangle, placed in a covered porcelain crucible and heated over a Bunsen burner until completely charred. The crucible is then ashed for at least 2 hours in a muffle furnace at 500° C. The cooled ash is then transferred to a tared stainless steel ribbed planchet using a rubber policeman with laboratory aerosol and reagent water.

The filtrate portion of the sample is evaporated on a hot plate until the volume approaches 20 to 25 ml. At that point, the filtrate is transferred to a tared stainless steel ribbed planchet. Both planchets are evaporated to dryness under an infrared heat lamp. They are subsequently cooled in a desiccator, weighed and counted using a low background gas proportional counter.

Calculation of Sample Activity and 1.96 Sigma Error:

$$\frac{Result}{(pCi/l)} = 100\frac{\frac{C_s}{T_s} - \frac{C_b}{T_b}}{2.22(v)(E)} \pm \frac{1.96\sqrt{\frac{C_s}{T_s^2} + \frac{C_b}{T_b^2}}}{2.22(v)(E)}$$

Net Activity Counting Error

where:

C_s	=	total gross sample counts (counts)
T_s	=	sample count time (min)
C_b	=	total background count (counts)
T_b	=	background count time (min)
E	=	counting efficiency based on Sr-90 for the weight of planchetted sample
v	=	aliquot size in liters
2.22	=	dpm per pCi
1.96	=	multiple of counting error

The MDL is defined as that value equal to the 1.96 sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the net activity.

DETERMINATION OF TRITIUM IN WATER
BY LIQUID SCINTILLATION COUNTING

Teledyne Brown Engineering

Ten (10) milliliters of sample is directly pipetted into a 25 ml vial and mixed with liquid scintillation material and counted for a minimum of 100 minutes to determine its activity. The tritium activity is determined by measuring the count rate in the beta activity energy spectrum from 0 to 18 KeV. Eighteen to 100 KeV represents the carbon-14 energy region. If there is no count rate above background in the carbon-14 energy region, the sample has no contamination and the tritium activity may be calculated directly. If the net count rate in the carbon-14 energy channel is 10% of the tritium count rate or higher, the sample contains contamination that may affect the count rate in the tritium channel, and the sample must be purified by distillation before recounting.

Calculation of Sample Activity and 2 Sigma Error:

$$\frac{Result}{(pCi/l)} = \frac{\frac{N}{t_s} - \beta}{2.22(v)(E)} \pm \frac{2\sqrt{\frac{N}{t_s^2} + \frac{\beta}{t_b}}}{2.22(v)(E)}$$

Net Activity Counting Error

where:

N	=	total counts from sample (counts)
t_s	=	counting time for sample (min)
ß	=	background rate of counter (cpm)
t_b	=	counting time for background (min)
2.22	=	dpm/pCi
v	=	sample volume (in liters)
E	=	efficiency of the counter tritium
2	=	multiples of counting error

The MDL is defined as that value equal to the two sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the net activity.

DETERMINATION OF GROSS BETA ACTIVITY IN AIR PARTICULATE SAMPLES

Teledyne Brown Engineering

This describes the process used to measure the overall beta activity of air particulate filters without identifying the radioactive species present. No chemical separation techniques are involved. Each air particulate filter is placed directly on a 2-inch stainless steel planchet. The planchets are then counted for beta activity in a low-background gas flow proportional counter. Calculation of activity includes an empirical self-absorption correction curve which allows for the change in effective counting efficiency caused by the residue mass. Self-absorption is not considered in the case of air particulate filters because of the impracticality of accurately weighing the deposit and because the penetration depth of the deposit into the filter is unknown.

Calculation of Sample Activity and 2 Sigma Error:

$$\frac{Result}{(pCi/m^3)} = \frac{(\frac{N}{t_s}) - \beta}{2.22(v)(E)(.02832)} \pm \frac{2\sqrt{(\frac{N}{t_s^2}) + (\frac{\beta}{t_b})}}{2.22(v)(E)(.02832)}$$

Net Activity　　　　Counting Error

where:

N	=	total counts from sample (counts)
t_s	=	counting time for sample (min)
ß	=	background rate of counter (cpm)
t_b	=	counting time for background (min)
2.22	=	dpm/pCi
v	=	volume of sample analyzed in cubic feet calculated from the elapsed time meter
E	=	efficiency of the counter
2	=	multiple of counting error
.02832	=	conversion to cubic meters

The MDL is defined as that value equal to the two sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the net activity.

DETERMINATION OF GROSS BETA ACTIVITY IN AIR PARTICULATE SAMPLES

Public Service Electric & Gas

After allowing at least a three-day (extending from the sample stop date to the sample count time) period for the short-lived radionuclides to decay out, each air particulate filter paper is placed in a 2-inch diameter stainless steel planchet and counted using a gas proportional counter.

Calculation of Sample Activity and 1.96 Sigma Error:

$$\frac{Result}{(pCi/m^3)} = \frac{\frac{C_s}{T_s} - \frac{C_b}{T_b}}{2.22(v)(E)(.02832)} \pm \frac{1.96\sqrt{\frac{C_s}{T_s^2} + \frac{C_b}{T_b^2}}}{2.22(v)(E)(.02832)}$$

Net Activity   Counting Error

where:

C_s	=	total gross sample counts (counts)
T_s	=	sample count time (min)
C_b	=	total background count (counts)
T_b	=	background count time (min)
E	=	counting efficiency based on Sr-90
v	=	sample volume in cubic feet calculated from the elapsed time meter readings and the flow rate
.02832	=	conversion to cubic meters
2.22	=	dpm/pCi
1.96	=	multiple of the counting error

The MDL is defined as that value equal to the 1.96 sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the net activity.

DETERMINATION OF I-131 IN MILK AND WATER SAMPLES

Teledyne Brown Engineering

Two liters of sample are first equilibrated with stable iodide carrier. A batch treatment with anion exchange resin is used to remove iodide from the sample. The iodine is then stripped from the resin with sodium hypochlorite, reduced with hydroxylamine hydrochloride, and extracted into carbon tetrachloride as free iodine. It is then back-extracted as iodide into sodium bisulfite solution and is precipitated as palladium iodide. The precipitate is weighed for chemical yield and is mounted on a nylon planchet for low level beta counting. The chemical yield is corrected by measuring the stable iodide content of the milk or water with a specific ion electrode.

Calculation of the Sample Activity and 2 Sigma Error:

$$\frac{Result}{(pCi/l)} = \frac{\frac{N}{t_s} - \beta}{(2.22)(v)(E)(y)(\exp^{-\lambda\Delta t})} \pm \frac{2\sqrt{\frac{N}{t_s^2} + \frac{\beta}{t_b}}}{(2.22)(v)(E)(y)(\exp^{-\lambda\Delta t})}$$

Net Activity — Counting Error

where:

- N = total counts from sample (counts)
- t_s = counting time for sample (min)
- β = background rate of counter (cpm)
- t_b = counting time for background (min)
- 2.22 = dpm/pCi
- v = volume of sample analyzed (liters)
- y = chemical yield of the amount of sample counted
- λ = is the radioactive decay constant for I-131 (0.693/8.05)
- Δt = is the elapsed time between sample collection (or end of the sample collection) to the midcount time
- 2 = multiple of the counting error
- E = efficiency of the counter for I-131, corrected for self absorption effects by the formula:

$$E = E_s \frac{(\exp^{-0.0061M})}{(\exp^{-0.0061M_s})}$$

where:

- E_s = efficiency of the counter determined from an I-131 standard mount
- M = mass of PdI_2 on the sample mount (mg)
- M_s = mass of PdI_2 on the standard mount (mg)

The MDL is defined as that value equal to the two sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the net activity.

Public Service Electric & Gas

Stable iodine carrier is equilibrated in a 4-liter volume of raw milk before two separate 50 ml batches of anion exchange resin are introduced to extract iodine. After each batch has been stirred in the milk for an appropriate time, both are then transferred to an aluminum sample can where the resins are rinsed with demineralized water several times and any leftover rinse water removed with an aspirator stick. The can is hermetically sealed and then counted on a gamma detector.

Calculation of the Sample Activity and 1.96 Sigma Error:

$$\frac{Result}{(pCi/l)} = \frac{\left(\frac{C_s}{T_s} - \frac{C_b}{T_b}\right)(1.05)}{(2.22)(v)(E)(y)(\exp^{-\lambda\Delta t})} \pm \frac{1.96\sqrt{\frac{C_s}{T_s^2} + \frac{C_b}{T_b^2}}\,(1.05)}{(2.22)(v)(E)(y)(\exp^{-\lambda\Delta t})}$$

Net Activity — Counting Error

where:

C_s	=	total gross sample counts (counts)
T_s	=	sample count time (min)
C_b	=	total background count time (counts)
T_b	=	background count time (min)
E	=	counting efficiency for I-131
v	=	aliquot analyzed (liters)
y	=	iodine yield
λ	=	is the radioactive decay constant for I-131 (0.693/8.05)
Δt	=	is the elapsed time between sample collection (or end of the sample collection) to the midcount time
1.05	=	Correction factor for protein-bound iodine
2.22	=	dpm/pCi
1.96	=	multiple of counting error

The MDL is defined as that value equal to the 1.96 sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the net activity.

DETERMINATION OF GAMMA EMITTING RADIOISOTOPES

Teledyne Brown Engineering

Gamma emitting radioisotopes are determined with the use of a lithium drifted germanium (GeLi) and high purity germanium detectors with high resolution spectrometry in specific media; such as, air particulate filters, charcoal filters, milk and water. Each sample to be assayed is prepared and counted in standard geometries such as one liter wrap-around Marinelli containers, 300 ml or 150 ml bottles, or 2-inch filter paper source geometries.

Samples are counted on large (>55 cc volume) GeLi detectors connected to Nuclear Data 6620 data acquisition and computation systems. All resultant spectra are stored on magnetic tape.

The analysis of each sample consists of calculating the specific activities of all detected radionuclides or the detection limits from a standard list of nuclides. The GeLi systems are calibrated for each standard geometry using certified radionuclide standards traceable to the National Bureau of Standards.

Gamma Spectroscopy Statistically Significant Activity and 2 Sigma Error Calculation for the ND6620 and ND6700 Systems:

$$\frac{Activity}{\left(\frac{pCi}{unit\ mass}\right)} = \frac{AREA * DECAY}{LIVETIME(sec.) * ABN * EFF * 0.037 * (unit\ mass)}$$

Statistically Significant Activity

$$\pm\ 200 * \frac{\sqrt{2 * BKGND + AREA}}{AREA} * Activity$$

2 Sigma Counting Error

where:

AREA	=	Net Peak Area (from Nuclide Line Activity Report)
BKGND	=	Compton Background (from Nuclide Line Activity Report)
DECAY	=	Decay Correction Factor (from Minimum Detectable Activity Report) (Nuclide Half Life - Collection time to Mid Count time)
LIVE TIME	=	Elapsed Live Time (from Header Information)
ABN	=	Nuclide Abundance (from Nuclide Line Activity Report)
EFF	=	Detector Efficiency (from Nuclide Line Activity Report)
0.037	=	Conversion Factor (dps to picocuries)
unit mass	=	Sample weight or volume (from Header Information)

Gamma Spectroscopy Statistically Non Significant Activity and 2 Sigma Error Calculation for the ND6620 and ND6700 Systems:

$$\frac{NetActivity}{(\frac{pCi}{unit\ mass})} = \frac{NET * DECAY}{LIVETIME(sec.) * (EFF * B.I.) * 0.037 * (unit\ mass)}$$

Statistically Non Significant Activity

$$\pm\ 200 * \frac{\sqrt{2 * BKGND + NET}}{NET} * Net\ Activity$$

2 Sigma Counting Error

where:

NET	=	Net Peak Area (from Minimum Detectable Activity Report)
BKGND	=	Compton Background (from Nuclide Line Activity Report)
DECAY	=	Decay Correction Factor (from Minimum Detectable Activity Report) (Nuclide Half Life - Collection time to Mid Count time)
LIVE TIME	=	Elapsed Live Time (from Header Information)
(EFF*B.I)	=	Efficiency * Abundance (from Minimum Detectable Activity Report)
0.037	=	Conversion Factor (dps to picocuries)
unit mass	=	Sample weight or volume (from Header Information)

Gamma Spectroscopy Minimum Detectable Activity Calculation for the ND6620 and ND6700 Systems:

$$\frac{MDA}{(\frac{pCi}{unit\ mass})} = \frac{2.83\sqrt{BKGN} * DECAY}{LIVETIME(sec.) * (EFF * B.I.) * 0.037 * (unit\ mass)}$$

where:

BKGN	=	Total Peak Background Area (from Minimum Detectable Activity Report)
DECAY	=	Decay Correction Factor (from Minimum Detectable Activity Report) (Nuclide Half Life - Collection time to Mid Count time)
LIVE TIME	=	Elapsed Live Time (from Header Information)
(EFF*B.I)	=	Efficiency * Abundance (from Minimum Detectable Activity Report)
0.037	=	Conversion Factor (dps to picocuries)
unit mass	=	Sample weight or volume (from Header Information)

DETERMINATION OF GAMMA EMITTING RADIOISOTOPES

Public Service Electric & Gas

The procedure for detection of gamma emitting radioisotopes generates high resolution gamma spectra which are used for quantitative determination and identification. Standard geometries have been established to maximize efficiency, for sample types: air particulate filters, water, and milk.

A description of the analytical methods, beginning with air particulates used for each sample type is presented, followed by the general formula used for calculation of the sample activities.

Air particulate: At the end of each calendar quarter, 13 weekly air filters from a given location are stacked in a two inch diameter Petri dish in chronological order, with the oldest filter at the bottom, nearest the detector, and the newest one on top. The Petri dish is closed and the sample counted.

Water and Milk: A well-mixed 3.5-liter sample is poured into a calibrated Marinelli beaker. The samples are brought to ambient temperature and counted.

Calculation of the Sample Activity and 1.96 Sigma Error:

$$\frac{Result}{\left(\frac{pCi}{vol - mass}\right)} = \frac{N_{(j)} - B_{(j)}}{(2.22)(v)(t)(E_{(j)})(BI_{(j)})(\exp^{-\lambda_{(j)}\Delta t})}$$

Net Activity

$$\pm \frac{1.96\sqrt{N_{(j)} + B_{(j)}}}{(2.22)(v)(t)(E_{(j)})(BI_{(j)})(\exp^{-\lambda_{(j)}\Delta t})}$$

Counting Error

where:

$N_{(j)}$ = area, in counts, of a special region containing a gamma emission of the nuclide of interest

NOTE: If the detector exhibits a peak in this region when counting a blank (i.e., from natural background (ß)(t) is subtracted from N before using the above equation. ß is the count rate of the blank, cpm, in the background peak.

$B_{(i)}$ = background counts in the region of interest, calculated by fitting a straight line across the region connecting the two adjacent region.

1.96 = multiple of counting error

2.22 = dpm/pCi

v = volume or mass of sample analyzed

t = counting interval of sample, minutes

$E_{(i)}$ = efficiency of counter at the energy region of interest

$BI_{(i)}$ = branching intensity of the nuclide at the gamma emission energy under consideration (no. of photons per disintegration)

$\lambda_{(i)}$ = is the radioactive decay constant for $nuclide_{(i)}$ (0.693/nuclide half life)

Δt = is the elapsed time between sample collection (or end of the sample collection) to the midcount time

The MDL is defined as that value equal to the two sigma counting error of the result. Less than MDL is reported as the result when this value is greater than the measured result defined above.

Teledyne Brown Engineering

Teledyne Brown Engineering dosimeters are rectangular teflon wafers impregnated with 25% $CaSO_4$:Dy phosphor. They are annealed in a hot air oven prior to use and are inserted into black polyethylene pouches. The filled pouches are labelled and placed in rectangular holders which contain copper shielding to filter out low energy radiation. After exposure in the environment, four separate areas of the dosimeter are read in a Teledyne Brown Engineering model 8300 TLD reader. The dosimeter is then re-irradiated by a standardized Cs-137 source and the four areas are read again. Calculation of the environmental exposure is performed by computer, using the re-irradiation readings to determine the sensitivity of each area of the dosimeter. The reading of control dosimeters are subtracted to allow for transit dose and system background.

A. For any given area of the dosimeter, the dose mR is calculated by the formula:

$$Dose = (R)\left(\frac{redose}{RR}\right) - (avcontrol)$$

where:

R	=	initial reading of the area
RR	=	second reading of the area (after re-irradiation)
redose	=	re-irradiation dose in mR
avcontrol	=	average of control values calculated as explained below. If no controls are used, avcontrol = 0 and gross exposures result

B. Each area of each control is calculated by the formula:

$$cdose = (cr)\left(\frac{credose}{crr}\right)$$

where:

cdose	=	control area dose in mR
cr	=	initial reading of the control area
crr	=	second reading of the control area (after re-irradiation)
credose	=	re-irradiation dose of the control dosimeter in mR

The average of control values is then calculated from all four areas of all controls by the formula:

$$avcontrol = \frac{\sum_{1}^{4N} cdose}{4N}$$

where:

N = total number of control dosimeters

C. The average and standard deviation of the area readings for each dosimeter are calculated by standard methods.

D. Using the criteria that if one standard deviation is greater than 10% of the average of the four readings and that if the value of one area is outside the range of 3 standard deviations of the average of the other three areas, then that area will be eliminated and the results will be based on the remaining areas.

APPENDIX F

QUALITY CONTROL
EPA INTER-LABORATORY COMPARISON PROGRAM

APPENDIX F: QUALITY CONTROL PROGRAM

Teledyne Brown Engineering (TB) and Public Service Electric & Gas (PSE&G) participate in the EPA Radiological Inter-laboratory Comparison (cross check) Program. This participation includes a number of analyses on various sample media as found in the Limerick Generating Station REMP. As a result of this participation, an objective measurement of analytical precision and accuracy as well as, a bias estimation of the results are obtained.

Examination of the data shows that the vast majority were within the EPA control limits. Each case of exceeding the control limits was investigated. There was no evidence to suggest systematic errors.

The results of TB's and PSE&G's participation in the EPA cross check program can be found in Tables F-1 and F-2, respectively.

TABLE F-1

USEPA
INTER-LABORATORY COMPARISONS - 1994
TELEDYNE BROWN ENGINEERING

Collection Date	Sequence No.	Media	Nuclide	EPA Results(a)	Teledyne Brown Results(b)	Normalized Deviation Grand Avg.	Normalized Deviation Known	All Participants Mean ± 2 s.d.	
01/14/94	638	Water	Sr-89	25.0 ± 8.66	24.0 ± 3.00	[illegible]	-0.35	23.74 ± 8.02	
			Sr-90	15.0 ± 8.66	15.67 ± 6.59	[illegible]	0.23	14.59 ± 4.34	
01/28/94	636	Water	Gr-Alpha	15.0 ± 8.66	21.67 ± 1.74	2.74	2.31	13.75 ± 8.50	(c)
			Gr-Beta	62.0 ± 17.32	72.33 ± 11.37	2.80	1.79	56.14 ± 28.30	
02/04/94	637	Water	I-131	119.0 ± 20.78	110.33 ± 0.00	-1.59	-1.30	120.99 ± 20.36	
03/04/94	639	Water	H-3	4936.0 ± 855.63	4833.33 ± 458.25	-0.04	-0.36	4844.97 ± 955.34	
04/19/94	642	Water	Gr-Beta	117.0 ± 31.18	102.67 ± 19.29	-0.40	-1.38	106.86 ± 30.94	
			Sr-89	20.0 ± 8.66	19.00 ± 3.00	0.18	-0.35	18.49 ± 7.38	
			Sr-90	14.0 ± 8.66	13.00 ± 0.00	-0.39	-0.35	14.13 ± 4.28	
			Co-60	20.0 ± 8.66	23.67 ± 9.63	1.23	1.27	20.12 ± 3.66	
			Cs-134	34.0 ± 8.66	34.00 ± 5.19	0.88	0.00	31.45 ± 5.44	
			Cs-137	29.0 ± 8.66	34.00 ± 7.95	0.98	1.73	31.17 ± 4.80	
			Gr-Alpha	86.0 ± 38.11	78.00 ± 9.00	-0.50	-0.63	84.40 ± 29.26	
06/10/94	643	Water	Co-60	50.0 ± 8.66	43.00 ± 6.00	-2.34	-2.42	49.77 ± 7.64	(d)
			Zn-65	134.0 ± 22.53	13.33 ± 1.74	-16.96	-16.08	140.62 ± 19.16	(e)
			Ru-106	252.0 ± 43.30	201.33 ± 27.87	-1.05	-3.51	216.56 ± 57.04	(f)
			Cs-134	40.0 ± 8.66	29.33 ± 11.37	-2.65	3.70	36.99 ± 6.28	(g)
			Cs-137	49.0 ± 8.66	49.67 ± 4.59	-0.94	0.23	52.38 ± 7.22	
			Ba-133	98.0 ± 17.32	85.00 ± 9.00	-0.25	-2.25	86.46 ± 16.62	(h)
07/15/94	647	Water	Sr-89	30.0 ± 8.66	26.00 ± 5.19	-0.99	-1.39	28.84 ± 12.12	
			Sr-90	20.0 ± 8.66	19.00 ± 0.00	0.07	-0.35	18.80 ± 5.60	
07/22/94	645	Water	Gr-Alpha	32.0 ± 13.86	25.33 ± 8.67	-0.95	-1.44	29.74 ± 20.22	
			Gr-Beta	10.0 ± 8.66	16.00 ± 3.00	0.38	2.08	14.91 ± 7.48	(i)
08/05/94	646	Water	H-3	9951.0 ± 1723.39	[illegible]700.00 ± 300.12	0.08	-0.44	9651.86 ± 1393.26	
08/26/94	648	Air Filter	Gr-Alpha	35.0 ± 15.59	[illegible] ± 6.24	-1.07	-0.71	36.89 ± 13.24	
			Gr-Beta	56.0 ± 17.32	[illegible] ± 9.63	0.04	0.58	59.08 ± 14.46	
			Sr-90	20.0 ± 8.66	[illegible]00 ± 3.00	-0.54	-0.69	19.57 ± 5.52	
			Cs-137	15.0 ± 8.66	[illegible]0 ± 5.19	0.14	0.69	16.59 ± 4.84	
10/07/94	650	Water	I-131	79.0 ± 13.86	71.00 ± 9.00	-1.92	-1.73	79.89 ± 13.58	
05/30/94	651	Milk	Sr-89	25.0 ± 8.66	24.33 ± 7.56	0.74	-0.23	22.19 ± 10.22	
			Sr-90	15.0 ± 8.66	17.67 ± 4.59	0.87	0.93	15.15 ± 4.96	
			I-131	75.0 ± 13.86	81.67 ± 17.58	1.47	1.44	74.89 ± 11.16	(j)
			Cs-137	59.0 ± 8.66	70.33 ± 13.86	2.75	3.93	62.39 ± 7.44	
			K	1715.0 ± 148.96	1740.00 ± 461.85	0.79	0.50	1700.90 ± 218.00	
10/28/94	652	Water	Gr-Alpha	57.0 ± 24.24	47.00 ± 9.00	-0.66	-1.24	52.30 ± 27.98	
			Gr-Beta	23.0 ± 8.66	25.33 ± 4.59	-0.63	0.81	27.16 ± 10.46	
10/18/94	653	Water	Gr. Beta	142.0 ± 36.37	120.00 ± 0.00	-0.46	-1.81	125.57 ± 27.84	
			Sr-89	25.0 ± 8.66	24.67 ± 6.24	0.58	-0.12	22.99 ± 8.32	
			Sr-90	15.0 ± 8.66	14.33 ± 3.45	-0.20	-0.23	14.92 ± 4.54	

TABLE F-1

USEPA
INTER-LABORATORY COMPARISONS - 1994
TELEDYNE BROWN ENGINEERING

Collection Date	Sequence No.	Media	Nuclide	EPA Results(a)	Teledyne Brown Results(b)	Normalized Deviation Grand Avg.	Normalized Deviation Known	All Participants Mean ± 2 s.d.	
			Co-60	40.0 ± 8.66	41.00 ± 3.00	0.55	0.35	39.43 ± 5.30	
			Cs-134	20.0 ± 8.66	21.67 ± 4.59	1.11	0.58	18.45 ± 3.56	
			Cs-137	39.0 ± 8.66	41.67 ± 6.93	-0.02	0.92	41.73 ± 5.32	
			Gr-Alpha	57.0 ± 24.25	51.33 ± 4.59	-0.66	-0.70	56.68 ± 19.66	
			Co-60	59.0 ± 8.66	52.00 ± 0.00	-2.38	-2.42	58.87 ± 9.18	(k)
11/04/94	654	Water	Zn-65	100.0 ± 17.32	81.33 ± 21.06	-4.04	-3.23	104.68 ± 15.90	(k)
			Cs-134	24.0 ± 8.66	19.67 ± 7.54	-1.14	-1.50	22.95 ± 4.54	
			Cs-137	49.0 ± 8.66	56.33 ± 6.93	0.84	1.85	51.92 ± 7.22	
			Ba-133	73.0 ± 12.12	58.33 ± 8.67	-3.09	-3.63	70.81 ± 12.26	(k)

Footnotes:

(a) EPA Results - Expected laboratory precision (3 sigma). Units are pCi/l for water and milk except K is in mg/l.

(b) Teledyne Results - Average ± 3 sigma. Units are pCi/l for water and milk except K is in mg/l. Units are total pCi for air particulate filters.

(c) There appears to be variation in self-absorption matrix. The EPA confirms that the composition of their tap water from Lake Mead, varies seasonally which can cause variation in alpha, beta results. No corrective action required at this time since results are within ± 3 sigma control limits.

(d) A second aliquot was analyzed, paying particular attention to volume aliquoted. The result, 52 pCi/l, was in good agreement with the EPA. The three original results, each counted on a different detector, showed good precision. The measurement of Co-60 has not been a problem. Future EPA cross-checks will be weighed and results followed to check for a possible trend "out of control".

(e) The average value of three analyses on the "Report of Analysis" was 133 pCi/liter which is in good agreement with the EPA. Apparently, incorrect results were entered into the EPA computer. Future data will be printed from the computer screen to check entries.

(f) The EPA has indicated that the Radiation Quality Assurance Program has been experiencing problems with the ruthenium-106 analysis.

(g) The first aliquot, prepared according to EPA dilution instructions was counted on four detectors in the 1 liter Marinelli geometry with Cs-134 results (based on the 796 KeV peak) in pCi/l of 32.0, 25.1, 31.7, and 30.8. The 31.7 result was not reported. Had that been reported instead of 25.1, the average would have been 31.5 and the normalized deviation would have been -2.94 instead of -3.70. A second aliquot was prepared and a single measurement was made with the result of 31.1 pCi/l. An undiluted aliquot was measured in a 150 ml geometry with

Collection Date	Sequence No.	Media	Nuclide	EPA Results(a)	Teledyne Brown Results(b)	Normalized Deviation Grand Avg.	Normalized Deviation Known	All Participants Mean ± 2 s.d.

the result of 33.5 pCi/l. That result is comparable with the Marinelli results. Thus none of : sample preparation (dilution, volume determination, maintaining correct pH, etc.), sample geometry, or detector efficiency seem to be the cause of the low results.

(h) There is no apparent reason for the low result, however the average value, 85 pCi/l is in good agreement to the grand average (86.46). No corrective action planned.

(i) EPA results for gross beta in water were corrected for 20% crosstalk into the beta channel from the Th-230 alpha spike. Recent measurements show that the crosstalk can be much higher (37% for gamma products counter #1). The normalized deviation from the grand average was only 0.38. Future results will be corrected with specific crosstalk values determined by counting Th-230 standards.

(j) The milk sample was counted four times. The reported Cs-137 values were based on one aliquot of 1 liter volume and an aliquot of 0.865 liter counted two times. It is suspected that the 0.865 liter volume was incorrectly determined. If 1 liter (the usual volume for counting milk samples) is used in the calculation, then the average of three results equals 63.6 pCi/l which gives a normalized deviation to the Known of 1.59. The fourth count (a 1 liter aliquot) had a Cs-137 equal to 64.2 pCi/l which is in good agreement with the average of the other three. Teledyne will set up a log for recording aliquots used for EPA samples and record how the aliquot volume was determined.

(k) The EPA requires that water samples be diluted before gamma analysis. That imposes a feature not appropriate for the handling of environmental samples. As in the 06/10/94 water sample, it appears that the first aliquot may not have been accurately prepared. A second aliquot was prepared and counted three times with results in pCi/l and normalized deviation of:

Co-60	60.6	0.55
Zn-65	100.0	0.00
Cs-134	22.9	-0.38
Cs-137	58.5	3.29
Ba-133	69.8	-0.79

Four of the five are now in good agreement with the EPA results. The Cs-137 is high, but within the control limits when compared to the grand average deviation of all laboratories of 2.89. The grand average was 51.9 pCi/l. For future samples of this type we will have two technicians each prepare an aliquot and compare the counting results to check for preparation technique differences.

TABLE F-2
USEPA ENVIRONMENTAL RADIOACTIVITY LABORATORY
INTERCOMPARISON STUDY PROGRAM
PSE&G

Gross Alpha and Gross Beta Analysis
of Water (pCi/L) and Air Particulate (pCi/filter)

DATE MM-YY	ENV SAMPLE CODE	MEDIUM	ANALYSIS	* PSE&G Mean ± s.d.	** EPA Known
01-94	EPA-WAT-AB374	Water	Alpha	24±1.2	15±5
			Beta	61±4.2	62±10
04-94	EPA-WAT-P377	Water	Alpha	80±2.6	86±33
			Beta	118±1.7	117±18
08-94	EPA-WAT-GABS382	APT	Alpha	39±1.2	35±9
			Beta	58±0.6	56±10
10-94	EPA-APT-P385	Water	Alpha	60±2.1	57±14
			Beta	140±2.5	142±21
10-94	EPA-WAT-P387	Water	Alpha	64±2.9	57±14
			Beta	26±1.5	23±5

* s.d. - one standard deviation of three individual analytical results
** known value plus or minus one sigma as reported by EPA

TABLE F-2
USEPA ENVIRONMENTAL RADIOACTIVITY LABORATORY
INTERCOMPARISON STUDY PROGRAM
PSE&G

Gamma Analysis of Milk, Water (pCi/L) and
Air Particulate (pCi/filter)

DATE MM-YY	ENV SAMPLE CODE	MEDIUM	ANALYSIS	* PSE&G Mean ± s.d.	** EPA Known
04-94	EPA-WAT-P377	Water	Cs-134	31±1.0	34±5
			Cs-137	30±1.2	29±5
			Co-60	21±1.5	20±5
06-94	EPA-WAT-G378	Water	Ba-133	97±6.4	98±10
			Co-60	48±0.6	50±5
			Zn-65	134±2.5	134±13
			Ru-106	226±12	252±25
			Cs-134	37±1.7	40±5
			Cs-137	50±0.6	49±5
08-94	EPA-APT-GABS382	APT	Cs-137	14±0.6	15±5
09-94	EPA-MLK-GS383	Milk	Cs-137	60±1.2	59±5
			K(1)	1676±31	1715±86
			I-131	75±2.0	75±8
10-94	EPA-WAT-P385	Water	Co-60	38±2.0	40±5
			Cs-134	20±1.0	30±5
			Cs-137	40±2.0	39±5
11-94	EPA-WAT-G386	Water	Co-60	58±2.6	59±5
			Zn-65	99±1.0	100±10
			Cs-134	25±1.0	24±5
			Cs-137	51±1.2	49±5
			Ba-133	76±7.1	73±7

(1) Reported as mg/l of Potassium

* s.d. - one standard deviation of three individual analytical results
** known value plus or minus one sigma as reported by EPA

TABLE F-2
USEPA ENVIRONMENTAL RADIOACTIVITY LABORATORY
INTERCOMPARISON STUDY PROGRAM
PSE&G

Tritium Analysis of Water (pCi/L)

DATE MM-YY	ENV SAMPLE CODE	MEDIUM	ANALYSIS	* PSE&G Mean ± s.d.	** EPA Known
03-94	EPA-WAT-H376	Water	H-3	4603±42	4936±494
08-94	EPA-WAT-H381	Water	H-3	9480±102	9951±995

* s.d. - one standard deviation of three individual analytical results
** known value plus or minus one sigma as reported by EPA

TABLE F-2
USEPA ENVIRONMENTAL RADIOACTIVITY LABORATORY
INTERCOMPARISON STUDY PROGRAM
PSE&G

Iodine Analysis of Water (pCi/L)

DATE MM-YY	ENV SAMPLE CODE	MEDIUM	ANALYSIS	* PSE&G Mean ± s.d.	** EPA Known
02-94	EPA-WAT-I375	Water	I-131	113±2.3	119±12
10-94	EPA-WAT-I384	Water	I-131	82±2.1	79±8

* s.d. - one standard deviation of three individual analytical results
** known value plus or minus one sigma as reported by EPA

TABLE F-2
USEPA ENVIRONMENTAL RADIOACTIVITY LABORATORY
INTERCOMPARISON STUDY PROGRAM
PSE&G

Strontium-89 and Strontium-90 Analysis of
Air Particulates (pCi/filter),
Milk (pCi/L) and Water (pCi/L)

DATE MM-YY	ENV SAMPLE CODE	MEDIUM	ANALYSIS	* PSE&G Mean ± s.d.	** EPA Known
01-94	EPA-WAT-S373	Water	Sr-89	26±2	25±5
			Sr-90	14±0.6	15±5
04-94	EPA-WAT-P377	Water	Sr-89	19±1	20±5
			Sr-90	14±0.6	14±5
07-94	EPA-WAT-S379	Water	Sr-89	32±7.5	30±5
			Sr-90	18±3	20±5
08-94	EPA-APT-GABS382	APT	Sr-90	19±0.6	20±5
09-94	EPA-MLK-GS383	Milk	Sr-89	20±3.1	25±5
			Sr-90	15±0.6	15±5
10-94	EPA-WAT-P385	Water	Sr-89	31±3	25±5
			Sr-90	15±0.6	15±5

* s.d. - one standard deviation of three individual analytical results
** known value plus or minus one sigma as reported by EPA

APPENDIX G

LGS SURVEY

APPENDIX G: LGS SURVEYS

A Land Use Census around the Limerick Generating Station (LGS) was conducted by Normandeau Associates, RMC Environmental Services Division for PECO Energy to comply with Sections 2.5.1 and 3.4.2 of the Plant's Offsite Dose Calculation Manual. The survey was conducted during the May to September 1994 growing season. The results of this survey are summarized in Table G-1.

There were no changes required to the LGS REMP as a result of this survey.

Table G-1 Location of Nearest Residence, Garden and Milk Farm within a Five Mile Radius of Limerick Generating Station, 1994

(Distance in Miles)

Sector	Residence	Garden(1)	Milk Farm
N	0.6	1.6	4.7
NNE	0.5	0.5	-
NE	0.8	1.5	-
ENE	0.6	2.5	-
E	0.6	1.1	-
ESE	0.5	1.2	1.1(2)
SE	1.0	1.1	4.6
SSE	1.0	1.2	4.7
S	0.8	1.2	2.3
SSW	1.0	1.4	1.8
SW	0.6	0.6	3.0
WSW	0.8	1.5	2.8
W	0.6	2.2	2.8
WNW	0.7	1.0	-
NW	1.3	1.6	-
NNW	0.9	0.8	-

(1) Garden greater than 500 square feet
(2) Goat Milk